

PRiME 2024

Meeting Abstracts 2024-02

Honolulu, Hawaii, USA
6-11 October 2024

Volume 1 of 9

ISBN: 979-8-3313-1901-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2024) by The Electrochemical Society
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact The Electrochemical Society
at the address below.

The Electrochemical Society
65 South Main Street, Building D
Pennington, New Jersey 08534-2839
USA

Phone: 1.609.737.1902
Fax: 1.609.737.2743

ecs@electrochem.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

A01-NEW APPROACHES AND ADVANCES IN ELECTROCHEMICAL ENERGY SYSTEMS

A01 - Flow Batteries 1

Optimizing Vanadium Redox Flow Battery Performance with Embroidered Porous Electrodes and Corrugated Bipolar Plates.....	1
<i>Jiangzhou Xie, Yuheng Tian, Suld Sulide, Maria Skyllas-Kazacos, Chris Menictas</i>	
Enhancing Electrolyte Stability and Performance in Vanadium Redox Flow Batteries through Inorganic Additives Investigation.....	3
<i>Yuheng Tian, Jiangzhou Xie, Maria Skyllas-Kazacos, Jiangzhou Xie, Chris Menictas</i>	
Active Material Transport in Carbon Porous Electrode for Vanadium Redox Flow Batteries	5
<i>Hirokazu Ishitobi, Tomoki Ide, Soshi Shiraishi, Hidehiko Tsukada, Takato Nakao, Nobuyoshi Nakagawa</i>	
Critical Roles of pH and Activated Carbon on the Speciation and Performance of an Archetypal Organometallic Complex for Aqueous Redox Flow Batteries.....	7
<i>Nicolas Holubowitch, Alexis Burghoff</i>	
An Aqueous Redox Flow Battery Using CO ₂ as an Active Material.....	9
<i>Ryoichi Kanega, Akira Yamamoto, Hisao Yoshida, Yukari Sato, Akihiro Ohira</i>	
An Electrochemical System Model for Aqueous Organic Flow Batteries: The TEMPTMA/MV System	11
<i>Xinjie Guan, Maria Skyllas-Kazacos, Chris Menictas, Pujith Rajaguru Senapathy Vijayaratnam</i>	
Understanding Shunt Currents in Flow Batteries: A Multiphysics Approach to Analysis and Mitigation	13
<i>Massimo Guarnieri, Davide Bordignon, Andrea Trovò</i>	
Repurposing Plastics into Membranes for Redox Flow Batteries	15
<i>Andrea Diaz, Zhongbo Zhang, Lu Zhang, Shrayesh N. Patel</i>	
On Identifying Crossover Induced Self-Discharge of Non-Aqueous Redox-Flow Batteries and Ketazin Based Redox-Active Species	16
<i>Sebastian Fricke, Susanna Krämer, Karin Sowa, Martin Winter, Mariano Gruenebaum</i>	
Techno-Economic Modelling of Flow Batteries to Analyze the Component-Wise Optimisation Potential, the Manufacturing Phase and the Operating Phase with Degradation Rates in a Simulation-Integrable Stand-Alone Software.....	18
<i>Daniel Gerlach, Jens Noack, Rabin Siva Dev, Sabine Trupp, Karsten Pinkwart</i>	
Advancements in Flow Batteries for Long Duration Energy Storage	20
<i>Massimo Guarnieri</i>	
Single-Membrane pH-Decoupling Aqueous Battery Using Proton-Coupled Electrochemistry for pH Recovery.....	22
<i>Dawei Xi, Zheng Yang, Abdulrahman Alfaraidi, Michael J. Aziz</i>	

A01 - Flow Batteries 2

Revisiting Microemulsion Electrochemistry	24
<i>Brian Barth, Adam Imel, Thomas A. Zawodzinski</i>	
Solubility-Enhanced Iron Complex Posolytes for Redox Flow Batteries.....	25
<i>Atsushi Okazawa, Takayuki Kakuchi, Keisuke Akahori, Kosuke Kawai, Masashi Okubo</i>	
Neutron Depolarization Under Electrochemical Polarization: Investigating Phase Change Reactions in All-Iron Redox Flow Batteries	27
<i>Inmaculada Gimenez-Garcia, Marina Tabuyo-Martinez, Rémy Jacquemond, Adrian A Mularczyk, Pierre Boillat, Antoni Forner-Cuenca</i>	
Evaluation of Extremely Stable Redox Active Materials and Porous Electrodes for Redox Flow Batteries Using Static Cells and Physics-Based Modeling.....	29
<i>Jordan D. Sosa, Michael J. Aziz</i>	
The Passive Flow Zinc Bromine System.....	31
<i>Daniel A. Steingart, Lynne Elizabeth Irvin, Robert Mohr, Dongrun Ju, Mateo Sebastian Williams</i>	
Inverse Design of Porous Electrodes in Redox Flow Batteries: A Computational Approach Integrating Topology Optimization and Multi-Physics Modeling	33
<i>Mojtaba Barzegari, Martin de Waal, Pedro de Carvalho, Maxime van der Heijden, Antoni Forner-Cuenca</i>	
Hydroxide Exchange Membrane Carbon Capture (HEMCC) Using Nickel Hydroxide Batteries and Flow-through Membranes	35
<i>James Buchen, Teng Wang, Brian P Setzler, Yushan Yan</i>	
Exploring the Role of Inert Conductive Area on Redox-Mediated Processes	37
<i>Nicholas J. Matteucci, Christopher T. Mallia, Fikile R. Brushett</i>	
Understanding the Activation and Concentration Overpotential of Negative and Positive Electrodes in Vanadium Redox Flow Batteries By Using Symmetric Cell Architecture	39
<i>Pengfei Sun, Takahiro Suzuki, Shohji Tsushima</i>	

A01 - Invited Talks 1

(Invited) Progress in Electrochemically Active Components for High-Energy Density Lithium Sulfur Battery Systems.....	41
<i>Prashant Nagesh Kumta, Oleg Velikokhatnyi, Mayur Gaikwad, George E Blomgren</i>	
(Invited) Synthesis and Interfacial Control of Electrode Architectures	42
<i>Sheng Dai</i>	
(Invited) Novel Electrode Materials for Sodium-ion Batteries.....	43
<i>Mariappan Parans Paranthaman, Saurabh Pethe, Xiao-Guang Sun</i>	
(Invited) Study on the Effect of Additive in High Nickel NMC – Graphite Libs for HF- Scavenging and Stabilization of Cei Layer	44
<i>Bharat Gattu, Somayeh Zamani, Dianne Atienza</i>	
(Invited) Assessment of Extreme High-Power Demand for Evtol Li-Ion Batteries	45
<i>Ilias Belharouak, Marm Dixit, Anuj Bisht, Chol-Bum Kweon, Ruhul Amin, Ali Abouimrane</i>	

(Invited) Development of All Solid-State Batteries with Sulfide Solid Electrolytes: From Materials to Characterizations	46
<i>Jung-Hyun Kim</i>	
(Invited) Early Insights, Safer Outcomes - Advancing Battery Safety from the Ground up	47
<i>Loraine Torres-Castro, Alex Martin Bates, Nathan Johnson, Paul Albertus, Judith Jeevarajan, Partha P. Mukherjee</i>	
(Invited) In-Operando Vibrational Spectroscopy for Next Generation Lithium Batteries.....	48
<i>Vibha Kalra</i>	

A01 - Invited Talks 2

(Invited) Proton Insertion into Wadsley-Roth and Related Phases	49
<i>Atsuo Yamada, Sunghyun Park, Shinichi Nishimura, Masashi Okubo</i>	
(Invited) Energy Storage at Ultra Low Temperatures through Electrolyte Innovation.....	50
<i>Vilas G. Pol, Soohwan Kim, Zheng Li, Ethan Adams, Thomas Adams, Colin Jamison, Hari Vignesh Ramasamy</i>	
(Invited) A Flexible and Sustainable Gel Electrolyte Toward Safe Zn-MnO ₂ Alkaline Rechargeable Batteries.....	52
<i>Usman Ali Khan, Teja Ganduri, Deepa Madan</i>	
(Invited) Prussian Blue Analogues for Na- and K-Ion Batteries	53
<i>Kosuke Nakamoto, Kosei Watanabe, Tomooki Hosaka, Shinichi Komaba</i>	

A01 - Li Battery Electrodes and Electrolytes 1

High-Speed Manufacturing(<1 min) of Ultra-Thin Lithium Metal Anode for Safe and High-Energy Battery	55
<i>Jueun Kim, Minjoon Park</i>	
Mechanism Analysis of Solution Li Pre-Doping Technique Toward Si-Based Anodes for Next-Generation Batteries	57
<i>Morihiro Saito, Yusuke Himata, Hikaru Enomoto, Fumisato Ozawa, Akihiro Nomura</i>	
Insights into the Negative Impact of Carbon Binder Domains in Lithium-Ion Battery Electrode through 3D Microstructure Resolved Model.....	59
<i>Seungsoo Jang, Yejin Kang, Joonam Park, Hyeongseok Kim, Kang Taek Lee</i>	
Printable Liquid Metal Electrodes for Lithium Ion Battery.....	60
<i>Yuta Ozawa, Yuuki Nishitai, Nyamjargal Ochirkhuyag, Natsuka Usami, Moeka Kanto, Kazuhide Ueno, Hiroki Ota</i>	
PV Silicon Recovery for Lithium Ion Battery Anodes	64
<i>Jaclyn Coyle, Jeff Green, Gabriel M. Veith, Matthew Keyser</i>	
Effect of Soft Carbon Coating on Electrochemical Performance of Graphite As Negative Electrode Materials for Lithium-Ion Batteries.....	65
<i>Xinli Gao, Shota Tsujimoto, Ryo Sakamoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
(Invited) Processing and Characterization of Solid-State Batteries.....	68
<i>Marm Dixit</i>	

Rechargeable Aqueous Lithium-Air Battery with Lithium Conducting Polymer Electrolyte Separator.....	69
<i>Hazirah Syahirah binti Zakria, Tomoya Mizutani, Daisuke Mori, Sou Taminato, Hiroki Eimura, Kei Ikoma, Atsushi Sawamoto, Osamu Yamamoto, Yasuo Takeda, Nobuyuki Imanishi</i>	
Revealing the Impact of Graphite Reaction and Binder Structural Changes on the Degradation of Silicon-Graphite Composite Electrodes via Differential Capacity and Stress Analysis	71
<i>Sung Yeol Kim, Giyong Kim</i>	
MLIP-DFT Combined High-Throughput Screening of Alkaline Stable Lithium Conductors	73
<i>Zhuohan Li, KyuJung Jun, Gerbrand Ceder</i>	
Investigating Non-Solvent Induced Phase Separation as a Fabrication Method for Lithium-Ion Battery Electrodes	74
<i>Trent A. Weiss, Fikile R. Brushett</i>	
A Physical Approach to Practical Applications of Lithium Metal Anode Using High-Flatness Cu Mesh Inducing Epitaxial Li Plating for All Solid-State Battery	76
<i>Jihan Park, Minjoon Park</i>	

A01 - Li Battery Electrodes and Electrolytes 2

Chemical Insertion of Li^+ Enables Reversible, Anionic Redox in FeS_2	78
<i>Ryan H. DeBlock, Jeffrey W. Long, Hunter O. Ford, Gloria Bazargan, Brian Chaloux, Debra R. Rolison, Meghanne Tighe</i>	
Nanoscope Strain-Associated Lithium Diffusion in Single-Crystalline NMC Battery Particles.....	79
<i>Danwon Lee, Chihyun Nam, Juwon Kim, Bonho Koo, Hyejeong Hyun, Jinkyu Chung, Sungjae Seo, Munsoo Song, Jaeyung Song, Daan Hein Alsem, Norman Salmon, Suyong Lee, Namdong Kim, David Shapiro, Jongwoo Lim</i>	
New Insights into the Electrochemical Reactions of Fluoride Ions in Carbon-Based Positive Electrodes	82
<i>Yuta Ito, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Tethering and Catalyzing Lithium Polysulfides in the Cathode to Improve Lithium-Sulfur Battery Lifetime, Energy, & Power	84
<i>John Chmiola, Nathan Dunlap, Taylor Juran, Fabio Albano</i>	
Microstructural Analysis of Lithium-Ion Battery Cathodes Toward Improved Manufacturing Sustainability	86
<i>Willa Brenneis, Qingsong Liu, Jeffrey J. Richards, Jeffrey Lopez</i>	
Enhancement of LiCoO_2 Electrode Reaction by Considerable Amounts of Powdery $\alpha\text{-LiAlO}_2$	87
<i>Yoshinori Arachi, Arisa Sanzen, Tatsuya Nakamura</i>	
Rationally Designed Cyclic Sulfonamide-Based Electrolyte for Improved Electrochemical Performance for Rechargeable Li Batteries.....	89
<i>Bishnu Prasad Thapaliya, Sheng Dai</i>	
Co-Rolling Dry-Process Enables Thin and Robust Solid-State Electrolyte Layer for All-Solid-State Batteries.....	90
<i>Dong Ju Lee, Yuju Jeon, Jung-Pil Lee, Lanshuang Zhang, Ki Hwan Koh, Marta Vicencio, Junlin Wu, Yu-Ting Chen, Zheng Chen</i>	

Impact of Structural Motifs on the Ionic Diffusion Mechanism in Sulfide-Based Solid Electrolytes.....	91
<i>Tawfiqur Rakib, Elif Ertekin</i>	

Investigating the Impact of Various Binder Contents and Compression on Graphite Electrode Thickness Change Measurements	93
<i>Simon Kuecher, Franz B. Spingler, Axel Durdal, Lennart Reuter, Andreas Jossen</i>	

A01 - Li Battery Safety and Performance

Early Detection Strategies for Lithium-Ion Battery Safety in Electric Vehicles.....	96
<i>Loraine Torres-Castro, Alex Martin Bates, Nathan Brenner Johnson, Genaro Quintana</i>	

Effect of Thermal Runaway Trigger Methods for Battery Safety Characterization	97
<i>Vijayasekaran Boovaragavan, Anudeep Mallarapu, Nathaniel Sunderlin, Matthew Tamashiro, Christina Peabody, Thibault Pelloux-gervais, Xin Li, Gregory Sizikov</i>	

Multifunctional Calorimeter for Thermal Characterization of Pouch and Cylindrical Cell	98
<i>Xiaoni Du, Chihwan Choi, Taylor R. Garrick, Song-Yul Choe</i>	

Multiscale Safety Evaluation of Sodium-Ion: Safer Than Lithium-Ion?	101
<i>Alex Martin Bates, Loraine Torres-Castro, Jill Langendorf, Nathan Brenner Johnson, Jessica Kustas, Mark Rodriguez, Chaz Rich</i>	

Identifying Variability across Institutions in Differential Scanning Calorimetry for Materials Level Battery Safety	102
<i>Nathan Brenner Johnson, Bhuvsmi Bhargava, Alex Martin Bates, Megan Diaz, Paul Albertus, Loraine Torres-Castro, Yuliya Preger</i>	

Efficient Reformulation of Lithium-Ion Battery Models Using Symmetric Polynomials: Extending to Phase Field Models	103
<i>Raghav Sai Thiagarajan, Taylor R. Garrick, Venkat R. Subramanian</i>	

Understanding the Interfacial Evolution of Lithium-Ion Batteries Using Second-Harmonic Nonlinear Electrochemical Impedance Spectroscopy	104
<i>Yuefan Ji, Daniel T. Schwartz</i>	

Performance Analysis of Regenerated Lithium-Ion Batteries in Their Second-Life	106
<i>Jayanth Ramamurthy, Adam Thelen, Mihir Ojha, Sina Navidi, Shervin Alaei, Weimin Jiao, Chao Hu, Todd A. Kingston, Cary L. Pint</i>	

Second Life of Lithium-Ion Batteries: Effects of Temperature Cycling.....	108
<i>Ejikeme Raphael Ezeigwe, Sivert Andre Woll, Lene Therese Backus Erichsen, Julia Wind, Odne Stokke Burheim</i>	

Moving Next-Generation Phase-Field Models to BMS Applications - a Case Study That Confirms Professor Uzi Landau's Foresight	110
<i>Tushar Telmasre, Anthony Concepcion, Suryanarayana Kolluri, Lubhani Mishra, Raghav Sai Thiagarajan, Aditya Naveen Matam, Akshay Subramaniam, Taylor R. Garrick, Venkat R. Subramanian</i>	

A01 - Zn Batteries

Designing Bifunctional Bilayer Air Electrode for Zinc–Air Batteries	112
<i>Rui Liu, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	

Electrolyte pH-Driven Formation of Zinc Hydroxide Bromide Precipitates: Characterization and Mitigation in Static Zinc-Bromine Batteries	114
<i>Dongrun Ju, Daniel A. Steingart, Robert Mohr, Lynne Elizabeth Irvin, Curtis Hammond Sirkoch</i>	

Understanding the Role of Manganese Sulfate As an Electrolyte Additive for Aqueous Zinc Ion Battery	115
<i>Chaewon Kim, Chenglin Cui, Ji Man Kim</i>	

Revealing Failure Mechanisms in Zinc-Manganese Dioxide Batteries Via Nondestructive Electrochemical Diagnostics	117
<i>Eugene Engmann, Abderrahman Atifi</i>	

A01 - Battery Applications

Performance and Degradation of Li-Ion Battery Cells for Stationary Applications	118
<i>Daiwon Choi, Nimat Shamim, Edwin Thomsen, Qian Huang, Alasdair Crawford, Vilayanur Viswanathan, David M Reed, Vincent Sprengle</i>	

Recent Trends and Challenges of Automated Disassembly for Electric Vehicle Batteries	119
<i>Jonathan Harter</i>	

Coupling of Offshore & Offgrid Wind Power & PtX-Processes, Supported by a MWh-Scale Battery for Safety, Stand-By Energy & PtX-Process Support.....	120
<i>Willi Peters, Sakthivel Mariappan, Jean-Francois Drillet</i>	

Circular Battery Design: Investing in Profitability and Sustainability	121
<i>Andreas Wolf, Felix Nagler, Philip Daubinger, Tobias Kraus, Karl Sebastian Mandel, Andreas Flegler, Guinevere A. Giffin</i>	

Comparison of Different Energy Storage Systems for Stationary Applications Based on Real Cases.....	123
<i>Nicola Poli, Andrea Trovò, Giacomo Marini, Massimo Guarneri</i>	

A01 - Poster Session

Biobased Proton Exchange Membrane Using an Anionic Nanocellulose System	125
<i>Fernanda Brito dos Santos, Alex Whitbeck, Adel Jalae, Elod L. Gyenge, Johan Foster</i>	

Energy Storage Capability of Seawater Batteries for Intermittent Power Generation Systems: Conceptualization and Modeling	127
<i>Sanghun Park, Moon Son</i>	

Highly Safe and Fast Charging Method Based on Electrochemical Thermal Life Model for Lithium Ion Battery.....	128
<i>Kyungjin Yu, Adekanmi M. Adeyinka, Xiaoniu Du, Song-Yul Choe, Wooju Lee</i>	

Binder-Free CuO Nanowires Assisted Electrochemical Carbon-Dioxide Reduction Reaction.....	129
<i>Kwak Hyo Bin</i>	

Modified Split Hopkinson Pressure Bar Experiments of Grooved Al-Sheet Stacks As Energy Absorption Materials for Thermal Battery	130
<i>Hyungu Kang, Tae-Young Ahn, Heesook Roh, Seung-Ho Kang, Yu Song Choi</i>	

Stretchable Micro-Supercapacitors Based on Laser Directly Patterned Graphene/Liquid Metal.....	131
<i>Yu Jeong Choi, Hui Jin Ryu, Chanwoo Yang</i>	

Contacting of Fabric-Based Current Collectors for Lithium-Ion Batteries	132
<i>Benedict Ingendoh</i>	
Fluorine-Free Conducting Binder Polymer for Conductive Agent-Free NCM811-Based Lithium Ion Batteries.....	133
<i>Hojun Choi, Kim Jeonghun</i>	
Mechanical Interplay in a Silicon-Graphite Composite Electrode Under High Current Density over Long-Term Operation.....	134
<i>Giyong Kim, Sung Yeol Kim</i>	
Flashlight-Induced Ultrafast, Scalable Surface Activation of Highly-Loaded Graphite Composite Anode	136
<i>Kyoohee Woo, Su Hyun Choi, Sin Kwon, Sohui Jang, Hyuntae Kim, Wooseok Yang</i>	
3D-Printed High Surface Area Electrodes and Advanced Flow Reactors for Bio-Compatible Electrochemical Reactions	138
<i>Laura Gutierrez, Avery Pritchard, Buddhinie Srimali Jayathilake, Melinda L. Jue, Simon H. Pang</i>	
State of Health Prediction Model for LFP/Graphite Type Lithium-Ion Batteries Based on Discharge Curve Analysis	139
<i>Shun Nishijima, Kohei Honkura</i>	
Collaborative Electronic Structure Modifier for Iron Single-Atom Electrocatalyst in High-Energy, Long-Cycle Lithium-Sulfur Batteries.....	142
<i>Cheol-Young Park, Jinwoo Lee</i>	
Integrated Energy Generation and Water Desalination Platform.....	143
<i>Byeongwook Choi, Moon Son, Sanghun Park</i>	
Exploring High-Entropy Thin Films for Advanced Energy Storage Applications	144
<i>Assel Serikkazyeva, Aiyim Mashekova, Mukagali Yegamkulov, Arailym Nurpeissova, Aliya Mukanova, Zhumabay Bakenov</i>	
Direct Conversion from Poly- to Single-Crystal Cathode By Oxygen-Storage Additive.....	145
<i>Jongmin Kim, Seongwoo Lee, Kookhan Kim, Ji-Yong Eom</i>	
Coupling Solid and Soluble FePc Catalysts for Non-Aqueous Li-O ₂ Battery Applications	146
<i>Chen-Lung Chiu, Tzu-Han Wang, Jenn-Shing Chen</i>	
Development of Highly Adhesive and Conductive Polymers As Primer Coating Layer for Stable Large-Area Lithium Metal Powder Electrode	147
<i>Jeong Minseok, Kim Jeonghun, Dongyoon Kang, Yong Min Lee</i>	
Electrochemical Properties of Various Degradations in Rechargeable Batteries for LIB Diagnosis.....	148
<i>Il-Chan Jang, Joon Kyo Seo, Jinju Song, Jiyoung Ma, Jung-Je Woo</i>	
The Redox Activity of Fe-C and M-Fe-C Species to Improve an Overall Water Electrolysis and Alkaline Zinc-Air Batteries	149
<i>Yoo Jin</i>	
Nickel-Iron Interfacial Alloy Nanoparticles Encapsulated By Pyridinic-N Enriched CNT on Carbon Fiber Cloth for Bifunctional Oxygen Catalysts and Biaxially Flexible Zinc-Air Batteries.....	150
<i>Ae Rhan Kim</i>	

Operando Dilatometry and Gas Analysis of Na-Hard Carbon Half Cells with Carbonate Electrolytes	151
<i>Niklas Röttgen, Jan Petit, Philipp Heugel, Franziska Klein, Jens Tübke</i>	
MoO _x -Graphene Nanocomposite Electrode As a High-Performance Bifunctional Electrocatalyst for All Vanadium Redox Flow Battery	152
<i>Anteneh Wodaje Bayeh, Daniel Manaye manaye Kabtamu, Ying Yi Ou, Chen-Hao Wang</i>	
Development of Polybenzimidazole/Sulfonated Nanolignin Composite Membrane for PEM Redox Flow Battery	153
<i>Fernanda Brito dos Santos, Philip Spencer McMichael, Alex Whitbeck, Adel Jalaei, Elod L. Gyenge, Johan Foster</i>	
Effect of Short-Chain Polymer Binders on Mechanical and Electrochemical Performance of Silicon Anodes	155
<i>Fei Sun, Lizbeth Zurita, Dean Wheeler</i>	
Scaling up Solid State Battery Research at Fraunhofer FFB	157
<i>Julian Zahn, Richard Schmich</i>	
Variation of Metal Precursor Salts and Biotemplates in the Synthesis and Morphological Control of Biotemplated LiNi _{0.8} Mn _{0.1} Co _{0.1} O ₂ Lithium-Ion Cathodes	158
<i>Ryan Emmett, Rebecca Boston, Alisyn Nedoma</i>	
Stretchable Li Ion Battery Electrodes Using Ga-Based Liquid Metal and Ionic Liquids	160
<i>Hikaru Fujimoto, Natsuka Usami, Moeka Kanto, Hiroki Ota, Masayoshi Watanabe, Kazuhide Ueno</i>	
Facile Fabrication of Silicon Anodes Enhanced by Functionalized Carbon Nanotubes: Towards Affordable and High-Performance Lithium-Ion Batteries	161
<i>Gwanghyun Lee, Ju Yeon Kim, Dea Woo Kim, Jong Hyeok Park</i>	
Evaluation and Regulation of Interfacial Reaction of Cathode for Lithium-Sulfur Batteries to Improve Electrochemical Performance	162
<i>Seungmin Lee, Enyuan Hu</i>	
Novel Electrolyte Applications in Lithium-Sulfur Batteries Containing MOF-Modified Cathodes	163
<i>Maciej Smolinski, Aleksandra Ossowska, Maciej Marczewski, Adam Łaszcz, Marek Marcinek</i>	
The Role of Volume Change in Lithium Oxygen Battery Electrodes	164
<i>Eric Oldham, Javier Alvaré, Dean Wheeler</i>	
Effect of O ₂ Supply on Discharge/Charge Performance of Li-Air Secondary Batteries	165
<i>Fumisato Ozawa, Sota Nakamura, Mitsuki Sano, Shota Azuma, Akihiro Nomura, Morihiro Saito</i>	
Deciphering the Potential Shifts in Highly Concentrated Lithium Aqueous Electrolyte	167
<i>Junsik Kang, Hochun Lee</i>	
Excellent Performance of Mesoporous Carbon with High Crystallinity for Lithium Air Battery Cathode	168
<i>Yuuka Nakajima, Shoichi Matsuda, Takashi Kameda, Shoji Yamaguchi, Junji Takada, Takahiro Morishita</i>	
Thermodynamics of Li _x Na _{1-x} CoO ₂ Layered Oxide: A Sodium Stabilized and Lithium Saving Battery Cathode Material	171
<i>Tullio Salvatore Geraci, Alexandra Navrotsky</i>	

Investigation of Rate Capability and Mass Transfer Dynamics in Lithium-Ion Batteries	172
<i>Ejikeme Raphael Ezeigwe, Ronan H Dunne, Tone G Bua, Simon Birger B. Solberg, Jacob Joseph Lamb, Julia Wind, Odne Stokke Burheim</i>	
Studies on Non-Destructive State-of-Health Estimation for Lithium-Ion Batteries	174
<i>Peerada Plathong, Yuto Miyahara, Kohei Miyazaki, Changhee Lee, Takeshi Abe</i>	
Sustainable Binder Materials and Their Benefits for Li-Ion Batteries	176
<i>Maja Kandula, Ayse Yarangünü, Anja Rajic, Sven Hartwig</i>	
Probing the Process of Electron Transfer in Microemulsions with Substituted Ferrocenes	177
<i>Muhammad Zulqarnain Arif, Adam E. Imel, Brian Barth, Thomas A. Zawodzinski</i>	
In Situ Formed Metal-p-n Heterojunction for Ultrahigh Energy Density Supercapattery: Decelerates Ion Diffusion to Sustain Slow Discharge	178
<i>Seenivasan Selvaraj, Amarnath T. Sivagurunathan, Do-Heyoung Kim</i>	
Development of Greener Electrode Coatings for Next-Generation Supercapacitors	179
<i>Eleri Anne Worsley, Daniel Raymond Jones, Paolo Bertoncello, Serena Margadonna</i>	
Assembling Biodegradable Non-Metal Quinone-Based Supercapacitor with High Energy Density	181
<i>Nagihiro Haba, Yuto Katsuyama, Keisuke Morimoto, Yuta Nakayasu</i>	
Accelerating the Electrochemical Formation of the δ Phase in Manganese-Rich Rocksalt Cathodes.....	183
<i>Tucker Holstun, Tara Mishra, Liliang Huang, Xiaochen Yang, Gerbrand Ceder</i>	
Microemulsion-Solubilized Menadione As a Redox Flow Battery Negolyte: Electrochemical Surface-Enhanced Raman Spectroscopy Insights.....	184
<i>Bhavya Sharma, Brian Barth, Thomas A. Zawodzinski</i>	
Development of Zinc Electrodes as Recyclable Fuel for Mechanically Rechargeable Zinc Air Batteries.....	185
<i>Kosei Yahata, Satoshi Ogawa, Yoshiharu Ajiki</i>	

A01 - Other Energy Devices 1

A Breakthrough in the Efficiency and Capacity of the Dye-Sensitized Photo-Rechargeable Batteries (DSPBs) By Facilitating Redox-Driven Spontaneous Electron Transfer	187
<i>Myeong-Hee Lee, Hyun-Kon Song</i>	
The Influence of Trihaloacetic Acids on the Hydrogen Sorption Properties of Palladium Limited Volume Electrode in Aprotic Ionic Liquid: Towards Ionic Liquid-Based Electrolytes for Protonic Systems.....	188
<i>Małgorzata Pająk, Dorota Monikowska, Joanna Jankowska, Katarzyna Hubkowska, Andrzej Czerwiński</i>	
Fabrication of Two-Dimensional Heterostructure Electrodes for Intercalation Batteries Via Cation- Driven Assembly	191
<i>Ekaterina Pomerantseva</i>	
Time-Dependent Deep Learning Manufacturing Process Model for Battery Electrode Microstructure Prediction	192
<i>Diego Eduardo Galvez Aranda, Alejandro A. Franco, Franco Zanotto, Utkarsh Vijay, Tan Le Dinh</i>	

Analysis of Species Concentrations in Bifunctional Air Electrodes Using Mathematical Modeling and Simulation.....	194
<i>Atsunori Ikezawa, Kotaro Seki, Moritz Borkenhagen, Hajime Arai, Daniel Schröder</i>	
Development and Characterization of Structural Batteries	196
<i>Nicole Abdou, Achilleas Pipertzis, Johanna Xu, Leif E. Asp, Jan Swenson, Anna Martinelli</i>	
Triple I: Electrochemically Rechargeable Liquids in Highly Flexible Energy Storage Systems.....	198
<i>Mike L. Perry</i>	
Enhancing Electrocatalytic Activity through Tailored Charge and Spin Polarization in Molecules and Frameworks	200
<i>Sreeprasad T Sreenivasan</i>	
The Effect of Magnetic Field on the Electrochemical Reaction of the Seawater Magnetohydrodynamic Power Generator.....	201
<i>Makoto Aoki, Minoru Takeda</i>	

Energy Technology Division Walter van Schalkwijk Award in Sustainable Energy Technology Award Address

(Energy Technology Division Walter van Schalkwijk Award in Sustainable Energy Technology) Ion-Pair Membranes for Advanced Electrochemical Devices	203
<i>Yu Seung Kim</i>	

A01 - Other Energy Devices 2

A Simple Electrochemical Way to Probe the Surface Area of Zinc Electro-Deposition.....	204
<i>Mathieu Ben-Aouda Freville, Soufiane Abdeldhani-Idrissi, Corentin Tregouet, Annie Colin</i>	
Mechanistic Insights into the Behavior of Electrolyte Additives That Selectively Suppress Anode Corrosion in Battery Systems.....	206
<i>Theodore Phung, Nicholas Scott Sinclair, Rohan Akolkar</i>	
An Electrochemically Rechargeable Fuel for Continuous Operation of Electric Aircraft and Vehicles	207
<i>Yue Gao, Shu Chen, Chenyang Han, Guanbin Wu, Shengfei Wang, Ganyu Wang, Min Wang, Alissa Claire Johnson, Mengyao Zhu, Lei Ye, Jason Jolly, Peining Chen, Bingjie Wang, Shu Yang, Huisheng Peng, James H. Pikul</i>	
Fabrication and Modeling of Battery Yarns for e-Textiles	210
<i>Wei Gao, Nanfei He, Xi Zhang, Amanda Mills, Marcus Bagnell, Steve Crouch-Baker</i>	
(Invited) Organic Catalysis Promotor for Accelerating Oxygen Evolution Reaction Toward Advanced Water Electrolysis.....	212
<i>Sechan Lee, CHangsoo Lee, MinJoong Kim, Gisu Doo, Myeongmin Seo, Hyeonjung Park, Yeonsoo Lee, Young Hwa Yun, Ik-Sun Kim, Hye Bin Jung, Hyun-Seok Cho</i>	
Pressure-Electrochemistry at Gigapascal Pressures: Model Study in the Y-H System.....	213
<i>Karen Sugano, Mgcini Keith Phuthi, Pinwen Guan, Venkat Viswanathan, Yet-Ming Chiang</i>	
Parametric Analysis of Aluminum-Air Batteries with Focus on Aluminum Product Layer Management for Enhanced Power Output.....	215
<i>Colt Griffith, Brian Washington, Gabriel Goenaga, Shane Foister, Thomas A. Zawodzinski</i>	

A Planar Sodium Nickel Chloride Battery Running at Intermediate Temperatures for Mid-Range Energy Storage	216
<i>Keeyoung Jung, Hanul Choi, Seungmi Lee, Hayoung Kim, Jeongheon Heo, Choongmo Yang, Cornelius Dirksen, Matthias Schulz, Younki Lee, Vincent Sprenkle, Guosheng Li</i>	

Synergetic Effect of Nasicon $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_3$ and 2D MXene for High-Performance Symmetric Sodium-Ion Batteries.....	217
<i>Abdul Shakoor, Buzaina Moossaa, Jeffin James Abraham, Ramazan Kahraman, Siham Al-Qaradawi</i>	

A01 - Other Energy Devices 3

Enhanced ORR Activity of MnO_2 Nanoparticles through Direct Chemical Surface Attachment for Aluminum-Air Batteries	218
<i>Brian Washington, Shane Foister, Colt Griffith, Gabriel Goenaga, Thomas A. Zawodzinski</i>	

Robust 3D Lithium Cell Architecture - Inherently Boosted Safety	219
<i>Jan Prochazka</i>	

Repair and Reuse of Spent Lithium Battery Electrode Materials	220
<i>Guangmin Zhou</i>	

Coupling Electron Transfer Reactions of Quinones with Grotthuss Proton Transport of Concentrated Hydrogen-Bonded Electrolytes	221
<i>Miguel Munoz Sanchez, Vaishali Khokhar, Robert F. Savinell, Burcu E Gurkan</i>	

Porous Iron Anodes for High-Performance Hybrid Battery-Electrolyzer System	222
<i>Santosh K. Pal, Fokko M. Mulder</i>	

Palladium Nanoparticles-Modified AB_5 -Type Alloy in Ionic Liquid-Based Electrolytes for Novel Hydrogen Storage Systems.....	224
<i>Dorota Monikowska, Małgorzata Pająk, Katarzyna Hubkowska, Andrzej Czerwiński</i>	

Shining a Light on Osmotic Energy: Innovating Power Generation with Light-Responsive Covalent Organic Frameworks	227
<i>Ya-Chun Li, Li-Hsien Yeh</i>	

Low-Dimensional $\text{SnSe} - \text{Ti}_3\text{C}_2$ MXene Composite As Binder-Free Anode for Energy Storage Applications.....	228
<i>Kavin Arunasalam, Jesus Medina Santos, Meiyang Liang, Teng Zhang, Yury Gogotsi, Valeria Nicolosi</i>	

Upscaling Salinity Gradient CRED Cell for Blue Energy Harvesting	230
<i>Adérito Fins Carreira, Nan Wu, Zhiyi Man, Annie Colin, Michael Levant</i>	

Engineering Asymmetric Ion Selective Membranes with Subnano-in-Nano Architectures for Highly Efficient Blue Energy Conversion.....	234
<i>Fery Prasetyo, Li-Hsien Yeh</i>	

A02-BATTERIES WITH LI CHEMISTRIES AND BEYOND: IN HONOR OF MARCA DOEFF

A02 - Na-ion Batteries 1

(Invited) Na-Ion Battery: Towards Sustainable Layered Oxide Cathodes.....	235
<i>Xiaolin Li, Fredrick Omenya, Marcos Lucero, David M Reed</i>	

(Invited) Opportunities and Challenges in Fe-Based Layered Oxide Cathodes for Sodium-Ion Batteries.....	236
<i>Eungje Lee, Jehee Park, Jihyeon Gim, Neelam Sunariwal, Anton Tomich, Anh D. Vu, Christopher S. Johnson</i>	
(Invited) Heterostructure Engineering in Electrode Materials for Sodium-Ion Batteries	237
<i>Claire Xiong</i>	
Unraveling the Influence of Hetero Atom Doped Carbon Coating and Morphology Control on Electrochemical Behaviour of $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_3$ Cathode Material.....	238
<i>Priyanka Gupta, Faduma Maddar, Suddhasatwa Basu, Ivana Hasa</i>	
(Invited) Sodium Ion Hosts - Similarities and Distinctions from Function in Lithium Based Batteries.....	239
<i>Amy C. Marschilok, Esther S. Takeuchi, Kenneth J. Takeuchi</i>	
Nano-Structuring Strategies of Ti/Sn Oxides Produced from MAX Phases to Achieve Efficient Anodes for Alkaline Ion Batteries	240
<i>Antonio Gentile, Nicholas Vallana, Irene Ostroman, Chiara Ferrara, Riccardo Ruffo, Stefano Marchionna</i>	

A02 - Na-ion Batteries 2

(Invited) Advancing Sodium-Ion Battery Electrolyte Technologies through Multidisciplinary Approaches.....	241
<i>Chunmei Ban</i>	
Partially Fluorinated Electrolyte Formulations Enabling Safe Performance of Anode-Free Na-Based Batteries	242
<i>Robert Tobias Hinze, Christian Woelke, Martin Winter, Isidora Cekic-Laskovic</i>	
The Effect of Micro-Sized Tin/Hard Carbon Anode Composition on Sodium-Ion Battery Performance.....	244
<i>Joseah Amai, Ameya Khirwadkar, Kenneth Haines, Zachary Van Zandt, George J. Nelson</i>	
(Invited) Advanced Insitu Electron Microscopy for Batteries: Insights for Lithium-Ion and Beyond	246
<i>Kai He</i>	
Chemically Stabilized Nasicon- $\text{Na}_{1.5}\text{V}_{0.5}\text{Nb}_{1.5}(\text{PO}_4)_3$ Anode for Long-Life Sodium-Ion Batteries.....	247
<i>Biplab Patra, Rashmi Hegde, Anirudh Natarajan, Debolina Deb, Dorothy Sachdeva, Narayanan Ravishankar, Keshav Kumar, Sai Gautam Gopalakrishnan, Premkumar Senguttuvan</i>	
Hard Carbon Sodiation and Its Mechanical Impact on Formation	249
<i>Christopher Owen, Gunnar Thorsteinsson, Daniel A. Steingart</i>	

A02 - Li-ion Cathodes 1

(Invited) Recent Developments in Lithium-Manganese-Oxide Electrochemistry.....	250
<i>Michael M. Thackeray, Adam P. Tornheim, Anh D. Vu, Boyu Shi, Eungje Lee, Jason R. Croy</i>	
Decir for in-Situ Analysis of Li-NMC Batteries	251
<i>Joshua Lochala, Cassidy Anderson, Kevin Baar</i>	

Morphology-Dependent Reaction Kinetics in Synthesizing LiNiO ₂	252
<i>Chenguang Shi, Elliot Brim, Ryan Richards, Feng Lin</i>	
(Invited) Strategies for Enabling Stable Cycling in High-Capacity Li-Ion Cathodes.....	253
<i>Wei Tong</i>	
(Invited) Overview of Cathode-Electrolyte Interphase (CEI) Consortium.....	254
<i>Jie Xiao</i>	
Understanding Electrochemical Measurements of Lithium Diffusion in Porous LiNiO ₂ Cathodes.....	255
<i>Kilian Vettori, Anja Henss, Jürgen Janek</i>	
(Invited) Hard X-Ray Core Shell Spectroscopy Studies of Battery Materials.....	257
<i>Mahalingam Balasubramanian</i>	
Lithium-Ion Intercalation By Coupled Ion-Electron Transfer Mechanism.....	258
<i>Yirui Zhang, Dimitrios Fraggedakis, Tao Gao, Shakul Pathak, Ryan Stephens, Martin Z. Bazant, Yang Shao-Horn</i>	
(Invited) Binder-Free Sulfur-Carbon Composite Electrodes for High Energy Density Lithium-Sulfur Batteries.....	259
<i>Yoon Hwa, Yuhui An</i>	

A02 - Li-ion Cathodes 2

(Invited) A Comparative Evaluation of Li, Na, and K-Ion Cathodes	260
<i>Gerbrand Ceder</i>	
Hole Localization Induces Anionic Redox in Li-Ion Cathodes	261
<i>Hari Ramachandran, Edward Weian Mu, Eder Lomeli, Augustin Braun, Jue LIU, Edward I. Solomon, Wanli Yang, Thomas P. Devereaux, William C. Chueh</i>	
Nanocomposite Engineering of Heterogeneous Mn-Based Cation-Disordered Cathodes for High-Performance and Low-Cost Lithium-Ion Batteries	263
<i>Eunryeol Lee, Sang-Wook Park, Dae-Hyung Lee, Rahul Malik, Hyun-Wook Lee, Jinhyuk Lee, Dong-Hwa Seo</i>	
(Invited) Are There Still Gold Nuggets on the Sandy Beach? Efforts to Further Reducing the Cost of Li-Ion Batteries through the Discovery of Low-Cost New Cathodes	264
<i>Zhantao Liu, Simin Zhao, Yuanzhi Tang, Ting Zhu, Hailong Chen</i>	

A02 - Poster Session

Isovalent Co-Substitution of Iron and Titanium into Single-Crystal NMC622	265
<i>Macgregor Macintosh, Mark Obrovac, Mohsen Shakouri</i>	
Effect of Solution Concentration on the Electrochemical Properties of Electrospun Zinc Phosphate Carbon Nanofibers As Anode Materials for Lithium-Ion Batteries.....	267
<i>Yrysgul Sagynbay, Ayaulym Belgibayeva, Zhumabay Bakenov</i>	
Does Trapped Oxygen Form in the Bulk of LiNiO ₂ during Charging?	269
<i>Mikkel Juelsholt, Robert House, Peter Bruce</i>	
Flammability (Flash point) of Gel Polymer Electrolytes.....	271
<i>Caroline St-Antoine, Gabrielle Foran, Arnaud Pr��b��, David Ayme-Perrot, Mickael Dolle</i>	

High-Entropy Spinel Oxide as Conversion Anodes for Li-Ion Batteries.....	272
<i>Ki-Hun Nam, Shan Yan, Amy C. Marschilok, Esther S. Takeuchi, Kenneth J. Takeuchi, Marca M. Doeff</i>	
Impact of Carbonate Additive on Cycle Life of Layered Metal Oxide Cathode in Localized High Concentration Electrolyte	274
<i>Marcos Lucero, Xiaolin Li</i>	
Understanding on the Reaction Pathway for Lithium Storage Behavior in Molybdenum Sulfides with Different Sulfur Configuration	275
<i>Youn-Ki Lee</i>	
Activated Mesoporous N-Doped Carbon Nanospheres As Scaffolds for Li-S Battery Cathodes with High Capacity Retention	277
<i>Qijun Li, Taisiia Berestok, Niklas Ortlieb, Maria Belen Camarada, Anna Fischer</i>	
Effect of Nanoparticles As Additives on Lithium-Ion Transport in Composite Polymer Electrolytes	278
<i>Meghan Burns, Michael Counihan, Jordi Cabana, Sanja Tepavcevic</i>	
New 3D Current Collectors for Lithium-Ion Batteries	279
<i>Paulina Hamankiewicz, Zbigniew Rogulski, Maciej Ratyński, Michał Grygiel, Andrzej Czerwiński, Bartosz Hamankiewicz</i>	
Capacity Recovery Phenomenon Manifested in Lithium-Ion Batteries Due to over-Discharge	280
<i>Shota Ito</i>	
Effect of Ionic Liquids on Lithium Recovery in Lithium Deficient $\text{LiNi}_{0.5}\text{Co}_{0.2}\text{Mn}_{0.3}\text{O}_2$ Crystals.....	282
<i>Shutaro Ishikawa, Tetsuya Yamada, Kazuyuki Shishino, Kazumichi Yanagisawa, Mongkol Tipplook, Fumitaka Hayashi, Katsuya Teshima</i>	
Innovations in Direct Recycling Enhanced through a Design for Circularity Approach.....	283
<i>Simon Ziegler, Michael Hofmann, Andreas Flegler, Sara Li Deuso, Karl Sebastian Mandel, Guinevere A. Giffin</i>	
From NMC to NMC – Challenges of Direct Recycling	285
<i>Magdalena Winkowska-Struzik, Dominika Buchberger, Witold Uhrynowski, Michał Struzik, Maciej Boczar, Zbigniew Rogulski, Andrzej Czerwiński</i>	
Effect of Fast-Charging and Cycling Window on Lithium-Ion Battery Performance and Aging.....	287
<i>Sankaranarayanan Venkatakrishnan, Ramaraja Ramasamy</i>	
Fundamental Investigations on the Ionic Transport and Thermodynamic Properties of Potassium-Ion Electrolytes.....	288
<i>Ben Jagger, Shobhan Dhir, Junyi Zhao, Mauro Pasta</i>	
Influence of Transition-Metal Order of Lnmo Spinel on Li Ion Diffusion and Thermodynamics of LNMO	290
<i>Albina Glibo, Mahmoud Reda, Yuri Surace, Juergen Kahr, Hans Flandorfer, Damian Marlon Cupid</i>	
Optimization and Electrochemical Testing of 3-Electrode Pouch Cell for Insights into Battery Prototyping	291
<i>Alexander John Roberts, Agata Greszta, Wuttichai Somyanonthanakun</i>	
The Mechanism of Redox-Mediated Li_2O_2 Oxidation and $^1\text{O}_2$ Evolution in Li-Air Batteries	292
<i>Daniel Dewar, Sunyik Ahn, Ceren Zor, Sixie Yang, Tammy Nimmo, Alexander Kibler, Xiangwen Gao, Lee R Johnson, Peter Bruce</i>	

Air-Induced Lithium Extraction from the Near-Surface NMC Family Materials	294
<i>Magdalena Winkowska-Struzik, Dominika Buchberger, Alicja Glaszcza, Jacek Bogdan Jasinski, Michal Struzik, Andrzej Czerwinski</i>	
Interplay of Thermal Gradients and C-Rate on Lithium Plating	295
<i>Md Mahdi Ul Ishtiaque, Jayanth Ramamurthy, Cary L. Pint, Todd A. Kingston</i>	
A Comparative Study of Tin Anodes in Carbonate and Glyme Electrolytes	297
<i>Ameya Khirwadkar, Joseah Amai, George J. Nelson</i>	
On the Influence of Recycled Graphite Properties for Anode Preparation and Efficiency in LIBs.....	299
<i>Elsa Briqualeur, Brunilda Rica, Antonin Bogaert, Karen Waldron, Mickael Dolle</i>	
Aging and Power Characterization of Graphite-NMC Cells Containing Coal-Derived Graphites	300
<i>Kody D Wolfe, Abigail Paul, Regan Magee, Warren Wilczewski, Nathan Wichert, Jeffrey Lowe, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
A Low Self-Discharge Lithium–Sulfur Cell for the Evaluation of the Long Battery Shelf Life.....	301
<i>Cheng-Che Wu, Yun-Chung Ho, Sheng-Heng Chung</i>	
The Dopamine Assisted Synthesis of Integrated MoO ₃ /Carbon Electrodes with Enhanced Charge Storage Properties for Aqueous Zinc-Ion Batteries	303
<i>Ekaterina Pomerantseva</i>	
Determination of Flash Point in Gel-Polymer Electrolytes for Their Use in Safe Quasi-Solid Batteries.....	304
<i>Caroline St-Antoine, Marie-Chloe Michaud Paradis, Pauline Gonnell, Gabrielle Foran, Arnaud Pr����, David Aym����-Perrot, Mickael Dolle</i>	
Impact of Additives – Polymer Interaction on the Electrochemical Performance and Stability of Thermoplastic Vulcanizate Based Solid Polymer Electrolyte	306
<i>C����� Barcha, Gabrielle Foran, Joseph Chidiac, Caroline St-Antoine, Mona Azimi, Mehdi Costalin, Lea Caradant, Paul Nicolle, Steeve Rousselot, Arnaud Pr����, David Ayme-Perrot, Mickael Dolle</i>	
Lithium–Sulfur Solid-State Electrolyte (Polymers, Oxides and Sulfides) Batteries with a High-Loading Polysulfide Cathode	308
<i>Sheng-Heng Chung</i>	
Long Chain Polysulfides Control via Ferroelectric (Ba _{0.9} Sr _{0.1} TiO ₃) Nanoparticles Doped Sulfur Cathode for High-Capacity Li-S Batteries	310
<i>Ivan Castillo, Balram Tripathi, Danilo Barrionuevo, Gerardo Morell, Ram S Katiyar</i>	
Synergistic Effect of Ni/TiO ₂ Heterostructures on Performance Enhancement of Lithium-Sulfur Batteries.....	312
<i>Nurzhan Baikarov, Aishuak Konarov, Almagul Mentbayeva, Zhumabay Bakenov</i>	
Novel, Economically Scalable Approaches for the Development of High Energy Density, Long Cycle Life, and Safe Lithium-Sulfur Batteries	314
<i>Weibing Xing, Md Wahidul Hasan, Amir Abdul Razzaq</i>	
Electrospinning Techniques for Composite Gel Polymer Electrolytes in Electrochemical Stable Lithium–Sulfur Batteries	317
<i>Tzu-Ching Chan, Sheng-Heng Chung</i>	

Thiocarbonyls as Performance Enhancing Additives for Lithium-Sulfur Batteries	319
<i>Joanne Searle, Alexander Kibler, Darren Anthony Walsh, Lee R Johnson, Alexander Saywell, Graham Newton</i>	

Binary Mixture-Based Electrolytes Using Imidazolium-Based Ionic Liquids for Enhanced Safety and Electrochemical Performance of Lithium-Ion Batteries	321
<i>Takeshi Kakibe, Daichi Hirai, Satoshi Matsuda, Tatsuya Nakamura, Hajime Kishi</i>	

A02 - Li-ion Cathodes 3

(Invited) Mn-Based High-Energy Cathodes for Lithium-Ion Batteries	323
<i>Guoying Chen</i>	

Insights on Structure and Redox Activity Enabling Outstanding Performance of Co-Free and Mn-Rich O ₂ -Li _{0.75} [Li _{0.15} Ni _{0.15} Mn _{0.7}]O ₂ Cathode	325
<i>Jun Ho Yu, Seung-Taek Myung</i>	

Open Circuit Potential Curve Characterization Method for Cathode Active Materials.....	327
<i>Camille Usubelli, Kevin Kimura, Muenir M. Besli, Reinhardt Klein, Nikhil Ravi, Jake Christensen, Yelena Gorlin</i>	

(Invited) Understanding Compatibility of Layered Oxides in Solid State Batteries.....	328
<i>Muenir M. Besli, Michael Metzger, Camille Usubelli, Sondra Hellstrom, Yijin Liu, Dennis Nordlund, Marca M. Doeff, Jake Christensen, Saravanan Kuppan</i>	

(Invited) Progress in the Analytical Capability of X-Rays to Locate Chemical Phenomena in Battery Materials	329
<i>Jordi Cabana</i>	

Origin of Structural Degradation in Li-Rich Layered Oxide Cathode.....	330
<i>Tongchao Liu</i>	

(Invited) Dynamics and Heterogeneity of Particle Network in Composite Electrodes	331
<i>Kejie Zhao</i>	

Exploring the Chemical Space of O ₂ -Type Lithium-Rich Layered Cathodes.....	332
<i>Donggun Eum</i>	

A02 - Li Chemistry Anodes and Electrolytes 1

(Invited) The Use of Protected Lithium Metal Electrodes in the Development of High Energy Density Next Generation Batteries	333
<i>Steven Visco, Yevgeniy Nimon</i>	

Stress-Induced Modification for Interlayers in Lithium Metal Batteries.....	336
<i>Brent Edgerton, Yangliu Liu, Jaron Moon, Roseanne Warren</i>	

VOLUME 2

(Invited) An Inorganic-Rich but Low LiF Content Interphase for Fast Charging and Long Cycle Life Lithium Metal Batteries As Well As Evolution and Interplay of Lithium Metal Interphase Components.....	338
<i>Xiao-Qing Yang</i>	

(Invited) Advancing and Manufacturing Materials for Next Generation Li-Ion Batteries	340
<i>Gleb Yushin</i>	
Lithium, Ether, and Graphite: A Retrospective Trilogy of the Anode-Electrolyte Interface.....	341
<i>Dawei Xia, Lei Tao, Feng Lin</i>	
Ultrafast Deposition of Faceted Lithium Polyhedra By Outpacing SEI Formation	342
<i>Xintong Yuan, Yuzhang Li</i>	
(Invited) Probing the Functionality of Lithium Carbonate in Lithium Metal Interphases through Model and Native SEI	343
<i>Betar M. Gallant</i>	

A02 - Li Chemistry Anodes and Electrolytes 2

(Invited) A Study of Si-based Metallic Glass Anodes for Li-ion Batteries.....	345
<i>Robert Kostecki, Hyungyeon Cha, Andrew Dopilka, Andrew Haddad, Jonathan M. Larson, Yueran Gu, Khryslyn Arano, Gabriel M. Veith, Vassilia Zorba</i>	
3D Structured Lithium Metal Anodes: A Comprehensive Analysis of Existing Work and Assessment of Performance Under Practical High Energy Density Cell Design	347
<i>Julia White, Jihui Yang, Jun Liu</i>	
Thermal Consequences of Lithium Metal Short Circuits	349
<i>Bret Schumacher, Jon Sullivan, Mia R Alvarez, Naiara Munich, Lauren Marbella, Dan Steingart</i>	
(Invited) Nano-Engineered SEI Layers for Next Generation Lithium-Ion Batteries.....	350
<i>Fabio Albano, John Chmiola, Taylor Juran, Nathan Dunlap</i>	
(Invited) Recent Insights on Conversion Materials for Lithium Batteries.....	352
<i>Esther S. Takeuchi, Amy C. Marschilok, Kenneth J. Takeuchi</i>	
High Performance Electrolytes for Lithium-Sulfur Batteries	353
<i>Xia Cao, David J. Kautz, Lili Shi, Jie Xiao, Jun Liu, Dongping Lu, Wu Xu, Ji-Guang Zhang</i>	
(Invited) Agricultural Waste Derived Anodes for Lithium and Sodium Ion Batteries.....	354
<i>Richard Laine, Mengjie Yu, Man Wang, Philyoung M Kim, Daniel M Casey, Matthew M Fernandez</i>	
(Invited) Rational Interfacial Design for Advanced Batteries	355
<i>Bin Li</i>	
Saturation-Based Transport Limitation in Thick Electrodes with Conventional Carbonate Electrolytes	356
<i>Kedi Hu, Christopher Owen, Alan C. West, Dan Steingart</i>	

A02 - Li Chemistry Anodes and Electrolytes 3

(Invited) Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries.....	357
<i>Brett L. Lucht</i>	

Small Molecule Aromatic Hydrocarbons: Powering Ultralong Cycle Life in Li-Ion Battery Anodes and Dual Chemical Prelithiation for Li-Ion Capacitors.....	358
<i>Yu-Sheng Su, Avi Arya, Kuan-Lin Lai</i>	
Laser Ablation of High-Loading Electrodes to Improve Performance of Li-Ion Batteries in Behind-the-Meter Storage (BTMS) Applications.....	359
<i>Drew J. Pereira, Ryan J Tancin, Yeyoung Ha, Stephen E. Trask, Donal P. Finegan, Bertrand J. Tremolet de Villers, Katharine L. Harrison</i>	
(Invited) Surface-Driven Electrolyte Reactivity.....	361
<i>Lei Cheng, Heonjae Jeong, Dawei Xia, Venkateshkumar Prabhakaran, Feng Lin</i>	
(Invited) Unified Interphase Design for Electrochemical Stability of Metal Anodes with Liquid-Based and All Solid-State Electrolytes.....	362
<i>David Mitlin</i>	
Aging Analysis for Li Metal Batteries Exposed to Calendar and Non-Uniform Use Conditions.....	363
<i>Eric J. Dufek, Pete Barnes, Sangwook Kim, Bor-Rong Chen, Hongxing Zhang, Corey M. Efaw, Yulong Wang, Bumjun Park, Bin Li, Michael Evans, Bianca Mak, Boryann Liaw, Daniel Olds, Peter G. Khalifah, Brittany Hodges</i>	
Development of Non-Flammable Phosphoric Ester Electrolyte for Lithium Metal Batteries By Mixed Salts of LiPF ₆ , LiPO ₂ F ₂ and LiNO ₃	364
<i>Tetsuo Nishida, Yasuhiro Fukunaka, Toshiyuki Nohira</i>	
Electrolyte Dependence of Li ⁺ Transport Mechanisms in Small Molecule Solvents from Classical Molecular Dynamics	366
<i>Abhishek Aggarwal, Emily Crabb, Yang Shao-Horn, Graham Leverick, Jeffrey Grossman</i>	

A02 - Solid-State Batteries 1

(Invited) Recent Developments in Solid-State Lithium-Metal Technology at Quantumscape.....	367
<i>Martin M Winterkorn</i>	
Accelerated Solid-State Electrolyte Synthesis via Reaction Equilibria Manipulation	368
<i>Kaitlin Garman, Charlotte Michele Thomas, Yangyang Wang, Chunmei Ban</i>	
(Invited) Garnet Electrolyte Material Degradation and Recovery.....	369
<i>Lei Cheng</i>	
(Invited) Microstructure Modeling of Computer-Generated Microstructures to Guide Design of Solid-State Electrolyte Architectures.....	370
<i>Skylar McConnell Jordan, Wooseok Go, Mike C Tucker, Matthew Kasemer, George J. Nelson, Marca M. Doeff, Krishna Shah</i>	
(Invited) Achieving Extreme High Ion-Current Densities in Tailored Materials, Structures, and Interfaces	372
<i>Eric D Wachsman</i>	
Understanding Interfacial Degradation in All Solid-State Lithium Batteries from Multiscale Simulations.....	373
<i>Liwen Wan, Suyue Yuan, Bo Wang, Kwangnam Kim, Tae Wook Heo, Brandon C. Wood</i>	
(Invited) Non-Intuitive Failure Mechanics in Solid State Batteries	374
<i>Kelsey Hatzell</i>	

Next Generation Solid-State Batteries for Electric Aviation	375
<i>Donald Dornbusch, Yi Lin, William Huddleston, Vesselin I Yamakov, Rocco P. Viggiano</i>	

A02 - Solid-state Batteries 2

(Invited) Integration of Sulfide and Halide Based Solid Electrolytes in All Solid State Batteries	376
<i>Jagjit Nanda</i>	
Reactive Force Field for Atomistic Understanding of Interfacial Processes in Sulfide Electrolytes.....	377
<i>Varun Shreyas, Meghnath Jaishi, Badri Narayanan</i>	
Modeling Large Mechanical Deformations in Solid-State Batteries	378
<i>Anudeep Mallarapu, Nathaniel Sunderlin, Avtar Singh, Dylan Hamilton, Chuanbo Yang, Kandler Smith, Donal P. Finegan</i>	
(Invited) Revealing the Reaction Mechanism and Chemo-Mechanics of Solid-State Na-S Batteries.....	379
<i>Hung Quoc Nguyen, Juraj Todt, Steven T Boles, Jozef Keckes, Daniel Rettenwander</i>	
(Invited) Dynamically Vulcanized Polymer Electrolytes: New Materials for Solid-State Battery Systems.....	380
<i>Lea Caradant, Gabrielle Foran, David Lepage, Paul Nicolle, Arnaud Pr��b��, David Aym��-Perrot, Mickael Dolle</i>	
(Invited) Mechanics of Materials in All Solid-State Lithium Metal Batteries	381
<i>Roseanne Warren</i>	

A02 - Solid-state Batteries 3

(Invited) Strategy and Interfacial Design for High-Rate & Hig-Areal-Capacity Sulfur Cathodes in All-Solid-State Li-S Batteries.....	382
<i>Yong Yang</i>	
Application of Single Ion Conductive Polymers in High Voltage Solid-State Batteries	383
<i>Robert Dominko, Luis Miguel Guerrero Mej��a, Mariana Vargas Ordaz, Urban Kosir, Aiping Wang, Sara Drvari�� Talian</i>	
(Invited) Designing a Safe and Sustainable Future: Sodium Ion and All-Solid-State Batteries	384
<i>Yan Yao</i>	
(Invited) Processing, Mechanics, and Electrode Structure for All-Solid State LLZO Batteries.....	385
<i>Mike C Tucker, Wooseok Go, Robert A Jonson, Fengyu Shen, Marca M. Doeff</i>	
Ultrafast Lithium-Ion Diffusion in Oxyhalides	386
<i>Grace Wei, KyuJung Jun, Gerbrand Ceder</i>	
(Invited) Borohydride-Substituted Li Argyrodite Solid Electrolytes for All-Solid-State Batteries	387
<i>Jae-Hun Kim</i>	
(Invited) Materials Development and Their Integration for High Energy and Long Cycle Life Solid-State Li Metal Batteries	388
<i>Haegyum Kim</i>	
Understanding the Electrochemistry of Solid-State Lithium-Oxygen Batteries Under Humid Environments.....	389
<i>Jaeheon Lee, Bryan D. McCloskey</i>	

A03-ACCELERATING NEXT-GENERATION BATTERY R&D THROUGH DATA-DRIVEN APPROACHES

A03 - Material Discovery and Development 1

(Invited) How Reliable Is Our Ranking of Coulombic Efficiency for Li Metal Anodes?	391
<i>Betar M. Gallant</i>	
Data-Driven Synthesis of Multi-Element Substituted Fluoride Crystals for Improved Ionic Conductivity	392
<i>Yuka Taketomi, Tetsuya Yamada, Kazumichi Yanagisawa, Mongkol Tipplook, Fumitaka Hayashi, Katsuya Teshima</i>	
Foundational Machine Learning Interatomic Potential to Study Li-Ion Battery Cathode Phase Transformation with Charge Transfer.....	393
<i>Bowen Deng, Peichen Zhong, KyuJung Jun, Janosh Riebesell, Kevin Han, Christopher J. Bartel, Gerbrand Ceder</i>	
Development of Data-Driven Feature Value Map Toward High-Performance Material Exploration	394
<i>Tetsuya Yamada, Riku Kitada, Fumitaka Hayashi, Katsuya Teshima</i>	
Improving Extrapolation Accuracy of Voltage Prediction Model for Lithium-Ion Battery Using Machine Learning.....	395
<i>Takuma Kawahara</i>	
Learning the Material Physics of Graphite Electrodes through Image Inversion	397
<i>Samuel Degnan-Morgenstern, Rajeev Gopal, Peng Bai, Martin Z. Bazant</i>	
Super Wide Area Exploration of High Conductive Oxide Solid Electrolytes Using Data-Driven Feature Value Map.....	399
<i>Yuki Kita, Tetsuya Yamada, Kazuyuki Shishino, Fumitaka Hayashi, Katsuya Teshima</i>	
Pathways Toward High-Energy Li-Sulfur Batteries, Identified Via Multi-Reaction Chemical Modeling	400
<i>Steven C. DeCaluwe, Daniel M. Korff</i>	
Multiscale Electrochemical Interface and Interphase Simulation: Insights from Operando Conditions and Machine Learning	401
<i>Tao Cheng</i>	
Leverage Battery Research with Atomistic Modeling and Machine Learning	402
<i>Nicolas Onofrio, Matti Hellström, Paul Spiering</i>	
(Invited) Design Insights into Solid Electrolytes with Machine Learning Interatomic Potentials	403
<i>Shyue Ping Ong, Adesh Mishra, Ji Qi, Zihan Yu</i>	

A03 - Material Discovery and Development 2

(Invited) BIG-MAP - Going BIG to MAP an Accelerated Path to Sustainable Battery Materials Discovery	404
<i>Tejs Vegge</i>	
Dielectric Response Using Long-Range Neural Network Potential	406
<i>Harender Dhatarwal, Ang Gao, Richard C. Remsing</i>	

Graph Encoders for Redox Potentials and Solubility Predictions	407
<i>Nicholas Furth, Adam Imel, Thomas A. Zawodzinski</i>	
ML-Assisted Structural Tuning of Pyridinium Anolytes for Low Reduction Potentials with High Radical Persistence	408
<i>Andrii Varenikov, Dennis Downing, Madison T Shaffer, David P Hickey, Thomas F. Guarr</i>	
A Machine Learning Approach for Understanding the Oxygen Vacancy Formation Energies within DRX Cathode Structures	409
<i>Adolfo Salgado-Casanova, Tzu-Chen Liu, Steven B. Torrisi, Christopher M. Wolverton</i>	
(Invited) Accelerating Battery R&D from Materials-to-Device Using AI and Data	411
<i>Kandler Smith</i>	
Machine Intelligence-Accelerated Optimization of All-Temperature Aqueous Electrolyte for Stable Zn-Ion Batteries.....	413
<i>Yang Li, Dejian Dong, Tianle Chen, Chunsheng Wang, Po-Yen Chen</i>	
Important Structural Features to Enhance Na-Ionic Conductivity in Single-Ion-Conducting Polymer Electrolytes	414
<i>Yuta Kagawa, Masaya Miyagawa, Hiromitsu Takaba</i>	

A03 - Poster Session

Ethylene Carbonate Oxidation Due to Reactive Oxygen Species Near the Cathode: Insights from High-Throughput DFT Calculations and Monte Carlo Simulations.....	415
<i>Rohith Srinivaas Mohanakrishnan, Sudarshan Vijay, Evan Walter Clark Spotte-Smith, Bernardine L. D. Rinkel, Bryan D. McCloskey, Kristin A. Persson</i>	
A Combined Diagnostic Approach Enabling the Separation of Graphite and Silicon Degradation in Blended Anode Electrodes	416
<i>George Darikas, Matthieu Dubarry, Anup Barai, Peter Miller, Mark Amor-Segan, David Greenwood</i>	
Uncovering Conversion Reaction Mechanism of FeF ₂ Cathode with Machine Learning Force Field	417
<i>Jiankun Pu, Venkat Viswanathan</i>	
Development of a Machine Learning Model for Quantifying SEM Images of Electrode Materials Based on AFM Topography Image.....	418
<i>Youngwoo Choi, Seungbum Hong</i>	
Investigation of Stable Structures, Electronic States and Mechanism of Mg Intercalation of MgCo _{2-z} Ni _{0.5} MnAl _z O ₄ (z = 0, 0.3) during Charge and Discharge Process as Cathode Materials for Magnesium Rechargeable Batteries Using First-Principles Calculations.....	419
<i>Chiaki Ishibashi, Ryo Takeuchi, Naoto Kitamura, Yasushi Idemoto</i>	
Development of Nasicon-Type Electrolytes Using Combination of Experimental Techniques and Materials Informatics.....	422
<i>Hayami Takeda, Hiroko Fukuda, Koki Nakano, Naoto Tanihata, Masanobu Nakayama, Takaaki Natori, Yasuharu Ono</i>	
Wet Procedure-Driven Performance Enhancement of Poly-Crystalline Cathodes in All-Solid-State Batteries.....	424
<i>Doohun Kim</i>	

Deep Generative Model Based Screening of Electrochemically Active Organic Compounds for Redox Flow Batteries	425
<i>Raul Ortega Ochoa, Arghya Bhowmik, Tejs Vegge</i>	
A Novel Approach to State-of-Health Estimation for Lithium-Ion Batteries Using User Profile Data	426
<i>Young Chan Song, Il-Chan Jang, Jung-Je Woo, Joon Kyo Seo</i>	
Big Data for the Diagnosis and Prognosis of Deployed Energy Storage Systems	427
<i>Fahim Yasir, Matthieu Dubarry</i>	
A Study on Estimating Mechanical Properties of Solid State Electrolyte Using Machine Learning & Finite Element Analysis.....	428
<i>Changmin Pyo, Jaewoong Kim, Jinsub Lim, Jaesam Sim, Sungwook Kang</i>	
Correlation between Lithium Titanate Powder Morphology and High Rate Performance in Lithium-Ion Batteries	430
<i>Bartosz Hamankiewicz, Hermes A. Llaine-Jiménez, Dominika Buchberger, Magdalena Winkowska-Struzik, Maciej Ratyński, Michał Krajewski, Maciej Boczar, Andrzej Czerwiński</i>	
Intellectual Property in Battery Cell Production: A Step-By-Step Regional Analysis.....	432
<i>Tim Greitemeier, Simon Lux</i>	

A03 - Battery Design, Optimization, Manufacturing 1

(Invited) Theory-Informed AI/ML for Battery Characterization	434
<i>Maria Chan</i>	
Transfer Learning from Synthetic Data for SOH Estimation	435
<i>Tobias Hofmann, Matthieu Dubarry, Jacob Hamar, Simon Erhard, Jan Philipp Schmidt</i>	
Predicting Critical Parameters to Prevent Li-Ion Battery Thermal Runaway Propagation Considering Uncertainty.....	437
<i>Peter Bugryniec, Solomon Brown</i>	
Investigation of the Impact of Different Electrode Inhomogeneities on the Voltage Response of Li-Ion Batteries	439
<i>Matthieu Dubarry, David Beck</i>	
Optimization of 3D Battery Geometries Using a Combination of Accurate Energy Prediction Models and Automatic Geometry Generator	440
<i>Kaito Miyamoto</i>	
(Invited) Physics Informed Data Driven Manufacturing for Li-ion Batteries	441
<i>Abraham Anapolsky, Kumu Aung, Arjun Bhargava, Benjamin Chang, Flora Chen, Thomas Forker, Matthew Gordon, Takumi Shibusawa, Brian Tieskoetter</i>	
Machine Learning for Cell Design and Optimization.....	442
<i>Wei Lu</i>	
Estimating State of Charge and State of Health of Lithium-Ion Batteries in Japanese Satellite Reimei	444
<i>Linda Bolay, Sayoko Shironita, Minoru Umeda, Eiji Hosono, Daisuke Asakura, Yoshitsugu Sone, Arnulf Latz, Birger Horstmann</i>	

Architecture Design of High-Performance Electrodes Guided by Large-Scale, High-Throughput Microstructure Simulations	445
<i>Affan Malik, Kent Snyder, Minghong Liu, Hui-Chia Yu</i>	

Voltage Mining for (De)Lithiation-Stabilized Cathodes and a Machine-Learning Model for Li-Ion Cathode Voltage.....	446
<i>Haoming Howard Li, Qian Chen, Gerbrand Ceder, Kristin A. Persson</i>	

A03 - Battery Design, Optimization, Manufacturing 2

(Invited) Digital Twin for Inverse Design of Battery Manufacturing Processes	447
<i>Alejandro A. Franco</i>	

Optimizing High Energy Density Sulfur Cathodes: A Multivariate Approach to Electrode Formulation and Processing	449
<i>Cassidy Anderson, Dongping Lu</i>	

Digital Twin-Driven Analysis of Microstructure Evolution in Li-Ion Battery Electrodes during Calendering	450
<i>Jaejin Lim, Jihun Song, Hyobin Lee, Kyung-Geun Kim, Yong Min Lee</i>	

Post 80% Cycling of Li-Ion Cells, an Update on a Seven Year Cycling Study of Diverse Lithium-Ion Battery Chemistries.....	451
<i>Sahana Upadhyaya, Reed M Wittman, Chaz Rich, Armando Fresquez, Babu Chalamala, Allison Mahvi, Michael J Wagner, Yuliya Preger</i>	

(Invited) Cell-Level Instrumentation of Lithium-Ion Battery Modules to Support Model Validation	452
<i>Yuliya Preger, Jacob Mueller, Armando Fresquez, Chaz Rich</i>	

From Electrochemical Analysis to Machine Learning Prediction: A Comprehensive Approach to LIB Safety	453
<i>Yasaman AbdiSobbouhi, Basab Ranjan Das Goswami, Farzad Mashayek, Todd A. Kingston, Vitaliy Yurkiv</i>	

Accelerating Battery Research and Development through Data-Driven Approaches: The Battery Data Alliance's Battdata Platform.....	454
<i>Anthony Concepcion, Bing Syuan Wang, Venkat R. Subramanian, Manan Pathak, Chintan Pathak</i>	

Finale - Developing Infrastructure for Materials Acceleration Platforms to Expedite Data-Driven Battery Research and Design.....	455
<i>Simon Krarup Steensen, Monika Vogler, Helge Sören Stein, Ivano Eligio Castelli, Tejs Vegge</i>	

Forecasting Electrode State of Health (eSOH) for Managing Battery Lifetime Using Domain-Knowledge-Informed Machine Learning	457
<i>Apoorva Roy, Maher Alghalayini, Hamidreza Movahedi, Jason Siegel, Stephen J Harris, Anna Stefanopoulou</i>	

A03 - Performance Evaluation and Prediction

Multi-Model Architecture for Achieving Extended Battery Life Predictions.....	459
<i>Kevin L. Gering, Mayuresh Savargaonkar</i>	

Data-Driven Prognosis of Lithium-Ion Batteries Thermal Runaway: A Novel Machine Learning Approach	460
<i>Lin Liu</i>	
Battery Life Prediction Under Few-Shot Conditions	461
<i>Jiayu Wan</i>	
Data-Driven Feature Design Framework for Extreme Early Cycle Life Prediction for Lithium-Ion Batteries	462
<i>Jinwook Rhyu, Joachim Schaeffer, Xiao Cui, Martin Z. Bazant, William C. Chueh, Richard D. Braatz</i>	
Early Prediction of the Failure Probabilitydistribution for Energy Storage Technologiesdriven By Domain-Knowledge-Informed Machinelearning	464
<i>Maher Alghalayini, Marcus Noack, Stephen J Harris</i>	
Deep Learning Models for Forecasting of Long Duration Redox Flow Battery Performance and Degradation	465
<i>Emily Saldanha, Amanda Howard, Yunxiang Chen, Yucheng Fu, Jie Bao, Wei Wang, Vincent Sprenkle</i>	
Electric Vehicle Battery Lifespan Diagnosis Technology Based on Resistance Trends Under Real-World Operating Conditions	466
<i>Sang Jun Park, ByoengSu Kang, Woojoong Kim, Minjun Kang, Chae ho Lim, Youngsun Hong</i>	
Predicting Cycle Life of Lithium Metal Batteries Using Discharge/Charge Capacity and Voltage Relaxation Features Via Machine Learning.....	467
<i>Qianli Si, Shoichi Matsuda, Youhei Yamaji, Toshiyuki Momma, Yoshitaka Tateyama</i>	
Machine Learning Approaches for Battery Durability Prediction: Leveraging Diverse Datasets and Advanced Feature Engineering Techniques	469
<i>Simran Kumari, Jungwon Moon, Xin Yang, Kazuki Arihara, Masaki Ono, Masanobu Uchimura, Kensuke Yamamoto, Balachandran Radhakrishnan, Atsushi Ohma, Shigemasa Kuwata</i>	
Machine-Learning-Based Efficient Parameterspace Exploration for Energy Storage Systems	471
<i>Stephen J Harris, Maher Alghalayini, Marcus Noack, Vincent Battaglia, Kenneth Higa, Daniel Collins-Wildman</i>	

A03 - Automated Experimentation

(Invited) Sparking Autonomous Full Cycle Battery Research	472
<i>Helge Sören Stein, Bojing Zhang, Fuzhan Rahmanian, Leah Nuss, Jun Yuan, Dannika Heaney, Qiamin Ke, Monika Vogler, Arghya Bhowmik</i>	
Towards Autonomous Electrochemistry: Data-Driven Computations and Robotic Experiments	473
<i>Rajeev S Assary, Yangang Liang, Vijay Murugesan</i>	
High Throughput Li-Ceramic Battery Electrolyte Property Optimization Based on Efficient Sample Space Exploration.....	474
<i>Jesse Hinricher, Thorben Prein, Philipp Simons, Kunjoong Kim, Michael Foshey, Yunsheng Tian, Tim Erps, Wojciech Matusik, Elsa Olivetti, Jennifer L.M. Rupp</i>	

Rapid Experimental Optimization of Liquid Electrolytes Compositions for Safe Li-Ion Battery with Outstanding Long-Term Performance: Multi-Objective Constrained Bayesian Optimization Approach	475
<i>Kosan Roh, Jaehyun Park, Pius Appiah, Seung-Wan Song, Taekeon Oh</i>	
Integrated Workflow for High-Throughput Formulation and Characterization of Battery Electrolytes	476
<i>Guilherme Vieira da Motta Missaka, Jeffrey Lopez</i>	
Automation, Instructional, and Statistical Tools for Correlative Multivariate Analysis in Battery Metrology	478
<i>Carmen M Lopez, Krisha Vajaria, Ona Sobotie, Xuhui Yao, Rudra Narayan Samajdar, Yahya Zakaria, Christopher Jones, Ana Robador, Samira Sánchez, Pierre Kubiak</i>	
Combining High-Throughput Electrochemistry and Data-Driven Experimentation for Digital Discovery of Si-Ge-Sn Thin-Film Battery Anode Materials	480
<i>Aleksei Sanin, Jackson K. Flowers, Helge Sören Stein</i>	
Crystal Morphologic Design of Na-Layered Oxide Crystals by Automated High-Throughput Flux Method Experiments	482
<i>Yusaku Shimizu, Tetsuya Yamada, Kazumichi Yanagisawa, Mongkol Tipplook, Fumitaka Hayashi, Katsuya Teshima</i>	

A04-ADVANCED CHARACTERIZATION TECHNIQUES IN BATTERY RESEARCH

A04 - Electrode Materials and Interfacial Dynamics 1

Quasi-Static Force Testing of 4680 Cylindrical Batteries: Implications for Structural Integration in Next-Generation EV Energy Storage Systems	483
<i>Nima Ghandily, Domenic Klohs, Niklas Kisseler, Moritz Friege, Achim Kampker, Heiner Hans Heimes</i>	
Electrochemical Activity of Oxygen in Li-Ion Battery Cathodes from X-Ray Spectroscopic Modeling	484
<i>Eder Lomeli, Sean Hsu, Josh Jason Kas, John Vinson, John Rehr, Brian Moritz, Wanli Yang, Thomas P. Devereaux</i>	
(Invited) Characterization of Atomic- and Nano-Scale Defects in Ni-Rich Layered Cathode Materials through Neutron and X-Ray Scattering Techniques	485
<i>Hyungsub Kim</i>	
Multimodal Operando Analysis of High-Capacity Electrodes with Neutrons and Photons	486
<i>Sebastian Risse</i>	
Monitoring the Species Formed at High Cathode Potentials at Ni-Rich Cathodes in Lithium-Ion Batteries Using a Novel Dual Working Electrode	489
<i>Leonhard Johannes Reinschluessel, Lennart Reuter, Hubert Andreas Gasteiger</i>	
Multi-Modal Atomic Observation of Oxygen Loss in Layered Oxides Under External Strain	491
<i>Dongho Kim, Jaejin Hwang, Pilgyu Byeon, Junseop Kim, ChangHyun Park, Jaekwang Lee, Sung-Yoon Chung</i>	
(Invited) Magnetic Field Imaging for Fault Diagnosis of Lithium-Ion Batteries	493
<i>Hongkyung Lee</i>	

When Wetting Spills into Formation: Using Acoustics to Probe Electrolyte Dynamics in Lithium Ion Batteries	494
<i>Gunnar Thorsteinsson, Daniel A. Steingart</i>	
Understanding Degradation Mechanisms of Layered Transition Metal Oxide Cathodes through Multiscale Characterization.....	495
<i>Jianguo Wen, Tao Zhou, Lei Yu, Tongchao Liu, Khalil Amine</i>	
X-Ray Computed Tomography Evidence for Minimal Li-Metal Expansion during High-Rate Discharge in High-Energy Li NMC811 Pouch Cells.....	497
<i>Arghya Dutta, Emiko Mizuki, Yuka Tomori, Shoichi Matsuda</i>	
Rotational Inertia Measurements of Cylindrical Li-Ion Cells: Watching Electrolyte Move and the Impact of Cell Orientation.....	499
<i>Emily Joan Butler, Nicholas Kowalski, R. Christian Fitzner, Connor P Aiken, Jessie Harlow, Michel B. Johnson, Toby Mishkin Bond, Julianne Jager, Michael Metzger, Jeff R. Dahn</i>	
(Invited) Designing Cation Coordination from Bulk to Interface for Next-Generation Battery Electrolytes.....	501
<i>Justin G. Connell</i>	

A04 - Next-Generation Batteries 1

Conduction Mechanism Study of Argyrodite-Type and Polymer-Ceramic Composite Electrolyte By Solid-State and PFG NMR Spectroscopy.....	502
<i>Young Joo Lee, Dokyung KIM, Yoonju Shin, Hyun Woo Kim, Ji-Hoon Han, Sangdoo Ahn, Young Whan Cho</i>	
(Invited) Predictive-Design to Predictive Synthesis of Advanced Sodium Layered Oxide Cathodes By in Situ Synchrotron X-Ray Characterization	503
<i>Guiliang Xu</i>	
Operando Quantification of Dynamic Lithium Active Area Growth in Zero-Excess-Lithium Solid-State Batteries.....	504
<i>Austin Fan, Zhuo Li, Kelsey Hatzell</i>	
Synchrotron-Based Characterizations of Electrocatalytic Metal-Organic Frameworks and Covalent Organic Framework-Based Solid Electrolyte Interphase for Stabilizing Anode of Rechargeable Batteries.....	505
<i>Suttipong Wannapaiboon, Vipada Aupama, Soorathep Kheawhom</i>	
Is High Current Density Necessarily Unfavorable for the Cycling of Zn-Ion Batteries? An in Situ XRD Investigation.....	506
<i>Yifan Ma, Jakub Pepas, Guangxing Zhang, Minju Kang, John Carsley, Hailong Chen</i>	
Screening the Dynamic Behavior of the Electrode-Electrolyte Interphase on Hard Carbon Via Scanning (Electrochemical) Probe Microscopy	507
<i>Christine Kranz, Sven Daboss, Salimeh Saleh, Krishnaveni Palanisamy</i>	
Three-Dimensional Visualization of Inhomogeneous Reaction within Individual Active Material Particles in Composite Solid-State Battery Electrodes Using Nano CT-XANES.....	509
<i>Mai Tanaka, Yuta Kimura, Nozomu Ishiguro, Takashi Nakamura, Oki Sekizawa, Kiyofumi Nitta, Tomoya Uruga, Kingo Ariyoshi, Tomonari Takeuchi, Toyoki Okumura, Mizuki Tada, Yoshiharu Uchimoto, Koji Amezawa</i>	

Shining Light on New Additives for Lithium Sulfur Batteries through Polysulfide Shuttle Tracking Operando Optical Fluorescence Microscopy.....	512
<i>Kofi Coke, Roby Soni, Paul Robert Shearing, Thomas Samuel Miller</i>	

Deterioration Mechanisms Due to Exposing to Humidity-Controlled Air in All Solid-State Battery Revealed By TEM.....	514
<i>Shigeo Mori, Hirofumi Tsukasaki</i>	

A04 - Electrode Materials and Interfacial Dynamics 2

Complementary Analysis on the SEI of Thin Film SiO _x Using X-Ray Photoemission Spectroscopy and X-Ray Reflectivity Methods.....	516
<i>Mitsunori Nakamoto, Zijie Lu, Khawla Zrikem, Frédéric Le Cras, Masatomo Tanaka, Anass Benayad, Samuel Tardif, Ambroise Van Roekeghem</i>	

Insights into the Performance Enhancement of Co and Mn Doped LiNiO ₂ Cathodes Using Synchrotron Techniques	518
<i>Erick Espinosa Villatoro, Otavio Marques, Zehao Cui, Arumugam Manthiram, Molleigh Preefer, Daniel O'Sullivan, Peyton Willis, Jeffrey Williams, Johanna Nelson Weker</i>	

Using Operando NMR to Elucidate Degradation Mechanisms in Silicon Anodes.....	520
<i>Evelyna Wang, Marco-Tulio Rodrigues, Sohyun Park, Fulya Dogan, Baris Key</i>	

In-situ Imaging and Analysis of Li-ion Electrode Drying and Mud Cracking with X-ray Micro-CT	521
<i>Will J Dawson, Andrew RT Morrison, Adam M Boyce, Thomas Samuel Miller, Paul Robert Shearing</i>	

Qualitative and Quantitative Proton Content Analysis of Chemically Delithiated Ni-Rich NCM Materials.....	523
<i>Corbinian Groen, Simon Qian, László Szentmiklósi, Boglárka Maróti, Ildikó Harsányi, Hubert Andreas Gasteiger</i>	

Laboratory-Scale X-Ray Absorption Spectroscopy for in Situ Analysis of Li ⁺ -Insertion Mechanisms in Vanadium Ferrites.....	525
<i>Jeffrey W. Long, Ryan H. DeBlock, Hunter O. Ford, Debra R. Rolison, Michelle D. Johannes</i>	

Nondestructive Nano-Imaging and Nano-Spectroscopy of Buried Battery Interfaces: Advancing in Situ and Operando Infrared Characterization Schemes for Basic Energy Storage Science.....	526
<i>Jonathan M. Larson, Xin He, Hans A. Bechtel, Robert Kostecki</i>	

Quantitative Chemical State Analysis of Silicon-Based Anodes for Lithium Ion Battery Using X- Ray Emission Spectroscopy	528
<i>Hikari Takahara, Takashi Shoji, Naoki Kawahara, Makoto Doui, Hironori Kobayashi</i>	

Evaluation of Electronic and Crystal Structures of Li-Rich Layered Oxide Cathode Using Combinations of Exes, XPS, and PDF Analyses.....	529
<i>Masatsugu Oishi, Tomoya Kawaguchi, Raku Hamamoto, Satoshi Hiroi, Koji Ohara, Norihiko Okamoto, Tetsu Ichitsuho</i>	

Spatially-Resolved EELS Analysis of Surface Species on Metallic Lithium for the Development of Next Generation Li-Batteries.....	530
<i>Michel L. Trudeau, Frédéric Voisard, Rene Veillette, Karim Zaghib, Raynald Gauvin</i>	

Depth-Resolved Structure Change of LiNi _{0.8} Co _{0.2} O ₂ Cathode during Battery Operation	532
<i>Tetsuroh Shirasawa, Shigeru Kobayashi, Wolfgang Voegeli, Etsuo Arakawa, Kazunori Nishio, Ryota Shimizu, Taro Hitosugi</i>	

Mapping Li Concentration Gradients across Battery Cathodes.....	536
<i>Yige Sun, Samuel Wheeler; Gareth M. Hughes, Chris R.M. Grovenor, Patrick S. Grant</i>	

A04 - Next-Generation Batteries 2

(Invited) How Interfaces Control Lithium (De)insertion Pathway: Comparing Liquid and Solid Electrolytes	537
<i>Jongwoo Lim</i>	
Revealing the Inner Evolutions: Nondestructive Operando Studies of All-Solid-State Batteries	538
<i>Hongli Zhu</i>	
(Invited) Lithium Ion Conduction by Molecular Vibrations in Ion-Conducting Glasses	539
<i>Koji Ohara, Hiroki Yamada, Satoshi Hiroi, Atsushi Sakuda, Takahiro Ohkubo, Akitoshi Hayashi</i>	
(Invited) Evaluation and Characterization of NaCl as an Electrode for Sodium-Ion Batteries	540
<i>Iqra Moezz, Jae-Ho Park, Dieky Susanto, Ji-Young Kim, Hun-Gi Jung, Hee-Dae Lim, Kyung Yoon Chung</i>	
Detangling Ion Transport and Lithium Dendritic Growth Using Stimulated Raman Scattering Microscopy	541
<i>Qian Cheng</i>	

A04 - Poster Session

Insights into Lithium Ion Battery Charging Mechanisms: Ex Situ Studies on NMC Materials	542
<i>Alicja Glaszczka, Dominika Buchberger, Sai Rashmi Manippady, Magdalena Winkowska-Struzik, Michal Struzik, Andrzej Czerwinski</i>	
Nano-Level Homogeneity of SiGe-Cu Composite Anodes	544
<i>Sajid Ali Alvi, Andrea Fazi, Olof Bücke, Ignacio Jozami, Magnus Colliander, Farid Akhtar, Mattias Thuvander, Patrik Johansson</i>	
Operando X-Ray Absorption Technique (XAS) and Applications for Energy Storage at Synchrotron in Thailand.....	546
<i>Wanwisa Limphirat, Nonglak Meethong, Prasit Pattananuwat, Rojana Pornprasertsuk, Jiaquian Qin, Soorathep Kheawhom</i>	
How Fast Charging Affects Manganese Spinel Structure.....	547
<i>Dominika Buchberger, Alicja Glaszczka, Magdalena Winkowska-Struzik, Sai Rashmi Manippady, Michal Struzik, Andrzej Czerwinski</i>	
Revealing Structure-Property Correlations in New Solid Electrolyte Materials for All-Solid-State-Batteries Using Synchrotron X-Ray Analysis	548
<i>Da-Seul Han, Kyung-Wan Nam</i>	
Evaluations of Reaction Heterogeneities in Battery Electrodes upon Fast Charging Using Operando Synchrotron Techniques	549
<i>Tianyi Li, Kamila Wiaderek</i>	
Automating Energy Storage System Studies at the Advanced Photon Source: A Case Study of 11-BM.....	550
<i>Yang Wang, Saul Lapidus</i>	

Study of Analysis of Internal Current Distribution of Lithium Ion Pouch Cells By Magnetic Field Measurement	551
<i>Ishizuka Akihito, Yutaro Akimoto, Keiichi Okajima</i>	
Simultaneous Analysis of Reaction Distribution at LiFePO ₄ and LiCoO ₂ Electrodes of Lithium-Ion Batteries.....	553
<i>Misaki Katayama, Kazuo Kato</i>	
Degradation and Safety Analysis of Large Format LiFePO ₄ /Graphite Battery	554
<i>Keisuke Matsuda, Kumi Shono, Yo Kobayashi, Tomoyuki Nakamura</i>	
Forecast Li Plating in LiFePO ₄ /Graphite Cells: Proposal and Issues	555
<i>Kumi Shono, Yo Kobayashi, Keisuke Matsuda, Tomoyuki Nakamura</i>	
Impact of Li ⁺ Ion Diffusion Coefficient and Grain Size of Active Material on Overpotential	556
<i>Keisuke Ando, Kiyoshi Kanamura</i>	
Comparative Study of Irreversible Lithium Formation Mechanisms in Various Silicon Anode Materials for Li-Ion Secondary Batteries	558
<i>Yong-Hyun Yu, Dong-Young Kim, Jae-Hyun Shim</i>	
The Effect of Crystal Structure of Si Anode on Electrochemical Properties for Lithium-Ion Batteries.....	559
<i>Minji Yang, Jae-Hyun Shim</i>	
The Structural Profiling Method for Diagnosis of High Performance for LiFePO ₄ Cathode Materials Synthesized By Environmentally-Friendly Method with Low Cost Resources	560
<i>Hyunyoung Park, Jong-Il Park, Junghoon Kim, Been Namkoong, Dayoung Kam</i>	
Investigation of Li Deposition Behavior in Graphite Anodes of Lithium-Ion Batteries Using Operando Computed Tomography	561
<i>Toshiki Watanabe, Xiaoyu Liu, Fumiya Kondo, Masanori Fujii, Hajime Kinoshita, Toshiyuki Matsunaga, Kentaro Yamamoto, Yoshiharu Uchimoto</i>	
In-Situ AFM Analysis of Lithium Dendrite Growth Dynamics and Preferential Formation Sites	563
<i>Seonghyun Kim, Yoonhan Cho, Youngwoo Choi, Seungbum Hong</i>	
Optimizing Battery Development: Integrating Air-Controlled and Cryogenic Electron Microscopy Workflows	564
<i>Jae Jin Kim</i>	
Direction-Dependence in Li-Ion Battery Diagnostic Methods.....	566
<i>Anubhav Singh, Anup Barai</i>	
NMR Analysis for Lithium Metal Batteries and Direct Alcohol Fuel Cells	568
<i>Oc Hee Han</i>	
In Situ Insights into Cathode Calcination for Predictive Synthesis: Kinetic Crystallization of LiNiO ₂ from Hydroxides.....	569
<i>Akhil Tayal</i>	
Indicators for Optical Analysis of Local Conditions in Bifunctional Air Electrodes.....	571
<i>Nanako Nonaka, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	
Magnetically Guided Diagnosis of Current Flow Patterns inside Fault-Simulated Li-Ion Batteries.....	573
<i>Mingyu Lee, Hongkyung Lee</i>	

The Mechanical Dynamics of Lithium-Metal Battery Formation Protocols	574
<i>Aamani Ponnekanti, Gunnar Thorsteinsson, David Wasylowski, Dan Steingart</i>	
Chemo-Mechanics of Silicon Anodes Via Operando Acoustic Transmission in Solid State Batteries	575
<i>Kerry Sun, Gunnar Thorsteinsson, Daniel A. Steingart</i>	
Unraveling the Composition Effects in Chemo-Mechanical Behavior for Single-Crystal Ni Rich Cathodes	576
<i>Jing Wang, Tongchao Liu, Shirley Meng, Khalil Amine</i>	
Elucidation of the Li Storage State and Dynamics in Various Carbon Electrodes by Using ^7Li NMR.....	577
<i>Jugo Okabe, Yuan Fang, Isamu Moriguchi, Istvan Furo</i>	
Listening to Batteries: Utilising Acoustic Characterisation Techniques to Optimise Formation Cycle Protocols in Lithium-Ion Batteries	579
<i>Arthur Fordham, Rhodri E Owen, Wesley M. Dose, James B Robinson, Dan J L Brett, Rhodri Jervis</i>	
Electrochemically-Resolved Acoustic Emissions Analysis for Li-Ion Battery Materials.....	582
<i>Yash Samantaray, Daniel A. Cogswell, Alexander E. Cohen, Martin Z. Bazant</i>	
Elucidation of Degradation Mechanism of Lithium-Ion Batteries Under High Temperature Environment	584
<i>Tomohiro Osaki, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	
Dynamic Lithium Transport Pathway via Crack Formation in Phase-Separating Materials	587
<i>Chihyun Nam, Bonho Koo, Juwon Kim, Jinkyu Chung, Danwon Lee, Jaejung Song, Sungjae Seo, Yumin Heo, Jian Wang, Markus Weigand, Namdong Kim, Jongwoo Lim</i>	
Development of Operando Bimodal Atomic Force Microscopy System for Real-Time Nanomechanical Mapping of Electrode Cross-Sections in All-Solid-State Lithium-Ion Battery Configuration.....	589
<i>Ridwan Pratama Putra, Kyosuke Matsushita, Tsuyoshi Ohnishi, Takuya Masuda</i>	
X-Ray CT and XAS Analysis of NMC811 Cycled at Various Rates.....	591
<i>Rinka Yamamoto, Daisuke Shibata, Akinori Irizawa, Chengchao Zhong, Keiji Shimoda, Ken-ichi Okazaki, Yuki Orikasa</i>	
Amorphization Progress of Microscale-Silicon Studied via Operando and in Situ X-Ray Diffraction during Formation and Cycling.....	593
<i>Jonas L. S. Dickmanns, Lukas Grossmann, Moritz Bock, Marc Holst, Thien An Pham, Ralph Gilles, Hubert Andreas Gasteiger</i>	
Machine Learning Enabled Operando Optical Microscopy for Determination of Lithium Transport in Battery Electrodes	596
<i>Nadine Kerner, Yug Joshi, Monica Mead, Sebastian Eich, Roham Talei, Guido Schmitz</i>	
Electrochemical Reactions of $\text{LiCoO}_2\text{-Li}_3\text{BO}_3$ Composite Electrode Constructed on $\text{Li}_{6.6}\text{La}_3\text{Zr}_{1.6}\text{Ta}_{0.4}\text{O}_{12}$ solid Electrolyte Sheet Studied By in Situ Hard X-Ray Photoelectron Spectroscopy (HAXPES)	597
<i>Tsukasa Iwama, Tsuyoshi Ohnishi, Takuya Masuda</i>	
Neutron Imaging to Study Electrolyte Dynamics in Lithium-Ion Batteries	599
<i>Isabel Christine Antony, Robert Scott Young, Kofi Coke, Ralf F. Ziesche, Winfried Kockelmann, Rhodri Jervis, Chris Anthony Howard, Alex Rettie, Christoph Rau, Martin-Owen Jones, Paul Robert Shearing</i>	

Operando Raman Microscopy Studies on Next Generation Positive Electrode and Electrolyte Materials	600
<i>Eva Maria del Campo, Marek Marcinek, Laurence J. Hardwick, Alex R. Neale, Grażyna Zofia Zukowska</i>	
Heat Generation Behavior of Lithium-Ion Battery Operated at Low Temperature	601
<i>Jun Okagaki, Suguru Ueda, Shun Nishijima, Yohei Kawahara, Tsuyoshi Shibata, Ken Okada, Yoshiyasu Saito</i>	
Surface Wetting Properties of Lithium Anode Characterized Using Laser Scanning Confocal Microscopy	603
<i>Marina Yakovleva, Jian Xia, Brian Fitch</i>	
Cluster Analysis of Cell Health and Characterization of Lithium and Active Material Loss in a Large Format LiFePO ₄ Hybrid Vehicle Battery Pack	605
<i>Katrina Ramirez-Meyers, Nirmal Deshpande, Young-Geun Lee, Kelly Namara, Bonian Pan, Hannah Morin, Roby Gauthier, Destenie Nock, Elizabeth C Dickey, Jay F Whitacre</i>	
Development of in Operando Technique for Modification TiO ₂ Based Li-Ion Anode Materials Application	607
<i>Yu-Min Shen, Cheng-Hsun Ho, Zhen Chong, Chih-Lung Yang, Chia-Chin Chang, Jow-Lay Huang</i>	
Origin of Inhomogeneity inside LiFePO ₄ /Graphite	608
<i>Yo Kobayashi, Kumi Shono, Keisuke Matsuda, Tomoyuki Nakamura</i>	
Correlating the Battery Performance and the Texture of Electrodeposited Lithium Metal in Zero-Excess Solid-State Lithium Metal Batteries	609
<i>Zhuo Li, Austin Fan, Kelsey Hatzell</i>	
In Operando Raman Spectroscopy – a Powerful Tool for Understanding the Chemistry and Electrochemistry of Aqueous Redox Flow Batteries	610
<i>Jon Mark Weller, Gabriel Nambafu, Aaron Hollas, Peter Rice, Guosheng Li, David M Reed, Vincent Sprengle</i>	
Determining Electrode Microstructural Parameters with X-Ray Microscopy	612
<i>Jeffrey Lowe, Umamaheswari Janakiraman, Greg Less, Robert Kerns, Nancy Muyanja</i>	

A04 - Electrode Materials and Interfacial Dynamics 3

Operando Bragg Coherent Diffraction Imaging of Commercial Polycrystalline and Single Crystal NMC811 Electrodes	613
<i>Alice V. Llewellyn, Rhodri Jervis, Paul R Shearing</i>	
5D X-Ray Nanodiffraction Reveals Nanoscale Structural Deformation in NMC Cathode Materials	614
<i>Tao Zhou, Tongchao Liu, Weiyuan Huang, Lei Yu, Jing Wang, Jianguo Wen, Zhonghou Cai, Martin Holt, Khalil Amine</i>	
Exploring Ion Transport Dynamics in Liquid Electrolytes: Insights from in-Situ FTIR Imaging of Lithium Electrodes	616
<i>Jason Morgan Porter, Schuyler Dick</i>	
Insights into Lithium Inventory Quantification of LiNi _{0.5} Mn _{1.5} O ₄ -Graphite Full Cells	617
<i>Wurigumula Bao, Ying Shirley Meng</i>	

Advancing Pouch Cell Monitoring: The Promise of Surface-Applied and Referenceless Fiber Bragg Grating Sensors	618
<i>Andre Hebenbrock, Fangqi Li, Wolfgang Schade, Thomas Turek</i>	
From Cradle to Grave: In-Situ Imaging of Microstructural Changes in Commercial Cells during Formation and after Long-Term Cycling.....	620
<i>Toby Mishkin Bond, Roby Gauthier, Reid Andrew Dressler, Jeffin James Abraham, Jeff R. Dahn</i>	
Understanding Local Structure-Activity Relation in Lithium-Ion Cathodes with Solid State NMR: Effect of Dopants, Synthesis and Electrochemical Cycling	622
<i>Subhadip Mallick, Sohyun Park, Pavan Badami, Jihyeon Gim, Juan Garcia, Hakim Iddir, Daniel P. Abraham, Jason R. Croy, Fulya Dogan</i>	
Observing the Nanoaggregates in the Electrolytes by Small-Angle X-Ray Scattering	623
<i>Tao Li</i>	
Investigating Low Temperature Degradation and Its Impact on the Performance and Safety of Lithium-Ion Batteries	624
<i>Charlie Rodney Kirchner-Burles, Michael Johnson, Mark Buckwell, Gareth Hinds, Paul Robert Shearing, Rhodri Jervis, James B Robinson</i>	
Quantitative Non-Destructive Morphological Characterization of All-Solid-State Batteries.....	626
<i>Chen-Jui Huang, Jin An Sam Oh, Marta Vicencio, Ying Shirley Meng</i>	
Quantitative Electrolyte Analysis from Large Format Cylindrical Lithium-Ion Cells after Electrolyte Extraction.....	627
<i>Sabrina Schoenemeier, Verena Peters, Fabian Horsthemke, Heewoo Seo, Frank-Michael Matysik</i>	
Operando XRD Observation of NMC Cathode for Reaction Distribution Analysis Under Fast Discharging	629
<i>Masataka Mashino, Atsunori Ikezawa, Marina Murakami, Takeshi Shimomura, Takeyoshi Okajima, Hajime Arai</i>	

A04 - Visualizing Battery Mysteries: Imaging Techniques

Optical and X-Ray Absorption Interrogation of Selenium-Based Redox in Carbon Nanofoam Supported S_xSe_y Cathodes	631
<i>Rachel Elizabeth Carter, Ryan H. DeBlock, Matthew Lefler, Zachary Garbe Neale, Corey T. Love, Megan B. Sassin, Debra R. Rolison, Jeffrey W. Long</i>	
(Invited) Development of a 5D Analytical Tool for Probing Electrochemical Reactions in Composite Solid-State Battery Electrodes: Toward Designing Better Electrodes.....	632
<i>Yuta Kimura, Mai Tanaka, Nozomu Ishiguro, Takashi Nakamura, Oki Sekizawa, Kiyofumi Nitta, Tomoya Uruga, Kingo Ariyoshi, Tomonari Takeuchi, Toyoki Okumura, Mizuki Tada, Yoshiharu Uchimoto, Koji Amezawa</i>	
Visualizing Solid Electrolyte Interphase Formation in Carbon Nanotube-Based Lithium-Ion Batteries: A Comparative in-Operando Electrochemical Atomic Force Microscopy Study	634
<i>Brandon Henry Frost, Thomas Samuel Miller</i>	
In Situ Multi-Site Plasma Focused-Ion-Beam Tomography on Li-Electrolyte Interface in All-Solid-State Batteries.....	635
<i>Samprash Risal, Sanam Milapati, Zheng Fan</i>	

High Spatial Resolution Neutron Imaging of Lithium-Ion Batteries: Correlating Microstructure and Lithium Transport.....	636
<i>Megan Gober, James R Torres, Yuxuan Zhang, Shimin Tang, Jean-Christophe Bilheux, Hassina Bilheux, George J. Nelson</i>	
(Invited) Spatially Asymmetric Phase Separation of $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Visualized by Operando Transmission Electron Microscopy	638
<i>Yuki Nomura</i>	
A Need for Speed: Characterizing Fast Charging Failure Mechanisms in Lithium-Ion Batteries (LIBs) Using X-Ray Microtomography (XRM).....	640
<i>Michael Bowen</i>	
Extending Electrochemical Liquid Cell Transmission Electron Microscopy to High-pH Aqueous Alkaline Battery Research: Opportunities and Challenges.....	641
<i>Hanglong Wu, Duhan Zhang, Joseph S. Manser, Yet-Ming Chiang, Frances M. Ross</i>	
Observing and Quantifying Fracture Dynamics in Solid-State Battery Alloy Anodes with Operando Synchrotron X-Ray Tomography	643
<i>Douglas Lars Nelson, Stephanie Elizabeth Sandoval, Talia A. Thomas, Kelsey Anne Cavallaro, Matthew Todd McDowell</i>	
Do Binders Form Surface Films on Active Particles in Li-Ion Electrodes? Revealing Nanoscopic Surface Binder Morphology in Graphitic Electrodes Using Chemical Staining and High-Resolution Energy-Selective Backscattered Electron Imaging.....	645
<i>Stanislaw Zankowski, Patrick S. Grant</i>	

A05-ADVANCED LITHIUM-ION BATTERIES FOR HIGH-PERFORMANCE ELECTRIC VEHICLE APPLICATIONS

A05 - LIBS for EV 1

(Invited) Gyroid 3D Network in $\text{Si}@\text{SiO}_x/\text{C}$ Nanoarchitecture for Lithium Ion Battery	647
<i>Jung Ho Kim</i>	
(Invited) Improving Low-Temperature Lithium-Ion Battery Performance through 3D Structure-Controlled Anodes with Optimized Charge Storage Mechanisms.....	648
<i>Michael J Lee, Kyunbin Lee, Kun Ryu, Seung Woo Lee</i>	
A Discussion on the Unconventional Electrochemistry of Silicon Anodes	649
<i>Marco-Tulio F Rodrigues</i>	
Exploring the Synergy of SnS_2 and Graphite in Composite Anodes: Influence of Graphite Size and Morphology	651
<i>Jana Katharina Kupka, Yuri Surace, Damian Marlon Cupid, Hans Flandorfer</i>	
Direct Contact Prelithiation of Silicon-Dominant Anodes Using Ultra-Thin Lithium Foils	653
<i>Felix Diller, Oskar Wittmann, Rüdiger Daub</i>	
Lithium Plating on Graphite Electrodes in Lithium-Ion Batteries.....	654
<i>Che-Ning Yeh, Justin Rose, Harry Thaman, Swati Narasimhan, Wei-Yi Huang, Wen Sun, William Huang, Zewen Zhang, William C. Chueh</i>	
(Invited) Hydroflux Process as a Low-Temperature Synthesis of Layered Cathodes	655
<i>Masaki Matsui</i>	

(Invited) Co-Precipitation of Ncm Precursor Using Taylor-Couette Reactor and Scale up Approaches for Mass Production	656
<i>Jung Hoon Song</i>	
Ultrastable Cathodes Enabled by Controlled Ordered to Disordered Structure	657
<i>Tongchao Liu, Khalil Amine</i>	
Voltage Hysteresis without Cation Migration in Li-Rich Layered Oxides: A Discrepancy in the Intermediate Crystal Phases	658
<i>Marcela Calpa, Kei Kubota, Shoichi Matsuda, Kazunori Takada</i>	
Insights into Crystallography and Electrochemical Performance of Doped Li-Rich Layered Oxides for Lithium-Ion Batteries.....	659
<i>Arcangelo Celeste, Laura Silvestri, Sergio Brutti</i>	
Investigating the Moisture Sensitivity of Nickel-Rich Cathodes in Lithium-Ion Battery Production: Implications for Production Atmospheres and Cost Reduction.....	660
<i>Maximilian Lechner, Simon Wöfl, Elena Putz, Rüdiger Daub</i>	

A05 - LIBS for EV 2

(Invited) Bi-Functionalized Extinguishable Separator with Non-Flammable Microcapsules for Highly Safe Lithium Ion Batteries.....	661
<i>Ki Jae Kim, Ki Jae Kim</i>	
Developing Aqueous Processed Transition Metal Oxide Cathodes with Sustainable Binders for High Energy Density Lithium-Ion Batteries from Lab Scale to Manufacturing Scale	662
<i>Buket Boz, Hergul Savur, Lukas Neidhart, Katja Froehlich, Guenter Fafilek, Marcus Jahn</i>	
A Guide to Choosing Polymers for Use in Lithium-Ion Cells.....	664
<i>Anu Adamson, Shanika Abeysooriya, Michel B. Johnson, Tom Boetticher, Jeff R. Dahn, Michael Metzger</i>	
Impact of Sodium Carboxymethylcellulose Binder on the Performance of Lithium-Ion-Batteries for Industrially Relevant Anode Formulations.....	666
<i>Noah Keim, Werner Bauer</i>	
Experimental Extraction of Carbon-Binder-Domain Characteristic for Simulation Purposes	667
<i>Sergio Pinilla, Franco Zanotto, Diana Zapata Dominguez, Tomás Rodríguez, Alejandro A. Franco</i>	
How Binder Decomposition May Influence the Performance of High-Capacity Silicon Electrodes	669
<i>Jason Mennel, Dev Chidambaram</i>	

A05 - LIBS for EV 3

High Performance Li-Ion Batteries Using Binder-Free Anodes.....	670
<i>Sean Brahim, Stefan Maat</i>	
Development of Aluminum-Foil Anodes for Rechargeable Lithium Batteries.....	672
<i>Hongyi Li, Takitaro Yamaguchi, Shingo Matsumoto, Hiroaki Hoshikawa, Toshiaki Kumagai, Tetsu Ichitsubo</i>	

High Charge-Discharge Performance of Stacking-Sequence Disordered SiC as Anode Material for Lithium-Ion Battery	674
<i>Manshi Ohyanagi, Yura Hayashi, Kenshiro Shirai, Takahito Imai, Minehiko Ohta</i>	
Enhancing Anode-Free Lithium Battery Stability By One-Step Thermal Treatment of Porous Carbon Fibers for Controlled SEI Formation and Surface Activation	675
<i>Woosung Kim, Wei Lu</i>	
Si-Based Composite Anodes with Long Cycle Life for Lithium-Ion Batteries Achieved By Synergistic Effects of Elastic and Stiff Silicides	676
<i>Yasuhiro Domi, Hiroyuki Usui, Takumi Okasaka, Kei Nishikawa, Hiroki Sakaguchi</i>	
High Throughput Screening of Disordered Rocksalt Type Overlithiated Anode	678
<i>Yufang He, Bin Ouyang</i>	
(Invited) Investigation of Oxygen Release from Cathode Active Materials for Lithium-Ion Batteries Based on Anion Defect Chemistry	679
<i>Takashi Nakamura, David Henseler, Jürgen Janek, Xueyan Hou, Yuta Kimura, Koji Amezawa</i>	
(Invited) Key Factors of Ni-Rich Materials from the Perspective of Crystal Structure for Realizing High-Performance Electric Vehicles.....	681
<i>Wontae Lee, Won-Sub Yoon</i>	
The Effects of the Binder's Surface Free Energy on the Properties of Aqueously Processed LNMO Cathodes	682
<i>Andreas Weber, Werner Bauer</i>	
Understanding Solid-State Direct Recycling of Ni-rich Layered Positive Electrodes.....	683
<i>Maike Michelle Gnutzmann, Ardavan Makvandi, Julius Buchmann, Martin Winter, Johannes Kasnatscheew</i>	
Structural Evolution of Mn-Based Disordered Rock Salt Cathodes.....	684
<i>Tianyu Li, Tullio Salvatore Geraci, Krishna Prasad Koirala, Chongmin Wang, Alexandra Navrotsky, Raphaele J Clement</i>	
A Concentration Gradient Approach to Enhance Mechanical and Electrochemical Stability in Ni-rich Cathode Materials for Long-Lasting Lithium-Ion Batteries.....	686
<i>Qi Liu, Zhiyong Huang</i>	

A05 - LIBS for EV 4

(Invited) New Form-Factor Li-Ion Batteries for Electric Vehicles.....	687
<i>Jung Tae Lee</i>	
(Invited) Dry Electrode Technologies Toward High Energy Density and Low-Cost Lithium-Ion Battery	688
<i>Junghyun Choi, Patrick Joohyun Kim, Dongsoo Lee</i>	
The Dynamic Mechanical Response of Solvent-Free Li Ion Battery Electrodes and the Implications for Large-Scale Manufacture.....	689
<i>Guillaume Matthews, Benjamin Meyer, Patrick S. Grant</i>	
Granule-Design Technology of Electrode-Composite for Reducing Electric Resistance of Lithium-Ion Battery.....	691
<i>Maria Yokota, Feilure Tuerxun, Yusuke Akimoto, Takuro Matsunaga</i>	

Optimizing Lithium-Ion Batteries for Extended Extreme-Fast Charging: Strategies to Prevent Lithium Plating without Compromising Charge Acceptance	692
<i>Tanvir R. Tanim, Andrew M. Colclasure, Zhenzhen Yang, Kevin L. Gering, Eric J. Dufek, Alison R. Dunlop, Andrew N. Jansen</i>	
(Invited) Mechanistic Studies on Electrode/Electrolyte Interfaces in Li-Ion Batteries Using in-Situ Neutron Reflectometry	693
<i>Masaaki Hirayama</i>	
(Invited) Diagnosis and Prognosis for Facilitating High-Performance Lithium-Ion Batteries in Electric Vehicles	695
<i>Duho Kim</i>	
Experimental Investigation of Fast-Charging Protocols Derived from Physicochemical and Thermal Simulations Using 5.4 Ah Multilayer Pouch Cells with Silicon-Dominant Anodes over Aging.....	696
<i>Sven Friedrich, Axel Durdel, Johannes Mährlein, Andreas Jossen</i>	
Neutron Imaging of Lithium Batteries	699
<i>Wei WANG, Qi Liu</i>	

A05 - LIBS for EV 5

Fabrication and Performance Evaluation of Dry Spray-Coated Graphite Electrodes for Lithium-Ion Batteries for Electric Vehicle Applications.....	700
<i>Jesus Alberto Barreras Uruchurtu, Nicolas Besnard, Clément Paul, Lauréline Marchal, Samuel Devisme, Bernard Lestriez</i>	
Surface and Bulk Stabilization of Silicon Anodes Via in-Situ Formation of Li-M-Si Zintl Phases Using Multivalent Cation Additives	703
<i>Sohyun Park, Evelyn Wang, Baris Key, Fulya Dogan</i>	
A New Approach to Synthesis of Porous Si Anode for Li-Ion Batteries Via Organic-Solvent Assisted Etching	704
<i>Dahee Jin, Ju-Myung Kim, Ran Yi, Ji-Guang Zhang</i>	
Hierarchical Ni-Mn Oxides@Silicene Flower As Anode Materials for Fast-Charging Lithium-Ion Batteries.....	705
<i>Ting-Jang Tsai, Che-Ning Yeh</i>	
Fast-Charging $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Anode Driven By Light.....	706
<i>Yuanyuan Ma, Yaxin Shen, Heonjae Jeong, Jason Lipton, Hang Wang, Stephen A. Maclean, Jason A. Rohr, Christopher S. Johnson, Andre Taylor</i>	
(Invited) Nanostructured Positive Electrode Materials for Li-Ion Battery Applications	708
<i>Naoaki Yabuuchi</i>	
(Invited) Unveiling Olivine Cathodes for High-Energy-Density Lithium-Ion Batteries: Engineering from the Atomic Level to the Electrode Scale.....	709
<i>Wonchan Hwang, Jaehwan Kim, Jungjin Park</i>	
Mitigating Capacity Degradation and Surface Oxygen Loss of Single-Crystalline LiNiO_2 Cathodes Via Al_2O_3 Surface Coating	710
<i>Muhammad Ans, Satish Bolloju, Ashok S. Menon, Paolo Melgari, Galo Paez Fajardo, Louis F. Piper</i>	

Nearly All-Active-Material Disordered Rock-Salt Cathodes for Ni- and Co-Free Li-Ion Batteries	712
<i>Jinhyuk Lee, Dong-Hwa Seo, Eunryeol Lee, Dae-Hyung Lee</i>	
Structural and Chemical Evolution of Highly Fluorinated Li-Rich Disordered Rocksalt Oxyfluorides as a Function of Temperature.....	713
<i>Neelam Sunariwal, Jordi Cabana</i>	

A05 - LIBS for EV 6

(Invited) Comprehensive Microstructural Design and Fabrication Techniques for High-Energy-Density Solid-State Batteries.....	715
<i>Jinsoo Kim, Hyou Jo</i>	
Electronic Conduction Path Design in the Lithium-Ion Battery Electrodes Using Electrostatic Dry Coating Process	716
<i>Ayaka Yonaga, Shigehiro Kawauchi, Hiroyuki Kawaura, Kazuhisa Isegawa, Hidehiko Kimura, Takuro Matsunaga, Hiroshi Nakamura</i>	
Powder Structure Control Technology in the Solvent-Free Dry Electrode Forming Process of Lithium-Ion Battery and Its Battery Performance Evaluation	717
<i>Feilure Tuerxun, Ayaka Yonaga, Shigehiro Kawauchi, Takuro Matsunaga, Hiroshi Nakamura, Yuki Mori, Shota Ishikawa, Keita Nunoshita, Gen Inoue, Xuanchen Liu</i>	
Effect of Electrode Curvature on Cell Behavior in Cylindrical Lithium-Ion Batteries	718
<i>Byeong-jin Jeon, Yeong-Hyeon Lee, Kyeong-Min Jeong</i>	
Linking High-Throughput, Non-Destructive Quality Control Methods with Electric Vertical Take-Off and Landing Mission Cycles and Battery Safety	720
<i>Hamish Thomas Reid, Matthew Jones, Gaurav Singh, James B Robinson</i>	
Thermal Runaway Suppression of High-Energy Lithium-Ion Batteries with Nonflammable Liquid Electrolyte	722
<i>Seung-Wan Song, Yen Hai Thi Tran, Kihun An, Yuri Seo</i>	
Design of Functional Electrolytes for Automotive Lithium-Ion Batteries	723
<i>Masaki Deguchi, Yanko Marinov Todorov, Koji Abe</i>	
Impact of Mixed Salt Electrolytes for $\text{LiMn}_x\text{Fe}_{1-x}\text{PO}_4$ /Graphite Li-Ion Cells.....	724
<i>Jeffin James Abraham, Kate Leslie, Chongyin Yang, Michael Metzger, Jeff R. Dahn</i>	
Aqueous Binders for Stable Cycling of Iron Fluoride Conversion Cathodes	727
<i>Tianna Green, Jeffrey Lopez</i>	

A05 - Poster Session

Engineering Surface Oxidation States in Co-Free, High-Ni Core/Shell Cathode Precursors: Impact on Physicochemical Properties and Lithium-Ion Battery Performance.....	729
<i>Jinha Shim, Jin Ho Bang</i>	
Lithium Sulfate Coating of Co-Free, Li-Rich Layered Oxide Cathode for Improving Electrochemical Performance.....	730
<i>Jung Hyeon Moon, Hyeonmuk Kang, GyuSeong Hwang, Junho Lee, GeunHyeong Shin, EunAe Cho</i>	

Parameter Identification of Pseudo-Two-Dimensional Model for Lithium-Ion Batteries with Silicon/Graphite Composite Electrodes.....	731
<i>Jinho Ha, Sanghyun Kim, Gwang Hoon Jun, Dong-Wook Koh, Jung-Il Choi</i>	
Concomitant Optimization of Lithium Diffusion and Conductivity during Crystallization of TiNb_2O_7 Mesoporous Microparticles	733
<i>Christopher James Sturgill, Sean Cade Wechsler, Morgan Stefik</i>	
Enhancing Lithium-Ion Battery Performance through Dual Doping in Ni-Rich Cathodes.....	734
<i>Soo-Been Lee, Yang-Kook Sun</i>	
Elucidation of the Mechanism behind High-Valence Element Doping in Ni-Rich Cathode Materials	735
<i>Nam-Yung Park, Yang-Kook Sun</i>	
Fluorinated Azide Enables Fully Crosslinked Ceramic-Coated Separators for Advanced Li-Ion Batteries.....	736
<i>Seungyeop Choi, Syed Zahid Hassan, Youngjoon Roh, Jun Pyo Seo, Dae Sung Chung, Yong Min Lee</i>	
Significance of NMC Particle Morphology – Polycrystalline or Single-Crystal?	737
<i>Natalia Firlej, Michał Grygiel, Magdalena Winkowska-Struzik, Michał Struzik, Dominika Buchberger, Andrzej Czerwiński</i>	
A Novel Approach to Electrode Delamination for Mechanism Analysis and Signal Detection: Fault-Simulated Li-Ion Batteries	739
<i>Suhwan Kim, Seungyeop Choi, Dahee Jin, Kyung-Geun Kim, Mingyu Lee, Hongkyung Lee, Yong Min Lee</i>	
Development of a Resilient Binder for Stable Cycling of High Sulfur Loading Lithium-Sulfur Batteries.....	740
<i>Avinash Raulo, Saheed Adewale Lateef, Golareh Jalilvand</i>	
Improving the Energy Density of Lithium-Ion Batteries with a Dry-Processed Anode via the Synergistic Effects of the FEC-Derived SEI	742
<i>Juhyun Lee, Seungmin Han, Seungho Lee, Subi Yang, Woojin Jeong, Kwang Chul Roh, Junghyun Choi</i>	
Robust LiF-Rich SEI Inducing Protective Layer for High Energy Density Si Anodes in Li-Ion Batteries.....	744
<i>Seungho Lee, Subi Yang, Juhyun Lee, Woojin Jeong, Seungmin Han, Kwang Chul Roh, Junghyun Choi</i>	
Enhancing High-Performance for the Lithium-Ion Battery of Si/G Anode Via an Effective Additive Strategy.....	746
<i>Woojin Jeong, Subi Yang, Seungho Lee, Juhyun Lee, Seungmin Han, Jinyoung Chun, Junghyun Choi</i>	
Thin-Shelled Hollow Mesoporous TiO_2 Spheres with Less Tortuosity As Fast-Charging Anode	747
<i>Chang-Wan Hyeon, Chan Woo Kim, Sang-Eun Chun</i>	
Effect of Conductive Carbon on the Cycling Performance of Dry-Processed Cathode with High Mass Loading for Lithium-Ion Batteries	749
<i>Hyo-Jin Kim, Hui-Tae Sim, Myungkeun Oh, Ye-Eun Park, Dong-Won Kim</i>	
Nitride-Based Sacrificial Cathode Additive for High Energy Density Lithium-Ion Batteries.....	750
<i>Dongyeon Yun, Juhwan Kim, Seung-Tae Hong</i>	

The Impact of Li_2MnO_3 Proportion on the Structure and Electrochemical Performance of $x\text{Li}_2\text{MnO}_3 \cdot (1-x)\text{LiNi}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{O}_2$ for Lithium-Ion Batteries	751
<i>Shu-Yi Tsai, Kuan-Zong Fung, Wei-Zhi Lin</i>	
Realization of a Long-Lifespan Thin Li Metal Batteries Capable of Self-Recovery with a Functional Separator.....	752
<i>Eunbin Jang, Harim Seo, Jeeyoung Yoo</i>	
Investigation of Single-Crystal Process for Ni-Rich Layered Oxides Cathode through Solid State Reaction.....	754
<i>Kuan-Zong Fung, Shu-Yi Tsai, Yu-Hsuan Chen, Yu-Fan Chen</i>	
Structural and Grain-Growth Evolution during Synthesis of Layered $\text{Li}(\text{Ni}, \text{Co}, \text{Mn})\text{O}_2$ Oxides through Co-Precipitation Process	755
<i>Kuan-Zong Fung, Shu-Yi Tsai, Yu-Hsuan Chen, Yu-Fan Chen, Kenneth Fung</i>	
Nonflammable Organic Liquid Electrolyte for Improved Performance of SiO_x -Graphite//NCM811 Lithium-Ion Battery.....	756
<i>Jiin Lee, Kihun An, Yen Hai Thi Tran, Taekeon Oh, Seung-Wan Song</i>	
Novel Flame-Retarding Electrolyte for High-Energy and Safe Lithium Metal Battery	757
<i>Dung Tien Tuan Vu, Jiin Lee, Sehyun Kwak, Yen Hai Thi Tran, Kihun An, Seung-Wan Song</i>	
First-Principles Study on Lithiation Process of SiO Anode for Li-Ion Batteries.....	758
<i>Ryoya Shintaku, Tomoyuki Tamura, Shogo Nogami, Takakazu Hirose</i>	
Improvement of Ionic Conductivity and Suppression of Gas Generation in $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ Cathode Material By Using P-Ta Aqueous Coating Solution.	760
<i>Takuya Kuruma, Takayuki Yamamura, Takashi Miura, Daisuke Magori, Hitohiko Ide</i>	
Improving the Thermal Stability of Lithium-Ion Batteries Using a Separator Protective Film Made By Novel Materials	762
<i>Daiki Uto, Masato Imai, Shintaro Yasui, Kenji Yoshino</i>	
PTFE-Based Solvent-Free Electrode Manufacturing Process for Lithium-Ion Batteries and Solid-State Batteries.....	763
<i>Insung Hwang</i>	
Minimizing the Ion/Electron Pathway through Ultra-Thin Conformal Holey Graphene Encapsulation on Li- and Mn-Rich Layered Oxide Cathode for High-Performance Lithium-Ion Batteries.....	765
<i>Sungwook Kim, Heejoon Ahn</i>	
Carbon Based Conductive Additives for Dry Coated Cathodes	766
<i>Serkan Damnali, Thomas Woehrle</i>	
A Spherical LiFePO_4 /Carbon Nanotubes/Binder Composite as a Cathode Material for High Performance of Lithium-Ion Batteries.....	767
<i>Jihee Yoon</i>	
SOC Imbalance of the Electrodes in All-Solid-State LTO/LCO Batteries Examined by Three-Electrode Cell.....	768
<i>Kazuki Furukawa, Masayuki Yamada, Kingo Ariyoshi</i>	
Low Temperature Synthesis for Mn Series Positive Electrode Active Material.....	770
<i>Madoka Ishido, Akira Nasu, Hiroaki Kobayashi, Masaki Matsui</i>	

The Structure and Electrochemical Properties of High-Nickel $\text{LiNi}_{1-x-y}\text{Mn}_x\text{Al}_y\text{O}_2$ As Cathode Materials for Lithium-Ion Secondary Batteries	772
<i>Da-Hee Jung, Jae-Hyun Shim, Woo-Seong Choi, Ju-Whan Kim</i>	
Design of Fast-Charging SiO_x /Graphite Composite Anodes Via Three-Dimensional Electrochemical Mechanical Simulations	773
<i>Soo Young Yang, Hong Rim Shin, Siwon Kim, Jong-Won Lee</i>	
Comparison of Characterization of High Nickel Single Crystal Cathode Materials According to Pre-Heating and Reheating Temperature	774
<i>Ye Ji Yun, Ye Jin Sung, Eun-Suok OH</i>	
Water-Based Pickering Emulsion Scheme for One-Step Washing and Coating High-Ni Layered Cathode for Lithium-Ion Batteries	775
<i>Seongeun Park, Jong-Heon Lim, Kyu-Young Park</i>	
Effect of the Mxene Introduced to Hollow-Core Shell Binder on Silicon Anode in Lithium Ion Battery	776
<i>Yuri Seo, In Seo KIM, Chan Hee Hwang, Jang Hee Lee, Ye Eun Shin, Eun-Suok OH</i>	
Enhancing Lithium-Ion Battery Performance of Silicon Microparticle-Embedded Wrinkled Multilayered Graphene Structures for High Areal Capacity.....	777
<i>Seongchan Lee, Incheol Heo, Min seok Kang, Won Cheol Yoo, Jaeseong Kim</i>	
Discharge Characteristics of High-Loading Coated Cathode Active Materials for High-Capacity High-Efficiency Secondary Batteries Implementation	778
<i>DoMan Jeon</i>	
High-Performance Lithium-Ion Batteries: Dispersant-Free Nanocarbon for N-Doped Si-Carbon Composite.....	779
<i>Do Geun Lee, Joon Young Cho, Jung Hoon Kim, Gyeongbeom Ryoo, Min Ho Lee, Jong Hwan Park, Dong Yun Lee, Jeong-Hee Choi, Joong Tark Han</i>	
Improving the Electrochemical Performance of Sb-Modified Ni-rich NCM Cathode Materials for Lithium-Ion Batteries	780
<i>Hyun-Soo Kim, Seong-Joo Sim, Bong-Soo Jin</i>	
Exploring the True Nature of Doping Effects: The Origin of the Discrepancy in Doping Effects on Ni-Rich Cathode Materials.....	781
<i>Doo Seok Kwon, Jin Ho Bang</i>	

A05 - LIBS for EV 7

Differentiating the Aging Mechanisms of Si Anodes	782
<i>Zonghai Chen, JiYu Cai</i>	
Unraveling Lithium Plating and SEI Properties during Fast Charging of Li-Ion Batteries	783
<i>Mei Luo, Xiang Gao, Aleksandar S Mijailovic, Guanyi Wang, Andrew N. Jansen, Zhenzhen Yang, Qingliu Wu, Brian W. Sheldon, Jun Xu, Wenquan Lu</i>	
Utilizing Cladding Processes to Enhance Structural Stability of Aluminum-Foil Anodes for Rechargeable Lithium Batteries	784
<i>WeiQi LIU, Hongyi Li, Yuki Nakata, Shingo Matsumoto, Takitaro Yamaguchi, Hiroaki Hoshikawa, Toshiaki Kumagai, Tetsu Ichitsubo</i>	

Electrode-Level Modeling of Silicon Anodes for Improved Design	785
<i>Edmund McKay Shumway, Amir Sina Hamed, Dean Wheeler</i>	
Influence of Relaxation Time on Jelly Roll Deformation and Lithium Plating during Cycling of Cylindrical Lithium-Ion Cells	787
<i>George Darikas, Puritut Nakhanivej, Anup Barai, Melanie J Loveridge, Peter Miller, Mark Amor-Segan, David Greenwood</i>	
State of Charge When Cycling LiFeO ₄ /Graphite Cells Affects Lifetime	789
<i>Eniko Zsoldos, Daphne Thompson, William Black, Saad Azam, Jeff R. Dahn</i>	
Enhancing Power Density of Lithium-Ion Batteries through Controlled Reaction Mechanism of Lithium Insertion Material of LiNi _{0.5} Mn _{1.5} O ₄	791
<i>Kingo Ariyoshi, Shinya Hiroshima, Shumpei Masuda, Jun Sugawa</i>	
Suppression of Heat Generation during Rapid Charge and Discharge of LIB by Adding VGCF-H to the Cathode.....	793
<i>Mayuko Kishi, Tsuyoshi Inose, Takashi Mori, Daisuke Harada, Yuji Ito, Akifumi Takeda</i>	
The Electrochemical Performance of The Blended Cathode of LMFP and NMC811	794
<i>Mutsuki Oikawa, Jun Ikegami, Yuma Shimbori, Risa Miyagawa, Hironori Ishida, Takaaki Ogami, Kiyoshi Kanamura</i>	
Study on Doping Strategies to Improve the Stability of Ni-Rich Layered Cathodes for Electric Vehicles	796
<i>Nurzhhan Umirov, Gulzat Nuroldayeva</i>	
Guided Phase Transition in Host Formation Reaction for Designing Cathode Materials of Li-Ion Batteries.....	797
<i>Hyoj Jo, Sung-Kyun Jung</i>	

A05 - LIBS for EV 8

Fast Li Ion Transportation via Dielectric Nanoislands	798
<i>Takashi Teranishi, Yuji Toyota, Yusuke Higaki, Kana Fujisawa, Shinya Kondo, Akira Kishimoto</i>	
Direct Tracking of SnO ₂ -Li ⁺ Reactions in Confined Carbon Nanospace	799
<i>Hiroo Notohara, Koki Urita, Isamu Moriguchi</i>	
Thermal and Electrical Simulations for Thermal Runaway Propagation in Lithium-Ion Battery Modules.....	801
<i>Yohei Uemura, Wen Zhang, Sayaka Morimoto, Ryosuke Yagi</i>	
A Discrete Element Analysis of the Mechanical Properties of Lithium-Ion Electrode Layers Linked to Mechanical Degradation.....	803
<i>Axel Lundkvist, Per-Lennart Larsson, Erik Olsson</i>	
Novel Reduced-Order Electrochemical Models for Lithium-Ion Batteries Integrating Comprehensive Degradation Mechanisms across Various Operational Scenarios	804
<i>Tianhan Gao, Wei Lu</i>	
Experimental Analysis of the Mechanical Aging Behavior of Large-Format Lithium-Ion Cells Under Various Compression and Temperature Conditions.....	805
<i>Johannes Brehm, Maximilian Altmann, Philip Kotter, Andreas Jossen</i>	

Suppression of Loss of Fast Charging Capability in Ni-Rich Cathode By Microstructural Modification	807
<i>Myoung-Chan Kim, Nam-Yung Park, Yang-Kook Sun</i>	
Lithium Battery Cathode Materials, Li-Rich Li-Fe-M-O, Based on Tetrahedrally-Coordinated Structure	808
<i>Sou Taminato, Ryosuke Goto, Aiyu Sawada, Daisuke Mori, Nobuyuki Imanishi</i>	
Thermal Treatment As a Key Factor for Obtaining Top-Grade Core-Shell NMC Cathode Materials.....	810
<i>Michał Grygiel, Dominika Buchberger, Magdalena Winkowska-Struzik, Natalia Firlej, Michał Struzik, Andrzej Czerwiński</i>	
Unlocking the Potential of Lithium-Excess Spinel Cathodes for Next-Generation Li-Ion Battery Applications.....	811
<i>Boyu Shi, Jihyeon Gim, Anh D. Vu, Tianyi Li, Maksim A. Sultanov, Jianguo Wen, Mahalingam Balasubramanian, Jason R. Croy, Michael M. Thackeray, Eungje Lee</i>	

A05 - LIBS for EV 9

LIOVIX® Printable Lithium Technology for Roll-to-Roll Lithium Anode Manufacturing.....	813
<i>Jian Xia, Brian Fitch, Marina Yakovleva</i>	
Dry Battery Electrode Manufacturing for Graphite Anodes: Implications on Electrochemical Properties and Cell Manufacturing.....	814
<i>Korbinian Huber, Christian Scheidle, Moritz Wichmann</i>	
Understanding Degradation Modes in High-Temperature 18650 Cylindrical Cells to Project Low-Temperature Lifetimes.....	815
<i>Claire Floras, Kenneth Tuul, Sasha Martin Maher, Michael Metzger, Jeff R. Dahn</i>	
Understanding Capacity Recovery Behavior Using Long-Term Stored Pouch Cells.....	817
<i>Siyoun Park, Yong Min Lee, Hyobin Lee, Tai-Jong Jung, Jaejin Lim, Dongyoon Kang, Jihun Song, Chil-Hoon Doh, Seungwook Eom, Ji-Hyun Yu, Yoon-Cheol Ha</i>	
Enhancing the Lifetime of Co-Free SC640/Graphite Pouch Cells Operated at 4.4 V	818
<i>Saad Azam, Connor P Aiken, Quinton Meisner, Wentao Song, Holden MacLennan, Zhengcheng Zhang, Jeff R. Dahn</i>	
Bayesian Deep Operator Network-Based Optimization for Battery Thermal Management System.....	819
<i>KyungHyun Kim, Jung-Il Choi</i>	
Rapid Scalable Plasma Processing of Lithium Lanthanum Zirconium Oxide (LLZO) Separators for Solid State Batteries	820
<i>Gabriel Badillo Crane, Sarah Holmes, Thomas William Colburn, Francisco Barrera, Yi Cui, Reinhold Horst Dauskardt</i>	
Thermal Stability and Performance of Li-Ion Batteries at Elevated Temperatures: Separator Effects.....	821
<i>Cameron Taj Romero, David Allen Strickland, J. Chris Bachman, Michael Keating, Elizabeth J. Biddinger, Robert J. Messinger, John-Paul Jones, William C West</i>	
Influence of Vinylene Carbonate on Fe-Dissolution in Lfp/Graphite Pouch Cells Cycled at High Temperatures of 70 °C.....	823
<i>William Black, Saad Azam, Holden MacLennan, Anu Adamson, Jeff R. Dahn</i>	

Optimizing the Performance of NMC 622 Battery Half Coin Cells by Using Amphiphilic Aqueous Binders to Modulate the Percolation of Carbon Black	824
<i>Chirag Patel, William Poizer, Ayo Omole, Laurence A. Middlemiss, Igor Efimov, Alan Dunbar, Abarasi Hart, Gabriel Pérez, Alisyn Nedoma</i>	

A06-FAST ENERGY STORAGE MATERIALS AND DEVICES

A06 - Fast Energy Storage Materials and Devices 1

(Keynote) Elevating Supercapacitors with Ultrafast Materials: Vital Contributors to Sustainable Energy Solutions	826
<i>Katsuhiko Naoi, Wako Naoi</i>	
Regulating and Concentrating Ion-Flux on Anode Materials for Next-Generation Batteries.....	828
<i>Hyung Mo Jeong, Donghyoung Kim, Benzhi Wang, Shin Joon Kang, Sunhyeong Kwon, Byunggon Song</i>	
Hydrodynamic Jet Cavitation to Process Natural Graphite into High C-Rate Capable Anodes for Use in Pouch Cells	829
<i>Benjamin Robinson, John Low</i>	
Enhancing Supercapacitor Performance with Microemulsion-Based Electrolytes.....	831
<i>Adam Imel, Zulqarnain Z. Arif, Brian Barth, Gabriel Goenaga, Thomas A. Zawodzinski</i>	
(Invited) Development of Hybrid Capacitor with Mesopores-Rich Activated Carbon Positive Electrode and Aluminum Metal Negative Electrode	832
<i>Masanobu Chiku, Shota Uchida, Eiji Higuchi, Hiroshi Inoue</i>	
Asymmetrical Supercapacitor Based on Iodide Ion Containing Ionic Liquid Mixture	834
<i>Thomas Thomberg, Alar Janes, Enn Lust</i>	

A06 - Fast Energy Storage Materials and Devices 2

(Invited) Investigation of Electric Double-Layer Capacitor Electrodes with Time-Resolved SAXS and Thickness Measurements.....	836
<i>Yoshikiyo Hatakeyama, Soshi Shiraishi</i>	
(Invited) Preparation of Boron-Doped Nanodiamond and Its Application to Aqueous Electrochemical Capacitors	838
<i>Takeshi Kondo</i>	
(Invited) Design, Optimization, and Construction of High-Performance Potassium-Ion Battery Electrodes	839
<i>Hsing-Yu Tuan</i>	
DRT Characterization of Lithium-Ion Batteries for eVTOL Applications	840
<i>Preston Young, Anirban Roy, Bapi Bera, Douglas S Aaron, Matthew M Mench</i>	
Impact of Cell Format, Engineering Design and Non-Active Components on EDLC Prototype Device Performance	842
<i>Alexander John Roberts, Wuttichai Somyanonthanakun, Agata Greszta</i>	
Materials Science Aspects and Performance of High Power Magnetically Ordered Pseudocapacitors	843
<i>Igor Zhitomirsky</i>	

A06 - Fast Energy Storage Materials and Devices 3

(Invited) Edlc Characterization of Carbon Electrodes with Micro to Narrow Mesopores	845
<i>Koki Urita, Sota Takahama, Fernando Vallejos Burgos, Chiharu Urita, Hiroo Notohara, Isamu Moriguchi</i>	
(Invited) Fabricating High Performance Fiber-Shaped Supercapacitor from the State-of-the-Art Carbon Nanotube Fiber	847
<i>Nam Dong Kim, Jeong-gil Kim, Min Ji Kim, Min Sub Kim, Hyeon SU Jeong</i>	
(Invited) Confinement Effects on the Redox Reaction of Aromatic Molecules	849
<i>Daisuke Takimoto</i>	
Optimization of Solid Electrolytes for Enhanced Battery-Supercapacitor Hybrid Devices: A Leap Toward High-Capacity Retention and Extended Lifespan	851
<i>Omar Gomez Rojas, Wataru Sugimoto</i>	
(Invited) Unlocking Iron Metal As a Cathode for Sustainable Li-Ion Batteries By an Anion Solid-Solution	853
<i>Xiulei (David) Ji</i>	
(Invited) Engineering Pore Structure of Hard Carbon Anode Materials for High-Power Potassium-Ion Hybrid Capacitors	854
<i>Jongkook Hwang</i>	

A06 - Fast Energy Storage Materials and Devices 4

(Keynote) High Power Batteries Enabled by Disordered Rocksalt Anodes	855
<i>Ping Liu</i>	
(Invited) Synthesis of Structured Transition Metal Sulfide Electrodes Via a Highly Active Sulfur Activation Process for Fast Energy Storage Applications	856
<i>John Hong</i>	
(Invited) Design Strategy of High-Performance Hard Carbon Anodes for Sodium-Ion Storage	857
<i>Young Soo Yun</i>	
(Invited) Performance As Electrode for Electric Double-Layer Capacitor of Activated Carbon Derived from Bamboo Residue after Steam Treatment Activated By Alkaline Metal Hydroxide	858
<i>Toshiki Tsubota, Anh Duy Khuong, Daiki Morioka</i>	
(Invited) Co-Doping of Tungsten Suboxide for Enhancing the Performance of Flexible Supercapacitors	860
<i>Jae-Jin Shim, Mohammad R Thalji, Kwok Feng Chong</i>	
(Invited) Using Electrochemical Microscopy for Determining Ion Transfer Rates and Interphase Stability at the Electrode-Electrolyte Interface in Aqueous Batteries.....	861
<i>Zachary Tyson Gossage, Nanako Ito, Tomooki Hosaka, Shinichi Komaba</i>	
(Invited) Fast Proton Storage in Metal Oxide Electrodes for Aqueous Electrochemical Energy Storage.....	863
<i>Masashi Okubo</i>	

A06 - Poster Session

Enhanced Electrochemical Performances of Silicon Based Anodes By Carbon-Coated Copper Current Collectors: Towards Effective Strategy for High-Capacity Lithium Ion Batteries	864
<i>Jihyeon Ryu, Ick-Jun Kim, Seungwook Eom, Byeong Guk Kim, Seung Yol Jeong, Yang Sunhye</i>	
Improved State of Charge Estimation with Pressure Change Characteristics Measurement of LiFePO ₄ Battery for Electric Vehicle Applications	865
<i>Jae Young Choi, Jinhyeong Park, Jinyeong Choi, Tae-hoon Kim</i>	
Ethyl Cellulose As a Sustainable Binder for Activated Carbon Electrodes in Supercapacitors.....	866
<i>Thomas M. Fone, Daniel Raymond Jones, Christopher O. Phillips, Aphidet Chasri, Davide Deganello</i>	
Specific Analysis of Nonlinear Voltage Behavior with Respect to Activated Carbon in Lithium Ion Capacitors	867
<i>Yang Sunhye, Ick-Jun Kim, Seung Yol Jeong, Jihyeon Ryu, Ki-Hun Nam, Sang-gil Kim</i>	
Development of Highly Integrated Electric Double Layer Capacitor and Hybrid Capacitor Based on 3D Additive Manufacturing Technology	868
<i>JeongHun Baek, Bumjin Kim, Sanghui Kang, Seungho Lee, Jungjoon Yoo</i>	
Solvent-Confined Van Der Waals Gap Engineering to Improve Energy Storage in a 2D Layered Supercapacitor	869
<i>Jaehyung Shim, Chul-Ho Lee</i>	
Enhanced Specific Capacitance of Lithium Ion Capacitors By Effective Surface Functionalization for Lithiophilic Activated Carbon.....	870
<i>Kyungmin Do, Jihyeon Ryu, Minhyeok Choi, Seung-Wook Eom, Ick-Jun Kim, Sunhye Yang</i>	
Radially Oriented Ni ₃ (HITP) ₂ Microspheres: High-Performance Anodes for Li-Ion Capacitors.....	871
<i>Jungjoon Yoo, Sanghui Kang, Bumjin Kim, JeongHun Baek, Chan-Woo Lee</i>	
Reduced Graphene Oxide Carbon Additives of Alpha-MnO ₂ Cathode for Enhanced Capacity and Energy Density in Aqueous Zn Ion Battery.....	872
<i>Segi Byun, Jueun Baek, Yunhee Ahn, Seulgi Kim, Dongju Lee, Jungjoon Yoo</i>	
Development of a Cell-Based Pre-Transfer Learning Model and an Electrochemical Analysis-Based Remaining-Useful-Life Prediction Model for Large Scale Battery Pack in Fast Charging Condition	873
<i>Jinhyeong Park, Tae-hoon Kim, Hongjong Lee, Jae Young Choi</i>	
A Study on the Correlation with Charging Characteristics According to the Charge & Discharge Life of Lithium Ion Battery Cells and a Method for Analyzing the Remaining Life	875
<i>Hongjong Lee, Tae-hoon Kim</i>	
Redox Flow Deionization Using Prussian Blue and Functionalized Ion Exchange Membrane for Enhanced Selective Lithium Recovery.....	876
<i>Younghyun Cho, Tran Minh Khoi, Van Phung Huynh, Thu Tran, Jae Eun Shin</i>	
Coarsening-Driven Hierarchical Porous Carbon Polyhedrons from Polymer@Metal-Organic Frameworks for Advanced Stretchable Ionogel Supercapacitors	877
<i>Min seok Kang, Won Cheol Yoo</i>	
Effect of Carbonate Solvent Additives in Electrolyte on the Self-Discharge Phenomenon in Organic Electrical Double Layer Capacitors.....	878
<i>Yun KU, Hao-Yu KU, Chi-Chang Hu</i>	

Development of High-Performance Lithium-Ion Capacitor Using Reduced Nitrogen-Doped Graphene as Capacitor-Type Cathode Material Exhibiting Anomaly Anion Storage Mechanism	880
<i>Jumpei Ishikawa, Kazunari Soeda, Daisuke Okuda, Masashi Ishikawa</i>	
Fabrication of Textile Supercapacitors for Smart Textiles Using Spray Patterning Process.....	882
<i>Yunseok Jang, Youn-Ki Lee, Seoung-Hyun Lee</i>	
Investigation of Electrospun Lignin Fiber Separators for Supercapacitor Applications.....	884
<i>Azega R.K., Mazharul Haque, Peter Enoksson, Per Lundgren</i>	
Surface-Functionalized Carbon Linker-Mediated Assembly for Preparing Pseudocapacitive Binder-Free Textile Electrodes	886
<i>Jeongyeon Ahn, Jeongyeon Ahn</i>	
Role of Lattice Flexibility on Electrochemical Ion Insertion: Structural Dynamics in WO_3 vs $\text{WO}_{2.9}$	887
<i>Vincenzo Musico, Noah Holzapfel, Wan-Yu Tsai, Nina Balke, Veronica Augustyn</i>	
Highly Interconnected Macroporous Carbon Spheres for Ionogel-Based Stretchable Supercapacitors	888
<i>Incheol Heo, Seongchan Lee, Won Cheol Yoo</i>	
Mechanisms and Applications of Electrochemical CO_2 Capture Utilizing Activated Carbon Supercapacitors	889
<i>Alan Ferris, Ran Ding, Jahan M Dawlaty, Joaquín Rodríguez López, Veronica Augustyn</i>	
Importance of the Interlayer Distance of Reduced Graphite Oxide for Reversible Redox Reaction of Quinone-Based Molecules.....	890
<i>Kaiya Nakasone, Akira Sakima, Ryusuke Futamura, Daisuke Takimoto</i>	
Learning-Based Fast Charging of Li-Ion Batteries.....	892
<i>Renato Rodriguez, Omidreza Ahmadzadeh, Damoon Soudbakhsh</i>	
Micrometer Scale X-Ray CT Assisted Cathode Pore Space Designs for High Energy Fast Discharge Rate Lithium-Ion Battery	894
<i>Bonian Pan, Jay F Whitacre, Xinsheng Wu, Young-Geun Lee</i>	
The Distribution of Capacitive Times for the Analysis of Electrochemical Impedance Spectroscopy Data from Supercapacitors	895
<i>Baptiste Py, Francesco Ciucci</i>	

A06 - Fast Energy Storage Materials and Devices 5

(Invited) Improving Withstand Voltages of Conductive Polymer Solid Aluminum Capacitors for Power Electronics Applications.....	897
<i>Hiroki Habazaki, David Quintero Giraldo, Mana Iwai, Kazuhiro Nagahara, Atsushi Tanaka, Kenji Machida, Hidenori Okuzaki, Kazunori Hasegawa</i>	
(Invited) Designing Redox-Active Organic Molecules (ROMs) for Fast-Charging Battery Electrodes with High Stability.....	898
<i>Ji Eon Kwon</i>	
Ampere-Hour-Scale Soft-Package Potassium-Ion Hybrid Capacitors Enabling 6-Minute Fast-Charging	899
<i>Huanxin Li</i>	

Investigation of Pseudocapacitance Mechanisms of Magnéli Oxide Ti_4O_7 -Based Supercapacitors	901
<i>Yu-Ting Weng, Nae-Lih (Nick) Wu</i>	
(Invited) In Situ Crosslinked Gel Polymer Electrolytes for Li-Ion Capacitors with Improved Safety and Stability at High Temperature Operation	902
<i>Jon Ajuria, Simon Lindberg, María Martínez-Ibañez, María Arnaiz, María Canal Rodríguez</i>	
Influence of Hierarchical Porosity of Electrodes on the Energy and Power Densities of Electrochemical Devices	904
<i>Enn Lust, Alar Janes, Jaak Nerut, Thomas Thomberg, Eneli Monerjan, Rutha Jaeger, Ove Oll, Tavo Romann, Miriam Koppel, Laura Kalder, Heigo Ers, Maarja Paalo, Riinu Härmas, Meelis Härmas, Liis Siinor, Vitali Grozovski, Mart Väärtnõu, Piret Pikma, Karmen Lust, Peeter Valk, Egert Möller, Kenneth Tuul, Rait Kanarbik</i>	

A06 - Fast Energy Storage Materials and Devices 6

(Invited) Extrinsic and Intrinsic Methods to Increase the Rate Performance of MnO_2 Electrodes	906
<i>Wataru Sugimoto, Yuta Takemura, Ryota Saito, Angga Hermawan, Keisuke Muramatsu</i>	
(Invited) Tailoring Molecular Interaction in Solid-State Polymer Electrolytes for High-Performance Supercapacitors	907
<i>U Hyeok Choi, Ji Hyang Je, Seon Min Park, Puji Lestari Handayani, Dawoon Lee, Jaekyun Kim</i>	
(Invited) Anion-Intercalated Cathode Concept for Fast and Stable Cycling of LIC and Batteries	908
<i>Masashi Ishikawa, Jumpei Ishikawa, Masaru Yoshie, Daisuke Okuda</i>	
Iridium-Doped Manganese Oxide Nanosheets with Enhanced Pseudocapacitive Properties	910
<i>Keisuke Muramatsu, Ryota Saito, Wataru Sugimoto</i>	
(Invited) Heterogeneous Intercalated Metal-Organic Frameworks for Fast-Charging Electrodes	911
<i>Nobuhiro Ogihara, Masaki Hasegawa, Hitoshi Kumagai, Riho Mikita, Naoyuki Nagasako</i>	
(Invited) Marine Plastic Waste-Based Supercapacitors for Saving Remote Island	913
<i>Daisuke Tashima, Takuya Eguchi, Seiji Kumagai, Toshiki Tsubota, John D. W. Madden</i>	
(Invited) Enhancement of Li-Ion Intercalation Kinetics in High-Concentration Electrolytes	915
<i>Kaoru Dokko, Zhou Zhi, Kousuke Takeshita</i>	
Rutile TiO_2 As a Negative Electrode Material for Proton Rechargeable Batteries	916
<i>Masahiro Shimizu, Daisuke Nishida, Ayaka Kikuchi, Susumu Arai</i>	
Rational Design of Pyrene and Thienyltriazine-Based Conjugated Microporous Polymers for High-Performance Energy Storage and Visible-Light Photocatalytic Hydrogen Evolution from Water	918
<i>Santosh Sharma, Santosh U. Sharma, Shiao Wei Kuo, Mohamed Hammad Elsayed, Islam M.A. Mekhemer, Tso Shiuan Meng, Ho-Hsiu Chou</i>	
A Low-Cost Zn-Ion Hybrid Supercapacitors with High Energy Density	920
<i>Alar Janes, Jaanus Eskusson, Paul-Egert Peensalu, Thomas Thomberg, Enn Lust</i>	

A07-LI-ION AND LI METAL BATTERIES: ELECTRODES, ELECTROLYTES, AND INTERPHASES

A07 - Digital Only Presentations

(Digital Presentation) Surface Modification of $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ -Based Composite Solid Electrolyte and Its Influence on Interfacial Resistance and Cyclability..... 922
Andrew Parks, Zouina Karkar, Chae-Ho Yim, Mohamed S.E. Houache, Elena A. Baranova, Yaser Abu-Lebdeh

(Digital Presentation) Effects of the Morphological Changes Associated with a Li Metal Anode on Deposition and Dissolution Cycle in Bis(fluorosulfonyl)Amide-Based Ionic Liquids 923
Mika Nishikawa, Morgan L. Thomas, Nobuyuki Serizawa, Yasushi Katayama

A07 - Cathode Interface 0

Electrochemical Performance of LiFePO_4 Cathode with Dispersed Ion-Conductive Material 925
Jaturon Kumchompoo, Jyh-Tsung Lee, Chia-Chen Li

Enhancement of Charge Transfer Reaction at Electrode/Electrolyte Interface in Acetonitrile Solvent for Lithium-Ion Battery Cathode 927
Tatsumi Suzuki, Chengchao Zhong, Keiji Shimoda, Ken-ichi Okazaki, Yuki Orikasa

Proposal of a Data-Driven Surrogate Models with the Aim to Estimate the Mechanical Degradation of Cathodes in Lithium-Ion Batteries 929
Nikolai Erhardt, Hermann Nirschl

Porous Electrode Theory-Based Rapid Simulation of Deformation of Li-Ion Batteries 930
Gerrit Ipers, Shakul Pathak, Junning Jiao, Marc Berliner, Ruqing Fang, Wei Li, Weihai Li, Juner Zhu

Simulation-Guided Dual Functional Ta-Modified Ni-Rich $\text{LiNi}_{0.92}\text{Co}_{0.04}\text{Mn}_{0.04}\text{O}_2$ Cathode Material Development 931
Liang-Yin Kuo, Yola Bertilsya Hendri, Martin Ihrig, Chun-Chen Yang

A07 - Electrolyte 0

Elucidating the Shuttle Mechanism of Vinyl Ethylene Carbonate By in-Situ Advanced Raman Spectroscopy 933
Felix Pfeiffer, Angela Griggio, Matthias Weiling, Jian-Fen Wang, Christoph Peschel, Masoud Baghernejad

Multivalent Cation Additives for Building Dendrite-Free and Stable Electrode-Electrolyte Interface on Lithium-Metal Anodes..... 935
Hongyi Li, Tetsu Ichitsubo

Development of Operando Spectroscopy Measurement Technique Under Electrochemical Reactions 936
Hayate Mukofukasawa, Shinji Matsumoto, Koji Hiraoka, Shiro Seki

Advancements in Optical Microscopy Techniques for Investigating and Quantifying Lithium-Sulfur Battery Degradation..... 938
Rhodri E Owen, James Robinson

Probing Electrochemical Reactions at the Electrode-Electrolyte Interface in Lithium Metal Battery, Combining Experimental Approach and Computational Calculation.....	940
<i>Yasuhito Aoki, Mami Oda, Sachiko Kojima</i>	
Improvement of Cycling Performance of Lithium-Ion Batteries by Use of a Polymerizable Additive for Forming Ion-Conductive Solid Electrolyte Interphase	942
<i>Jinhong Seok, Da-ae Lim, Dayoung Hong, Jin-Young Oh, Chul Haeng Lee, Kyoung Ho Ahn, Dong-Won Kim</i>	
Resilient and Confined Polymer Microlattices for Low-Swelling, Pressure-Free Lithium Metal Pouch Cells.....	943
<i>Yue Gao, Shu Chen, Jason Jolly, Shengfei Wang, Guanbin Wu, Mengyao Zhu, Tiantian Chen, Chenyang Han, Min Wang, Lei Ye, Alissa Claire Johnson, Bingjie Wang, Shu Yang, Huisheng Peng, James H. Pikul</i>	
PEO Electrolyte As Interlayer for Li Metal Battery Comprising an Halide Based Hybrid Electrolyte	946
<i>Didier Devaux, Natalia Stankiewicz, Thomas Boulmier, Khawla Zrikem, Benoît Denis Louis Campéon, Cristina Iojoiu, Irune Villaluenga</i>	
Hybrid Polymer-Liquid Electrolytes and Their Interfaces Towards Electrode Materials for Lithium Ion Batteries	947
<i>Martina Cattaruzza, Mats Johansson, Goran Lindbergh, Fang Liu</i>	

A07 - Anode Interface 0

Magnetism-Induced Homogenization of Charge and Ionic Distributions Realized By Cu-Ni Core-Shell Nano-Necklace for Stable Lithium Metal Batteries	949
<i>Minkyu Kang, Minjun Bae, Yonghwan Kim, Dohyeong Kim, Yujin Chang, Shuqing Piao, Jonghyock Park, Kanghun Kim, Yuanzhe Piao</i>	
In-Battery Fabrication Method of a Lithiophilic LMA for Realizing Highly Stable Li Metal Batteries.....	951
<i>Subin Kim, Kwang Sup Eom</i>	
Synthesis and Characterization of Advanced Thin-Film Metallic Glass Anodes for Lithium Metal Batteries.....	954
<i>Jerry Howard, Krista Carlson, Dev Chidambaram</i>	
Enhancing the Stability of Lithium Metal Batteries with the Polydopamine-Coated Insulating Scaffold	955
<i>Jinhyeon Jo, Kwang Sup Eom</i>	
Advancements in Li-Ion Battery Efficiency: A Study on Silicon-Vanadium Carbide Composite Anodes and Liquid Electrolytes	959
<i>Rohit Choudhury, Praveen Meduri</i>	

A07 - Electrolyte 1

Minimized Li-Ion Coordination Diluent Differentiating Dual-Anion-Derived Solid Electrolyte Interphase Towards Long-Life Lithium Metal Batteries	961
<i>Donghai Wang, Guoxing Li</i>	
The Effect of Solvating Ability and Diffusivity of Electrolyte Solutions for Solid Electrolyte Interphases in Lithium Metal Batteries.....	962
<i>Seon Yeong Cho, Taegyu Jang, Hye Ryung Byon</i>	

Role of Li Electrode Redox Potential and Solid Electrolyte Interphase (SEI) Species on the Coulombic Efficiency of LiFSI-DME and LiFSI-FEC Electrolytes.....	964
<i>Daniel Wang, Christian Orlando Plaza Rivera, Haldrian Iriawan, Nicole Ceribelli, Livia Giordano, Yang Shao-Horn</i>	

A07 - Anode Interface 1

(Invited) Controlled Large-Area Lithium Deposition to Reduce Swelling of High-Energy Lithium Metal Pouch Cells in Liquid Electrolytes.....	965
<i>Jie Xiao</i>	
Thermal Pyrolysis of Ammonium Fluoride Induced Multilayered Protection for Longevity of Lithium Metal Batteries.....	966
<i>Bereket Woldegbreal Taklu, Wei-Nien Su, Bing Joe Hwang</i>	
Pre-Passivation of Lithium-Metal Anodes through Electrodeposition for Durable Cycling in Practical Lithium-Metal Batteries	968
<i>Jiyeon Seo, Hongkyung Lee</i>	
On the Calendar Life of Li Metal Batteries	969
<i>Ji-Guang Zhang</i>	

ECS Charles W. Tobias Young Investigator Award Address

(ECS Charles W. Tobias Young Investigator Award Address) Lithium Oxide Content in the Li Metal Anode Solid Electrolyte Interphase Drives High Coulombic Efficiency	970
<i>Betar M. Gallant</i>	

A07 - Cathode Interface 1

(Invited) Overcoming the Air, Cycle, and Thermal Instability Challenges of High-Nickel Cathodes	971
<i>Arumugam Manthiram</i>	
Decoupling the Capacity Fading in Ni-Rich Layered Materials during High-Temperature Cycling in the Full-Cell System.....	972
<i>Minji Kim, Wontae Lee, Won-Sub Yoon</i>	
Designing a High-Energy Dry-Processed Electrode for Li-Ion Batteries By Layering Single-Walled Carbon Nanotubes Onto the Ni-Rich Cathode Material.....	973
<i>Jinkyoo Koo, Chaeyeon Ha, Jae kwon Seo, Young Jun Kim</i>	

A07 - Characterization 1

(Invited) Quantifying Li Plating on Graphite during Fast Charging of Li-Ion Batteries	974
<i>Bryan D. McCloskey</i>	
Li-O ₂ Battery Cathodes with Partially Saturated Electrolyte.....	975
<i>Xianglin Li</i>	
Stabilizing Lithium Metal Anode and Conversion Cathode Interphases for High Energy Density Batteries.....	976
<i>Jeffrey Lopez</i>	

Understanding the Failure Mechanisms of LiMn_2O_4 /Graphite Pouch Cells Using Isothermal Microcalorimetry	977
<i>Eniko Zsoldos, Ahmed Eldesoky, Eric R Logan, Jeff R. Dahn</i>	

Approach to Regulating Crystal Nucleation for High-Performance Lithium-Chalcogen Batteries.....	979
<i>Mihyun Kim, Seung-Ho Yu</i>	

A07 - Cathode Interface 2

(Invited) High-Performance Ni-Rich Cathodes through Microstructure- and Surface-Modification for Electric Vehicle Batteries	981
<i>Yang-Kook Sun</i>	

Tactical Enhancement in the Cycle Stability of LiCoO_2 at 4.6 V Via Synergetic Al-Mg-F Doping.....	982
<i>Seungbin Park, Jangwhan Seok, Wontae Lee, Seongeun Lee, Won-Sub Yoon</i>	

Nanoscale Sulfide Coatings for Addressing the Issues of Nickel-Rich Metal Oxide Cathodes	983
<i>Xiangbo Meng, Yuzi Liu, Xianghui Xiao, Hua Zhou, Kevin Velasquez, Navin K C, Meetesh Singh</i>	

Industry-Level Safety Enhancement of High-Energy Li-Ion Batteries Via Material-Level Surface Modification	984
<i>Shu Jui Chang, Hsi Chen, Nae-Lih (Nick) Wu</i>	

Highly Li-Concentrated Ionic Liquid Electrolytes Enable High Stability of LiNiO_2	985
<i>Huazhen LIU, Hiroki Maeda, Jinkwang Hwang, Kazuhiko Matsumoto</i>	

A07 - Modeling 1

(Invited) Prediction of Electrode-Electrolyte Degradation through First-Principles and Data-Driven Reaction Networks	986
<i>Kristin A. Persson</i>	

Stress-Driven Diffusion of Lithium into Anode Copper Current Collectors during Plating and Stripping	987
<i>Kurt Hebert</i>	

Deep Learning Analysis of Solid Electrolyte Interface Microstructures in Lithium-Ion Batteries.....	989
<i>Ishraque Zaman Borshon, Vahid Jabbari, Todd A. Kingston, Farzad Mashayek, Reza Shahbazian-Yassar, Vitaliy Yurkiv</i>	

Data-Driven Understand of High Entropy Rocksalt Type Li-Ion Battery Cathodes	990
<i>Lin Wang, Zhengda He, Bin Ouyang</i>	

A07- Poster Session 1

Towards Novel Generation of Anodes Based on Halide Perovskites for Li-Ion Batteries	991
<i>Aleksandra Ossowska, Maciej Marczewski, Marcin Saski, Adam Trzaska, Janusz Lewinski, Wladyslaw Wieczorek</i>	

Preparation of Amorphous SiO_2 Coated $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Anode and Their High Cycleability	993
<i>Ryota Nomura, Yoshinao Kobayashi, Shintaro Yasui</i>	

Impact of Temperature on the Diffusion in Silicon-Based Anodes	994
<i>Kevin Böhm, Torsten Markus, David Henriques</i>	
Chemical Prelithiation of Silicon Oxide Anodes for Improved Performance in Lithium-Ion Batteries.....	995
<i>Gilles Bonneux, Kun Feng, Boaz Moeremans, Jan D'Haen, Bart Ruttens, Momo Safari, Marlies K. Van Bael</i>	
Impact of Silicon Content on the Behavior of Graphite/Silicon Composite Anodes for High-Performance Lithium-Ion Batteries: Insights from Multi-Scale Simulations	996
<i>Agnesia Permatasari, Magnus So, Van Lap Nguyen, Takeru Yano, Gen Inoue</i>	
Nanoporous Amorphous Silicon Thin Films Fabricated with Helium Plasma for Lithium Ion Battery Application.....	997
<i>Shin Kajita, Giichiro Uchida, Hirohiko Tanaka, Kiho Tabata, Yuta Yamamoto, Noriyasu Ohno</i>	
Explaining the Voltage Hysteresis and Slow Relaxation of Silicon Nanoparticles with a Chemo-Mechanical Particle-SEI Model.....	999
<i>Lukas Köbbing, Arnulf Latz, Birger Horstmann</i>	
Investigation of the Reaction Mechanism of Graphite Fluoride Rechargeable Batteries	1001
<i>Shuta Tomioka, Shota Tsujimoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Electrochemical Reactions of Graphite Fluoride Electrodes in Ionic Liquids.....	1005
<i>Yuta Ito, Kazuki Yoshii, Tomonari Takeuchi, Toyoki Okumura</i>	
Electrode Engineering Using Carbonaceous Materials for Improving Electrochemical Performance of High-Voltage Lithium-Ion Batteries.....	1006
<i>Yi-Hung Liu, Tsung-Yu Tsai, Wei-Cheng Chen, Chung-Hsuan Hsueh, Yen-Shen Kuo</i>	
Li ⁺ Conduction Properties and Local Structures of Sodium Iodide Doped with Li ⁺ and BH ₄ ⁻	1008
<i>Reona Miyazaki, Wojciech Slawinski, Takehiko Hihara</i>	
CNT/GO Zinc Composite as Dual-Functional Electroconductive and Lithophilic Coatings for Cu-Current Collectors in Anode-Free Li Batteries.....	1011
<i>Pooria Afzali, Luca Magagnin</i>	
Stable Solid Electrolyte Interphase Formation with Optimal Charging Protocol.....	1012
<i>Donggyun Lee, Minsu Kim, Minji Kim, Minjae Kim, Junghwan Kim, Yeonghyun Kim, Youngkeun Kim</i>	
Polysulfide-Mediation Properties of Nickel Phosphide Carbon Composite Nanofibers with Controlled Surface Oxidation Layer.....	1013
<i>Ayaulym Belgibayeva, Gulderaiym Turarova, Arailym Nurpeissova, Aliya Mukanova, Zhumabay Bakenov</i>	
Three-Dimensional Imaging of Large-Volume Lithium Metal Microstructure by Xenon Plasma Focused Ion Beam	1015
<i>Yueying Peng, Kei Nishikawa, Kiyoshi Kanamura</i>	
A Novel Mesoporous Carbon as a Flexible Conductive Support for Cathode of Li-S Batteries	1016
<i>Tianshu Liu, Ayako Kawase, Zheng-Ze Pan, Shinichiro Iwamura, Hirotomo Nishihara</i>	
Electrochemical Properties of Quinone-Based Organic Electrode Materials in Lithium Chloride/Dimethyl Sulfoxide Electrolyte Solutions	1018
<i>Sho Okubo, Masahiko Hayashi, Hiroaki Taguchi, Atsushi Aratake</i>	

Lithium-Oxygen-Battery Using Lightweight Gas-Diffusion Current Collector.....	1020
<i>Shuntaro Miyakawa, Shoichi Matsuda, Shoji Yamaguchi, Manai Ono, Takaya Saito, Goto Masatoshi</i>	
Fluoroalcohol Additives That Modify the Nature of Solid Electrolyte Interphase and Cathode Electrolyte Interphase Selected By Machine Learning Approach	1022
<i>Mitsunori Nakamoto, Satoshi Umezu, Hideyuki Kumita</i>	
Simulation of the Solid Electrolyte Interphase Layer in Lithium Metal Batteries – a Systematic Study.....	1024
<i>Madison Morey, Maya Lobel, Emily Ryan</i>	
Stress-Adaptive Binder Based on Shear-Thickening Properties for Highly Expansible LIB Electrodes	1025
<i>Ohhyun Kwon, Jihyeon Kang, Seohyeon Jang, Seyoung Choi, Hojong Eom, Junhyeop Shin, Jongkwon Park, Inho Nam</i>	
Bi-Dimensional PTFE Fibrillation Process Implemented in Solvent-Free Manufacturing of Ultra Thick Electrodes for Lithium-Ion Batteries.....	1027
<i>Hyeong-Seok Shim, Sang Hyun Lee, Kwon-Hyung Lee, Gyujin Song, Tae-Hee Kim</i>	
Electrolyte Development and Optimization: A Case Study for Wide Operating Temperature and Fast Charge Applications.....	1028
<i>Sarah Lucienne Guillot, Monica Lee Usrey, Brian M Kerber, Peng Du, Liu (Amy) Zhou, Suresh Sriramulu</i>	
Assessing the Surface Degradation Process of Manganese-Based Li-Ion Battery Cathodes Using Scanning Electrochemical Microscopy	1030
<i>Dong Ok Kim, Abhiroop Mishra, Michelle Zorigt, Joaquin Rodriguez Lopez</i>	
Investigation of Sodium Leaching into Electrolytes during Electrochemical Testing.....	1032
<i>Brian M Kerber, Shipra Garg, Matthew Hennek, Monica Lee Usrey, Suresh Sriramulu</i>	
Probing Transition Metal Dissolution/Redeposition Dynamics of NMC 900505	1033
<i>Katelyn Marie Meyer, Dawei Xia, Anika Tabassum Promi, Feng Lin</i>	
Decoupling Lithium Salt and Lithium Polysulfide Solvation By Partially-Fluorinated Ether Boosts Cycle Life of Lithium-Sulfur Batteries.....	1034
<i>Jingtian Yang, Qijia Zhu, Xiaowei Wang, Qian Liu, Zhengcheng Zhang</i>	
Unraveling the Sequential Effect of Dual-Layered Hybrid Graphite Anodes on Electrode Utilization during Fast-Charging Li-Ion Batteries.....	1035
<i>Jiwoong Kang, Jaejin Lim, Hyuntae Lee, Sujong Chae, Yong Min Lee, Minhong Lim</i>	
Effects of Electrolyte Salts on Ionic Transport in Solid Polymer Electrolytes Investigated by Operando Raman Spectroscopy.....	1036
<i>Ayana Ito, Koji Hiraoka, Shiro Seki</i>	
Effect of Positive Active Material De-Agglomeration on 350Wh/Kg Class High Energy Density Lithium Sulfur Laminated Batteries	1038
<i>Hitoshi Mikuriya, Hiroki Nara, Toshiyuki Momma</i>	
Cycling Performance Research on Disordered Rock Salt Cathode Material in Lithium Ion Batteries	1040
<i>Yanbao Fu, Vincent Battaglia</i>	

Electrospun LiCoPO ₄ @C Composite Nanofibers As High-Voltage Cathode Materials for Lithium-Ion Batteries	1042
<i>Samal Berikbaikzy, Zhumabay Bakenov, Ayaulym Belgibayeva</i>	

Plating Behavior and Charge Transfer Kinetics of the Amorphous-LLZO Modified Solid Electrolyte for Lithium Solid State Batteries.....	1044
<i>Rui-Tung Kuo, Tzu-Ying Lin</i>	

Polyimide-Based Composite Separators for Super-Stable Li Metal-Based Batteries.....	1045
<i>Patrick Joohyun Kim, Junghyun Choi, Min Su Park, Sujeong Woo</i>	

A07 - Anode Interface 2

(Invited) Understanding Alkaline Metals As Anodes for Advanced Batteries.....	1046
<i>Shirley Meng</i>	

Reassessing the Quantity of Lithium in Metal Batteries: The Less Is More Philosophy from Metal-Free to Metal Anode	1047
<i>Di Wang, Jie Qiu, Naoki Inui, Rika Hagiwara, Jinkwang Hwang, Kazuhiko Matsumoto</i>	

Multifunctional Layer Coated Cu for Anode-Free Lithium Metal Batteries	1048
<i>Bing-Joe Hwang</i>	

Interrelation between External Pressure, SEI Structure and Electrodeposit Morphology in an Anode-Free Lithium Metal Battery	1049
<i>David Mitlin</i>	

Improving Cycling Performance of Anode-Free Lithium Battery Via Stabilizing Lithium Deposition Under Protection Layer.....	1050
<i>Hyung-Seok Lim, Un Hyuck Kim, Xia Cao, Ji-Guang Zhang</i>	

A07 - Electrolyte 2

(Invited) Development of Deep Eutectic Electrolytes Using Urea Derivatives Toward Safe, High Voltage Lithium-Ion Batteries	1051
<i>Nanako Ito, Tomooki Hosaka, Ryoichi Tatara, Zachary Tyson Gossage, Shinichi Komaba</i>	

Data-Driven Design for Electrolyte Additives Supporting High-Performance Lithium-Ion Batteries	1053
<i>Chen Liao, Bingning Wang, Hieu Doan, Seoung-Bum Son, Daniel P. Abraham, Stephen E. Trask, Andrew N. Jansen</i>	

Revealing the Molecular Origin of Driving Forces and Thermodynamic Barriers for Li ⁺ Ion Transport to Electrode-Electrolyte Interfaces.....	1054
<i>Abhishek Aggarwal, Kiarash Gordiz, Artem Baskin, Jeffrey Grossman, Yang Shao-Horn</i>	

Importance of Fluorine in Non-Flammable High Voltage Electrolytes for LNMO SiGr Cell Chemistry	1055
<i>Maïke Leopold, Christian Woelke, Martin Winter, Isidora Cekic-Laskovic</i>	

Impact of Graphite Materials on the Consumption of Prop-1-Ene-1,3-Sultone and Vinylene Carbonate in Lithium-Ion Cells.....	1056
<i>Anu Adamson, Kenneth Tuul, Michael Metzger</i>	

A07 - Anode Interface 3

The Li-Ion Battery, the Electrification Revolution, and the Next Ideal Battery	1057
<i>Kang Xu, Qichao Hu</i>	
Effect of Stack Pressure on Morphological Stability of Lithium Metal Anodes	1058
<i>Mehdi Mosayebi, Kurt Hebert</i>	
Metal–Organic Framework Monoliths for Lithium Metal Batteries with Long Cycle Lifetimes.....	1060
<i>Chaejeong Kim, Wooyoung Jeong, Hong Rim Shin, Kyu-Nam Jung, Jong-Won Lee</i>	
Hydrothermally Synthesized SnS ₂ Anode Materials with Selectively Tuned Crystallinity as an Asset for Self-Healing Property and One Step in Situ Solid State Carbonization and Synthesis of C-SnS ₂	1061
<i>Akzhan Bekzhanov, Freddy Kleitz, Damian Marlon Cupid</i>	

A07 - Characterization 2

(Invited) Electrochemistry Based and Coupled Characterization of Electrode-Electrolyte Interfaces in Lithium Ion Batteries.....	1063
<i>Amy C. Marschilok, Esther S. Takeuchi, Kenneth J. Takeuchi</i>	
Understanding the Kinetic Origins of Voltage Relaxation and Low-Frequency EIS Measurements in Porous Electrodes	1064
<i>Nidhi Kapate, Stephen D. Kang, Jimmy J. Kuo, Hongbo Zhao, William C. Chueh</i>	
Electrochemical Analysis of the Cathode/Electrolyte Interface in Li-Ion Batteries by Scanning Electrochemical Microscopy (SECM).....	1066
<i>Rong He, Meng Zhou, Hongmei Luo, Robert Tenent</i>	
Uncovering Reduction Mechanisms of Fluoroethylene Carbonate	1067
<i>Sapna L Ramesh, Matthew D Krzyaniak, Michael R Wasielewski, Jeffrey Lopez</i>	
Characterization of Electrolyte Reduction Reactions on Freshly Plated Lithium Using Electrochemical Heat Flow Calorimetry	1068
<i>Clara Marie Berg, Lennart Reuter, Lara Paulina Link, Hubert Andreas Gasteiger</i>	

ECS Battery Division Awards Session

(Battery Division Student Research Award Sponsored by Mercedes-Benz Research & Development) High-Throughput Electrochemical Characterization of Aqueous Organic Redox Flow Batteries.....	1070
<i>Eric M. Fell, Thomas Young George, Yan Jing, Roy G. Gordon, Michael J. Aziz</i>	
(Battery Division Postdoctoral Associate Research Award Sponsored by MTI Corporation and the Jiang Family Foundation) Advancements and Challenges of Wide Temperature Electrolytes for Next-Generation Lithium Batteries	1072
<i>Jijian Xu, Oleg Borodin, Chunsheng Wang</i>	
(Battery Division Postdoctoral Associate Research Award Sponsored by MTI Corporation and the Jiang Family Foundation) Silicon SEI Instability and its Effect on Calendar Aging.....	1073
<i>Josey D, McBrayer, Noah B. Schorr, Katharine L. Harrison, Eric Allcorn, Mila Nhu Lam, Melissa L Meyerson, Shelley Minteer</i>	

(Battery Division Early Career Award Sponsored by Neware Technology Limited) Spin Probes and Materials Design for Next-Generation Batteries	1074
<i>Howie Nguyen, Elias Sebti, Peter Richardson, Raynald Giovine, Raphael J Clement</i>	
(Battery Division Technology Award) Dendrite-Free Architected Zinc Anodes: Enabling Sustainable, Safe, Scalable, Rechargeable, and Manufacturable Next-Generation Aqueous Batteries	1076
<i>Debra R. Rolison, Jeffery W. Long, Joseph F. Parker</i>	
(ECS Battery Division Research Award) Sustainable LiFePO_4 and $\text{LiMn}_x\text{Fe}_{1-x}\text{PO}_4$ ($x = 0.1$ to 1) Cathode Materials for Lithium-Ion Batteries: From Materials to Systems.....	1078
<i>Atiyeh Nekahi, Anil Kumar, Xia Li, Sixu Deng, Karim Zaghib</i>	

A07 - Anode Interface 4

(Invited) Enhancing Lithium Stripping Efficiency in Anode-Free Solid-State Batteries	1079
<i>Hongli Zhu</i>	
(2023-2024 ECS Toyota Young Investigator Fellowship Award) Ultrafast Electrodeposition of Faceted Li Metal.....	1080
<i>Yuzhang Li</i>	
The Solid Electrolyte Interphase Dispersion Can Predict Cycle and Calendar Lifetimes in Silicon Anodes for Lithium-Ion Batteries.....	1081
<i>Gerard Michael Carroll, Maxwell C. Schulze, Gabriel M. Veith</i>	
Deciphering the Impact of the Active Lithium Reservoir in Anode-Free Pouch Cells.....	1082
<i>Charlotte Gervillie, Louis Ah, Alex Ruili Liu, Chen-Jui Huang, Shirley Meng</i>	
Accelerating the Gelation of in-Situ Gel Polymer Electrolyte by Lithium Salts-Anion-like Initiator for Lithium-ion Batteries.....	1084
<i>Jihong Jeong, Hyun-Kon Song</i>	

A07 - Electrolyte 3

Maximizing Battery Performance: Unveiling the Potential of Ion Pair-Based Electrolytes.....	1085
<i>Seongjae Ko, Atsuo Yamada</i>	
Preventing Metal-Ion Cross-Talk via Gel Polymer Electrolyte for Li-Ion Batteries at High-Voltage	1086
<i>Daehyun Kim, Jihong Jeong, Hyun-Kon Song</i>	
Lithium-Ion Battery Electrolyte Design for Extreme Fast-Charging	1089
<i>Ning Guo, Bryan D. McCloskey</i>	

A07 - Cathode Interface 3

(Invited) Advances in Lithium-Ion Battery for Enabling Mass Electrification of Vehicles.....	1091
<i>Khalil Amine</i>	
Alkali-Catalyzed Coating of Covalent Triazine Frameworks for Enhanced Interfacial Stability of High-Nickel Ternary Cathode Materials.....	1092
<i>Juntian Fan, Sheng Dai</i>	

Experimental & Computational Evidence for Reduced Surface Layer Trapping Li-ions in Ni-rich Li-ion Battery Cathodes	1093
<i>Nickil Ajit Shah, Ashok S. Menon, Galo Paez Fajardo, Muhammad Ans, Melanie J Loveridge, Louis F. Piper</i>	

Dry-Deposited Self-Standing Composite Electrodes for EV Battery Applications.....	1095
<i>Oleg A Kuznetsov, Avetik R. Harutyunyan</i>	

A07 - Electrolyte 4

Advancements in Property Predictions and Optimization of Highly Complex Electrolytes	1096
<i>Kevin L. Gering</i>	

Next Generation Electrolytes for High-Capacity Electrodes at Low Temperatures	1097
<i>Jason Mennel, Dev Chidambaram</i>	

Transition Metal Dissolution: Impacts on Cell Performance and Mitigation by Electrolyte Formulation	1098
<i>Sarah Lucienne Guillot, Monica Lee Usrey, Brian M Kerber, Peng Du, Liu (Amy) Zhou, Suresh Sriramulu</i>	

Solvent-Free Molten Salts for Next Generation Lithium Metal Batteries	1099
<i>Chibueze Amanchukwu</i>	

Non-Dendritic Lithium Plating Enabled By LiBF ₄ and Lidfob Salts Prevents Rollover Failure in High-Voltage Li Ion Batteries.....	1100
<i>Anindityo Arifiadi, Lennart Wichmann, Feleke Berehane Demelash, Tobias Brake, Julius Buchmann, Christian Lechtenfeld, Peng Yan, Simon Wiemers-Meyer, Martin Winter, Johannes Kasnatscheew</i>	

A07 - Cathode Interface 4

Segregating Primary Nanoparticles from Secondary Microparticles with Surface Coating-Networking Architecture for High-Voltage Cathode Life at High Rate	1101
<i>Manikandan Palanisamy, Matthew M Mench</i>	

Tailored Iron Fluoride Lattices and Nanocomposites for High Energy, Rate, and Long Cycle Life	1102
<i>Ben Harrop, Anna Halajko, Glenn G Amatucci</i>	

Large Particle LiFePO ₄ for High Energy Applications	1104
<i>Moarij Syed, Mark Obrovac</i>	

Pyrochlore Structure Enables Stable Cycling Performance of Iron Fluoride Cathodes	1106
<i>Julian F. Baumgartner, Dragos C. Stoian, Kenneth P. Marshall, Mohammad Jafarpour, Matthias Klimpel, Wouter van Beek, Sina Abdolhosseinzadeh, Kostiantyn V. Kravchyk, Maksym V. Kovalenko</i>	

A07 - Electrolyte 5

(Invited) Redefined Battery Science and Engineering after 100 Years of Debye-Hückel Theory	1108
<i>Atsuo Yamada</i>	

The Effects of Low-Temperature Exposures on Li-Ion Battery Performance	1109
<i>Mihir Ojha, Shervin Alaei, Luke Lounsbury, Md Mahdi Ul Ishtiaque, Stuart Leland, Jayanth Ramamurthy, Steve Martin, Cary L. Pint, Todd A. Kingston</i>	

How Low Temperature Heat Transfer Fluids Improve Localized High-Concentration Electrolytes for Lithium-Metal Batteries.....	1111
<i>Dominik Weintz, Christian Woelke, Martin Winter, Isidora Cekic-Laskovic</i>	

A07 - Solid Electrolyte 1

(Invited) Interface Design Strategy for Solid State Batteries	1112
<i>Xin Li</i>	

Enabling High-Voltage Stability in Solid-State Battery Cathodes with ALD Coatings.....	1113
<i>Manoj K. Jangid, Tae H. Cho, Tao Ma, Daniel W. Liao, Hwangsun Kim, Younggyu Kim, Miaofang Chi, Neil P. Dasgupta</i>	

The Effect of Cation-Disorder on Lithium Transport in Halide Superionic Conductors	1115
<i>Peichen Zhong, Sunny Gupta, Bowen Deng, KyuJung Jun, Gerbrand Ceder</i>	

Enabling 5V Solid-State Lithium Metal Batteries Using Catholyte for $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ Spinel.....	1116
<i>Chae-Ho Yim, Zouina Karkar, Mohamed S.E. Houache, Daeil Kim, Boyun Jang, Yaser Abu-Lebdeh</i>	

A07 - Characterization 3

(Invited) Tracking Lithiation with Advanced Transmission Electron Microscopy	1117
<i>Dong Su</i>	

NMR Studies of High Voltage Electrolyte Decomposition Reactions.....	1118
<i>Haoyu Liu, Stefan Ilic, Jordi Cabana, Dusan Strmcnik, Baris Key</i>	

Facile Characterization of the Lithium Metal/Electrolyte Interface through Nonlinear Electrochemical Impedance Spectroscopy	1119
<i>Rose Yesl Lee, Jun Liu, Daniel T. Schwartz</i>	

Observing Real-Time SEI Formation on Silicon(-containing) Anodes By Operando ATR-FTIR Spectroscopy	1121
<i>Matthias Weiling, Christian Lechtenfeld, Felix Pfeiffer, Lars Frankenstein, Diddo Diddens, Jian-Fen Wang, Sascha Nowak, Masoud Baghernejad</i>	

A07 - Poster Session 2

Fluorine-Free Binder-Based Dry Thick Electrodes Toward Sustainable and Efficient Libs	1123
<i>Minkyung Kim, Jinsoo Kim</i>	

Understanding Temperature Effects in Silicon-Containing Lithium-Ion Batteries.....	1124
<i>Ji-Youn Bae, Seung-Ho Yu</i>	

Resilient Binder Network with Enhanced Ionic Conductivity for High-Areal-Capacity Si-Based Anodes in Lithium-Ion Batteries	1126
<i>Sungryong Kim, Taiho Park</i>	

Electrochemical Behavior Variation of Graphite/LiNi _{0.6} Co _{0.2} Mn _{0.2} O ₂ Cells during Overdischarge.....	1128
<i>Bong Jin Kim, Geon Woo Yoon, Ji Heon Ryu</i>	
Effects of Overcharge Voltage on Capacity Degradation Behaviors in Graphite/Ncm Full Cells	1129
<i>Chang Hun Lim, Ji Heon Ryu</i>	
Surface Engineering of LiNi _{0.8} Co _{0.1} Mn _{0.1} O ₂ By Ultrathin Al ₂ O ₃ Via Atomic Layer Deposition.....	1130
<i>Changwoo Byun, Yeongtae Choi, hee-Soo KIM, Seokyeon Shin</i>	
Electrode Design and Processing for Enhancing Performance of LiMn _{0.6} Fe _{0.4} PO ₄ Positive Electrode in Lithium-Ion Batteries	1131
<i>Nan Young Go, Min Seo Cho, Ji Heon Ryu</i>	

VOLUME 3

Fabrication of High Loading Film Cathode for Thermal Battery	1132
<i>Won Jun Ahn, Mi Seon Park, Yusong Choi, Sang Hyeon Ha</i>	
A Mechanistic Way Triggering the Reversible Intercalation-Conversion Combined Chemistry for High Energy Density Lithium Ion Battery	1133
<i>Jaehoon Heo, Kisuk Kang</i>	
Designing Polymeric Protective Layer Incorporating Functional Additives and Nanofillers for Lithium Metal Batteries.....	1134
<i>Heesu Kim, Ji-Wan Kim, Myungkeun Oh, Dong-Hyun Lee, Samuel Seo, Dong-Won Kim</i>	
Protective Double-Layer Composed of Solid Polymer Electrolyte and Lithiophilic Membrane for Electrodepositing Li Metal	1135
<i>Hee Joo Choi, Ji-Wan Kim, Hongyeul Bae, Jinhong Kim, Dong-Won Kim</i>	
Ester-Based Dual Co-Solvents for Improving Low Temperature Performance of Lithium Iron Phosphate Battery	1136
<i>Jin-Young Oh, Jinhong Seok, Da-ae Lim, Seong-Jae Lim, Dong-Won Kim</i>	
Precise Electrochemical Analysis of Carbon-Based Negative Electrode	1137
<i>Daiki Dosho, Shinji Matsumoto, Hayate Mukofukasawa, Takao Kunimi, Yoshikazu Kobayashi, Shiro Seki</i>	
Extraction of Performance Factors for Clay-Type-Solid-State Batteries Based on Electrochemical Evaluation.....	1141
<i>Keigo Suzuki, Takaaki Ichikawa, Kento Okanishi, Rintaro Mogi, Shiro Seki</i>	
Azacyclic Anchor-Enabled Cohesive Graphite Electrodes for Sustainable Anion Storage	1144
<i>Jieun Kang, Jaegeon Ryu, Soojin Park</i>	
Hetero-Layer Solid State Electrolyte of Thermal Batteries with Lithium Metal Anode for Reducing Self-Discharge	1145
<i>Jaein Lee, Sang-Hyeon Ha, Yusong Choi</i>	
Operando FTIR Characterization of Interphases from Organosulfur Electrolytes in High Voltage Lithium-Ion Batteries	1146
<i>Ziqi Liu, Jeffrey Lopez</i>	

Anode Properties of Si-Based Composite Electrodes Containing Two Silicides with Different Functions for Lithium-Ion Batteries	1147
<i>Ryuto Tanaka, Yasuhiro Domi, Hiroyuki Usui, Takuya Yamaga, Kei Nishikawa, Hiroki Sakaguchi</i>	
Development of Porous Silicon Nanowires with Conductive Paths and Large Specific Surface Area for Application to Lithium-Ion Batteries	1149
<i>Shinya Kato, Habin Li, Yosuke Ishii, Yasuyoshi Kurokawa, Tetsuo Soga</i>	
Enhancing Performance of Li-Metal Batteries through Optimization of Their Overall Potential Diagram	1150
<i>Zhong Fang, Seongjae Ko, Atsuo Yamada</i>	
3D Lithium-Metal Anode for High-Energy Lithium-Metal Batteries.....	1151
<i>Kookhan Kim, Ji-Yong Eom, Jongmin Kim, Yang Soo Kim</i>	
Influence of Oxygen Defects on Electrochemical Performance of Ni-Rich Layered Oxides for Future Lithium-Ion Batteries	1152
<i>David Henseler, Kilian Vettori, Steffen Schröder, Takashi Nakamura, Anja Henss, Jürgen Janek</i>	
Lithium Metal Batteries Using Lithiophilic Oxidative Interfacial Layer on the 3D Porous Metal Alloy Media.....	1153
<i>Yusong Choi, Jaein Lee, Tae-Young Ahn, Eunji Yoo, Jae-Seong Yeo</i>	
Performance of Lithium–Sulfur Battery with Ionic Liquids for Deep Space Environment under High Radiation Dose	1154
<i>Atsushi Uehara, Yoshitsugu Sone, Masashi Ishikawa</i>	
Advancing Electrolyte Stability in Lithium Metal Batteries: A Strategy to Suppress Ionic Liquid Decomposition through Lithium Solvation Power Optimization	1156
<i>Sewon Eom, Minhee Park, Hongkyung Lee, Wonbo Lee, Hochun Lee</i>	
Facile Lithium Densification Kinetics By Hyperporous/Hybrid Conductor for High-Energy-Density Lithium Metal Batteries.....	1158
<i>Dong-Yeob Han, Gyujin Song, Soojin Park</i>	
Corrosion Inhibition of Stainless Steel in Highly Concentrated $\text{Li}(\text{SO}_2\text{F})_2$ Electrolyte Solutions with Organophosphate Esters	1159
<i>Kota Shintani, Takayuki Doi, Minoru Inaba</i>	
Doping Engineering of Manganese on Cobalt Oxide in Particle Size-Controllable Compound Anode for Lithium-Ion Batteries	1161
<i>Ji-Won Jung, Hyunmin Na, Na-Yeong Kim, Ho-Jin Lee, Jeong-Ho Park, Jae-Woo Seo, Seon-Jin Choi, Jiyoung Lee, Hyun-Suk Kim, Jun Young Cheong</i>	
Experimental and Theoretical Study of the Performance of Li-Oxygen Batteries with Multiwall Carbon Nanotube Cathodes	1162
<i>Petru Andrei, Emil Lobachev</i>	
Tailoring Particle Size/Morphology for the Stable Cathode Performance of Polygonal-Shaped $\text{Li}(\text{Ni},\text{Mn})_2\text{O}_4$ Single Crystals.....	1163
<i>Minseuk Kim, Seulki Ji, Ho Jin Lee, Sun Sook Lee, Young-Chul Song, Yongseon Kim, Sungho Choi</i>	
Gradient Lithiophilic Composite Electrodes for Dendrite-Free Lithium Metal Batteries.	1164
<i>Byeong-Il Oh, Hyun-Kyung Kim</i>	

Enhance Electrochemical Performance of Lithium-Based Batteries Assisted by Vibration.....	1166
<i>Taeksoo Jung, Junho Suh, Seunghun Baek, Byeongyong Lee</i>	
Enhancing Stability of Glass Fiber Separators in Lithium-Ion Batteries through Sol-Gel Hybrid Coatings.....	1167
<i>Taewook Kang, Young Ji Park, Jin Ho Kim, Sun Woog Kim, Mi Jai Lee</i>	
Preparation of 3DOM PI-Ion Gel Composite Electrolyte Membranes for Li Metal Batteries.....	1168
<i>Yuma Shimbori, Kiyoshi Kanamura</i>	
Exploring the Relationship between Ion Diffusion and Molecular Structure of Gel Polymer Electrolytes Using NMR Spectroscopy	1170
<i>Dokyung Kim, So Jung Seo, Ji-Hun Seo, Young Joo Lee</i>	
Postmortem Lithium-7 NMR Analysis to Evaluate the Reversibility of Lithium Metal Electrodes and the Behavior of Li ⁺ in Lithium Metal Batteries	1171
<i>Jaewon Baek, Sun Ha Kim, Hee-Tak Kim, Oc Hee Han</i>	
Mitigating Gas Evolution in Electron Beam-Induced Gel Polymer Electrolytes through Bi-Functional Cross-Linkable Additives	1172
<i>Soojin Park, Seoha Nam, Hye Bin Son, Yeongseok Kim, Jin-Hyeok Jeong</i>	
Cycleability of SiO _x Nano-Flake Anode in Glyme-Based Localized High Concentration Electrolytes Using Fluorinated Diluents.....	1175
<i>Mai Nakanishi, Minoru Inaba, Takayuki Doi</i>	
Development of Localized High-Concentration Electrolytes Containing DME Solvent for Long-Life and High-Power Lithium-Ion Batteries.....	1178
<i>Hirotaka Nakagawa, Keigo Aoyama</i>	
Optimization of Electrolyte Composition to Suppress Al Corrosion in Localized High-Concentration Electrolytes	1180
<i>Keigo Aoyama, Hirotaka Nakagawa</i>	
Fabrications of Graphene Oxide and Silver Nanowire Hybrid Nanocomposites for Li-Metal Anodes with Dendrite Suppression	1182
<i>Sojeong Won, Bongjun Yeom</i>	
Investigation of the Passivation Reaction of Li Metal in Liquid Electrolytes Using Microcalorimetry.....	1183
<i>Sascha Berg, Ferdinand Fonck, Egbert Figgemeier</i>	
Advanced Dual-Layer Protection for Lithium Metal Anodes in Lithium-Sulfur Batteries with Reduced Electrolyte Volume	1184
<i>Jiyeon Seo, Bokyoung Choi, Hongkyung Lee</i>	
Preserving the Lithium Affinity of Thin Li-Alloy Coatings on Current Collectors for No-Excess Lithium Metal Batteries.....	1185
<i>Jiyeon Seo, Jiwon Lee, Hongkyung Lee</i>	
Preventing Lithium Dendrites on Fast Charging Batteries Using Interface Control	1186
<i>Jiin Lee, Kihun An, Yen Hai Thi Tran, Dung Tien Tuan Vu, Seung-Wan Song</i>	
Development of High-Capacity Black Phosphorus Carbon Composite Anode Material with Suppressed Dendrite Generation and Its Lithium-Ion Batteries	1187
<i>Naoki Inui, Ralph Nicolai Nasara, Hiroki Hashiwaki, Daisuke Inokuchi, Izumi Yamada, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	

Enhancement of Electrochemical Properties of Carboxylate-Based Single-Ion Conducting Polymers through Complexation with Ionic Liquids for Lithium-Ion Batteries.....	1190
<i>Dongwook Kim, Shizuka Okada, Hideto Nakajima, Daisuke Inokuchi, Izumi Yamada, Jinkwang Hwang, Takeshi Abe, Makoto Ouchi, Kazuhiko Matsumoto, Naoki Inui</i>	
Combined Chemical and Heat Treatment of Graphite from Spent Zn-C Batteries for Li-Ion Batteries.....	1192
<i>Jitti Kasemchainan, Karthik kumar Chinnakutti, Hojung Yun, Nagahiro Saito</i>	
Cycle Performance of Si Film Negative Electrodes with Lithium Fluoride Coating As an Artificial SEI.....	1193
<i>Mayu Sonoda, Masakazu Haruta</i>	
Lithium Dendrite-Free High-Voltage Lithium-Ion Pouch Cell Enabled By Ambi-Functional Additive.....	1195
<i>Dung Tien Tuan Vu, Jinsol Im, Jaehee Kim, Jisoo Han, Gyeongjun Chung, Giang Thi Huong Nguyen, Seo Junhyeok, Minjae Kim, Eui Hyung Hwang, Young Gil Kwon, Jae Wook Shin, Kuk Young Cho, Seung-Wan Song</i>	

A07 - Anode Interface 5

(Invited) Environmentally Benign Solvents Processed Electrically Conductive Polymer Binder for Si Battery.....	1196
<i>Gao Liu</i>	
H-Cell Evaluation of Electrolyte Solvation Energies in the Presence of Silicon Electrodes.....	1197
<i>Josefine McBrayer, Maxwell C. Schulze, Chaz Rich, Katharine L. Harrison</i>	
Revealing the Fading Mechanism of Long-Term Cycling Performance of Graphite/Silicon Composite Anode for Lithium-Ion Batteries	1198
<i>Yoon Jeong Choi, Seung-Ho Yu</i>	
Ethereal Based Electrolytes for Ultrastable $\text{LiNi}_{0.8}\text{Mn}_{0.1}\text{Co}_{0.1}\text{O}_2$ (NMC811) Si Full Cells.....	1200
<i>Xianyang Wu, Xinlin Li, Khalil Amine, Dezhen Wu, Tianyi Li, Chi Cheung Su, Zhenzhen Yang, Brian J. Ingram</i>	
Advanced Analysis of Binder Distribution within Multilayer Composite Electrodes of Lithium Ion Batteries.....	1201
<i>Cheol Bak, Kyung-Geun Kim, Hyuntae Lee, Youngjoon Roh, Cyril Bubu Bubu Dzakpasu, Jaemin Lim, Hyobin Lee, Hongkyung Lee, Yong Min Lee</i>	

A07 - Electrolyte 6

(Invited) Long-Lifetime $\text{LiMn}_x\text{Fe}_{1-x}\text{PO}_4$ /Graphite Cells Enabled By Advanced Electrolytes.....	1202
<i>Kate Leslie, Assylzat Aishova, Jessie Harlow, Divya Rathore, Kenneth Tuul, Jeffin James Abraham, Michael Metzger</i>	
Localized High-Concentration Electrolytes for High-Voltage Disordered Rocksalt Cathode Materials.....	1203
<i>Ridwan Ahmed, Krishna Prasad Koirala, Chongmin Wang, Wu Xu</i>	
Electrolytes Towards High Voltage Mn-Rich Cathodes	1204
<i>Qian Liu, Qijia Zhu, Zhengcheng Zhang</i>	

An Unwanted Guest in the Electrochemical Oxidation of High-Voltage Li-Ion Battery Electrolytes: The Life of a Superacidic Proton.....	1205
<i>Stefan Ilic, Milena Zorko, Pedro Farinazzo Bergamo Dias Martins, Haoyu Liu, Jingtian Yang, Zhengcheng Zhang, Justin G. Connell, Baris Key, Jordi Cabana, Dusan Strmcnik</i>	

Weakly Coordinating Solvents with FSI-Inspired Structures for Highly Efficient Lithium Metal Batteries.....	1206
<i>Shoma Nishimura, Yasuyuki Kondo, Kazuki Takeuchi, Yu Katayama, Kouki Oka, Yuki Yamada</i>	

A07 - Cathode Interface 5

High-Capacity Fe-Rich Disordered Rock-Salt Li-Ion Cathode Materials Achieved via Redox Engineering	1210
<i>Richie Fong, Jinhyuk Lee</i>	

Structural Origins of High Performance in Partially Disordered Li- and Mn-Rich Cathodes.....	1211
<i>Shashwat Anand, Tara Mishra, Peichen Zhong, Zinab Jadidi, Tina Chen, Gerbrand Ceder</i>	

Understanding High Voltage Electrolyte Reactivity on Cation-Disordered Rock Salt Cathodes	1212
<i>Justin Rastinejad, Bryan D. McCloskey</i>	

Coatings Based on Single-Ion and Intrinsically Conducting Polymers for High-Voltage Cathode Materials.....	1213
<i>Luis Miguel Guerrero Mejía, Francisco Ruiz-Zepeda, Elena Tchernychova, Robert Dominko</i>	

A07 - Characterization 4

(Invited) Blended Positive Electrode Materials for Li-Ion Batteries: Electrode Dynamics and Operando XRD.....	1214
<i>M. Palacin</i>	

Nucleation Behavior of Pitting and Evolution of Stripping on Lithium Metal Batteries	1215
<i>Hanrui Zhang, Mert Ulusel, Feifei Shi</i>	

Positive-to-Negative Electrode Cross-Talk in Lithium-Ion Batteries.....	1216
<i>Bernardine L. D. Rinkel, Bryan D. McCloskey</i>	

Insights into the Lithium Solvation Environments of Localized High Concentration Electrolytes by NMR and Effects on NMC811/Gr Cell Performance	1217
<i>Sarah Lucienne Guillot, Monica Lee Usrey, Peng Du, Suresh Sriramulu</i>	

Case Dependent Metal Dissolution in Li/NMC Batteries.....	1219
<i>Laura C Merrill, Hannah Kay Gruenwald, Josefine McBrayer, Keith J. Fritzsche</i>	

A07 - Anode Interface 6

Defect and Interphase Engineering in Electrode Materials for Lithium-Ion Batteries	1220
<i>Claire Xiong</i>	

Approaches to Improve Both Cycle and Calendar Life of Silicon-Based Lithium-Ion Batteries.....	1221
<i>Ju-Myung Kim, Dahee Jin, Xia Cao, Ji-Guang Zhang</i>	

High-Energy-Density Battery Design with COF Modified MXene Coating on Li Metal as Anode	1222
<i>Junjie Niu</i>	

Novel Polymeric Lithicone Coatings for Addressing the Issues of Lithium Anodes.....	1223
<i>Xiangbo Meng, Kevin Velasquez, Aiying Shao</i>	

A07 - Other 1

(Invited) Multifunctional Polymeric Metal Phthalocyanine Hosts and Artificial Layers for Li Metal and Li-S Batteries	1225
<i>Ho Seok Park</i>	
Enhancing the Energy Density and Cycle Life of Li/Sulfurized Polyacrylonitrile (SPAN) Batteries	1226
<i>An Phan, Phung M-L LE, Chunsheng Wang</i>	
A Sulfurized Carbon Cathode for High-Capacity and Long-Life Lithium–Sulfur Batteries	1227
<i>Mei Luo, Caleb Aaron Calvary, Yan Qin, Andrew N. Jansen, Zachary D. Hood, Yuzi Liu, Rodrigo Villegas Salvatierra, Wenquan Lu</i>	

A07 - Solid Electrolyte 2

(Invited) Mechanisms Governing Lithium Metal and Alloy Anodes in Solid-State Batteries.....	1228
<i>Matthew Todd McDowell</i>	
The Impact of Lithium Anode Interface on Capacity Fade in Polymer Electrolyte-Based Solid-State Batteries.....	1229
<i>Kyra D'Yana Owensby, Jiyoung Ock, Ritu Sahore, Harry M Meyer, Yan-Ru Lin, Wan-Yu Tsai, Xi Chelsea Chen</i>	
Interfacial Phase Separation Governs the Chemomechanics of Polymer Electrolytes in High-Voltage, Solid-State Lithium Batteries	1230
<i>Jungki Min, Seongmin Bak, Nicholas Pietra, Dawei Xia, Louis A. Madsen, Feng Lin</i>	
Ion Transport Enhancement Mechanism in Polymer/Ceramic Composite Electrolyte with High-Entropy Li-Garnet	1231
<i>Jiyoung Ock, Michelle Lehmann, Zhezhen Fu, Yangyang Wang, Amit Bhattacharya, Tao Wang, Sheng Dai, Raphaele J Clement, Alexei P. Sokolov, Xi Chelsea Chen</i>	
Achieving a Uniform Solid Structure for Poly-1,3-Dioxolane-Based in-Situ Polymer Electrolytes Via Proton Scavenging	1232
<i>Youngbin Yoon, Hyun-Kon Song</i>	

A07 - Other 2

(Invited) Thin Organic Crystal Films of Single Li ⁺ Ion Conductors for Lithium-Ion Batteries	1234
<i>Hye Ryung Byon</i>	
Chalcogenide-Based Gels As High-Capacity Electrodes for Lithium-ion Batteries.....	1235
<i>Saiful M. Islam, Islam Taohedul, Misganaw Weret, Subrata Roy, Sahar Bayat, Keerthan Rao, Mengya Li, Chad M. Risko, Kamila Wiaderek, Ruhul Amin</i>	
Composite Lithium and Thick Cathode for High-Energy Long-Cycling Lithium-Sulfur Batteries	1236
<i>Sicen Yu, Shen Wang, Qiushi Miao, Zeyu Hui, Gayea Hyun, Zhi Peng, John Holoubek, Xiaolu Yu, Junwei Gao, Jihui Yang, Ping Liu, Jun Liu</i>	

Highly Reversible Lithium Deposition and Stripping Under Practical Conditions through Improved Wettability of Polyolefin Separator to Highly Concentrated Electrolytes	1237
<i>Yosuke Ugata, Naoaki Yabuuchi</i>	

New Insights into the Effect of Cellulose-Based Separators on Electrode-Electrolyte Interface in Lithium Metal Batteries.....	1238
<i>Hunter Addison McRay, Drew J. Pereira, Golareh Jalilvand</i>	

A07 - Solid Electrolyte 3

Synthesis and Characterization of Lithium Thioborates as Solid Electrolyte for Battery Applications	1240
<i>Richeal Akese Oppong, Kirill Kovnir, Steve Martin</i>	

Lithium Electrode Protection for Long Cycle Life, High Energy Density and High-Rate Capability Batteries.....	1241
<i>Yuriy Mikhaylik, Chariclea Scordilis-Kelley, Mike Laramie, Wenzhuo Yang, Carlos Restrepo</i>	

Rationally Designed Li-Ag Alloy with in-Situ Formed Solid Electrolyteinterphase for All-Solid-State Lithium Batteries	1242
<i>Myungkeun Oh, Ye-Eun Park, Hui-Tae Sim, Hyojin Kim, Yun-Sun Cho, Seongjin PARK, Dong-Won Kim</i>	

Preparation of Solid Electrolytes Containing Highly Concentrated Electrolytes and Effects of Solidifying on Physicochemical Properties	1243
<i>Rintaro Mogi, Reita Furui, Shiro Seki</i>	

A07 - Electrolyte 7

High Voltage Li-Ion Batteries: Identical Additives but Different Impacts in EC-Based vs. EC-Free Electrolytes	1246
<i>Johannes Kasnatscheew, Sven Klein, Tobias Placke, Lukas Stolz, Martin Winter</i>	

Safety of Lithium-Ion Batteries with Regard to Film Forming Additives Vinylene Carbonate and Fluoroethylene Carbonate	1248
<i>Karsten Geuder, Hans Jürgen Seifert, Carlos Ziebert</i>	

Understanding Performance Issues in Gr/Lfp: An Exploration of Electrochemical Testing Parameters and Origins of Gassing	1249
<i>Brian M Kerber, Sarah Lucienne Guillot, Peng Du, Liu (Amy) Zhou, Shipra Garg, Matthew Hennek, Monica Lee Usrey</i>	

Towards Understanding the Structure and Dynamics of Localized High-Concentration Battery Electrolytes.....	1250
<i>Anne Hockmann, Diddo Diddens, Isidora Cekic-Laskovic, Monika Schönhoff</i>	

Lithium Metal Anode Using Polyacrylonitrile Supported Metal Nitrates As an Additive in Carbonate-Based Electrolyte	1252
<i>Hyeonmuk Kang, Jung Hyeon Moon, Yeonbeom Cho, Heechan Kang, EunAe Cho</i>	

The Importance of Electrolyte Additive Interactions: A Case Study in LNO Graphite Battery Chemistry	1253
<i>Christian Woelke, Anass Benayad, Felix Hanke, Giorgio Baraldi, Maria Echeverria, Ekin Esen, Elixabete Ayerbe, Alex R. Neale, Jacqui Everitt, Laurence J. Hardwick, Peng Yan, Marcin Poterala, Wladyslaw Wieczorek, Martin Winter, Isidora Cekic-Laskovic</i>	

A07 - Cathode Interface 6

Interfacial and Electrolyte Solution Reactions at Nickel-Rich Electrodes	1255
<i>Kieran Jones, Benjamin Denison, Rory McNulty, Darren Anthony Walsh, Graham Newton, Lee R Johnson</i>	
Understanding Electrolyte Stability and Instability in Lithium-Ion Batteries with Nickel-Rich Cathodes	1256
<i>Jason S Terreblanche, Tongjun Luo, Louis F. Piper, Wesley M. Dose</i>	
Interfacial Stability of Ru-Based Li-Rich Layered Oxide Cathode by Guaiacol as an Organic Superoxide Dismutase Mimics	1258
<i>Jeongin Lee, Jonghak Kim, Chihyun Hwang, Hyun-Kon Song</i>	
LiNiO ₂ Mechanical and Phase Stability Improvements at Deep Charge Predicted by Pillaring	1260
<i>Matthew Bergschneider, Fantai Kong, Taesoon Hwang, Kyeongjae Cho</i>	
Aqueous Processing of Ni-Rich Layered Oxide-Based Cathodes: Evaluating Strategies Via Additives, Binders and Coatings	1261
<i>Simon Albers, Martin Winter, Johannes Kasnatscheew</i>	
Study of Electrochemical Characteristics of Differently Produced Nickel-Rich Cathodes	1263
<i>Tim Grenda, Arno Kwade</i>	

A07 - Other 3

Enhancing Performance of Lithium Sulfur Batteries with Electrode-Electrolyte Interphase Engineering	1265
<i>Hsun-Yi Chen, Cindy Rusly</i>	
New Hybrid Nano-Architecture of Sulfur Electrode for Lithium-Sulfur Batteries	1266
<i>Mariam Ezzedine, Fatme Jardali, Ileana Florea, Costel Sorin</i>	
Manipulating the Electronic Structure of Polar Eelectrocatalysts for Rapid Sulfur Redox Kinetics.....	1267
<i>Huifang Xu, Qingbin Jiang, Kwan San Hui, Kwun Nam Hui</i>	
Electrolyte Li ⁺ Chemical Potential as a Descriptor of Li ⁺ Intercalation Behavior of Graphite Negative Electrodes.....	1268
<i>Haruna Nakajima, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
Conversion Mechanism-Driven Lithium Storage in Sr ₂ CoMoO ₆ Double Perovskite for High-Performance Anode	1270
<i>Shahan Atif, Yunpei Zhu, Yusuf Khan, Dorothy Sachdeva, Husam Niman Alshareef, Prabeer Barpanda</i>	

A08-MATERIALS AND INTERFACIAL ELECTROCHEMISTRY FOR SOLID STATE BATTERIES

A08 - Solid Electrolytes 1

(Invited) New Class of Halide-Based Na-Ion Conducting Solids and a Critical Role of the Anion Framework.....	1272
<i>Saneyuki Ohno, Zheng Huang</i>	

Discovery of Lithium Solid State Electrolytes through Machine Learned Probability Density Analysis.....	1274
<i>Karun K. Rao, Michael Nikolaou, Yan Yao, Christopher M. Wolverton, Lars Christian Grabow</i>	
Rotational Behavior Analysis of Cluster Anions in Solid-State Electrolytes via MD Simulation.....	1275
<i>Sunil Mair, Jeffrey Smith, Donald J. Siegel, W. Craig Carter, Yet-Ming Chiang</i>	
Ionic Conductivity Transitions in Sodium Antiperovskite Ionic Conductors	1278
<i>Duhan Zhang, Yiliang Li</i>	
Synthesis, Structure and Property Analysis of Argyrodite-Type $\text{Li}_{5.5}\text{PS}_{4.5-x}\text{Br}_{1.5}\text{O}_x$ solid Electrolytes.....	1279
<i>Rei Tsukazaki, Naoki Matsui, Satoshi Hori, Kota Suzuki, Ryoji Kanno</i>	
Hidden Electronic Disorder behind Diffusion in Solid-State Electrolytes	1281
<i>Harender Dhattarwal, Rahul Somni, Richard C. Remsing</i>	
Unraveling the Degradation Mechanisms in Composite Solid Polymer Electrolyte through in-Situ Impedance and Ex-Situ SEM	1282
<i>Cindy Rusly, Hsun-Yi Chen</i>	
Strategies for Design and Synthesis Novel Sulfide-Type Na-Ion Conductors.....	1283
<i>Hui Wang, Xiaolin Guo, Selim Halacoglu</i>	

A08 - Electrodes and Interfaces 1

(Invited) Studying in-Situ Passivating Interphase between Halide Solid-Electrolyte and Li-Based Anode in All-Solid-Statebatteries	1284
<i>Se Young Kim, Seong-Min Bak, KyuJung Jun, Gerbrand Ceder, Guoying Chen</i>	
Constriction Effect in All-Solid-State Cathodes.....	1285
<i>Moritz Bohn, Gioele Conforto, Tobias Kutsch, Robin Schuster, Hubert Andreas Gasteiger</i>	
Correlation between Active Material/Solid Electrolyte Interface Formation and Cell Performance in All-Solid-State Battery	1287
<i>Shusuke Kawaguchi, Minoru Kuzuhara, Takuhiro Miyuki</i>	
Understanding Degradation Behavior in All-Solid-State Batteries through Scanning Spreading Resistance Microscopy.....	1289
<i>Hirotsada Gamo, Yasushi Maeda, Tetsu Kiyobayashi, Zyun Siroma, Nobuhiko Takeichi, Hikaru Sano</i>	
Reaction Pathways and Electrochemistry of Various Alloy Anodes in Solid-State Batteries.....	1290
<i>Won Joon Jeong, Congcheng Wang, Sun Geun Yoon, Yuhgene Liu, Timothy S Chen, Matthew Todd McDowell</i>	
Deconvolved First Cycle Capacity Loss Mechanisms in All-Solid-State Batteries.....	1291
<i>Emma Kaeli, Zhelong Jiang, Xiaomian Yang, Emma P.K.L Choy, Nicolas Liang, Sunny Wang, Eddie Barks, Stephen D. Kang, William C. Chueh</i>	
Evaluation of Oxide Sulfide Heteroionic Interface Stability with $\text{LLZO} \text{Li}_7\text{P}_3\text{S}_{11}$ and $\text{LLZO} \text{Li}_6\text{PS}_5$ Cl As Fundamental Case Studies.....	1292
<i>Leonardo Merola, Max Palmer, Vipin K. Singh, Janis K. Eckhardt, Sebastian L. Benz, Till Fuchs, Felix H. Richter, Linda F. Nazar, Jeff Sakamoto, Jürgen Janek</i>	

Revealing Morphological and Chemical Changes of Nickel-Rich Oxide Cathodes in Sulfide-Based All-Solid-State Batteries.....	1294
<i>Xueli Zheng, Yukio Cho, Guang Yang, Jagjit Nanda</i>	
How Reproducible Is the Performance of All-Solid-State Battery Cells? A Round Robin Study	1295
<i>Sebastian Puls, Nella Marie Vargas-Barbosa</i>	
Understanding and Controlling Stack Pressure Inhomogeneity in Anode-Free Solid-State Batteries.....	1296
<i>Micah Thorpe, Mengyao Zhang, Daniel W. Liao, Younggyu Kim, Stephanie Elizabeth Sandoval, Douglas Lars Nelson, Pavel Shevchenko, Matthew Todd McDowell, M.D. Thouless, Neil P. Dasgupta</i>	

A08 - Materials and Cells 1

(Invited) Overview of the Project Solid-Next “Evaluation of All-Solid-State Battery Materials and Foundational Technology Development for Next Generation”	1297
<i>Yoshiya Fujiwara, Minoru Kuzuhara, Wataru Ogiwara, Koji Kawamoto, Takuhiro Miyuki</i>	
(Invited) Overview and Outlook of Korea’s Battery Industry	1299
<i>Jeongdoo Yi</i>	
Degradation Analysis of Composite Electrodes for Sulfide-Based All-Solid-State Batteries during Long-Term Storage.....	1300
<i>Junhee Kang, Beomsu Kim, Jonghyeok Yun, Jong-Won Lee</i>	
Relating Capacity Loss to Crack Propagation in All-Solid-State Batteries - a 3D Imaging Study.....	1301
<i>Adrian Lindner, Vivien Kiyek, Matthias Mail, Wolfgang Menesklou, Martin Finsterbusch, Torsten Scherer, Christian Kübel, Dina Fattakhova-Rohlfing, Olivier Guillon, Ulrike Krewer</i>	
Solid-State Architecture Batteries for Enhanced Rechargeability and Safety (SABERS) Beyond Li-Ion: Technology to Enable Next-Generation Sustainable Electric Aviation	1303
<i>Rocco P. Viggiano, Donald Dornbusch, Yi Lin, Vesselin I Yamakov</i>	
How Much Safer Are Solid State Cells? - Quantified Failure Analysis of Next-Generation Solid State Cells during Abuse Testing	1305
<i>Huw Christopher William Parks, Paul R Shearing, James B Robinson</i>	
Identification of the Limiting Factors to Improve the Cycling Stability of Sulfide-Based ASSBs	1306
<i>Gioele Conforto, Moritz Bohn, Leon Hüttinger, Tobias Kutsch, Robin Schuster, Hubert Andreas Gasteiger</i>	
Enhanced Thermal Stability of Charged Cathodes in All-Solid-State Batteries Using Halide Solid Electrolytes	1309
<i>Sung-Kyun Jung</i>	
A Chemo-Mechanical Particle Model for the Fabrication and Cyclic Expansion of Silicon Composite Solid-State Batteries	1310
<i>Magnus So, Takeru Yano, Agnesia Permatasari, Van Lap Nguyen, Gen Inoue</i>	
The Critical Role of Pressure Uniformity in Enhancing the Performance and Safety of Solid-State Batteries.....	1312
<i>Kyoungwhan Kim, Jaeho Shin</i>	
Assessment of Critical Stack Pressure and Temperature in Li-Garnet Batteries	1313
<i>Matthias Klimpel, Huanyu Zhang, Giulia Paggiaro, Romain Dubey, Faruk Okur, Lars P.H. Jeurgens, Kostiantyn V. Kravchyk, Maksym V. Kovalenko</i>	

A08 - Materials and Cells 2

(Invited) Development and New Perspectives in Lithium Ion Conductors and Solid-State Batteries.....	1314
<i>Ryoji Kanno, Satoshi Hori, Keisuke Shimizu, Kazuhiro Hikima</i>	
Exploring the Molecular Weight Effects of Poly(isobutylene) (PIB) in Slurry-Cast NMC811 Cathode for the Development of Sulfide Solid-State Batteries	1315
<i>Yuanshun Li, Ella Williams, Yi-Feng Su, Jagjit Nanda, Guang Yang</i>	
Development of Eco-Friendly Binders for Silicon Anodes in All-Solid-State Batteries Under Low Operating Pressure	1317
<i>Seunggoo Jun, Haechannara Lim, Yongbae Song, Yoon Seok Jung</i>	
Enabling Co-Firing of Li-Garnet-Electrolyte Tapes for Li-Metal Batteries	1318
<i>Steffen Weinmann, Jennifer L.M. Rupp, Kunjoong Kim</i>	
Fabrication of Thin $\text{Li}_6\text{PS}_5\text{Cl}$ Separators for All-Solid-State Lithium-Ion Batteries	1319
<i>Ingo Bardenhagen, Michael Gockeln, Julian Schwenzel</i>	

A08 - Solid Electrolytes 2

(Invited) Enhancing Performance and Moisture Resistance of Solid Electrolyte in Sulfide-Based All-Solid-State Batteries via Oxygen Integration	1321
<i>Yongsun Park, Yoonsu Shim, Junki Lee, Jong Min Yuk, Chan-Woo Lee, Ryoji Kanno, Sangcheol Nam, Ohmin Kwon</i>	
Surface Reaction of Argyrodite-Type Sulfide Solid Electrolyte in Air with a Dew Point of -20°C	1323
<i>Hikaru Sano, Misae Otoyama, Yusuke Morino, Daisuke Ito</i>	
Borohydride/Halide and Oxyhalide/Halide Composite Electrolytes for Assbs	1324
<i>JiHoon Han, Young-Su Lee, Young Whan Cho</i>	
Reactive Sintering of Garnet Type LLZTO from Pyrochlore Synthesized Using a Nonaqueous Sol-Gel Method.....	1325
<i>Jinzhaio Guo, Candace K. Chan</i>	
Elucidating Ion Transport Phenomena in Sulfide/Polymer Composite Electrolytes for Practical Solid-State Batteries	1327
<i>Kyeong-Seok Oh, Ji Eun Lee, Yong-Hyeok Lee, Yi-Su Jeong, Imanuel Kristanto, Hong-Seok Min, Sang Kyu Kwak, Sang-Young Lee</i>	
Scalable and Flexible Li-Ion Conducting Film Using a Sacrificial Template for High-Voltage All-Solid-State Batteries	1329
<i>Hyun Woo Kim</i>	
Composite Polymer Electrolyte Enabled through 2D g-C $_{37}$ N $_4$ for All Solid-State Sodium-Ion Batteries.....	1330
<i>Sudharshan Vasudevan, Sushmita Dwivedi, Palani Balaya</i>	
Strong and Flexible PEO/Pvdf Polymer Composite Electrolyte for All Li Metal Solid-State Battery	1332
<i>Bapi Bera, Douglas S Aaron, Matthew M Mench</i>	
Enhanced Lithium-Ion Pathway in Gel-Polymer Electrolytes through Nanoclay-Organic Composite Design Strategy	1334
<i>Younggyun Choi, Jong Hyeok Park, Seungho Cho, Jong Kyoung Kim</i>	

Organic Ice Electrolytes for Lithium Batteries.....	1336
<i>Do Sol Cheong, Hyun-Kon Song</i>	

A08 - Solid Electrolytes 3

(Invited) Towards Automated Materials Discovery for Next-Generation Batteries with Solid-State Electrolytes.....	1337
<i>Yan Wang</i>	
Interfacial Effects of the Na Metal State on the Electrochemical Behavior on β "-Alumina Solid Electrolyte	1338
<i>Jie Qiu, Di Wang, Jinkwang Hwang, Kazuhiko Matsumoto</i>	
Improvement of Sodium-Ion Conductivity in Sulfide Electrolytes for All-Solid-State Batteries	1339
<i>Akitoshi Hayashi, Kota Motohashi, Atsushi Sakuda</i>	
Thin-Film Glassy Solid Electrolytes: A New Functionality for Glass Enabling High Energy Density All Solid State Batteries	1340
<i>Steve Martin</i>	
Relationship between Crystal Structure and Ionic Conductivity in Structural Polymorphs of Li ₂ MS ₃ (M = Si, Ge) Solid Electrolytes	1341
<i>Yuki Sasaki, Satoshi Hori, Kota Suzuki, Masaaki Hirayama, Yongjun Jang, Ryoji Kanno</i>	
Synthesis Mechanisms of over-Stoichiometric Rocksalt-Type Li Superionic Conductors.....	1344
<i>Xinye Zhao, Yu Chen, Gerbrand Ceder</i>	
A Study on the Relationship between Physical Properties of Inorganic Materials and Electrochemical Stability in All-Solid-State Li-Metal Batteries.....	1345
<i>Heebae Kim, Jeeyoung Yoo, Youn Sang Kim</i>	
All-Solid-State Lithium–Sulfur Batteries Enabled By Single-Ion Conducting Particle Electrolytes	1347
<i>MoonJeong Park</i>	
In Situ Neutron Diffraction Showing Lithium-Yttrium Chloride Local Structure By Synthesis Method	1349
<i>Robert L Sacci, Teerth Brahmabhatt, Cheng Li, Liqun Guo, Jie Zheng, Mounesha N Garaga, Steve G Greenbaum, Yan Yao, Jagjit Nanda</i>	
Thin Solid Electrolyte Membrane Using Porous Template for High Energy Density All-Solid-State Batteries.....	1350
<i>Seok Hun Kang, Jaecheol Choi, Ju Young Kim, Dong Ok Shin, Young-Gi Lee</i>	

A08 - Poster Session

Interfacial Coatings to Enable the High Temperature Co-Sintering of All Ceramic Solid State NMC/LLZO Li Metal Batteries.....	1352
<i>Richard Mariano Hoft, Eric D Wachsman</i>	
Fabricating Highly Functional Li ₄ Ti ₅ O ₁₂ Composite Anodes Using Li ⁺ -Containing Organic Ionic Plastic Crystals	1353
<i>Hiroyuki Ueda, Zak Quattrocchi, Maria Forsyth, Patrick C. Howlett</i>	

Importance of Selecting an Appropriate Li ⁺ Concentration in Prolonging the Cyclability of a Solid-State Si Anode with an Organic Ionic Plastic Crystal.....	1355
<i>Hiroyuki Ueda, Gongyue Huang, Maria Forsyth, Patrick C. Howlett</i>	
Exploring Electrode-Preparation Methods of Si Anodes with Li ⁺ -Containing Organic Ionic Plastic Crystals for High-Energy-Density Solid-State Batteries	1357
<i>Hiroyuki Ueda, Maria Forsyth, Patrick C. Howlett</i>	
Origin of High Ionic Conductivity in Nasicon Type Ionic Conductors	1359
<i>Yufang He, Ajay Shaji, Elena Scivally, Bin Ouyang, Yan Zeng</i>	
Design of Poly(ethylene oxide)-Based Polymer-in-High Concentrated Ionic Liquid Electrolyte for All-Solid-State Lithium Metal Batteries.....	1360
<i>Mingjie Zhang, Urbi Pal, Faezeh Makhlooghi Azad, Shinji Kondou, Luke O'Dell, Giuseppe A Elia, Claudio Gerbaldi, Maria Forsyth</i>	
Improvement of Lithium Metal Electrode Performance with Shot Peening and Sputtering By Controlling Stacking Pressure of All Solid State Battery	1362
<i>Hito Fukusumi, Manabu Kodama, Shuichiro Hirai</i>	
Comparative Analysis of Entropy-Assisted Garnet-Structured Electrolyte in Solid-State Batteries	1364
<i>Mohamed Houache, Shuo Yan, Paul MacIver, Zouina Karkar, Chae-Ho Yim, Yaser Abu-Lebdeh</i>	
Strategies for Mixed Ionic-Electronic Conductivity in Co-Doped Li-Garnet Based Electrolytes.....	1365
<i>Klaudia Pachulska, Aleksandra Cuper, Magdalena Winkowska-Struzik, Przemyslaw Michalski, Michal Struzik</i>	
A Green Synthesis of Battery-Level Carbon Anode from PetCoke Carbon Waste.....	1366
<i>Samprash Risal, Sanam Milapati, Francisco C Robles Hernandez, Zheng Fan</i>	
Halide-Based All-Solid-State Batteries: From Pellet Cells to Pouch Cells	1367
<i>Fengyu Shen, Michael McGahan, John Pietras, Marca M. Doeff, Vincent Battaglia, Mike C Tucker</i>	
Reduction of Li ₂ CO ₃ Surface Species from Garnet-Type Solid-State Electrolytes via Scalable Open-Air Plasma Treatment	1368
<i>Mohammed Sahal, Jinzhao Guo, Candace K. Chan, Nicholas Rolston</i>	
Integrating All-Polymer Solid State Lithium Metal Batteries with High Areal Loading Cathodes.....	1370
<i>Jiyoung Ock, Kyra D'Yana Owensby, Andrew Ullman, Xi Chelsea Chen, Ritu Sahore</i>	
Simultaneous Solid Electrolyte Deposition and Cathode Lithiation for Thin Film Batteries	1371
<i>Zoey Warecki, Victoria Castagna Ferrari, Anton Ievlev, Josh D Sugar, Nam Soo Kim, David Murdock Stewart, Paul Albertus, Gary Rubloff, Albert Alec Talin</i>	
Development of a Printed Solid-State Battery Cell	1372
<i>Pasha Nikolaev, Frank Zalar, John Hondred, Jacob Lawson, William Feld, David Firsich, Padamkar Kichambare, Larry Scanlon, Brian E Henslee</i>	
Degradation Mechanism of Phosphate-Based Li-Nasicon Conductors in Alkaline Environment.....	1373
<i>Benjamin X. Lam, Zhuohan Li, Gerbrand Ceder</i>	
Electrospun Sodium Conducting PEO Membranes.....	1374
<i>Daniel Fabian Weindl, Tom Nilges</i>	

Electrodeposited High-Voltage Cathodes for Next-Generation Solid-State Batteries	1376
<i>Badri Shyam, Prerna Joshi, Tanner Anderson, Beniamin Zahiri, Heng Yang, John B. Cook, Paul V. Braun, John Busbee</i>	
Optimal Composition of Co-Doped $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ Solid Electrolyte for Practical Application in Thermal Battery	1377
<i>Hyungu Kang, Tae-Young Ahn, Heesook Roh, Seung-Ho Kang, Yu Song Choi</i>	
Effects of Polymer Electrolytes on the Interfacial Contact with Positive Electrode Materials for β'' - Al_2O_3 Based All-Solid-State Sodium Batteries	1378
<i>Yoshihiko Inoue, Shota Tsujimoto, Ryo Sakamoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Modifying $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7}(\text{PO}_4)_3$ electrolyte-Anode Interface with Two-Dimensional Materials for All-Solid-State Lithium Batteries	1382
<i>Dong-Lun Tsai, Che-Ning Yeh</i>	
Unveiling the Interfacial Composition of Li-Metal Polymer Electrolytes during Lithium Plating-Stripping Employing Operando ATR-FTIR Spectroscopy	1383
<i>Jian Fen Wang, Matthias Weiling, Felix Pfeiffer, Masoud Baghernejad</i>	
Electrochemical Property of $\text{Li}_{3x}\text{La}_{2/3-x}\text{TiO}_3$ Sintered Anode for Solid-State Batteries	1385
<i>Shinichi Takeno, Ken Watanabe, Koichi Suematsu, Kengo Shimanoe</i>	
Computational Study of Amorphous $\text{LiNb}_{0.5}\text{P}_{0.5}\text{O}_3$ Cathode Coating Material Utilizing Universal Machine Learning Potential.....	1387
<i>Koki Yoshikawa, Yoshiya Fujiwara, Huu Duc Luong, Zizhen Zhou, Fumika Fujisaki, Yoshitaka Tateyama</i>	
Electrochemical Properties of Novel Pyrochlore-Type Solid Electrolyte.....	1389
<i>Hitoshi Onodera, Yuta Shimonishi, Shuhei Yoshida</i>	
Application of Reference Electrode for All-Oxide Solid-State Battery to Reveal Electrode Reactions and Degradation Mechanisms.....	1391
<i>Yui Fujihara, Dai Kutsuzawa, Takeshi Kobayashi</i>	
Operando X-Ray CT Analysis of Silicon/Solid Electrolyte Mechanical Interface during Expansion and Shrinkage of Silicon	1393
<i>Mao Matsumoto, Yuya Sakka, Chengchao Zhong, Keiji Shimoda, Ken-ichi Okazaki, Hisao Yamashige, Takashi Ozeki, Toshiaki Matsui, Yuki Orikasa</i>	
Advancing Li-Transport in Composite Polymer Electrolytes with Functionalized LLZO Nanoparticles.....	1395
<i>Sanja Tepavcevic, Michael Counihan, Jungkuk Lee, Priyadarshini Mirmira, Pallab Barai, Meghan Burns, Chibueze Amanchukwu, Venkat Srinivasan, Yuepeng Zhang</i>	
Electrochemical and Surface Analysis of $\text{Li}_{10}\text{GeP}_2\text{S}_{12}$ Solid Electrolytes Synthesized Using a Solution-Based Method	1398
<i>Kazuhiro Hikima, Ryota Kishi, Atsunori Matsuda</i>	
Detailed Investigation on LiNbO_3 -Coated Layer of Different Thicknesses on $\text{LiNi}_{0.5}\text{Co}_{0.2}\text{Mn}_{0.3}\text{O}_2$ Cathode Material for All-Solid-State Lithium Batteries.....	1400
<i>Willy Shun kai Bong, Minoru Kuzuhara, Koji Kawamoto</i>	
Low-Temperature Sintering of NASICON-Type LAGP Its Application to All-Solid-State Batteries	1401
<i>Hirotooshi Yamada, Ryoya Yamasaki, Yusuke Onoue, Kazuki Matsumoto</i>	

Preventing Micro-Penetration of Li Dendrites in Solid Electrolyte through Transition Metal Segregation Layer for a Stable All-Solid-State Li-Metal Battery.....	1403
<i>Heejun Yun, Eunji Lee, Youn Sang Kim</i>	
Characterization of an Additional LiCl Layer for Enhancing Interfacial Stability between a Solid Electrolyte and Lithium Metal in All-Solid-State Batteries.....	1404
<i>Jinuk Lee, Seoyoon Shin, Seok hee Lee</i>	
Synthesis and Densification of $\text{Na}_{1+x}\text{Zr}_2\text{Si}_x\text{P}_{3-x}\text{O}_{12}$ Nasicon Solid Electrolyte for Solid-State Na Batteries.....	1406
<i>Kuan-Zong Fung, Shu-Yi Tsai, I-Chun Liu, Kenneth Fung</i>	
Interface Properties of Artificial Solid Electrolyte Layer on Li-Metal Anode for Quasi-Solid-State Battery	1407
<i>Daeil Kim, Boyun Jang, Byeol Han, Junwoo Joo, Joon-soo Kim</i>	
Electrochemical Responses of Solution-Impregnated Sulfur/Mesoporous Carbon Composites in Liquid Li-S and Solid-State Li-S Batteries.....	1408
<i>Murugesan Karuppaiah, Jung Kyoo Lee</i>	
Orientation Control of Perovskite Electrolyte Using Phase Transformation from Ruddlesden-Popper Type Nanoplate Synthesized By Hydrothermal Reaction	1409
<i>Kenichi Mimura, Hiroki Itasaka, Naoki Hamao, Zheng Liu, Koichi Hamamoto</i>	
Hydrothermal Synthesis of Oxide Solid Electrolyte Nanocrystals with Controlled Shapes for Orientated Ceramics	1410
<i>Hiroki Itasaka, Ken-ichi Mimura, Zheng Liu, Naoki Hamao, Koichi Hamamoto</i>	
Co-Sintering Reaction Analysis of $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7}(\text{PO}_4)_3/\text{LiFePO}_4$ and $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7}(\text{PO}_4)_3/\text{LiNiPO}_4$ Composites	1411
<i>Shuhei Kobayashi, Kei Kubota, Fumihiko Ichihara, Machiko Ode, Shogo Miyoshi, Takuya Masuda</i>	
Highly Ionic Conductive Polymer Interlayer for Garnet-Type Solid Electrolyte to Improve Energy Storage Performance of All-Solid-State-Batteries.....	1413
<i>Young-Geun Lee, Jay F Whitacre</i>	
Development of High-Areal-Capacity Electrodes for Sulfide-Based All-Solid-State Batteries.....	1414
<i>Akihiro Yamano, Tsukasa Takahashi, Daisuke Inoue, Yoichiro Ogata, Masanori Morishita</i>	
Advancements in Thin Solid-State Electrolytes for High-Energy Lithium Metal Batteries.....	1415
<i>Seojeong Yoo, Sung Ryul Choi, Jun-Young Park</i>	
Mixed Conductive Materials to Improve the Conductive Path of All-Solid-State Battery Composite Electrodes	1417
<i>Young-Gyu Jeon, Chang-Hun Lim, Hyun-Kyung Kim</i>	
Synthesis and Ionic Conductivity of $\text{K}_2\text{Bi}_{1-x}\text{Sn}_x\text{F}_{5-x}$	1418
<i>Sumiko Morinaga, Kaisei Hamaguchi, Sou Taminato, Nobuyuki Imanishi, Daisuke Mori</i>	
The Dual Role of Thiophosphate Solid Electrolytes as Catholytes and Active Material Precursors in Lithium/Sulfur Solid-State Batteries	1420
<i>Konrad Münch, Jürgen Janek</i>	
Fabrication of Ruthenium-Based Cathode Material/Solid Electrolyte Composites.....	1421
<i>Kanamori Yuzo, Daisuke Mori, Sou Taminato, Nobuyuki Imanishi, Yosuke Hamasaki, Kazuhiro Hikima</i>	

From Useless to Useful - Particle Engineered Li ₆ PS ₅ Cl for Solid-State Pouch Cells	1423
<i>Mika Serna Malmer, Quoc-Anh Tran, Meenal Agrawal, Ingeborg Sellæg Ellingsen, Michael Häusler, Roland Brunner, Roman Zettl, Volker Hennige, Mir Mehradj Ud Din, Daniel Rettenwander, Laras Fadillah</i>	
In-Situ Charging-Discharging SEM Observation and Analysis for Si Anode in a Solid-State Battery~ Cross-Section Preparation and in-Situ SEM Observation By Stack Pressure Holder ~	1424
<i>Tatsuhito Kimura, Kota Yanagihara, Yasuaki Yamamoto, Reiko Matsuda, Kazuhiro Hikima, Atsunori Matsuda, Yoshikazu Sasaki</i>	
Tuning the Properties of PEO/PAN-Based Electrospun Membranes for Solid-State Li- and Na-Ion Batteries.....	1426
<i>Elisabeth Springl, Tom Nilges</i>	
Phase-Structure-Property Relationships of Halide Coating Materials for Solid Composite Electrodes	1427
<i>Yeo Kyung Lee, Jonghyeok Yun, Junhee Kang, Jong-Won Lee</i>	
Discharge Performance of FeF ₃ -Based Cathode for Thermal Battery	1428
<i>Roh Heesook, Tae-Young Ahn, Yusong Choi, Kang Seung-Ho, Kim Minu, Cheong Hae-Won</i>	
Interphase-Controlled Composite Electrolyte Based on LLZTO-Ionic Liquid for All Solid-State Battery	1429
<i>Harim Seo, Eunbin Jang, Jeeyoung Yoo</i>	
Effects of Metal Interlayers between Li ₇ La ₃ Zr ₂ O ₁₂ Solid Electrolyte and Li Anode on Li Dissolution/Deposition Cycles	1431
<i>Masakazu Haruta, Erika Okazaki, Hitoshi Onodera, Shuhei Yoshida, Minoru Inaba</i>	
Electrochemical Properties and Microstructural Analysis of Li ₂ feso Cathode Material for All-Solid-State Battery	1433
<i>Kazuhiro Hikima, Maro Nishimoto, Atsunori Matsuda</i>	
Improvement of Grain-Boundary Resistance of Li ₇ La ₃ Zr ₂ O ₁₂ By Coating with Li ₂ CO ₃ : A Study on Improving Electrochemical Performance of All-Solid-State Batteries.....	1435
<i>Jae-Wan Park, Jae-Hyun Shim</i>	
Design of Composite Cathode Electrodes for All-Solid-State Batteries.....	1436
<i>Dong-Gyu Kim, Hyun-Kyung Kim</i>	
Complex Charge Transport of Carbon Network in Composite Cathode for Solid-State Batteries	1437
<i>Juho Lee, Sung-Kyun Jung, Jinsoo Kim</i>	
Exploring the Optimal Binder Content of Composite Cathode and Anode for Sulfide-Based All-Solid-State Batteries	1438
<i>Yong-Han Jo, Young-Jun Lee, Dong-Won Kim</i>	
Traveling Solvent Floating Zone Growth and Ionic Conductivity of Li _{0.1} La _{0.3} Nb _{0.8} Ta _{0.2} O ₃ Single Crystals.....	1439
<i>Mizuki Onimaru, Yuki Maruyama, Masanori Nagao, Satoshi Watauchi, Isao Tanaka</i>	
Enhanced Chemical and Electrochemical Stability of Sn-Substituted Li _{6+X} P _{1-X} Sn _X S ₅ Cl _{0.5} Br _{0.5} Sulfide Solid Electrolyte for All-Solid-State Battery	1441
<i>Yoon Jae Cho, Dong Gyu Kim, Do-Kyung Kim</i>	
Investigation of Redox Potential of Li ₂ SO ₄ Using All-Solid-State Cells	1442
<i>Yushi Fujita, Kota Motohashi, Atsushi Sakuda, Akitoshi Hayashi</i>	

Studies of Solid State Electrolytes for Li-Type Batteries	1444
<i>Jian Pan, Oscar Tutusaus, Chan Shu, Rana Mohtadi</i>	
Microstructure, Charge Transport and Interfaces in All-Solid-State Batteries	1445
<i>Felix Hartmann, Jürgen Janek</i>	
Charge-Discharge Performance of All-Solid-State Lithium Batteries with Amorphous MoS ₄ Electrodes Prepared By Thermal Decomposition of (NH ₄) ₂ [Mo ₃ S(S ₂) ₆]·H ₂ O.....	1447
<i>Keitaro Imai, Tatsuki Shigedomi, Tomohiro Furukawa, Hiroe Kowada, Kota Motohashi, Atsushi Sakuda, Akitoshi Hayashi</i>	
Challenges in Application of Ni-Rich Layered Cathodes in All-Solid-State Lithium Batteries	1449
<i>Jin wook Lee, Tae-Yeon Yu, Yang-Kook Sun</i>	
Li Concentration Change Around Cu/Lipon Interface Measured By Time of Flight Elastic Recoil Detection Analysis.....	1450
<i>Kyoshi Kurihara, Shuri Nakamizo, Satoshi Yamamoto, Keisuke Yasuda, Takuya Majima, Takeshi Yajima, Yasutoshi Iriyama</i>	
Effect of Dopant Concentration in Li ₇ La ₃ Zr ₂ O ₁₂ (LLZO) on Performance of Thermal Battery.....	1452
<i>Tae-Young Ahn, Heesook Roh, Hyungu Kang, Jiyoung Kim, Jongseo Lee, Yusong Choi</i>	
Probing the Mechanical Properties of Superionic Boron Cluster Solid Electrolytes.....	1454
<i>Oscar Tutusaus, Jacob Hempel, Santosh Thapa, Kwangnam Kim, Kyoung E. Kweon, Brandon C. Wood, Luke Hentz, Ryan Christopher Hill, Rana Mohtadi, Yang-Tse Cheng</i>	
Transition-Metal Substitution Effects on Ionic Conduction Properties of Solid Electrolyte LiTa ₂ PO ₈	1455
<i>Souichi Shima, Takeshi Yajima, Yasutoshi Iriyama</i>	
Low-Cost Synthesis of Garnet-Type Electrolytes through the Study of Formation Mechanism.....	1457
<i>Kaitlin Garman, Charlotte Michele Thomas, Yangyang Wang, Chunmei Ban</i>	
Electrochemical Properties of Solid Electrolytes with High Content of Non-Sintered Ceramics	1458
<i>Komei Sawada, Daisuke Okuda, Masashi Ishikawa</i>	
A Liquid-Phase-Synthesized Cathode Composite with a Three-Dimensional Ion/Electron- Conducting Structure for All-Solid-State Lithium–Sulfur Batteries.....	1460
<i>Peilu Jiang, Huangkai Zhou, Subin Song, Kota Suzuki, Kenta Watanabe, Yumi Yamaguchi, Naoki Matsui, Satoshi Hori, Ryoji Kanno, Masaaki Hirayama</i>	
Improvement of ionic conductivity and relative density of Li _{6.4} La ₃ Zr _{1.4} Ta _{0.6} O ₁₂ electrolytes by optimization of composition and sintering aid	1463
<i>Yuya Kouno, Yuta Masuo, Hitoshi Onodera, Shuhei Yoshida, Takayuki Doi, Masakazu Haruta, Minoru Inaba</i>	
Synthesis and Characterization of BH ₄ -Substituted Lithium Argyrodite for Assbs.....	1466
<i>JiHoon Han, Young-Su Lee, Kyung-Woo Yi, Young Whan Cho</i>	
Electrochemical Properties of Garnet-Type Ta and Ga Co-Doped Li ₇ La ₃ Zr ₂ O ₁₂ for Solid-State Li Batteries.....	1467
<i>Ryoji Inada, Akio Hori, Yuta Muramoto, Tomohiro Tojo</i>	
Properties of Li _{1.3} Al _{0.7} Ti _{1.3} (PO ₄) ₃ Ceramic Solid Electrolyte Densified by Cold Sintering Process.....	1468
<i>Ryoji Inada, Kanta Oizumi, Kaito Kurahashi, Tomohiro Tojo</i>	
Growth of Solid Electrolyte Li _{1+x} Al _x Ti _{2-x} (PO ₄) ₃ Single Crystals.....	1470
<i>Yuki Maruyama, Kohei Okanda, Masanori Nagao, Satoshi Watauchi, Isao Tanaka</i>	

A08 - Electrodes and Interfaces 2

Deep Insight into Reactivity of Li ₃ PS ₄ Electrolyte for Solid Li-Ion Batteries Towards Humidity Using Large Instruments	1472
<i>Irina Profatilova, Ivan Leteyi Mfiban, Victor Vanpeene, Vasily Tarnopolskiy, Oskar Thompson, Claire Villevieille, Marco DiMichiel, Lise Daniel, Sandrine Lyonnard, Magali Reyrier</i>	
(Invited) Factors Guiding the Stability Sulfide and Oxide Solid-State Electrolyte Interphases with Lithium Metal.....	1474
<i>David Mitlin</i>	
Direct Mechanical and Electrochemical Analysis of Dendrites in Solid-State Electrolytes.....	1475
<i>Cole D. Fincher, Colin Gilgenbach, Rachel Osmundsen, Christian Roach, Aubrey Penn, M.D. Thouless, W. Craig Carter, Brian W. Sheldon, James LeBeau, Yet-Ming Chiang</i>	
Quantifying the Structural Properties of the Lithium-Solid Electrolyte Interface	1477
<i>Kelsey Uelton, Dylan Hamilton, Elizabeth Allan-Cole, Rafael Ferreira de Menezes, Samuel Marks, Annalise Maughan, Michael F Toney</i>	
Interrelations between Dendrite Growth and Electrolyte's Microstructure in Garnet Type Solid Electrolyte	1478
<i>Vikalp Raj, David Mitlin, Naga Phani B. Aetukuri</i>	
Lithium Dendrite Deflection in Solid Electrolytes through Mixed Ionic-Electronic Conducting Interlayers.....	1480
<i>Zikang Yu, Chenjie Gan, Aleksandar S Mijailovic, Aidan Stone, Robert Hurt, Changmin Shi, Brian W. Sheldon</i>	
Li Metal Surface Modification to Stabilize Lithium-Argyrodite Interface for Sulfide-Based All- Solid-State Lithium Metal Batteries	1481
<i>Hui-Tae Sim, Myungkeun Oh, Ye-Eun Park, Hyojin Kim, Yun-Sun Cho, Seongjin PARK, Dong- Won Kim</i>	
Operando Tomographic Imaging of Dendrite Initiation and Propagation in Lithium Metal Solid- State Batteries.....	1482
<i>Bingkun Hu, Ziyang Ning, Peter Bruce</i>	
In-Situ Charging-Discharging SEM Observation and Li Analysis for Si Anode in All Solid-State Battery By Using SEM-EDS-SXES Method.....	1483
<i>Kota Yanagihara, Tatsuhito Kimura, Yasuaki Yamamoto, Reiko Matsuda, Kazuhiro Hikima, Atsunori Matsuda, Yoshikazu Sasaki</i>	
All-Solid-State Li-S Cells: The Importance of Interfaces	1485
<i>Joshua Cruddos, Josh Cruddos, James B Robinson, Wolfgang Zeier</i>	

A08 - Electrodes and Interfaces 3

(Invited) Role of Ag in Ag-C Interlayer for Reversible Plating/Dissolution of Li-Metal for Anode- Free Li-Metal Solid-State Batteries	1487
<i>Tetsuya Asano, Shinya Suzuki, Shoichi Sugata, Nobuyoshi Yashiro, Sewon Kim, Jusik Kim</i>	
(Invited) Strain-Free Mxene Electrodes for All Solid-State Batteries	1489
<i>Masashi Okubo</i>	

Near-Strain-Free Anode Architecture Enabled By Interfacial Diffusion Creep for Initial-Anode-Free Quasi-Solid-State Batteries	1490
<i>Minje Ryu, Kwang Hee Kim, Myung-Jin Lee, Tae-Kyung Liu, Jung Hwan Lee, Changhoon Jung, Jusik Kim, Jong Hyeok Park</i>	
Enabling Lithium-Free Batteries through Newly Developed Lithium-Garnet with Mixed Ion and Electron Conduction.....	1491
<i>George Alexander, Eric D Wachsman</i>	
Interfacial Electrochemistry and Mechanics of Carbon Interlayers for Anode-Free Solid-State Batteries.....	1492
<i>Daniel W. Liao, Muzamil Mulla, Hiroki Kawakami, Koichiro Aotani, M.D. Thouless, Neil P. Dasgupta</i>	
Interface Dynamics and Heterogeneities in Solid-State Batteries	1493
<i>Bairav Sabarish Vishnugopi, Kaustubh Girish Naik, Partha P. Mukherjee</i>	
Scalable Surface Micro-Texturing of LLZO Solid Electrolytes for Battery Applications.....	1494
<i>Wooseok Go, Dilworth Y. Parkinson, Dayana Oropeza, Vassilia Zorba, Sriram S. Murali, Marca M. Doeff, Mike C Tucker</i>	
Reducing Interfacial Resistance between $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ and Liquid Electrolyte through Wet Polishing for Quasi-Solid Batteries	1495
<i>Jumpei Kondo, Kazushi Otani, Ryota Noba, Suguru Miyamoto, Hideaki Hikosaka, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
Exploring the Interaction between EC and Ta-Doped LLZO	1497
<i>Zachary Tronstad, Bryan D. McCloskey</i>	

A08 - Materials and Cells 3

(Invited) All-Solid-State Lithium-Sulfur Batteries: From Cathode Architecture to Pouch Cell Engineering	1499
<i>Yi Lin, Coby H. Scrudder, Hanjing Chen, Vesselin I Yamakov, Jin Ho Kang, Ji Su, Rodolfo I Ledesma, Donald A Dornbusch, Rocco P. Viggiano</i>	
Solid State Gradients: One Step Aqueous Spray Deposition of Novel Graduated Cathode/Solid Electrolyte Interfaces for Improved Solid State Batteries.	1500
<i>Matthew Tudball, Thomas Samuel Miller</i>	
Influence of the Sputtering and Annealing Conditions in the Obtained LiFePO_4 Thin Film Cathodes.....	1502
<i>Elena Lopez Pazos, Luca Nobili, Luca Magagnin</i>	
An All-Solid-State Lithium Metal Battery Integrating LiNiO_2 Cathode with Halide Solid Electrolyte	1503
<i>Hsi Chen, Nae-Lih (Nick) Wu</i>	
Advantageous Li_3PO_4 Coating on Conductive Agents for Sulfide-Based All-Solid-State-Batteries.....	1504
<i>Younghoon Jo, Janghyuk Moon, Chaeyeon Ha, Hongjun Chang, Young-Jun Kim</i>	
Sulfide Solid Electrolyte Coated Cathode in All-Solid-State Batteries	1505
<i>Jun tae Kim, Hyeon-ji Shin, Hun-Gi Jung</i>	
Development of Intimate Contact Technology for High Performance All-Solid-State Batteries	1506
<i>Dong-Joo Yoo</i>	

Optimizing Cathode Processing for Enhanced Performance of Li-S All-Solid-State Batteries with Conversion-Type Active Material.....	1507
<i>Matilde Pavan, Konrad Muench, Tim Bernges, Sebastian L. Benz, Anja Henss, Wolfgang Zeier, Jürgen Janek</i>	
Digital-Twin Sulfide-Based Semi-Solid-State Batteries: Unveiling Structural and Electrochemical Properties.....	1509
<i>Hyobin Lee, Jongjun Lee, Jaejin Lim, Suhwan Kim, Kyeong-Seok Oh, Won-Yeong Kim, Seokhyeon Ryu, Sang-Young Lee, Yong Min Lee</i>	
High Energy Density Sulfide-Based All-Solid-State Batteries by Tailoring Electronic Conductivity within Composite Cathode	1510
<i>Hyeon-ji Shin, Jun Tae Kim, Da-Seul Han, Kyung-Wan Nam, Hun-Gi Jung</i>	
Electrochemical Properties of Prelithated Silicon-Graphite Mixtures As an Anode Material for Quasi-Solid-State Battery	1511
<i>Boyun Jang, Daeil Kim, Byol Han, Yeonjin Park, Joon-soo Kim</i>	

A08 - Electrodes and Interfaces 4

A Comparative Safety Analysis of Lithium-Ion and Solid-State Lithium-Metal Pouch Cells	1512
<i>Jonathan Fakkema, Harsh Sapra, Eric Kazyak</i>	
Mechanical Milling - Induced Microstructure Changes in Argyrodite Lpscl Solid-State Electrolyte Critically Affect Electrochemical Stability	1513
<i>Yixian Wang, David Mitlin</i>	
Electrochemical Analyses of the Li-Ion Transfer Resistances at the Chloride Solid Electrolyte Sulfide Solid Electrolyte Interfaces	1515
<i>Kotaro Yoshida, Atsunori Ikezawa, Takeyoshi Okajima, Shoma Yanagihara, Saneyuki Ohno, Hajime Arai</i>	
4D-STEM of LGPS and NMC Interfaces Reveal Interphase Formation Mechanism	1517
<i>Nikhila C Paranamana, Andreas Werbrouck, Amit Datta, Xiaoqing He, Matthias J. Young</i>	
Co-Sintering Anode Materials with Garnet Electrolytes for Solid-State Batteries	1519
<i>Zongqi He, Ken Watanabe, Koichi Suematsu, Kengo Shimanoe</i>	
Aging Property of Halide Solid Electrolyte at the Cathode Interface.....	1520
<i>Wonju Kim, Joohyeon Noh, Kisuk Kang</i>	
Investigating Electro-Chemo-Mechanical Properties of Conversion Cathodes for Solid-State Batteries.....	1521
<i>Elif Pinar Alsac, Douglas Lars Nelson, Sun Geun Yoon, Congcheng Wang, Talia A. Thomas, Udochukwu D Eze, John M Harris, Yuhgene Liu, Matthew Todd McDowell</i>	
Composition and Conductivity Evaluation of Cathode Active Materials/Solid Electrolytes for Lithium-Ion Batteries	1522
<i>Riku Teranishi, Atsushi Tanaka, Tetsuya Yamada, Fumitaka Hayashi, Katsuya Teshima</i>	
Effect of Size Distribution of Solid Electrolyte on Tortuosity of Ionic Conductivity	1524
<i>Takeru Yano, Moritz Hofer, Shuji Ohsaki, Hideya Nakamura, Satoru Watano, Gen Inoue, Peter Michalowski, Arno Kwade</i>	

A09-NEW MATERIALS FOR NON-LITHIUM BASED NEXT-GENERATION BATTERIES

A09 - Sodium Battery 1

Cellulose Nanofiber-Based Separators for Durable Zn Ion Batteries	1525
<i>Jiaqian Qin</i>	
Zero-Excess Sodium-Organic Battery through in-Situ Metal Plating	1526
<i>Nathan Reynolds</i>	
Printed for Performance: Harnessing the Electrochemical Potential of Prussian White Thick Electrodes via 3D Printing.....	1528
<i>Halima Khanom, Carl Reynolds, Emma Kendrick</i>	
Synthesis and Optimization of Sodium-Vanadium Fluorophosphate – Positive Electrode Material for Sodium-Ion Batteries	1530
<i>Oskar Grabowski, Michał Krajewski, Magdalena Winkowska-Struzik, Andrzej Czerwiński</i>	
Stress Corrosion Cracking of Nasicon Pellets in Aqueous Electrolytes	1532
<i>Mengyao Zhang, Flora Tseng, Zeinab Ismail, David G. Kwabi, Jeff Sakamoto, Neil P. Dasgupta, M.D. Thouless</i>	
Na-Ion Battery Based on Carbon and Phosphate Chemistries.....	1533
<i>Michał Krajewski, Oskar Grabowski, Marta Chmielniak, Magdalena Winkowska-Struzik, Andrzej Czerwinski</i>	
Understanding and Optimizing Inactive Doping in P2-Type Sodium Layered Oxides for Sodium Ion Batteries	1534
<i>Mingfeng Xu, Philip Rapp, Giovanni Gammaitoni, Hubert Andreas Gasteiger, Matteo Bianchini</i>	
Stabilizing Cationic and Anionic Redox in Na-Rich Na ₂ RuO ₃ Cathode Material Using First Principle Calculations.....	1536
<i>Priti Singh, Mudit Dixit</i>	
Electrolyte Design to Improve Solid Electrolyte Interphase for Sodium-Ion Batteries.....	1537
<i>Dhrubajyoti Das, Sreeraj Puravankara</i>	
(Invited) Design and Synthesis of Heterostructured Anode Materials for Advanced Sodium-Ion Batteries.....	1538
<i>Sang-Ok Kim</i>	

A09 - Next Generation Battery 1

(Invited) Challenges and Advances in High-Energy Magnesium Batteries.....	1539
<i>Dedy Setiawan, Jiwon Hwang, Jin Choi, Yewon Park, Yeon Woo Lee, Hyungjin Lee, Hochun Lee, Seung-Tae Hong</i>	
SILAR-Deposited Metal Chalcogenides Promoting Polysulfide Conversion in Sulfur-Based Redox Flow Batteries.....	1540
<i>Eleonora Natale, Eugenio Gibertini, Luca Magagnin</i>	

Low Potential Benzotriazole Derivatives As Negolytes for Nonaqueous Redox Flow Battery: Design, Synthesis and Electrochemical Investigations.....	1542
<i>Sabhpathy Palani, Miguel Munoz Sanchez, Uddalak Sengupta, David C Powers, Burcu E Gurkan</i>	
Enhancing the Viability of Zinc-Polyiodide Flow Batteries: A Study on Innovative Composite Polyamide-Porous Separators for Optimized Ionic Conductivity and Ion Permeability	1543
<i>Anongnat Somwangthanaroj, Warunyoo Yoopensuk, Wathanyu Kao-ian, Phakkhananan Pakawanit, Soorathep Kheawhom</i>	
Enabling Two-Electron Redox Systems for Energy-Dense Organic-Based Flow Batteries	1544
<i>An Kitamura, Christian Malapit</i>	
Edible Rechargeable Batteries	1545
<i>Valerio Galli, Valerio Francesco Annese, Giulia Coco, Ivan K. Ilic, Pietro Cataldi, Leonardo Lamanna, Mario Caironi</i>	
Effects of Electrolyte Composition on the Electrochemistry of Organic Mixed Conducting Polymer Electrodes	1546
<i>Ana De La Fuente Duran, Nicholas Daniel Siemons, Adam Marks, Arianna Magni, Alberto Salleo, William C. Chueh, Tyler Mefford</i>	
Electrochemical Impedance Spectroscopy of Bi-Based Cathode for Pellet-Type All Solid-State Fluoride Shuttle Battery	1547
<i>Hiroki Nara, Kazuyuki Sato, Kousuke Noi, Toshiyuki Momma</i>	
Development of Fluoride-Ion Primary Batteries	1550
<i>Loleth E Robinson, Jonah Wang, Harrison Asare, Jessica Andrews, Balram Tripathi, Ram S Katiyar, Brent C Melot, Simon Jones, William C West, Loleth J Robinson</i>	
Stepwise Two Electron-Transfer Processes of Naphthalene Diimide As the Soluble Negolyte and Solid Storage in Redox Target Flow Batteries.....	1551
<i>Ariyeong Yun, Seongmo Ahn, Hye Ryung Byon</i>	
Sustainable Organophosphorus Anolyte for Non-Aqueous Redox Flow Battery.....	1553
<i>Emily Mahoney, Christian Malapit</i>	
Scalable and Cost-Effective Approaches to Rechargeable Zinc Sponge Anodes	1554
<i>Ryan H. DeBlock, Debra R. Rolison, Jeffrey W. Long</i>	

A09 - Sodium Battery 2

(Invited) Enhancing Electrochemical Performance of Fe-Mn Based Na Layered Oxides through Li Substitution: A Synchrotron X-Ray Analytical Study	1555
<i>Young Hwa Jung</i>	
Stability of RbO ₂ As a Discharge Product of Metal–O ₂ Batteries	1556
<i>Ryoichi Tatara, Ryusei Fujimoto, Tomooki Hosaka, Daisuke Igarashi, Shinichi Komaba</i>	
Simulating Sodium-Ion Batteries with the DFN Model	1558
<i>Evelina Wikner, Yonas Tesfamhret</i>	
Halogen-Free Electrolytes for Sodium-Ion Batteries	1560
<i>Evan Summerwill Flitz, Nicolas Singstock, Charlotte Michele Thomas, Kaitlin Garman, Seoung-Bum Son, Chunmei Ban</i>	

Influence of Interlayer Cation Ordering on Na ⁺ Transport in P2-Type Electrodes for Sodium-Ion Batteries.....	1561
<i>Eric Gabriel, Zishen Wang, Vibhu Vardhan Singh, Kincaid Graff, Jue LIU, Cyrus Koroni, Dewen Hou, Darin Schwartz, Cheng Li, Juejing Liu, Xiaofeng Guo, Naresh Osti, Shyue Ping Ong, Claire Xiong</i>	
Microstructure Analysis and Performance Study of Wood Lignin-Derived Carbon Foam Electrode for Sodium-Ion Batteries	1562
<i>Diprajit Biswas, Qiangu Yan, Zhiyong Cai, Eric Kazyak</i>	
Capacity Fade Analysis of Sodium-Ion Batteries Considering Calendar Ageing in Electric Vehicles	1563
<i>Manjunath Lingappa Nilugal, Venkatasailanathan Ramadesigan</i>	
Improving the Battery Metrics of Commercial Hard Carbon through S-Doping for Sodium-Ion Batteries.....	1566
<i>Sanchita Manna, Sreeraj Puravankara</i>	
Design of Spherical Hard Carbon Secondary Particles for Na-Ion Battery Anode Application.....	1568
<i>Seong Ung Hong, Byoung-Sun Lee</i>	

A09 - Next Generation Battery 2

(Invited) Cathode Active Materials for Aluminum Metal Anode Rechargeable Batteries.....	1570
<i>Tetsuya Tsuda</i>	
SEI Growth on Aluminum-Metal Anodes in Aluminum Dual-Ion Batteries.....	1574
<i>Joy Kieser, Burak Aktekin, Marcus Rohnke, Jürgen Janek</i>	
Redox-Targeting Semi-Liquid Electrode with Hard Carbon for High-Energy-Density Seawater Batteries.....	1576
<i>Dowan Kim, Wang-Geun Lee</i>	
Preparation of LaF ₃ -Based Composite Electrolytes for Solid-State Fluoride Shuttle Batteries	1578
<i>Seiji Katakura, Yuya Imaeda, Takeshi Abe, Tomokazu Fukutsuka</i>	
Rechargeable Hydrogen Gas Batteries for Large-Scale Energy Storage	1580
<i>Wei Chen</i>	
LaAl ₃ Intermetallic Alloy Anode for Fluoride-Ion Battery.....	1581
<i>Shun Sasano, Ryo Ishikawa, Kazuaki Kawahara, Naoya Shibata, Yuichi Ikuhara</i>	
Fluoride-Ion Migration Mechanism in Fluoride Battery Electrolyte Material Cs ₂ RbBiF ₆ with Double-Perovskite Structure.....	1583
<i>Hiroki Moriwake, Takafumi Ogawa, Akihide Kuwabara, Yuichi Ikuhara, Eiki Niwa, Kou Sakakibara, Daisuke Mori</i>	

A09 - Sodium Battery 3

(Invited) High-Performance Sodium-Ion Battery Using Copper Sulfide Anode and Nasicon-Type Cathode.....	1585
<i>jong Min Yuk</i>	
State-of-the-Art Na-Ion Batteries: Electrolyte Approach to Address the Issues of Cycle-Life	1586
<i>Phung M-L LE, Thanh-Nhan Tran, Minh-Kha Le</i>	

Evaluation of Cathode α -NaFeO ₂ for Sodium-Ion Batteries	1587
<i>Koki Imabayashi, Yoshinao Kobayashi, Shintaro Yasui</i>	
Poly(vinyl benzoate)-b-Poly(diallyldimethyl ammonium TFSI)-b-Poly(vinyl benzoate) Triblock Copolymer Electrolytes for Sodium Batteries	1589
<i>Pierre Luca Stigliano, Antonela Gallastegui, Carlos Villacis-Segovia, Marco Amores, Ajit Kumar, Luke O'Dell, Jian Fang, David Mecerreyes, Cristina Pozo-Gonzalo, Maria Forsyth</i>	
From Ternary to Quaternary Graphite Intercalation Compound in Na-Ion Batteries	1591
<i>Youhyun Son, Gustav Ávall, Guillermo Alvarez Ferrero, Annica Freytag, Knut Janßen, Philipp Adelhelm</i>	
Impact of Sc Doping in Layered Na _{0.2} Oxides on Their Electrode Performance	1593
<i>Kodai Moriya, Eunjeong Kim, Ryoichi Tatara, Shinichi Kumakura, Shinichi Komaba</i>	
Enhancing Rate Performance and Stability of Nickel Hexacyanoferrate through K ⁺ Substitution for Na ⁺ Guest Ions	1595
<i>San Chun Kang, Na Young Song, Sang-Eun Chun</i>	
First-Principles Study of Layered Electrode Materials for Multivalent Batteries	1597
<i>Haesun Park, Deahyun Kim</i>	
Investigation of Anionic and Cationic Redox Chemistry in P3-Type Na _{0.67} [Zn _{0.3} Mn _{0.7}]O ₂ Layered Sodium Cathode with Zn Displacement	1598
<i>Natalia Voronina, Seung-Taek Myung</i>	
Understanding the Multiple Roles of Solvation Structure in the Performance of Next-Generation Sodium Metal Battery Systems	1600
<i>Louis Vincent Morris, Cynthia Pyles, Adam Dunkelberger, Rachel Elizabeth Carter</i>	
<u>A09 - Sodium Battery 4</u>	
(Invited) Ionic Liquids As Multifunctional Electrolytes for Sodium Secondary Batteries	1601
<i>Kazuhiko Matsumoto, Jie Qiu, Di Wang, Huazhen Liu, Shaoning Zhang, Keisuke Murakami, Kousei Araya, Shengan Wu, Jinkwang Hwang</i>	
Chimie Douce Synthesis of Novel Metastable Cathodes for Potassium-Ion Batteries.....	1602
<i>Pawan Kumar Jha, Alexander Golubnichiy, Valerie Pralong, Artem M. Abakumov, Maximilian Fichtner, Prabeer Barpanda</i>	
Hybrid Electrolyte Strategies for High-Energy Sodium-Based Batteries.....	1604
<i>Wang-Geun Lee</i>	
Vacancy-Driven Sodium Diffusion in Sodium Closo-Borohydride As Solid-State Electrolyte	1605
<i>Jin An Sam Oh, Ying Shirley Meng</i>	
Exploring Phosphate-Based Mixed Polyanionic Materials for Enhanced Metal-Ion Rechargeable Batteries.....	1606
<i>Shubham Lochab, Sagar Bharathraj, Shashishekara Parampalli Adiga, Prabeer Barpanda</i>	
Alluaudite chemistry: From Intercalation to Conversion	1608
<i>Pubali Barman, Pawan Kumar Jha, Prabeer Barpanda</i>	
Detecting Internal Short Circuits in Commercial Sodium Ion Batteries By Measuring Their Cryo- Resistance	1610
<i>Mathias Rehm, Andreas Jossen, Stefan Schaeffler</i>	

Effect of Heat-Treated Temperature of Non-Graphitizable Carbon on Sodium-Ion Transfer Reaction	1614
<i>Shota Tsujimoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Analysis of Commercial Na-Ion 18650 Cell Performance: Cell-to-Cell Variation and Long-Term Cycling	1618
<i>Reed M Wittman, Matthieu Dubarry, Chaz Rich, Jill Langendorf, Alex Martin Bates</i>	
Controlled Phase Transformation Toward Stable Cycling of Layered Oxides for Sodium Ion Batteries.....	1619
<i>Dewen Hou, Gi-Hyeok Lee, Jiacheng Hu, Eric Gabriel, Kincaid Graff, Jiantao Li, Tianyi Li, Yang Ren, Wenqian Xu, Chengjun Sun, Chongmin Wang, Wenquan Lu, Yan Qin, Xinwei Zhou, Zonghai Chen, Feng Wu, Wanli Yang, Yuzi Liu, Claire Xiong</i>	
Binary Solvent Induced Stable Interphase Layer for Ultra-Long Life Sodium Metal Batteries.....	1620
<i>Rinish Reddy Vaidyula, Mai H Nguyen, Jason Alexander Weeks, Yixian Wang, Ziqing Wang, Kenta Kawashima, Austin G Paul-Orecchio, Hugo Celio, Andrei Dolocan, Graeme Henkelman, Charles Buddie Mullins</i>	
Bilayering Enables Faster Charging and High Areal Capacity of Na-Ion Electrodes.....	1623
<i>Galen Brown, Stanislaw Zankowski, Patrick S. Grant</i>	

A09 - Next Generation Battery 3

(Invited) Alloying Element-Based Functional Interface for Magnesium Metal Negative Electrode.....	1625
<i>Toshihiko Mandai</i>	
Architecting Manganese Oxide Oxygen Reduction Electrocatalysts Adds New Function to Zinc–Air Cells	1627
<i>Debra R. Rolison, Jeffrey W. Long, Christopher N. Chervin, Jesse S. Ko, Joseph F. Parker, Brandon J. Hopkins</i>	
Studying the Effect of Carbonous Fillers on the Properties of Conductive Polymer Composites As Flow Field Plates in Redox Flow Batteries	1628
<i>Erfan Asadipour, Vijay K Ramani</i>	
Ruddlesden-Popper Type Intercalation Cathode with High Capacity Involving O-O Bond Formation for All-Solid-State Fluoride-Ion Batteries.....	1630
<i>Hidekazu Miki, Kentaro Yamamoto, Toshiki Watanabe, Toshiyuki Matsunaga, Hideki Iba, Akihito Kuwabara, Jun Miyawaki, Yoshihisa Harada, Kazuhiko Maeda, Hiroshi Kageyama, Yoshiharu Uchimoto</i>	
Understanding Benzophenone Degradation Pathways to Improve Non-Aqueous Redox Flow Battery Performance.....	1632
<i>Adolfo I. Barros Romo, Sandip Maurya, Benjamin L Davis</i>	
Impact of Cationic Sizes on the Capacitance and Interfacial Structure of ‘Water-in-Salt’ Electrolytes on Graphene	1633
<i>Md Sharif Khan, Oliviero Andreussi</i>	
Long Durable Prussian-Blue Analogous Cathode for Aqueous Sodium-Ion Batteries.....	1634
<i>Zhenxing Feng</i>	

Effect of Antisolvent Additives in Aqueous Zinc Sulfate Electrolytes for Zinc Metal Anodes: The Case of Acetonitrile	1635
<i>Stefan Ilic, Michael Counihan, Sydney Nicole Lavan, Yingjie Yang, Yinke Jiang, Emma N. Antonio, Yong Zhang, Edward Maginn, Michael F Toney, Robert F. Klie, Justin G. Connell, Sanja Tepavcevic</i>	

Modulating the Electrochemical Potential and Zn^{2+} Diffusion Kinetics in Hydrated Vanadate	1636
<i>Chaofeng Liu</i>	

Advanced Ab Initio Simulations of Layered Oxide Cathodes: Screening Atomistic Arrangements and Accurate Electronic Structures.....	1637
<i>Konstantin Koester, Payam Kaghazchi</i>	

A09 - Multivalence Metal Based Battery 1

On the Exploitation of Magnetic Fields in Zn-Ion Batteries	1639
<i>Jeffrey Gordon Bell</i>	

Defect Engineering of Zn Substituted MnCo_2O_4 Spinel Structure As a Cathode for High-Performance Zinc-Ion Batteries.....	1640
<i>Prasit Pattanauwat, Nishant Yadav</i>	

Porous Carbons for Positive Electrode of Zn-Carbon Rechargeable Battery	1641
<i>Masaaki Yoshikawa, Hiroyuki Fujimoto, Zempachi Ogumi, Takeshi Abe</i>	

Polysaccharide-Based Hydrogel Electrolyte Membranes for Quasi-Solid-State Rechargeable Alkaline Zinc Batteries.....	1643
<i>Hiroshi Inoue, Masanobu Chiku, Eiji Higuchi, Cheng Zhen</i>	

Optimization of Segmentation of Electrolyte to Enhance Polarization Behaviors and Cycling Performance of Zinc Rechargeable Battery.....	1645
<i>Masatsugu Morimitsu, Kakeru Tomoda, Yuriko Komatsu, Ririka Tada</i>	

Enhancing Electrochemical Performance through Anode Modification Strategies in Aqueous Zn Battery System	1647
<i>Beom-Keun Cho, Seung-Ho Yu</i>	

A09 - Poster Session

Study of the Local and Average Structure of Vanadium Oxides As Potential Cathodes for Mg-Ion Batteries.....	1648
<i>Anwesa Samanta, Jordi Cabana</i>	

Cathode Performance of ZnMn_2O_4 for Zn Anode Rechargeable Batteries	1649
<i>Ikuto Yoshiki, Yuiko Inoishi, Tatsumi Ishihara</i>	

Ultrasmall $\alpha\text{-MnO}_2$ Cathodes for Multivalent Rechargeable Batteries	1651
<i>Reona Imura, Hiroaki Kobayashi, Shiori Kawasaki, Toshihiko Mandai, Kazuaki Kisu, Shin-ichi Orimo, Kazuya Yamaguchi, Tetsu Ichitsubo, Itaru Honma</i>	

Inkjet Printed $\text{Ti}_3\text{C}_2\text{T}_x$ MXene Electrodes for Zn-Ion Storage.....	1652
<i>Prisca Viviani, Eugenio Gibertini, Gianlorenzo Bussetti, Luca Magagnin</i>	

Dual Fluoride Salt-Based Hydrate-Melt Electrolyte: Advancing Aqueous Fluoride Shuttle Battery	1653
<i>Anusha Pradhan, Yasuyuki Kondo, Katsuhiko Saguchi, Naoki Gorai, Kenji Kawashima, Yu Katayama, Yuki Yamada</i>	
Evaluating Redox Flow Battery Field Designs with the Vanadium Acetylacetonate Chemistry.....	1655
<i>Rohit Rungta, Charles W. Monroe</i>	
Proton Intercalation of $\text{Mo}_3\text{Nb}_2\text{O}_{14}$ Anode for Aqueous Batteries.....	1657
<i>Kosuke Kawai, Yuta Igarashi, Seon Joon Jang, Koji Yazawa, Kazuma Gotoh, Jun Kikkawa, Atsuo Yamada, Yoshitaka Tateyama, Masashi Okubo</i>	
Design and Performance of a Sodium and Mercury Low-Temperature Liquid Metal Battery with a NaSICON Solid-State Electrolyte for Large Scale Energy Storage	1660
<i>Jake Kattelman, Jeremy Moon, Dev Chidambaram</i>	
Exploring Binderless Tin and Hard Carbon Anodes Via Electrospray Deposition for Sodium-Ion Batteries.....	1661
<i>Kenneth Gordon, Collin Burnell, Griffin Usie, Zhi Liu, Ling Fei</i>	
Preparation, Crystal Structure and Electrochemical Properties of $\text{Mg}_{1-x}\text{Cu}_{2+x}\text{O}_3$	1662
<i>Kazuma Uehara, Zhou Zihan, Zhicheng Huang, Kei Hayashi, Yuzuru Miyazaki</i>	
Solvent Molecule Decomposition at the Spinel Cathode Surface of Mg-Battery: A First-Principles Study.....	1664
<i>Keitaro Sodeyama, Tomoaki Kaneko, Yui Fujihara, Toshihiko Mandai, Hiroaki Kobayashi</i>	
Self-Supported VO_2 on Polydopamine-Derived Pyroprotein-Based Fibers for Ultrastable Zinc-Ion Batteries.....	1666
<i>Yeonho Kim</i>	
Tailoring Cathode Materials: Al_2O_3 Coating for Advanced Sodium-Ion Batteries.....	1667
<i>Trapa Banik, Indranil Bhattacharya, Babatunde Soyoye, Mary Vinolisha Antony Dhason</i>	
Carboxylic Acid Functionalized Ionic Liquid Electrolyte Additives for Stable Zinc Metal Anodes.....	1668
<i>Donghee Gueon, Jung Hoon Yang</i>	
Charge-Discharge Behavior of NMC_{111} Cathode in Aqueous Zinc Battery	1669
<i>Takahiro Kosaki, Hiroki Hayashi, Hiroki Nara, Asano Gota, Toshiyuki Momma</i>	
Layered Transition Metal Dichalcogenides As Ca/Mg Intercalation Electrode: A Systematic First-Principles Study.....	1671
<i>Daehyun Kim, Haesun Park</i>	
Zn-Sn Alloy Seed Layer-Coated Cu Current Collector for Anode-Free Aqueous Zn Ion Batteries	1672
<i>YoungSeok Jang, Jigang Shin, Busung Go, Soobum You, Seungju Kim, Tahir Sattar, Seokgwang Doo</i>	
Room Temperature Fluorination/Defluorination of FeF_x Positive Electrode for All-Solid-State Fluoride Ion Batteries.....	1673
<i>Akira Yano, Hiroki Yamamoto, Yuta Maeyoshi, So Fujinami, Tomotaka Nakatani, Keiji Shimoda, Yuki Orihara, Yasuhiro Inada, Masahiro Shikano, Hikari Sakaebe, Kazuki Yoshii</i>	
Development of Composite Electrolytes Composed of $\text{La}_{0.93}\text{Ba}_{0.07}\text{F}_{2.93}$ and a Polymer Electrolyte for Fluoride-Ion Batteries	1675
<i>Ryo Sakamoto, Susumu Kukita, Takeshi Abe</i>	

Promoting Homogeneous Zinc-Ion Transfer through Preferential Ion Coordination Effect in Gel Electrolyte for Stable Zinc Metal Batteries	1678
<i>Sangyeop Lee, Im Kyung Han, Youn Soo Kim, Soojin Park</i>	
Highly Reversible Zn Plating/Stripping Enabled By Zincophilic Coating for Anode-Free Zinc-Ion Batteries.....	1679
<i>Rene Mary Amirtha, Tai-Feng Hung</i>	
Probing Self-Discharge Behavior of Graphitic Cathodes for Rechargeable Aluminum Batteries.....	1681
<i>Chi Li, Jagabandhu Patra, Jeng-Kuei Chang</i>	
VO ₂ Polymorphic Cathodes and Dual-Salt Aqueous Electrolyte for Zn-Ion Batteries.....	1682
<i>Purna Chandra Rath, Li-Tao Teng, Jeng-Kuei Chang</i>	
Water Content Gradient Electrolyte for Highly Stable Aqueous Zinc Metal Batteries.....	1683
<i>Ziqing Wang, Charles Buddie Mullins</i>	
Stacking Disorders in Honeycomb Layered NaKNi ₂ TeO ₆ and Mixed-Cation Transport.....	1685
<i>Titus Masese, Godwill Kanyolo, Yoshinobu Miyazaki, Tomohiro Saito</i>	
Silver Honeycomb Layered Tellurate Exhibiting Ag Subvalency and Metallophilic Bilayers.....	1687
<i>Godwill Kanyolo, Titus Masese, Yoshinobu Miyazaki, Tomohiro Saito</i>	
Ionic Liquid As an Electrolyte Solvent for Proton Rechargeable Batteries.....	1689
<i>Masahiro Shimizu, Tomonori Ichikawa, Koki Tsuchikane</i>	
Addition Effect of Crown Ether on Intercalation of Solvated Mg ²⁺ into Graphite Interlayers.....	1691
<i>Keito Yamamoto, Masahiro Shimizu</i>	
First Principles Calculation of Sodium Intercalation in Transition-Metal Dichalcogenides.....	1693
<i>Jiangming Cao, Michael P. Mercer, Andrea Silva, Denis Kramer</i>	
Enhanced Durability of Zn-Metal Anodes through in-Situ Bi-Layer Coating with Metal Fluoride and Polymer.....	1694
<i>Jaewoong Han, Hongkyung Lee</i>	
Utilizing Camphene As an Alternative to NMP Solvent for Casting Redox-Active Organic Cathode Materials.....	1695
<i>Rinish Reddy Vaidyula, Zachary Brotherton, Robert Ferguson Fuller, Kenta Kawashima, Ziqing Wang, Nate Lynd, Charles Buddie Mullins</i>	
Study of Sodium ION Battery Characteristics of High-Capacity, High-Efficiency Composite ANODE Material Composed of Tin and Hard Carbon.....	1697
<i>Songyi Han, Young Kuk Choi, Jeoung-Kyu Kim, Wang-Geun Lee</i>	
Microstructure of Electrodeposited Al in an AlCl ₃ /Urea Electrolyte for Rechargeable Al Batteries.....	1698
<i>Ming-Si Jian, Meng-Chang Lin, Peng-Wei Chu</i>	
Characterization and Electrochemical Performance of Na(Ni,Fe,Mn)O ₂ for Sodium-Ion Battery Cathodes	1699
<i>Min-Seung Kang, Son Young-guk, Il-Kyoung Jeong, chae-Ryong Cho</i>	
Verifying the Effect of Organic Additives in Aqueous Zinc Batteries Via Operando Imaging Technology	1701
<i>Sungmin Lee, Sung-Ho Huh, Seung-Ho Yu</i>	

Fluoride-Free Sonochemical Exfoliation of Titanium Aluminium Carbide to Few-Layered Titanium Carbide Nanosheets	1702
<i>Balasubramaniam Meichandiran, Tadhg Kennedy</i>	
From Death to Resurrection: Revisiting the Reversibility of Rechargeable Alkaline Zinc-Manganese Dioxide Batteries.....	1704
<i>Emanuele Marini, Chuljung Kim, Mendel Kostka, Jannis Schindling, Philipp Zosel, Ludwig Joerissen, Markus Hölzle</i>	
Structurally Robust Cu-Doped P3- Na _{0.62} Mn _{1-x} Cu _x O ₂ Cathodes for High-Capacity Sodium-Ion Batteries.....	1705
<i>Lunara Rakhymbay, Aishuak Konarov</i>	
Electrochemical Solid Polymer Electrolyte Coating of Carbon Fibres for Structural Sodium Micro Batteries.....	1706
<i>Elvira Lind, Martina Cattaruzza, Dan Zenkert, Mats Johansson, Goran Lindbergh</i>	
Aqueous Redox Flow Battery Using Iron Based Complexes as Redox Active Materials	1707
<i>Mingyu Shin, Sungmin Park, Yongchai Kwon</i>	
Stable Iodine Redox Flow Batteries Using (2-Hydroxypropyl)- β -Cyclodextrin Additive	1708
<i>Mingyu Shin, Yongchai Kwon</i>	
Revelation of Reaction and Capacity-Fading Mechanisms of Quasi-Solid-State Zn-Ion Batteries with δ -MnO ₂ As the Positive Active Material.....	1709
<i>Weeraporn Treerittiwittaya, Karthik kumar Chinnakutti, Nuria Tapia-Ruiz, Hongyi Gao, Pinit Kidkhunthod, Jitti Kasemchainan</i>	
High-Performance Aqueous Zinc-Ion Batteries Using Centrifugal Jet-Spun Non-Woven Chitin Fiber Separator	1710
<i>Jungho Jin, Myeong-Oh Song, Jeong-Ho Park, Ji-Won Jung</i>	
Complex-Type Fe-Cr Redox Flow Battery: Identification of Challenges	1712
<i>Xiaoyu Zhou, Kei Hanafusa, Ryota Tatsumi, Yongrong Dong, Kiyoaki Moriuchi</i>	
All-Solid-State Rechargeable Air Batteries Using Redox Active Naphthoquinone in the Negative Electrode.....	1713
<i>Suguru Wada, Kenji Miyatake</i>	
Development and Characterization of Hybrid Inorganic-Organic Solid Electrolytes for Their Application in Solid State Sodium Batteries	1716
<i>Niklas Röttgen, Michael Holzapfel, Franziska Klein, Jens Tübke</i>	
Sustainable Production and Application of Heterosite FePO ₄ As a Positive Electrode for Sodium Secondary Batteries	1718
<i>Fumiyasu Nozaki, Jinkwang Hwang, Kazuhiko Matsumoto</i>	
Addressing Hurdles to Decadal Operation of Next-Generation Flow Battery Chemistries	1719
<i>James D Saraidaridis</i>	
Design and Performance of a Sodium-Potassium and Mercury Room Temperature Liquid Metal Battery with an Organic Electrolyte for Large Scale Energy Storage	1721
<i>Jake Kattelmann, Jeremy Moon, Dev Chidambaram</i>	

Synthesis and Electrochemical Properties of Potassium Cobalt Silicate Cathode Materials for Potassium-Ion Batteries	1722
<i>Saki Akiyama, Takumi Hirayama, Tomooki Hosaka, Kosuke Nakamoto, Ryoichi Tatara, Kei Kubota, Shinichi Komaba</i>	
Water-in-Salt Binary Mixtures: A Structural Analysis of Potassium Salts Derived Electrolyte	1724
<i>Mukhilan Dhasarathaboopathy, Sabhapathy Palani, Vaishali Khokhar, Burcu E Gurkan</i>	
Potassium Alloy Reference Electrodes for Potassium-Ion Batteries	1725
<i>Ben Jagger, Shobhan Dhir, Jack Aspinall, Mauro Pasta</i>	
Electrochemical Performance of Zinc in Potassium Acetate-Based Electrolytes at Industrially Relevant Currents and Utilizations	1727
<i>Debayan Dutta, Damon E. Turney, Timothy N. Lambert, Sanjoy Banerjee</i>	
Design Principles for Improved Electrochemical Performance and Stability of Nonaqueous Mg-Electrolytes	1728
<i>Stefan Ilic, Noel Joseph Leon, Akash Jain, Chen Liao, Rajeev S Assary, Justin G. Connell</i>	
Fluoride Ion Conductivity of Rb-Doped K ₂ SbF ₄	1729
<i>Kazuaki Kawahara, Ryo Ishikawa, Naoya Shibata, Yuichi Ikuhara</i>	
Charge-Discharge Behavior of Spinel-Type Manganese Dioxide for Positive Electrode Materials for Aqueous Proton Batteries	1730
<i>Yusuke Kida, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	
Colossal Capacity Loss during Calendar Aging of Zn Battery Chemistries	1732
<i>Bo Liu, Xintong Yuan, Yuzhang Li</i>	
Regulating Interfacial Chemistry with Amphiphilic Copolymer for Durable Zinc Metal Anodes	1733
<i>Xiujuan Chen, Peiyuan Gao, Wei Li, Nhat Anh Thieu, Zane Grady, Novruz Akhmedov, Kostas Sierras, Murugesan Velayutham, Valery Khramtsov, David M Reed, Xiaolin Li, Xingbo Liu</i>	
Unraveling the Degradation Mechanisms of Vanadium Oxide Cathode-Based Aqueous Zinc-Ion Batteries	1734
<i>Kiyeon Sim, Kwang Sup Eom</i>	
High-Performance Near-Neutral Zinc-Air Batteries Enabled By Two-Step Electrochemical Pre-Treatment	1736
<i>Chi-Yu Lai, Kai-Yu Tseng, Chi-Chang Hu</i>	
Polyacrylamide-Based Hydrogel Electrolyte for Modulating Water Activity in Aqueous Zinc-Ion Batteries	1738
<i>Damira Rakhman, Aishuak Konarov, Zhumabay Bakenov</i>	

A09 - Multivalence Metal Based Battery 2

Bivalent Metal-Organic Batteries: Optimisation of Electrolytes By Next-Generation Additives	1740
<i>Natalia Izdebska, Klaudia Kierepka, Maciej Marczewski, Wladyslaw Wieczorek</i>	
Examining Competitive Coordination Structure in Eutectic Electrolyte for Zinc-Ion Batteries	1741
<i>Wenjing Deng, Xiaolei Wang</i>	
High Cycle Stability of Zinc Anode Battery Using Ni-Co Layered Double Hydroxide Cathode	1742
<i>Hikaru Sugihara, Satoshi Ogawa, Yoshiharu Ajiki</i>	

Interface Engineering of VO ₂ for Enhanced Energy Storage in Aqueous Zn-Ion Batteries	1744
<i>Jheng-An Chen, Jia-He Su, Yuan-Hong Ting, Tzu-Ho Wu</i>	
Influence of Simple Salts on Solvent Reduction Stability at Mg-Alloy Anodes Interface: A Potential-Dependent DFT Study	1745
<i>Hyemin Kim, Min Deng, Adrian Fortuin, Tim Würger, Prokopios Georgopoulos, Denis Kramer, Mikhail Zheludkevich, Daniel Höche</i>	
Advanced Electrolytes for Mg and Ca Batteries Based on Alkoxyborates and Alkoxyaluminates	1746
<i>Robert Dominko, Tjaša Pavčnik, Olivera Lužanin, Jozse Moskon, Miran Gaberscek, Jan Bitenc</i>	
Non-Aqueous Calcium-Based Dual-Ion Batteries with an Organic Electrode of High-Rate Performance.....	1747
<i>Wen-Yang Jao, Chen-Wei Tai, Chi-Chang Hu</i>	
Intercalation Mechanism of Solvated Magnesium Electrolytes on Spinel Cathode Surfaces	1749
<i>Heonjae Jeong, Lei Cheng</i>	

A09 - Multivalence Metal Based Battery 3

Synthesis, Cathode Properties and Crystal and Electronic Structure Changes in Charge/Discharge Process of Spinel Type Cathode-Materials 0.3MgCo _{2-x} Mn _x O ₄ -0.7Mg(Mg _{0.33} V _{1.67-y} Ni _y)O ₄ for Magnesium Secondary Batteries	1750
<i>Yasushi Idemoto, Shinichi Kumagai, Chiaki Ishibashi, Naoto Kitamura</i>	
3D MOF Derived Porous Nanorods like Cation Defect-Rich Ni _{0.6} Fe _{2.4} O ₄ @NC Efficient Electrocatalyst Enables Robust Rechargeable Zinc-Air Batteries	1753
<i>Gopalakrishnan Mohan, Soorathep Kheawhom</i>	
High-Capacity and Ultrastable Magnesium Batteries Enabled By Unique Solvation Reorganization in a Hybrid-Solvent Electrolyte	1755
<i>Feiyang Chen, Zheng-Long Xu</i>	
Design Strategies for High Voltage Spinel Cathode Materials to Enable Reversible Mg-Ion Intercalation.....	1756
<i>Bob Jin Kwon, Evelyn Wang, Ritesh Uppuluri, Saul Lapidus, Gerbrand Ceder, Jordi Cabana, Baris Key</i>	
Defect Rocksalt Oxides As Cathodes for Rechargeable Magnesium Batteries	1758
<i>Tomoya Kawaguchi, Masaya Yasuda, Natsumi Nemoto, Kohei Shimokawa, Hongyi Li, Norihiko L Okamoto, Tetsu Ichitsubo</i>	
Development of High-Utilization Four-Electron Tin Anodes for Aqueous Batteries	1760
<i>Sofia K. Catalina, Jianbo Wang, William C. Chueh, Tyler Mefford</i>	
Computational Investigations of Features for Predicting Ionic Conductivity in Multivalent Solid Electrolytes	1761
<i>Samuel M Greene, Donald J. Siegel</i>	
Improving Manganese Hexacyanoferrate's Performance by Optimizing Processing Conditions and Adding Minuscule Amount of Ni	1762
<i>Jay Deshmukh, Libin Zhang, Ning Zhang, Animesh Dutta, Ziwei Ye, Hussein Hijazi, Meng Yue, Meredith Tulloch, Michael Metzger</i>	

Positive Electrode Behavior of Manganese Dioxide in Alkaline Aqueous Electrolyte Solution.....	1765
<i>Masaki Okada, Masayuki Morita, Zempachi Ogumi, Takeshi Abe</i>	
Challenges on Developing Room-Temperature Rechargeable Magnesium Batteries with Oxide Cathodes	1766
<i>Tetsu Ichitsubo, Hongyi Li, Kohei Shimokawa, Xiatong Ye</i>	
Quaternary Electrolyte Mixtures for Rechargeable Aluminum-Sulfur Batteries.....	1767
<i>Snehal Sakharam Bhalekar, Robert J. Messinger</i>	
Investigation of Alkaline Zinc Anode Performance with Increasing Addition of Calcium Zincate (Ca[Zn(OH) ₃] ₂ ·2H ₂ O) Under Industrially Relevant Conditions.....	1769
<i>Patrick K Yang, Damon E. Turney, Michael Nyce, Bryan Russell Wygant, Timothy N. Lambert, Stephen O'Brien, Gautam Ganapati Yadav, Meir Weiner, Shinju Yang, Brendan Hawkins, Sanjoy Banerjee</i>	

A09 - Multivalence Metal Based Battery 4

Defective High-Entropy Spinel Oxides as Efficient Electrocatalysts for Rechargeable Zinc-Air Batteries.....	1771
<i>Kenneth Ikechukwu Ozoemena, Aderemi Bashiru Haruna</i>	
Design Guidelines for Cathode/Electrolyte Interface of Room-Temperature Rechargeable Magnesium Batteries with MnO ₂ Cathodes.....	1772
<i>Xiatong Ye, Hongyi Li, Norihiko L. Okamoto, Tetsu Ichitsubo</i>	
Polymer and Polymer Composite Electrolyte for Zn Ion Battery.....	1774
<i>Manunya Okhawilai, Peerawat Prathumrat, Chutiwat Likitaporn</i>	
High Performance Zinc-Based Anodes for Aqueous Zinc Batteries.....	1775
<i>Matthew Fayette, Xiaolin Li, David M Reed</i>	
A Low-Cost Xanthan Gum-Based Hydrogel Electrolytes for Quasi-Solid-State Rechargeable Alkaline Zinc Batteries.....	1776
<i>Patrick Dedetemo Dedetemo, Hiroshi Inoue</i>	
Enhancing Stability in Aqueous Zn Ion Batteries: Insights into Two-Dimensional Nanomaterials Protective Layer	1778
<i>Seulgi Kim, Ingyu Choi, Dongju Lee</i>	
Electrochemical Characteristics of Rechargeable MnO _x /Zn Battery	1779
<i>Hiroyuki Fujimoto, Masaaki Yoshikawa, Masaki Okada, Keiji Shimoda, So Fujinami, Masayuki Morita, Zempachi Ogumi, Takeshi Abe</i>	
Rechargeable Ag–Zn Batteries Via Single-Anion Conducting Solid-State Polymer Electrolytes	1780
<i>Hunter O. Ford, Eric Ruzicka Ruzicka, Brian Chaloux, Nishani Jayakody, Michael W Swift, Christopher Klug, Youngchan Kim, Xiao Liu, Battogtokh Jugdersuren, Jeffrey W. Long, Debra R. Rolison, Megan B. Sassin</i>	
Crafting a Reversible Zinc Metal Anode: The Impact of Organic Electrolyte Additives in Solid Electrolyte Interface Formation.....	1781
<i>Bhaskar Kakoty, Rishikesh V, Vinita Ahuja, Srimayee Mukherji, Sundaram Balasubramanian, Anjana Joseph, Chandrahas Narayana, Premkumar Senguttuvan</i>	
Preparation and Electrochemical Properties of α-MgCu ₂ O ₃	1783
<i>Yuzuru Miyazaki, Kazuma Uehara, Zhou Zihan, Zhicheng Huang, Kei Hayashi</i>	

Regulating the Solvation Shell Structure of Eutectic Electrolytes for Stable and High Performance Anode-Free Zn-Li Hybrid Batteries	1785
<i>Shih-Che Lin, Chun-Jern Pan, Chun-I Lee</i>	

B01-CARBON NANOSTRUCTURES: FROM FUNDAMENTAL STUDIES TO APPLICATIONS AND DEVICES

B01 - Digital Only Presentations

(Digital Presentation) Effect of Multimode Microwave on Ni@C Synthesized By Polygonal Barrel Plasma CVD	1789
<i>Fumihiro Koderu, Nobukazu Sato, Sota Ohara, Mitsuhiro Inoue, Akihiko Miyakoshi, Minoru Umeda, Takayuki Abe</i>	
(Digital Presentation) Internal Friction, Mechanical Spectroscopy of SiO ₂ , Radiation Functionalized Nanocomposites of Multiwalled Carbon Nanotubes and Polyamide, Polyethylene, Polyvinylchloride	1790
<i>Yurii Anatoliyovich Onanko, Mykhailo Vasylovych Yatsiuk, Anatoliy Petrovich Onanko, Eugene Michaylovich Matseliuk, Oksana Petrivna Dmytrenko, Mukola Polikarpovich Kulish, Tatiana Mukolaivna Pinchuk-Rugal, Peter Petrovich Il'in, Anna Andriivna Kuzmych</i>	

B01 - Synthesis

Catalytic Carbon Derived from the Pyrolysis of Ionic Liquids with/without Carbon Support.....	1793
<i>Pitambar Poudel, Aaron Timothy Marshall</i>	
Playing with Carbon-Carbon Bonds	1796
<i>Jianguo Wen</i>	
Approaching the Atomic Limit of Optically-and Electrically-Active Quasi-1D Van Der Waals Crystals Using Carbon and Boron Nitride Nanotube Encapsulation	1797
<i>Maxx Arguilla</i>	
Fullertubes: Current Progress and Latest Isolation of New Molecules	1798
<i>Steven Stevenson</i>	
Mixed-Dimensionality Heterostructures (TMDs@SWCNTs) for Gas Sensing Applications	1800
<i>Haifa Taoum, Ileana Florea, Costel Sorin</i>	

B01 - Conductivity & Transport 1

Sulfate Radical Oxidation for Enhancing Polishing-Rate Forhardmask-Film Chemical-Mechanical- Planarization	1801
<i>Jea-Gun Park, Manhyup Han, Myung-Hae Kim, Hyun-Sung Koh, Jin-Hyung Park</i>	
Effect of Carbon Addition and Passivation on the Mechanical Behavior of Freestanding Al Thin Films.....	1803
<i>Injong Oh, Zion Lee, Hojang Kim, Gi-Dong Sim</i>	
Carbon Nanomaterial Enabled Ultra High Conductivity Cu Composites for Advanced Conductors.....	1804
<i>Tolga Aytug, Kai Li, Mina Yoon, Michael McQuire, Huixin Jiang, Andrew Lupini, List Fred, J. Allen Haynes</i>	

Advancing Graphene Integration in Si CMOS Technology: Challenges, Solutions, and Modulator Exploration	1805
<i>Mindaugas Lukosius, Rasuole Lukose, Pawan Kumar Dubey, Ashraful Md Islam Raju, Daniele Capista, Marco Lisker, Andreas Mai, Christian Wenger</i>	

B01 - Conductivity & Transport 2

Investigation on the Charge Transport Properties of Cumulenenic Sp-Carbon Wires in Solution and in Thin Films	1806
<i>Elda Sala Ruben, Stefano Pecorario, Valerio Galli, Joao Paulo V. Damasceno, Mario Caironi</i>	
Overcoming Thermoelectric Trade-Offs through Lanthanide Oxide/Carbon Nanotube Hybrid Material	1807
<i>Tae-hoon Kim, Jabar Bushra, Heiko Reith, Maksim Naumochkin, Kornelius Nielsch, Stefan C. B. Mannsfeld</i>	
(Invited) The Role of Counterion Chemistry on the Nature of Charge Carriers in Redox-Doped Nanocarbons	1809
<i>Andrew J Ferguson, Jeff Blackburn</i>	
A Computational Tool for Determining the Local Dielectric Constants within Heterogenous Nanoscale Systems from Molecular Dynamics Trajectories	1810
<i>Anju Yadav, Lela Vuković</i>	
Electrochemical Studies of Ion Transport through Single-Walled Carbon Nanotubes Using Polyoxometalate/Nanotube Composite Electrodes.....	1811
<i>Darren Anthony Walsh</i>	
(Invited) Integrating Biology and Technology: Unleashing the Power of Graphene Field Effect Transistors	1812
<i>Kiana Aran</i>	

B01 - Poster Session

Impact of Local Structure and Spin on the ORR Performance of Single Atom M-N-C Catalysts	1814
<i>Hyeonjung Jung, Md Delowar Hossain, Michal Bajdich</i>	
Sensitivity Improvement of Electrochemical Virus Detection through Morphology Control of CNT Electrodes	1816
<i>Daichi Suzuki, Kenshin Takemura, Nao Terasaki</i>	
Separation and Isolation of Rare-Earth Clusters Trapped inside Uncommon Carbon Cages	1817
<i>Riley Schmitt, Steven Stevenson</i>	
Unraveling the Catalytic Graphitization Mechanism of Ni-P Electroless Plated Cokes Via in Situ Analytical Approaches.....	1818
<i>Sangwon Lee</i>	
Tunable Absorption and Photochromism in Polyheptazine Imides Via a Solvent Mediated Synthetic Pathway	1819
<i>Saunak Kumar Das, Stefan Repp, Sebastian Bette, Manisha Samanta, Lorenzo Tesi, Bettina Valeska Lotsch</i>	

Glowing Graphene Quantum Dots Enhancing Photoelectric Transportation in Photosynthesis Carbon Trapping of Pteridophyta Fern.....	1821
<i>Yen-Hsun Su, Shein-Fu Wu, Shu-Mei Wang, Chia-Wei Chang</i>	
Biographite Synthesized By Iron-Catalytic Graphitization Using Hydrothermal Carbonization Pretreatment for Lithium Ion Battery Anode.....	1822
<i>Yuta Nakayasu, Preethi Perianayagam, Futa Imaizumi, Takashi Itoh, Masaru Watanabe</i>	
Synthesis, Characterization, and Lib Cell Performance of Chemically-Derived Pure Crystalline Fullerene C60	1824
<i>chae-Ryong Cho, Linghong Yin, Hong Chen, Min-Seung Kang</i>	
Preparation and Properties of Activated Carbon for Capacitive Deionization to Obtain Clean Water	1826
<i>Song Mi Lee, Seon Ho Lee, Doo-Hwan Jung</i>	
Hierarchical Graphene Trees As Anode Materials for Lithium Ion Batteries with High Rate Capability	1827
<i>Seung Yol Jeong, Yang Sunhye, Byeong Guk Kim, Sooyeon Jeong, Hye Jung Lee, DongGyun Hong, Ick-Jun Kim</i>	
Highly Conductive Deformation-Free Reduced Graphene Oxide Fibers : Towards High- Performance Wearable Supercapacitors	1828
<i>Hye Jung Lee, Seung Yol Jeong, Sunhye Yang, Sooyeon Jeong, DongGyun Hong, Jihyeon Ryu, Ick-Jun Kim</i>	
Enhanced Electrochemical Properties of Silicon and Quasi-Defect-Free Reduced Graphene Oxide for High Performance Anode Materials.....	1829
<i>Sooyeon Jeong, Byeong Guk Kim, Jihyeon Ryu, Hye Jung Lee, DongGyun Hong, Ki-Hun Nam, Ick-Jun Kim, Sunhye Yang, Seung Yol Jeong</i>	
Study of Partial Silica Coating and Heat Treatment of PCNF to Improve Durability of Low- Temperature Fuel Cells.....	1830
<i>Seon Ho Lee, Song Mi Lee, Doo-Hwan Jung</i>	
High Performance Self-Powered UV Photodetector Based on Nitrogen-Doped Graphene Quantum Dot Schottky Diode	1831
<i>Muhammad Shehzad Sultan, Ernesto Espada Nazario, Bianca S Umpierre Ramos, Daniele D. Negron, Luis O. Ramos Alers, Wojciech Jadwisieniczak, Brad R Weiner, Gerardo Morell</i>	
Study on Enhanced Electron Field Emission Properties of Graphene Quantum Dots Synthesized By Pulsed Laser Ablation.....	1832
<i>Muhammad Shehzad Sultan, Ernesto Espada Nazario, Bianca S Umpierre Ramos, Daniele D. Negron, Luis O. Ramos Alers, Wojciech Jadwisieniczak, Brad R Weiner, Gerardo Morell</i>	
Electrical Characterization of Metal Contacts to Carbon Nanostructured Materials.....	1833
<i>Zewen Sun, Minsu Cho, Arijun Nahar, Kamatchi Jothiramalingam Sankaran, Yoshimine Kato, Kungen Teii</i>	
Development of Liposomes Containing NADH Incorporated Fullerene C ₇₀	1834
<i>Koike Ryuto, Haruka Sunaga, Rie Yamamoto, Kotaro Nishimura, Atsushi Ikeda, Toshifumi Konishi</i>	
Antioxidative and Anti-Inflammatory Carbon Nanotherapy for Rheumatoid Arthritis.....	1836
<i>Chanhee Choi, Yujin Choi, Sin Lee, Yoonhee So, Hongwon Kim, So-Hyun Moon, Jong-Ho Kim</i>	

Narrow-Spectrum WSe ₂ Nanosheet Antibiotics for the Therapy of Multi-Drug Resistant Bacterial Infections.....	1837
<i>Yoonhee So, Chanhee Choi, Yujin Choi, Jaehoon Shin, Yejoo Yu, Jong-Ho Kim</i>	
Mechano-Electrochemical Energy Harvesting for Self-Powered Sensors.....	1838
<i>Changsoon Choi</i>	
Secondary Battery Application by Fabrication of Vanadium Mxene.....	1839
<i>Kimin Roh, Sun Kyung Kim, Tae Jun Park, Han Jung Kwon, Jungjoon Yoo</i>	
Active Material-Free Continuous Carbon Nanotube Fibers with Unprecedented Enhancement of Physicochemical Properties for Fiber-Type Solid-State Supercapacitors.....	1842
<i>Hayoung Yu, Jeong-gil Kim, Nam Dong Kim, Seung Min Kim, Hyeon SU Jeong</i>	
Multi-Frequency Ultrasonic Dispersion of Carbon Nanotubes As Cathode Additives for the High Performance Li-Ion Batteries	1844
<i>Ki Ro Yoon</i>	

B01 - Photoinduced Processes

Bioinspired Molecular Electrets: Structure-Function Relationships When Dipoles Appear Everywhere.....	1845
<i>Valentine I. Vullev</i>	
Tailored Carbon Dots in Solar Energy Conversion Schemes	1846
<i>Dirk Michael Guldi</i>	
Role of 'pi-Stacked Self-Assembly' in Governing the Dynamics of Photoinduced Electron Transfer Events in Nanocarbon-Derived Donor-Acceptor Conjugates and Hybrids	1847
<i>Francis D'Souza, Shahrzad Kazemi, Ruben Caballero, Pilar de la Cruz, Ajyal Alsaleh, Paul Karr, Fernando Langa</i>	
(Invited) Emissive Charge-Transfer Excited-State between Organic Conjugated Molecule and Two-Dimensional Inorganic Nanosheet.....	1849
<i>Tomokazu Umeyama</i>	
(Invited) High Temperature Effects on the Properties of Single-Chirality Carbon Nanotube Assemblies.....	1851
<i>Yuhei Miyauchi, Akira Takakura, Taishi Nishihara, Takeshi Tanaka, Hiromichi Kataura</i>	

B01 - Batteries 1

Highly Aligned Graphene-Based Anodes Via Microfluidic Pulse Freezing Method.....	1852
<i>Hadis Zarrin, Yifan Liu, Dae Kun Hwang</i>	
Effective Conductive Networks from Carbon Materials for Lithium-Ion Batteries	1853
<i>Julian F. Baumgartner, Kostiantyn V. Kravchyk, Maksym V. Kovalenko</i>	
Graphdiyne-Based Two-Dimensional Nanomaterials for Next-Generation “Beyond Li-Ion” Batteries.....	1854
<i>Xueli Zheng</i>	
Upcycling PET Bottles into P-Doped Hard Carbon Anode Materials for Li-Ion Batteries	1855
<i>Dossym Yeskozha, Arailym Nurpeissova</i>	

Evaluating Li Ion Storage Mechanism in Carbon Nanotubes (CNT) Anodes for High Energy Density Li-Ion Batteries: An Atomistic Perspective	1858
<i>Aniruddha Dive, Yiran Xiao, Liwen Wan, Francesco Fornasiero</i>	

B01 - Batteries 2

Elucidating the Lithium-Ion Storage Mechanism in Insertion-Available Hard Carbon with Abundant Closed Porosity: Toward a Practical Material for Batteries	1859
<i>Liang-Chieh Tseng, Chen-Wei Tai, Chi-Chang Hu</i>	
Developing Routes for 3D Printed Carbon Aerogel Electrodes	1861
<i>Marcus Andre Worsley</i>	
Spontaneous Encapsulation of Silicon Nanoparticles By Hydroxyl-Rich Graphene Oxide for High Performance Core-Shell Anode Materials	1862
<i>Byeong Guk Kim, DongGyun Hong, Sooyeon Jeong, Hye Jung Lee, Ki-Hun Nam, Ick-Jun Kim, Sunhye Yang, Seung Yol Jeong</i>	
Enhancing the Li-Ion Storage Capacity of Nitrogen-Doped Bilayer Graphdiyne in Li-Ion Battery: A First-Principles Study	1863
<i>Liang-Yin Kuo, Yi-Zhan Wu, Minh Tam Le, Pham Thi Nhu Nguyet</i>	
Effect of the Number of Graphene Layers in rGO-CNT Current Collectors for Anode-Free Li Metal Batteries	1864
<i>Subi Yang, Seungho Lee, Juhyun Lee, Seungmin Han, Woojin Jeong, Jinyoung Chun, Junghyun Choi</i>	
Pillared Graphene Nanostructures for Electrochemical Energy Storage	1865
<i>Cengiz Sinan Ozkan</i>	

B01 - Capacitors

Peat Derived Carbon – Perfect Fit as an Electrode Material for High Power Supercapacitors and High Capacity Sodium-Ion Batteries	1866
<i>Maarja Paalo, Anu Adamson, Meelis Härmas, Enn Lust, Alar Janes</i>	
Tailored 3D Porous N-Doped Carbon Nanospheres for Bottom-up Electrode Design - Independent Pore and Particle Size Control for the Use in Model Electrodes	1868
<i>Niklas Ortlieb, Taisiia Berestok, Patrick Elsässer, Sven Küspert, Jonas Mutscher, Anna Fischer</i>	

B01 - Catalysis

Bimetallic CoFe Nanoparticles Embedded in Hierarchically Meso-Macroporous N-Doped Carbon Nanospheres As Electrocatalyst for Excellent Oxygen Reduction Reaction	1869
<i>Yulin Li, Yanna Guo, Yamauchi Yusuke, Yoshiyuki Sugahara</i>	
Controllable Synthesis of Work Function Tailored Zeolite Derived Hierarchically Porous and Active Site Enrich Carbon Framework for ORR in Acidic and Alkaline Medium and Its Application Towards Zinc Ion Hybrid Supercapacitor Device	1870
<i>Rupali Mane, Neetu Jha</i>	
Microwave Approach to Multi-Functional Graphene Nanocomposites for Energy Applications	1872
<i>Xinyu Zhang, Shatila Sarwar</i>	

Structured Carbon Nanofibrous Electrode for Mass Transport Enhanced MEA for PEMFCs	1873
<i>Yunseong Ji, Yong Gun Shul</i>	

Graphitic Engineered Carbon Supports for Fuel Cell and Electrolyzer Catalysts: Significance and Characterization Methodology	1874
<i>Michael Payne, Molly Klein, Brian Lenhart, Samuel McKinney, Delia Hernandez, Michele Ostraat</i>	

B01 - BioNanosensors 1

(Invited) Parallelized Fabrication and Functionalization of Graphene Field-Effect Biosensors	1875
<i>Delphine Bouilly</i>	

(Invited) Carbon Nanotube-Based Fabric Sensor for Selective Detection of Sweat Biomarkers.....	1876
<i>Chelsea Monty-Bromer, Victoria Stege, Michael Fulmer, Shelby Daniels, Madison Luthy</i>	

(Invited) Near-Infrared Nanosensors Driven By Molecular Recognition at sp^3 Defect Sites of Locally Functionalized Single-Walled Carbon Nanotubes	1878
<i>Tomohiro Shiraki</i>	

(Invited) Integrating Molecular Recognition Nanosensors with Bioprocesses for Real-Time, Non-Destructive, and Multivariate Process Analytics	1880
<i>Sooyeon Cho</i>	

A CNT-FET Electronic Nose for the Detection of VOCs Associated with Agriculturally Relevant Pests.....	1881
<i>Asaf Avnon, Hagai Klain, Roy Kaspi, Anat Levi-Zada, Sharoni Shafir, Guy Mechrez, Sefi Vernick</i>	

B01 - BioNanosensors 2

(Invited) Carbon/Metal Hybrid Materials for Robust Biosensors Development	1882
<i>Noe T Alvarez</i>	

(Invited) Multiplexed Cytokine Detection Via Fluorescent Single-Walled Carbon Nanotube Sensors.....	1883
<i>Ryan M. Williams, Pooja Vinod Gaikwad, Amelia K. Ryan, Atara R Israel, Zachary Cohen, Syeda Rahman</i>	

(Invited) NIR-II Instrumentation - from in Vitro Spectroscopy to Translational Fluorescence Imaging.....	1884
<i>Sebastien Blais-Ouellette, Pierre-Alix Dancer, David Rioux, Paul Dorval, Wendy Chung</i>	

B01 - BioNanosensors 3

(Invited) Nanosheet Antibody Mimics for Diagnosis and Therapy of Bacterial Infections	1885
<i>Sin Lee, Yujin Choi, Jong-Ho Kim</i>	

(Invited) Bio-Inspired Method for Degrading Carbon Nanotubes.....	1886
<i>Toshiya Okazaki, Minfang Zhang</i>	

(Invited) Spatial Quantification of Nitric Oxide Via DNA Wrapped Single Wall Carbon Nanotubes to Demonstrate Extracellular Interactions between Cells	1888
<i>Nicole M Iverson, Ivon Acosta Ramirez</i>	

B01 - BioNanosensors 4

- (Invited) Predictive Modeling of the Biological Fate of Nucleic Acid Nanotechnologies: Bridging In Vivo and in Vitro Analyses..... 1889
Heather A. Clark, Ciara Eades, Kristine Ma, Nicole I Langlois
- (Invited) AI-Driven Surface Enhanced Raman Spectroscopy for Rapid Diagnosis of Metabolic Disorders 1890
Tony Hu
- (Invited) How to Make and Manipulate Carbonaceous Materials Using Liquid Metals 1891
Kourosh Kalantar-Zadeh
- Advancement of Ionic Complexes Based on Multivalent Carbon Dot Polyanions for Applications in Electrochemical Systems..... 1892
Hong Chul Lim, Tae Hyun Kim

B01 - BioNanosensors 5

- (Invited) Tackling Leakage, Drift, and Variation in Printed Carbon Nanotube-Based Electronic Biosensors 1893
Aaron D Franklin
- (Invited) Conductometric Biosensors: Semiconductor Technology for Precise Measurements of Molecules 1894
Sharath Sriram
- Electrochemical Preparation of Multifunctional Fabrics Using Graphene Materials 1895
Behnaz Jafari, Gerardine G Botte
- (Invited) Lubricin-Powered Biosensors for Multiplex Biomarker Detection 1896
Saimon Moraes Silva, Thiago Coimbra Pimenta, Wren Greene
- Carbon Nanotube Optical Sensors for Drug Discovery..... 1897
Daniel A. Heller, Prakrit Jena, Mijin Kim, Christopher Horoszkowski, Stephen Ruiz, Declan Gwynne, Chen Chen

C01-CORROSION GENERAL POSTER SESSION

C01 - Digital Only Presentations

- (Digital Presentation) Life Cycle Cost and Technical Analysis of Corrosion Control Methods to Prevent Failures in Water Service Systems 1898
Andres Marquez, Rishi Ramkellawan, Chris Maharaj
- (Digital Presentation) Improved Properties of Polyurethane Coatings Using Mesoporous Silica Nanoparticles Loaded with Imidazole 1901
Ibrahim AlJundi, R. a. Shakoor, MD Anwarul Hasan

C01 - Corrosion General Poster Session

- Influence of Water Vapor on High Temperature Oxidation Behavior of Type 310 Stainless Steel..... 1902
Wen-Ta Tsai, Michael Ma

Effects of Corrosion Inhibitors on the Galvanic Corrosion Behaviors of Cu Coupled to Au on PCB	1903
<i>SeKwon Oh</i>	
High-Temperature Corrosion Characteristics of Copper for Deep Geological Disposal of Spent Nuclear Fuel	1904
<i>Seunghyun Kim, Gitae Park, Gidong Kim, Sang-Woo Song</i>	
Effective Dissolution of Tin Using Electrolytically Oxidized Alkaline Solution	1905
<i>Yu-ki Taninouchi, Hiroaki Nakano</i>	
Corrosion Failure Analysis of Peak Load Boiler Using Landfill Gas.....	1907
<i>Soo Yeol Lee, Min Ji Song, Keun Hyung Lee, Taeuk Kang</i>	
Enhancement of Corrosion Resistance and Hardness for Type 420J2 Martensitic Stainless Steel Via Laser Powder Bed Fusion Process.....	1908
<i>Yusuke Tsutsumi, Takuya Ishimoto, Tomoyo Manaka, Kyosuke Ueda, Mariko Kadowaki, Hideki Katayama, Aira Matsugaki, Takayoshi Nakano, Takao Hanawa</i>	
Corrosion Enhanced By Hydrogenotrophic Methanogens Differently Enriched on Copper Alloys	1910
<i>Elena Cazzulani, Pierangela Cristiani, Gian Luca Chiarello, Andrea Franzetti</i>	
Corrosion Potential Oscillation of Iron in H ₃ PO ₄ + H ₂ O ₂ Solutions	1911
<i>Ryo Sato, Terumasa Kuge, Shuji Nakanishi, Yoshiharu Mukouyama</i>	
Development of Green Conversion Sol-Gel Coatings for Corrosion Protection of AZ61 Magnesium Alloy.....	1913
<i>Federico R. Garcia-Galvan, Alicia Páez-Pavón, Violeta Barranco, Irene Llorente, Miguel Romero Martin, Noemi Carmona, Sebastian Feliu, Santiago Fajardo, Juan Carlos Galvan</i>	
Effect of Impact Energy on High Temperature Erosion-Corrosion Behavior of Ni-xFe Alloys in Fluidized Silica Sand.....	1915
<i>Rikuto Tamura, Suzue Yoneda, Takashi Kogin, Eiji Ishikawa, So Murasue, Shigenari Hayashi</i>	
Enhancing Corrosion Resistance of Type 316L Stainless Steel in Marine Environments: Role of Surface Roughness and Organic Acid Passivation	1917
<i>Rockhoon Jung, Hana LIM, Hyun-Jong Kim</i>	
Tuning Machine Learning Hyperparameters of a Metal-Assisted Chemical Etching (MACE) Process.....	1918
<i>Christopher St John, Christian L. Arrington, Jonathan Coleman, Mason Risley, David Bruce Burckel</i>	
Suppression of the Leidenfrost Effect By Controlling the Nanostructure of Aluminum Surfaces	1919
<i>Takahiro Noguchi, Mana Iwai, Sho Kitano, Koji Fushimi, Hiroki Habazaki</i>	
Formation and Biological Properties of Hydroxyapatite-Magnesium Oxide Composite Coatings on Mg-1Zn-1Gd Alloys Though Anodization, Electrodeposition, and Solution Treatment Processes.....	1921
<i>Erli Lin, Songzhu Shochiku Kure-Chu, Jiacheng Liu, Peng WANG, Noriaki Kurita, Xiaopei Li</i>	
Improving Corrosion Resistance By Anodizing of Aluminum Vapor-Deposited Magnesium	1923
<i>Takuma Araki, Shunsuke Tomita, Tatsuya Kikuchi</i>	
Optimum Conditions for the Fabrication of Ordered Porous Alumina Via Anodizing in Etidronic Acid at Higher Voltages.....	1925
<i>Takumi Koguchi, Tatsuya Kikuchi</i>	

VOLUME 4

Porous Silicon Nanowires: Evaluation of Thermal Properties By a Vamas Interlaboratory Comparison on Scanning Thermal Microscopy	1927
<i>Natascia De Leo, Luca Boarino, Matteo Fretto, Petr Klapetek, Aitor Lopeandia, Javier Rodriguez Viejo, Eleonora Cara</i>	

C02-HIGH-TEMPERATURE CORROSION AND MATERIALS CHEMISTRY 16

C02 - High Temperature Electrochemistry 1

Advancement of High Temperature Electrochemistry for Decarbonization Applications at Idaho National Laboratory.....	1930
<i>Dong Ding</i>	
A New Generation of Protective Coating Materials Based on $\text{CuMn}_{1.7}\text{Fe}_{0.3}\text{O}_4\text{-Me}_2\text{O}_3$ (Me=Y, Gd) Ceramic Bilayers for Solid Oxide Cells Interconnect	1931
<i>Bartłomiej Lemieszek, Justyna Ignaczak, Krystian Lankauf, Patryk Blaszcak, Maciej Bik, Marcin Zajac, Maciej Sitarz, Piotr Jasiński, Sebastian Molin</i>	
Metal Dusting Corrosion of Ni-Based High-Cr Alloys in Colossal Carbon Supersaturation	1932
<i>Charlie Chun</i>	
Electrochemical CO_2 Capture By Intermediate-Temperature Hybrid Electrolyte Electrochemical Assembly.....	1934
<i>Wenjuan Bian</i>	
Advancing Chemical Synthesis through Integrated High Temperature Electrochemical and Thermochemical Processes for Enhanced Efficiency, Yield, and Sustainability	1935
<i>Chuanheng Duan</i>	
Corrosion Analysis of a High Entropy Alloy for Ammonia Production	1936
<i>Mamie Sancy, Daniela Silva, Magdalena Walczak</i>	
Electron Irradiation of Self-Healing and Internal Ooxidation of Self-Healing Ceramics.....	1938
<i>Makoto Nanko, Nguyen Thi Nguyen, Phanuwat Khlaisongkham, Yen-Ling Kuo, Alan Xu, Gordon Thorogood, Thi-Mai-Dung Do, Hisayuki Suematsu</i>	
Influence of Cutting Surface Condition and Composition on High-Temperature Oxidation Behavior of Ti_2AlC MAX Phase Ceramics	1939
<i>Naoya Yamaguchi, Manabu Okada, Yen-Ling Kuo, Makoto Nanko</i>	

C02 - High Temperature Electrochemistry 2

The Potential for High Temperature Corrosion in the Naval Operating Environment	1941
<i>David Shifler</i>	
High-Temperature Oxidation Behavior of Fe-10Ni Alloy in Air/ $\text{Ar-H}_2\text{-H}_2\text{O}$ Dual Atmosphere.....	1942
<i>Suzue Yoneda, Sota Abe, Yasutaka Kawada, Kiyoshi Imai, Shigenari Hayashi</i>	
Oxidation of Ni Foil at 873K between $\text{Ar-1\%O}_2$ and $\text{Ar-5\%H}_2$ Gas Atmospheres.....	1946
<i>Kenichi Kawamura, Soichiro Inoue, Yudai Koinuma, Ken Namba</i>	

Dual Atmosphere Oxidation of Fe-9mass%Cr Alloy at 923 K Using Samples with Hydrogen Charged Palladium	1947
<i>Mitsutoshi Ueda, Shunsuke Norimatsu</i>	
Dependence of Lattice Constant and Oxygen Deficiency of CrNbO ₄ on Oxygen Partial Pressure.....	1948
<i>Yen-Ling Kuo, Shusei Fujita, Shigenari Hayashi, Makoto Nanko</i>	
Passivity Degradation of Ni and Fe-Based Alloys in High-Temperature Acid Sulfate Solutions	1949
<i>Victor U Okoro, Kevin Daub, Anatolie Carcea, Roger Newman, Suraj Y Persaud</i>	
Identification of Corrosion Factors in Blast Furnace Gas Pipe Network with Corrosion Big Data Online Monitoring Technology	1951
<i>Chao Liu, Bingqin Wang, Xuequn Cheng, Xiaogang Li</i>	
Molten Salt Corrosion Study of Alloys for Energy Application.....	1953
<i>Adnan Syed, Adrianus Indrat Aria, John Nicholls</i>	

C02 - High Temperature Electrochemistry 3

The Effect of Cold Work and Irradiation on the Dealloying Behavior of Ni-Cr Alloys in Molten Fluoride Salts.....	1954
<i>Ho Lun Chan, Sean Mills, Elena Romanovskaia, Harjot Singh, Valentin Romanovski, Minsung Hong, Xikai Wang, Matthew Chancey, Mark Asta, Andrew M Minor, Peter Hosemann, John R. Scully</i>	
Effect of Trace Moisture on the Corrosion of Commercial Alloys in Molten LiCl-KCl	1956
<i>Thomas Selmi, Craig Moore, Dev Chidambaram</i>	
Electrochemical Study of the Hot Corrosion Behavior of TP347H in Coal Ash.....	1957
<i>Shanshan Hu, Youyuan Zhang, Xingbo Liu</i>	
Investigation of Ruthenium and Iridium Metal as Potential Anodes for Oxide Reduction in Molten LiCl-Li ₂ O.....	1958
<i>Craig Moore, Thomas Selmi, Dev Chidambaram</i>	
Investigation of Metal Oxides as Potential Anodes for Oxide Reduction in Molten LiCl-Li ₂ O.....	1959
<i>Craig Moore, Thomas Selmi, Dev Chidambaram</i>	
High Temperature Corrosion Induced By Calcium-Based Deposits	1960
<i>Vilupanur A Ravi, Michael Kloesel, Regina Dilig, Diego Ochoa, Steven Maldonado, Ezequiel Jimenez, Ronald Reyes</i>	
Hot Corrosion Behavior of Nickel-Based Superalloys in Molten Na ₂ SO ₄ -MgSO ₄ Salts.....	1961
<i>Youyuan Zhang, Shanshan Hu, Michael Teka, Xingbo Liu</i>	

C03-CRITICAL FACTORS IN LOCALIZED CORROSION 11

C03 - Digital Only Presentations

(Digital Presentation) Experimental Analysis of Pit Initiation at MnS Inclusion in Low-Alloy Steel Using in-Situ Raman Spectroscopy	1962
<i>Hiroyuki Fuji, Ryota Imaki, Izumi Muto</i>	

C03 - Corrosion Resistant Alloys

- (Invited) Critical Factors Inside and Outside Localized Corrosion Sites 1963
Robert G Kelly
- Investigating Stress-Induced Geometry Effects on Corrosion Rates of Stainless Steel in Aqueous Solutions..... 1964
Alexandra Murphy, David Yapell, Lyra Troy, Jabari Allen, Christian Ruiz, Joseph Dumont, Tommy Rockward
- Self-Healing Properties of High Entropy Alloys: Insights from Element Resolved Electrochemistry..... 1965
Kevin Ogle, Chenyang Xie, Fan Sun, Junsoo HAN
- Effects of Cr on Microstructure and Pitting Corrosion Resistance of Ferritic Lightweight Steels 1967
Heon-Young Ha, Seong-Jun Park, Kyong-Won Kim, Chang-Hoon Lee, Tae-Ho Lee, Joonoh Moon, Ho Sik Lee
- Improvement of the Corrosion Resistance for Martensitic Stainless Steel By Laser Thermal Processing..... 1968
Tomoyo Manaka, Yusuke Tsutsumi, Mitsuhiro Goto, Mariko Kadowaki, Yoshiharu Murase, Hideki Katayama, Takuya Ishimoto, Takao Hanawa
- (Invited) Recent Advances in Understanding the Critical Pitting Temperature..... 1970
Tianshu Li, Gerald S. Frankel
- Determination of E_{crit} Using 1-D Pit Approach and Its Relationship to the Repassivation Potential of 3-D Pits 1972
Mariana Georges, Gerald S. Frankel
- Localized Corrosion Behavior of Type 304 Stainless Steel Electrolytically Charged with Hydrogen 1974
Eiji Tada, Hongming Cheng, Azusa Ooi
- Titanium Hydride Growth and Ti_x Fe Intermetallic Particle Dissolution on Grade-2 Titanium Under Simulated Crevice Corrosion Conditions 1975
Adam M. Morgan, Vahid Dehnavi, Dmitriy Zagidulin, David W. Shoesmith, James J. Noel
- Hydrogen-Induced Electrochemical Degradation of Passive Film Formed on Ni-Ti Superelastic Alloy in an NaCl Solution 1977
Jun-Seob Lee, Seo-Young Rho, Kuga Ando, Ken'ichi Yokoyama

C03 - Copper and Steel

- (Invited) Determining the Possibilities for Localized Corrosion of Copper in Aqueous Chloride, Sulfate, Bicarbonate, and Bisulfide Solutions 1978
Sina Matin, Mengnan Guo, Taylor Martino, Roshan Daljeet, Zack Qin, Adam M. Morgan, Jian Chen, Dmitriy Zagidulin, Mehran Behazin, David W. Shoesmith, James J. Noel
- Cathodic Corrosion of Copper: A DFT and Kmc Simulation Study..... 1980
Hori Pada Sarker, Anshuman Goswami, Michael Tang, Frank Ablid-Pedersen
- Origin of Copper Dissolution in Electrocatalytic Reduction Conditions Involving Amines 1982
Yani Guan, Philippe Sautet
- Unravelling the Mechanism of Filiform Corrosion on Painted Carbon Steel..... 1983
Michele Fedel, Stefano Rossi, Luca Benedetti, Flavio Deflorian, Andrea Cristoforetti

Coupled Point Defect Theory and Artificial Neural Network Studying Dynamic Behaviors of Rebar Corrosion.....	1984
<i>Yakun Zhu, Digby D. Macdonald, George Engelhardt</i>	

Synergistic Effects of Plastic Deformation and Chloride Ions on Localized Corrosion of Steel Rebars in Concrete	1985
<i>Kotaro Doi, Sachiko Hiromoto</i>	

C03 - Techniques

(Invited) Influence of Environmental Variables on Localized Corrosion	1986
<i>Rebecca Filardo Schaller, Ryan Katona</i>	

Respirometric Studies on Transpassive Dissolution	1987
<i>Sannakaisa Virtanen</i>	

Online ICP-OES for Studying the Alloying Effect of Zn and Cu on Corrosion of Al-10 Mass% Si Alloy.....	1988
<i>Natsumi Takano, Mana Iwai, Sho Kitano, Hiroki Habazaki, Ryogo Nakagawa, Dai Yamamoto, Koji Fushimi</i>	

Application of Scanning Probe Microscopy Towards Clarifying the Mechanism of Localized Corrosion.....	1990
<i>Yuya Takara, Takahiro Ozawa</i>	

Kelvin Probe Techniques in Corrosion Science: Probing Reactivity with Spatial Resolution	1991
<i>Michael Rohwerder</i>	

C03 - Aluminum

Effect of Sn on Dissolution Behavior of Al Prepared By Spark Plasma Sintering	1992
<i>Masashi Nishimoto, Fuki Shinagawa, Izumi Muto</i>	

Enhancing Pitting Corrosion Resistance of AA7075 through Surface Alkalization By Mg ₂ Si and Conversion Coating	1993
<i>Ko Ebina, Masashi Nishimoto, Izumi Muto</i>	

Understanding the Effect of Microstructure and Composition on Localized Corrosion Susceptibility of 6xxx Aluminum Alloys	1994
<i>Gerald S. Frankel, Priyanka Adapala, Thomas Avey, Yudie Yuan, Mary Lyn Lim, Ganesh Bhaskaran, Sazol Das, Alan Luo</i>	

Initiation of Localized Corrosion of Die-Cast ADC12 Aluminum Alloy	1995
<i>Kaito Takeuchi, Masashi Nishimoto, Izumi Muto</i>	

60 Years' Marine Corrosion of Aluminium Alloy 24S (A2024) - Conservation and Treatment of Very Corroded Aluminium Alloys with 100% Carbon Vegetal Corrosion Inhibitors	1996
<i>Emmanuel Rocca, Agnès Paris-Mirambet, Francois Mirambet</i>	

C03 - Other Materials

Mitigating Localized Corrosion in Complex Environments through Corrosion Probe Regulated Cathodic Protection	1997
<i>Yongjun (Mike) Yongjun Tan, Bob Varela</i>	

In-Situ Non-Destructive Corrosion Monitoring	1998
<i>Gonzalo Seisdodos, Milo Guy Prisbrey, Pavel Vakhlamov, Cristian Pantea, Eric Sean Davis, Tommy Rockward</i>	
Transmission Electron Microscope Characterizations of the Localized Corrosion Behavior of Biodegradable ZX21 Mg Alloy in Hanks' Balanced Salt Solution	1999
<i>Chih-Wei Sung, Chien-Wei Fan, Chun Chen, Peng-Wei Chu</i>	
Corrosion Behavior of Additively Manufactured AZ91 Mg Alloy	2000
<i>Raul Reyes, Federico R. Garcia-Galvan, José Antonio Jiménez, Sebastian Feliu, Violeta Barranco, Juan Carlos Galvan, Santiago Fajardo</i>	
Effect of Microalloying on Localized Corrosion and Mechanically Induced Corrosion of Magnesium-Zinc Based Ternary Alloys	2001
<i>Pingli Jiang, Carsten Blawert, Mikhail Zheludkevich</i>	
Corrosion Resistance of Zinc Alloy Coatings Containing 1-3wt% Mg and Al at Small Radius Bends	2002
<i>Matthew Alexander Brooks, David Penney, James Sullivan, Amar Malla, Christopher Mills, Clive Challinor</i>	

ECS Corrosion Division Awards Session

(Corrosion Division Morris Cohen Graduate Student Award) Respirometric Monitoring of Corrosion.....	2004
<i>Michael P. Strebl, Mark P. Bruns, Sannakaisa Virtanen</i>	
(Corrosion Division H. H. Uhlig Award) The Remarkable Versatility of Copper: From its Corrosion Resistance to Antibacterial Properties	2006
<i>Ingrid Milosev</i>	

C04-PITS AND PORES 10: NANOMATERIALS - FABRICATION, PROPERTIES, AND APPLICATIONS

C04 - Digital Only Presentations

(Digital Presentation) Investigation of Electrochemical Cu Deposition on Nanoscale Sculptured Al Surfaces by FFT-Impedance Spectroscopy.....	2008
<i>Mark Daniel Gerngross, Melike Baytekin Gerngross, Juergen Carstensen, Rainer Adelung</i>	
(Digital Presentation) Nanoscale Sculpturing of Al and Al Alloys for Heterogeneous Al-Cu Joints	2010
<i>Melike Baytekin Gerngross, Mark Daniel Gerngross, Juergen Carstensen, Rainer Adelung</i>	

C04 - Nanomaterials: Fabrication and Application 1

(Invited) Implantable and Bioresorbable Chemical Sensors for in-Vivo Monitoring of Clinical-Diagnostic Markers	2012
<i>Giuseppe Barillaro</i>	
Fabrication of Alumina Membrane Filters with Framework	2014
<i>Takashi Yanagishita, Youta Boushi</i>	
Composite Porous Structure Formation By Metal-Assisted Etching of p-Type Silicon.....	2015
<i>Shinji Yae, Kyohei Azuma, Rin Nishinaka, Tatsuki Hashiguchi, Takuma Nakayama, Ayumu Matsumoto</i>	

In-Situ Observations of Li ⁺ and Na ⁺ Storage in Anodic Nanotubes	2016
<i>Damian Kowalski, Mewin Vincent, Sandra Sajeev</i>	

Microfabrication of Highly Robust Superhydrophobic Glass Surfaces Via Combined Thermal Poling and HF Gas Etching	2018
<i>Kohei Yasuda, Nobuya Mineyuki, Kohei Sano, Yasuo Hayashi, Takayuki Homma</i>	

C04 - Nanomaterials: Optical and Magnetic Properties

(Invited) Nanostructured Silicon Loaded with FePt Nanoparticles – a Composite with High Energy Product	2020
<i>Klemens Rumpf, Petra Granitzer, Roberto Gonzalez-Rodriguez, Jeffery Coffey</i>	

Semiconducting/Ferromagnetic Nanocomposites Investigated By High Temperature FORC	2021
<i>Petra Granitzer, Klemens Rumpf, Roberto Gonzalez-Rodriguez, Manfred Nachtnebel, Jeffery Coffey</i>	

Seed Layer Effect on Electrodeposited 3D CoPt Alloy Nanowires for Magnetic Storage Application.....	2022
<i>Md Mahmudul Hasan, Tongshuang Huang, Mikiko Saito, Yota Takamura, Philippe Allongue, Takayuki Homma</i>	

Metasurface Optic Features Using Metal-Assisted Chemical Etching (MACE).....	2024
<i>Christopher St John, Christian L. Arrington, Jonathan Coleman, Mason Risley, David Bruce Burckel</i>	

C04 - Nanomaterials: Fabrication and Characterization 1

(Invited) “Armor-Coated” Enzymes: Chemistry and Properties of Functional Biomolecules Trapped in Mesoporous Silicon Nanoparticle Cages.....	2026
<i>Michael J Sailor</i>	

(Invited) Engineering Anodic Porous Alumina-Based Photonic Structures and Prospective Applications.....	2027
<i>Laura K. Acosta, Josep Ferre-Borrull, Elisabet Xifre-Perez, Lluís F. Marsal</i>	

C04 - Nanomaterials: Oxide Formation and Self-Organization

(Invited) Fabrication of Anodic Porous Alumina via Anodizing Aluminum in Novel Electrolyte Solutions.....	2029
<i>Tatsuya Kikuchi, Mana Iwai, Daiki Nakajima</i>	

Effects of Composition and Texture of Ti Alloys on the Anodic Growth of Nanotubular Oxide Layers.....	2031
<i>Hiroaki Tsuchiya, Shinji Fujimoto</i>	

Radical Surface Chemistry: The Surprising Reactivity of Silica and Partially Oxidized Porous Silicon Surfaces	2032
<i>Yangie Li, Ramya Narasimhan, Denise M. Monack, Richard N Zare, Juliana T Hetzel, Kurt W Kolasinski</i>	

Formation Behavior of Nanoholes in Porous Ga Oxide	2033
<i>Toshiaki Kondo</i>	

Controlling Nickel Deposition Depth in Mesoporous Silicon through Wetting and Deposition Kinetics.....	2034
<i>Monja Gronenberg, Deik Petersen, Juergen Carstensen, Rainer Adelung</i>	

C04 - Nanomaterials: Fabrication and Application 2

(Invited) One Dimensional Anodic TiO ₂ Nanotubes for Energy and Catalytic Applications	2035
<i>Hanna Sopha, Lina Marcela Sepúlveda Sepúlveda, Jan M. Macak</i>	
Atomic Layer Deposition on Anodic TiO ₂ Nanotubes for Electrochemical Applications	2037
<i>Jan M. Macak, Raul Zazpe, Hanna Sopha, Jhonatan Rodriguez Pereira, Bilal Bawab</i>	
(Invited) Mild Anodization of Aluminum: From Fundamentals to Industrial Applications	2038
<i>Hidetaka Asoh</i>	

C04 - Nanomaterials: Fabrication and Characterization 2

(Invited) Porous Silicon Nanowires for SERS Platforms and Thermo-Electrical Materials	2039
<i>Eleonora Cara, Natascia De Leo, Federico Ferrarese Lupi, Andrea Giovannozzi, Burkhard Beckhoff, Philipp Hönicke, Aitor Lopeandia, Javier Rodriguez Viejo, Zineb Saghi, Luca Boarino</i>	
Fabrication and Multi-Functional Performance of TiO ₂ /TiO ₂ -TiN/MoS ₂ Composite Films on Ti through Smart Anodization and Anodic Electrodeposition	2042
<i>Peng WANG, Songzhu Shochiku Kure-Chu, Jiacheng Liu, Kouya Matuhira, Shun Itatsu, Erli Lin, Noriaki Kurita</i>	

C04 - Nanomaterials: Fabrication and Characterization 3

(Invited) Titania Nanostructures in Single-Atom-Mediated Photocatalytic Processes.....	2044
<i>Patrik Schmuki</i>	
Nature of Instability in Electrokinetics-Based Anodic Oxide Pore Formation.....	2045
<i>Sajal Wankhede, Dipin S. Pillai</i>	
Environmental, Processing, and Fabrication Factors Affecting Pitting Corrosion of SS316L	2046
<i>Tasnia Fatima, Ricardo Carvalho, Rajeev Kumar Gupta, Brendy Carolina Rincon Troconis</i>	
(Invited) A New Perspective on Pore Growth in Anodic Alumina Films	2047
<i>Sachiko Ono</i>	

C04 - Nanomaterials: Fabrication and Characterization 4

(Invited) Porous Semiconducting Nanotube Interfaces for Device Applications	2049
<i>Roberto Gonzalez-Rodriguez, Evan Hathaway, Yuankun Lin, Jingbiao Cui, Jeffery Coffey</i>	
Formation of Porous Anodic Aluminum Oxide with a Thick Barrier Layer and High Porosity By Anodizing Aluminum in Sodium Metaborate Solutions.....	2051
<i>Mana Iwai, Tatsuya Kikuchi, Sho Kitano, Koji Fushimi, Hiroki Habazaki</i>	
(Invited) Metal-Assisted Chemical Etch of Semiconductors: Fundamentals and Applications	2052
<i>Xiuling Li</i>	

C04 - Nanomaterials: Fabrication and Application 3

- (Invited) Titania Nanotube Layers as Anodes for Li-Ion Microbatteries..... 2053
Thierry Djenizian
- Highly Efficient Blue Energy Harvesting By Nanoarchitected Tri-Continuous Porous Structures
with Ultrathin Light-Responsive Covalent-Organic Framework Membrane 2055
Yu-Hsiang Peng, Li-Hsien Yeh
- Anodic TiO₂ Single Nanotubes with Fe₃O₄ Nanoparticles: Advanced Photocatalytical Applications..... 2056
Lina Marcela Sepúlveda Sepúlveda, Ivan Saldan, Hanna Sopha, Jan M. Macak
- (Invited) Slit Pores Engineering in 2D Layered MXenes for Electrochemical Energy Storage and
Conversion..... 2057
Michael Naguib

C05-ATMOSPHERIC AND MARINE CORROSION 3

C05 - Marine Corrosion

- (Invited) Replicating the Corrosion Behavior of Steel and Aluminum Alloys at a Coastal Exposure
Site: Using an Accelerated Combined-Effects Chamber Simulation (ACES) for Improved
Laboratory Corrosion Testing..... 2058
*Douglas C Hansen, Raymond J. Santucci, Drew Sanders, Matthew J. Rothgeb, Christine E.
Sanders, Chad Hunter, Ronald A. Zeszut, Hannah J. Buchanan, Michaela A. Kendig*
- Selection of Design Parameters to Reduce Maintenance 2060
David Shifler
- Control of Corrosion of Carbon Steel in Sea Water by Polyaniline/Epoxy-(graphene)-Based
Double-Layered Smart Coatings 2061
Ahmad Diraki, Sasha Omanovic
- Comparison of Chloride Deposition Rates Measured at a Marine Site Using Dry Candles with
Annual, Bi-Monthly and Monthly Exposure Durations 2063
Ryan Sugamoto, Jan Kealoha, Blake Yamamoto, Lloyd H. Hihara

C05 - Atmospheric Corrosion 1

- (Invited) Rust Design for Corrosion Protection of Steel Exposed to Atmospheric and Marine
Environments..... 2064
Masato Yamashita
- Effects of Friction Stir Welding on the Structure and Protectiveness of Rust Layers Grown on Low-
Alloyed Steels Under Cyclic Wet/Dry Corrosion Condition 2067
*Hiroaki Tsuchiya, Yuichiro Kobayashi, Takumi Kawakubo, Kohsaku Ushioda, Hidetoshi Fujii,
Masato Yamashita, Shinji Fujimoto*
- Study of Rust Structure Change in Wet and Dry Conditions Using XAFS Measurement..... 2068
Takahiro Ozawa

Influence of Phosphorus on Initial and Long-Term Atmospheric Corrosion Behavior of Steel Materials	2069
<i>Hideki Katayama, Chihiro Hayama, Mariko Kadowaki, Yoshiharu Murase, Toru Hara, Yuka Hara, Yusuke Tsutsumi, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	

Green Corrosion Inhibitor Based on Triazoles for Steel Reinforcement in Concrete Elements	2071
<i>Oladis Marici Troconis de Rincon, Jorge Escribano, Loreto Dacio, Leonardo X. Alvarez, Brendy Carolina Rincon Troconis</i>	

C05 - Coating and Corrosion Protection 1

Evaluation of Painted Steels for Transmission Towers Under Accelerated Deterioration Tests	2072
<i>Mari Maeda, Kenji Yasumoto, Junichi Tani</i>	

Corrosion Protection of Substrate Metal by Formation of Self-Healing Coating	2074
<i>Makoto Chiba, Rin Takada</i>	

Corrosion Protection of Damaged Metals Covered with Self-Healing Coating	2075
<i>Makoto Chiba, Rin Takada</i>	

Mitigating Galvanic Corrosion in Carbon Fiber Reinforced Polymer-AZ31B Dissimilar Joints through Oxide Layer-Coated Rivets	2076
<i>Yong-Chae Lim, Jiheon Jun, Yi-Feng Su, John E. Wade, Jong Keum, Feng Zhili</i>	

Bionanocomposite Thin Films Based on Eco-Friendly Carbon-Clay Materials for Corrosion Protection of Light Alloys	2077
<i>Ana Barra, Federico R. Garcia-Galvan, Juan Carlos Galvan, Cláudia Nunes, Paula Ferreira, Eduardo Ruiz-Hitzky</i>	

Exploring the Synergistic Effect of Mesoporous Coating and Loaded Corrosion Inhibitor in Epoxy for Enhanced Durability and Long-Term Protection	2079
<i>Ahmed Bahgat Bahgat, Abdul Shakoor, Loredana Santo, Noora Al-Qahtani, Mohammad K Hassan</i>	

C05 - Coating and Corrosion Protection 2

Towards Sustainable Corrosion Protection: An Investigation into Ecofriendly Sol-Gel Conversion Coatings for AZ61 Magnesium Alloy	2080
<i>Federico R. Garcia-Galvan, Jesús López Sánchez, Violeta Barranco, Irene Llorente, Santiago Fajardo, Juan Carlos Galvan, Noemi Carmona</i>	

Open-Air Plasma Assisted Organosilicon Coating on AM60 Mg Alloy for Corrosion Protection	2082
<i>Jiheon Jun, Yong-Chae Lim, Yi-Feng Su, Daphne Pappas, Ryan Robinson</i>	

Comparative Study of the Influence of Al & Mg Content on the Microstructure and Electrochemical Behaviour of Hdg Zn-Al-Mg Coatings	2083
<i>Amar Malla, James Sullivan, David Penney, Daniel Britton</i>	

Investigation on Corrosion Behavior of Nickel Plated Steel in Copper Sulfate Solution and It's Applicability As a Defect Inspection	2084
<i>Seung Hwan Lee</i>	

Novel Highly Antibacterial Corrosion Resistant Nip-CeO ₂ -C ₃ N ₄ Nanocomposite Coatings	2085
<i>Christian Arro, Eman M Fayyad, Mostafa H Sliem, Aboubakr M. Abdullah</i>	

C05 - Atmospheric Corrosion 2

(Invited) Finite Element Modeling of Atmospheric Corrosion: Boundary Conditions, Model Fidelities, and Computational Advances with Machine Learning	2087
<i>Ryan Michael Katona, Aditya Venkatraman, Matthew Roop, Philip James Noell, David Montes de Oca Zapiain, Rebecca Filardo Schaller</i>	
Accelerating Computational Calculations of Galvanic Corrosion Using Active Learning.....	2088
<i>David Montes de Oca Zapiain, Aditya Venkatraman, Demitri Maestas, Michael Anthony Melia, Philip James Noell, Ryan Katona</i>	
A Parametric Study of Mathematical Model for Long-Term Localized Corrosion of Copper in Canadian Deep Geological Repository.....	2089
<i>Yunhan Chuai, Scott A Briggs, Mark E. Orazem</i>	
Challenges and Approaches to Extending the Safe Operational Life of Future Renewable Energy Infrastructure	2091
<i>Mike Yongjun Tan</i>	

C05 - Atmospheric Corrosion 3

(Invited) Atmospheric Corrosion of Metals in Cold and Snowy Region.....	2093
<i>Masatoshi Sakairi</i>	
(Invited) Atmospheric Corrosion Studies for Corrosivity Categorization in Alaska	2095
<i>Raghu Srinivasan, Jozef Hunter</i>	
(Invited) Atmospheric Corrosion of Multi-Materials on Winter Road Condition in Cold Region	2096
<i>Koji Fushimi, Kosaku Nomura, Masatoshi Sakairi</i>	
Exposure Test of Various Zinc-Coated Steel Sheets and Corrosion Resistance Evaluation of Zinc-Based Corrosion Products in Japan	2097
<i>Kenta Fujihashi, Wataru Oshikawa</i>	

C05 - Atmospheric Corrosion 4

Electrochemical Conditions to Evaluate the Corrosion Fatigue Behavior of Friction-Welded Stainless and Carbon Steel	2099
<i>Stefano Rossi, Luca Benedetti, Matteo Benedetti, Vigilio Fontanari</i>	
Chloride-Induced Stress Corrosion Cracking Behavior of Duplex Stainless Steels for Dry Storage Canister Application Via Atmospheric Corrosion Tests and Scanning Electrochemical Microscopy	2100
<i>Seunghyun Kim, Suhyun Park, Minsu Gu, Changheui Jang, Gidong Kim, Sang-Woo Song</i>	
Accuracy and Limitations of Measuring Corrosion Rates and Depth of Penetration on Corroded Steel Plates Using Dual-Element Ultrasonic Sensors.....	2101
<i>Blake Yamamoto, Lloyd H. Hihara</i>	
Visualization of Hydrogen Absorbed into High Strength Steel during Corrosion Process By Mn Oxide Thin Film	2102
<i>Yu Sugawara, Masataka Omoda, Shinji Ootsuka</i>	

Real-Time 2D Mapping of Hydrogen Entry and pH Distribution inside a NaCl Droplet on an Fe Sheet Using a Hydrogenochromic Sensor	2103
<i>Hiroshi Kakinuma, Sachiko Hiromoto, Tomohiko Hojo, Saya Ajito, Motomichi Koyama, Eiji Akiyama</i>	

C05 - Atmospheric Corrosion 5

Atmospheric Corrosion of Aluminum and Aluminum/Gold Thin Films	2105
<i>Vitalie Stavila, Carly Sin-Yiu, Tae Wook Heo, Laura C Merrill, Josh D Sugar, Michael Anthony Melia, Ryan Muhammad Khan, Frank William DelRio, Brandon C. Wood, Philip James Noell, Mark D. Allendorf</i>	
Effect of Storage Conditions on the Corrosion Resistance of Laser-Treated Al Surfaces Discussed in Terms of Adhesive Bond Strength	2106
<i>Rio Hirakawa, Nao Terasaki, Christian Gundlach, Sven Hartwig</i>	
Galvanic and Local Corrosion of Aluminum Alloy 6061-T6 Coupled to Non-Passivating and Passivating Alloys	2108
<i>Natalie Wohner, Lloyd H. Hihara</i>	
Corrosion Behavior of High Pressure Die Cast Al Alloys in Neutral and Acidic 3.5 Wt.% NaCl Solutions	2109
<i>Jiheon Jun, Amit Shyam, Sumit Bahl, Yi-Feng Su, Nicholas Richter, J. Allen Haynes</i>	

D01-PHOTOVOLTAICS FOR THE 21ST CENTURY - 20TH ANNIVERSARY: NEW MATERIALS AND PROCESSES

D01 - Digital Only Presentations

Cost-Effective Approaches to Recycle Current and Future Waste Solar Modules	2110
<i>Jyoti Bhattacharjee, Subhasis Roy</i>	

D01 - Keynote Address

(Keynote) Discovery and Progress of Solid State Perovskite Solar Cells	2112
<i>Nam-Gyu Park</i>	
(Keynote) Toward High Performance Perovskite Solar Cells and Modules: Current Situation and Future Prospects	2113
<i>Hiroshi Segawa</i>	
(Keynote) Controlling Ion Migration in Metal Halide Perovskites for Better Solar Cell Stability	2114
<i>Prashant V Kamat, Gabor Szabo</i>	

D01 - Perovskite Solar Cell 1 - Materials & Green Processes

(Invited) Progress in Materials and Process Engineering for Sustainable Perovskite Solar Cells	2115
<i>Hyun Suk Jung</i>	

(Invited) Materials and Processes Developments for the Commercialization of Perovskite Solar Cells.....	2116
<i>Naoto Eguchi, Kohei Yamamoto, Taro Fukazawa, Takashi Funaki, Nobuko Onozawa-Komatsuzaki, Naoyuki Nishimura, Hiroyuki Kanda, Santa Mondal, Atsushi Kogo, Tetsuhiko Miyadera, Takashi Miyake, Takuro N. Murakami</i>	

Perovskite Film Passivation and Precursor Engineering for High Performance Devices.....	2117
<i>Qilin Dai</i>	

D01 - Perovskite Solar Cell 2 - Materials & Green Processes

(Invited) Modification of Perovskite Layer for Efficient Perovskite Solar Cells	2118
<i>Atsushi Wakamiya</i>	

Materials and Device Engineering for Non-Halogenated Solvent-Processed Organic Solar Cells	2120
<i>Chang Eun Song</i>	

Laser Molecular Beam Deposition of Halide Perovskite Solar Cell Materials: The Correlation between Preparation Conditions and Film Properties.....	2121
<i>Nobuyuki Matsuki, Tomomasa Sato</i>	

A Recyclable Reducing Agent to Minimize Sn ⁴⁺ in Pb-Sn Mixed Perovskite Precursor Solution for Sustainable All-Perovskite Tandem Solar Cells	2123
<i>Boonmongkolras Passarut, Sung Woong Yang, Sunwoo Kim, Jungchul Yun, Yeonghun Yun, You-Hyun Seo, Nam Joong Jeon, Gill Sang Han, Doyun Im, Sangwook Lee</i>	

D01 - Perovskite Solar Cell 3 - Materials & Green Processes

Manufacturing [001]-Oriented FAPbI ₃ Photodetectors Exhibiting Outstanding Air Stability through Eco-Friendly Anti-Solvent Additive Engineering.....	2124
<i>Kwang-Ro Yun, Tae-Yeon Seong</i>	

Fabrication of Cost-Effective Carbon-Based Multiporous-Layered-Electrode Perovskite Solar Cells	2125
<i>Seigo Ito</i>	

D01 - Perovskite Solar Cell 4 - Materials & Green Processes

(Invited) High Performance Flexible Perovskite Solar Cells Employing UV-Sintered Electron Transport Layers.....	2126
<i>Min Jae Ko</i>	

(Invited) Vacuum-Processable Additive for Controlling Growth of Perovskite Crystals in All Vacuum Processed Perovskite Solar Cell	2127
<i>Kyungkon Kim</i>	

Carbon-Based Perovskite Solar Cells: Interface Engineering of 5-AVAI Additive.....	2128
<i>Lara Perrin, Seigo Ito, Ryuki Tsuji, Lionel Flandin, Emilie Planes</i>	

Investigating the Influence of Alkali Metal Carbonates on Oxygen Vacancies for Efficient and Stable Perovskite Solar Cells.....	2129
<i>Won Jin Jang, Soo Young Kim</i>	

Exploration of New Lead-Free Organic-Inorganic Metal Halides for Photovoltaic Applications.....	2130
<i>Yuri Hirano, Pia Klee, David Bradford Cordes, Alexandra Martha Zoya Slawin, Julia Louise Payne</i>	

D01 - Perovskite Solar Cell 5 - Characterizations

(Invited) Breaking Centro-Symmetry in Formamidinium Lead Triiodide (FAPbI ₃) Films with Preferred Oriented Grains.....	2132
<i>Hyunjung Shin</i>	
Nanoscope Observation of Perovskite Solar Cell with TEM	2133
<i>Satoshi Uchida, Hiroshi Segawa</i>	
Unraveling the Nature of Vibrational Dynamics in the Metal Halide Perovskite CsPbI ₃	2135
<i>Rasmus Lavén, Erik Fransson, Paul Erhart, Maths Karlsson</i>	

D01 - Perovskite Solar Cell 6 - Characterizations

(Invited) Development of Lead and Lead-Free Solution-Processed Solar Cells Using Automated Experiments.....	2136
<i>Akinori Saeiki</i>	
Inorganic Additive-Based Approach for Wide-Bandgap Perovskites and Their Crystallization Mechanism	2137
<i>Ryosuke Nishikubo, Yeon Park, Akinori Saeiki</i>	

D01 - Perovskite Solar Cell 7 - Tandem Structures

(Invited) Perovskite-Based Tandems: Perovskite/Si 2J and Beyond	2139
<i>Jin Young Kim</i>	
(Invited) Tin-Based Perovskite Solar Cells and Development to All-Perovskite Tandem Solar Cells	2140
<i>Shuzi Hayase</i>	
Four-Terminal Double-Junction Solar Cells Consisting of a Mesoscopic Wide-Bandgap Perovskite Solar Cell and an Inverted Narrow-Bandgap Perovskite Solar Cell with Spectral Splitting System.....	2141
<i>Kei Ito, Kazuteru Nonomura, Ryota Kan, Keishi Tada, Ching Chang Lin, Takumi Kinoshita, Takeru Bessho, Satoshi Uchida, Hiroshi Segawa</i>	

D01 - Si Solar Cell 1 - Recycles

(Invited) Glass and Metal Separation Technology to Improve Solar Panel Recycling	2142
<i>Masafumi Ito, Taisuke Doi</i>	
Electrochemical Separation of Copper and Tin for Silicon Solar Module Recycling	2145
<i>Randall Adcock, Natalie Click, Theresa Chen, Meng Tao</i>	

D01 - Si Solar Cell 2 & Cross Cutting

(Invited) Interface and Surface Control for High Performance Heterojunction Solar Cells.....	2146
<i>Noritaka Usami</i>	

(Invited) Development of High-Efficiency Transparent Cu ₂ O Top Cells for Tandem Photovoltaics with Efficiency Exceeding 30%	2147
<i>Naoyuki Nakagawa, Yuya Honishi, Soichiro Shibasaki, Yukitami Mizuno, Takashi Yamamoto, Atsushi Wada, Sara Yoshio, Motohiro Toyota, Kodai Wakamatsu, Junji Sano, Kanta Sugimoto, Kazushige Yamamoto</i>	

Reactive Force-Field Molecular Dynamics Study for Analysis of Silicon Nanocrystal Formation Process in Silicon Oxide Film	2149
<i>Genta Tamura, Naoya Uene, Kazuhiro Gotoh, Noritaka Usami, Takashi Tokumasu</i>	

Large-Area Ultrasonic Spray Manufacturing with Open-Air Plasma Curing of Transparent Conducting Oxides for Thin Film Solar Cells with High Figures of Merit via Solution Combustion Synthesis.....	2151
<i>Thomas William Colburn, Gabriel Crane, Austin C Flick, Abigail Carbone, Robert D Miller, Reinhold Horst Dauskardt</i>	

D01 - Perovskite Solar Cells 8 - Devices & Modules

(Invited) Advanced Electrodes and Carrier Transport Layers for Flexible/ Foldable Photovoltaic Devices and Modules	2152
<i>Wallace C.H. Choy</i>	
New Perylene Diimide Dyes and Inks for Large Area Roll-Coated Organic Solar Cells.....	2153
<i>Gregory Charles Welch</i>	

D01 - Poster Session

Building a Buried Interface with AJI-NO-MOTO Modification of SnO ₂ Etl for High Performance Perovskite Photovoltaic Devices	2154
<i>Ching Chang Lin, Motoshi Nakamura, Hiroki Sugimoto</i>	
Empowering Advanced Photovoltaic Pioneers: A Bilateral Italy-USA Project	2156
<i>Marco Piccinni, Davide Carrea, Sawssen Slimani, Aleksandr Omelianchik, Pierfrancesco Maltoni, Christian Rossi, Jamal Al-Hourani, Simona Delsante, Davide Peddis, Gary Friedman, Diego Colombara</i>	
Enhanced Efficiency and Stability of Inverted Solar Cells Utilizing Pure δ -FAPbI ₃ Single Crystal Perovskite	2158
<i>Jin Hyuck Heo, Jin Kyoung Park, Woo-Sik Kim, Sang Hyuk Im</i>	
Exploring the Influence of TCO Thickness and Ag Addition on Performance of CIGS Thin Film Solar Cells for Bifacial and Tandem Configurations	2159
<i>Amanat Ali, Dong-Hwan Jeon, Van-Quy Hoang, Jaebaek Lee, Dae-Kue Hwang, Jin-Kyu Kang, Shi-Joon Sung, Dae-Hwan Kim</i>	
Fabrication of Orientation-Controlled Fluorine-Doped SnO ₂ Film Grown By Atmospheric Spray Pyrolysis	2160
<i>Kenji Yoshino, Koichi Yoshiyama, Tomohiro Higashi</i>	
Improvement of Performance of Perovskite Solar Cell By in-Plane Design.....	2162
<i>Yuka Yoshihara, Keishi Tada, Jotaro Nakazaki, Fumiyasu Awai, Kazuteru Nonomura, Satoshi Uchida, Hiroshi Segawa</i>	

Improving Stability and Efficiency of Perovskite Solar Cells with Creatine-Based Passivation Methods.....	2164
<i>Jihyun Min, Taiho Park</i>	
Microwave-Induced Crystal Growth of Metal Halide Perovskites to Enhance the Photovoltaic Performance.....	2165
<i>Inchan Hwang</i>	
Over 5,000 h at 85 °C Thermal Stability of Encapsulated Carbon-Based Multiporous-Layered-Electrode Perovskite Solar Cells	2166
<i>Ryuki Tsuji, Seigo Ito</i>	
Title : The Flexible Solar Cells Using Earth Abundant Materials	2168
<i>Jin-Kyu Kang, Dae-Hwan Kim, Shi-Joon Sung, Kee-Jeong Yang, Dae-Kue Hwang, Seung-Hyun Kim, Hyo-Jeong Jo, Sun-Jeong Maeng, Ju-Young Yun</i>	
Ultrathin ALD SnO _x Layer for the Interfacial Engineering of Co-Evaporated Sb ₂ Se ₃ Solar Cells.....	2170
<i>Van-Quy Hoang, Jaebaek Lee, Dong-Hwan Jeon, Kee-Jeong Yang, Jin-Kyu Kang, Bashiru Kadiri-English, Shi-Joon Sung, Dae-Hwan Kim</i>	

D01 - Organic Solar Cell

(Invited) Development of Fused Porphyrin Sensitizers for Efficient Dye-Sensitized Solar Cells.....	2171
<i>Tomohiro Higashino</i>	
(Invited) Design and Synthesis of π -Conjugated Polymers for High-Efficiency Organic Photovoltaics	2172
<i>Itaru Osaka</i>	
(Invited) Design Strategies of Organic Semiconducting Materials for Organic Photovoltaics	2173
<i>Kim YunHi</i>	

D01 - Perovskite Solar Cell 9 - Novel Structures

(Invited) De-Doping Control Engineering for High Efficient and Stable Perovskite Solar Cells	2174
<i>Dong Suk Kim, Yun Seop Shin</i>	
High Throughput Solution Combustion Generated Nickel Oxide Films As a Hole Transport Layer for Perovskite Photovoltaics.....	2175
<i>Thomas William Colburn, Abigail Carbone, Justus Just, Ryan Wainer, David William Collinson, Reinhold Horst Dauskardt</i>	
Carbon Back Electrode Added SnO ₂ Nanoparticle for Scalable Multiporous-Layered-Electrode Perovskite Solar Cells.....	2176
<i>Takaya Shioki, Kouta Oishi, Taiki Matsumura, Ryuki Tsuji, Seigo Ito</i>	

D01 - Perovskite Solar Cell 10 - Sustainable Technologies

(Invited) Towards Outdoor Operation of Perovskite Solar Cells.....	2177
<i>Kai Zhu</i>	
Ultrastretchable Photovoltaics with High Areal Coverage Using a 3D Printer-Based Kirigami/Origami Technique.....	2178
<i>Phillip Lee</i>	

Dithienopyran-Based Narrow-Bandgap Donor Polymers: Unveiling the Potential for Semitransparent Organic Solar Cells with Enhanced NIR Absorption.....	2179
<i>Seung Un Ryu, Taiho Park</i>	

D02-SEMICONDUCTORS, DIELECTRICS, AND METALS FOR NANOELECTRONICS AND PLASMA NANOSCIENCE 2

D02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics and Plasma Nanoscience 1

(Invited) Ultrathin Polymer Insulating Layers By Initiated Chemical Vapor Deposition for Low-Power Soft Electronics	2180
<i>Sung Gap Im</i>	
(Invited) The Potential of Pulsed Low Temperature Plasmas for the Controlled Deposition of Plasma Polymer Ultrathin Films and Composite Nanomaterials (Invited).....	2181
<i>Johannes Berndt</i>	
Natural Organic Pectin Polysaccharide Based Resistive Random Access Memory	2182
<i>Kuan Yew Cheong, Hooi Ling Lee, Feng Zhao</i>	
(Invited) Control of Elementary Processes in Semiconductor Process Plasmas.....	2183
<i>Masaharu Shiratani, Kunihiro Kamataki, Naho Itagaki, Naoto Yamashita, Takamasa Okumura, Kazunori Koga</i>	
(Invited) Low Energy Methods for Highly Selective Etching and Surface Treatment of Advanced Nanodevices	2184
<i>Mark Kawaguchi</i>	

D02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics and Plasma Nanoscience 2

(Invited) Influence of Very Low Energy Ions on Monolayer Graphene: An Experimental and Theoretical Investigation	2185
<i>Pierre Vinchon, Yoshiyuki Miyamoto, Satoshi Hamaguchi</i>	
Optimizing Edge Smoothness in Graphene Nanoribbons for Enhanced Transistor Performance: A Lithography Approach.....	2186
<i>Kavish Saini, Sreeprasad Sreenivasan</i>	
(Invited) Plasma-Tailored Nanocarbons As Advanced Electrodes for High-Frequency Supercapacitors	2187
<i>Neelakandan Marath Santhosh, Uros Cvelbar</i>	
Precise Bottom-up Synthesis of Functional Nanowires and Nanosheets Based on 1D and Quasi-1D Van Der Waals Crystals	2188
<i>Maxx Arguilla</i>	
2D Titanium Carbide (MXene): Band Gap Modulation	2189
<i>Jhilmil Swapnalini, Prasun Banerjee</i>	
Plasma Etch of IGZO Thin Film and IGZO/SiO ₂ Interface Diffusion in Inductively Coupled CH ₄ /Ar Plasmas.....	2193
<i>Jie Li, Laurent Souriau, Shreya Kundu, Philippe Bezaud, Frederic Lazzarino</i>	

D02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics and Plasma Nanoscience 3

(Invited) Photon-Induced Plasmas and Contamination Control in Semiconductor Industry	2194
<i>Job Beckers</i>	
(Invited) Engineering Semiconducting and Dielectric Materials and Processes Using Integrative Methods	2195
<i>Peter Ventzek, Jianping Zhao, Hu Li, Gabriel Blankemeyer, Shyam Sridhar, Qiang Wang, Gregory Hartmann, Roberto Longo, Patrick Conlin</i>	
(Invited) High Crystallinity of MoS ₂ by Film Annealing in Sulfur Atmosphere and Plasma Control during RF Sputtering	2197
<i>Shinya Imai, Tetsuya Tatsumi, Shigetaka Tomiya, Kuniyuki Kakushima, Hitoshi Wakabayashi</i>	
(Invited) Application of Impedance Spectroscopy to Analysis of Plasma-Surface Interaction	2200
<i>Keiichiro Urabe</i>	
(Invited) On the Improvement of Ge Lasers	2201
<i>Guangrui Xia, Liming Wang</i>	
Initial Virgin Erase State Engineering for Highly Reliable 2D & 3D NAND Flash Memory	2203
<i>JoongHo Yoon, Wook Hyoung Lee, Dong Seog Eun, Jun Sik Hong, Yong Sik Yim</i>	

D02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics and Plasma Nanoscience 4

(Invited) Recent Advances in Oxide-TFT Technology for Next-Generation Sustainable Electronics	2205
<i>Kenji Nomura</i>	
Patterning of Si ₃ N ₄ and SiO ₂ Nanostructures for 3D Electronic Devices at Low Temperatures	2206
<i>Thorsten Lill, Yuri Barsukov, Youn-Jin Oh, Igor Kaganowich, Harmeet Singh</i>	
Logic-in-Memory Application of IGZO Channel FET Based 2T0C DRAM	2207
<i>Ji-Hun Kim, Woo-Tak Choi, Tae-Hun Shim, Jin-Sub Park, Jin-Pyo Hong, Jea-Gun Park</i>	
Ultrathin Gallium Oxide As a Gate Dielectric and Passivation Layer for Two-Dimensional Devices with Conductive Filament Contacts	2210
<i>Sanghyun Moon, Jihyun Kim</i>	
Investigating the Role of Grain Boundaries in Enhancing Bifunctional Memory Properties of CeO ₂ Thin Films	2212
<i>Ching-Heng Hung, Chong-Chi Chi, Ming-Pei Lu, Ming-Yen Lu</i>	
(Invited) Atomistic Study of 4H-SiC Using Ab Initio and Machine Learning Techniques	2213
<i>Robert Stella, Sabine Leroy, Andreas Hössinger, Dominic Waldhör, Lado Filipovic</i>	
(Invited) Impact of CMOS Miniaturization on Digital and RF Applications and Its Future	2216
<i>Hiroshi Iwai</i>	

D02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics and Plasma Nanoscience 5

(Invited) Revolutionizing Data Storage and Brain-Inspired Computing with Perovskite Nanowires and Quantum Wires	2217
<i>Swapnadeep Poddar, Zhiyong Fan</i>	

Dependency of Skyrmion Size in PMA Structure on Material of Interface Reducing Layer to Generate Skyrmion.....	2219
<i>Yohan Choi, Yeon-Soo Shin, Min-cheol Kim, Tae-Hun Shim, Jinsub Park, Jea-Gun Park</i>	
(Invited) Reduction of Contact Resistance through the Application of Cylindrical Contacts to WSe ₂	2221
<i>Seungyun Lee, Dongryul Lee, Jihyun Kim</i>	
Novel Multilevel Memory Behavior of CsPbBr ₃ perovskite Nanocrystals with Assistance of High Performance 2D MoS ₂ channel.....	2223
<i>Tsai Chen-Yu, Ming-Pei Lu, Ming-Yen Lu</i>	
First-Principles Study of Electron-Defect Interaction and Carrier Mobility in Transition Metal Dichalcogenides Semiconductors.....	2224
<i>Zhongcan Xiao, Rongjing Guo, Chenmu Zhang, Yuanyue Liu</i>	
Diameter and Morphology of Colloidal-Silica-Abrasives Depending on Surfactant Concentration with Amine-Functional Group.....	2225
<i>Jea-Gun Park, Min-Uk Jeon, Pil-su Kim, Ju-Yeon Kim, Hyeong-Ju Jin, Ho-Jun Ahn, Jin-Hyung Park</i>	
Contact Resistance Reduction of MoS ₂ -Based Field Effect Transistor Using Semimetallic TiS ₂ Contact Layer Deposited By Atomic Layer Deposition	2227
<i>Jeongwoo Seo, Hwi Yoon, Sangyoon Lee, Inkyu Sohn, Hyung-jun Kim, Seung-min Chung, Hyungjun Kim</i>	
(Invited) Achieving Erosion Less Designing Cu- and Isolation-Film Polishing-Rate Selectivity in Cu-Film Chemical Mechanical Planarization.....	2228
<i>Jea-Gun Park, Pil-su Kim, Min-Uk Jeon, Hyeong-Ju Jin, Ho-Jun Ahn, Ju-Yeon Kim, Jin-Hyung Park</i>	
Metrology of No Fault Found Events: Using Microwave Spectroscopy and 4D X-Ray Computed Tomography to Detect Thermal Fatigue-Caused Damage in Solder Joints.....	2230
<i>Yaw Obeng, Eshan Ganju, Nikhilesh Chawla, Jason Campbell</i>	

D02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics and Plasma Nanoscience 6

(Invited) Investigation of Plasma Defect Engineering in ZrO ₂ -Based RRAM Devices for Low Power in-Memory Computing.....	2232
<i>Aseel Zeinati, Durgamadhab Misra, Dina H. Triyoso, Kandabara Tapily, Robert D Clark, Sarah Lombardo, Cory S Wajda, Gert J Leusink</i>	
(Invited) Influence of Target-Sample Distance on Residual Stress for Sputter-Deposited Ferroelectric AlScN	2234
<i>Yukimura Tokita, Takuya Hoshii, Kazuo Tsutsui, Hitoshi Wakabayashi, Kuniyuki Kakushima</i>	
Vanadium Oxide Device with Tunable Oxygen Vacancy Concentration for Neuromorphic Computing.....	2238
<i>Patrick Sean Finnegan, Sangheon Oh, Brian Zutter, Sean R Bishop, Adam Scott Christensen, Sapan Agarwal, Elliot J. Fuller, Albert Alec Talin</i>	
Enhanced Thermal Stability in Dielectric Properties of (K _{0.8} Na _{0.2})NbO ₃ -Based Ceramics for X9R-Mlcc Applications.....	2240
<i>Sahn Nahm, Geun-Soo Lee, San Kwak, Byeong-Jae Min, Seung-Hyun Kim, Jung-Soo Kim, In-Su Kim</i>	

CMOS-Compatible Ultra-Low-Current Electrochemical Random-Access Memory Having Ruthenium Oxide Reservoir for Analog in-Memory Computing	2241
<i>Jae Kyeong Kim, Dae-Seong Woo, Gwang-Ho Park, Tae-Hun Shim, Jinsub Park, Jea-Gun Park</i>	
Threshold Voltage Shift of P-Ch GaN Misfets with Charge Trapping Insulator	2242
<i>Takuya Hoshii, Tatsuro Toyoda, Hitoshi Wakabayashi, Kazuo Tsutsui, Kuniyuki Kakushima</i>	
Nonlinear Bifunctional Memristor for Reprogrammable Programmable Read-Only Memory (PROM) Applications.....	2244
<i>Ying-Chen Chen, Chih-Yang Lin, Chao-Cheng Lin</i>	

D02 - Poster Session

In Situ Synchrotron Based Soft XAS and Resonant Inelastic X-Ray Scattering (RIXS) Characterizations for ϵ -Cu _{0.9} V ₂ O ₅ Oscillator.....	2246
<i>Jialu Li, John Ponis, Sarbajit Banerjee, Gihyeok Lee, Zengqing Zhuo, Jinghua Guo</i>	
Influence of Nanoscale Dielectric Gap on Electrical Characterization in Scanning Probe Microscopy	2247
<i>Seongmun Eom, Pravin Kavle, Deokyoung Kang, Yeongyu Kim, Lane W. Martin, Seungbum Hong</i>	
Notched Gate and Graded Gate Oxide Processing for Reduced Capacitance Application in RF MOSFETs.....	2248
<i>Lucas Antunes, Pascal Masson, Julien Amouroux, Julien Dura, Julien Babic, Benoist Richard, Laetitia Vedovini, Franck Julien, Arnaud Regnier, Alain Fleury, Stephane Monfray</i>	
Electrostatically Tunable PN Junction in 1L-MoTe ₂ Formed By Gold-Mediated Exfoliation	2250
<i>Yoshimura Taku, Hiroshi Shigeno, Ryosuke Ishikawa, Kenji Watanabe, Takashi Taniguchi, Yusuke Hoshi</i>	
Creation and Control of Lateral Electronic Junction in Ultrathin Semiconductor through the Interfacial Treatment Using Self-Assembled Monolayer	2252
<i>Junghyup Han, Youn Sang Kim</i>	
Comprehensive Analysis for PDA Effect on SiO ₂ /SiN _x /Si Stacked Structure Using Multiple Technique	2253
<i>Tomohiro Sakata, Kumiko Takahashi, Noriyuki Takemoto, Keiko Inoue, Tomomi Sugimoto, Yusaku Tanahashi, Shingo Ogawa</i>	
Structural and Electrical Properties of (1-x)Pb(Zr, Ti)O ₃ -Xpb(Zn _{0.4} Ni _{0.6}) _{1/3} Nb _{2/3} O ₃ Piezoceramics with R-PC-T Multistructure.....	2255
<i>Geun-Soo Lee, Jung-Soo Kim, San Kwak, Sahn Nahm</i>	
Good Thermal Stability in Dielectric Properties of (1-x)(K _{0.8} Na _{0.2})NbO ₃ -xSrTiO ₃ Ceramics for the Application to X9R MLCC	2256
<i>San Kwak, In-Su Kim, Geun-Soo Lee, Byeong-Jae Min, Sahn Nahm</i>	
Self-Rectifying Self-Selecting Memory Having Bi-Layer Stacked Dual Functional Material for Logic-in-Memory	2257
<i>Dae-Seong Woo, Jae-Kyeong Kim, Gwang-Ho Park, Tae-Hun Shim, Jinsub Park, Jea-Gun Park</i>	

E01-ELECTROCHEMICAL DEPOSITION FOR FUNCTIONAL MATERIALS AND ENERGY APPLICATIONS

E01 - Digital Only Presentations

- (Digital Presentation) Electrochemical Synthesis of Chromium Carbide Coatings on the Surface of Carbon Fibres in NaCl-KCl-CrCl₃-Cr Melt and Study of Their Electrocatalytic Properties 2259
Artem Gryaznov, Danil Slesarev
- (Digital Presentation) Co-Nanocatalysts in the Reaction of Electrochemical Reduction of Nitrates to Ammonia 2261
Irina Kuznetsova, Dmitry Kultin, Olga Lebedeva, Konstantin Kalmykov, Leonid Kustov

E01 - Early Career Forum - Session 1

- Electrodeposition of Tin Dioxide Films for Photoelectrochemical Water Splitting Applications 2262
Małgorzata Plachta, Karolina Syrek, Marcin Koziel, Leszek Zaraska
- Mass Transfer Limitation within Molecular Crowding Electrolyte Reorients Preferential (100) and (101) Texture for Dendrite-Free Zinc Metal Batteries 2264
Ziqing Wang, Charles Buddie Mullins
- Electrodeposited Ni-Fe-TiO₂ Alloy Composites As a Bifunctional Electrocatalyst for Alkaline Water Splitting Reactions 2266
Sreenivasan Annadurai, Lisa J Podlaha
- Moss-like Growth of Metal Electrodes: On the Role of Competing Faradaic Reactions and Fast Charging 2267
Kent J.X. Zheng
- Exploring the Potential of Cadmium Selenide Nanowires-Based Chalcogenide Devices for Photoelectrochemical Hydrogen Production 2268
Shiljashree Vijay, Wei Cheng, Syed Mubeen Jawahar Hussaini

E01 - Early Career Forum - Session 2

- Surface-Limited Electrochemical Reactions for the Characterization of Mass Transport in Nanoporous Electrodes 2269
Noah Rondou, Philippe M. Vereecken, Martijn J.W. Blom
- Electrodeposition of Copper Clusters during Electrolytic Zinc Phosphating to Increase Nitrate Reduction Selectivity 2271
Federico Lissandrello, Maria R. Lukatskaya, Luca Magagnin
- Nucleation and Growth during Electrochemically Induced Deposition of Li₃PO₄ 2273
Ali Amir Saleh, Louis De Taeye, Sai Gourang Patnaik, Genis Vanheusden, Philippe M. Vereecken
- Electrochemical Study Towards a Better Understanding of Induced Codeposition with Silver 2275
Quentin Orecchioni, Marie-Pierre Gigandet, Joffrey Tardelli, Jean-Yves Hihn
- Investigating the Incipient Dynamics of Nucleation and Growth in Electrodeposition: Uncovering Key Relationships for Strategic Exploitation 2277
Courtney L Clark, Jamie Cechini, Daniel E Hooks, Janelle Wharry, David Bahr

Analytical Electrochemistry of Nickel and Platinum Electrolytes	2278
<i>Kyle Troche, Jamin R. Pillars, Fernando H. Garzon</i>	
Investigation of the Effects of Glycine in Ni Electrodeposition: Local pH Measurement and Its Mathematical Modelling	2279
<i>Yukihiro Takahashi, Svein Sunde, Frode Seland</i>	

E01 - Early Career Forum - Session 3

Fabrication of Pt-Rich CoPt/Co-Rich CoPt Bilayer Films with Perpendicular Magnetic Anisotropy for Vertical Domain Wall Memory	2280
<i>Daiki Araki, Yoshiaki Sonobe, Takayuki Homma</i>	
Molten Salt Electrolysis for Sustainable Iron Metal Production	2282
<i>Anar Badalbayli, Nicholas Scott Sinclair, Rohan Akolkar</i>	
Influences of the Aqueous Electrolyte Composition and the Deposition Parameters on the Electrodeposition of Nickel-Rhenium Alloy	2286
<i>Nurul Amanina Binti Omar, Scott Dombrowe, Frank Koester, Thomas Lampke</i>	
Investigating Gas Promoted Ir Deposition on Pt Black Nanoparticles As Synthesis Method for Bifunctional OER/ORR Catalyst in Acidic Media	2287
<i>Stephan Ruck, Chuyen Pham, Simon Thiele, Anna T.S. Freiberg</i>	
Engineering of Electrocatalysts for HER and Oer Using Carbon Cloth Combined with Nonprecious Metals	2289
<i>Marilia Barreto Dalla Benetta, Carmel B Breslin, Eithne Dempsey</i>	
Electrodeposition of PAH-Dendrimers via Electrochemical Oxidation an Integrated Experimental-Theoretical Approach	2291
<i>Marco Bonechi, Walter Giurlani, Andrea Marchetti, Stephane Campidelli, Remigiusz Kowalik, Claudio Fontanesi, Massimo Innocenti</i>	
Carbon Nanotube Production from Li_2CO_3 Via High Temperature Electrolysis	2293
<i>Zhixu Zhu, Inyoung Jang, Callum Wootton, Andrea Gonzalez Minaya, Anna Hankin</i>	
Kinetics and Stability of Sustainable Indium Alkaline Electrodeposition	2295
<i>Davide Carrea, Marco Piccinni, Gary Friedman, Diego Colombara</i>	

E01 - Nucleation & Growth - Electrodeposition of Thin Films and Alloys

(Invited) Surface Morphology Evolution in the Presence of Halides	2297
<i>Chanyuan Huo, Ayesha Mubshrah, Walther Schwarzacher</i>	
A Novel View on the Electrochemical Nucleation and Growth of Metals and Alloys By Local Electrochemistry and Correlative Electron Microscopy	2298
<i>Jon Ustarroz, Daniel Torres, Monica Parpal Gimenez, Souheil Mourtada, Mohamed El Marini, Leonardo Bertolucci Coelho</i>	
Electrochemical Atomic Layer Deposition: Self-Terminated Electrodeposition Reactions	2300
<i>Hyunki Kim, Yihua Liu, M Lafouresse, Gery R Stafford, Thomas P Moffat</i>	
High Efficiency Electroplating (220)-Orientation Nano-Twinned Copper in Methanesulfonic Acid System and Mechanism Analysis	2301
<i>Hsiang-Sheng Wei, Chi-Chang Hu</i>	

Control of Electroplated Copper Layers Microstructure Under Modulated Current: Organic Additives Free Electrolytes	2303
<i>Jean Dematos, Marie-Pierre Gigandet, Jean-Yves Hihn</i>	
Mitigating Anodic Reactions in Water-in-Salt Electrolytes for Refractory Metal Electrodeposition	2305
<i>Michael McBride, Amanda Rutledge, Daniel E Hooks</i>	
Anomalous Electrodeposition of Palladium – Antimony Alloys	2306
<i>Evgeniya Freydina, Jeffrey C. Monroe, Robert D. Hilty</i>	
Electrodeposition of Ag-Au Alloys and Design of Nanoporous Gold with Controlled Porosity.....	2307
<i>Natasa Vasiljevic, Vinicius Cruz San Martin, Alicja Szczepanska</i>	

E01 - Electrodeposition of Nanostructures

(Invited) Nano-Sized Metal Deposition on Doped Silicon: Electrodeposition and Characterization.....	2309
<i>Walter Giurlani, Giulio Pappaianni, Francesco Montanari, Antonio De Luca, Massimo Innocenti</i>	
Electrodeposition of Metal Nanoclusters.....	2310
<i>Francis Zamborini, Binu Thapa</i>	
Nano- and Mesoporous Structure Formation Probed with in Situ/in Operando Small and Wide-Angle X-Ray Scattering Analysis during Electrodeposition and Dealloying Processes.....	2311
<i>Heinz Amenitsch, Philipp Aldo Wieser</i>	
Power Modules Assembling By Thermocompression of Copper Layer Obtained by Dynamic Hydrogen Bubble: Elaboration Sequences and Electrical Efficiency	2313
<i>Goulven Janod, Jonathan Schoenleber, Lucas Chachay, Marie-Pierre Gigandet, Vanessa Avramovic, Jean-Yves Hihn, Yvan Avenas, Remi Daudin, Jean-Michel Missiaen, Didier Bouvard, Rabih Khazaka</i>	
Electrochemical Synthesis of Tellurium Nanostructure on Non-Conductive Substrate by Redox Reaction of Tellurium Ions	2315
<i>Jinmyeong Seo, Subeen Park, Inseong Hwang, Sanghwa Yoon, Bongyoung Yoo</i>	

E01 - Poster Session

Gallium Nitride Electrodeposition at Indium Tin Oxide and Fluorene Tin Oxide Electrodes in Ammonium Nitrate and Gallium Nitrate Aqueous Solution: New Findings	2316
<i>Mauricio A. Leyva Aranzabal, Carlos R. Cabrera</i>	
Growth of Highly Oriented Crystalline Silver Nanostructures on MgO (001) Substrates By Pulsed Laser Ablation and Application to SERS Substrates	2317
<i>Naoki Takeda, Satoshi Kurumi</i>	
Adsorption of Organic Molecules at Solid-Electrolyte Interface – the Effect of the Electrolyte and Electrode Structure	2319
<i>Piret Pikma, Heigo Ers, Liis Siinor</i>	
Maximizing CdTe Nanowire Potential: Rapid Electrodeposition for High-Performance Photoanodes.....	2321
<i>Samuel Adesanoye, Wei Cheng, Syed Mubeen Jawahar Hussaini</i>	

Enhancing Cesium Cation Exchange Efficiency Using Transition Metal-Based Core-Shell Prussian Blue Analogue-Carbon Nanofiber Composites	2322
<i>Minsun Kim, Soonhyun Kim, Semin Eun</i>	
Characterization and Functional Properties of Electroplated Silver and Silver Alloys from Cyanide Free Electrolytes	2323
<i>Quentin Orecchioni, Marie-Pierre Gigandet, Walid Bedjou, Joffrey Tardelli, Jean-Yves Hihn</i>	
Gold and Gold Alloys Electropolishing Using HCl-Glycerol-Ethanol Electrolytes	2324
<i>Julymar Rodriguez, Marie-Laure Doche, Jean-Yves Hihn</i>	
Role of Glycine in the Electroless Fe-Ni-B Alloy Process for Power Semiconductor Devices	2325
<i>Takayo Yamamoto, Tomio Nagayama</i>	
(111) Orientation Nanotwinned Copper with Well-Controlled Morphology by System-Optimized Electropolishing	2327
<i>Chi-Chang Hu, Hsu Tsou</i>	
Electrodeposition of Re-Mo Alloy	2329
<i>Quanhong Liu, Qiang Huang</i>	
Advancements in Analyzing Organic Additives in Electroplating Baths: A Focus on Electrochemical Impedance Spectroscopy (EIS) Coupled with Distribution of Relaxation Times (DRT)	2331
<i>Walter Giurlani, Margherita Verrucchi, Marco Bonechi, Giovanni Zangari, Massimo Innocenti</i>	
Electrochemically Deposited Nanoarchitected Nanoporous Metal Film Using Block Copolymer Micelle for Ultra-Sensitive SERS Platform	2332
<i>Park Jisoo, Kim Jeonghun</i>	
Electrodeposition for the Guided Synthesis and Screening of Binary Alloy Thin Films	2334
<i>Jakub Pepas, Yifan Ma, Guangxing Zhang, Minju Kang, John Carsley, Hailong Chen</i>	
Fabrications of Au-Pt Bimetallic Heterostructure Electrodes By Ligand-Exchange Assisted Layer-By-Layer Self-Assembly for Hydrogen Evolution Reaction	2335
<i>Sujin Lee, Youn Jeong Jang, Bongjun Yeom</i>	
Evaluation of Copper Sulfate Electroplating Solution and Film Quality Prediction Using Turbidity Measurement Method	2336
<i>Toshiaki Koga, Yoshitaro Sakata, Nao Terasaki</i>	

E01 - Electrodeposition for Energy Applications: Electrocatalysis

(Invited) Understanding Catalytic Structure-Function Relationships via in-Situ Surface Stress Measurements of Electrodeposited Metal Films	2338
<i>David Raciti, Gery R Stafford, Thomas P Moffat</i>	
(Invited) Room Temperature Electrochemical Synthesis of Ordered Intermetallic Catalysts	2339
<i>Shoji Hall</i>	
Electrodeposition and Characterization of Platinum Coatings on Titanium Porous Transport Layers for PEM Electrolyzers	2340
<i>Martin Leimbach, Mario Kurniawan, Mathias Fritz, Andreas Bund</i>	

E01 - Electrodeposition for Energy Applications: Batteries

Regulating Zinc Electrodeposition on the Anode By Controlling Crystal Growth.....	2341
<i>Duhan Zhang</i>	
Effect of Li on the Uniformity of Zn Recharge Reaction in the Anodic ZnO Passivation Layer	2342
<i>Ayumu Komiya, Tanyanyu Wang, Masahiro Kunimoto, Tsuyoshi Asano, Yoshinori Nishikitani, Takayuki Homma</i>	
Suppression Effect of Sn on Irregular Shape Deposition of Zn for Negative Electrode of Large-Scale Energy Storage Devices	2344
<i>Masahiro Kunimoto, Fumimasa Ono, Ayumu Komiya, Sayaka Harasawa, Takayuki Homma</i>	
A Study of Electro-Epitaxial Deposition of Zn on Cu Substrate by a Combinatorial Substrate Approach	2346
<i>Guan-Ting Fang, Yun-Chih Tung, Liuwen Chang, Chih-Chieh Wang</i>	
Impact of Formation Cycle Current Density on the Cycling Stability of Zero-Excess Li-Metal Batteries.....	2347
<i>Soochan Kim, Pravin N. Didwal, Juliane Fiates, James A. Dawson, Robert S. Weatherup, Michael F. L. De Volder</i>	
Li ⁺ Ionic Mass Transfer Accompanied with Electrodeposition of Li Metal in High Concentration Electrolyte	2348
<i>Kei Nishikawa, Go Kamesui, Keisuke Shinoda, Hisayoshi Matsushima, Mikito Ueda, Kiyoshi Kanamura</i>	
Electrochemically Induced Templated Sol-Gel Deposition of Mesoporous Silica and Nanocomposite Thin Films	2349
<i>Genis Vanheusden, Louis De Taeye, Rodrigo Lopez Baez, Philippe M. Vereecken</i>	

E01 - Electrodeposition for Photovoltaics and Water Splitting

(Invited) Development of High Entropy Catalysts for Efficient Electrochemical Fuel Production	2351
<i>Uk Sim</i>	
(Invited) Electrodeposited Oxides and Catalysts for Photoelectrochemical and Electrochemical Water Splitting.....	2352
<i>Ho Won Jang</i>	
Ternary Copper Vanadate Semiconductors and Alloys for Energy Applications.....	2353
<i>Krishnan Rajeshwar, Efsthios Meletis, Abhishek Rawat, Fahad Danladi, Mark C Hersam</i>	
Electrodeposition of Sb on FTO and Conversion to Sb ₂ S ₃ for Photovoltaic Applications	2354
<i>Lorenzo Milano, Luca Magagnin</i>	
Interface Control of Electrodeposited CZTSSe Thin Film Solar Cells for Perovskite Tandems	2355
<i>Sun Kyung Hwang, So Jeong Park, Ik Jae Park, Jin Young Kim</i>	
Deep Metal-Assisted Chemical Etching Using a Porous Monolithic AgAu Layer to Develop Neutral-Colored Transparent Silicon Photovoltaics	2356
<i>HyeonOh Shin, Tae_Hyuk Kwon</i>	

E01 - Electrochemical Science and Technology: Challenges and Opportunities

(Invited) Than Superficial: Exploiting Anodic Oxidation for Innovative Jewelry through Electrochemical Engineering.....	2358
<i>MariaPia Pedefferi, Maria Vittoria Diamanti, Barbara Del Curto</i>	
Sustainable Semi-Continuous Rare Earth Alloy Production in Chloride Based Molten Salts.....	2360
<i>Benjamin P Holcombe, Nicholas Scott Sinclair, Alex Baker, Eunjeong Kim, Scott Mccall, Rohan Akolkar</i>	
Implementation of Electrolytic Phosphating for Steel Wire Drawing as an Alternative to Conversion Coatings	2361
<i>Federico Lissandrello, Nicola Corti, Gabriele Mazzeo, Luca Magagnin</i>	
Room Temperature Synthesis of Hydrogen Permeation Barrier for Storage and Transportation Application	2362
<i>Nafiseh Amiri, Ishtiaq Rabbi, Stanko Brankovic</i>	
The Flow Cell Concept for the Metallization of Complex Geometries in Aerospace High-End Applications.....	2364
<i>Lidija D. Rafailovic, Catherine Haas, Sonja Nixon, Slobin Shayna, Oliver Rohr, Tomislav Lj. Trisovic</i>	
Bayesian Optimization Strategies for Electrochemical Technology Development	2366
<i>Eugene J. O'Sullivan</i>	
Reach Compliant Nickel-Based Nanocomposite Coatings for Tribological Applications	2369
<i>Filippo Zoia, Pooria Afzali, Roberto Bernasconi, Luca Magagnin</i>	
Electromagnetic Coils for a 3000 Psi Hydraulic MEMS Valve Assembly	2371
<i>Christian L. Arrington, Christopher St John, Patrick Sean Finnegan, PAUL C Galambos, Lonnie JOE LOVE</i>	
Bottom-up Gold Filling of Curved X-Ray Gratings	2373
<i>Daniel Josell, David Raciti, Thomas Gnaupel-Herold, Thomas P Moffat, Lucia Romano, Michal Rawlik, Liyang Chen, Qihui Yu, Marco Stampanoni, Alexander Pereira, Martin Stauber</i>	
Design and Fabrication of an Economically Viable Open-Source Programmable Rasterable System for Electroplating.....	2374
<i>Emmanuel Chikwado Anene, David Robert Bruce</i>	

Electrodeposition Division Research Award Address

(Electrodeposition Division Research Award) Using Electrodeposition for Batteries and Electrocatalysis.....	2375
<i>Andrew A. Gewirth</i>	

Electrodeposition Division Early Career Investigator Award Address

(Electrodeposition Division Early Career Investigator Award) Wet Metallization of Additive Manufactured Parts: State of the Art and Future Perspectives	2376
<i>Roberto Bernasconi</i>	

E01 - Electrodeposition for Sustainable Processes

- (Invited) Aqueous Electrochemical Reduction Approaches for Functionalized Surfaces 2377
Reima Herrala, Linfan Cui, Benjamin Wilson, Kirsi Yliniemi, Mari Lundström
- Sustainability in the Electroplating Industry: A Challenge to Overcome 2379
Massimo Innocenti, Walter Giurlani, Alfredo Rosini, Manuele Marcucci, Marco Bonechi, Margherita Verrucchi, Fabio Biffoli, Giulio Pappaianni, Elena Mariani, Claudia Giovani, Claudio Fontanesi
- Considerations for Aqueous Electrochemistry Towards Sustainable Iron Production: From Dilute to Highly Concentrated Electrolytes..... 2380
Nicholas Scott Sinclair, Benjamin Martin, Rohan Akolkar
- Bimetallic Fe-Mo Films Deposited via Dynamic Hydrogen Bubble Templating (DHBT) for Electrocatalytic Nitrogen Reduction to Ammonia..... 2382
Carlos M. S. Lobo, Hannah Kammal, Julian Merlin Kaulbersch, Roland Marschall, Christina Roth
- Electrodeposition of Cu with Amino Acids Toward Electrocatalytic Enhancement of CO₂ Reduction Reactions 2384
Yuki Tsuda, Kazuki Yoshii, Takao Gunji, Sahori Takeda, Nobuhiko Takeichi

E01 - Nonaqueous Electrodeposition

- Electroplating Zirconium from Low Temperature Deep Eutectic Solvents..... 2386
Jamie A Stull, Umanga De Silva, Jordyn Janusz, Ben Jones
- Understanding Solubility: Zirconium Electrodeposition in Non-Aqueous Electrolytes..... 2387
Umanga De Silva, Jordyn Janusz, Ben Jones, Jamie A Stull
- Temperature-Robust Short-Term Memory Stored at Electrode/Ionic Liquid Interface and Its Applications for Energy-Efficient Information Processing 2388
Yuki Kubo, Shunsuke Miyamoto, Hisashi Shima, Toshiyuki Itoh, Toshiki Nokami, Yasuhisa Naitoh, Hiroyuki Akinaga, Yumeng Zheng, Kentaro Kinoshita
- Electrochemistry of Trivalent Chromium in Ionic-Liquid/Deep Eutectic Solvent-Based Ternary Aqueous Solutions..... 2391
David J. Sconyers, Musashi Briem, Daniel J. Curran, Joshua A. Maurer

E01 - Functional Materials

- (Invited) Molecular Thermoelectricity 2392
Hyo Jae Yoon
- Effect of Local pH Change on Galvanostatic Deposition of n-Type Cu₂O in Acidic Media: A Chronopotentiometry Study 2393
Kabita Lakra, Kavaipatti Balasubramaniam
- Electrodeposited NiFeCo + Tb and Dy for Enhanced Magnetostrictive Properties and Soft Magnetism..... 2395
Mina Faltas, Mark Rodriguez, Luke Soule, Melissa L Meyerson, Skyler Oglesby, Nathan Jackson, Jamin R. Pillars, Ihab Elkady

Electrodeposition of Tribological Molybdenum Disulfide Coatings on Stainless Steel.....	2396
<i>Donald "Donny" A Robinson, Christopher L Reed, Thomas F Babuska, Josh D Sugar, Suzy M Vitale, Steven R Larson, John F Curry, Michael T Dugger</i>	

Understanding the Role of the Black Anodic Film in Copper Electrodeposition in Sulfuric Acid Medium: Organic Additives Free Electrolytes	2397
<i>Jean Dematos, Marie-Pierre Gigandet, Jean-Yves Hihn</i>	

E01 - Electroforming, Composites and Complex Geometries

Controlled Texture of Metal Electroforming through Pulse Electrodeposition	2399
<i>Alex Mirabal, Daniel E Hooks, Saryu Jindal Fensin, Jamie A Stull</i>	

Electrochemical Methods to Optimize Anodic Aluminum Oxide and Incorporation of Molybdenum Disulfide for Enhanced Wear Performance	2401
<i>Daniel E Hooks, Kendrich Hatfield, Nathan Brown, Enkeleda Dervishi, Bradley Carpenter, Jordyn Janusz</i>	

Annealing Phenomena in the Electroformed Invar FMM	2402
<i>In Gyeong KIM, Jun Ha Lee, Se Eun Shin, Yong Bum Park</i>	

Towards the Electrodeposition of Graded Polymer / Metal Composites	2403
<i>Michael McBride, Amanda Rutledge, Kendrich Hatfield, Daniel E Hooks</i>	

Etidronic Anodizing of Aluminum Alloys: Growth and Properties of Anodic Layers	2404
<i>Virginie Moutarlier, Jérémy Daval, Emmanuelle Brunol, Rémy Viennet, Laurence Ricq, Jean-Yves Hihn</i>	

Inkjet Assisted Electroforming and Swarm Actuation of Magnetic Micromotors.....	2406
<i>Roberto Bernasconi, Anna Nova, Salvador Pané, Luca Magagnin</i>	

E03-ELECTRODEPOSITION AND ELECTROLESS DEPOSITION FOR INTERCONNECTS IN INTEGRATED CIRCUITS AND 3D PACKAGING

E03 - Digital Only Presentations

(Invited, Digital Presentation) Finite Element Analysis of Temperature Distribution on Laser Enhanced Electroless Plating by Continuous Wave Laser.....	2407
<i>Tsunehisa Suzuki, Shotaro Uwano, Tetsuya Fujii, Mitsuyoshi Nomura, Kenji Gouya, Jun-ichi Muraoka</i>	

E03 - Interconnects and TSVs 1

Observation of Leveler and Accelerator Behaviors in Copper Electroplating Using a Microfluidic Device.....	2409
<i>Masanori Hayase, Daiki Fukushima</i>	

The Mechanism of Cu Microvia Pulse-Reverse Electrodeposition in Single Accelerator System.....	2410
<i>Huiju Seo, Myung Jun Kim, Jae Jeong Kim</i>	

(Invited) Advanced Plated Cu Metallization for Hybrid Bonding and 3D Interconnects.....	2411
<i>Ryo Aizawa, Urara Shiina, Jinta Nampo, Masahiro Sawa, Akinobu Ohno, Mariappan Murugesan, Takafumi Fukushima</i>	

E03 - Interconnects and TSVs 2

(Invited) Probing the Effect of Molecular Orientation on Cu Deposition Rates at Cu Surfaces	2413
<i>Andrew A. Gewirth, Gavin Lindsay</i>	
Effects of Aromatic Surfactants on Tin Electrodeposition	2414
<i>Algene Fryer, Qiang Huang</i>	
Toward Smart Manufacturing By Introducing Redundancy to Analytical Systems for Controlling of Damascene and 3D Packaging Electrodeposition Processesa	2415
<i>Aleksander Jaworski, Tomasz Rapecki, Kazimierz Wikiel</i>	
Microfluidic Device for in Situ Observation of Bottom-up Copper Deposition in a TSV-like Structure- Improved Adhesion of Working Electrode Edge	2417
<i>Yize Zhu, Masanori Hayase</i>	

E03 - Interconnects and TSVs 3

(Invited) Electrochemical Deposition for Microelectronic Interconnects	2419
<i>Thomas P Moffat, David Raciti, Hyunki Kim, Trevor Braun, Daniel Josell</i>	
(Invited) Application of Electroless Plating to 3D Interconnection Technology of LSIs	2420
<i>Shoso Shingubara</i>	
Optimization of Copper Electrodeposition in High Aspect Ratio through Silicon Vias	2421
<i>Jessica McDow, Jonathan Coleman, Mieko Hirabayashi, Matthew B. Jordan</i>	
Cu Pillar Wafer Pretreatment for Enhancing Wettability and Cleaning Cu Seed Layer	2423
<i>SooWoong Park, Myung Jun Kim, Jae Jeong Kim</i>	

E03 - Poster Session

Improving Uniformity of Electroplated Co Thin Film on SOFC Interconnector by Controlling Electrochemical Behavior and Microstructure	2425
<i>Han-Kyun Shin, Hyun Park, Hyo-Jong Lee, Jung HAN KIM</i>	
Characterization of Cu and SiCn Surface for Hybrid Bonding	2426
<i>Fabiana Lie Tanaka, Kohei Nakayama, Kenta Hayama, Yutetsu Kamiya, Mai Thi Ngoc La, Fumihiko Inoue</i>	
The Adsorption Kinetics of CTA^+ , Br^- , and Ag^+ Determining Anisotropic Growth of Gold Nanorods.....	2428
<i>Yujin Min, Seolim Yoon, Myung Jun Kim</i>	
Improving Zn Anode Stability in Zn Ion Battery by Controlling Electrochemical Zn Growth with Organic Additives	2429
<i>Hana Lim, Jiwoo Oh, Myung Jun Kim</i>	
Controlling Surface Morphology of Electrodeposited Sn-Bi through Additives	2430
<i>Yoojin Hwang, Jeong Ho Lee, Myung Jun Kim</i>	
Additives for the Formation of Cu Twin Structure by Electrodeposition	2431
<i>Jeong Ho Lee, Yoojin Hwang, Myung Jun Kim</i>	

E03 - Novel Processes 1

Electrochemical Properties of Indium CMP for Quantum Applications.....	2432
<i>Mai Thi Ngoc La, Kohei Nakayama, Fabiana Lie Tanaka, Fumihiro Inoue</i>	
Aerosol Jet Printing, Electrodeposition, and Passivation Process for Fabrication of Flexible Rhenium Interconnects.....	2434
<i>Jacob Manzi, Lok-kun Tsui, Zhefan Ma, Kamal Ahammed, Qiang Huang, Judith Maria Lavin</i>	
The Future of Die-to-Die Copper Interconnects and Epoxy Dielectrics.....	2435
<i>Junghyun Park, Monsuru Olatunji Dauda, Mustapha Bello, John C. Flake</i>	
Copper Metallization of Nano-through Silicon Vias for Backside Power Delivery Networks.....	2436
<i>Anh Van Nhat Tran, Nandini Venkataraman, Ya-Ching Tseng, Binni Varghese, Navab Singh</i>	

E03 - Novel Processes 2

(Invited) Metallization for Advanced Semiconductor Technology Nodes: Wet-Chemical Deposition and Etching, Characterization, and (Semi) Damascene Approaches	2439
<i>Harold Philipsen</i>	
Sporadic Voiding Effects in Ni - Sn Solder Joints: Understanding, Control, and Prevention.....	2440
<i>Nikolay Dimitrov, Zhen Lei, Michael Njuki, Peter Borgesen</i>	
A Combined Aerosol Jet Printing and Electrodeposition Process for Fabrication of Multi-Layer Inductors and Transformers on Iron-Nitride Substrates.....	2441
<i>Lok-kun Tsui, Jacob Manzi, Thomas Michael Hartmann, Joshua Dye, Judith Maria Lavin</i>	
Designing New Ultra-Radiopure, High-Strength Electroformed CuCr Alloys, for Rare Event Searches.....	2443
<i>Dimitra Spathara, Patrick Knights, Konstantinos Nikolopoulos</i>	

E03 - Toward Higher Conductivity, Higher Quality Deposition 1

(Invited) New Materials for High-Conductivity Interconnects.....	2445
<i>Daniel Gall</i>	
(Invited) Epitaxial Electrodeposition of Metals for Interconnects Beyond Cu.....	2446
<i>Katayun Barmak</i>	
Superconducting Re-Mo Alloys from Electrodeposition.....	2447
<i>Quanhong Liu, Qiang Huang</i>	
Superconductivity of Electrodeposited Rhenium Alloys.....	2449
<i>Zhefan Ma, Qiang Huang</i>	
Ruthenium Layers Electrodeposited from Non-Aqueous Electrolytes as Interdiffusion Barriers for Electronic Interconnects	2451
<i>Roberto Bernasconi, Federico Lissandrello, Luca Magagnin</i>	

E03 - Toward Higher Conductivity, Higher Quality Deposition 2

- (Invited) Cu-Cu Bonding in Semiconductor Packaging: Utilizing Texture Control for Enhanced Performance..... 2453
Haneul Han, Sanghwa Yoon, Bongyoung Yoo
- (Invited) Assessing Mechanical Properties of Multilayer Copper Foils for Secondary Batteries..... 2454
Han-Kyun Shin, Hyun Park, Jung HAN KIM, Hyo-Jong Lee
- Hydrogen in Electrolessly Deposited Copper Films -Additive's Effect on Hydrogen Concentration and Structure of Films- 2455
Shinji Yae, Kazuma Hayashi, Naoki Fukumuro
- The Effect of Surface pH on Rhenium Electrodeposition 2456
Kamal Ahammed, Qiang Huang

F01-ADVANCES IN INDUSTRIAL ELECTROCHEMISTRY AND ELECTROCHEMICAL ENGINEERING

F01 - Electrodeposition and Electromachining

- Modelling the Nickel Electroforming Process of a Mechanical Vane Fit for Industry 4.0 2457
Eleni Andreou, Sudipta Roy
- Development of 3D Printing Electroplating Tooling Assisted By Multiphysics Modeling 2460
Baptiste Fedi, Aurélien Boucher, Jonathan Schoenleber
- Physics-Based and Data Driven Modeling of Electrophoretic Coatings: Hybrid and Multiphysics Strategy..... 2461
Baptiste Fedi, Jonathan Schoenleber, Aurélien Boucher
- Enabling in-Line Silicon Wafer Porosification: An Experimental and Simulation Study 2463
Deik Petersen, Monja Gronenberg, Juergen Carstensen, Rainer Adelung
- Electropolishing to Surface Finish of Hastelloy X Manufactured By Laser Powder Bed Fusion 2464
Hyunbin Jo, Serim Park, Jisu Kim, Hyunsik Kim, Donghyun Kim, Junghoon Lee
- Surface Roughness Control of Powder Bed Fused AlSi10Mg Alloy with Various Building Angles..... 2465
Serim Park, Hyunbin Jo, Jisu Kim, Jungmin Han, Hyoungseok Moon, Junghoon Lee

F01 - Anodization and Its Applications

- Improving Patterning Resolution Via Solid-State Anodic Dissolution at the Polymer Electrolyte Membrane/Cu Interface Under Optimal Electrolytic Conditions 2466
Atsuki Tsuji, Junji Murata
- Anodic TiO₂ Films for Water Purification in Solar Evaporators 2468
Manjunath Veeranna Shinnur, Matteo Buccella, MariaPia Peddeferri, Vanni Lughi, Daniela Meroni, Maria Vittoria Diamanti
- Formation Efficiency of Anodic Alumina in Acidic Electrolyte Containing Amino Acid..... 2470
Shota Kusuyama, Kenta Hagiwara, Hidetaka Asoh

Evaluation of the Dielectric Properties of Aluminum Conductive Polymer Solid Capacitors at High Temperatures	2471
<i>David Quintero Giraldo, Hisato Matsuya, Mana Iwai, Sho Kitano, Koji Fushimi, Hiroki Habazaki</i>	

Nickel Nanoclusters Embedded in Carbon Flaky Frameworks for Electrochemical Ammonia Oxidation.....	2473
<i>Yu-Jen Shih</i>	

F01 - Electrolysis of Water, CO₂, NH₃, and H₂O₂

Theoretical and Experimental Analysis of the Cathode-Vapour-Feed PEM-Electrolyser for Space Applications.....	2475
<i>Sören Heizmann, Chiara Manfretti</i>	

Modelling and Optimization of Shunt Current Management in Industrial Alkaline Water Electrolysis: Grounding, Forced Potentials and Combination of Multiple Stacks	2477
<i>Simon Appelhans, Maik Becker, Henning Becker, Thomas Turek</i>	

Electrifying Industrial Hydrogen Peroxide Production	2479
<i>Dawei Xi, Yuheng Wu, Yuli Li, Michael J. Aziz</i>	

Electrochemical Looping Using Tungsten Oxide for Electrolytic Hydrogenations	2480
<i>Payman Sharifi Abdar, Evan V Miu, Isabella Hughes, James McKone</i>	

Kinetic and Potential Modeling of the Electrolysis Cell for Nitrate Reduction Reaction to Ammonia.....	2481
<i>Maryam Ahmadi, Mohammadreza (Reza) Nazemi</i>	

Identification of Mass Transfer Mechanisms inside an Industrial Electrochemical Cell for CO ₂ to Formate Conversion through 2D Transient Modeling	2483
<i>Mohammad Bahreini, Martin Desilets, Ergys Pahija, Ulrich Legrand, Arthur Fink</i>	

Technical Economic Assessment of Carbon Dioxide Reduction to Ethylene Using an Integrated System Approach.....	2486
<i>Scott Blazer Jr., Barbara Marchetti, Xiao-Dong Zhou, Yudong Wang</i>	

Thermodynamic and Economic Assessments of Electrochemical CO ₂ Conversion to Dimethyl Ether	2487
<i>Brenden Arndt, Mohammadreza (Reza) Nazemi</i>	

Physics-Based Modeling to Elucidate Design Principles for Redox-Mediated Electrochemical Systems.....	2488
<i>Nicholas J. Matteucci, Christopher T. Mallia, Fikile R. Brushett</i>	

F01 - Ironmaking / Separations for Mining / Metal Purification

Electrochemical Ironmaking for Green Steel: Turning Low-Grade Ore into High-Purity Iron.....	2490
<i>Colleen Wallace, Steve Fatur, Trevor Braun, Sam Frey</i>	

Investigation of Phosphorus Refining in Hot Metal through Electrochemical Methods	2492
<i>Sanghoon Lee</i>	

Commercialization of Posco Lithium Production Technology.....	2493
<i>Kyung Hoon Kim, Hyun-Soo Kim, Sung-il Jeon, Jae-Hun Kim, Min-Young Cho</i>	

Direct Extraction of Lithium from α -Phase Spodumene By Electrochemical Leaching 2494
Hanrui Zhang, Feifei Shi

Radicals on Tap for Green Hydrometallurgical Ore Extraction and Li-Ion Battery Recycling 2495
Nathalie Tuya, Brandon Dye, Richard May, Dan Steingart

F01 - Separations for Mineral Recovery

Molecular Design of Redox-Copolymers for Selective Electrochemical PGM Recovery 2496
Hee-Eun Kim, Ching-Hsiu Chung, Johannes Elbert, Xiao Su

Electrodeposition for Metal Recovery from Spent Batteries: Strategies for Improving Selectivity 2497
Seongmin Choi, Kwiyoung Kim, Xiao Su

Electrolytic Silver Recovery from Photovoltaic Waste 2498
Alan Rassoolkhani, Collin Dunn, Ryan Conner, Cameron Lippert, James Landon

F01 - Separations: CO₂ Capture and Waste Water Remediation

Bridging the Gap: A Cost Comparison of Electrochemical and Thermochemical Carbon Capture Technologies 2500
Katelyn M. Ripley, Fikile R. Brushett

Towards Oxygen-Tolerant Proton-Coupled Redox Organics for Aqueous Electrochemical CO₂ Capture 2502
Abdulrahman Alfaraidi, Nina Ni, Kyumin Lee, Nathan Faialaga, Richard Liu, Michael J. Aziz

Investigating (photo)-Electrochemical Pathways for the Remediation of Co-EDTA Wastewater Streams 2503
Jhen-Cih Wu, Xiao Su, Chia-Hung Hou

Electrifying PFAS Cleanup: Remediation of per- and Polyfluoroalkyl Substances (PFAS) from Water Using Electrosorption and Electrooxidation Techniques 2504
Anaira Roman Santiago, Song Yin, Jhen-Cih Wu, Johannes Elbert, Chia-Hung Hou, Diwakar Shukla, Hee-Eun Kim, Xiao Su

F01 - Poster Session

Numerical Strategy to Optimize Barrel Electroplating : Discrete Element Method and Electrochemical Modeling 2505
Baptiste Fedi, Kevin Marchais, Jonathan Schoenleber, Aurélien Boucher

Dispersibility and Morphologically Controlled Synthesis Method of Fe Metal Particles By Utilizing the Metal Complexes in an Aqueous Solution 2506
Hideyuki Takahashi, Koji Yokoyama, Shoichi Kumon, Kimitaka Sato, Shun Yokoyama

Electrifying Sulfate Waste: A Sustainable Approach to Chemical Production and Gigaton-Scale Carbon Dioxide Removal 2507
Santiago Jimenez-Villegas, ChulOong Kim, Roxanna Delima, Laura Lammers

Water Splitting through Electrochemical Catalyst of Iridium-Based Transition Metal Alloy Nanoparticles on Oxide Supports 2508
Jeongeun Song, Kyeongwon Han, Hyungjin Kim, Seulgi Kim, Hyeonji Park, Yukwon Jeon

Electrochemical Adsorption-Desorption Mechanism on Composite Electrode Materials for CO ₂ Direct Air Capturing	2509
<i>Hyunjin Kim, Kyeongwon Han, Hyeonji Park, Jeongeun Song, Ganghui Lee, Yukwon Jeon</i>	
Optimization of Oxygen Reduction Activity Via Transition Metal-Oxide Based Composite Electrodes in Acidic Medium	2510
<i>Hyeonji Park, Kyeongwon Han, Hyunjin Kim, Jeongeun Song, Yuri Ko, Yukwon Jeon</i>	
Regulation of Double Perovskite Materials through a Structural Modification and Doping for an Effective Electrocatalyst in Water Electrolysis.....	2511
<i>Kyeongwon Han, Heesu Kim, Hyunjin Kim, Hyeonji Park, Jeongeun Song, Boyean Kim, Yukwon Jeon</i>	
Eco-Friendly and Cost-Effective Electrochemical Synthesis of High-Purity Lithium Hydroxide Monohydrate	2512
<i>Hyun-Jong Kim, Hana LIM, Sung Cheol Park, SeKwon Oh, Ho-Nyun Lee, Seong Ho Son</i>	
Thermodynamic and Mass Transport Characterization of Lithium Hexafluorophosphate in Dimethyl Carbonate.....	2513
<i>Luhan Sun, Andrew A Wang, Charles W. Monroe</i>	

F04 - Poster Session

Fabrication of Uniform Porous Anodic Aluminum Oxide by Anodizing Aluminum in Trisodium Phosphate with Higher pH Values	2514
<i>Hsuan-Lin Hsieh, Ayasa Terashima, Tatsuya Kikuchi</i>	
Electropolishing of Magnesium and Its Alloys in Highly Safe Sodium Chloride/Glycol Solutions	2516
<i>Shunsuke Tomita, Tatsuya Kikuchi</i>	
Fabrication of Patterned TiO ₂ Nanotube Layers Utilizing 3D Printer Platform and Their Electrochromic Properties	2518
<i>Kwang-Mo Kang, Yoon-Chae Nah</i>	
Photoelectrochemical properties of Single walled and Double walled TiO ₂ nanotubes	2519
<i>Ah-yeong Lee, Rin Jung, JeongEun Yoo, Kiyoung Lee</i>	
Fabrication of Superomniphobic TiAl ₆ V ₄ Surface for Self-Cleaning and Anti-Biofouling Effect of Medical Devices	2520
<i>Jeong-Won Lee</i>	
Anti-Microbial Property of SiO ₂ or SnO ₂ Thin Film Coated Resin Nanostructures.....	2521
<i>Yuito Matsushita, Tomohiro Shimizu, Shoso Shingubara, Takeshi Ito</i>	

F01 - Energy Storage and Conversion

Pressurizing the Fuel Cell in a Direct Hybrid System for Airborne Applications	2523
<i>Tobias Graf, Robin Fonk, Daniel Frank, Christiane Bauer, Caroline Willich</i>	
Percolation Investigation of Polymer-Based Battery Electrodes and Its Influence on Capacity Utilization.....	2525
<i>Philip Zimmer, Christian Stolze, Simon Muench, Xiao Weisheng, Steffi Stumpf, Stephanie Hoepfener, Martin D. Hager, Ulrich S. Schubert</i>	

Large-Scale Production of Nanotube Silicon for Lithium-Ion Batteries	2527
<i>Kyle Charles Manwaring, Brian Gonda, Cale Parise, Lizbeth Zurita Garcia, Fei Sun, Kobit Adhikari, Dean Wheeler, Brian A. Mazzeo</i>	
Physical and Electrochemical Properties of Zinc Chloride and Potassium Chloride Based Non-Aqueous Electrolytes.....	2529
<i>Arpita Mishra, Manju P, Arindam Sarkar, BharatKumar Suthar</i>	
Modeling the Impact of Additional Electrolyte on Lithium-Ion Convection Cell Performance.....	2530
<i>Trent A. Weiss, Weiran Gao, Javit Drake, Fikile R. Brushett</i>	
Coal-Derived Nanoscale Materials for Energy Storage Applications.....	2532
<i>Fereshteh Salimi Nanadegani, Nadeem Khan, Natasha Smith, Rudolph Olson, Joe Sleppy, Isaiah Oladeji, Alisa Silverstein, Kody D Wolfe, Jason Trembly, John A. Staser</i>	

F01 - Biomass Conversion and Separation

Achieving Market-Ready Economic and Environmental Feasibility of Biomass-Based Plastic, Polyethylene Furanoate (PEF), via Electrocatalytic Conversion of Crude 5-Hydroxymethylfurfural (HMF) Solution	2533
<i>Dong Ki Lee, Jongin Woo, Ung Lee, Donggu Han</i>	
Probing the Reaction Mechanisms for Electroreduction of Furanics on Copper.....	2534
<i>Andrew S. May, Sarvarjon Talipov, Moses D. Chilunda, Elizabeth J. Biddinger</i>	
Investigating Crude Glycerol Electrooxidation	2535
<i>Rachel N Gaines, Adam P Sibal, Bridget E Friel, Vijay M Shah, Ashlynn S Stillwell, Paul J.A Kenis</i>	
Advancements in Redox-Mediated Electrodialysis for Valorization of Biomolecules.....	2536
<i>Nayeong Kim, Aderiyike Aguda, Jiho Lee, Jemin Jeon, Johannes Elbert, Xiao Su</i>	
Electrochemical Oxidation of Biomass-Derived Wastewaters for Simultaneous H ₂ Production	2537
<i>Bhanupriya Boruah, Swanand Sadashiv Bhatwadekar, Nickolas W Riedel, Lyndi E. Strange, Juan A. Lopez-Ruiz</i>	

F02-MODELING ELECTROCHEMICAL SYSTEMS FOR TRANSPORTATION APPLICATIONS 3

F02 - Digital Only Presentations

(Invited) (Digital Presentation) Development of Temperature-Dependent Degradation Models for Large-Format Lithium-Ion Batteries	2539
<i>Lubhani Mishra, Akshay Subramaniam, Taylor R. Garrick, Venkat R. Subramanian</i>	

F02 - Modeling Fuel Cells and Diagnostics for Transportation Applications

Simulation of Stack-Integrated Autothermal Reformer and Solid Oxide Fuel Cells for Operation in Aircraft Engines	2540
<i>Yifan Gu, Akhil Ashar, Fuqiong Lei, Huayang Zhu, Rob J Braun, Greg S Jackson</i>	

Model-Based Development of Control Strategies for a Fuel Cell Air Supply System and Experimental Verification at Flight-Relevant Conditions.....	2542
<i>Daniel Frank, Stefan Wazlawik, Samara Brandao de Almeida, Christiane Bauer, Caroline Willich</i>	
Magic Angle Moiré Bilayer Graphene for Enhanced Electrochemical Oxygen Reduction Reaction in PGM-Free Catalysts	2543
<i>Sirui Li, Piotr Zelenay, Edward F. Holby, Wilton Kort-Kamp</i>	
Multiscale Modeling Approach to Study the Influence of Bilayer Porous Transport Layers on Oxygen Evolution and PEMWE Performance	2544
<i>Mitchell Sepe, Dhairya Shah, Hyunseok Cho, Sirivatch Shimpalee</i>	
Simultaneous Entropic Coefficient Measurement and Multi-Species, Multi-Reaction Modelling	2545
<i>Kody D Wolfe, Abigail Paul, Regan Magee, Warren Wilczewski, Nathan Wichert, Jeffrey Lowe, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
In-Operando Virtual Look inside the Battery: The Role of Physics-Based Models in Advancing State-of-X Diagnostics of Batteries with Phase-Separating Materials	2546
<i>Tomaž Katrašnik, Klemen Zelič, Igor Mele</i>	
Theoretical Model and Control-Parameter Classification for Solid Oxide Fuel Cell System with Cooling Air Bypass into Burner	2548
<i>Long Ma, Zijing Lin</i>	

F02 - Electrochemical Mechanical-Thermal Coupled Models for Transportation Applications

Modeling Battery Cell Reversible Expansion Using the Discrete Element Method	2549
<i>Hunter Teel, Taylor R. Garrick, Srikant Srinivasan, Fengkun Wang, Yangbing Zeng, Sirivatch Shimpalee</i>	
(Keynote) on the Challenges and Opportunities for Parameterizing Multi-Physics Battery Models with Expansion Measurements.....	2551
<i>Jason Siegel</i>	
Robust and Efficient Mechanical Model of High-Volume-Change Silicon Electrodes for Li-Ion Batteries.....	2553
<i>Dean Wheeler, Amir Sina Hamed, Edmund McKay Shumway</i>	
Quantifying Aging-Induced Irreversible Volume Change of Porous Electrodes	2555
<i>Taylor R. Garrick, Yong Miao, Eric Macchiomei, Miguel Fernandez, John W. Weidner</i>	
Pseudo-Transient Modeling of Li Stripping in a Li/LLZO ASSB with Interfacial Defects	2556
<i>David Nadeau, Lionel Roué, Francois Allard</i>	
Modeling Capacity Losses Due to Irreversible Volume Change in Lithium-Ion Batteries.....	2558
<i>Hunter Teel, Taylor R. Garrick, Joseph Steven Lopata, Srikant Srinivasan, Fengkun Wang, Yangbing Zeng, Sirivatch Shimpalee</i>	
(Invited) Reduced Order Modeling of Li-Ion Battery Systems - from Fundamentals to Real-Life Applications.....	2560
<i>Paul Coman, Ralph E. White</i>	
Quantifying the Temperature Dependence of the Multi-Species, Multi-Reaction Model	2561
<i>Abigail Paul, Regan Magee, Isabel Baca, Warren Wilczewski, Nathan Wichert, Kody D Wolfe, Jeffrey Lowe, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	

Prediction of Lithium-Ion Battery Aging Due to SEI Growth and Lithium Plating Using 3D Microstructure-Based Modeling Method	2562
<i>Hunter Teel, Taylor R. Garrick, Joseph Steven Lopata, Fengkun Wang, Yangbing Zeng, Sirivatch Shimpalee</i>	
The Influence of Thermal Management Concepts on the Battery Behavior - Insights from a New Coupled Numerical Modelling Approach on the Battery Module Scale and Corresponding Experiments.....	2564
<i>Thomas Nyhues, Thomas Kalmbach, Jessica Kansy, André Loges, Thomas Wetzel, Achim Wiebelt</i>	

F02 - Select Perspectives from Early Career Researchers in Electrochemical Modeling

(Invited) Analyzing Effect of Battery Design Characteristics and Thermal Dynamics on Battery Performance in Electric Aircraft.....	2567
<i>Lukas Kieseewetter, Krishna Shah</i>	
(Invited) Impact of Preload Compression and Aging on High-Temperature Li-Ion Battery Pouch Cell Venting.....	2569
<i>Vivian Tran, Xin Hui Ooi, Sravan Pannala, Anna Stefanopoulou, Jason Siegel</i>	
(Invited) Modeling the Volume and Porosity Change of Lithium-Ion Cells Due to Lithium Intercalation and External Compression.....	2571
<i>Axel Durdal, Johannes Brehm, Valentin Elender, Andreas Aufschläger, Maximilian Altmann, Philip Kotter, Andreas Jossen</i>	
(Invited) Applications of a Mechano-Electrochemical Battery Model for Electric Vehicle Development	2573
<i>Drew J. Pereira, John W. Weidner</i>	
(Invited) Electrode Blending Simulations Using the Mechanistic Degradation Modes Modeling Approach.....	2575
<i>David Beck, Matthieu Dubarry</i>	
(Invited) First-Principles Modeling of Degradation Mechanisms of the NaO ₂ Discharge Product in Na-O ₂ Battery Cells.....	2576
<i>Alex Von Gunten, Kunal Velinkar, Onyema Obi, Eranda Nikolla, Jeffrey Greeley</i>	

F02 - Poster Session

Quantifying Volume Change in Porous Electrodes Via the Multi-Species, Multi-Reaction Model	2578
<i>Taylor R. Garrick, Miguel Fernandez, Mark Verbrugge, Christine Labaza, Rafid Mollah, Brian Koch, Matthew Jones, Jing Gao, Xiujie Gao, Nicholas Irish</i>	

F02 - Modeling Electrochemical Systems for Transportation Applications

(Invited) Elucidating Redox Mechanisms in Battery Materials through Resonant Inelastic X-Ray Spectroscopy (RIXS).....	2580
<i>Max Radin, Alexander Kunitsa</i>	
Deconstructing the Onsager-Stefan-Maxwell Framework	2581
<i>Rohit Rungta, Charles W. Monroe</i>	

A Reduced Order Modeling Approach to Capture Transport within a Three-Electrode System Towards Fast Charge Applications	2582
<i>Rafid Mollah, Taylor R. Garrick, Jing Gao, Yangbing Zeng, Brian Koch</i>	
Three-Dimensional Microstructure Modeling of Lithium Deposition and Dendrite Formation during Automotive Relevant Cycling	2583
<i>Hunter Teel, Taylor R. Garrick, Joseph Steven Lopata, Sirivatch Shimpalee</i>	
(Invited) Gradients and Instabilities in Solid-State Battery Architectures	2584
<i>Partha P. Mukherjee, Bairav Sabarish Vishnugopi, Abhinand Ayyaswamy</i>	
The Impact of Microstructure Variation on Lithium-Ion Battery Charging Capability	2585
<i>Hunter Teel, Taylor R. Garrick, Mitchell Sepe, Joseph Steven Lopata, Srikant Srinivasan, Fengkun Wang, Yangbing Zeng, Sirivatch Shimpalee</i>	
Modeling Degradation to Predict Capacity and Cell Level Reversible and Irreversible Expansion throughout Life across Various Cycling Conditions	2587
<i>Jason Siegel, Sravan Pannala, Zhiwen Wan, Anna Stefanopoulou, Matthew Jones, Taylor R. Garrick</i>	

F02 - System Level Modeling for Transportation Applications

Dimensionless Analysis of a Physics-Based Model for Economical Hydroxide Exchange Membrane Carbon Capture	2589
<i>Marco Colin Martinez, Brian P Setzler, Yushan Yan</i>	
Economic Feasibility Study of Deploying Green H ₂ Infrastructure at Los Angeles International Airport (LAX)	2591
<i>Sajjad Rezaei, Khaled Alsamri, Elio Simeoni, Jacqueline Huynh, Jack Brouwer</i>	
The Energy Storage Technologies in Generation-Integrated Systems (GIES) and Non-GIES.....	2593
<i>Gefayehu Tameru Yeserah</i>	

F02 - Atomistic Modeling of Electrochemical Systems

(Keynote) Atomic Scale Modeling of "Anode Free" Li-Metal Batteries.....	2595
<i>Donald J. Siegel</i>	
(Invited) Understanding Macroscopic Battery Degradation Observations through Ab Initio Theory, Atomistic and Coarse-Grained Simulations, and Experiments.....	2596
<i>Perla B. Balbuena, Saul Perez Beltran, Dacheng Kuai, Simone Marshall, Jorge M. Seminario</i>	
Lithiation-Induced Volume Change of NCM-Type Battery Cathode Materials from First Principles.....	2597
<i>Jeffrey Lowe, Hasnain Hafiz, Louis Hector, Jr.</i>	
(Invited) Voltage Controlled First-Principles Simulations of Li Ion Transport at Battery Interfaces Using the Quantum Continuum Approximation (QCA).....	2598
<i>Quinn Campbell</i>	
(Invited) Multi-Physics Modeling of Electrochemical Interfacial Phenomena	2599
<i>Venkatasubramanian Viswanathan</i>	
Leveraging Molecular Dynamics to Improve Porous Electrode Theory Modeling Predictions of Lithium-Ion Battery Cells.....	2600
<i>Sean T. Dix, Jeffrey Lowe, Mehdi Rashvand Avei, Taylor R. Garrick</i>	

F03-TUTORIALS AND ADVANCES IN ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY

F03 - Impedance Spectroscopy: Corrosion

- (Invited) High-Frequency Impedance Measurements on Cement Paste Loaded with Steel Fibres 2601
B. Díaz, A. Diéguez, C. Gil, X. Ramon Novoa, C. Paz, C. Pérez
- (Invited) Electrochemical Impedance Spectroscopy of Reinforced Concrete 2602
Christopher Lewis Alexander
- (Invited) Evaluation of Long-Term Corrosion Behavior of Metallic Biomaterials in Simulated Body Fluid By Electrochemical Impedance Spectroscopy 2604
Yusuke Tsutsumi
- (Invited) Organic Coatings for Corrosion Protection: Highlighting the Polymer Molecular Mobility Contribution to the EIS Response 2606
Nadine Pebere, Nicolas Causse, Eric Dantras, Deni Jero, Aurélien Roggero
- (Invited) Admittance Analysis to Evaluate Carbon Steel Corrosion Covered with Rust Layer in Electrochemical Impedance Spectroscopy 2608
Yoshinao Hoshi, Yusaku Akimoto
- Combined EIS/Tof/SIMS Investigation of Iron Dissolution Mechanisms in CO₂ Saturated Chloride Solutions 2609
Srdjan Nesic, Negar Moradighadi, Huiru Wang, Luntao Wang, Antoine Seyeux, Alain Pailleret, Philippe Marcus
- Interface Characterization of Fusion Bonded Composites Made from Laser-Pretreated Steel and Glass Fiber-Reinforced Thermoplastics Using Electrochemical Impedance Spectroscopy 2610
Christian Gundlach, Miriam Mengedoht, Maja Kandula, Sven Hartwig

F03 - Impedance Spectroscopy: Batteries

- (Invited) Dynamic Impedance Spectroscopy on Batteries: From Materials to Cells 2611
Fabio La Mantia
- (Invited) Nonlinear Frequency Response Analysis – Basics and Application for Battery Analysis 2613
Ulrike Krewer, Andre Weber, Julian Ulrich, Hoon Seng Chan
- Developing a Time-Efficient Strategy for Screening Health of Lithium-Ion Batteries 2615
Jusuke Shimura, Daisuke Takata, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki
- (Invited) Electrochemical Impedance Spectroscopy in Proton Exchange Membrane Water Electrolysis: Status, Features, Problems and Potentials 2617
Jianbo Zhang, Wenbo Shi, Jing Zhang, Qiao Wu, Xiaohong Chen, Yanqiang Kong
- (Invited) Analysis of Electrochemical Reaction in Polysulfide-Insoluble Lithium Sulfur Battery with in-Situ Electrochemical Impedance Spectroscopic Method 2619
Hikari Watanabe, Yuto Sugiura, Isao Shitanda, Masayuki Itagaki
- Physicochemical Impedance Modelling of Porous Electrodes in All-Solid-State Electrochemical Devices 2621
Felix Kullmann, Benjamin Hauck, Adrian Lindner, Sebastian Dierickx, Andre Weber

On the Proper Use of a Warburg Impedance	2622
<i>Mark E. Orazem, Burak Ülgüt</i>	

F03 - Impedance Spectroscopy: Methods

(Invited) Fourier Transformed AC Voltammetry and Relationship to Electrochemical Impedance Spectroscopy	2623
<i>Alan Maxwell Bond</i>	
(Invited) EIS Measurements in Ionic Liquids: Monitoring of the Electrodeposition of a Thin Metal Layer.....	2624
<i>Ekaterina Kurchavova, Yuelin Xie, Vincent Vivier, Mireille Turmine</i>	
Inductive Behavior in Electrochemical Impedance Spectroscopy: Can We Discriminate between Adsorption and Non-Stationarity.....	2625
<i>Abdelmoheiman Zakaria Benbouzid, Mireille Turmine, Vincent Vivier</i>	
Analyzing Experimental Data Validity and Error Structure for Second-Harmonic Nonlinear Electrochemical Impedance Spectroscopy	2626
<i>Yuefan Ji, An-Hung Shih, Daniel T. Schwartz</i>	
Leveraging the Discriminating Power of Second-Harmonic Nonlinear Electrochemical Impedance Spectroscopy with Nonlinear Transmission Line Model.....	2628
<i>Yuefan Ji, Daniel T. Schwartz</i>	
Distribution of Relaxation Times of Electrolysis Cells Using Time Domain Impedance Spectroscopy	2630
<i>Nathanael Royer, Long Le, Kerry D Meinhardt, Juan A. Lopez-Ruiz, Olga A Marina</i>	
Interpretation of Impedance Spectra for Neural Stimulation Devices in Vitro.....	2631
<i>Cynthia C. Eluagu, Bernard W. Biney, Elizabeth Olivo, QiWei Dong, Yupeng Wu, Stuart Cogan, Kevin John Otto, Mark E. Orazem</i>	
Impedance Analysis of Ultramicroelectrodes for Neural Stimulation	2633
<i>Bernard W. Biney, Sophia Carvalho, Cynthia C. Eluagu, Elizabeth Olivo, QiWei Dong, Yupeng Wu, Stuart Cogan, Kevin John Otto, Mark E. Orazem</i>	

F05-TOWARDS ELECTROLYSIS FOR SUSTAINABILITY: INNOVATIONS IN MATERIALS AND PROCESSES

F05 - Novel Catalysts and Electrodes 1

Enabling Separator Modification with Sulfiphilic CoTe ₂ Sites on Electrospun Carbon Nanofibers for High-Performance Lithium-Sulfur Batteries.....	2634
<i>Zhen Wei, Zhi Liu, Xing Li, Ling Fei</i>	
Innovative Methods for Crafting Hierarchically Structured, High-Performance Self-Supporting Flexible Bifunctional Electrocatalysts in Rechargeable Zinc-Air Batteries	2635
<i>Yingjie Chen, Xiangyu Meng, Lifeng Dong</i>	
Phase-Selective Synthesis of Cobalt Oxide Materials Via Electrochemical Chloride-Mediated Oxidation.....	2636
<i>MinJeong Kim, Ki Min Nam, Gisang Park, Joon Yong Park</i>	

Zr-Based Thin Film Metallic Glasses As High-Efficiency Materials for Electrocatalysis of the Hydrogen Evolution Reaction	2637
<i>Jerry Howard, Krista Carlson, Dev Chidambaram</i>	
Nicup Catalyst with the Synergistic Effect of Ni and Cu for Hydrogen Production Using Ammonia Electrolysis	2638
<i>Chanmin Jo, Minseo Jeon, Dae Jun Moon, Gyoung Hwa Jeong, Joon Young Kim, Uk Sim</i>	
Designing Sustainable Electrocatalysts for Electrolysis By Structural Modifications of Multi-Metal Oxides.....	2639
<i>Farshid Ramezanipour, Surendra B. Karki</i>	
Unveiling a Binder-Free Approach through Plasma Treatment of NiCoO ₂ Anode Multi-Layer Coatings for Alkaline Water Electrolysis.....	2640
<i>Mohit Chatwani, Christian Marcks, Adarsh Jain, Timo Wagner, Nicolas Wöhr, Anna K. Mechler, Vineetha Vinayakumar, Doris Segets</i>	
Mechanochemical Activation of Nickel Oxide Enabling Binder-Free Anodes for Alkaline Water Electrolysis	2643
<i>Mohit Chatwani, Christian Marcks, Adarsh Jain, Anna K. Mechler, Vineetha Vinayakumar, Doris Segets</i>	
Understanding the Mechanism of Evaporation-Induced Islands during the Formation of Catalyst Layers and Their Influence on the Alkaline Oxidation Evolution Reaction	2646
<i>Adarsh Jain, Christian Marcks, Mohit Chatwani, Anna K. Mechler, Vineetha Vinayakumar, Mohit Chatwani</i>	
Advancements in AEM Anode Catalysts: Calcium Manganese Oxide as a High Performing Bioinspired Electrocatalyst for Oxygen Evolution Reaction Applications.....	2649
<i>Brian Lenhart, Lindsay Wagner, Samuel Mckinney, Michele Ostraat</i>	
PEM Electrocatalysis in a Stirred-Tank Bioreactor Enables Growth of Clostridium Ragsdalei with CO ₂ and Electrons	2651
<i>Irina Schwarz, Arielle Rieck, Asad Mehmood, Dirk Weuster-Botz, Tim-Patrick Fellingner</i>	
Effect of Bi Doping on the Kinetics of Nickel Oxides-Based Electrocatalyst in Alkaline Oxygen Evolution Reaction	2653
<i>Seunghyun Jo, Kwang Sup Eom</i>	

F05 - Novel Catalysts and Electrodes 2

Structural Regulation and Advanced Transmission Electron Microscopy Characterization of the Oxygen Reduction Reaction Electrocatalysts.....	2655
<i>Mingxing Gong</i>	
Investigation of Nickel-Based Gas Diffusion Electrodes for Implementation in a Hybrid Alkaline Water Electrolysis Cell	2656
<i>Lars Sanderbrandes, Thomas Turek</i>	
FCC-Based High Entropy Alloy (AlFeCoNiCu) Catalysts for Electrochemical Ammonia Production from Nitrate.....	2658
<i>Jinuk Choi, Hyojung Lim, Gyoung Hwa Jeong, Uk Sim</i>	

Selective CO ₂ Reduction to Multicarbon Products on Cu-Based Electrocatalysts in Membrane Electrode Assembly	2659
<i>Monsuru Olatunji Dauda, Mustapha Bello, John C Hendershot, Junghyun Park, Ignace Agbadan, Soundarzo Tasnim, Orhan Kizilkaya, Phillip Sprunger, Koffi Yao, John C. Flake</i>	
Polarization Electric Field of Tourmaline Promotes Formic Acid Oxidation on Palladium.....	2660
<i>Xinsheng Zhang, Shuozhen Hu, Guoming Luo</i>	
Efficient Electrochemical Conversion of Ammonium Nitrate Solutions Using Novel Electrodes.....	2662
<i>Christian E Alvarez Pugliese, Alamgir Mojibul Haque, Okoye Francis Ogonna, Kingsley Azuka, Alejandro Gutierrez-Carballo, Pravin Babar, Gerardine G Botte</i>	
Reduced Graphene Oxide Supported MoS _x Se _{2-x} Bifunctional Electrocatalysts for Electrochemical Ammonia Production from Nitrate.....	2663
<i>Hyojung Lim, Jinuk Choi, Gyoung Hwa Jeong, Subramani Surendran, Gnanaprakasam Janani, Uk Sim</i>	
Enhancement of Electrocatalytic Oxygen Evolution Activity in Perovskite Oxides Via Fluorination Approach	2664
<i>Kazuyuki Iwase, Masaki Ohtaka, Itaru Honma</i>	
Metallic Glass Nanoparticles Synthesized via Flash Joule Heating for High Performance Catalysis.....	2666
<i>Hang Wang, Yuanyuan Ma, Xue Fan, Stephen A. Maclean, Nathan Makowski, Jason Lipton, Juan Meng, Jason A. Rohr, Mo Li, Andre Taylor</i>	
Matching Operating Parameters and Catalysts for the Sulphur Depolarized Electrolysis.....	2668
<i>Lukas Fernando Roessler Escudero, Viktor Hacker, Merit Bodner</i>	
Layered Manganese Dioxide Intercalated with Copper Ions for Electrochemical Reduction of Nitrate to Ammonia	2670
<i>Wataru Yoshida, Hiroyasu Fukuhara, Masaharu Nakayama</i>	

F05 - Innovative Electrolysis Cell 1

Development of Large-Sized CO ₂ Electrolyzer Producing CO for Industrial Applications	2671
<i>Yusuke Kofuji, Naoya Fujiwara, Maki Yonetsu, Yasuhiro Kiyota, Yuki Kudo, Satoshi Mikoshiba, Kosuke Yanagi, Isamu Kikuchi, Shunsuke Kimura, Ryota Kitagawa</i>	
Li-Mediated Electrochemical NH ₃ Synthesis Utilizing H ₂ O As a Proton Source	2672
<i>Jae Hyung Kim, Joonmok Shim, Sun Hyung Kim, Kyungho Lee, Hyung Chul Yoon</i>	
Insights from the Systems Scale to Design Practical CO ₂ Electrolyzers	2673
<i>Shashwati C da Cunha, Joaquin Resasco</i>	
Efficient CO and Acrolein Coproduction via Paired Electrolysis.....	2674
<i>Xue Wang, Peihao Li, Peihao Li</i>	
Electrochemically Induced CO ₂ Capture Enabled By Aqueous Quinone Flow Chemistry	2675
<i>Yan Jing, Kiana Amini, Dawei Xi, Shijian Jin, Abdulrahman Alfaraiddi, Emily F. Kerr, Roy G. Gordon, Michael J. Aziz</i>	
Bipolar Hydrogen Production from Electrocatalytic Oxidative Dehydrogenation of Biorenewable Furfural in Membrane-Less Electrolyzers.....	2677
<i>Wenzhen Li, Hengzhou Liu, Yifu Chen, Naveen Agrawal, Michael Janik</i>	

In Preparation of Using Confocal Raman Spectroscopy to Study Mass Transport in Bipolar Membranes	2678
<i>Rebecca Beswick, Allison M Crow, Todd G Deutsch, Wilson A Smith, Beth Kleimenhagen</i>	

Hydrophilic Separator Stables CO ₂ -to-C ₂ H ₄ Conversion at Low Cell Voltage with Non-Noble Metal Anode	2679
<i>Huy Pham, Cao Thang Dinh</i>	

F05 - Innovative Electrolysis Cell 2

Combined Electrolysis and Steam Methane Reforming for Optimized, Sustainable Methanol and Green Hydrogen Production	2680
<i>Johanna Hemauer, Jan-Peter Bohn, Sebastian Rehfeldt, Harald Klein</i>	

Influence of Process Parameters on Electrochemical CO ₂ Reduction to C ₂ + Products.....	2682
<i>Florian Pradellok, Jan Hüwels, Matthias Wessling, Robert Keller</i>	

Control of Reaction Environment for Selective Ethylene Production By Electrochemical CO ₂ Reduction	2683
<i>Takanori Tamaki, Naoki Matsuyama, Takahito Shibata, Kotaro Handa, Takeo Yamaguchi</i>	

Sustainable Electrochemical Synthesis of Dry Formaldehyde from Anhydrous Methanol.....	2685
<i>Florian Schwarz, Elizabeth Larenz, Anna K. Mechler</i>	

Electrochemical Oxidation of Methanol to Formate with High Yield and Conversion for Paired Electrosynthesis Processes	2688
<i>Niklas Vollmert, Jonas Bäßler, Jan Vehrenberg, Miriam Mineur, Sophia Schenke, Lukas Griesberg, Paulina Montero Pineda, Robert Keller, Matthias Wessling</i>	

Scalable Cross-Flow Multi-Tubular Electrochemical Cell for Electrochemically Mediated CO ₂ Capture	2690
<i>Younghun Lee, Michael Edward Massen-Hane, T. Alan Hatton</i>	

Exploring the Role of Natural Convection in 2-Stage Electrochemical CO ₂ Separation	2692
<i>Katelyn M. Ripley, Lauren E. Clarke, Isabella Caruso, Fikile R. Brushett</i>	

Performance Measurements and Modelling of a Low Cost 1 Kw Alkaline Electrolyzer Prototype to Test Electrogenerator.....	2693
<i>Philippe Mandin, Lilian Rabillard, Praveen Thappily</i>	

Multiscale Materials and Process Engineering for Efficient CO ₂ Recycling.....	2696
<i>Soumyabrata Roy, Jingjie Wu, Md Golam Kibria, Pulickel Ajayan</i>	

Pulsed Electrolysis for Enhanced Nitrate Reduction Reaction to Ammonia at Low Concentrations	2697
<i>Rami Reddy Boppella, Maryam Ahmadi, Brenden Arndt, Mohammadreza (Reza) Nazemi</i>	

A Generalizable Electrochemical Platform for Batch-to-Continuous Transitions	2698
<i>Robert Hacku, Glenn Cormack, Tyler Petek, James McKone</i>	

F05 - Poster Session

Pd-Based Metal-Support Heterostructure Catalyst for High Performance Electrocatalytic N ₂ Reduction Reaction	2700
<i>Ji-Yoon Song, Jaehyun Park, Hee-Tae Jung</i>	

Effect of Applied Voltage Value on Lithium 6 Isotope Enrichment By Intermittent Voltage Application Electrodialysis Method	2701
<i>Kiyoto Shin-mura, Takeru Fukusaka, Ryoya Tokuyoshi, Ayumi Kitada, Yukari Segami, Kaito Kato, Hirofumi Tazoe, Kazuya Sasaki</i>	
Fabrication and Characterization of Low Loading Dimensionally Stable IrO _x Electrocatalyst for Oxygen Evolution Reaction	2702
<i>Prasoon Kumar, Austin McKee, Sattar Alsaedi, Syed Mubeen Jawahar Hussaini</i>	
Impact of Cross-Linker Length on the Characteristics of Anion Exchange Membrane Water Electrolyzer	2703
<i>Mahamuda Akter, Yeri Park, Jong-Hyeok Park, Jin Soo Park</i>	
Biohybrid CO ₂ Electrolysis for the Direct Synthesis of Biomass from CO ₂	2704
<i>Jae Won Lee, Hyunjoon Lee</i>	
Optimization of Operating Conditions to Improve the Performance of Brine Electrolyzer for Mineralization of Waste Cement and Steel Slag.....	2705
<i>Kwang-Deog Jung, Jaewon Kim, Syed B.H. Rizvi, Ki Bong Lee, Heung Yong Ha</i>	
Electrochemical Ammonia Synthesis at Intermediate Temperatures Using Solid-State Phosphate Electrolyte	2706
<i>Yamato Nakashima, Shohei Tada, Ryuuji Kikuchi</i>	
Investigating Star-Shaped Crosslinkers in Pore-Filling Anion Exchange Membranes.....	2707
<i>Minyoung Lee, Dahye Jeong, Yeri Park, Mahamuda Akter, Jong-Hyeok Park, Jin Soo Park</i>	
Investigating Characteristics of Anion Exchange Membranes Utilizing Various Anion-Conducting Monomers for Water Electrolysis	2708
<i>Dahye Jeong, Minyoung Lee, Yeri Park, Mahamuda Akter, Jong-Hyeok Park, Jin Soo Park</i>	
Influence of Solvents on Catalyst Layer Performance in Proton Exchange Membrane Water Electrolysis and Fuel Cells	2709
<i>Jong-Hyeok Park, Yeri Park, Jin Soo Park</i>	
Enhancing Properties of Anion Exchange Membranes for Water Electrolysis.....	2710
<i>Yeri Park, Minyoung Lee, Dahye Jeong, Mahamuda Akter, Jong-Hyeok Park, Jin Soo Park</i>	

F05 - Innovative Electrolysis Cell 3

From Batch to Flow: Paired Electrolysis of H ₂ and Electrochemical Conversion of Biobased 5-HMF in a Flow Reactor	2711
<i>Linda Brösger, Robin Kunkel, Julia Melke</i>	
Understanding Breakpoint Chlorination during in-Situ Electrochlorination: Influence of Mass Transport.....	2713
<i>Aksana Atrashkevich, Dominic Varda, Kaitlyn Yeager, Sergi Garcia-Segura</i>	
Development of a Photoelectrochemical Process for the Elimination of Trace Substances in Wastewater Treatment with an Integrated 200% Electrolysis Cell.....	2715
<i>Tobias Schanz, Jonathan Z. Bloh</i>	
Effect of Polarity Reversal on Mitigating Passivation Layer during Iron Electrocoagulation.....	2717
<i>Gyoung Gug Jang, Swapnamoy Dutta, Yi-Feng Su, Jiheon Jun, Jong Keum, Kyungho Kim, Shankararaman Chellam, Costas Tsouris</i>	

Carbon Fixation for Food Production.....	2718
<i>Andressa Juliana Almeida Simoes, Chun Yat Sit, Sukhwa Hong, Josie Wachtveitl, Yewon Moon, Paul J.A Kenis</i>	

F05 - Novel Catalysts and Electrodes 3

Analyzing Bismuth Catalysts for Nitrogen and Nitrogen Oxides Reduction: A DFT Study Comparing Activation Mechanisms and Examining Dopant Effects	2719
<i>Dong-Kyu Lee, Yujin Jeong, Tae-Yong An, Tae-Hoon Kim, Mincheol Kim, Jung Kyu Kim, Uk Sim</i>	
Electrochemical Synthesis with Flow Electrodes: An Innovative Process Concept from Biobased Resources to Polymers	2720
<i>Maria Charlotte Padligur, Paul Westerfeld, John Linkhorst, Matthias Wessling</i>	
Investigating Anode Structural Characteristics with Multistage Data Quantification: Influence of Extrinsic Properties of Anodes for Oxidation Evolution Reaction in Alkaline Water Electrolysis	2721
<i>Adarsh Jain, Vineetha Vinayakumar, André Olean-Oliveira, Christian Marcks, Mohit Chatwani, Anna K. Mechler, Corina Andronesco, Mohit Chatwani</i>	

VOLUME 5

Formation of Porous Ni-Pt Alloy Using the Molten Salt Treatment.....	2723
<i>Michihisa Fukumoto, Hiroki Takahashi, Dawid Kutyla, Marek Wojnicki, Piotr Zabinski</i>	
Crystal Engineering of Metal-Organic Framework As a Catalyst Design for Water Splitting and Sensing	2724
<i>Paulraj Arun Kumar, Sampath Gayathri, Jong Hun Han</i>	
Application of Porous Electrode for Energy Efficient Electrocoagulation.....	2725
<i>Gyoung Gug Jang, Swapnamoy Dutta, Yuxuan Zhang, Kyungho Kim, Shankararaman Chellam, Costas Tsouris</i>	
Pd 4d Orbital Overlapping Modulation on Au@Pd Nanowires for Efficient H ₂ O ₂ Production	2726
<i>Zhiping Deng, Xiaolei Wang</i>	

F05 - Advanced Electrolytes and Membranes

Electrocatalytic Synthesis of Pure Aqueous Hydrogen Peroxide Using a Porous Proton Exchange Membrane.....	2727
<i>Kazuma Enomoto, Takuya Okazaki, Fumiaki Amano</i>	
Ligand-Functionalized Membranes for Lithium-Selective Electrodialysis Separations.....	2728
<i>Kristen Abels, Amilton Barbosa Botelho, Xi Chen, William Abraham Tarpeh</i>	
Bipolar Membrane Polarization Governed By Interfacial Ionic Species.....	2729
<i>Thomas Young George, Paige N Brimley, Wilson A Smith, Michael J. Aziz</i>	
Selective Reduction of Bicarbonate to Formate Via in-Situ Generated CO ₂ on a Hydrophilic Membrane Filter	2731
<i>Kohta Nomoto, Takuya Okazaki, Fumiaki Amano</i>	

F05 - Environmental Impact Assessments

Life Cycle Assessment of Liquid Alkaline Electrolyzers Comparing Environmental Performance across Various Design, Operation, and End-of-Life Scenarios.....	2732
<i>Mohammed Tamim Zaki, Hanna Breunig</i>	
Advancements in Electrochemical Advanced Oxidation Processes: Addressing Emerging Contaminants in Latin America	2733
<i>Miguel A Sandoval, Ricardo Salazar, Wendy Calzadilla, Jorge Vidal, Enric Brillas</i>	
Zero-Emission Hydrogen Production at on-Site Hydrogen Refueling Station Using Excess Electricity in Kyushu	2736
<i>Yuya Tachikawa, Tomotake Kobayashi, Keiji Kawakami, Yudai Matsuo, Yoshiyasu Kumamoto, Ryoko Morishima, Masahiro Yasutake, Kazunari Sasaki</i>	
Environmental and Life Cycle Assessment of Lithium(I) Carbonate Production from Lithium(I) Containing Brines.....	2737
<i>Zijing He, Anna Korre, G. H Kelsall, Melanie Colet Lagrille</i>	
Modeling Framework for the Assessment of a Sustainable Hydrogen Production and Supply Chain Network in California.....	2739
<i>Mohammed Tamim Zaki, Seongeun Jeong, Adam Z. Weber, Hanna Breunig</i>	
Fundamentals Studies of Sludge Electrolysis Using Bovine Serum Albumin (BSA) as a Model Compound	2740
<i>Ehsan Abbasi, Christian E Alvarez Pugliese, Gerardine G Botte</i>	

G01-ATOMIC LAYER DEPOSITION AND ETCHING APPLICATIONS 20

G01 - Keynote

(Keynote) Atomic Layer Processing in Semiconductor Research and Development	2741
<i>Matthew V. Metz</i>	

G01 - Semicon Applications

Low Resistivity Metallic Films by Thermal Atomic Layer Deposition for High Aspect-Ratio Interconnects	2742
<i>Matthew Weimer, Irina Stateikina, Sara Harris, Dane Lindblad, Marc Guilmain, Xavier Gaudreau-Miron, Arrelaine A Dameron</i>	
Resistivity Engineering of Atomic Layer Deposited Tungsten Carbonitride Thin Films Via Carbon Concentration Control for Cross-Point Memory Electrodes Applications	2744
<i>Seunggyu Na, Namkyu Yoo, Jeongwoo Seo, Jaehyeok Kim, Tae Hyun Kim, Seungwon Park, Minkyu Lee, Myoungsub Kim, Seung-min Chung, Hyungjun Kim</i>	
(Invited) ALD HfZrO ₂ Films from Ferroelectric to High-k Applications.....	2745
<i>Alessandra Leonhardt, Jessica Cimada, Ranjith Ramachandran, Matthew Surman, Rohit John, Vivek koladi Mootheri, Fu Tang, Michael Schmotzer, Michael Givens, Mihaela Balseanu, Andrea Illiberi</i>	

G01 - ALD of (Semi)conductive Oxides

- Understanding the Amorphous Structure of Al- and Zn- Doped TiO₂ with an Automated 4D-STEM Analysis Pipeline..... 2746
Andreas Werbrouck, Nikhila C Paranamana, Xiaoqing He, Matthias J. Young
- (Invited) Atomic Layer Deposition of (Semi)Conductive Oxides for Photovoltaics and Mo(o)Re..... 2747
Bart Macco

G01 - Area-Selective ALD

- (Invited) Key Challenges in Area Selective Deposition: From R&D Scale to High Volume Manufacturing 2749
Mark Saly, Bhaskar Bhuyan
- Site-Selective Atomic Layer Deposition at TiO₂ Defects Via Targeted Dehydration 2751
Jessica Catharine Jones, Alex B. F. Martinson
- (Invited) Silanes As Precursors and Inhibitors for Area-Selective Deposition 2752
Chad Brick, Tomoyuki Ogata
- Seiichi Iwamatsu, the Inventor of Atomic Layer Etching: The Conception of Cycled Exposures of Silicon to Halogens and Pulses of Heat, Ions, and More 2753
Fred Roozeboom, Jonas Sundqvist, Dmitry B. Suyatin, Kuniyuki Kakushima

G01 - Poster Session

- Manufacturing Scale-up of ALD Onto Synthetic Graphite Powder in a Continuous Vibrating Reactor for Battery Applications 2756
Brandon Castro, Andrew Broerman, Christopher Gump, Arrelaine A Dameron
- Atomic Layer Deposition Silver for Hydroxide Exchange Membrane Fuel Cells 2758
Beum Geun Seo, Fritz Prinz, Joon Hyung Shim, Gwon Deok Han
- Scalable Synthesis of Pt on Carbon Black Via Atomic Layer Deposition and Catalyst Layer Fabrication for Proton Exchange Membrane Water Electrolysis 2759
Mena-Alexander Kraenbring, Peter Piechulla, Mingliang Chen, J. Ruud van Ommen, Fatih Özcan, Doris Segets
- Development of Autonomous Reactor for High-Throughput Exploration of Electrically Conductive Copolymers Using Vapor-Phase Deposition..... 2760
Colin Gopaul, Mahya Mehregan, Andreas Werbrouck, Ryan C Gettler, Nikhila C Paranamana, Kurt P Brorsen, Matthias J. Young
- Optimization of the SAM Coating Films As Resist Layers Utilized in the Area-Selective ALD Process..... 2761
Sungwook Hong

G01 - Atomic Layer Etching 1

- (Invited) Atomic Layer Etching: Basics, New Developments & Applications..... 2763
Thorsten Lill

Plasma Atomic Layer Etching of Dielectric Materials with Low Global Warming Fluoro-Ether Isomers	2764
<i>Heeyeop Chae, Daeun Hong</i>	

G01 - Atomic Layer Etching 2

(Invited) Investigating ALE Approaches for Novel Metal Oxide Patterning at Sub-100 Nm Pitch for High-Density Memory & Compute Applications	2765
<i>Shreya Kundu, Leila Ghorbani, Frederic Lazzarino, Stefan De Gendt</i>	
(Invited) Surface Analysis of GaN by Cyclic Etching Process for ALE of III-V Materials	2767
<i>Makoto Sekine</i>	

G01 - ALD for Membrane Applications

Ceramic Thin-Film Composite Membranes with Tunable Subnanometer Pores for Molecular Sieving By Atomic Layer Deposition	2769
<i>Jeffrey W. Elam, Xuechen Zhou, Rahul Shevate, Anil U. Mane, Jaehong Kim, Menachem Elimelech</i>	
(Invited) Recent Advancements and Emerging Applications in Atomic Layer Deposition (ALD) on High-Porosity Materials	2770
<i>Mikhael Bechelany</i>	

G01 - ALD and SIS of Sulfides

Size and Structure Selective Indium Sulfide Cluster Formation Via Vapor Phase Sequential Infiltration Synthesis	2771
<i>Kihoon Kim, Shana Havenridge, Nestor Zaluzec, Donghyeon Kang, Nuwanthaka Jayaweera, Jeffrey W. Elam, Cong Liu, Karen L. Mulfort, Alex B. F. Martinson</i>	
(Invited) Atomic Layer Deposition of “Group 16 Compounds” for Emerging Applications	2772
<i>Hyungjun Kim</i>	
(Invited) Atomic Layer Deposited Sulfides As (Pre)Catalysts for Electrochemical Water Splitting	2773
<i>Miika Mattinen</i>	

G01 - ALD for Electrocatalysis

ALD Synthesis of Transition Metal Phosphides	2775
<i>Raul Zazpe, Jhonatan Rodriguez Pereira, Jaroslav Charvot, Milan Klikar, Filip Bures, Jan M. Macak</i>	
Ir-ALD Incorporated 2D Mxene Advanced Heterostructures for Green Hydrogen Energy Applications	2776
<i>Debananda Mohapatra, Yeseul Son, Chaehyun Park, Minjeong Kweon, Soo-Hyun Kim</i>	
Ultra-Low Loaded Platinum Via Plasma-Enhanced Atomic Layer Deposition for the Fuel Electrode Active Layer in Steam Reversible Solid Oxide Cells	2777
<i>Hyong June Kim, Haoyu Li, Deahyun Kim, Geonwoo Park, Sung Eun Jo, Kyoungjae Ju, Haesun Park, Min Hwan Lee, Jihwan An</i>	

Atomic Layer Deposition of Noble Metal Single Atoms and Nanoparticles for Electrocatalytic Applications.....	2778
<i>Jan M. Macak, Bilal Bawab, Jhonatan Rodriguez Pereira, Raul Zazpe</i>	

G01 - ALD Process Characterization

(Invited) In Situ Measurements during ALD/ALE Processes.....	2779
<i>Jeffrey W. Elam</i>	

Precursor Vapor Pressure Estimation and Precise QCM Measurement for ALD Process Development with Ideal ALD Characteristics	2780
<i>Yukihiro Shimogaki, Noboru Sato, Yuxuan Wu, Jun Yamaguchi, Atsuhiko Tsukune, Takeshi Momose</i>	

Self-Driving Tool, Digital Twin, and Machine Learning Algorithms for the Real Time Optimization of the ALD Growth of Multicomponent Thin Films Using in Situ Techniques.....	2781
<i>Angel Yanguas-Gil, Jeffrey W. Elam</i>	

G01 - Organic and Organic-Inorganic Materials

(Invited) A Solvent-Free, Thermally Curable Low-Temperature Organic Planarization Layer for Thin Film Encapsulation	2782
<i>Sung Gap Im</i>	

Conformal Conductive Polymer Deposition on Carbon Nanotube Forests	2783
<i>Andrew Reinhard, Mahya Mehregan, Matt Maschmann, Matthias J. Young</i>	

(Invited) ALD/MLD Enabled Novel Functional Lanthanide-Organic Thin Films	2784
<i>Maarit Karppinen</i>	

Molecular Layer Deposition of Novel Lithicones and Promising Applications	2785
<i>Xiangbo Meng, Kevin Velasquez, Aiyang Shao, Fumiya Watanabe</i>	

Controlling Electronic and Ionic Conductivity in oMLD Polymer Coatings	2786
<i>Matthias J. Young, Nikhila C Paranamana, Mahya Mehregan, Shima Mehregan, Amit Datta</i>	

G01 - ALD for Battery Applications

(Invited) Enhancing the Performance of Lithium-Ion Cathodes	2787
<i>Jason R. Croy, Jiajun Chen, Subhadip Mallick, Rajesh Pathak, Jeffrey W. Elam</i>	

ALD-Imparted Stability on High-Voltage Cathode Materials for Increased Cycle Life and Energy Density in Lithium-Ion Batteries	2788
<i>Gregory F. Pach, Madison Martinez, Jaime W DuMont, Meghan Herbert-Walters, Arrelaine A Dameron, Barbara K Hughes</i>	

Interface-Engineered Atomic Layer Deposition of $\text{Li}_4\text{Ti}_5\text{O}_{12}$: Toward High-Capacity 3D Thin-Film Batteries.....	2789
<i>Jan Speulmanns, Sascha Bönhardt, Malte Czernohorsky, Wenke Weinreich</i>	

Interface Engineering of Current Collector Using Resistive ALD-Grown Nanofilms for Fast Charging of Lithium Metal Batteries.....	2791
<i>Kenzie Marie Sanroman Gutierrez, Yi Cui, Stacey F. Bent</i>	

G01 - ALD Equipment, Spatial/Fast/Plasma ALD

- (Invited) Faster ALD for Emerging Quantum Applications 2792
Agnieszka Kurek, Dmytro Besprozvannyi, Arpita Saha, Yi Shu, Michael Powell, Ciaran Lennon, Harm Knoops
- High Speed Spatial Peald of 3D Objects Using Single-Sided and Double-Sided Plasma Exposure 2793
Eric Dickey

G02-18TH INTERNATIONAL SYMPOSIUM ON SEMICONDUCTOR CLEANING SCIENCE AND TECHNOLOGY (SCST 18)

G02 - Digital Only Presentations

- (Digital Presentation) Investigation of Nanoconfined Wet Etching Mechanism Using MD Simulation 2794
Yuki Yoshida, Takeo Nakano, Sangita Kumari, Shan Hu, Peter D'elia

G02 - Poster Session

- Molecular Dynamics Simulation of Bubble Formation in Confined Water in Si/SiO₂ Nanochannels 2795
Amir Taghavi Nasrabadi, Shuuichi Nishikido, Ihsan Simms, Mitsunori Nakamori

G02 - Confined Etching

- (Invited) Prospects of New Cleaning Technologies for Future Device Development 2796
JI Hoon CHA
- Precise Inner Spacer Etch-Back By Combining Ozone Gas Bake and Wet Chemical Etching 2797
Hikaru Kawarazaki, Dai Ueda, Teppei Nakano, Takayoshi Tanaka, Ju-Geng Lai, Efrain Altamirano Sanchez
- Deuterium Isotopic Effect on Nanometer-Sized Narrow Spaces Formed by Silicon Walls 2799
Shohei Miyagawa, Masayuki Otsuji, Takuma Takeda, Akiko Harumoto, Dai Ueda, Koichi Sawada

G02 - Selective Wet Etching

- (Invited) Selective Wet Etching of Semiconductor Materials by Novel Catalyst-assisted Modes 2802
Kenta Arima, Junhuan Li, Shiika Murase, Kouji Inagaki
- Selective Etching of SiO₂ over Si₃N₄ through Varying the Concentration of Fluorine Species 2804
Bumsik KIM, Wonje Lee, Sangwoo Lim
- Addition of Iodine Compounds in H₃PO₄ Solution for the Increase in Si₃N₄ Etching Rate 2806
Jongwon Han, Sangwoo Lim
- Highly Efficient Si₃N₄/SiO₂ Selective Etching Process with Non-Phosphoric Acid Solutions 2807
Jinhoon Lee, Sangwoo Lim

G02 - Contamination Metrology and Control

Evaluation of Metal Contamination Behavior on Silicon Wafer Surfaces Rinsed with Deionized Water Containing pg/L-Level Impurities.....	2809
<i>Kyohei Tsutano, Takezo Mawaki, Yasuyuki Shirai, Rihito Kuroda</i>	
Direct Determination of Metallic Contamination on and in Wafers Using Laser Ablation Inductively Coupled Plasma Mass Spectrometry	2811
<i>Katsu Kawabata, Tatsu Ichinose, Koshi Suzuki</i>	
Quantitative Modelling of Residual Molecular Contamination in Low-Pressure Processing Environments.....	2813
<i>Paul W. Mertens</i>	

G02 - Particle Removal

(Invited) Particles Removal on Challenging Surfaces	2815
<i>Philippe Garnier, Hugo Galbes</i>	
Surface Damage by Physical Cleans during Semiconductors Manufacturing.....	2818
<i>Philippe Garnier, Hugo Galbes, Laurent Viravaux</i>	
メガヘルツ周波数範囲のクォーツトランスデューサー超音波洗浄機を使用したポリスチレンラテックス粒子の除去の評価	2821
<i>Yoshiyuki Seike, Rai Takagi, Tomomi Hikita, Yuji Honda, Noriyuki Taoka, Yusuke Ichino, Tatsuo Mori</i>	
Study of Chemical-Physical Cleaning Technologies for Better Particle Removal Trapped on the Crystal Defects of 4H-SiC.....	2822
<i>Geu-Rim Ha, Yoon-Ji Ra, Yeonje Gye, Jingoo Park, Tae-Gon Kim, Juyeol Lee, Jooyoung Yang, Tae-Uk Kim</i>	

G02 - Spin Clean Modeling

Characterizing Turbulence and Wave Dynamics Under Rotation: Enhancing Semiconductor Processes through CFD Analysis and High-Speed Imaging.....	2823
<i>Naser Belmiloud</i>	
Modeling and Optimization of Wet ALE Process.....	2826
<i>Derek Bassett, Kate Abel</i>	
Investigating the Role of Fluid Dynamics on Cut Width Accuracy in Wet Bevel Cleaning Techniques.....	2828
<i>Rencheng Dong, Akira Fujita, Derek Bassett, Kazuyoshi Shinohara, Shuhei Takahashi, Ihsan Simms</i>	

G02 - Wetting and Drying

Verification of Adhesive Forces Reduction By Surface Modification Treatment in Finfet Patterns: A Molecular Dynamics Simulation Study.....	2832
<i>Ryuichi Seki, Hirofumi Tabe, Naozumi Fujiwara, Masanobu Sato, Masayoshi Takayanagi</i>	

Molecular Dynamics Simulation of Calculation of Adhesion Energies	2834
<i>Hirofumi Tabe, Ryuichi Seki, Naozumi Fujiwara, Masanobu Sato</i>	

G02 - Metal Etching and Photoresist Stripping

Rate Equation for TiN Etching in Dilute H ₂ O ₂	2836
<i>Dai Ueda, Akiko Harumoto</i>	
Extreme Chemical Reduction on Photoresist Stripping Process by Using Sulfuric Acid Ozone Mixture in Liquid Film	2839
<i>Tsung-Ju Lin, Yu Yamaguchi, Shuichi Shibata, Keigo Tamura, Naozumi Fujiwara, Masaki Inaba</i>	

G03-SiGe, Ge, AND RELATED COMPOUNDS: MATERIALS, PROCESSING, AND DEVICES 11: IN MEMORY OF QIZHI LIU

G03 - Ge Enrichment: From Materials To Devices

(Invited) Germanium Layer Transfer for Advanced CMOS	2843
<i>Tatsuro Maeda</i>	
High Quality (001)-Oriented Nanolayers of Ge Fabricated through 3D Condensation for Augmented MOSFETs Based Devices	2844
<i>Adonis Steve Takala, Olivier Gourhant, Stephane Verdier, Theo Levert, Ismail Madaci, Christophe Duluard, Anne-Flore Mallet, Adam Arette-Hourquet, Monica Bollani, Marco Salvalaglio, Luc Favre, Isabelle Berbezier</i>	
Tight Control of SiGe Condensation Technique for Large Scale Fabrication of High Quality Thick S _{0.5} Ge _{0.5} Layer	2846
<i>Olivier Gourhant, Anne-Flore Mallet, Adam Arette-Hourquet, Luc Favre, Isabelle Berbezier, Christophe Duluard, Adonis Steve Takala, Ismail Madaci</i>	
(Invited) Mobility Enhancement Technology of Extremely-Thin Body Ge-on-Insulator Channel Mosfets	2848
<i>Shinichi Takagi, Xueyang Han, Chia-Tsong Chen, Kei Sumita, Kasidit Toprasertpong, Mitsuru Takenaka</i>	

G03 - Plenary Session: Stacked Nanosheets

(Keynote) Epitaxial Si/SiGe Multi-Stacks: From Stacked Nano-Sheet to Fork-Sheet and CFET Devices	2850
<i>Roger Loo, Anjani Akula, Yosuke Shimura, Clement Porret, Erik Rosseel, Thomas Dursap, Andriy Yakovitch Hikavyi, Matteo Beggiato, Janusz Bogdanowicz, Alex Merkulov, Mustafa Ayyad, Han Han, Olivier Richard, Andrea Impagnatiello, Dong Wang, Keisuke Yamamoto, Tamás Sipőcz, Árpád Kerekes, Hans Mertens, Naoto Horiguchi, Robert Langer</i>	
(Keynote) Group-IV Epitaxy and Process Solutions for Stacked Gate-All-Around Nanosheet Technology Performance Improvement	2853
<i>Shogo Mochizuki</i>	

G03 - High Bandgap and 2D Semiconductors

(Invited) Development of High-Bandwidth GaN-Based Micro-LEDs for Visible Light Communication	2855
<i>Pengfei Tian, Zhen Zhang, Zuxin Jin, Runze Lin</i>	
(Invited) Impacts of Anisotropic Material Properties on Performance of SiC Power Devices.....	2857
<i>Tsunenobu Kimoto, Ryoya Ishikawa, Xilun Chi, Kyota Mikami, Keita Tachiki, Mitsuaki Kaneko</i>	
(Invited) Silicon Carbide Technology Scaling: Challenges and Opportunities across the Value Chain	2859
<i>Navab Singh, Umesh Chand, Shiv Kumar, Xuan Sang Xuan Nguyen, Lakshmi Kanta Bera, Surasit Chung, Xiao Gong, Yee Chia Yeo</i>	
(Invited) Growth of Germanene, Stanene, Plumbene, and Their Lateral Heterostructure.....	2861
<i>Junji Yuhara</i>	

G03 - Stacked Nanosheets 1: Epitaxy

(Invited) Epitaxial Growth and Development of Complimentary Field-Effect Transistors.....	2864
<i>Himani Arora, John Tolle</i>	
Source/Drain Epitaxy for Nanosheet-Based CFET Devices.....	2865
<i>Erik Rosseel, Clement Porret, Thomas Dursap, Roger Loo, Hans Mertens, Jishnu Ganguly, Ritam Sarkar, Camila Cavalcante, Olivier Richard, Jef Geypen, Brendan Marozas, Daniel Casey, Rami Khazaka, Steven Demuyne, Lucas P. B. Lima, Robert Langer, Serge Biesemans, Naoto Horiguchi</i>	
Low-Temperature Selective Si:As Epitaxy.....	2868
<i>Danar Abdula, YuJen Chiu, Brendan Marozas, Rami Khazaka, Caleb K Miskin, Jung Soo Lee, Alexandros T Demos</i>	
Defect-Free SiGe/Si Multistacks for Next-Generation CFET Architectures	2871
<i>Gianluca Rengo, Daniel Casey, Brendan Marozas, Niels Claessens, Rami Khazaka</i>	
(Invited) Low Temperature SiGe:B Epitaxy for Next-Generation Logic Devices	2875
<i>Lutz Muehlenbein, Vijay D'Costa, Daniel Casey, Rami Khazaka</i>	

G03 - Stacked Nanosheets 2: Processes, Metrology and Integration

(Invited) Metrology Along the Gate-All-Around Logic Roadmap: From Nanosheet to Complementary Field-Effect Transistors.....	2879
<i>Janusz Bogdanowicz, Mohamed Saib, Matteo Beggiato, Gian Lorusso, Vincent Brissonneau, Emmanuel Dupuy, Roger Loo, Yosuke Shimura, Anjani Akula, Hiroaki Arimura, Pallavi Puttaram Gowda, BT Chan, Daisy Zhou, Hans Mertens, Lucas P. B. Lima, Naoto Horiguchi, Serge Biesemans, Joey Hung, Igor Turovets, Sun Wei, Philipp Hoenicke, Richard Ciesielski, Anne-Laure Charley, Philippe Leray</i>	
Effect of Polymer Type Additives in Selective Wet Etching of Si _{1-x} Ge _x - to Si-Film to Enhance Etch Rate Selectivity.....	2880
<i>Changjin Lee, Ji-Eun Lee, Eun-Woo Jang, Ji-Hoon Kim, Jinsub Park, Jea-Gun Park</i>	

An Assessment of the Lateral Selective Etching, with HCl, of High Versus Low Ge Content SiGe Layers.....	2881
<i>Jean-Michel Hartmann, Bernard Previtali, Francois Aussenac, Pattamon Dezest, Olivier Glorieux, Adrien Blot-Saby, Ludovic Couture, Sylvain Barraud</i>	

Si-Ge Seed-Based Laser Crystallization of Amorphous Silicon for Monolithic 3D Upper Active Layer.....	2885
<i>Heejae Jeong, Seung-Hwan Kim, Hyung-jun Kim, Hyuk-Jun Kwon</i>	

(Invited) Heterogeneous 3D CFET with Ge Nanosheet Channel	2888
<i>Sanghyeon Kim, Seongkwang Kim, Hyeonrak Lim, Jaeyong Jeong, Jaejung Jeong, Youngkeun Park, Byungjin Cho, Younghyun Kim</i>	

G03 - 3D Integration and 2D Semiconductors

(Invited) Epitaxy Strategies for Monolithic 3D Integration of Single-Crystalline Semiconductors.....	2889
<i>Jeehwan Kim</i>	

Addressing the Defects within the Gate Oxide and at the Gate Oxide/Si Interface in Linear and Two-Dimensional Quantum Dot Arrays in Silicon.....	2890
<i>Saurabh Karwal, David J Michalak, Sergey V Amitonov, Larysa Tryputen, Amir Sammak, Marcel Meyer, Florian K Unseld, Corentin C Déprez, Ilja Meijer, Timo R. van Abswoude, Lieven M.K. Vandersypen, Giordano Scappucci, Menno Veldhorst, Rabah Hanfoug</i>	

(Invited) Applications of Complimentary FETs Using Low Temperature Deposited Phase Composite Semiconductor Channel Materials	2892
<i>Byoung Hun Lee</i>	

(Invited) 3D Integration of 2D Devices for Advanced Memory, Logic, and Bio-Inspired Computing	2893
<i>Saptarshi Das</i>	

G03 - Disruptive Devices

(Invited) Beta-Gallium Oxide-Based Devices Towards Grid-Scale Electronics	2894
<i>Sriram Krishnamoorthy, Saurav Roy, Arkka Bhattacharyya, Carl Peterson, Yizheng Liu</i>	

(Invited) Atomic-Scale Design of Advanced Transistors Via Ultrathin Negative Capacitance Gate Stacks	2896
<i>Suraj Cheema</i>	

(Invited) Interface Control Process of Rare-Earth Oxides on Si for Gate Dielectric Application	2898
<i>Kuniyuki Kakushima</i>	

G03 - HBT and BiCMOS Devices

(Invited) Millimeter-Wave and THz Circuits and Sub-Systems in Si-Ge Bi-CMOS Technology	2899
<i>Saeed Zeinolabedinzadeh</i>	

Design of PNP SiGe HBTs Towards 200 GHz $f_{\max}$	2900
<i>Uppili Raghunathan, Steven Shank, Sarah McTaggart, Megan Lydon-Nuhfer, Cameron Luce, Ramsey Hazbun, Stephen Bosley, Aaron Vallett, Daisy Dillon, Saurabh Sirohi, Jeffrey B. Johnson, Alexander Derrickson, Vibhor Jain, John Jack Pekarik</i>	

Compact Modeling of Base Current High Injection Effect in SiGe HBTs	2901
<i>Yiao Li, Guofu Niu, Andries Scholten, Marnix Willemsen</i>	
Improved Nonlinear Self-Heating Compact Modeling in SiGe HBTs Using Mextram	2903
<i>Anni Zhang, Guofu Niu, Yiao Li, Marnix Willemsen, Andries Scholten</i>	
(Invited) Epitaxial Process Development and Challenges for Advanced SiGe BiCMOS	2905
<i>Fabien Deprat, Jeremy Vives, Alexis Gauthier, Marvin Frauenrath, Justine Lespiaux, Stephane Verdier, Alice Ferrandon, Evan Oudot, Pascal George Ribot, Pascal Chevalier</i>	

G03 - Quantum Devices

(Invited) Advancing Si Spin Qubit Research: Process Integration of Hall Bar FETs on Si/SiGe in a 200mm BiCMOS Pilot Line	2907
<i>Felix Reichmann, Alberto Mistrioni, Yuji Yamamoto, Philipp Kulse, Steffen Marschmeyer, Dirk Wolansky, Oksana Fursenko, Marvin Hartwig Zöllner, Giovanni Capellini, Laura Diebel, Dominique Bougeard, Marco Lisker</i>	
Low Disorder and High Mobility 2DEG in Si/SiGe Fabricated in 200 mm BiCMOS Pilot line	2909
<i>Alberto Mistrioni, Felix Reichmann, Yuji Yamamoto, Marvin Hartwig Zöllner, Giovanni Capellini, Laura Diebel, Dominique Bougeard, Marco Lisker</i>	
200 mm Wafer Level Characterization at 2 K of Si/SiGe Field-Effect Transistors	2912
<i>Nikola David Komericki, Pascal Muster, Felix Reichmann, Till Huckemann, Daniel Kaufmann, Yuji Yamamoto, Marco Lisker, Wolfram Langheinrich, Lars R Schreiber, Hendrik Bluhm, Ruediger Quay</i>	
(Invited) Engineering Sn-Based Group IV Quantum Materials	2913
<i>Simone Assali, Anis Attiaoui, Patrick Del Vecchio, Nicolas Rotaru, Oussama Moutanabbir</i>	

G03 - GeSn-Based Optoelectronics

(Invited) Electrically Pumped GeSn/SiGeSn Lasers	2914
<i>Dan Buca, Teren Liu, Lukas Seidel, Omar Concepción Diaz, Jean-Michel Hartmann, Alexei Tchelnokov, Giovanni Capellini, Michael Oehme, Detlev Grützmacher</i>	
The Lattice Strain Distribution in $\text{Ge}_x\text{Sn}_{1-x}$ Micro-Disks Investigated at the Sub 100-nm Scale	2915
<i>Cedric Corley-Wiciak, Marvin Hartwig Zöllner, Agnieszka Anna Corley-Wiciak, Fabrizio Rovaris, Gianfranco Sfruncia, Giuseppe Nicotra, Ignati Zaitsev, Costanza Lucia Manganelli, Edoardo Zatterin, Davide Spirito, Anna Marzegalli, Tobias Schulli, Nils Von Den Driesch, Dan Buca, Francesco Montalenti, Carsten Richter, Giovanni Capellini</i>	
Light Emission of Sn/Ge MQW pin Diodes on Si.....	2917
<i>Michael Oehme, Michael Hack, Leon Starz, Hussain Darwish, Christian Spieth, Soeren C. Schaefer, Maurice Wanitzek, Lukas Seidel, Erich Kasper, Daniel Schwarz</i>	
In-Situ n-Type Doped Carrier-Injection Layers in GeSn Direct Bandgap LEDs for Methane Sensing	2919
<i>Clement Cardoux, Lara Casiez, Jeremie Chretien, Paul Goulain, Marvin Frauenrath, Nicolas Pauc, Vincent Calvo, Nicolas Coudurier, Philippe Rodriguez, Sebastian Koelling, Oussama Moutanabbir, Olivier Gravrand, Jean-Michel Hartmann, Alexei Tchelnokov, Vincent Reboud</i>	
(Invited) Group IV Mid-Infrared Optoelectronics Leveraging Nanoscale Growth Substrates	2921
<i>Oussama Moutanabbir, Lu Luo, Youngmin Kim, Simone Assali, Mahmoud Atalla, Hyo-Jun Joo, Sebastian Koelling, Melvina Chen, Xuncheng Shi, Daniel Burt, Donguk Nam</i>	

G03 - Ge-Based Optoelectronics

(Invited) High-Performance Ge/Si Electro-Absorption Optical Modulator and Its Highly-Efficient Photodetector Operation	2922
<i>Junichi Fujikata, Yasuhiko Ishikawa</i>	
(Invited) Pseudo-Planar Ge-on-Si Avalanche Photodiodes in Geiger and Linear Modes for Short-Wave Infrared Detection.....	2924
<i>Jaroslav Kirdoda, Muhammad Mirza, Charlie Smith, Derek Dumas, Conor Coughlan, Charlie McCarthy, Hannah Mowbray, Fiona Fleming, Xin Yi, Lisa Saalbach, Dave Muir, Mrudul Modak, Xiao Jin, Qingyu Tian, John David, Gerald Buller, Douglas Paul, Ross Millar</i>	
(Invited) Graded Index Silicon Germanium Photonics Circuits in the Mid-Infrared	2926
<i>Victor Turpaud, Thi Hao Nhi Nguyen, Annabelle Bricout, Hamza Dely, Jacopo Frigerio, Stefano Calcaterra, Jean-Michel Hartmann, Jean-René Coudevylle, Cedric Villebasse, David Bouville, Carlos Alonso-Ramos, Laurent Vivien, Giovanni Isella, Delphine Marris-Morini</i>	

G03 - Poster Session

Room-Temperature Light Emission from Ion-Implanted SiGe/Si and Ge/Si Quantum Dots on Si(001)	2927
<i>Lukas Spindlberger, Johannes Aberl, Felipe Murphy Armando, Thomas Fromherz, Moritz Brehm</i>	
Selective-Area Growth of InGaAs Nanowires on SOI and the Vertical Transistor Application.....	2929
<i>Keita Taniyama, Yuki Takeda, Yuki Azuma, Ziye Zheng, Junichi Motohisa, Katsuhiro Tomioka</i>	
Demonstration of VGAA-TFETs using InAs/Si Heterojunction on SOI substrate.....	2931
<i>Yuki Takeda, Yuki Azuma, Ziye Zheng, Junichi Motohisa, Katsuhiro Tomioka</i>	
Deposition of SiC Thin Films By Using R. F. Power Ramps	2933
<i>Hector Perez Ladron de Guevara, Kevin Manuel Esparza Ramírez, Enrique Rosendo Andrés, Isaac Zarazua Macias, Carlos Israel Medel Ruiz</i>	
Photoemission Study on Si and Ge Segregation on Al/Si _{0.8} Ge _{0.2} Structures	2934
<i>Taiki Sakai, Akio Ohta, Noriyuki Taoka, Yuji Yamamoto, Markus Andreas Schubert, Seiichi Miyazaki, Katsunori Makihara</i>	
Advanced SiGe:B Raised Sources and Drains for p-type FD-SOI MOSFETs	2936
<i>Jean-Michel Hartmann, Francois Aussenac, Olivier Glorieux, David Cooper, Sebastien Kerdilès, Zdenek Chalupa, Francois Boulard, Heimanu Niebojewski, Blandine Duriez, Thomas Bordignon, Sebastien Peru, Pawel Michalowski, Richard Daubriac, Fuccio Cristiano</i>	
Effect of Environmental Conditions on the Electrical Properties of MoTe ₂ Monolayers with hBN Cap Layer	2940
<i>Taku Yoshimura, Hiroshi Shigeno, Kenji Watanabe, Takashi Taniguchi, Yusuke Hoshi</i>	

G03 - Quantum Dots and Nanowires

(Invited) Hexagonal Silicon Germanium As a Direct Bandgap Light Source	2942
<i>Wouter H.J. Peeters, Victor T. van Lange, Marvin A.J. van Tilburg, Abderrezak Belabbes, Marvin Jansen, Riccardo Farina, Max C. van Hemert, Marco Vettori, Marcel A. Verheijen, Silvana Botti, Friedhelm Bechstedt, Jos E.M. Haverkort, Erik P.A.M. Bakkers</i>	

Epitaxy of Hexagonal Ge-2H : Lessons from in Situ TEM Observations	2943
<i>Laetitia Vincent, Marcel A. Verheijen, Wouter Peeters, Hassan Melhem, Theo Van den Berg, Hafssa Ameziane, Gilles Patriarche, Thomas Dursap, Laurent Travers, Charles Renard, Federico Panciera, Erik P.A.M. Bakkers</i>	
Optical Properties of Multilayered Staggered SiGe Nanodots Depending on Si Spacer Growth Temperature.....	2945
<i>Yuta Ito, Ryo Yokogawa, Wei-Chen Wen, Yuji Yamamoto, Atsushi Ogura</i>	
(Invited) Heterogeneous Integration of IR Detectors with CMOS and Thin Film Transistors	2948
<i>Yuhwa Lo, Yunrui Jiang, Shaurya Arya, Hexuan Peng</i>	

G03 - GeSn Epitaxy

(Invited) Advanced Virtual Sigesn Substrates for the Monolithic Integration of Novel Opto- and Nanoelectronics	2949
<i>Daniel Schwarz, Sören Christopher Schäfer, Christian Spieth, Michael Oehme</i>	
A Computational Chemistry Study of the CVD Growth of Germanium-Tin Materials	2953
<i>Joe Margetis</i>	
A Real-Time Chemical Vapor Deposition Optical Monitoring System for Ge _{1-x} Sn _x Growth Optimization.....	2955
<i>Joshua M Grant, Alexander Golden, Enbo Yang, Shui-Qing Yu</i>	
Mechanisms of Gas Phase Reactions in Germanium-Tin Chemical Vapor Deposition Processes Determined By in Situ Mass Spectrometric Investigation.....	2957
<i>Enbo Yang, Joshua M Grant, Alexander Golden, Joe Margetis, Wei Du, Shui-Qing Yu</i>	
Comprehensive study on epitaxial growth of GeSn(111) layers with high Sn content on Si(111) featuring Ge buffer layer	2960
<i>Shigehisa Shibayama, Shunsuke Mori, Yoshiki Kato, Mitsuo Sakashita, Masashi Kurosawa, Osamu Nakatsuka</i>	
(Invited) Recent Progress on Heteroepitaxy of Si-Sn Alloy Thin Films	2962
<i>Masashi Kurosawa, Shigehisa Shibayama, Mitsuo Sakashita, Osamu Nakatsuka</i>	

G03 - Properties and Metrology of Sn Containing Compounds

(Invited) Raman Spectroscopy for Epitaxial Silicon-Germanium-Tin Alloys.....	2963
<i>Davide Spirito, Agnieszka Anna Corley-Wiciak, Omar Concepción Díaz, Shunda Chen, Diana Ryzhak, Marvin Hartwig Zöllner, Costanza Lucia Manganelli, Tianshu Li, Dan Buca, Giovanni Capellini</i>	
Evaluation of Band Structure of Single Crystalline Si-Rich SiSn thin Film.....	2965
<i>Hiroki Ishizaki, Ryo Yokogawa, Yuta Ito, Takuya Minowa, Masashi Kurosawa, Atsushi Ogura</i>	
Development of Novel Ternary Alloy of CSiSn for Low-Cost Next Generation Photovoltaics.....	2968
<i>Seyedeh Banishashemian, Mohammad Mahmoudi, Aboozar Mosleh, Hameed Naseem</i>	
Density Functional Theory Study on Formation Energy, Formation Entropy, and Thermal Equilibrium Concentration of Tin and Vacancy in Germanium Layer	2970
<i>Koji Sueoka, Yusuke Noda</i>	

G03 - Epitaxy of Heavily In Situ Doped Group-IV Semiconductors

(Invited) Boron δ -Doping and Silicon Epitaxy on Chlorinated Silicon Surfaces	2974
<i>Robert E. Butera</i>	
Boron Delta-Doping in Si : B Stacks By RP-CVD Epitaxy	2975
<i>Alice Ferrandon, Fabien Deprat, Jeremy Vives, Marvin Frauenrath, Veronique Guyader, Caroline Lacomme, Ismail Madaci, Luc Favre, Isabelle Berbezier</i>	
Selective Epitaxy of Tensile, Highly Doped SiP for Planar NMOS FD-SOI Devices.....	2977
<i>Joel Kanyandekwe, Jean-Michel Hartmann, Justine Lespiaux, Tanguy Marion, Lazhar Saidi, Valérie Lapras, Alice Bond, Fabien Bringuier, Jérôme Richy, Nicolas Gauthier, Alan Thouvard, Tim Biet, Ludovic Couture, Adrien Blot-Saby, Agathe Andre, Jérémy Marchand, Christophe Licitra, Remi Coquand, Alexis Royer, Tristan Dewolf, Haidar Al Dujaili, Andrea Lassenberger, Olivier Glorieux</i>	
Selective Epitaxial Growth of SiGe(:B) for Advanced p-Type Fd-SOI.....	2981
<i>Justine Lespiaux, Joël Kanyandekwe, Tanguy Marion, Lazhar Saidi, Valérie Lapras, Alice Bond, Fabien Bringuier, Jérôme Richy, Alan Thouvard, Tim Biet, Emmanuel Nolot, Ludovic Couture, Laurent Brunet, Philippe Rodriguez, Eva Dos Reis, Nicolas Gauthier, Adrien Blot-Saby, Jean-Michel Hartmann</i>	
Surface Kinetics and Uniformity Issues in Low-Temperature Epitaxy of SiGe and Si:P Layers.....	2983
<i>Andrey Smirnov, Yury Shustrov, Daria Zimina, Alex Galyukov</i>	

G03 - Metrology of Group-IV Semiconductors

(Invited) AFM for Nanoscale Morphology & Property Characterization of Traditional and Emerging Semiconductors and Ferroelectrics	2985
<i>Peter De Wolf</i>	
Developing the Metrology for Atomic Level Spatial Distribution and Local Chemistry Analysis of in-Situ Dopants By Atom Probe Tomography	2986
<i>Jhao-Rong Lin, Richard J. H. Morris, Jeroen E. Scheerder, Andriy Yakovitch Hikavyi, Clement Porret, André Vantomme, Claudia Fleischmann</i>	
Temperature and Ge Fraction Dependence of Broad Peaks in Raman Spectra from Ge-Rich Silicon Germanium Thin Films	2988
<i>Yuiha Maeda, Ryo Yokogawa, Atsushi Ogura</i>	
Investigation of Phonon Spectral Model for Silicon-Germanium By Inelastic X-Ray Scattering and Raman Spectroscopy	2991
<i>Ryo Yokogawa, Yuta Ito, Yuiha Maeda, Yasutomo Arai, Ichiro Yonenaga, Atsushi Ogura</i>	

G03 - Advanced Group-IV Epitaxy Processes

(Invited) Self-Assembled Si Color Centers: Confinement to the Nanoscale Via Ultra-Low Temperature Molecular Beam Epitaxy	2994
<i>Johannes Aberl, Enrique Prado-Navarrete, Merve Karaman, Diego Haya Enriquez, Christoph Wilflingseder, Andreas Salomon, Daniel Primetzhofer, Markus Andreas Schubert, Giovanni Capellini, Thomas Fromherz, Peter Deák, Ádám Gali, Moritz Brehm</i>	

Ultra-Low Temperature Epitaxy of Ge-Rich Nanosheets on SOI for Reconfigurable Transistor Applications.....	2996
<i>Enrique Prado-Navarrete, Christoph Wilflingseder, Andreas Salomon, Thomas Fromherz, Masiar Sistani, Andreas Fuchsberger, Lukas Wind, Daniele Nazzari, Walter M. Weber, Johannes Aberl, Moritz Brehm</i>	
(Invited) Applications of Oxygen Inserted Epitaxy	2998
<i>Robert J Mears, Marek Hytha, Hideki Takeuchi</i>	
Polycrystalline inclusion-free growth of thick, lattice-matched SiGeC with high substitutional Carbon concentrations up to 2%.....	3000
<i>Marvin Frauenrath, Jeremy Vives, Matteo Devaux, Claudel Blondel, Ece Aybeke, Baydaa Obeid, Romain Duru, Theo Levert, Tony Printemps, Stephane Verdier, Fabien Deprat</i>	
High Performance CMOS RF Switch Based on Highly Carbon Doped Raised Source/Drain Regions.....	3003
<i>Antonin Chollet, Isabelle Berbezier, Luc Favre, Maxime Labrot, Julien Dura, Kassem Melhem, Romain Duru, François Figarols, Mathieu Abel, Sylvie Bodnar, B. Bartolotti</i>	
Benchmarking of HCl-Based Cyclic Deposition / Etch (CDE) and Single Deposition / Etch (DE) Processes for Selective Epitaxial Growth of SiGeC:B Films	3005
<i>Jeremy Vives, Fabien Deprat, Marvin Frauenrath, Stephane Verdier, Ece Aybeke, Alain Baron, Eldrine Marque, Didier Chaussende</i>	

G03 - Group-IV Field Effect Transistors

(Invited) High Mobility GeSn Nanowire CMOS	3008
<i>Yannik Junk, Omar Concepción Díaz, Marvin Frauenrath, Jinxuan Sun, Jin Hee Bae, Florian Bärwolf, Andreas Mai, Jean-Michel Hartmann, Detlev Grützmacher, Dan Buca, Qing-Tai Zhao</i>	
Piezo Electric Properties of Epitaxial SiGe	3009
<i>Yuji Yamamoto, Wei-Chen Wen, Naoki Inomata, Agnieszka Anna Corley-Wiciak, Diana Ryzhak, Cedric Corley-Wiciak, Roland Sorge, Bernd Tillack, Takahito Ono, Z. Zhizian</i>	
Reaxff MD Analysis of Substrate Material Properties into Oxide Films during Thermal Oxidation Process of Group IV Semiconductor Materials	3013
<i>Kenta Sekiguchi, Naoya Uene, Daisuke Otori, Kazuhiko Endo, Takashi Tokumasu</i>	
Realization of High-Hole Mobility and Low-Hole Concentration in Polycrystalline Ge Layers By Hydrogen Passivation.....	3016
<i>Koki Nozawa, Takashi Suemasu, Kaoru Toko</i>	
(110)-Surface Strained-Channel MOSFETs	3018
<i>Keisuke Arimoto</i>	

G03 - Advanced Group-IV Stacks

Nucleation and Growth Mechanisms of Polycrystalline SiGe-Based Materials By Chemical Vapor Deposition at Reduced Pressure	3020
<i>Jeremy Vives, Julie Chaussard, Fabien Deprat, Marvin Frauenrath, Ece Aybeke, Karen Dabertrand, Didier Chaussende</i>	

Threading Dislocation Density Reduction in SiGe Strain Relaxed Buffer Layers through a Preexisting Dislocation Reservoir	3022
<i>Lucas Becker, Peter Storck, Georg Schwalb, Thomas Schroeder, Martin Albrecht</i>	
Growth of High-Quality Non-Polar Materials through Graphene via Anchor Point Nucleation.....	3024
<i>Tadeas Hanus, Thierno Mamoudou Diallo, Andreas Ruediger, Jean-Christophe Harmand, Gilles Patriarche, Abderraouf Boucherif</i>	
Sustainable Fabrication of Ge Freestanding Membranes and Substrate Reuse via Porosification Lift-Off	3026
<i>Tadeas Hanus, Bouraoui Ilahi, Philippe-Olivier Provost, Javier Arias-Zapata, Ahmed Ayari, Alexandre Chapotot, Hubert Pelletier, Jinyoun Cho, Kristof Dessen, Abderraouf Boucherif</i>	

H02-THIN FILM TRANSISTORS 17 (TFT 17)

H02 - TFT Materials

(Invited) Why Poly-OS IGO TFT Exhibits Mobilities $>50 \text{ cm}^2/\text{Vs}$	3028
<i>Yuki Tsuruma, Koji Yamaguchi, Daichi Sasaki, Emi Kawashima, Tasuke Kadono, Keisuke Ide, Takayoshi Katase, Mutsumi Kimura, Toshio Kamiya</i>	
The Effect of Doping Conditions on Amorphous IGZO Electrical Conductivity.....	3030
<i>Seung jun Choi, SeYong Choi, Seung Jae Moon, Byung Seong Bae</i>	
(Invited) Organic Floating-Gate Transistors for Printable Nonvolatile Memory and Optoelectronic Device Applications.....	3031
<i>Takashi Nagase</i>	
(Invited) Thin Film Technologies : The Key Approach for the Decrease of Energy Consumption of the Digital World	3033
<i>Olivier Bonnaud</i>	

H02 - TFT Devices, Circuits, and Reliability 1

Revisiting Band Tails and Localized States in Amorphous Semiconductors.....	3035
<i>Yuezhou Luo, Andrew J. John Flewitt</i>	
Effect of Gate-Electrode/Gate-Dielectric Interlayer on Gate Screening of Remote Phonon Scattering in InGaZnO Thin-Film Transistor with High-k Gate Dielectric	3036
<i>Hao Sun, PuiTo Lai</i>	

H02 - TFT Devices, Circuits, and Reliability 2

(Invited) Amorphous Indium-Gallium-Tin Oxide Thin-Film Transistor with High Mobility of $40 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ and Excellent Stability.....	3037
<i>Taebin Lim, Jiwon Sun, Solbee Lee, Jin Jang</i>	
High-Mobility Indium Oxide Thin Film Transistors with High Reliability	3039
<i>Prashant Ghediya, Yusaku Magari, Hikaru Sadahira, Takashi Endo, Mamoru Furuta, Yuqiao Zhang, Yasutaka Matsuo, Hiromichi Ohta</i>	
(Invited) Ultra-thin Oxide TFTs and Related Instabilities	3040
<i>Junghwan Kim, Minju Song, Soohyun Kim, Hyoseon Shin, Jiho Yeom</i>	

Non-Traditional Response to Intensive NBS and NBIS Treatments on IGZO TFTs.....	3041
<i>Eli Powell, Bin Zhu, Robert G. Manley, Karl D. Hirschman</i>	

An a-IGZO TFT Based Pixel Circuit Suitable for Stable Operation Under AMOLED Impulsive Driving Dimming Scheme.....	3044
<i>Ji-Ho Lee, Ji-Hwan Park, Kyeong-Soo Kang, Chanjin Park, Soo-Yeon Lee</i>	

H02 - TFT Devices, Circuits, and Reliability 3

(Invited) Performance and Reliability of Hydrogen-Doped Polycrystalline Indium Oxide Thin-Film Transistors	3046
<i>Mamoru Furuta</i>	

Enhanced Stability Under Positive Bias Temperature Stress in Oxide Thin Film Transistors with Double Gate Structure By Improving Bottom Channel Interface.....	3047
<i>Kyoung-Seok Son, Myoeng-Ho Kim, Seung-Hun Lee, Youn-Goo Kim, Jaybum Kim, Sunhee Lee</i>	

Active Layer Thickness-Dependent Reliability of Solution-Processed Indium-Gallium-Zinc Oxide Thin-Film Transistors Under Bias Stress.....	3049
<i>Hwarim Im, Yong-Sang Kim</i>	

(Invited) Advances in Oxide Thin-Film Transistor Based Inverter Technology.....	3051
<i>Kenji Nomura</i>	

(Invited) A CMOS Inverter Technology Constructed with T-Shaped Gate Poly-Si Thin-Film Transistors	3052
<i>Horng-Chih Lin, Cheng-Kuei Lee, Pei-Wen Li, Kung-Ming Chen, Guo-Wei Huang</i>	

H02 - TFT Processes 1

(Invited) Low Contact Resistance on Buried Interfaces in Oxide Thin-Film Transistors by Selective-Area Reduction Using Hydrogenation Catalyst Electrode	3054
<i>Masatake Tsuji, Yuhao Shi, Hanjun Cho, Shigenori Ueda, Junghwan Kim, Hideo Hosono</i>	

Low-Temperature Ozone Atomic-Level Trimming on Ge Interfused Channel with Subthreshold Characterization Enhancement for Gate-All-Around Si Nanotransistors	3056
<i>Jiang Renjie, Qingzhu Zhang, Guanqiao Sang, Lei Cao, Lianlian Li, Wang Peng, Li Qingkun, Yin Huaxiang</i>	

Development of Vertical Structured TFT Using Interfacial Oxidation.....	3058
<i>SeYong Choi, Byung Seol Hwang, Sang Hun Hwang, Sang Ho Hwang, Seung Jae Moon, Byung Seong Bae</i>	

Dose-Dependent Performance of Boron-Implanted Self-Aligned Bottom-Gate IGZO TFTs	3060
<i>Eli Powell, Muhammad Salahuddin Kabir, Rahnuma Rifat Chowdhury, Robert G. Manley, Bin Zhu, Karl D. Hirschman</i>	

H02 - TFT Processes 2

(Invited) High Performance Metal Oxide Thin Film Transistor Using ALD Technology	3062
<i>Takanori Takahashi, Yuki Haru Uraoka</i>	

(Invited) Advancements in High-Performance Metal-Oxide TFTs Via Atomic-Layer Deposition: A Path Towards Next-Gen Display and Memory Technology	3063
<i>Seong Hun Yoon, Jae Seok Hur, Jae Kyeong Jeong</i>	
(Invited) Integrated Qled-Thin Film Electronic Driving Device Fabricated Fully in Solution	3064
<i>Tayeb Mohammed-Brahim, Sajid Hussain, Lei Wei</i>	
Synergistic Control of Molecular Self-Assembly and Orientation to Enhance the Performance of Organic Field-Effect Transistors Utilizing Solution-Processable Organic Semiconductors.....	3066
<i>Shyam S Pandey, Shubham Sharma, Kumar Vivek Gaurav, Shuichi Nagamatsu</i>	

H02 - Poster Session

Optimization of Metal Capping Layer Design for Enhanced Mobility in Indium Gallium Zinc Oxide (IGZO) Thin Film Transistors.....	3068
<i>JinKyu Lee, Soo-Yeon Lee</i>	
Liquid-Film Rupture for Web-like Ag Nanowires Toward High-Performance Organic Schottky Barrier Transistors	3070
<i>Hye Ryun Sim, Sangjun Lee, Juhyeok Lee, Syed Zahid Hassan, Geon-Hee Nam, Chan So, Kyu Min Sim, Dae Sung Chung</i>	
Improved Electrical Performance of CVD Monolayer-MoS ₂ TFT Via Wet Transfer of Van Der Waals Source/Drain Electrodes	3071
<i>Yuheng Deng, Yu Heng Deng, Hao Sun, Qing He Wang, Jingping Xu</i>	
Enhancing a-IGZO Thin-Film Transistors Performance Via Multi-Parameter Machine Learning.....	3072
<i>Hyunkyu Yang, Youn Sang Kim</i>	
Diketopyrrolepyrrole-Based Copolymers: Achieving Equally Effective Ambipolar Charge Transport in Organic Field-Effect Transistors and High-Voltage Logic Circuits	3073
<i>Tae Kyu An, Jihoon Lee, Sung Ryong Kim</i>	
The Influence of Nickel Doping on the Metal-Oxide in Solution-Processed Transistors Based on Indium Zinc Oxide	3074
<i>Jung Min Shin, Hwan Drew Kim, Kyung-MIN KIM</i>	
Four-Terminal Polycrystalline-Silicon Vertical Thin-Film Transistors on Glass Substrates for pH Sensor Applications	3075
<i>Kosei Suzuki, Masahide Nitta, Tetsuo Tabei, Akito Hara</i>	

H02 - TFT Applications Beyond Conventional Displays 1

(Invited) TFT Technologies from Commercial Displays to Emerging Immersive Displays	3077
<i>Yue Kuo, Arokia Nathan</i>	
(Invited) Highly Stable Metal-Oxide Thin-Film-Transistors and Circuits for Large-Area Flexible and Stretchable Electronics	3079
<i>Sung Kyu Park</i>	
IGZO TFT Backplane Integration for μ LED Flat-Panel Display	3080
<i>Eli Powell, Trevor Woodard, Zhi Li, Brian Corbett, Sean Garner, Robert G. Manley, Karl D. Hirschman</i>	

Integration of a-InWZnO Thin Film Transistor with Copper Conductive Bridge Random Access Memory for Low Power Consumption Displays	3082
<i>Yu Chuan Chiu, Po-Tsun Liu, Tsung-Che Chiang, Jo-Lin Chen, Chih-Chieh Hsu, You-Xuan Li, Yue Kuo</i>	
Internal Compensation Pixel Circuit for X-Ray Detector with on a-Igzo Thin-Film Transistors and Perovskite Materials	3084
<i>Jang Hoo Lee, Youngjin Kim, Hye Kang Park, Seung Jae Moon, Lei Wei, Byung Seong Bae</i>	
Design and Verification of an a-Igzo Tfts-Based Neuron Circuit with Threshold Voltage Variation Compensation.....	3086
<i>Yumin Yun, Junhyeong Park, Kyeong-Soo Kang, Ji-Hwan Park, Chanjin Park, Soo-Yeon Lee</i>	
(Invited) Study on Rram Properties Using Resistive Switching Layer with ZnO Nanostructure.....	3088
<i>Po-Tsun Liu, Chih-Chieh Hsu, Shu-Wei Chang, Yu Chuan Chiu</i>	
(Invited) Ferroelectric Thin-Film Transistors for Memory and Neuromorphic Device Applications.....	3090
<i>Jang-Sik Lee</i>	

H02 - TFT Applications Beyond Conventional Displays 2

(Invited) TFT-Based Neuromorphic Circuits for Computer Haptics	3091
<i>Kai Wang</i>	
(Invited) IGZO-Based Neuromorphic Devices and Their Application in Spiking Neural Networks	3093
<i>Junhyeong Park, Yumin Yun, Sunyeol Bae, Soo-Yeon Lee</i>	
(Invited) Advancement in Neuromorphic Devices for Detection of Complex Stimuli with Low Power Consumption Utilizing Cross-Linked Electrolyte	3095
<i>Su-Kyung Kim, Tae-Yeon Seong</i>	
Implementation of Integrate-and-Fire (IF) Characteristics of 1T-Neuron Induced Solely by Light Stimuli	3096
<i>Jaehee Lee, Jung Wook Lim</i>	

H03-LOW-DIMENSIONAL NANOSCALE ELECTRONIC AND PHOTONIC DEVICES 17

H03 - 2D Materials - Growth and Device Applications 1

(Invited) Interface Band Engineering for High-Performance 2D Semiconductor Electronics	3098
<i>Chul-Ho Lee</i>	
(Invited) Two-Dimensional Layered Materials with Scalable and Controlled Phase/Structure-Engineered Films Toward Functional Nanoelectronics	3099
<i>Yu-Lun Chueh</i>	
(Invited) Integration and Optimization of 2D Transition Metal Dichalcogenides as Switching Layers in Memristors.....	3100
<i>Andrea Capasso</i>	
(Invited) The Synthesis and Optical Properties of 2D Janus Quantum Layers.....	3102
<i>Sefaattin Tongay, Blake Povilus</i>	

(Invited) Mesoscale Ordered Two-Dimensional Semiconductor Polymers with Tunable Dirac Cones and Flat Bands	3104
<i>Giorgio Contini</i>	
(Invited) Design, Synthesis and Applications of Two-Dimensional π -Conjugated Polymers	3105
<i>Dmytro F. Perepichka</i>	
(Invited) Bilayer Molybdenum Disulfide Strain Controlled Field Effect Transistor	3106
<i>Cengiz Sinan Ozkan</i>	

H03 - Devices 1

(Invited) Development of Transparent Nanostructured Oxide Semiconductors for Electronic and Optoelectronic Devices	3107
<i>Oomman K Varghese, David Waligo, Lilly Schaffer, Maggie Paulose</i>	
(Invited) Green Chemistry Approach to the Synthesis of Nivel Transparent Microelectronics	3108
<i>Victor M Castano</i>	
(Invited) Liquid Metals for Creating Optical and Electronic Devices	3109
<i>Kourosh Kalantar-Zadeh</i>	
(Invited) Flexible Electronic Devices Based on Low-Dimensional Nanomaterials and Their Integration Technologies	3110
<i>Johnny C Ho</i>	

H03 - Devices 2 - Halide Perovskites

(Invited) Low-Dimensional Hybrid Perovskite Materials: Discoveries and Properties	3111
<i>Tom Wu</i>	
(Invited) Understanding the Photochemistry of Perovskites for Photovoltaics	3112
<i>Matthew Lloyd Davies, Emmanuel Péan, Rodrigo Garcia Rodriguez, Pavlina Kalyva, Alex Doolin, Rhys Charles, Karen Valadez Villalobos</i>	
(Invited) Irreproducibility of High-Performance Perovskite Solar Cells: Causes and Solutions.....	3113
<i>Jin-Wook Lee</i>	
(Invited) Development of High-Performance Sn Based Halide Perovskite Transistors	3114
<i>Youjin Reo, Yong-Young Noh</i>	
(Invited) 2-Dimensional Halide Perovskite Memristors for Data Storage and Neuromorphic Computing.....	3115
<i>Ho Won Jang</i>	
Ferroelectric Properties and Bulk Photovoltaic Effects of 2D Hybrid Halide Perovskites.....	3116
<i>Jae Yong Park, Willa Mihalyi-Koch, Crhistopher T. Triggs, Chris R. Roy, Kyana M. Sanders, John C. Wright, Song Jin</i>	

H03 - 2D Materials - Growth and Device Applications 2

(Invited) Phase Transition and Phase Engineering in Layered 2D Materials and Their Devices	3117
<i>Ying Wang</i>	

(Invited) Active Matrix Organic/Perovskite Light Emitting Diodes Based on MoS ₂ Thin Film Transistors	3118
<i>Soo Young Kim</i>	
(Keynote) Wafer-Scale Epitaxy of 2D Materials with Uniformity, Single Crystallinity, and Low Defect Density	3119
<i>Vincent Tung</i>	
(Invited) Designing Noncentrosymmetric and Chiral 2D Quantum Materials Via Screw Dislocations and Structural Tuning	3120
<i>Song Jin</i>	
All Inkjet-Printed Electronics from Electrochemically Exfoliated Two-Dimensional Nanomaterials	3121
<i>Okin Song, Joohoon Kang</i>	
Doping of Tmdc-Based Device By Control of Molecule Dipole Orientations Via External Electric Field.....	3122
<i>Po-Chien Lai, Yu-Lun Chueh</i>	
(Invited) Emerging Two-Dimensional Materials for Device Applications	3123
<i>Jun Lou</i>	

H03 - Devices 3

(Invited) A Polaron Paradigm for Perovskite Nanocrystal Emitting States	3124
<i>Ken Kuno</i>	
(Invited) Exploiting Near-Infrared Light for Theranostics	3125
<i>Fiorenzo Vetrone</i>	
(Invited) Engineering Multipolar Resonances in Nonlocal Metasurfaces	3126
<i>Vahid Karimi, Dominic Bosomtwi, Li Liu, Viktoriia Babicheva</i>	
(Invited) Advancing Quantitative, Contactless, Non-Destructive Characterization of Photonic and Plasmonic Devices	3128
<i>J Antonio Zapien, Yishu Foo, May Thawda Phoo, Md Rashedul Huque, Yun Zhang, Yee Man Kwong</i>	
(Invited) Optomechanical Nanoprobes in the Quest for Novel Nanoscale Electronic and Photonic Devices	3129
<i>Giovanni Fanchini</i>	
(Invited) GaAs Related Nanowires on Si for Large Area and Functional Electron-Photon Conversion.....	3131
<i>Fumitaro Ishikawa</i>	
(Invited) Group III-Nitride Nanostructures and Devices: From Classical Optoelectronics to Artificial Photosynthesis	3132
<i>Sharif Sadaf, Nirmal Anand, Dipon Ghosh, Md Afjalur Rahman, Christy G Jenson</i>	

H03 - Devices 4 - Ferroelectrics

(Invited) Nanoscale Ferroelectric Nitrides for Next Generation Electronics and Quantum Photonics	3133
<i>Zetian Mi</i>	

(Invited) Correlating Device Physics with Material Chemistry in Hafnia-Based Ferroelectric Memory Systems	3134
<i>Min Hyuk Park</i>	
(Invited) Ultrahigh Bulk Photovoltaic Effect Responsivity in Thin Films: Unexpected Behavior in a Classic Ferroelectric Material.....	3136
<i>Jonathan Spanier</i>	
A Comprehensive Study of Ferroelectric Properties of Fluorite-Structured $\text{Hf}_{1-x}\text{Zr}_x\text{O}_2$ Thin Films Grown on Mo Electrode with Various Thicknesses and Compositions	3137
<i>Ju Yong Park, Se Hyun Kim, Dong Hyun Lee, Kun Yang, Geun Hyeong Park, Min Hyuk Park</i>	
(Invited) Atomically Thin Electronic Channels with Programmed Molecular and Ionic Interactions	3139
<i>Cheol-Joo Kim</i>	
(Invited) Energy Intelligent Computing Devices Based on 2D Materials	3140
<i>Heejun Yang</i>	
An Investigation on the Low Voltage Ferroelectric $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ Capacitor Deposited on Phase-Controlled W Electrode	3141
<i>Kun Yang, Hyun Woo Jeong, Ju Yong Park, Jaewook Lee, Hyojun Choi, Younghwan Lee, Min Hyuk Park</i>	
(Invited) Bioinspired in-Sensor Computing for Artificial Vision	3143
<i>Yang Chai</i>	

H03 - Poster Session

All Solution-Processed High-Performance MoS_2 Thin Film Transistors with the High-k Perovskite Oxide Dielectric	3144
<i>Su-Yeon Joung, Chul-Ho Lee</i>	
Periodically Strained 2D Materials for Tunable Optoelectronic Applications.....	3145
<i>Mitchel McLean, Anh Tuan Nguyen, Woochul Lee, Nicolas Gaillard</i>	
Engineering High-Color Purity Photonic Crystal Strain Sensors via Melt-Shear Process	3146
<i>Sang Hoon Lee, Young-Seok Kim</i>	
Enhanced Electromagnetic Wave Absorption Properties of Layer-By-Layer Films Comprising $\text{MXene@Fe}_3\text{O}_4$ /Thermoplastic Polyurethane Fabricated via Spray Coating.....	3147
<i>JongYun Jeon, Young-Seok Kim</i>	
Topological Insulator Bismuth-Antimony Alloy Contact for Two-Dimensional Semiconductor Based Electronics	3148
<i>Hyunjun Park, Gihyeon Kwon, Jaeyoon Chu, Mann-Ho Cho</i>	

H03 - Devices 5 - Flexible Electronics

Thermal Conductivity Enhancement of Single Polyethylene Oxide Nanofiber	3150
<i>Anh Tuan Nguyen, Woochul Lee</i>	
High Quality Carbon Nanotube Thin Films for Transistor Application	3151
<i>Yi Li, Meiqi Xi, Xuehao Zhu, Lan Bai, Yu Cao, Xuelei Liang</i>	

(Invited) Exploring “Unconventional” Topological Nanoparticle Photonics Resonances.....	3152
<i>Vincenzo Giannini</i>	
(Invited) Understanding the Impact of Defects and Disorder in Materials for Advanced Energy Devices	3153
<i>Kulbir Ghuman</i>	
(Invited) Edge-Computing Multimodal Flexible Sensor System	3154
<i>Kuniharu Takei</i>	
(Invited) Designing Solution-Processed Photonic Light- and Heat-Management Structures for Solution-Processable and Printable Organic Optoelectronic Devices	3155
<i>Natalie Stingelin</i>	
(Invited) Toward Precision Manufacturing with Electron Microscopes.....	3156
<i>Mark Rummeli</i>	

H03 - 2D Materials - Growth and Device Applications 3

(Invited) Post-Synthetic Modulation of 2D Semiconductors by Organic Materials	3157
<i>Daisuke Kiriya</i>	
(Invited) High-Throughput Production of 2D Materials and Their 1D Structures	3158
<i>Fang Liu</i>	
Modulating Electronic Properties through Synthesis of Single-Layer Metallic Janus Crystal NbSSe	3159
<i>Renee Sailus, Sefaattin Tongay</i>	
Tuning Selectivity of Two-Dimensional Based Gas Sensors Via Monolayer Hexagonal Boron Nitride Encapsulation	3161
<i>Ruei-Hong Cyu, Yu-Lun Chueh</i>	
Solution-Based Processing of Two-Dimensional Materials for High-Performance and Wafer-Scale Electronics	3162
<i>Jihyun Kim, Joohoon Kang</i>	
(Invited) Sustainable Green Quantum Dots in Catalytic and Photovoltaic Applications	3163
<i>Rafik Naccache</i>	
(Invited) Engineering Active Sites of 2D Materials for Active Hydrogen Evolution Reaction.....	3164
<i>Suyeon Cho</i>	
Rational Design of Phase-Engineered WS ₂ /WSe ₂ Heterostructures By Low-Temperature Plasma- Assisted Sulphurization and Selenization Toward Enhanced HER Performance.....	3165
<i>Bushra Rehman, Yu-Lun Chueh, K.M.M.D.K Kimbulapitiya, Yu-Ren Peng</i>	
Van Der Waals Heterostructures Based on Two-Dimensional Semiconductors with Built-in Potential for Improved Electrochemical Water Splitting	3167
<i>Yun Seong Cho, Joohoon Kang</i>	
Low-Temperature Evaporation Combined with Pulsed Laser Annealing for the Preparation of High- Quality p-Type Single-Crystal Tellurium-Layered Material Thin Films	3168
<i>Chia-Hung Lo, Chia-Chen Chung, Yu-Lun Chueh</i>	

Exploring the Physical Characteristics of Transition Metal Dichalcogenides Under Extreme Ultraviolet (EUV) Radiation	3169
<i>Yu-Qi Huang, Man-Yun Kao, Che-Hao Hsu, Yu-Lun Chueh</i>	

H03 - Devices 6

(Invited) Van Der Waals Heterostructures and Superlattices: Boundless Opportunities at Bondless Boundaries.....	3170
<i>Xiangfeng Duan</i>	
Interfacial Engineering to Decouple Electrical and Thermal Conductivities in an Energy Efficient Low Thermal Budget Additive Manufacturing Technique for Flexible Thermoelectric Generators.....	3171
<i>Jiyuan Huang, Rohan B. Ambade, Jacob Lombardo, Ben Brooks, Aswani Poosapati, Priyanshu Banerjee, Mortaza Saeidi-Javash, Yanliang Zhang, Deepa Madan</i>	
A New Patterning Method of SnO ₂ -Based Transparent Conductive Oxide Films By Two-Step Wet Processes Using Reduction in Gluconic Acid Aqueous Solution	3172
<i>Daisuke Ogawa, Hiromasa Namiki, Yuito Miyashita, Kazutaka Isoda</i>	
(Invited) Metal Oxide Nanowire Array to Overcome Odor Sensing Limits.....	3174
<i>Kazuki Nagashima</i>	
(Invited) Plasmonic Metasurfaces Based on Epsilon-Near-Zero Materials.....	3175
<i>Pierre Berini</i>	
(Invited) Progress in 3D-Oriented MOF Systems	3177
<i>Paolo Falcaro</i>	
(Invited) Hot Electron Photodetectors, Sensors and Solar-Cells	3179
<i>jean-Michel Nunzi, Rana Poushmin</i>	
(Invited) 3D Oriented Metal–Organic Framework Dmof-1 Thin Films Functionalized with Azobenzene as Photo-Stimuli-Responsive Materials	3181
<i>Sumea Klokic, Heinz Amenitsch</i>	

H03 - Devices 7

(Invited) Structure and Function Tuning of Nanostructured Titania for Photochemical and Electrochemical Applications.....	3182
<i>Hisataka Nishida, Do Hyung Han, Hyunsu Park, Yoshifumi Kondo, Sunghun Cho, Yeongjun Seo, Tomoyo Goto, Tohru Sekino</i>	
(Invited) Advanced Nanoengineering for Sustainable Energy Technologies	3183
<i>Gurpreet Singh Selopal, Kokilavani Shanmugasundaram, Swedha Madhu, François Vidal, Haiguang Zhao</i>	
(Invited) Application of Liquid Metals in Battery Technology	3184
<i>Hiroki Ota</i>	
(Invited) Polymer Controlled Synthesis of Metal-Carbon Nanostructures for Energy and Sensing Applications.....	3186
<i>David Kisailus</i>	
(Invited) Novel Materials Chemistry for Applications in Energy Storage and Conversion	3187
<i>Nicola Pinna</i>	

Large Tunability of 2D Density in Atomically-Thin In_2O_3 By Mild Fluorine-Based Plasma.....	3188
<i>Yu-Cheng Chang, Der-Hsien Lien, Chien-Wei Chen</i>	

H04-GALLIUM NITRIDE AND SILICON CARBIDE POWER TECHNOLOGIES 14

H04 - General Wide Bandgap Technologies

(Invited) Improving Resilience of Wide Bandgap Electronics.....	3189
<i>Md Abu Jafar Rasel, Nahid Al-Mamun, Amanul Haque, Douglas Wolfe, Fan Ren, Stephen J Pearton</i>	
(Invited) Improving Interface Trap Analysis in Wide Band Gap MIS Structures.....	3190
<i>Brian D. Rummel, Luke Yates, Andrew T. Binder, Caleb E. Glaser, Robert J. Kaplar</i>	

H04 - Characterization Methods

(Invited) Common Practical Challenges in Characterization of Wide-Bandgap Semiconductors.....	3192
<i>Andrew T. Binder, Brian D. Rummel, Kevin J. Reilly, Richard Floyd, Jeffrey Steinfeldt, Mihai Negoita, Luke Yates, Robert J. Kaplar</i>	
Investigation of Inclusions and Associated Dislocation Configurations in 4H-SiC Wafers through Synchrotron X-Ray Topography and Ray-Tracing Simulation.....	3194
<i>Qianyu Cheng, Zeyu Chen, Shanshan Hu, Balaji Raghothamachar, Michael Dudley</i>	

H04 - Ultra Wide Bandgap Power Technologies

(Invited) Beta- Gallium (Aluminum) Oxide Epitaxial Thin Films, Heterostructures and in-Situ Dielectrics for High Performance Electronics.....	3196
<i>Sriram Krishnamoorthy, Arkka Bhattacharyya, Carl Peterson, Saurav Roy</i>	
(Invited) A Brief Overview and Outlook on the Progress of III-Nitride Semiconductor Materials.....	3198
<i>Jaime A. Freitas</i>	
(Invited) Investigating New Avenues for the Bulk Single Crystal Growth of BN.....	3199
<i>Florian Metzger, Jacob Dooley, Jonny Valenzuela, Tenzin Sherpa, Nathan Stoddard, Kai Landskron, Siddha Pimputkar</i>	
Plane Selective Metal-Assisted Chemical Etching for Good Ohmic Contact to $\beta\text{-Ga}_2\text{O}_3$	3200
<i>Woong Choi, Seungyun Lee, Jihyun Kim</i>	

H04 - SiC Power Technologies 1

(Invited) Progress in Fast 4H-SiC Crystal Growth and Defect Reduction By High-Temperature Gas-Source Method.....	3202
<i>Hidekazu Tsuchida, Takahiro Kanda</i>	
(Invited) Mitigation of BPD Faulting Using H_2 Etches for Pulsed Power Applications	3203
<i>Rachael L Myers-Ward, Nadeemullah Mahadik, Michael Evan Liao, Geoffrey Foster, Samuel White, Jenifer R Hajzus, Daniel Pennachio, Andrew Koehler</i>	
Stacking Fault Analysis for the Early-Stages of PVT Growth of 4H-SiC Crystals	3205
<i>Shanshan Hu, Zeyu Chen, Qianyu Cheng, Balaji Raghothamachar, Michael Dudley</i>	

H04 - SiC Power Technologies 2

(Invited) Barriers to SiC Power Semiconductor Device Commercialization	3207
<i>Victor Veliadis</i>	
(Invited) Tunneling Phenomena and Ohmic Contact Formation at Non-Alloyed Metal/Heavily-Doped SiC Interfaces.....	3209
<i>Masahiro Hara, Takeaki Kitawaki, Kotaro Kuwahara, Hajime Tanaka, Mitsuaki Kaneko, Tsunenobu Kimoto</i>	
(Invited) Expansion Behavior of Single BPD Loop Causing Stacking Fault Multiplication in 180 Mm Thick 4H-SiC Epitaxial Layers	3211
<i>Nadeemullah Mahadik, David A Scheiman, Jeff A Mittereder, Robert E Stahlbush, Youngsang Kim, Michael W Owen, Zeyu Chen, Balaji Raghothamachar, Michael Dudley</i>	
(Invited) In-Situ Observation of SiC Solution Growth: Observation Principle and Effect of Al Addition to Si-Cr Solvent.....	3215
<i>Sakiko Kawanishi, Tomohiro Yamada, Hironori Daikoku, Hiroyuki Shibata, Takeshi Yoshikawa</i>	
Analysis of Lattice Damage in Annealed 4H-SiC Epiwafers after Heated Implantation with High Energy Al Ions	3217
<i>Zeyu Chen, Qianyu Cheng, Shanshan Hu, Balaji Raghothamachar, Reza Ghandi, Stacey Kennerly, Charles Carlson, Dannie Steski, Michael Dudley</i>	

H04 - Heterostructure Power Technologies

(Invited) Heterointegration of Wide and Ultrawide Bandgap Semiconductors	3219
<i>Mark S. Goorsky, Michael Evan Liao, Kenny Huynh, Brandon Carson</i>	
(Invited) Improvement of Surface Morphology of Vicinal Off Angled 4H-SiC Epitaxial Wafer for GaN/SiC Hybrid Devices	3220
<i>Kazutoshi Kojima, Akira Nakajima, Hisashi Yamada, Shinsuke Harada</i>	
Enhancing Normally-Off P-GaN Gate HEMTs Performance with Composite GaN/AlN/AlGaN Blocking Layers	3222
<i>Hsin Chu Chen, An-Chen Liu, Yu-Wen Huang, Hao-Chung Kuo</i>	
Simple Contact-Less Photo-Electrochemical (CL-PEC) Etching for AlGaIn/GaN Heterostructures	3225
<i>Taketomo Sato, Yugo Oki, Naoki Shiozawa</i>	
Controlled Surface Polarity and Crystallinity of Gallium Nitride on Si (111) Using Atomic Layer Deposition for Selective Wet-Etch and STEM Analysis	3227
<i>SeongUk Yun, Andrew C Kummel, Kesong Wang</i>	

H04 - State-of-the-Art Program on Compound Semiconductors (SOTAPOCS-67)

Native Oxidation of HgCdTe Compound Semiconductors and Its Impact on Infrared Detectors Performances	3230
<i>Steven BEL, Clément Lobre, Sarah Petit, Marc Veillerot, Giacomo Badano</i>	
Nano-Tomography Investigation of Residual Damages in p-Type Doped HgCdTe Semiconductor.....	3232
<i>Clément Lobre, Florian Marmonier, Pierre-Henri Jouneau</i>	

Solution-Processed Zinc Oxide Nanoparticles for Thin Film Optoelectronic Neuromorphic Devices	3234
<i>Sahil Dawka, Pengjun Duan, Shreyasi Maitra, Raju Sapkota, Chris Papadopoulos</i>	

H01 - Poster Session

Photosensitive Adhesive Bonding between Laser Diode and Optical Nonreciprocal Device	3238
<i>Hideki Yokoi, Hiroki Ikeda</i>	
Diamond Crystal Growth on Orientation-Controlled Carbon-Based Materials	3240
<i>Masaki Matsumoto, Keiji Taniya, Keisuke Tokuhara, Yuki Nagai, Hiroto Shimizu, Takuma Nishida, Shuhei Toshinari, Daisuke Konishi, Yoshihiro Ueoka, Masami Mesuda, Mami N. Fujii</i>	
Fabrication of InP Vertical Gate-All-Around Transistors Using Crystal Phase Transition Heterojunction	3242
<i>Ryosei Uchida, Yuki Takeda, Yuki Azuma, Ziye Zheng, Junichi Motohisa, Katsuhiko Tomioka</i>	
Computer Aided Optimization of Insulated Gate Bipolar Transistors	3244
<i>Pranathi Brungi, Petru Andrei</i>	

H05-ELECTRONIC, THERMAL, AND ELECTROCHEMICAL PROPERTIES OF METAL ORGANIC FRAMEWORKS (MOFS) 3: TECHNOLOGY, APPLICATIONS, AND EMERGING DEVICES

H05 - Poster Session

2-Dimensional Palladium Organometallic Framework Generated Via C-H Activation for Electrochemical Syngas Production from CO ₂	3245
<i>Jong-Yeong Jung, Jaewook Kim, Hyunjoon Song</i>	

H05 - MOFs: Perspectives on the Future

(Invited) the Future of MOFs - Asking the Question - "What Needs to be True?"	3246
<i>Stuart Raymond Miller</i>	

H05 - MOFs: Synthesis & Characterization

(Invited) said: Versatility of the Deposition Process Combined with in-Situ Characterization Methods	3247
<i>Maissa K. S. Barr</i>	
Nanoconfined Lanthanum Hydride Nanoconfinement in Functionalized Carbon Hosts	3248
<i>Mohana Shivanna, Timothy Elmslie, Sakun Duwal, Catalin Spataru, Zak Piontkowski, Joseph Teprovich, Mark D. Allendorf, Peter Sharma, Vitalie Stavila</i>	
Effects of Anion or Cation Structures on the Interaction of Ionic Liquid with Cu ₃ (BTC) ₂ Metal-Organic Frameworks	3249
<i>Kaito Koseki, Yumeng Zheng, Kentaro Kinoshita</i>	
Nanoconfined Metal Hydrides As Alternatives to Lithium Ion Battery Energy Storage	3251
<i>Vitalie Stavila, Mohana Shivanna, William Taylor, Nicole Torquato, Mark D. Allendorf</i>	

Ordered Transfer from 3D-Oriented MOF Superstructures to Polymeric Films and Patterns.....	3253
<i>Paolo Falcaro, Lea Brandner</i>	
(Invited) metal Organic Framework Templates for the Fabrication of High Performance Photoanodes.....	3254
<i>Federico Rosei</i>	

H05 - MOFs: Theory & Thermal Properties

(Invited) open the Gate: Molecular Dynamics Simulation of Adsorption-Induced Phase Transformations of MOF Nanocrystallites	3255
<i>Rochus Schmid</i>	
(Invited) thermal Transport in Covalent Organic Frameworks.....	3256
<i>Ashutosh Giri</i>	
(Invited) bridging MOFs to Applications Via Machine Learning.....	3257
<i>Mohamad Moosavi</i>	
Recent Progress in Modeling Thermal Transport in MOFs.....	3258
<i>Christopher Wilmer</i>	
(Invited) the Use of Metal-Organic Frameworks in Adsorption Cooling/Heating: From the Perspective of Computational Screening.....	3259
<i>Song Li, Wei Li, Zhilu Liu</i>	

H05 - MOFs: Electronic Properties

(Invited) air/Liquid Interfacial Formation Process of Electrically Conductive Metal-Organic Framework Nanosheets	3260
<i>Rie Makiura</i>	
Charge Transfer Donor-Acceptor Guests Confined within Metal-Organic Framework Crystals	3262
<i>Mohana Shivanna, Mark D. Allendorf, Ali Abou Taka, Paul E Schrader, Krupa Ramasesha, Laura M McCaslin, Vitalie Stavila</i>	
Two-Dimensional Redox-Active Cerium-Based Metal–Organic Frameworks Coordinated on Carbon Nanotubes as Materials for Supercapacitors	3263
<i>Kuan-Chu Wu, Meng-Dian Tsai, Chung-Huan Wu, Tzu-Hsien Yang, You-Liang Chen, Chung- Wei Kung</i>	
Electrochemical Impedance of Electrode Pattern-Transferred Metal-Organic Frameworks with Pores Filled with Ionic Liquid	3265
<i>Kentaro Amano, Yumeng Zheng, Kentaro Kinoshita</i>	
Shaping Electronic Properties of Metal-Organic Frameworks for Energy Storage Applications.....	3267
<i>Sumea Klokic, Benedetta Marmiroli, Giovanni Birarda, Simone Dal Zilio, Lisa Vaccari, Heinz Amenitsch</i>	
(Invited) conductive 2D Conjugated MOFs for Electronics	3269
<i>Renhao Dong</i>	

H05 - MOFs: Catalysis & Sensing

- (Invited) group 4 Metal-Based Metal–Organic Frameworks and Their Roles in Electrocatalysis and Electrochemical Energy Storage..... 3271
Chung-Wei Kung
- In Situ Clustering of Copper Nanoparticles in Mesoporous Cerium-Based Metal–Organic Frameworks for Efficient Electrocatalytic Nitrate Reduction to Ammonia..... 3273
Cheng-Hui Shen, Yingji Zhao, Liyang Zhu, Chung-Wei Kung, Yamauchi Yusuke
- Surface Attachment of Metal-Organic Frameworks to Create Photo Responsive Porous Materials for Photocatalysis 3275
Daniel Kissel
- (Invited) review of Broadband Dielectric Spectroscopic Detection of Volatile Organic Compounds with Surface Anchored Organic Frameworks As Solid-State Sensor Materials 3276
Papa Kojo Amoah, Helmut Baumgart, Engelbert Redel, Zeinab Hassan, Rhonda R Franklin, Yaw Obeng
- (Invited) application of Organic Frameworks for the Control of Electrochemical Processes and Electrocatalytic Properties..... 3277
Jung Hyun Park, Siying Yu, Chi Ho Lee, Joseph Sang-Il Kwon, Hong Yang
- Maturation of MOF-Based Sensors for the Electrical Detection of Gaseous Products 3278
Mara E. Schindelholz, Stephen J. Percival, Matthew J. Hurlock, Matthew S. Christian, Leo J. Small, Tina M. Nenoff
- (Invited) ppb-Level NO₂ Monitoring Using Lung-Inspired MOF on Graphene Hybrids Sensor 3279
Hyeongtae LIM, Hyeokjin Kwon, Hongki Kang, Jae Eun Jang, Hyuk-Jun Kwon

H06-CHROMOGENIC MATERIALS AND DEVICES

H06 - Poster Session

- Development of New Light-Dimming Film Using Black Electrochromic Inks 3283
Ryo Taguchi, Kazuki Tajima, Takashi Kubota, Hiroshi Watanabe, Tadayoshi Kamei, Michiaki Fukui
- Photoelectrochemical Three-Dimensional Fabrication of Conductive Polymers Using Multi-Photon Absorption Process 3284
Ayumu Suzuki, Katsumi Yamada
- Improved Electrochromic Stability in Reversible Metal Electrodeposition Devices Using Gel Electrolytes 3286
Ji-Hyeong Lee, Kwang-Mo Kang, Yoon-Chae Nah
- High-Performance Electrochromic Devices Composed of Niobium Tungsten Oxide Films 3287
Kwang-Mo Kang, Yoon-Chae Nah

H06 - Chromogenic Materials and Devices 1

- Effect of Concentration and Addition Timing of Bromide Ion on Synthesis of Thin Silver Nanowires (AgNW)..... 3288
Keiya Shimizu, Atsushi Aoki

Fabrication and Performance of Transmissive Light-Emitting Electrochemical Cells Using Spray-Coated Silver Nanowires(AgNW) Cathode.....	3289
<i>Ayumu Akamatsu, Atsushi Aoki</i>	
Improved Functionality of Ultrafast Responsive Electrochemiluminescent Device with DNA/Ru(bpy) ₃ ²⁺ Hybrid Film and Various Electrolyte Compositions.....	3290
<i>Ryuki Ozawa, Hiroki Nakatani, Takashi Tachikawa, Kazuki Nakamura, Norihisa Kobayashi</i>	
Electrofluorochromic Devices Based on Electrochemical Valance Change of Europium Complex in Polyether Matrices.....	3291
<i>Ryoto Yabuta, Norihisa Kobayashi, Kazuki Nakamura</i>	
Luminescence Color Control Based on Inter Molecular Excited Energy Transfer Induced by Electrochromic Reaction	3293
<i>Kazuki Nakamura, Norihisa Kobayashi</i>	
High Performance and Durable Electrochromic Device of Fe(II)-Based Metallo-Supramolecular Polymer for Smart Electrochromic Window Application.....	3294
<i>Susmita Roy, Sanjoy Mondal, Susmita Roy</i>	

H06 - Chromogenic Materials and Devices 2

Electrochromic Devices with Metallosupramolecular Polymers.....	3295
<i>Masayoshi Higuchi</i>	
Highly Flexible Electrochromic Devices Containing Photo-Curable Acrylated Viologens	3296
<i>Sooyeon Eom, Jong Seung Park</i>	
Electrochromism of Redox-Active Ionic Liquids and the Kinetics of the Colorations	3297
<i>Hironobu Tahara, Hiroto Murakami</i>	
Electrochromism of Redox-Active Ionic Liquids Based on Pyridinium Derivatives	3298
<i>Hiroto Murakami, Hironobu Tahara</i>	
(Invited) Large-Area Flexible and Stretchable Electrochromic Devices with Viologen Derivatives	3299
<i>Jong Seung Park</i>	

H06 - Chromogenic Materials and Devices 3

(Invited) Color e-Paper Technology with Electrochemistry Toward Energy Conservation.....	3300
<i>Norihisa Kobayashi</i>	
Effect of Pt Catalyst Instead of Pd on Switchable Ag Mirror Devices	3301
<i>Yui Kageyama, Atsushi Aoki</i>	
Modulation of Coloration Properties for Silver Deposition-Based Electrochromic Device Using Organic Capping Agents.....	3302
<i>Shun Uji, Kazuki Nakamura, Norihisa Kobayashi</i>	
Aqueous Solution-Based Switchable Silver Mirror Devices.....	3303
<i>Saho Nakamura, Atsushi Aoki</i>	

H06 - Chromogenic Materials and Devices 4

Synergistic Effects of Co-Doping WO ₃ with Al and Pt on Photoelectrochromic Performance	3305
<i>Jacinta Okwako, Chi Hwan Han</i>	
Integration of Electrochromic Technology in Energy Applications.....	3306
<i>Hong Chul Moon</i>	
Modified Prussian Blue Nanoparticles with Salicylate for Electrochromic Devices.....	3307
<i>Jisu Han, Tae-Youb Kim, Chil Seong Ah, Juhee Song</i>	
Black Electrochromic Materials Using Conjugated Polymers Consisting of Proton Donor and Biphenyl Acceptor	3308
<i>Rika Adachi, Atsushi Aoki</i>	
Electrochromism Based on Reflective Color of Conductive Polymers	3310
<i>Katsumi Yamada</i>	
Fabrication of Modules for Water Electrolysis Using Organic Solar Cells with Non-Fullerene Acceptors.....	3311
<i>Juri Hayashi, Atsushi Aoki</i>	

H07-PIEZOCATALYSIS

H07 - Photocatalysis and Photochemistry

Exploring Domain Engineering in Bismuth Ferrite for Enhanced Photoelectrochemical Performance.....	3313
<i>Yen-Lin Huang</i>	
Probing CO ₂ Reduction Chemistry Under Operando Condition	3314
<i>Bin Liu</i>	
Enhancing Selectivity and Efficiency in Carbon Dioxide Reduction to C ₂ Products through Spatial Confinement of Copper Species	3315
<i>Sung-Fu Hung</i>	
Bifunctional Photocatalysis Via Doped TiO ₂ : Antibiotic Degradation and CO ₂ Reduction	3316
<i>Ya-Chi Yu, Wen-Hui (Sophia) Cheng</i>	

H07 - High Entropy Materials

High-Entropy Electrocatalysts for Seawater Splitting.....	3317
<i>Wei Hsuan Hung, Ching-Yu Chiang, I-Chia Chiu, Hsin-Ya Chang</i>	
A Library of High-Entropy-Alloy Nanocrystals with Controlled Facets for Catalysis.....	3318
<i>Tung-Han Yang</i>	
Enhancing Energy Solutions and Environmental Remediation: Piezocatalysis in Ferroelectric High-Entropy Oxides and 2D Materials	3319
<i>Jyh-Ming Wu</i>	

H07 - Poster Session

- Investigation of Phase Transition for BaTiO₃ Nanoparticles By High-Temperature X-Ray Diffraction 3321
Tetsuhiro Katsumata, Hiroshi Takashima, Kiwamu Sue
- Preparation of Freestanding Films Using Barium Titanate Nanoparticles and Their Electrical and Optical Properties 3322
Hiroshi Takashima, Tetsuhiro Katsumata, Yoshihiro Takebayashi, Takumi Ono, Kiwamu Sue

H07 - Piezocatalysis and Energy Conversion

- Organic Synthesis Using Piezoelectric Materials 3323
Koji Kubota
- Dicarboxylferrocene Ligand Promoted Structural Reconstruction in Bimetallic NiCo-Based Metal Organic Framework for Energy-Saving H₂ Production via Urea Oxidation Reaction 3324
Jyh-Ming Ting, Hui-Chuan Chen, Thi Xuyen Nguyen
- Enhancing Photoelectrochemical Water Splitting Efficiency of ZnO P-N Homojunction Nanorod Arrays By Piezotronics and Piezocatalyst 3325
Chuan-Pu Liu, Yi-Miao Lin, Yu-Liang Hsiao
- Piezo-Photocatalysis – a Promising Strategy for Energy Conversion 3326
Yue Jiang, Sajjad Seifi Mofarah, Danyang Wang, Pramod Koshy, Charles Sorrell

H07 - Piezocatalysis for Environmental Remediation

- Flexo-Phototronic Effect in Centro-Symmetric BiVO₄ Epitaxial Films 3328
Ying-Hao Chu
- 2D Ga₂S₃ Heterostructured Catalyst with Highly Enhanced Photocatalytic Activity 3329
Chih-Yen Chen
- Leveraging Functional High-Entropy Oxide Perovskites for Enhanced Piezocatalytic Degradation 3330
Heng-Jui Liu, Yi-Chen Ye, Yun-Wei Tsai
- Defect Engineering Centrosymmetric 2D Material Flexocatalysts 3331
Yu-Ching Chen, Jyh-Ming Wu

H07 - 2D Materials and Advanced Oxidation Processes

- Dual-Vacancy-Engineered ZnIn₂S₄ Nanosheets for Harnessing Low-Frequency Vibration Induced Piezoelectric Polarization Coupled with Static Dipole Field to Enhance Photocatalytic H₂ Evolution 3333
Hong-Kang Tian, Ming-Yuan Hung, Yen-Ting Kuo, Jih-Jen Wu
- Universal Platform for Robust Dual-Atom Doped 2D Catalysts with Superior Hydrogen Evolution in Wide pH Media 3335
Ki Kang Kim
- The Synthesis and Application of Solid-Supported Metal Borate Nanoparticles As Photo-Redox Catalyst for Environmental Remediation 3336
Bo-Yi Wu, Yu-Lun Zhu, Pei Yui Keng

Piezo-Photocatalytic Water Splitting of MoS ₂ @Mo ₂ CT _x Heterostructure Catalyst.....	3338
<i>Hsun-Yen Lin, Jyh-Ming Wu</i>	

H07 - Energy Storage

Light-Driven Organic Transformation with Bismuth Vanadate Photoanodes	3339
<i>Chun-Chung Brian Kuang, Yi-Wen Chen, Jun-Lin Fong, Guan-Zhu Tu, Chang-Ming Jiang</i>	
Toward a Fundamental Understanding of Solid-Solid Interfaces in Hydrogen Fuel Cells and Water Electrolysis through First-Principles Based Modeling	3340
<i>Zhenhua Zeng</i>	
Design of Innovative Janus Phase/Structure-Engineered Two-Dimensional Layered Heterostructures with Enhanced Catalysis Effect on Green Energy Applications.....	3341
<i>Yu-Lun Chueh</i>	
Sulfide Catalysts Anchored on Graphene As an Efficient Sulfur Host for Lithium-Sulfur Batteries	3342
<i>Yu-Wei Chuang, Che-Ning Yeh</i>	
Ionic Transport Mechanism of All-Solid-State Lithium Batteries with Barium Titanate Nanofillers	3343
<i>Chi-Yen Lai, Yu-Yao Huang, Che-Ning Yeh</i>	
NiMn-Layered Double Hydroxides@Metal Anchored Nitrogen-Doped Carbon Framework As a Bifunctional Catalyst for Rechargeable Zinc-Air Batteries.....	3344
<i>Ko-Fan Tu, Che-Ning Yeh</i>	

H07 - Photonics and Electronics Materials

2D/3D Heterojunction Perovskite Devices with Controlled Order and Orientation.....	3345
<i>Cheng-Hsien Yeh, Chuan-Feng Shih, Yuan-Wen Hsiao, Yu-Hui Huang, Hsuan-Ta Wu, Ching-Chieh Leu</i>	
Enhancing the Image Quality of Quantum-Dots-Based Infrared-to-Visible up-Conversion Optoelectronic Device By Surface Ligand Engineering.....	3346
<i>Yi-Chun Ma, Hsueh-Shih Chen</i>	
Flexible Pressure Sensors Based on Laser-Induced Graphene	3347
<i>Peng Chi Wang, Tzu-Ling Kang, Yu-Chieh Lan, Wei-Chen Tu</i>	

I01A-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - FUEL CELL ELECTROCATALYST ACTIVITY AND DURABILITY

I01A - 01 Pt-Based Cathode Catalysts

Active Sites for ORR on Pt in PEM Fuel Cells: A DFT Perspective.....	3349
<i>Zhenhua Zeng</i>	
Chini Clusters on Oxygen Reduction Reaction (ORR) Catalysts.....	3350
<i>Ryan Heitkamp, Sergei Ivanov, Ekaterina Dolgoplova, Xiaojing Wang, Gang Wu, Jacob S. Spendelow</i>	
Mechanistic Insights into the Formation and Growth of Supported Metal Nanoparticles By an Identical-Location Synthesis Approach	3352
<i>Lisa Maria Seidl, Yang Hu, Qingfeng Li</i>	

AI Assisted Electrochemical Experimentation	3354
<i>Keiichi Okubo, Chen Ling</i>	
Effect of Reduction Method for Carbon Supported Platinum Nanosheet with High Surface Area and Activity.....	3355
<i>Yuki Tokura, Junke Zhang, Daisuke Takimoto, Wataru Sugimoto</i>	
Electrochemical Characterisation and Fuel Cell Testing of Bespoke, Low Loading Platinum on Carbon Black Catalysts Fabricated By Physical Vapour Deposition.....	3357
<i>Richard Oliver David Clark, Eman Alharbi, Gazi Aliev, Wolfgang Theis, Emerson Kohlrausch, Jesum Alves Fernandes, Neil Rees</i>	
Role of Carbon Support Structure on PEMFC Durability	3361
<i>Eugénie Perrin, Marie Heitzmann, Caroline Celle</i>	
Engineered Carbon Supports for Heavy-Duty Fuel Cell Vehicle Applications	3363
<i>Nagappan Ramaswamy, James Wortman, Anusorn Kongkanand, Swami Kumaraguru, Michael Payne, Michele Ostraat</i>	
Designer Electrocatalysts for the Oxygen Reduction Reaction with Controlled Platinum Nanoparticle Locality	3364
<i>Giovanni Ferro, Camille Roiron, Plamen Atanasov</i>	
Durability of Highly Active PGM Catalyst MEA Tested Via Nitrogen and Air AST Cycling Under HDV Condition	3366
<i>Guangqi Zhu, Hannah Zhang, Haoran Yu, David A. Cullen, Sungho Jeon, Erika Ortiz, Eric A. Stach, Oana C. Marina, Zheng-Hua Li, Jian Xie</i>	
Comparing Voltage Cycling–Induced Performance Losses of a Porous Carbon Supported Pt Catalyst Under H ₂ /N ₂ and H ₂ /Air at Different Relative Humidities	3367
<i>Carla Sophie Harzer, Franziska Carmen Hnyk, Hubert Andreas Gasteiger</i>	

I01A - 01 Pt-Based Cathode Catalyst Layers

(Invited) Using X-Ray Microscopy Techniques to Advance Fuel Cell Catalyst Layers.....	3369
<i>Aimy Bazylak</i>	
One Million Atoms Large-Scale Reactive Molecular Dynamics Simulations for Design of Cathode Catalyst Layer in Polymer Electrolyte Fuel Cell Toward Boosting Its Performance	3370
<i>Tetsuya Nakamura, Kaito Mori, Shogo Fukushima, Yixin Su, Yusuke Ootani, Nobuki Ozawa, Momoji Kubo</i>	
Modeling Water Uptake, Swelling, and Proton Conduction in Thin Ion-Conducting Films	3374
<i>Shahriar Alam, Jeffrey S Allen</i>	
Dihydroxyl Additives for Enhancing Activity and Durability of Pt/C Catalysts.	3375
<i>Tanya Agarwal, Siddharth Komini Babu, Kui Li, Rod L. Borup</i>	
Relationship between Membrane Thickness and Stability of Pt/C Catalyst for Oxygen Reduction Reaction in a Gas Diffusion Electrode	3376
<i>Aleš Marsel, Miha Hotko, Nejc Hodnik</i>	
Differentiating PGM Ostwald Ripening from Catalyst Degradation Using Identical Location TEM and Controlled Potential Cycling	3377
<i>Guangqi Zhu, Sungho Jeon, Erika Ortiz, Eric A. Stach, Chenzhao Li, Mohammad Behzadnia, Hannah Zhang, Haoran Yu, David A. Cullen, Oana C. Marina, Zheng-Hua Li, Jian Xie</i>	

Comprehensive Evaluation of PEM Fuel Cells Recovery Exposed to Sulfur Dioxide in Air Stream	3378
<i>Tatyana V. Reshetenko</i>	
Single Cell Regeneration Investigations on Ruthenium Poisoned Cathode Electrocatalysts for PEMFC.....	3381
<i>Luana Schwendler, Qiang Guo, Frédéric Hasché, Mehtap Oezaslan</i>	
Understanding of Regeneration Processes of Ruthenium-Poisoned ORR Catalysts	3383
<i>Qiang Guo, Jochen Klein, Sonja Blaseio, Luana Schwendler, Frédéric Hasché, Mehtap Oezaslan</i>	

I01A - Poster Session

Oxygen Reduction Reaction Activity of Pt on Various Carbon Supports in OH ⁻ conducting Ionic Liquids.....	3385
<i>Kosuke Fukuoka, Takashi Yanagishita, Hirokazu Munakata</i>	
Synthesis of Co@N-C Porous Electrocatalysts in Alkaline Electrolytes and Their ORR Applications.....	3387
<i>Hee Soo Kim, Hae In Lee, Dong-Ha Lim, Jaehoon Cho</i>	
Fluorine and Nitrogen Doped Fe-Based Non-Precious Metal Catalyst for Highly Efficient Catalytic Oxygen Reduction Reaction in Alkaline Electrolyte	3388
<i>Won Suk Jung, Ho Seok Yoon</i>	
Development of Fe/N/C Type Oxygen Reduction Catalysts Using Carbon Supports Derived from Cellulose Paper by a Microwave Method.....	3390
<i>Zen Akiyama, Taisei Mizuno, Soichiro Suganaga, Hidenobu Shiroishi, Morihiro Saito, Mutsumasa Kyotani, Tatsuhiko Okada</i>	
Porous Nitrogen-Doped Carbon Supported Pt Nanocatalyst for Efficient Oxygen Reduction Reactions	3393
<i>Zixin WANG, Kui Li, Xiaojing Wang, Jacob S. Spendelow</i>	
Effect of Substituent in Phosphonic Acid on Anion Adsorption and Oxygen Reduction Reaction Activity.....	3394
<i>Honghong Lin, Siwen Wang, Liang Wang, Gaohua Zhu, Chen Ling, Hongfei Jia</i>	
Correlation of the Adsorption Geometry of Melamine and the ORR Activity on the Low Index Planes of Pt.....	3396
<i>Yukiya Katagiri, Masashi Nakamura, Nagahiro Hoshi</i>	
Effect of Annealing Time on Various PtNi/C Binary Alloy Catalysts for ORR in PEFCs	3399
<i>Kazuki Yamaguchi, Batnyagt Garavdorj, Hidenobu Wakita, Koichi Ui, Tatsuya Takeguchi</i>	
High-Loading Intermetallic PtCo Nanoparticles Supported on S-Doped Carbon for Oxygen Reduction Reaction Catalysts.....	3403
<i>Hyunwoo Yang, HyunWoo Chang, KwangHo Lee, HyunWoo Yang, EunAe Cho</i>	
Relationship between synthesis conditions and ORR activity of PtCo nanowire/C catalysts for PEFC cathodes	3404
<i>Kousuke Shibata, Tatsuya Takeguchi, Hidenobu Wakita, Koichi Ui, Batnyagt Garavdorj</i>	
Synthesis of Multicomponent Pt Alloy Catalysts for Oxygen Reduction Reaction and Durability Evaluation.....	3406
<i>Yuki Oka, Jun Manabe, Hideo Daimon, Takayuki Doi, Minoru Inaba</i>	

Catalytic Activities of Pt-Y-Ni/C Synthesized Using Microwave-Polyol Process for Oxygen Reduction Reaction in PEMFC	3408
<i>Tae-Won Kim, Seo-Jin Jeong, Hyeon Bin Lee</i>	
Development of High Durable Catalyst for PEFC	3409
<i>Tomohiro Akiyama, Masaru Kagawa, Koichi Matsutani</i>	
Carbon Interaction with Precious Metal Catalysts for ORR : More Than a Support.....	3410
<i>Camille Roiron, Giovanni Ferro, Jiazhe Loki Chen, Alessio Cosenza, Plamen Atanasov</i>	
The Performance of PEFC with Marimo-like Carbon Considering Relative Humidity	3411
<i>Kohei Takamura, Sayaka Hosokawa, Hiroyuki Gunji, Mika Eguchi</i>	
The Effects of Contact By the Catalyst Layer and the Gas Diffusion Layer Interface on the Performance of a PEFC with Marimo-like Carbon	3413
<i>Kohei Takamura, Momoka Sano, Hiroyuki Gunji, Mika Eguchi</i>	
Morphology Changes of Pt Supported on an Ordered Mesoporous Carbon with Network-Structure: In Situ TEM Observation of a PEFC Electrocatalyst	3415
<i>Hanako Nishino, Satoko Sato, Hiroko Yamazaki, Takeo Kamino, Makoto Uchida, Akihiro Iiyama, Naoto Koizumi, Toshihiro Miyao</i>	
Synthesis of Mesoporous Carbon Support Using Two Different Sizes of SiO ₂ Hard Templates	3418
<i>Minyoung Kim, Hideo Inoue, Hideo Daimon, Takayuki Doi, Minoru Inaba</i>	
PEFC Electrocatalysts using Highly-Graphitized Mesoporous Carbon Supports	3421
<i>Kakeru Kubo, Kojiro Sanami, Takashi Suzuki, Zhiyun Noda, Masahiro Yasutake, Junko Matsuda, Stephen Matthew Lyth, Masamichi Nishihara, Kazunari Sasaki</i>	
Preparation of N-Containing Shell on Carbon Via Polymer-Coating and Application for Pt Supporting Materials	3423
<i>Chaerin Kim, Xinying Fang, Tsuyohiko Fujigaya</i>	
Doping Effects of Metal-Doped Tin Oxide Nanoparticles Used As Carbon-Free ORR Catalysts for Polymer Electrolyte Fuel Cells.....	3425
<i>Takeshi Fukuda, Ryuki Tsuji, Maito Tanabe, Seigo Ito</i>	
SECM Study for Surface-Grain-Resolved Hydrogen Oxidation Reaction Activity of Polycrystalline Pt Electrode	3427
<i>Masaki Sampei, Disuke Noda, Kenta Hayashi, Naoto Todoroki, Toshimasa Wadayama</i>	

I01A - 03 Pt and Pt-Alloy Cathode Catalysts

Investigation of PEMFC Cathode Rf-Dependent Performance Losses for Voltage Cycling and Start-up Accelerated Stress Tests.....	3429
<i>Franziska Carmen Hnyk, Leonardo Isaias Astudillo, Sydney Hughes, Hubert Andreas Gasteiger</i>	
Thin Film Electrocatalysts on Extended Surface Supports for the Oxygen Reduction Reaction	3431
<i>Chan-Wen Chiu, Deepra Bhattacharya, Suzanne E. Mohny, Christopher Arges</i>	
ORR Activity of Ru@Pt/C Core-Shell Nanosheets with a Flat Two-Dimensional Structure.....	3432
<i>Junke Zhang, Keisuke Muramatsu, Wataru Sugimoto</i>	

Examining the Structure-Activity Relationship for Acid Treated Ordered PtCo with Different Ordering Degree Using PDF and XAS Analysis for Oxygen Reduction Reaction	3434
<i>Mukesh Kumar, Yunfei Gao, Neha Thakur, Weijie Cao, Toshiki Watanabe, Satoshi Tominaka, Kazutaka Sonobe, Ryota Sato, Toshiharu Teranishi, Hideto Imai, Yoshiharu Sakurai, Yoshiharu Uchimoto</i>	
Atomic Ordering Promoted $\text{Li}_0\text{-Zn-PtCo}$ Intermetallic Nanocatalysts for Enhanced Oxygen Reduction Reaction in PEMFCs.....	3436
<i>HyunWoo Chang, Jae Hyun Ryu, KwangHo Lee, JeongHan Roh, SangJae Lee, Junu Bak, Dongwon Shin, Minjun Kim, HyunWoo Yang, Wonbo Lee, EunAe Cho</i>	
Investigation on High Stable Ordered Pt _m (M=Fe, Co, Ni, Cu) Catalysts Via Operando X-Ray Absorption Spectroscopy Analysis	3437
<i>Chunlin Pei, Yunfei Gao, Mukesh Kumar, Neha Thakur, Toshiki Watanabe, Ryota Sato, Toshiharu Teranishi, Hideto Imai, Yoshiharu Sakurai, Yoshiharu Uchimoto</i>	
Effect of Carbon Supports on Performance and Durability of Hydrogen Fuel Cells.....	3439
<i>Marwa Atwa, Fritz Prinz</i>	
The Development of Uniform-Sized Pt-Based Binary Alloy Electrocatalysts for ORR in Polymer Electrolyte Fuel Cells	3440
<i>Batnyagt Garavdorj, Oyunbileg Galindev, Hidenobu Wakita, Koichi Ui, Tatsuya Takeguchi</i>	
Preparation and Characterization of Platinum-Cobalt Nanosheets for Oxygen Reduction Reaction	3442
<i>Osama Metaweia, Wataru Sugimoto</i>	

I01A - 03 Non-PGM Cathode Catalysts

(Invited) Optimizing the Activity of Oxygen Reduction Reaction Via Structural Engineering of Support for Fe-N-C Electrocatalysts in Proton Exchange Membrane Fuel Cells.....	3443
<i>Jinwoo Lee</i>	
Spin-State Analysis for a Fourteen-Membered Macrocyclic Fe Complex for Oxygen Reduction	3444
<i>Yuta Nabae, Zhiqing Feng, Sotaro Honda, Masato Machida, Junya Ohyama, Makoto Moriya</i>	
Ultrahigh Loading of Copper Single Atoms through Pyrolysis of Nitrogen-Doped Graphene Quantum Dots for Oxygen Reduction Reaction	3445
<i>Doo Young Kim, Shashika Perera, Prakhar Sharma, Ayanthi Thisera, Beth S. Guiton</i>	
Understanding the Dynamics of Cobalt Nitride-Based Thin Films for Electrocatalytic Oxygen Reduction	3446
<i>Colin Flynn Crago, Ashton M. Aleman, Michaela Burke Stevens, Thomas F. Jaramillo</i>	
(Invited) Non-PGM Catalysts for Electrochemical Energy Storage and Conversion.....	3447
<i>Kavita Kumar, Yu-Ping Ku, Angus Pedersen, Magda Titirici, Ifan Stephens, Antoine Bonnefont, Serhiy Cherevko, Laetitia Dubau, Frederic Jaouen, Frederic Maillard</i>	
Development of Co-, Fe- and N-Doped Mesoporous Carbon Catalysts for Anion-Exchange Membrane Fuel Cell Cathode.....	3448
<i>Jaana Lilloja, Johanna Katariina Piir, Marek Mooste, Elo Kibena-Pöldsepp, Ave Sarapuu, Arvo Kikas, Vambola Kisand, Maike Käärrik, Jekaterina Kozlova, Alexey Treshchalov, Päärn Paiste, Jaan Aruväli, Jaan Leis, Aile Tamm, Kaupo Kukli, Steven Holdcroft, Kaido Tammeveski</i>	

Highly Porous Nitrogen and Phosphorus Dual-Doped Carbon with Increased Phosphorus Content As an Efficient Oxygen Reduction Electrocatalyst	3450
<i>Naoki Tachibana, Hiromasa Namiki, Shoichi Somekawa</i>	

Precious Metal-Free Electrocatalysts for Anion-Exchange Membrane Fuel Cell Cathodes via Magnesium-Based Template-Assisted Synthesis	3452
<i>Ave Sarapuu, Umber Sajjad, Kaarel Kisand, Silver Juvenen, Jekaterina Kozlova, Helle-Mai Piirsoo, Arvo Kikas, Alexey Treshchalov, Maike Käärrik, Jaan Aruväli, Päärn Paiste, Jaan Leis, Vambola Kisand, Kaupo Kukli, Aile Tamm, John C. Douglin, Dario R Dekel, Kaido Tammeveski</i>	

I01A - 04 Pt-Alloy Cathode Catalysts with Carbon Supports

Carbon-Embedded Pt Alloy Cluster Catalyst: Properties and Oxygen Reduction Activity	3454
<i>Sang yong Shin, Hyunjoo Lee</i>	

Pt-Cu Nanosheet Catalysts for Pemfcs with Enhanced Durability through Galvanic Replacement Reaction	3456
<i>HyunWoo Yang, SangJae Lee, KwangHo Lee, HyunWoo Chang, JeongHan Roh, Dongwon Shin, Minjun Kim, EunAe Cho</i>	

Low-Electronegativity Mn-Contraction of Pt _{mn} Nanodendrites Boosts Oxygen Reduction Durability	3457
<i>Yan Nie, Chuan Zhao</i>	

Composition-Activity-Stability Relationship Investigation of Trimetallic Pt-Ni-Au Oxygen Reduction Reaction Catalyst	3458
<i>Xianxian Xie, Valentin Briega Martos, Michael Vorochta, Iva Matolínová, Serhiy Cherevko, Ivan Khalakhan</i>	

Optimization of Pt-Based Nanocatalysts Loading to Improve MEA Performance	3459
<i>Shutang Chen</i>	

Rational Design of Nitrogen-Doped Low Pt-Loading Electrocatalysts for Fuel Cells: Binary to High-Entropy Alloys and Intermetallics	3460
<i>Kotaro Sasaki, Xueru Zhao</i>	

Investigation of High Entropy Alloy Nanoparticles Assisted By Resonance Acoustic Mixing for Oxygen Reduction Reaction	3462
<i>Jinho Hyun, Chanho Pak</i>	

Pt Ternary Alloy with Rare Earth Metal - Pt ₅ Ce-Co Intermetallic Nanoparticles as Highly Active Catalyst for Oxygen Reduction Reaction in PEMFCs	3463
<i>Hannah Zhang, Sungho Jeon, Brooke E. Vander Pas, Jianming Bai, Hong Zhang, Guangqi Zhu, Mohammad Behzadnia, Gabriel M. Filippelli, Feng WANG, Ping Liu, Eric A. Stach, Jian Xie</i>	

Structural and Compositional Tuning of Platinum Alloy Nanowires for Enhanced Oxygen Reduction Reaction	3464
<i>Panampillil Vijayamma Subha, Hidenori Kuroki, Gopinathan M Anilkumar, Takeo Yamaguchi</i>	

Durability and Structural Transformation of Pt Alloy Nanowires and Nanoparticles for the Oxygen Reduction Reaction in Acidic Media	3466
<i>Masaru Kato, Yu Zhuang, Yuta Kato, Yoshimi Iguchi, Tianchi Li, Shinji Tanioku, Ichizo Yagi</i>	

I01A - 04 New Support Materials Based on Carbon

(Invited) Computational and Experimental Characterization of PEFC Electrode Structures	3467
<i>Shunsuke Yamakawa, Shuji Kajiya, Ryosuke Yatsu, Naoki Hasegawa, Takahisa Suzuki, Kazuma Shinozaki, Ryosuke Jinnouchi</i>	
Polymer Electrolyte Fuel Cells Using Powerpaste	3469
<i>Natalia Bencomo, Devon Lambourne, Zachary Lynn, Paul Matter, Minette Ocampo</i>	
Engineering of High-Surface Area Carbons Supports with Optimized Properties for Pt/C PEMFC Catalysts Design	3471
<i>Julian Martin, Sven Küspert, Kläre Christmann, Robert Marić, Miriam von Holst, Hassan Fadlullah, Severin Vierrath, Nada Zamel, Anna Fischer</i>	
Crystallography of Intermetallic Pt Nanoparticle Catalysts on Engineered Carbon Supports.....	3472
<i>Michael Payne, Diego Bernal, Molly Klein, Brian Lenhart, Michele Ostraat</i>	
Melamine Modification of Pt Surface Increases the ORR Activity and Durability of Pt/C	3473
<i>Shin-ichi Yamazaki, Masafumi Asahi, Noboru Taguchi, Tsutomu Ioroi</i>	
Acid Modified Carbon Support with Proton Conductive Properties for Polymer Electrolyte Membrane Fuel Cell Applications.....	3475
<i>Dan Wu, Tsuyohiko Fujigaya</i>	
Enhancing Proton Exchange Membrane Fuel Cell Durability By Using Porous Carbon-Supported Cathode Catalysts with Various Pt-Particle Sizes	3477
<i>Roberta Karla Francesca Della Bella, Timon Lazaridis, Christopher Warsch, Hubert Andreas Gasteiger</i>	
Novel Mesoporous Carbon Supporting PGM As an Effective ORR Catalyst in PEM Fuel Cells.....	3480
<i>Qiao Liu, Xiaojing Wang, Jacob S. Spendelow</i>	
Investigation on Porosity of Mesoporous Carbon (MPC) Support and Evaluation of Single Cell Performance Using Pt/MPC Cathode Catalyst	3481
<i>Hideo Daimon, Nobuhito Kuroda, Kohei Yamada, Jun Manabe, Minyoung Kim, Yuuki Oka, Takayuki Doi, Hideo Inoue, Minoru Inaba</i>	
Scalable and Tunable Synthesis of Sustainable Nitrogen-Doped Hydrothermal Carbon Materials (N-HTC) As Support Material for Platinum/N-HTC ORR Catalysts	3484
<i>Julian Martin, Julian Mitrovic, Anna Fischer</i>	

I01A - 05 New Support Materials & HT-PEMFC

Expanding the Scope of ZIF-Derived Carbons Towards Tailored Architectures and Compositions	3485
<i>Nina Pappas, Alaba Upe Ojo, Kate Chen, Ekaterina Dolgoplova, Xiaojing Wang, Jacob S. Spendelow</i>	
Advanced ORR Catalysts Based on Intermetallic Nanoparticles and Metal-Organic Frameworks	3486
<i>Kate Chen, Kui Li, Xiaojing Wang, Gang Wu, Jacob S. Spendelow</i>	
Nanoporous Niobium Oxide Coating on Pt/C to Increase Catalyst Durability in Oxygen Electroreduction	3487
<i>Ahmed Jasim, Yangchuan Xing, James Wortman, Nagappan Ramaswamy</i>	

A Tantalum-Rich Pt-Ta-Co Electrocatalyst for Polymer Electrolyte Fuel Cells.....	3488
<i>Kojiro Sanami, Kakeru Kubo, Ryo Miyamoto, Masahiro Yasutake, Zhiyun Noda, Stephen Matthew Lyth, Junko Matsuda, Kazunari Sasaki</i>	
Insight into the Modification of the Low-Pt Electrocatalysts By the Defective Metal Oxide Additives: The Effect on the Oxygen Reduction Reaction in Acid Media	3490
<i>Aldona Kostuch, Enrico Negro, Vito Di Noto, Sylwia Zoladek, Iwona A. Rutkowska, Pawel Kulesza</i>	
Pt Catalysts Supported on Nb-SnO ₂ /CeO ₂ for Polymer Electrolyte Fuel Cells Toward the Application of Heavy-Duty Vehicles.....	3492
<i>Katsuyoshi Kakinuma, Guoyu Shi, Makoto Uchida, Akihiro Iiyama</i>	
(Invited) Development and Characterization of Electrodes and Membrane Electrode Assemblies for High Temperature PEM Fuel Cells.....	3494
<i>Dana Schonvogel, Julia Müller-Hülstede, Tanja Zierdt, Julia Buschermöhle, Henrike Schmies, Lisa Maria Uhlig, Nadine Pilinski, Peter Wagner</i>	
Durable Ion-Pair High-Temperature Proton Exchange Membrane Fuel Cells with a Low Platinum Loading Intermetallic Catalyst	3496
<i>Youngkwang Kim, Xueru Zhao, Sandip Maurya, Emory S. De Castro, Kotaro Sasaki, Yu Seung Kim</i>	
Potential Cycling Test of High Temperature PEMFC Based on Acid Doped Polybenzimidazole Membranes	3498
<i>Sanser Celenk, Lars Nilausen Cleemann, Jens Oluf Jensen, Qingfeng Li</i>	

I01A - 05 Electrocatalysts for AEMFC

Effect of Surface Wettability and Pore Structure of Non-Precious Metal Catalysts on Alkaline Oxygen Reduction Reaction Activities at the Gas Diffusion Electrode	3499
<i>Jong Gyeong Kim, Hyeon Seung Jung, Youngin Cho, Chanhok Pak</i>	
Science of Scale-up: Electrocatalysts from Lab to Pilot Scale.....	3500
<i>Alexey Serov, Xiang Lyu, Haoran Yu, David A. Cullen, Flavio Chuahy</i>	
Integrating Machine Learning for Colloidal Synthesis of Spinel Oxide Nanocrystals.....	3501
<i>Xin Wang, Colin Bundschu, Jonathan L. Rowell, Tomas A. Arias, Richard D. Robinson, Peter Frazier, Hector D. Abruna</i>	
S-Doped La _{0.8} Sr _{0.2} (CrMnFeCoNi)O ₃ High Entropy Perovskite As Efficient Bifunctional Oxygen Evolution Reaction/Oxygen Reduction Reaction Electrocatalyst	3502
<i>Thi Xuyen Nguyen, Jun-Hong Sun, Jyh-Ming Ting</i>	
OH* Electro-Adsorption Kinetics on Pt (111) in Alkaline: Comparison to the H* Electro-Adsorption.....	3503
<i>Chia-Yi Lin, Hector D. Abruna, Jin Suntivich</i>	
High Performance Palladium-Ceria Anodes for Anion Exchange Membrane Fuel Cells	3504
<i>Marco Bellini, Maria Vincenza Pagliaro, Hamish Andrew Miller, Tailor Peruzzolo, Carolina Castello, Francesco Rossi</i>	
Development of Anode Catalysts for Anion Exchange Membrane Fuel Cells Operating with Both H ₂ and Liquid Fuels.....	3506
<i>Hamish Andrew Miller, Maria Vincenza Pagliaro, Marco Bellini, Tailor Peruzzolo, Carolina Castello, Francesco Bartoli</i>	

I01A - 05C Pt-Based Anode Catalysts

Suppression of Hydrogen Peroxide Formation on Pt Using WO ₃ as Anode Co-Catalysts	3508
<i>Watcharaporn Hoisang, Muhammad Farooq, Wataru Sugimoto</i>	
Suppression of H ₂ O ₂ Formation and Durability of Various H ₂ -Anode Catalysts for Long-Life PEFCs.....	3510
<i>Muhammad Imran, Muhammad Farooq, Wataru Sugimoto, Mitsuharu Chisaka, Waka Nagano, Tatsuya Takeguchi, Nobuki Ozawa, Momoji Kubo, Hanako Nishino, Hiroyuki Uchida</i>	
Impact of Metal Oxide Nanoparticles in Anode Catalyst Layer on Membrane Degradation and Output Performance of PEFC.....	3513
<i>Mohamed Berber, Muhammad Imran, Hanako Nishino, Hiroyuki Uchida</i>	

VOLUME 6

A High Potential Trapped State upon H ₂ -Starvation of a Low Pt-Loaded PEMFC Anode	3517
<i>Juan Herranz, Tim Welmers, Adrian Heinritz, Thomas J. Schmidt</i>	
Robust Fuel Cell Electrodes: Pt Thin Film Catalysts for Anode Reversal Tolerance	3519
<i>Wipula Priya Rasika Liyanage, Alper Can Ince, Siddharth Komini Babu, Rod L. Borup, Jacob S. Spendelow</i>	
Effect of Co-Catalyst Support Toward the Cell Reversal Tolerance of IrO ₂ Nanosheets-Pt/C Catalyst.....	3520
<i>TingWei Huang, Wataru Sugimoto</i>	
Comparison of Galvanostatic and Potentiostatic Accelerated Stress Tests of Bifunctional Pt-Ir Alloy Anode Catalysts for H ₂ Starvation Using Rde Technique	3523
<i>Philipp Seidel, Giulia Ioselli, Sooyoung Yoon, Sonja Blaseio, Florian Mintel, Frédéric Hasché, Mehtap Oezaslan</i>	
Bifunctionality and Reversibility of Colloidal Pt-Ir Anode Catalyst Material for Hydrogen Starvation	3525
<i>Giulia Ioselli, Philipp Seidel, Sooyoung Yoon, Sonja Blaseio, Frédéric Hasché, Mehtap Oezaslan</i>	
Mechanistic Insights into the Bifunctionality of Cell-Reversal Tolerant Pt-Ir Alloy Catalysts during HOR and OER Using Operando Quick-XANES	3527
<i>Sonja Blaseio, Giulia Ioselli, Philipp Seidel, Jochen Klein, Qiang Guo, Helena Casara, Mehtap Oezaslan</i>	
Improvement of Reversal-Tolerance By Ti ₄ O ₇ -C Supported Pt-Ir Composite Catalysts.....	3529
<i>Hidenobu Wakita, Yoko Ishigaku, Waka Nagano, Mitsuharu Chisaka, Tatsuya Takeguchi</i>	

I01B-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - ELECTROLYZER ELECTROCATALYST ACTIVITY AND DURABILITY

I01B - Digital Only Presentations

(Digital Presentation) Oxygen Evolution Activity and Durability on Mn Oxide-Based Catalyst in Acidic Solution.....	3531
<i>Koichi Matsuzawa, Yuma Kohara, Akimitsu Ishihara</i>	

I01B - 01 Alkaline Oxygen Evolution Reaction Catalysis 1

Reconstruction and Dissolution of Transition Metal (Oxy)Hydroxide Electrocatalysts Induced By Intermittent Water Electrolysis	3533
<i>Raul A. Marquez, Emma Kalokowski, Thuy Vy Le, Chloe L. Williamson, Kenta Kawashima, Jay T Bender, Andrei Dolocan, Hugo Celio, Delia J Milliron, Joaquin Resasco, Thomas F. Jaramillo, C Buddie Mullins</i>	
Characterization of Plasma-Sprayed Nickel-Based Electrodes for Oxygen and Hydrogen Evolution in Alkaline Media	3535
<i>Glen McClea, Aaron Timothy Marshall, Steven Matthews</i>	
Modulating Electronic Interaction in Electrocatalysts for Boosting Oxygen Evolution Reaction	3537
<i>Yung-Eun Sung, Seongbeom Lee, Jaehyuk Shim</i>	
Modulating Confined Interlayer Environment By Hard Lewis Acid Cation for Enhancing Oxygen Evolution Reaction	3539
<i>Qing Su, Tomohiko Utsunomiya, Sid Halder, Asuka Morinaga, Yasuyuki Kondo, Reshma R Rao, Yu Katayama, Yuki Yamada</i>	
Efficient Oxygen Evolution Activity of Nickel-Based Compounds and Their Structural and Electronic Effects	3541
<i>Yuuki Sugawara, Yuto Nakase, Gopinathan M Anilkumar, Keigo Kamata, Takeo Yamaguchi</i>	
Facile Engineering of Self-Repairing Ni-Rich Stainless-Steel Electrode Toward Oxygen Evolution Reaction.....	3543
<i>Xiang Lyu, Alexey Serov, Jun Yang</i>	
Conventional and High-Entropy Spinel As Oxygen Evolution Electrocatalysts (ECs) for Implementation in Low-Temperature Electrolyzers (ELs): Synthesis, Physicochemical Studies and Electrochemical Characterization.....	3544
<i>Soufiane Boudjelida, Angeloclaudio Nale, Ketì Vezzù, Gioele Pagot, Enrico Negro, Saveria Santangelo, Silvia Gross, Davide Vendrame, Vito Di Noto</i>	
Active Sites of 3d Transition Metal Oxyhydroxides for OER.....	3545
<i>Jing Zhu, Fabio Dionigi, Wei-Xue Li, Jeffrey Greeley, Peter Strasser, Zhenhua Zeng</i>	
The Catalytic Effect of Hydroxide Layer on the Metal Surface in Alkaline Water Electrolysis	3546
<i>Hye Ri Kim, Changho Yeon, Gahyeon Lee, Seulgi Baek, Chan-Woo Lee, Jong Hoon Joo</i>	

I01B - 02 Alkaline Oxygen Evolution Reaction Catalysis 2

Dopant Modulated, Surface Restructured $\text{Ni}_x\text{Co}_{1-x}\text{S}_y$ Electrocatalysts for Oer in Alkaline Condition.....	3547
<i>Zhenxing Feng</i>	
Atomic-Scale Tracking of Catalytic Reaction Mechanism on the LaCoO_3 Surface Depending on Overpotential during Water Oxidation	3548
<i>Chang Hyun Park, Hyungdoh Lee, Jin-Seok Choi, Younghwan Lim, Junseop Kim, Sung-Yoon Chung</i>	
Enhanced Mass Transportation for the Oxygen Evolution Reaction in Flexible Mesoporous Hydrogel Electrodes	3551
<i>Yoshiyuki Kuroda, Ritsuki Nakajima, Hiroki Wago, Shigenori Mitsushima</i>	

Unveiling Accelerated Oxygen Evolution Reaction through Explosive Reconstruction of Active Species of Co _x N@NC.....	3553
<i>Hyung Wook Choi, Jiwon Kim, Dae Ho Yoon</i>	
PGM-Free Oer Catalyst for Water Splitting – an Interrogation on the Structural Dynamics of Catalyst during Reaction	3555
<i>Di-Jia Liu</i>	
Oxygen Evolution Reaction Activity and Stability of Copper and/or Manganese Cobalt Spinel.....	3557
<i>Christopher Pantayatiwong Liu, Camille Roiron, Plamen Atanassov</i>	
Thin-Film Study of Delithiated LiCoO ₂ Catalyst for Oxygen Evolution Reaction in Alkaline Media	3559
<i>Kenshi Asano, Yuto Miyahara, Shota Tsujimoto, Ryo Sakamoto, Changhee Lee, Kohei Miyazaki, Takeshi Abe</i>	
Perovskites As Oxygen Evolution Reaction Catalysts for Alkaline Electrolysis: A Stable Alternative?	3562
<i>Fabian Luca Buchauer, Soren Bredmose Simonsen, Christodoulos Chatzichristodoulou</i>	
Electrocatalysis of Oxygen Evolution by Metal Oxides through Atomically-Thin Carbon	3564
<i>Graham Newton, William Townsend, Lee R Johnson, Andrei Khlobystov, Darren Anthony Walsh</i>	
Machine Learning-Guided Discovery of PGM-Free Oxyphosphide Oxygen Evolution Catalysts for Alkaline Water Electrolysis	3565
<i>Ahmed A. Farghaly, Sammy Onajah, Marja Lalley, Wilton Kort-Kamp, Sirui Li, Melissa E Kreider, Shaun M Alia, Haoran Yu, Deborah J. Myers</i>	

I01B - Poster Session

Benchmarking Electrocatalyst Stability Tests Using Lab-Scale Alkaline Water Electrolyzers	3567
<i>Raul A. Marquez, Michael Espinosa, Emma Kalokowski, Yoon Jun Son, Kenta Kawashima, Thuy Vy Le, Chikaodili E. Chukwuneke, C Buddie Mullins</i>	
Factorial Analysis to Optimize the Trimetallic Conife-LDH/Graphene Composites for the Oxygen Evolution Reaction	3569
<i>Daniele Alves, Eithne Dempsey, Carmel B Breslin</i>	
Graphene Oxide-Driven Morphological Evolution of MOF: Unleashing High Activity of Derived Co@N-Doped Carbon Electrocatalyst for Water Splitting	3572
<i>Sampath Gayathri, Paulraj Arun Kumar, Jong Hun Han</i>	
Regulation of the Oxygen Evolution Mechanism in RuO ₂ By Controlling the Doping Level	3573
<i>Hyunwoo Jun, Jinwoo Lee</i>	
Atomically Dispersed Ru on Ni Catalyst-Integrated Porous Transport Electrode for Proton Exchange Membrane Water Electrolyzer	3574
<i>Kyeong-Rim Yeo, Soo Kil Kim</i>	
DFT Calculation on Na Doping Effects on Bismuth Ruthenate-Based Pyrochlore Oxides	3575
<i>Hiroto Ohta, Aya Okazaki, Masatsugu Morimitsu</i>	
Manganese Dioxide-Based Catalysts with Low Ir Content for High-Durability PEM Water Electrolysis	3577
<i>Naoya Kitade, Takuya Okada, Ryuhei Nakamura, Ailong Li, Shuang Kong, Kazuna Fushimi</i>	

Surface Engineering of Cobalt Nano Cube by Enhanced Nitrogen Content in Surface Carbon Shell for Efficient Hydrogen Evolution Reaction in Anion Exchange Membrane Water Electrolysis	3579
<i>Byeong Guk Kang, Ru Li Lee, Tae Hong Kim, Bong Kyun Kang</i>	
Analysis of Crystalline and Amorphous Iridium Oxide Catalyst Layers after Accelerated Durability Test	3580
<i>Takanobu Ishida, Yuko Takeda, Yuta Watanabe, Naoya Aoki</i>	
Enhanced Oxygen Evolution Reaction Performance in Anion Exchange Membrane Water Electrolysis by Ru-Doped Ni-Fe Catalysts.....	3581
<i>SunBeom Ahn, Gyeong Ho Han, Sang Hyun Ahn</i>	
Synthesis and Characterization of Titanium Nitride-Supported Iridium-Nickel Alloys as Highly Active Electrocatalysts for Hydrogen Evolution Reaction.....	3583
<i>Toan Minh Pham, Kyungmin Yim, Jinsoo Kim</i>	
Synthesis of Nanostructured $(\text{Ni}_{0.7}\text{-W}_{0.3})_{1-x}\text{Ru}_x$ Electrocatalysts for Hydrogen Evolution Reaction in PEM Water Electrolysis.....	3584
<i>Kanghoon Choi, Sasha Omanovic</i>	
Investigation of the Durability of a Water Electrolysis Cell with Iridium Fiber Anode Against Voltage Fluctuations Simulating Wind Power	3586
<i>Shiko Nagatomo, Yasir Arafat Hutapea, Kohei Ito, Akari Hayashi</i>	
Relationship between Resistance Due to Bubbles and Electrode Shape in Alkaline Water Electrolysis Cells.....	3588
<i>Yuki Nishio, Ryuta Misumi, Shigenori Mitsushima</i>	
Investigating the Factors Influencing the Activity of Iridium-Based Perovskite Oxide Electrocatalyst for Acidic Water Oxidation By Operando XAS.....	3591
<i>Weijie Cao, Toshiki Watanabe, Kentaro Yamamoto, Toshiyuki Matsunaga, Neha Thakur, Mukesh Kumar, Yoshiyuki Kuroda, Shigenori Mitsushima, Yoshiharu Uchimoto</i>	
Highly Active Ni Incorporated Co_2p Heterostructure As Efficient Hydrogen Evolution Reaction Electrode for Alkaline Water Electrolysis.....	3594
<i>Junseok Sim, Wan Sik Kim, Asiya M. Tamboli, Sejin IM, Younghan Jung, JunSeok OH, Chang-Hee Kim</i>	
Enhanced Activity and Stability via Fe Substitution in Lithium Nickel-Based Electrocatalyst for Oxygen Evolution Reaction in Alkaline Media.....	3595
<i>Younghan Jung, Asiya M. Tamboli, Wan Sik KIM, Sejin Im, Junseok Sim, JunSeok OH, Chang-Hee Kim</i>	
Unitized Regenerative Fuel Cells Employing Dendritic Pt and Ir Nanoparticles Supported By an Electrochemically Stable Oxide	3596
<i>Hyung-Suk Oh</i>	
Development of Binder Free Fe Substituted NiCo_2O_4 Electrocatalyst Using Electrostatic Spray Deposition for Efficient Oxygen Evolution Reaction.....	3597
<i>JunSeok OH, Asiya M. Tamboli, Wan Sik KIM, Sejin IM, Junseok Sim, Younghan Jung, Chang-Hee Kim</i>	
Enhancement of Alkaline OER Performance of the Electroplated Ni-P Catalysts Using Electrochemical Dealloying Technique	3598
<i>Hyunjun Oh, Kwang Sup Eom</i>	

Self-Supported Transition Metal Based-Textile Electrodes through Interfacial Assembly for Overall Water Splitting in Alkaline Media	3600
<i>Jeongmin Mo, Jinhan Cho</i>	
Simple and Scalable Manufacturing Process of Raney-Ni Electrode Via Dip-Coating Method for Alkaline Water Electrolysis	3601
<i>Hae In Lee, Suhyun Kim, Hee Soo Kim, Jaehoon Cho, Dong-Ha Lim</i>	
NiMo/C Doped with Trace Precious Metals (Pt, Rh, Ru, Ir) for Enhanced Hydrogen Evolution Reaction in Anion Exchange Membrane Water Electrolysis	3603
<i>Changsoo Lee, Chanwon Jung, Sechan Lee, Gisu Doo, Hyeonjung Park, MinJoong Kim</i>	
High Performance Bifunctional Catalysts Using RuCoO _x Composite Oxide System for Alkaline Water Electrolysis.....	3604
<i>Zihao Zhang, Neha Thakur, Mukesh Kumar, Toshiki Watanabe, Kentaro Yamamoto, Toshiyuki Matsunaga, Yoshiyuki Kuroda, Shigenori Mitsushima, Yoshiharu Uchimoto</i>	
Investigating the Electronic Structure of a Complex Oxide Catalyst for Alkaline Water Electrolysis By Operando X-Ray Absorption Spectroscopy	3606
<i>Jiaming Lin, Ningchen Ma, Neha Thakur, Mukesh Kumar, Toshiki Watanabe, Kentaro Yamamoto, Toshiyuki Matsunaga, Yoshiyuki Kuroda, Shigenori Mitsushima, Yoshiharu Uchimoto</i>	
Improvement of Mass Activity of IrO _x Electrocatalyst in Acidic Oxygen Evolution Reaction Using Bi ₃ TaO ₇ Support	3608
<i>Young Hwa Yun, Changsoo Lee, Bonjae Koo</i>	
Cu-Fe Electrocatalysts for Electrochemical Urea Production from Carbon Dioxide and Nitrate Under Ambient Conditions	3609
<i>Jinuk Choi, Tae-Yong An, Hyojung Lim, Chanmin Jo, Minseo Jeon, Uk Sim</i>	
Electrochemical Ammonia Oxidation Using a Nickel Phosphide Catalyst Incorporating N-Doped Carbon for Efficient Hydrogen Production	3610
<i>Chanmin Jo, Subramani Surendran, Min-Cheol Kim, Yoongu Lim, Dae Jun Moon, Joon Young Kim, Gyoung Hwa Jeong, Jung Kyu Kim, Uk Sim</i>	
The Impact of Progressive Buildup of Trapped Gas Bubbles on the Performance of Oxygen Evolution Reaction Electrodes during Alkaline Water Electrolysis.....	3611
<i>Jeff Owen Hoffmann, Lan Wang, Yushan Yan</i>	
Study on Effect of Activation Procedure on Anion Exchange Membrane Water Electrolyzer Using Ni-Mo Electrocatalyst for Hydrogen Evolution Reaction	3612
<i>Wonjae Lee, Hyebin Yun, Yongmin Kim, Sun Seo Jeon, Hoon Taek Chung, Byungchan Han, Hyunjoon Lee</i>	
Monometallic, Bimetallic, and Trimetallic Oxyphosphides for OER Catalysis in Alkaline Electrolyte	3613
<i>Sammy Onajah, Marja Lalley, Melissa E Kreider, Shaun M Alia, Haoran Yu, Deborah J. Myers, Ahmed A. Farghaly</i>	
Unveiling the Activity-Electrochemically Active Surface Area Relationship in PGM-Free Oxyphosphide OER Electrocatalysts for Alkaline Water Electrolysis.....	3614
<i>Sammy Onajah, Marja Lalley, Melissa E Kreider, Shaun M Alia, Haoran Yu, Deborah J. Myers, Ahmed A. Farghaly</i>	

I01B - 21 Alkaline Oxygen Evolution Reaction Catalysis 3

Stability Investigation on NiFeO _x Electrocatalysts during On and Off Cycles in Harsh Alkaline Conditions	3616
<i>Reona Suzuki, Keisuke Obata, Kazuhiro Takanabe</i>	
Exploring the Synergistic Ni-Fe-W Interplay in Double Perovskites to Understand the Operando Electronic Transformations Driving High Oxygen Evolution Reaction Activity and Stability	3618
<i>Natasha Hales, Thomas J. Schmidt, Emiliana Fabbri</i>	
Electrochemically Engineered Layer of γ -NiOOH with Fe Oxides on Nickel Foam for Durable Oxygen Evolution Reaction Catalyst for Alkaline Water Electrolysis	3622
<i>Sreekanth Narayanaru, Gopinathan M Anilkumar, Hidenori Kuroki, Takanori Tamaki, Takeo Yamaguchi</i>	
The Contributions of Catalyst Layer Resistance on Overall Overpotentials in Anion Exchange Membrane Water Electrolyzers	3624
<i>Emily K. Volk, Elliot Padgett, Stephanie Kwon, Shaun M Alia</i>	
Monitoring the Spontaneous Growth of Nickel-Iron Layered Double Hydroxides during Alkaline Oxygen Evolution at Industrial Conditions	3625
<i>Johan Christian Ehlers, Christodoulos Chatzichristodoulou, Gastón Larrazábal</i>	
The Effect of Different Membrane Types on the Activity and Stability of Nickel-Based Catalysts for Water Splitting	3627
<i>Miha Hotko, Aleš Marsel, Marjan Bele, Nejc Hodnik</i>	
Accelerated Durability Tests of Electrostatic Spray Deposited NiFe ₂ O ₄ for Renewable Energy-Powered Alkaline Water Electrolyzers	3628
<i>Asiya M. Tamboli, Younghun Jung, JunSeok OH, Wan Sik Kim, Junseok Sim, Sejin IM, Changhee Kim</i>	
Tracking the Evolving Structure of Nickel–Iron Oxyhydroxide Oxygen Evolution Electrocatalysts in Alkaline Media	3629
<i>David A. Cullen, Haoran Yu, Raphael P. Hermann, Xiang Lyu, Alexey Serov, Luigi Osmieri, Piotr Zelenay, Jaehyung Park, A. Jeremy Kropf, Matthew Sweers, Deborah J. Myers, Melissa E Kreider, Shaun M Alia, Michael Mizrahi, Lior Elbaz</i>	
Performance and Durability of Metallic Aerogel Anode Catalyst in Pure-Water-Fed Hydroxide Exchange Membrane Electrolyzers	3630
<i>Yachao Zeng, Manman Qi, Yushan Yan</i>	
Investigating Activity and Stability of Mixed-Metal Oxides (M-NiO) for Anion Exchange Membrane Electrolysis	3631
<i>Mai-Anh Ha, Mitchell Hansen, Emily Mercer, Andrew Norman, Elisa Miller-Link, Emily K. Volk, Héctor González, Shaun M Alia</i>	

I01B - 22 Alkaline Hydrogen Evolution Reaction Catalysis

Mechanical Alloying of Nickel-Based Catalysts for Alkaline Water Electrolysis	3633
<i>Thu Pham Anh Phan, Mikkel Rykær Kraglund, Harish Lakhotiya, Jens Oluf Jensen</i>	
Factorial optimisation of CoCuFe- LDH/graphene composites for water splitting	3634
<i>Daniele Alves, Eithne Dempsey, Carmel B Breslin</i>	

Pt Re Electrodes for AEM Water Electrolysis: Catalytic Insights and Performance Optimization for the Hydrogen Evolution Reaction	3637
<i>Brian Lenhart, Lindsay Wagner, Samuel Mckinney, Michele Ostraat</i>	
Pt/Ni-Fe Oxide-Based Catalyst for Hydrogen Evolution Reaction in Alkaline Media.....	3639
<i>Guoyu Shi, Tetsuro Tano, Donald A. Tryk, Akihiro Iiyama, Makoto Uchida, Katsuyoshi Kakinuma</i>	
Atomically Dispersed Electrocatalysts for Low Temperature Fuel Cells and Water Electrolysis	3641
<i>Jinwoo Lee</i>	
The Role of Individual Surface Species in the Volcano-Type Behavior of HER on Nickel	3642
<i>Dzevad K Kozlica, Pedro Farinazzo Bergamo Dias Martins, Matjaz Finsgar, Maris M Mathew, Milena Martins, Marjan Bele, Miran Gaberscek, Dusan Strmcnik</i>	
Metal-Organic Framework-Derived PGM-Free Electrocatalysts for Hydrogen Evolution Reaction in Alkaline Media	3644
<i>Hanguang Zhang, Piotr Zelenay</i>	
Unlocking Stainless Steel's Potential for the Hydrogen Evolution Reaction Using Patterned Electrodes	3645
<i>Campbell Maurice Tiffin, Sami Khan, Aaron Timothy Marshall</i>	
Kinetically Accelerating Ni and C Dual Active Sites Via Pyrrolic-N for Water Dissociation and Alkaline Hydrogen Production.....	3648
<i>Jiwon Kim, Hyung Wook Choi, Dae Ho Yoon</i>	
Active and Durable Platinum Group Metal-Free Electrocatalysts for Hydrogen Evolution Reaction in Alkaline Systems	3650
<i>Doha Sayed, Luigi Osmieri, Piotr Zelenay</i>	
Advancing Green Hydrogen Production: Synthesizing and Analyzing Nickel and Iron Micro-Flower Shaped Electrocatalysts on Ni-Mesh for Alkaline Water Electrolysis.....	3652
<i>Rutha Jaeger, Peeter Valk, Vitali Grozovski, Olga Volobujeva, Alise-Valentine Prits, Martin Maide, Rainer Küngas, Enn Lust, Jaak Nerut</i>	

I01B - 31 PEM/Alkaline Electrolysis

Scalable and Efficient H ₂ S Treated Nickel Foam Electrocatalyst for Alkaline Water Electrolysis Under Industrial Conditions	3654
<i>Soffi Ester Sola Olesen, Anders Westergaard Jensen, Bo Brummerstedt Iversen, Filippo Fenini, Lars Pleth Nielsen, Anders Bentien</i>	
Bubble Dynamics at Single-Phase Nickel Nitride and Sulfide for Hydrogen Evolution Reaction.....	3656
<i>Chinkit Tyagi, Bruno Fabre, Corinne Lagrost, Franck Tessier, Marie-Caroline Jullien, Valérie Bouquet</i>	
Development of Noble-Metal Free Bifunctional Catalysts for Hydrogen Evolution Reaction (HER) and Oxygen Evolution Reaction (OER) for the Application in an Electrical Rechargeable Galvanic Hydrogen Storage System	3658
<i>Merel Viola Rittel, Philipp Hauke, Oren Rosenfeld, Robert Hahn, Peter Strasser</i>	
Reproducibility in Electrocatalysis.....	3660
<i>Jan Niklas Hausmann, Prashanth W. Menezes</i>	

Catalysts and Electrode Development for AEM Water Electrolysis.....	3661
<i>Steve Baranton, Robin Hu, Shazam Williams, Amelia Susanto, Jessie Ju, Eric Chuanyi Zhou, Darek Bialasz, Charlie Min</i>	
Industrial Scale Anodes and Cathodes for Conventional Alkaline Electrolysis and Anion Exchange Membrane Water Electrolysis.....	3664
<i>Gonzalo Abellán, Gonzalo Abellán, Vicent Lloret Segura, Alvaro Seijas Da Silva</i>	
Highly Active Raney-Nickel Electrodes Based on 3D Pin Structures for Use in High Temperature Alkaline Electrolysis	3665
<i>Justin Albers, Marius Lau, Christian Immanuel Bernaecker, Abimbola Ashaju, Ahmad Harbiye, Thomas Weissgaerber, Adam Key</i>	
Discovering the Catalytic Role of Interfacial Water Towards Hydrogen Evolution/Oxidation Reactions in Aqueous Solutions	3666
<i>Ershuai Liu, Xueping Qin, Ernest Pahuyo Delmo, Minhua Shao, Tejs Vegge, Walter S. Drisdell</i>	
High Entropy Alloys Insights for Electrochemical Water Splitting.....	3667
<i>Maria Astrid Campos Mata, Soumyabrata Roy, Pulickel M. Ajayan</i>	
Using Theory to Understand the Origins of the High Activity of Earth-Abundant Transition Metal Oxide Electrocatalysts for the Hydrogen and Oxygen Evolution Reactions in Alkaline Media	3668
<i>Donald A. Tryk, Guoyu Shi, Katsuyoshi Kakinuma, Makoto Uchida, Akihiro Iiyama</i>	
Multiscale Modeling of Heterogeneous Interfaces for Hydrogen Production	3671
<i>Anh Tuan Pham, Hyuna Kwon, Alexandra Zagalskaya, Marcos Calegari, Tadashi Ogitsu</i>	

I01B - 32 PEM Oxygen Evolution Reaction Ir-based Catalysis 1

Operando XPS Study of Tungsten Oxide-Supported Iridium Nanoparticles: High-Efficiency Water Splitting Catalysts in Acidic Environments and PEM Electrolysis	3672
<i>Lu Yu Chueh, Yu Wei Hsu, Chang-Ming Wu, Meng-Hsuan Tsai, Chueh-Cheng Yang, Chia-Hsin Wang, Yung-Tin Pan</i>	
Activity and Stability of Iridium-Based Alloy Catalysts for PEM Electrolyzer	3673
<i>Sakthivel Mariappan, Jean-Francois Drillet</i>	
Improving Performance of PEM Water Electrolysis Utilizing Nanofiber-Enhanced Porous Transport Electrodes with Low Iridium Content	3675
<i>Xin Wen, Bastien Penninckx, Sankar Sasidharan, Fabian Wenger, Ellinor Ehrnberg</i>	
Highly Durable Barium Iridates for Oxygen Evolution Electrocatalysis Via Atomic Ordering of Nb ⁵⁺ /Ta ⁵⁺ (d ⁰) and Suppression of Lattice Oxygen Participation	3677
<i>Ki Hyun Park, Yelyn Sim, Tae Gyu Yun, Dongho Kim, Junseop Kim, Sung-Yoon Chung</i>	
Iridium Oxide and Niobium-Doped Iridium Oxide Anodes for PEM Water Electrolysis: Towards Sustainable Hydrogen Production with Superior Performance	3681
<i>Brian Lenhart, Van Nguyen, Lindsay Wagner, Samuel Mckinney, Michele Ostraat</i>	
Highly Active Iridium Doped Titanium-Spinels for the Acidic Oxygen Evolution Reaction in PEM-Water Electrolysers.....	3682
<i>Timo Proelss, Philipp Parzinger, Tanja Franken</i>	

Oxygen Evolution Catalysts with Iridium Oxide Supported on Doped Titanium Oxide: Role of Dopants on Catalysts Reactivity and Stability.....	3685
<i>Elena Cazzulani, Plamen Atanassov, Camille Roiron, Pierangela Cristiani, Gian Luca Chiarello, Shabnam Zargarian</i>	
Investigation of Ultra-Low Loading of Metallic Oxide Supported Iridium-Based Catalysts in the Proton Exchange Membrane Water Electrolyzers	3686
<i>Hung-Ming Chang, Alexey Serov, Xiang Lyu, Iryna Zenyuk</i>	
Electrospun Pt Nanowires as a Highly Conductive Support for Ir for the Electrochemical Oxygen Evolution Reaction	3688
<i>Tom O'Carroll, Sergio Diaz-Abad, Gang Wu, Siddharth Komini Babu, Xiaojing Wang, Jacob S. Spendelow</i>	
Tuning the Electronic Structure of Iridium-Based OER Electrocatalysts by Particle Proximity and Metal-Support Interactions Probed by Operando XAS	3690
<i>Jochen Klein, Nils Kramer, Sonja Blaseio, Qiang Guo, Giulia Ioselli, Mehtap Oezaslan</i>	

I01B - 41 PEM Oxygen Evolution Reaction Ir-based Catalysis 2

(Invited) Understanding the Electrochemical Conversion Processes from Iridium Black to Iridium Oxides and Implications on Their Activity and Degradation Toward Oxygen Evolution	3692
<i>Qingying Jia, Ian Anderson, Connor Buek, Qiang Sun, Fan Yang, Courtney Mittelsteadt</i>	
What's the Status Quo of Performance and Durability for Low-Iridium Loadings with Commercial Catalysts in PEM Water Electrolysis?	3694
<i>Nikolai Utsch, Fabian Scheepers, David Aymé-Perrot, Nicolas Dubouis, Isabelle Betremieux, Martin Johannes Müller, Ralf Peters</i>	
Shape-Controlled Iridium Catalysts for OER in PEM Electrolysis.....	3695
<i>Heng Xu, Xiaojing Wang, Jacob S. Spendelow</i>	
In-Situ Analysis of Reversible Deactivation and Reactivation Mechanisms of Ir Catalysts for Lifetime Extension of Proton Exchange Membrane Water Electrolysis.....	3697
<i>Ahyoun Lim, Kahyun Ham, Ioannis Spanos</i>	
Elucidating the Evolution of the Iridium Oxide Catalysts' Surface: From Activation through Operation to Degradation Modes	3699
<i>Camille Roiron, Clifton Wang, Iryna V. Zenyuk, Plamen Atanassov, Shabnam Zargarian</i>	
Optimizing Multi-Phase IrO ₂ Catalysts with Ti for Enhanced Oxygen Evolution Reaction for Proton Exchange Membrane Water Electrolysis	3701
<i>Younghwa Yun, Sechan Lee, Hyeonjung Park, Gisu Doo, MinJoong Kim, Hyun-Seok Cho, Changsoo Lee</i>	
Spatial Atomic Layer Deposition to Manufacture Catalyst Coated Electrodes for PEM Water Electrolysis with Ultra-Low Loadings of Iridium	3702
<i>Oscar Diaz-Morales, Jie Shen, Cássia Sidney Santana, Frennie Bens, Bas Dijk</i>	

I01B - 42 PEM Oxygen Evolution Reaction non Ir-based Catalysis

(Invited) Strengthening Ru–O Bonds with Co and Mn Dopants for Robust Oxygen Evolution in Acid Media	3704
<i>Lei Wang</i>	

The Potential of Ruthenate Pyrochlores As Anodic Electrocatalysts for PEM Water Electrolysisoral Presentation	3705
<i>Megan Muriel Heath, Elise Fosdal Closs, Svein Sunde, Anita Hamar Reksten, Tor Olav Sunde, Magdalena Müller, Hågen Røe, Abhishek Rajbhandari, Frode Seland</i>	
Design Strategies for Oxygen Evolution Reaction Catalysts: Insights from a Kinetic Perspective via Constrained Ab Initio Molecular Dynamics	3706
<i>Dongyup Shin, Sang Soo Han</i>	
Durable Anode Electrodes with Facile and Scalable Electrodeposition for Green Hydrogen Production at Industrial Scale.....	3708
<i>Lei Ding, Weitian Wang, Zhiqiang Xie, Jun Li, Adam Paxson, Monjid Hamdan, David A. Cullen, Lonneke van Eijk, Jayson Foster, Genevieve Stelmachovich, Svitlana Pylypenko, Douglas S Aaron, Matthew M Mench, Feng Yuan Zhang</i>	
The Role of Porous Transport Layer in Enabling Low Anode Catalyst Loadings.....	3710
<i>Jacob A Wrubel, Makenzie Parimuha, James L. Young, Guido Bender</i>	
Doped Rutile TiO ₂ Nanowires As Supports for Durable Proton Exchange Membrane Water Electrolyzers.....	3712
<i>Eamonn Murphy, Kui Li, Sergio Diaz-Abad, Siddharth Komini Babu, Xiaojing Wang, Jacob S. Spendelow</i>	
Engineered Porous Transport Electrode for Proton Exchange Membrane Water Electrolyzers	3713
<i>Cássia Sidney Santana, Frennie Bens, Jie Shen, Bas Dijk, Oscar Diaz-Morales</i>	
Sputter-Coated Catalyst Layers for Low Loading Anodes for Proton Exchange Membrane Water Electrolysis	3715
<i>Diana E. Beltran, Bennett A. Chao, Makenzie Parimuha, Ricardo P. M. Duarte, Jacob A Wrubel, Guido Bender, James L. Young</i>	
Unveiling and Mitigating the Instability of Noble Metal-Free Oxide Electrode for PEM Water Electrolysis	3716
<i>Jian Wang</i>	
Advanced Nano-Porous Thin Films: Automating Water Electrolysis with Spark Ablation Printing.....	3717
<i>Erdem Irtem, Ece Arici, Simone Asperti, Niels Schouten, Aaike Van Vugt</i>	

I01B - 51 PEM Hydrogen Evolution Reaction and Combined Alkaline/PEM Electrolysis

Unraveling the Harmonious Coexistence of Ruthenium States on a Self-Standing Electrode for Enhanced Hydrogen Evolution Reaction.....	3719
<i>Joonhee Ma, Soo Young Kim</i>	
Developing Catalysts for Proton and Anion Exchange Membrane Water Electrolyzers	3720
<i>Sun Seo Jeon, Hyunjoo Lee</i>	
A New Class of {Mo _x S _y }-Based Electrocatalysts: From Local Electrochemistry to Their Implementation in Proton Exchange Membrane Electrolyzers	3721
<i>Maria El Khoueiry, Serge Al Bacha, Clement Falaise, Nathalie Leclerc, Emmanuel Cadot, Loïc Assaud</i>	
Solid State Synthesis and Catalytically Active Nanoparticle Exsolution As a Novel Approach for HER Electrode Fabrication.....	3723
<i>Jakob Michael Reinke, Ruihan Li, Zhiying Yi, Linsey C Seitz, Scott A Barnett</i>	

Design of Highly Dispersed Pt Entities on Mesoporous N-Doped Carbon Nanospheres – Improving Pt Utilization for Hydrogen Evolution	3725
<i>Sven Küspert, Ian E. Campbell, Zhiqiang Zeng, S. Esmael Balaghi, Niklas Ortlieb, Ralf Thomann, Markus Knäbbeler-Buß, Christopher S. Allen, Suzanne E. Mohny, Anna Fischer</i>	
The Electrochemical Kinetics of the H-Upd and O-Upd on Polycrystalline Platinum.....	3726
<i>Benedikt Axel Brandes, Enzo Moretti</i>	
Synthesis of Transition Metal Carbide Catalysts for Hydrogen Evolution Reaction.....	3727
<i>Jing Qi, Yunfeng Zhai, Keith Bethune</i>	
Amphi-Funtional Mediator for Proton-Coupled Electron Transfer in Low-Voltage Electrocatalytic-Hydrogenation	3728
<i>Jisu Lee</i>	
Locking the Atomic Ni Leaching on Ordered PtNi Nanostructure for Long-Term Hydrogen Production	3730
<i>Song Jin, Minseon Park, Jae-Yeop Jeong, Junyoung Park, Seung-min Woo, Chiho Kim, Jooyoung Lee, Won Bae Kim, Min Ho Seo, Sung Mook Choi</i>	

I01C-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - IONOMERS, MEMBRANES AND SEPARATORS FOR FUEL CELLS AND ELECTROLYZERS

I01C - Membrane Development: Electrolysis

PEEK-Reinforced Sulfonated Poly(phenylene sulfone)-Membrane for Water Electrolysis with Lower Gas Crossover and Lower Resistance Than N115	3732
<i>Regina Qelibari, Andreas Münchinger, Giorgi Titvinidze, Carolin Klose, Severin Vierrath</i>	
Tuning the Hydrophilicity of Polymers for Ion-Solvating Membranes for Alkaline Electrolysis	3734
<i>Jens Oluf Jensen, Dmytro Serhiichuk, Sinu Charamchirail Rajappan, Yifan Xia, Mikkel Rykær Kraglund, David Aili</i>	
Development of Sustainable, Environment-Friendly Protein-Based Proton Exchange Membranes for Fuel Cells and Water Electrolyzers	3736
<i>Huseyin Yer, Ugur Pasaogullari, Nadav Amdursky, Stoyan Bliznakov</i>	
The Effect of Polymer Chemistry of Block or Random Co-Polymers for Anion Exchange Membrane Electrolyzer Membranes and Ionomers in Carbonate Electrolyte	3737
<i>Andrew M. Herring, Alana Blaise Sweeney, Mei-Chen Kuo, Marco Salgado, Liam Carroll</i>	
Poly(pyrrolidinium)-Based Anion Exchange Membranes and Ionomers for Anion Exchange Membrane Water Electrolyzers	3738
<i>Albert S Lee</i>	
Highly Gas Permeable and Dimensionally Stable Anion Exchange Ionomers for Anion Exchange Membrane Water Electrolyzers	3739
<i>Fanghua Liu, Fanghua Liu, Toshio Iwataki, Makoto Uchida, Katsuyoshi Kakinuma, Kenji Miyatake</i>	
Advanced Polybenzimidazole Derivatives in Ion-Solvating Membrane Water Electrolysis with Low KOH Concentration.....	3740
<i>Hyungkyu Cho, Byeol-Nim Lee, Bonghyun KIM, Jaemuk Lim, Tae-Hoon Lim, Hyoung-Juhn Kim</i>	

Hydrocarbon Proton and Anion Exchange Polymers for Water Electrolysis Applications.....	3741
<i>Marco Viviani, Dennis Rusitov, Rusudan Sulaberidze, Lasha Khutsishvili, Andreas Münchinger, Carolin Klose, Giorgi Titvinidze</i>	

Radical-Mediated Cross-Linked Anion Exchange Membranes for Efficient Alkaline Water Electrolysis Cells.....	3742
<i>Ahmed Mohamed Ahmed Mahmoud, Kenji Miyatake</i>	

I01C - Electrode Ionomers and Interfaces

Approaches to Mitigate Electrochemical Ionomer Oxidation	3744
<i>Yu Seung Kim, Jihoon Lim, Jeffrey Michael Klein, Seung Geol Lee, Eun Joo Park, Sun Young Kang, Sandip Maurya, William Earl Mustain, Shannon W. Boettcher</i>	

Investigating Cathode Ionomer Content and Assembly Techniques for Anion Exchange Water Electrolysers	3745
<i>Laura Titheridge, Aaron Timothy Marshall, Anouk Soisson, Christina Roth, Shailendra Kumar Sharma</i>	

Investigating Ionomer Interactions on the Catalytic Interface of Model Catalysts (NiO, IrO ₂)	3747
<i>Mai-Anh Ha, Oliver Leitner, Avital Isakov, Ross E Larsen, Emily K. Volk, Héctor González, Shaun M Alia</i>	

Coarse-Grained Molecular Dynamics Simulation on the Impact of the Primary Pores on the Distribution and Morphology of Ionomers within Catalyst Layers during the Drying Process	3748
<i>Sirui Wang, Yuting Guo, Ruoyu Liu, Sheng-Feng Huang, Takashi Tokumasu</i>	

Investigation on the Interaction of Catalyst and Ionomer in AEM Electrolysis	3750
<i>Ai-Lin Chan, Arielle L Clauser, Melissa E Kreider, Emily K. Volk, Josh D Sugar, Shaun M Alia</i>	

High Oxygen Permeability Ionomer Composed Entirely of Cyclic Monomers: Synthesis, Properties, and Application to Polymer Electrolyte Fuel Cell Cathodes	3752
<i>Takeshi Hirai, Satoru Hommura, Atsushi Watakabe, Tatsuya Miyajima, Suguru Nakayama, Kayoko Tamoto, Makoto Uchida</i>	

Structure-Property Relationships for Thin-Ilm Nafion: Model-Predictive Design of Low-Pt PEMFC Catalyst Layers	3754
<i>Steven C. DeCaluwe, Corey R. Randall</i>	

Fitting Scattering Profiles of Perfluorinated Sulfonic Acid Ionomer Dispersions.....	3755
<i>Eugene Jeong, Shawn Litster</i>	

Ionomer Impact on Oxygen Evolution Reaction Activity and Kinetics for Ir-Based Catalysts.....	3756
<i>Zhao Li, Xiaoping Wang, Nancy N. Kariuki, Jaehyung Park, Deborah J. Myers</i>	

Highly Gas Permeable Partially Fluorinated Aromatic Ionomers Containing Cyclohexyl Groups for Fuel Cell Cathode Binders.....	3757
<i>Yiyang Zou, Kenji Miyatake</i>	

I01C - Poster Session

Effects of Ionomer Film Thickness and Water Content on Oxygen Permeation Properties of PEFC Cathode Catalyst.....	3758
<i>Kengo Hikida, Hiroto Suzuki, Takashi Tokumasu</i>	

Transport Mechanism of Hydroxide Ions Focused on the Vehicle Mechanism Near the Cation Sites in Anion Exchange Membranes.....	3761
<i>Ryusei Ono, Hiroto Suzuki, Kenji Miyatake, Takashi Tokumasu</i>	
Synthesis and Evaluation of Silica Particles Grafted with Electrolyte Unit (VI)-Improvement of Polymer Introduction Rate	3763
<i>Yusuke Watabe, Masahiro Fujita, Yuko Takeoka, Masahiro Rikukawa</i>	
Synthesis and Evaluation of Polyphenylene-Based Copolymers with Phosphonium Group (III) – Relationship between Copolymerization Ratio and Film Formability	3765
<i>Hayato Momosawa, Masahiro Fujita, Yuko Takeoka, Masahiro Rikukawa</i>	
Synthesis and Evaluation of Polyphenylene-Based Copolymers with Superacid Groups (IV)-Effect of Superacid Structure	3766
<i>Rio Takahashi, Masahiro Fujita, Yuko Takeoka, Masahiro Rikukawa</i>	
Designing Regio-Chemistry Controlled Ionomers for Enhanced Durability in Anion Exchange Membrane Water Electrolysis with a Focus on High Adhesion and Catalyst Anti-Poisoning.....	3768
<i>Hyeonjung Park, Youngkwon Kim, Gisu Doo, Changsoo Lee, Sechan Lee, Jongsu Seo, Jae Hun Lee, Young-Woo Choi, Sang-Kyung Kim, Hyunseok Cho, MinJoong Kim</i>	
Analysis of Transport Characteristics of Protons in Polymer Electrolyte Membranes in PEFC below Freezing Temperatures	3769
<i>Hiroki Nishizawa, Takuya Mabuchi, Takashi Tokumasu</i>	
Molecular Characterization of PFSA Ionomer Dispersions and Their Aggregated Structures	3771
<i>Jaeman J Shin</i>	
Coarse-Grained Molecular Dynamics Simulation of Ionomer-Mediated Carbon Cluster Bonding in Polymer Electrolyte Fuel Cell Catalyst Layers.....	3772
<i>Ruoyu Liu, Sirui Wang, Yuting Guo, Sheng-Feng Huang, Takashi Tokumasu</i>	
Highly Durable HT-PEMFC at 250°C Enabled By Self-Assembled Metal Phosphate Network Polymer Membrane	3774
<i>So Young Lee, JongGeun Seong, Gyeongseok Gwak, Sonjong Hwang, Katie Heeyum Lim, Hyoung-Juhn Kim, Suk-Woo Nam</i>	
A Non-Ideal Transport Model of Bipolar Membranes to Understand and Manage Multi-Ion Interactions in Water Electrolysis	3775
<i>Francisco Javier Ubongon Galang, Justin C. Bui, Priyamvada Goyal, Adam Z. Weber, Alexis T. Bell</i>	
The Impact of Relative Humidity on Electrode Ionomer Deposition for Hydroxide Exchange Membrane Electrolyzers.....	3776
<i>Abigayle Polsky</i>	
Cyclohexanol Proportion Influence on Catalyst Paste Rheological Properties and Screen-Printed Hydrogen PEMFC Electrochemical Performance.....	3778
<i>Kassim Jose Mendoza Pena, Takeshi Fukuda, Ryuki Tsuji, Maito Tanabe, Hiroshi Satone, Seigo Ito</i>	
Additives for Improving Chemical Stability of Polymer Electrolyte Membranes.....	3779
<i>Dongwon Shin, Abdul Kodir, Hyejin Lee, Byungchan Bae</i>	
Mechanical Durability of Water Electrolysis Membranes in a Liquid Environment Under Differential Pressure Mode.....	3780
<i>Eijun Ueda, Hideyuki Okada, Ryogo Kato</i>	

Development of a Composite Electrolyte Membrane with Chain-like Microstructure CeO ₂ -Based Oxide for Achieving High Durability and Performance in Polymer Electrolyte Fuel Cells.....	3781
<i>Kazuki Shudo, Ryuji Ohno, Makoto Uchida, Katsuyoshi Kakinuma</i>	
Unraveling Chemical Degradation in PEM Water Electrolyzers: Factors, Stressors, and Membrane-Level Solutions for Enhanced System Lifespan	3783
<i>Yingying Chen, Erin Setzler, Brian Barrett, Alexander Agapov</i>	
Highly Oxidation-Resistant Anion Exchange Membrane By Immobilized Radical Scavenger	3784
<i>Wenjuan Shi, Junhua Wang, Lan Wang, Keda Hu, Hui Duan, Catherine M. Weiss, Yushan Yan</i>	
Advanced Free Radical Scavenger for Proton Exchange Membrane Fuel Cells	3786
<i>Liang Wang, Hongfei Jia</i>	
Mechanically Tough Polymer Electrolyte Membranes Prepared By Radiation-Induced Graft Polymerization of Poly (ether ether ketone) Film	3787
<i>Shin Hasegawa, Kimio Yoshimura, Akihiro Hiroki, Yue Zhao, Yasunari Maekawa</i>	
Dipole Polarization-Induced High Proton Conduction and Aligned Molecular Structures of Nafion Blend Membranes with PVDF and PVDF-Trfe for Enhanced Pemfcs.....	3791
<i>Iksu Lee, Seungbin Kim, Dongjun Lee, Daeun Kim, Insung Bae</i>	
Sulfonated Poly(phenylene sulfone)s with High Ion Exchange Capacity	3793
<i>Jedeok Kim</i>	
Preparation and evaluation of composite membranes using cellulose nanofibers (CNF).....	3795
<i>Tatsuki Yasuda, Katsuyoshi Kakinuma</i>	
Development of a Superior Anion Exchange Membrane with Hyperbranched Polymer for Anion Exchange Membrane Water Electrolysis	3796
<i>Tamilazhagan Palanivel, Shankara Kalanur, Vinodh Rajangam, Bruno Georges Pollet</i>	
Poly(2,6-dimethyl-1,4-phenylene oxide)-Based Anion Exchange Membranes Enhanced with 3D-Ionic Triptycene Additive for Water Electrolysis	3798
<i>Jae Hun Lee, Seong jin An, Won Seok Chi, Ji Eun Kim, Hyeonjung Park, Sang-Kyung Kim</i>	
Development, Evaluation and Characterization of Hydrophilic Oxide/Polymer Composite Membranes for Polymer Electrolyte Fuel Cells Operating at Temperatures over 80°C	3799
<i>Ryuji Ohno, Kazuki Shudo, Katsuyoshi Kakinuma</i>	
Development of High Proton Conductive Membrane Using the Nano Cellulose Fibers for Polymer Electrolyte Fuel Cells	3801
<i>Takashi Katoh, Yoshimasa Matsuo, Akito Masuhara</i>	
Thin Reinforced Composite Membranes for Efficient Anion-Exchange Membrane Water Electrolysis	3802
<i>Hyeon-Bee Song, Ji-Hyeon Lee, Moon-Sung Kang</i>	
Cellulose-Based Crosslinked and Reinforced Sulfonated Poly(ether ether ketone) Membranes for Robust Proton Exchange Membranes in Fuel Cells	3803
<i>Dongjun Lee, Daeun Kim, Seungbin Kim, Insung Bae</i>	
Ion-Conducting Polymers with Intermolecularly Interacting Groups for Improved Cell Performance and Durability of Anion Exchange Membrane Water Electrolysis	3804
<i>Kyungwhan Min, Tae-Hyun Kim</i>	

I01C - Membrane Development: Fuel Cells

Molecular Engineering of Ion-Conducting Polymer Membranes: Synthesis, Properties, and Applications.....	3805
<i>Chulsung Bae</i>	
Ionomer Circularity: Current State of the Art, Advancements, and Challenges	3806
<i>Benjamin Gould, Blake Karawan, Andrew M Park, Franchessa Sayler</i>	
How Do Hydrocarbon (HC)-Based Membrane Electrode Assemblies (MEAs) Compare with Perfluorosulfonic Acid (PFSA)-MEAs Above 80 °C?	3807
<i>Martina Butori, Marcus Liljenberg, Björn Eriksson, Carina Lagergren, Göran Lindbergh, Rakel Wreland Lindström</i>	
Advancements in the Fabrication of Reinforced Proton Exchange Membranes and Exploration of Next-Generation Membrane Technologies	3809
<i>Yusuke Chiba, Shintaro Hayabe, William Salem, Toshiaki Sawada</i>	
A New Archetype: Opportunities of Pemion® Fully Hydrocarbon Ionomer and Composite Membranes in Proton-Exchange Membrane Fuel Cell Applications.....	3810
<i>Benjamin Britton</i>	
Phosphoric Acid-Doped Ion-Pair High-Temperature Proton Exchange Membranes Based on Polyphenylene Copolymer	3811
<i>Heemin Park, Youngkwang Kim, Yu Seung Kim, Chulsung Bae</i>	
Overcoming Challenges in Ion-Pair Membrane Technology: Advancements in Fuel Cells and Electrochemical Hydrogen Pumps	3812
<i>Manjeet Chhetri, Youngkwang Kim, Sandip Maurya, Hyounmyung Park, Emory S. De Castro, Yu Seung Kim</i>	
Benchmarking Composite Fuel Cell Membranes	3813
<i>Douglas I. Kushner, Ahmet Kusoglu, Grace Y. Lau</i>	
Graphene-Based Electrolyte Membranes with Low Hydrogen Permeability	3814
<i>Stephen Matthew Lyth, Thomas Bayer, Kazunari Sasaki, Enes Muhammet CAN, Benjamin Cuning, Masamichi Nishihara, Albert Mufundirwa</i>	

ECS Edward Goodrich Acheson Award Address

(ECS Edward Goodrich Acheson Award) Improvements in Anion Exchange Membrane Water Electrolysis Materials and Devices.....	3816
<i>Paul Kohl, Habin Park, Hazel Gerber, W. Henry Freer, Xiaoxuan Yang, Chenyu Li</i>	

I01C - Membrane Development & Characterization

Controlling Flooding and Parameter Sensitivity in an Anion Exchange Membrane Fuel Cell Using a Triblock Copolymer Membrane and Matched Ionomers	3817
<i>Andrew M. Herring, Srikanth Ponnada, Mei-Chen Kuo</i>	
High-Temperature Anion-Exchange Membrane Fuel Cells	3818
<i>Dario R Dekel</i>	

Elucidating Hydroxide Transport through Utilization of Asymmetric Feed System: Advancing Towards Pure Water and Vapor Anion-Exchange-Membrane Electrolysis.....	3820
<i>Prattakorn Metem, John G. Petrovick, Björn Eriksson, Göran Lindbergh</i>	
Characterization of Water Flux across Anion-Exchange Membranes	3822
<i>Catherine M. Weiss, Yushan Yan, Adam Z. Weber</i>	
High-Performance Bipolar Membranes for Direct Seawater Electrolysis.....	3823
<i>Hyeon-Bee Song, Moon-Sung Kang</i>	
Investigation of Water Dissociation Catalyst Layer Configurations for Bipolar Membrane Water Electrolyzers.....	3824
<i>Alanna M. Gado, Stoyan Bliznakov, Leonard J. Bonville, Radenka Maric</i>	
Divergent Synthesis of Bipolar Membranes Combining Strong Interfacial Adhesion and High-Rate Capability	3826
<i>Yi-Lin Kao, Lihaokun Chen, Shannon Boettcher, David Aili</i>	

I01C - Membrane Durability: Degradation and Diagnostics

Poly(fluorene)-Based Anion Exchange Membranes with an Interstitial Alkyl Chain in Polymer Backbone and Conducting Groups for Water Electrolysis	3828
<i>Taiho Park</i>	
Realizing Superior Durability of Water Electrolyzer Using Anion Exchange Membrane with an Interstitial Alkyl Chain : From a Single Cell to Large-Sized 1-Cell Stack	3829
<i>Haeryang Lim, Jae-Yeop Jeong, Sung Mook Choi, Taiho Park</i>	
Load Cycling Durability Protocols for Predictive MEA Lifetime Modeling for Long-Life PEMFC Applications.....	3831
<i>Frank D. Coms, Ashley LaLonde, Wenbin Gu, Joel Tylene</i>	
Hydrocarbon Fuel Cell Membranes: Do We Need New Chemical Durability Testing Protocols?.....	3833
<i>Zongyi Han, Tamas Nemeth, Michael Yandrasits, Hong Ren, William Bangay, Lorenz Gubler</i>	
Chemical and Mechanical Degradation of ePTFE-Reinforced Perfluorinated Sulfonic Acid Membranes in PEMFCs	3835
<i>Erigen Bakangura, Sarah Garner, Michael Chen, Ethan Brown, Josh Dong, Erik Kjeang</i>	
Performance Improvement of Chemically Durable PVA Gas Barrier PEM by Optimizing the Interlayer Thickness	3837
<i>Zulfi Gautama, Yang I, Stephen Matthew Lyth, Kazunari Sasaki, Masamichi Nishihara</i>	
Assessing the Unique Degradation Mechanisms of Hydrocarbon-Based Membranes in Conventional MEA Design Using 4D in-Situ X-Ray Computed Tomography	3839
<i>Aniket Kumar, Seyed Hesam Mirfarsi, Michael Adamski, Scot Jones, Scott McDermid, Benjamin Britton, Erik Kjeang</i>	
Effect of Contamination in the Carbon Catalyst Support on Chemical Degradation of Polymer Electrolyte Membranes in Fuel Cells	3843
<i>Shogo Nakamura, Kojiro Sanami, Zulfi Gautama, Zhiyun Noda, Masahiro Yasutake, Stephen M Lyth, Masamichi Nishihara, Kazunari Sasaki</i>	
Development of Highly Durable Anion Exchange Membrane and the Utility for Aemwe Cells	3847
<i>Naoki Yanagibashi, Shinya Nagatsuka, Yuki Ozawa, Megumi Nakano, Hiroyuki Sato, Keiji Nishikwa, Kodai Nagashima, Katsuya Uchida, Shoji Miyamishi, Takeo Yamaguchi</i>	

Mechanical Stability of Membranes in PEMWE	3849
<i>Julian Kink, Martin Ise, Michel Suermann, Boris Bensmann, Philipp Junker, Richard Hanke-Rauschenbach</i>	

I01C - Membrane Durability: Additives

Impact of CeO ₂ Nanofiller on the Physicochemical Properties, Conductivity Mechanism and Tolerance to Radical-Induced Degradation of Hybrid Inorganic-Organic Proton-Exchange Membranes Based on an Aquivion™ Matrix	3851
<i>Vito Di Noto, Federica Silvestri, Enrico Negro, Ketì Vezzù, Gioele Pagot</i>	
Transport Properties and Morphology of Cerium Oxide Composite Sulfonated(Poly Arylene Ether Sulfone) Membranes for Application in Heavy-Duty Fuel Cell Vehicles.....	3853
<i>Pranathi Gangavarapu, Shane Foister, Gabriel Goenaga, Thomas A. Zawodzinski</i>	
Simulation of in-Situ Chemical Membrane Degradation in the Presence of Fe and Ce Cations in Reinforced Fuel Cell Membranes.....	3854
<i>Nitish Kumar, Olivia C Lowe, Amin Bahrami, Yixuan Chen, Francesco P Orfino, Monica Dutta, Michael Lauritzen, Erin Setzler, Alexander Agapov, Erik Kjeang</i>	
Porphyrin-Based Antioxidant for Proton Exchange Membrane Fuel Cells.....	3857
<i>Tym de Wild, Lorenz Gubler, Thomas Nauser, Tamas Nemeth</i>	
Improving the Durability of Perfluorosulfonic Acid Membrane in Pemfcs Using Cerium-Based Radical Scavengers Including Organic Ligand Group	3859
<i>Byeol-Nim Lee, Hyungkyu Cho, Bonghyun Kim, Jaemuk Lim, Md Abu Zafar Al Munsur, Tae-Hoon Lim, Hyoung-Juhn Kim</i>	
Evaluating Effects of Cerium Concentration and Water Content on Diffusivity of Cerium Ions in PEFC Using Molecular Dynamics Simulations	3861
<i>Hiroto Suzuki, Takashi Tokumasu</i>	
Chemical Durability Enhancement of Gas Barrier Cellulose Nanocrystal Electrolyte Membranes.....	3864
<i>Masamichi Nishihara, Yang I, Zulfi Gautama, Stephen Matthew Lyth, Kazunari Sasaki</i>	
Understanding the Mechanism of Chemical Durability Enhancement through Modeling of Electrolyte Membranes with Improved Oxygen Barriers.....	3866
<i>Norihiro Fukaya, Takahisa Suzuki, Zulfi Gautama, Kazunari Sasaki, Masamichi Nishihara</i>	

I01D-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - FUEL CELL ELECTRODES, MEAS AND DIAGNOSTICS

I01D - Digital Only Presentations

(Digital Presentation) The Influence of Pore Geometry on Water Transport in the Gas Diffusion Layer of PEM Fuel Cells.....	3868
<i>Alexandru Herescu</i>	
(Digital Presentation) In-Situ Quantification of Individual Electrode Polarization and Depth Validation of the Distribution of Relaxation Times Methods Feasibility in PEM Fuel Cell	3869
<i>Lu Li</i>	

I01D - Modeling 1

(Invited) Mathematical Modeling of Electrochemical Cells: Promises, Problems, and Progress	3870
<i>Shidong Zhang, Steffen Hess, Thomas Kadyk, Steven B. Beale</i>	
Interpretation of PEMFC Impedance Response Using Continuum Modeling.....	3872
<i>Arthur Dizon, Rangachary Mukundan, Adam Z. Weber</i>	
Analysis of Entropy Generation Due to Heat and Mass Transfer in Porous Electrode of PEFC.....	3874
<i>Kosuke Nishida</i>	
Overvoltage Analysis of the Heterogeneous-Structure Effect of PEMFC Cathodes	3876
<i>Akihisa Tanaka, Gen Inoue, Keisuke Nagato</i>	
Understanding of Water Transport through Membrane Electrode Assembly in PEFC.....	3878
<i>Miho Kageyama, Kimiyo Nakamichi, Mikito Tominaga, Motoaki Kawase</i>	
Revisiting the Gas Diffusion Layer Water Inventory - from Micro to Macro Scale for Modern GDLs	3881
<i>Lukas Koenig, Sabina Schneider, Florian Wilhelm, Joachim Scholta, Markus Hölzle</i>	
Water Management in the Gas Diffusion Layer of PEM Fuel Cells Using a Surface Energy Minimization Model.....	3883
<i>Alexandru Herescu</i>	
Gas Diffusivity of PEM Fuel Cells Gas Diffusion Layer: Experimental Measurement and Modeling	3884
<i>Amin Mohammadi, Majid Bahrami, Claire McCague, Esmaeil Navaei Alvar, Kim Pascal</i>	
High current density operation of proton exchange membrane fuel cells at a constant relative humidity	3886
<i>Wei Liu, Zhaoda Zhong, Vincenzo Liso, Torsten Berning</i>	

I01D - Modeling 2

(Invited) Treated Perfluorosulfonic Acid Ionomer Layer with Dual Oxygen Transport Pathways for PEMFC Cathode Catalyst Layer	3887
<i>Trung Van Nguyen, Yuanchao Li</i>	
A Multiscale Modeling Approach to Investigate the Influence of Catalyst Layer Materials in Proton Exchange Membrane Fuel Cells.....	3889
<i>Thomas Jahnke, Konrad Gülicher, Jens Mitzel, Arnaud Morin</i>	
Multiscale Modeling of Oxygen Interfacial Transport Resistance in Proton Exchange Membrane Fuel Cell Catalyst Layer.....	3891
<i>Shiyi Wang, Adam Z. Weber</i>	
Investigation of the Influence of Catalyst Layer and Carbon Structure for Cell Performance Using Reaction and Mass Transport Simulation of PEFC	3892
<i>Atsushi Yamamoto, Gen Inoue</i>	
Tafel Slope Estimation of Electronic Resistance Laden Catalyst Layer in PEMFC Using Polarization Curve Correction Methodology.....	3894
<i>Yadul Sethi, Yan-Sheng Li, BharatKumar Suthar</i>	

A platinum degradation reaction model for the high-speed computation in the integrated fuel cell system simulator and its validation by the accelerated stress test data of the commercial fuel cells.....	3896
<i>Shigeki Hasegawa, Sanghong Kim, Miho Kageyama, Motoaki Kawase</i>	
An empirical carbon degradation reaction model for the high-speed computation in an integrated fuel cell system simulator and its validation by the accelerated stress test data of the commercial fuel cells	3898
<i>Shigeki Hasegawa, Sanghong Kim, Miho Kageyama, Motoaki Kawase</i>	
Modeling Analysis of the Impact of Platinum Oxides and Cerium Ion Migration on PEMFC Performance and Degradation Under a Realistic Driving Cycle	3901
<i>Francesco Verducci, Amedeo Grimaldi, Elena Colombo, Andrea Casalegno, Andrea Baricci</i>	
Modeling The Hydrogen Crossover Through Membrane With And Without Catalyst Layers.....	3903
<i>Beste Balci Polat, Kimiyo Nakamichi, Yulei Ma, Miho Kageyama, Beste Polat</i>	
Regulating Assembly of Porous Electrode Catalyst Layers	3906
<i>Harsh Srivastav, Clayton J. Radke, Adam Z. Weber</i>	
Autonomous Exploration of Catalyst Layer Drying Process of PEMFC	3907
<i>Keisuke Nagato, Hirotaka Oya, Akihisa Tanaka, Gen Inoue, Takuya Tsujiguchi</i>	

I01D - Poster Session

Quantifying Individual Electrode Polarization and Elucidating Interactive Phenomena in PEM Fuel Cells.....	3909
<i>Lulu Li, Yudong Wang, Nengneng Xu, Xiao-Dong Zhou</i>	
Effect of Post-Heat Treatment of Catalysts Under Various Gas Conditions on the Microstructure of Catalysts Ink and Electrode for PEMFC	3910
<i>Sungmin KIM, Yun Sik Kang, Iksung Lim, Eunjik Lee, Seunghee Woo, Seok-Hee Park, Gu-Gon Park, Sung-Dae Yim</i>	
Enhancement of Liquid Water and Oxygen Transport By Partially Hydrophilic Mpls in a PEFC.....	3912
<i>Yuya Tanaka, Yusuke Aoyama, Suguru Uemura, Yutaka Tabe</i>	
Engineering Anode Catalyst Supports for Enhancing Anode Reversal Tolerance in Proton Exchange Membrane Fuel Cells	3914
<i>Zheng Li, Tianshou Zhao, Lin Zeng</i>	
High Performance of Anion Exchange Membrane Fuel Cells By Introducing Hydrophobic Carbon Nanotube Diffusion Layer.....	3915
<i>Zijie Zhang, Lin Zeng</i>	
Utilizing Distribution of Relaxation Times Analysis for Water Content Management in Anion Exchange Membrane Fuel Cells.....	3916
<i>Huang Haodong, Tianshou Zhao, Lin Zeng</i>	
2-, and 3-Dimensional Monitoring of the Oxygen Partial Pressure within a Polymer Electrolyte Fuel Cell during Power Generation at Temperatures Higher Than 80 ° C.....	3917
<i>Christopher Leon Schreiber, Anna Kapulwa, Junji Inukai</i>	
Evaluation of Degradation Mechanisms of Polymer Electrolyte Fuel Cell Using DEM Simulation	3919
<i>Kaisei Okamura, Yuki Saito, Magnus So, Agnesia Permatasari, Takeru Yano, Gen Inoue</i>	

Evaluation of Reaction and Mass Transport Properties of Fuel Cell Catalyst Layers	3921
<i>Ayako Kondo, Yuki Saito, Agnesia Permatasari, Keita Nakano, Takeru Yano, Gen Inoue</i>	
Electrochemical Characteristics of Polymer Electrolyte Fuel Cells Using Pt-Ta-Co Electrocatalysts	3923
<i>Ryo Miyamoto, Kojiro Sanami, Takashi Suzuki, Kakeru Kubo, Masahiro Yasutake, Zhiyun Noda, Masamichi Nishihara, Junko Matsuda, Stephen Matthew Lyth, Kazunari Sasaki</i>	
Study on Water Distribution Depending on the Cathode Gas Diffusion Layer in PEFC.....	3926
<i>Ji-Hyun Oh, Yun Sik Kang, Seokhee Park, Seunghee Woo, Sung-Dae Yim</i>	
Durability Study of Membrane Electrode Assembly for Heavy-Duty Fuel Cells.....	3927
<i>Calita Maria Quesada, Xiaojing Wang, Siddharth Komini Babu, Ramchandra Gawas, Rangachary Mukundan, Rod L. Borup</i>	
Quantitative and Structural Analysis of Water Molecules in Anion Exchange Membrane Affecting the Fuel Cell Performance	3928
<i>Yuto Shirase, Junji Inukai, Koji Ohara, Tetsuro Nagai, Koji Yoshida, Kenji Miyatake</i>	
Real-Time Overpotential Evaluation and Control Method for PEMFC	3932
<i>Kohei Ohno, Yutaro Akimoto, Keiichi Okajima, Takanori Matsuki, Tomoharu Sakai, Masao Nagaura, Shin Kasai</i>	
Enhanced Low-Humidity Performance of Polymer Exchange Membrane Fuel Cells via Membrane Surface Engineering	3934
<i>Taehyo KIM</i>	
States and Distributions of Water inside a Membrane of a PEMFC Above 100°C at Constant Water Vapour Pressure Studied Using Raman Spectroscopy	3935
<i>Eric Selorm Dzramado, Solomon Wekesa Wakolo, Junji Inukai</i>	
Improvement of Mesoporous Carbon Supports for PEFC.....	3937
<i>Hiroki Doi, Yasir Arafat Hutapea, Akari Hayashi</i>	
Microstructural Design of PEFC Electrocatalyst Layer Using Mesoporous Carbon.....	3939
<i>Takashi Suzuki, Ryo Miyamoto, Masahiro Yasutake, Zhiyun Noda, Stephen Matthew Lyth, Masamichi Nishihara, Junko Matsuda, Kazunari Sasaki</i>	
Diagnosis Method of Failure in PEMFC Using Magnetic Fields	3941
<i>Masumi Shibata, Yutaro Akimoto, Keiichi Okajima, Takahiro Nishi, Shintaro Tanaka</i>	
Estimating Lifetime and Degradation Analysis of PEMFC Under Harsh Load Conditions for Eco-Friendly Off-Road Heavy Equipment	3943
<i>Junphil Hwang, Juyoung Oh, Hoyoung Ryu, Seunghyun Lee, Hee Su Kim</i>	

I01D - Catalyst Layer 1

(Invited) Advanced Analysis Technologies Developed in Nedo FC-Platform: From Innovative Material Developments to Solving Problems for Industrial Implementation	3944
<i>Hideto Imai, Yoshiharu Sakurai, Toshiya Otomo, Yoshiharu Uchimoto, Norimitsu Takeuchi</i>	
Next Generation Cathode Catalyst Layer Design with High Oxygen Permeable Ionomer – Benefits, Challenges, and Prospects for Heavy Duty Fuel Cell Applications.....	3946
<i>Devproshad K PAUL, Alan Young, Jingwei Hu, Julie Bellerive</i>	

Non-Fluorinated Sulfonated Poly(phenylene sulfone)-Based Polymers As Membranes and Binders in Proton Exchange Membrane Fuel Cells	3948
<i>Didem Yazili-Marini, Lionel Talley Fogang, Emanuele Marini, Giorgi Titvinidze, David Hicke, Joachim Bansmann, Ludwig Joerissen, Klaus-Dieter Kreuer</i>	
Protonic Vs. Gas Transport Resistance in Hydrocarbon-Based Catalyst Layers: A Trade-Off Analysis for PEM Fuel Cells Under Low Humidity Conditions	3950
<i>Hannes Liepold, Severin Vierrath, Andreas Münchinger</i>	
Manufacturing Novel Cathodes for Improved Fuel Cell Performance.....	3951
<i>Jabari Allen, Rangachary Mukundan, Tommy Rockward</i>	
A Novel Inorganic Proton Conductor for the Catalyst Layer of HT-PEMFC.....	3952
<i>Yunfeng Zhai, Jing Qi, Keith Bethune</i>	
Stem-Inspired Self-Contained Support for High-Power Proton-Exchange Membrane Fuel Cells.....	3954
<i>Ao Zhang, Ran Wang, Mohammed Bazaid, Yu-Han Joseph Tsai, Ting-Jung Hsiao, William A Goddard, Seung Soon Jang, Yu Huang</i>	
Influence of Operating Conditions on the Mass Activity Characteristics and Performance of Carbon-Free Pt Black Electrodes for PEFC	3955
<i>Keita Umedu, Iori Shimada, Mitsumasa Osada, Nobuhide Takahashi, Hiroshi Fukunaga</i>	
Impact of the Cathode Platinum Distribution on the Proton Transport Resistance Measurement in a PEMFC.....	3956
<i>Shirin Mehrazi, Bjorn Marcel Stuhmeier, Jonathan Braaten, Lei Cheng</i>	
Exploring the Impact of Cathode Ionomer Content on Alkaline Exchange Membrane Fuel Cells (AEMFCs) Using Inkjet Printing Technique	3957
<i>Jiafei Liu, Marc Secanell</i>	

I01D - Catalyst Layer 2

(Invited) Membrane-Electrode-Assembly Design Strategy for PA-Based High Temperature Proton Exchange Membrane Fuel Cells.....	3960
<i>Katie Heeyum Lim, So Young Lee, Yu Seung Kim</i>	
Electrospun Fuel Cell Cathode Catalyst Layers Under Low Humidity Conditions	3961
<i>Valentina Kallina, Mehtap Oezaslan, Frédéric Hasché</i>	
Connected Platinum-Based Catalysts and Carbon-Free Cathode Catalyst Layers for High- Performance PEFCs	3963
<i>Hidekazu Kuroki, Kento Sasaki, Qiancheng Liao, Takeo Yamaguchi</i>	
Development of Mesoporous Carbon Supports for PEFC.....	3965
<i>Yasir Arafat Hutapea, Hiroki Doi, Akari Hayashi</i>	
Investigation on Effect of Reducing Cathode Pt-Loading on Ohmic Overpotential in Catalyst Layer	3967
<i>Shota Katayama, Sho Makino, Shinsuke Matsuda, Masazumi Arao, Masashi Matsumoto, Hideto Imai, Takahiko Asaoka</i>	
Design of Pillar-Structured Electrode of Polymer Electrolyte Fuel Cells by Experiment and Simulation of Reaction and Mass Transport.....	3970
<i>Hideto Koshiba, Keisuke Nagato, Gen Inoue, Morio Tomizawa, Akihisa Tanaka, Masayuki Nakao</i>	

Patterned Hybrid Electrodes for Improved Fuel Cell Performance.....	3972
<i>Alper Can Ince, Wipula Liyanage, Tanvir Alam Arman, Ugur Pasaogullari, Siddharth Komini Babu, Jacob S. Spendelow</i>	

Bifunctional Oxygen Electrodes for PEM-Unitized Regenerative Fuel Cell Fabricated By Inkjet Printing.....	3973
<i>Luis Padilla, Jiafei Liu, Natalia Semagina, Marc Secanell</i>	

I01D - Catalyst Layer 3

From Catalyst Ink to PEM Fuel Cell Stack: First Full-Size Screen Printed Catalyst Layers Tested within a Generic Stack.....	3975
<i>Linda Ney, Dominic Herbst, Noah Wengenmeyr, Zohreh Kiaee, Neethu Philip Thombra, Frank Häußler, Ludwig Joerissen, Ulf Groos</i>	

Nafion Adsorption in Proton Exchange Membrane Catalyst Inks and Its Impact on Fuel Cell Performance.....	3977
<i>Siddharth Rajupet, Clayton J. Radke, Adam Z. Weber</i>	

The Impact of Support Carbon Properties on Ionomer Adsorption on Pt/C in Polymer Electrolyte Fuel Cell Catalyst Ink.....	3979
<i>Shuhei Yoshino, Masashi Harada, Naoki Hasegawa, Shuji Yomo, Akihiko Koiwai, Shunsuke Yamakawa, Ryosuke Jinnouchi</i>	

Dedensification of Perfluorinated Sulfonicacid (PFSA) Ionomer at the Platinum-Ionomer Interfaces via Modulating Chemical Structures	3981
<i>Chiyoung Jung, Won young Choi, Hyunguk Choi</i>	

Polymer Additives for the Fabrication of Defect-Free Direct Membrane Fuel Cell Catalyst Layer Coatings.....	3983
<i>Carlos Baez-Cotto, Isabelle Berry, Tim Van Cleve, Erica Young, Leiming Hu, Audrey K. Taylor, Sakshi Gautam, Fry Intia, Luis Perales, Rafiq Ahmed, Kevin Torres, K.C. Neyerlin</i>	

Understanding PEMFC Catalyst Ink Component Interactions Using Rheo-Impedance Measurement.....	3984
<i>Joy Marie Mora, Po-Ya Abel Chuang</i>	

X-Ray Scattering Characterization of Pt and PtCo Catalyst Inks and Electrodes for PEFC Cathodes.....	3985
<i>Jaehyung Park, Nancy N. Kariuki, Deborah J. Myers, Tim Van Cleve, Kenneth C. Neyerlin</i>	

Effect of Non-ionic Surfactant on Fe-N-C Catalyst Layers under HT-PEMFC Conditions	3986
<i>Tanja Zierdt, Jonas Knake, Julia Müller-Hülstede, Dana Schonvogel, Peter Wagner, Michael Wark, K. Andreas Friedrich</i>	

Fuel Cell Meas Made Using Electrode Inks with Pre-Formed Particle/Binder Fibers	3988
<i>Xiaozong Fan, Peter N. Pintauro, Ryszard Wycisk</i>	

I01D - Durability

(Invited) Durability Analysis of Meas with Reversal Tolerant Anodes Under Repeated Cell Reversal Conditions.....	3990
<i>Chi-Yeong Ahn, Yunho Kim, Jung-Hyung Park, Young-Shik Kim, Hyungwon Shim</i>	

Impact of Electrode Reversal Method on Electrode Degradation By High-Potential Environment in Polymer Electrolyte Membrane Fuel Cells.....	3991
<i>Pilsoo Choi, Kwang Sup Eom</i>	

Degradation Characteristics of Carbon-Supported Pt Via CO ₂ Detection during Startup/Shutdown of Polymer Electrolyte Membrane Fuel Cells	3993
<i>Seisho Ishikawa, Akihisa Tanaka, Hirotaka Oya, Hideto Koshiba, Tsubasa Yamashita, Yasunari Hanaki, Yusuke Mizuno, Masayuki Nakao, Keisuke Nagato</i>	
Accelerated Stress Testing (AST) Protocol Development for Heavy-Duty Fuel Cells	3995
<i>Xiaojing Wang, Calita Maria Quesada, Wipula Priya Rasika Liyanage, Haoran Yu, Jaehyung Park, Xiaohua Wang, Ramchandra Gawas, David A. Cullen, Deborah J. Myers, Rajesh Ahluwalia, Rangachary Mukundan, Rod L. Borup</i>	
Understanding Degradation of PtCo/C Catalysts in Polymer Electrolyte Fuel Cell Subjected to Two Accelerated Stress Tests	3997
<i>Iryna Zenyuk, Celine H. Chen, Matthew Coats, Florian Chabot, Yu Morimoto, Plamen Atanassov, Jonathan Braaten, Lei Cheng, Christina Johnston, Svitlana Pylypenko</i>	
Lifetime Prolongation of PtCo/C Cathode Catalysts for PEM Fuel Cells By Understanding Triggers for Pt Surface Area Loss and Co Dissolution in Voltage Cycling-Based Accelerated Stress Tests	3998
<i>Vivian Meier, Markus Achim Schilling, Timon Lazaridis, Hubert Andreas Gasteiger</i>	
Deconvoluting the through-Plane Degradation Mechanisms of the Pt-Co/C Cathode Catalyst Layer in Polymer Electrolyte Membrane Fuel Cells Under Load Cycling Conditions	4000
<i>Matthew Coats, Jayson Foster, Dylan Kuiken, Lei Cheng, Jonathan Braaten, Bjorn Marcel Stuhmeier, Ulrich Berner, Christina Johnston, Svitlana Pylypenko</i>	
In-Depth Analysis of the Impact of Ionomer Content on PEMFC Degradation By Combining Electrochemical Characterization Techniques and Transmission Line Modeling	4001
<i>Sebastian Raab, Po-Ya Abel Chuang, Andre Weber</i>	
Influence of Catalyst-Layer Defects on PEMFC Degradation	4003
<i>Hirotaka Oya, Akihisa Tanaka, Seisho Ishikawa, Tsubasa Yamashita, Yasunari Hanaki, Yusuke Mizuno, Masayuki Nakao, Keisuke Nagato</i>	
Exploring the Impact of Contamination and Ageing on Proton Exchange Membrane Fuel Cells: Insights from Transmission Electron Microscopy	4005
<i>Hossein Pourrahmani, Thomas B. Ferriday, Emad Oveisi, Jeremie Bettex, Jan Van herle</i>	

I01D - GDL/MPL

(Invited) Rethinking Diffusion Media for Polymer Electrolyte Fuel Cells: Replacing Fluoropolymers and Engineering Microstructures	4007
<i>Antoni Forner-Cuenca, Irene Sinisgalli, Meike Rijdsdijk, Rik van Gorp, Nicolaas Leth, Rémy Jacquemond, Rens Jan Horst</i>	
3D-Printed Gas Diffusion Layers for Enhanced Mass Transport in Polymer Electrolyte Fuel Cells	4009
<i>Tim Doerenkamp, Felix N. Buechi, Thomas J. Schmidt, Jens Eller</i>	
Effect of GDL Structure and Operating Conditions on PEMFC Performance and Liquid Water Removal	4011
<i>Shota Tateyama, Takahiro Suzuki, Mitsunori Nasu, Naoki Hirayama, Masahiro Watanabe, Makoto Uchida, Akihiro Iiyama, Shohji Tsushima</i>	
Highly Stable Gas Diffusion Layer with Anti-Flooding Characteristics Under High-Current Operation for the Polymer Electrolyte Fuel Cell Applications	4013
<i>Young Je Park, Won young Choi, Hyungkuk Choi, Seo won Choi, Hyeon E Cho, Kang Taek Lee, Chi-Young Jung</i>	

Water Permeability and Oxygen Transport Resistance of Hydrophilic and Hydrophobic Composite Microporous Layer Coated Gas Diffusion Layer	4015
<i>Peng Wang, Hironori Nakajima, Tatsumi Kitahara</i>	
Self-Supporting Microporous Layer for Polymer Electrolyte Fuel Cells Using Thin Carbon Mesh Gas Diffusion Layer	4017
<i>Makoto Yoshikawa, Zhiyun Noda, Masahiro Yasutake, Tatsumi Kitahara, Stephen Matthew Lyth, Junko Matsuda, Masamichi Nishihara, Kazunari Sasaki</i>	
On the Tuning of the MPL's Cracked Area for Optimizing the Performance of Polymer Electrolyte Fuel Cells.....	4019
<i>Bruno Galante, Juan Herranz, Felix N. Buechi, Raffaele Gilardi, Angelo Guglielmi, Begona Buades, Jens Eller</i>	
Defects in Membrane Electrode Assembly Environments: An Approach to Understanding Membrane Degradation Processes.....	4021
<i>Armando Pena-Duarte, Calita Maria Quesada, Xiaojing Wang, Daniel P Leonard, Rod L. Borup</i>	
Impact of Irregular Microporous Layer on Chemo-Mechanical Membrane Degradation Investigated by 4D in-Situ Fuel Cell Visualization.....	4023
<i>Yixuan Chen, Amin Bahrami, Nitish Kumar, Francesco P Orfino, Monica Dutta, Michael Lauritzen, Esmaeil Navaei Alvar, Erin Setzler, Alexander Agapov, Erik Kjeang</i>	
<u>I01D - Diagnostics</u>	
(Invited) How to Make Fuel Cells Cheaper and More Efficient.....	4026
<i>Quentin Meyer, Chuan Zhao</i>	
Spatially-Resolved Characterisation of Large-Format PEMFC Electrodes: Electrochemical Impedance, ECSA and O ₂ Concentration	4027
<i>Oliver Curnick, Mehran Afra, Alexander Thirkell, Quentin Meyer, Can Özyalcin, Joe Fleming, Simon Foster</i>	
Determination Method of Reaction Rate and Mass Transfer Parameters in Cathode Catalyst Layer in PEFC	4028
<i>Hikaru Ogawa, Miho Kageyama, Hisaaki Gyoten, Shuka Murakami, Motoaki Kawase</i>	
Fuel Cell Electrochemical Characterization before and after Break-in; Implications for End of Line Manufacturing Diagnostics	4032
<i>Ian James Garvie, Lazar Cvijovic, Gonzalo Alfonso Almeida Pazmiño, Amir Niroumand, Erik Kjeang</i>	
Method for Precise Oxygen Resistance Analysis in Polymer Electrolyte Membrane Fuel Cells Under Various Operating Conditions.....	4034
<i>Hyunsoo Chun, Youngseop Lee, Jiwoong Kim, Jung Hyo Chang, Jin Young Kim, Kyoungdoug Min</i>	
Impedance Based Comparison of PEMFC Cathode Catalyst Layer Materials.....	4035
<i>Kersten Schwab, Andre Weber, Emanuel Albert Heider, Markus Joos</i>	
Hydrogen Limiting Current Test Diagnostic Tool for Analyzing PEMFC Durability in Accelerated Stress Tests	4036
<i>Andrea Baricci, Andrea Casalegno, Elena Colombo, Amedeo Grimaldi, Daniele Mora</i>	

Effect of Formic Acid on Fuel Cell Performance for Automobile Applications.....	4037
<i>Yoshiyuki Matsuda, Takahiro Shimizu, Daichi Imamura</i>	

Cloud-Connected Labs of Future for Green Energy Materials.....	4039
<i>Kourosh Malek</i>	

I01D - Imaging

(Invited) In-Situ Liquid Water Visualization in PEFC and Its Application to Advanced Materials.....	4040
<i>Shuichiro Hirai, Keisuke Satoh, Katsunori Sakai, Hiroshi Naito, Takashi Sasabe</i>	

Recent Progress in Liquid Water Visualization of Polymer Electrolyte Fuel Cells Elucidated By Synchrotron X-Ray and Pulsed Neutron Sources.....	4042
<i>Wataru Yoshimune, Yuki Higuchi, Akihiko Kato, Fangzhou Song, Shogo Hibi, Satoshi Yamaguchi, Yoshihiro Matsumoto, Hiroto Hayashida, Takenao Shinohara, Satoru Kato</i>	

Effects of Selected Fuel Cell Operating Conditions on the Distribution of Liquid Water in the Cathode Gas Diffusion Layer.....	4044
<i>John Alexander H MacDonald, Jonathan Halter, Fabusuyi Akindele Aroge, Olivia C Lowe, Francesco P Orfino, Esmaeil Navaei Alvar, Monica Dutta, Erik Kjeang</i>	

Effects of Gravity on Water Transport in PEM Fuel Cells Via Synchrotron X-Ray Radiography	4046
<i>Eric Alexander Chadwick, Volker Paul Schulz, Aimy Bazylak</i>	

Nanoscale in-Situ Effects of Humidity on Proton Exchange Membrane Fuel Cell Catalyst Layers Using Scanning Transmission X-Ray Microscopy	4048
<i>Harsharaj Birendrasingh Parmar, Tess Seip, Jian Wang, Adam Hitchcock, Aimy Bazylak</i>	

燃料電池の膨張触媒層の3次元構造のクライオSTEMトモグラフィー	4050
<i>Junichi Shimanuki, Masazumi Arao, Shota Katayama, Hideto Imai, Yoshiko Ito, Yuri Nishino, Atsuo Miyazawa</i>	

Combining Microscopy and Synchrotron X-Ray Diagnostics to Study Catalyst Degradation in PEFCs.....	4052
<i>Albert Mufundirwa, Hiroyuki Iwamoto, Yumi Fukunaga, Tomokazu Yamamoto, Satoru Yoshioka, Yasukazu Murakami, Takeharu Sugiyama, Noboru Ohta, Hiroshi Sekiguchi, Kensuke Tono</i>	

3D Investigation of Pt-Based Nanocatalyst Durability on High Surface Area Carbon by Automated Electron Tomography	4054
<i>Lynda Amichi, Haoran Yu, Amirkoushyar Ziabari, Obaidullah Rahman, David Arregui-Mena, Leiming Hu, Kenneth C. Neyerlin, David A. Cullen</i>	

Time-Resolved X-Ray Fluorescence Analysis of Cerium Ion Transport in Polymer Electrolyte Membranes Under Humidity Gradient	4056
<i>Kaoruko Morita, Rukiya Hanahara, Yuta Ishiguro, Aika Takezawa, Naoki Kitano, Akira Kuwaki, Akihiko Kato, Satoshi Yamaguchi, Kazuma Shinozaki, Yuki Orikasa</i>	

Deep Learning to Automate Imaging-Based Analyses of Polymer Electrolyte Fuel Cells.....	4058
<i>André Colliard Granero, Michael Eikerling, Kourosh Malek, Mohammad J. Eslamibidgoli</i>	

I01D - Flow Field

Spatially Resolved Analysis of the Influence of Three-Dimensional Flow Field Structures on Loss Processes in PEMFCs.....	4059
<i>Philipp Oppek, Sebastian Raab, Andre Weber</i>	
Prospects in the Design of Porous Vs. Rib/Channel Flow Fields for Polymer Electrolyte Membrane Fuel Cells.....	4060
<i>Pablo A. Garcia-Salaberri, Andrea Perego, Iryna V. Zenyuk</i>	
Balancing Performance and Pressure Drop in Ni Foam Flow Fields Via Embedded Channel Design	4062
<i>Eric Alexander Chadwick, Axel Briand, Tess Seip, Bruno Auvity, Aimy Bazylak, Volker Paul Schulz</i>	
Establishing Foundational Structure-Performance Correlations for 3D Graphene Foams in PEMFCs	4063
<i>Alexander Brown, Yannick Garsany, Richard Stroman</i>	
Novel Design of Corrugated Columns for Water Management in a Proton Exchange Membrane Fuel Cell	4064
<i>Hasan Shahzad, Pablo A. Garcia-Salaberri, Luis Duque, Ester Diaz-Álvarez, M. Antonia Folgado, Antonio M Chaparro</i>	
Relative Humidity Distribution along the Gas Flow Channel in a Wide Temperature Range.....	4065
<i>Beste Balci Polat, Kimiyo Nakamichi, Yulei Ma, Miho Kageyama, Motoaki Kawase</i>	
Influence of the Clamping Force and the Formation of Liquid Water Along the Channel on the Local Diffusion Processes in PEMFCs.....	4068
<i>Yannick Fischer, Philipp Oppek, Po-Ya Abel Chuang, Andre Weber</i>	
Water Transport, Diffusion and Drag in Intermediate Temperature Proton Exchange Fuel Cells	4069
<i>Nikola Nikolic, Goran Lindbergh, Björn Eriksson, Rakel Wreland Lindström, Carina Lagergren</i>	

I01E-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - ELECTROLYZER ELECTRODES, MEAS AND DIAGNOSTICS

I01E - ELX Characterization

Characterisation by Advanced Experimental Methods of Components in PEM Fuel Cells and PEM Electrolyses	4070
<i>Anna Martinelli, Dylan Schulz</i>	
Magnetic Field Analysis for State of Health Monitoring of PEM Electrolyzer Stacks	4071
<i>Sistan Rasuli, Kjell Buehler, Kerstin Witte-Bodnar, Volker Naumann, Stephan Schoenfelder, Klemens Ilse</i>	
New Online ICP-MS Measurement Method for Studying Active Catalyst Dissolution in a Single-Cell PEM Water Electrolysis Setup.....	4073
<i>Torben Gottschalk, Christopher Moß, Patrick Trinke, Boris Bensmann, Richard Hanke-Rauschenbach</i>	

Unraveling a Novel Degradation Mechanism in Industrial Scale PEM Electrolytic Cells by Multimodal Analysis Based on X-Ray Computed Tomography.....	4075
<i>Christine Heume, Krzysztof Dzieciol, Niklas Wolf, Leander Treutlein, Ali Javed, Jean-Pierre Poc, Lukas Rein, Yannik Rutsch, Yasemin Tasdemir, Tobias Mehlkoph, Shibabrata Basak, Julian Borowec, Sebastian Speer, Sven Jovanovic, Yannik Danner, Violeta Karyofylli, André Karl, Eva Jodat, Rüdiger-A Eichel</i>	
Synchrotron Radiation Study of Fe-N-C Catalysts for Dissemination of Fuel Cells.....	4077
<i>Genki Nakamura, Hirohisa Tanaka</i>	
(Invited) Characterization of Catalyst Layers in Polymer Electrolyte Membrane Electrolyzers.....	4080
<i>Genevieve Stelmachovich, Lonneke van Eijk, Jayson Foster, Svitlana Pylypenko</i>	
Analytical Electron Microscopy Investigation of PEM Electrolyzer Degradation Mechanisms Under Different Durability Test Protocols.....	4081
<i>Haoran Yu, Elliot Padgett, Kui Li, David A. Cullen, Shaun M Alia, Siddharth Komini Babu, Rangachary Mukundan</i>	
Elucidating 3D Water Distributions in PEM Water Electrolyzers Via Neutron Imaging.....	4082
<i>Tess Seip, Jongmin Lee, Lijun Zhu, Salvatore Ranieri, Eric Alexander Chadwick, Kevin Krause, Lukas Helfen, Bruno Auvity, Stéphane Chevalier, Aimy Bazylak</i>	
Operando Neutron Radiography/Tomography Studies to Characterize Gas Evolution and Two-Phase Flow System in Alkaline Water Electrolyzer.....	4083
<i>Michael Liebert, Tobias Arlt, Henning Markötter, Nikolay Kardjilov, Alessandro Tengattini, Ingo Manke, Ludwig Joerissen</i>	
Operando Neutron Imaging for Improved Understanding of Gas Distributions in an Alkaline Electrolyzer	4085
<i>Marcus Kragh-Schwarz, Anders Bentien, Jonas Okkels Birk, Mathias K. Huss-Hansen, Soffi Ester Sola Olesen, Sara Hjelme, Andreas Nørgaard Jacobsen, Pourya Forooghi, Lars Pleth Nielsen</i>	
Advanced Durability Evaluation of Proton Exchange Membrane Water Electrolyzer Integrating Solar Variability for Green Hydrogen Production	4087
<i>Bora SEO, Anastasiia Voronova</i>	
<u>101E - ELX Diagnostics</u>	
A “Ship-in-a-Bottle” Method for Hydrogen Crossover Mitigation in PEM Water Electrolyzers.....	4088
<i>Fan Yang, Qiang Sun, Cortney Mittelsteadt</i>	
Chronopotentiometric Methodology to Characterize the Electrochemically Active Surface Area in PEM Water Electrolysis Cells and Stacks	4089
<i>Franziska Wilfinger, Maximilian Möckl, Carina Schramm, Matthias Felix Ernst, Matthias Kornherr, Hubert Andreas Gasteiger</i>	
Comparison between Iridium Oxide- and Iridium Metal-Based Anode Catalysts during Intermittent Operation in PEM Water Electrolyzers	4092
<i>Carina Schramm, Matthias Kornherr, Michele Piana, Matthias Felix Ernst, Hubert Andreas Gasteiger</i>	
H ₂ Production Efficiency in PEM Water Electrolysis Cells – Evaluating the Effect of the Electrode-Electrolyte Interface on O ₂ and H ₂ Crossover	4095
<i>Anna T.S. Freiberg, Simon Thiele</i>	

Advanced Hydrogen Crossover Characterization: Closing the Mole Balance through Coupled Anode and Cathode Exhaust Analysis.....	4097
<i>Jacob A Wrubel, Ricardo Filipe Paz Moldes Duarte, Elias D Pomeroy, Andrea Kowal, Guido Bender</i>	
Quantifying H ₂ Crossover in PEM Water Electrolyzers Operating at High Differential Pressure	4099
<i>Ramchandra Gawas, Guanzhi Wang, Paul E. Rudnicki, Arthur Dizon, Douglas I. Kushner, Xiong Peng, Rangachary Mukundan</i>	
Reversible Performance Dynamics in PEM Water Electrolysis: An Electrochemical Study	4100
<i>Alexander Rex, Tobias Krenz, Patrick Trinke, Lennard Helmers, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
Limiting Current Investigations for PEM Water Electrolysis in the Presence of Metal Cations	4102
<i>Maurice Friedrichs-Schucht, Frédéric Hasché, Mehtap Oezaslan</i>	
Exploring Reference Electrodes in Polymer Electrolyte Membrane Water Electrolysis: Analysis of Design Challenges and Review of Characterization Results for Oxygen and Hydrogen Evolution Reaction Kinetics	4104
<i>Lena Viviane Buehre, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
Deciphering Anion Exchange Membrane Water Electrolysis: A Distribution of Relaxation Times Approach	4106
<i>Matthias Ranz, Bianca Grabner, Bernhard Schweighofer, Hannes Wegleiter, Alexander Trattner</i>	
Electrochemical Impedance Spectra Measurements and Analysis of Polymer Electrolyte Membrane Electrolysis on Short Stack.....	4108
<i>Michael Liebert, Ludwig Joerissen, Joachim Scholta</i>	

I01E - Poster Session

Evaluation of Corrosion Resistance of Au-Plated Titanium Bipolar Plates for Polymer Electrolyte Membrane Water Electrolysis.....	4110
<i>Ayumu Minoura, Masanobu Kumagai, Hitoshi Yashiro, Masatsugu Murase</i>	
Niobium Interlayer Coating: Is it a Practical Approach to Tune the Protective Pt Loading in PEM Water Electrolyzers?.....	4112
<i>Hossein Kalhori, Mohammadhossein Johar, Leila Moradizadeh, Samaneh Shahgaldi</i>	
Hierarchical Electrode Design for Highly Efficient and Stable Anion Exchange Membrane Water Electrolyzers.....	4114
<i>Rito Yanagi, Adam Z. Weber, Xiong Peng</i>	
Investigation of the Effect of Initial Anode Structures on the Durability of Water Electrolysis Cells.....	4115
<i>Taisei Hoshii, Yasir Arafat Hutapea, Kohei Ito, Akari Hayashi</i>	
Development of Mesoporous Carbon Fibers As Catalyst Supports for PEFC.....	4117
<i>Yuma Morinaka, Yasir Arafat Hutapea, Akari Hayashi</i>	
Catalyst-Integrated Porous Transport Layer for Polymer Electrolyte Membrane Water Electrolysis	4119
<i>Masahiro Yasutake, Zhiyun Noda, Junko Matsuda, Stephen Matthew Lyth, Masamichi Nishihara, Kazunari Sasaki</i>	

Atomic Layer Deposition of SnO ₂ Thin Films As Anticorrosion Layers in Proton Exchange Membrane Water Electrolysers (PEMWE).....	4121
<i>Loïc Assaud, Haitham Maslouh, Mikhael Bechelany</i>	
Analysis of Two-Phase Flow within Porous Structures of Water Electrolysis Cells and Structural Correlation Evaluation.....	4122
<i>Shinnosuke Omoto, Takeru Yano, Gen Inoue</i>	
Fe-N-C Catalysts Surpassing Pt Catalysts in ORR for Fuel Cells.....	4124
<i>Kohei Miwa, Hirohisa Tanaka</i>	
Relationship between Hydrophilicity of Cathode Porous Flow Field and Current Efficiency for Toluene Direct Electro-Hydrogenation Cells	4127
<i>Rio Shinohara, Kaoru Ikegami, Yoshiyuki Kuroda, Hirotaka Mori, Yuka Kanada, Junya Yamashita, Shigenori Mitsushima</i>	
Nanostructured NiMoO ₄ as an Efficient Electrocatalyst for Oxygen Evolution Reaction.....	4130
<i>Vinodh Rajangam, Shankara Kalanur, Bruno Georges Pollet</i>	
Performance and Durability Evaluation of Anion Exchange Membrane Water Electrolysis Cells Using Non-Precious Metal Catalysts and a Hydrocarbon-Based Electrolyte.....	4131
<i>Soichiro Natori, Sayaka Takahashi, Toshio Iwataki, Miho Yamaguchi, Takayuki Asakawa, Guoyu Shi, Katsuyoshi Kakinuma, Kenji Miyatake, Makoto Uchida</i>	
Nickel–Iron Oxyhydroxide Catalyst-Integrated Unified Electrode for High-Performance and Durable Anion-Exchange Membrane Water Electrolysis	4134
<i>SungBin Park, Ji Eun Park, Yung-Eun Sung</i>	

I01E - ELX - PTL

From Structure to Performance: Insights into the Role of Porous Transport Layers in PEM Water Electrolysis via Electrode Engineering.....	4135
<i>Navneet Goswami, Sergio Diaz-Abad, Siddharth Komini Babu, Jacob S. Spendelow, Wilton Kort-Kamp</i>	
Effect of Cathode PTL Wettability on Gas-Water-Oil Transport in a Direct Toluene Electro-Hydrogenation Electrolyzer.....	4136
<i>Ryuhei Shiono, Hiroya Tanaka, Fatima Isabella Reyna-Peña, Yosei Takimoto, Takuto Araki, Shigenori Mitsushima</i>	
Design Rules for Optimizing Microporous Layer Properties and Back-Layer Effect Using Decal Transfer Method in PEMWE.....	4139
<i>Gi Hong Jung, Hyeonjung Park, Sechan Lee, Changsoo Lee, MinJoong Kim, Hyun-Seok Cho, Gisu Doo</i>	
Non-Uniform Activity at High Current Density through Stacked Mesh Substrates Due to Gas Bubbles and Ohmic Losses	4140
<i>Kensei Tsuburaya, Keisuke Obata, Keisuke Nagato, Kazuhiro Takanabe</i>	
Multilayer Porous Transport Layers for Polymer Electrolyte Water Electrolysis to Replace Thin Protective Pt Coating at Low IrO ₂ Loading.....	4142
<i>Zarina Turtayeva, Carl Cesar Weber, Juan Herranz, Felix N. Buechi</i>	
(Invited) Development of Novel Coatings on Stainless Steel based Bipolar Plates for Proton Exchange Membrane (PEM) Water Electrolyzer Application	4143
<i>Aditya Singh, Samaneh Shahgaldi</i>	

Compression of Porous Transport Layers Enhanced Bubble Transport in Polymer Electrolyte Membrane Water Electrolyzers	4145
<i>Lijun Zhu, Jongmin Lee, Chaeyoung Tina Ham, Eric Alexander Chadwick, Harsharaj Birendrasingh Parmar, Pavel Trtik, Aimy Bazylak</i>	
Integration and Performance of Porous Transport Layer Materials Operated at High Pressure	4146
<i>Ricardo P. M. Duarte, Jack Todd Lang, Iryna Zenyuk, Andrea Kowal, Jacob A Wrubel, Guido Bender</i>	
Understanding the Impact of Porous Transport Layers on Anion Exchange Membrane Electrolyzer Performance.....	4148
<i>Melissa E Kreider, Arielle L Clauser, Leiming Hu, Emily K. Volk, Ai-Lin Chan, Josh D Sugar, Shaun M Alia</i>	
Electrospun Micro Porous Layer for Enhanced Proton Exchange Membrane Water Electrolysis	4150
<i>Sergio Diaz-Abad, Siddharth Komini Babu, Jacob S. Spendelow</i>	
Development and Characterization of Commercial-Scale Microporous Layers on Porous Transport Layers for Proton Exchange Membrane Water Electrolyzers.....	4151
<i>Ryan J. Ouimet, Hanna Soucie, Serafina Fortiner, Devashish Kulkarni, Jack Todd Lang, Iryna Zenyuk, Bryan Erb, Andrew Smeltz, Christopher B. Capuano, Katherine E. Ayers</i>	
Porous Transport Layers and Microporous Layers Prepared By Tape casting for PEM Water Electrolyzers.....	4153
<i>Mike C Tucker, Grace Y. Lau, Ramchandra Gawas, Jason Keonhag Lee, Xiong Peng</i>	

I01E - ELX - AEM Electrodes

The Role of the Ionomer in the Catalyst Layer of Anion Exchange Membrane Water Electrolyzers	4154
<i>Emily K. Volk, Arielle L Clauser, Melissa E Kreider, Ai-Lin Chan, Josh D Sugar, Stephanie Kwon, Shaun M Alia</i>	
Comparison of Different Ionomers for the Anode Catalyst Layer of Anion Exchange Membrane Water Electrolysis.....	4156
<i>Khajidkhand Chuluunbandi, Simon Thiele, Anna T.S. Freiberg</i>	
Ionomer-Free Near-Zero Gap Anion Exchange Membrane Water Electrolyzer Fabricated By in-Situ Modified Catalyst Coated Membrane Method	4159
<i>Tae-Hoon Kong, Youngkook Kwon</i>	
Anode Catalyst Layers for AEM-WE: Implementation, Characterisation and Evaluation of Different Synthesis Routes	4160
<i>Bastian Kaufmann, Miriam Hesse, Moritz Pilaski, Maike Berger, Stefan Palkovits, Regina Palkovits, Martin Welters, Rainer Cremer</i>	
Atmospherically Plasma-Sprayed Macro Porous Layers for Anion Exchange Membrane Water Electrolysis Operating with Alkaline Supporting Electrolyte.....	4162
<i>Vincent Wilke, Marco Rivera, Aldo Saul Gago, K. Andreas Friedrich</i>	
(Invited) Pathways Toward Efficient and Durable AEM Water Electrolyzers.....	4164
<i>Andrew Tricker, Tugrul Ertugrul, Jason Keonhag Lee, Jack Todd Lang, Iryna Zenyuk, Adam Z. Weber, Xiong Peng</i>	
Liquid Alkaline Water Electrolysis: Are the Reports of Its Demise Premature?	4165
<i>Daniel Leonard, Sandip Maurya, Sun Young Kang</i>	

Fibrous Electrodes for Alkaline Electrolysis	4166
<i>Andrea Russo, Jens Oluf Jensen, Mikkel Rykær Kraglund, Wenjing (Angela) Zhang, EunAe Cho</i>	

I01E - ELX - Modeling 1

Computational Discovery of Optimal Dopants for Electrode to Enhance Sea Water Splitting	4167
<i>Hyeonjung Jung, Jihyeon Song, Yechan Lee, Han Sol Jung, Sung Il Park, Minseong Kim, Sangmin Park, Jeong Woo Han</i>	
Leveraging Machine Learning and Data Mining for Enhanced PEM-Electrolysis Using Standardized Data Management	4168
<i>Stephan Zimmer, Florian Wiesner, Jannis Steiger, Robert Keller, Matthias Wessling</i>	
Towards the Prediction of Future Polarization Curves from Operating Data: Machine Learning-Based Investigations for Degradation Modelling of PEM Water Electrolysis Cells	4169
<i>Janis Pablo Woelke, Alexander Rex, Christoph Eckert, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
An Extendible Multiphysics Model of a Single Water Electrolysis Cell	4171
<i>Vicente Olguín Godoy, Frede Blaabjerg, Pooya Davari, Henrik Lund Frandsen</i>	
An Advanced Allen-Cahn Navier-Stokes Coupled Lbm Model to Predict Two-Phase Flow Dynamics at the Pore-Scale inside a Polymer Electrolyte Water Electrolyzer	4172
<i>Anirban Roy, Frida H Roenning, Yu-Kai Weng, Douglas S Aaron, Jacob A Wrubel, Matthew M Mench</i>	
A Lifetime Prediction Model for the Anode Catalyst Layer in PEM Electrolyzers	4174
<i>Alexander John Van-Brunt</i>	
Optimization of Porous Transport Layers in PEM Electrolyzers Using Pore Network Modeling with Combinations of Fiber Size and Volumetric Fractions	4175
<i>Amit Ghosh, Aman Uddin</i>	
Exploring the Effects of Recombination Interlayers on Hydrogen and Oxygen Crossover in PEM Water Electrolysis: Insights from 1D Model-Based Investigations	4177
<i>Steffen Brundiers, Patrick Trinke, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
Modeling Gas Crossover and Recombination in Proton-Exchange Membrane Water Electrolysis	4179
<i>Paul E. Rudnicki, Arthur Dizon, Ramchandra Gawas, Christopher G. Arges, Rajesh Ahluwalia, Adam Z. Weber</i>	
Experimental and Numerical Analysis of Alkaline Exchange Membrane Water Electrolyzers	4180
<i>Jasper Eitzen, Jake Mouallem, Scott Storbakken, Andrea Quintero, Marc Secanell</i>	

I01E - ELX - Durability/Degradation

(Invited) Catalyst Activity and Durability Evaluations for PEM Water Electrolyzers	4182
<i>Tsutomu Ioroi, Tsukasa Nagai, Zyun Siroma, Tomoki Akita, Kazuaki Yasuda</i>	
Towards a Deeper Understanding of Catalyst Degradation during Intermittent Operation at Different Operating Conditions of Proton Exchange Membrane Water Electrolyzers	4183
<i>Matthias Kornherr, Carina Schramm, Matthias Felix Ernst, Manuel Müller, Hubert Andreas Gasteiger</i>	

Accelerated Stress Tests Protocol Development for Industrial PEM Electrolyzer Stacks	4186
<i>Devi varaprasad Ruttala, Devashish Kulkarni, Ryan J. Ouimet, Sergio P Bakovic, Yanghua He, Serafina Fortiner, Hanna Soucie, Christopher B. Capuano, Marcelo Carmo, Kathy Ayers</i>	
Anion Exchange Membrane Water Electrolyzer Accelerated Durability Assessment Using Potential Cycling	4187
<i>Noor Ul Hassan, Emily K. Volk, Melissa Kreider, Huyen N Dinh, Bryan S. Pivovar, Shaun M Alia</i>	
(Invited) Dissolution of Iridium: Aqueous vs. Solid Polymer Electrolytes	4189
<i>Serhiy Cherevko, Matej Zlatar, Maja Milosevic, Moritz Geuß</i>	
Effect of Cations Contamination on Durability of Proton Exchange Membrane Water Electrolyzer.....	4191
<i>Mayra Rodriguez, Sergio Diaz-Abad, Jacob S. Spendelow, Siddharth Komini Babu</i>	
Understanding Durability of Polymer Electrolyte Membrane Water Electrolyzers.....	4192
<i>Kui Li, Haoran Yu, Ramchandra Gawas, David A. Cullen, Deborah J. Myers, A. Jeremy Kropf, Matthew Sweers, Rangachary Mukundan, Jacob S. Spendelow, Siddharth Komini Babu</i>	
How to Assess the Degradation of the PEM Water Electrolysis Anode Catalyst on a Lab Scale?	4193
<i>Mirjam Rogler, Richard Wagner, Simon Thiele, Michel Suermann</i>	
Investigating Reverse Current Phenomena Induced by Start/Stop Cycling in Lab-Scale Single-Cell Liquid Alkaline Water Electrolyzers.....	4194
<i>Sandip Maurya, Daniel P Leonard, Sun Young Kang</i>	
Investigation of Degradation Mechanism of Liquid Alkaline Water Electrolyzer Under Dynamic Operation Condition	4195
<i>Guanzhi Wang, Rangachary Mukundan, Xiong Peng</i>	

I01E - ELX - Catalysts

Ru-Core Ir-Shell Catalysts Deposited on a Surface-Modified Porous Transport Layer for Polymer Electrolyte Membrane Water Electrolysis Anode.....	4196
<i>Masahiro Yasutake, Zhiyun Noda, Junko Matsuda, Stephen Matthew Lyth, Masamichi Nishihara, Kazunari Sasaki</i>	
Optimized Nifemn Layer Double Hydroxide Catalyst Enables Stable and Efficient Seawater Splitting	4198
<i>Chang Wu, Shailendra Kumar Sharma, Aaron Timothy Marshall</i>	
Balancing Optimal Hydrogen Evolution and Not Really	4199
<i>Mansu Kim, Sohui Kim, Joseph Hupp, Dongmok Whang</i>	
Boosting Hydrogen Production: Non-Noble Metal Catalysts Optimize Electrodes in Anion Exchange Membrane Water Electrolysis	4200
<i>Miriam Hesse, Enado Pineti, Bastian Kaufmann, Moritz Pilaski, Ivan Radev, Mila Manolova, Seniz Sörgel, Thomas Ernst Müller, Ulf-Peter Apfel</i>	
Oxygen Evolution Platinum Group Metal-Free Catalyst Loading Optimization for Anion Exchange Membrane Water Electrolysis with Low Concentration Electrolyte	4202
<i>Matteo Rossini, Burak Koyuturk, Amirreza Khataee, Göran Lindbergh, Ann Cornell</i>	

Performance and Durability of Membrane Electrode Assemblies Using a Non-Precious Metal Catalyst on Both Electrodes and a Hydrocarbon-Based Electrolyte for Anion Exchange Membrane Water Electrolysis.....	4205
<i>Makoto Uchida, Sayaka Takahashi, Soichiro Natori, Toshio Iwataki, Takayuki Asakawa, Katsuyoshi Kakinuma, Kenji Miyatake</i>	

I01E - ELX - Modeling 2

Modeling Gas Bubbles in Water Electrolyzers across Length Scales.....	4207
<i>Jonathan T. Davis, Kansas Seung, Jack Guo, Thomas J Ferron, Fikret Aydin, Joshua Aaron Hammons, Tiras Y Lin, Shinyoung Kang</i>	
CNN-Based Identification of Bubble Size and Number Depending on Operating Conditions in PEM Water Electrolyzer	4208
<i>Kohei Toyama, Ryo Kanemoto, Ryuhei Shiono, Hiroto Omori, Takuto Araki, Shigenori Mitsushima</i>	
Elucidating Degradation Mechanisms through Modeling of Proton-Exchange Membrane Electrolytic Cells	4210
<i>Violeta Karyofylli, Yannik Danner, K. Ashoke Raman, Linus Hammacher, Hans Kungl, André Karl, Eva Jodat, Rudiger-A Eichel</i>	
Modeling the Metal Poisoning of PEM Water Electrolyzers.....	4211
<i>Patrick Trinke, Torben Gottschalk, Christoph Eckert, Boris Bensmann, Richard Hanke-Rauschenbach</i>	

I01E - ELX - PEM Electrodes

(Invited) Ionomer-Free Nano-Channeled Electrodes for Proton-Exchange-Membrane Water Electrolyzers.....	4213
<i>Keonhag Lee, Finn Babbe, Guanzhi Wang, Andrew Tricker, Rangachary Mukundan, Adam Z. Weber, Xiong Peng</i>	
Ink to MEA: Ionomer/Iridium Interactions with Varying Oxide Coverage in Proton-Exchange-Membrane Water Electrolyzers	4214
<i>Sarah A. Berlinger, Xiong Peng, Ahmet Kusoglu, Ethan J. Crumlin, Adam Z. Weber</i>	
Enabling Low Iridium Loadings and Reduced Catalyst Material Cost for PEM Water Electrolyzers Via Composite Anode Design with Conductive Additive.....	4215
<i>Kara J Ferner, Shawn Litster</i>	
Understanding Structure Differences of Iridium Oxides Depends on Loading in Proton Exchange Membrane Electrolyzers.....	4217
<i>Obeen Kwon, Florian Chabot, Carol Korzeniewski, Shannon Boettcher, Yu Morimoto, Iryna Zenyuk</i>	
Microporous Layer-Supported Catalyst-Coated Membrane for PEM Water Electrolysis	4220
<i>Kentaro Uzuka Hansen, Feng Jiao</i>	
Integration of Thin Laser Structured Micro Porous Layers in PEM Water Electrolyzers	4222
<i>Patrick Trinke, Alexander Wienke, Mareike Benecke, Lukas Stein, Boris Bensmann, Jürgen Koch, Richard Hanke-Rauschenbach</i>	

I01E - ELX - Mixed

De-Risking PEM-Electrolysis: Advanced Characterization for the Pathway Towards the GW-Scale	4224
<i>André Karl, Eva Jodat, Hans Kungl, Rüdiger A Eichel</i>	
Influence of Gas Void Fraction on Electrode Performance in Industrial Alkaline Water Electrolysis.....	4226
<i>Felix Gäde, Jonatan Möller, Thomas Turek, Maik Becker</i>	
Bubble Management through Electrolyte Engineering to Reduce Bubble Induced Resistance in Zero-Gap Water Electrolyzers	4228
<i>Keisuke Obata, Huihang Qiu, Keisuke Nagato, Kazuhiro Takanabe</i>	
Influence of Electrolyte Supply Scheme in Anion Exchange Membrane Water Electrolysis.....	4230
<i>Hiroshi Ito, Akane Kageyama, Shyota Ohtsuka, Masayoshi Ishida, Hiroyuki Tateno</i>	
Experimentally-Validated CFD Model of an Anhydrous HCl Electrolyzer.....	4231
<i>Kris Likit-anurak, Hunter Teel, Sirivatch Shimpalee, Benjamin Meekins</i>	

I01F-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - CELLS, STACKS AND SYSTEMS FOR FUEL CELLS AND ELECTROLYZERS

I01F - Porous Transport, Gas Diffusion and Electrode Design

(Invited) Understanding the Corrosion of Titanium Porous Transport Layers and Pt Coatings Using Potential and Time-Resolved Inductively-Coupled Plasma Mass Spectrometry.....	4232
<i>Deborah J. Myers, A. Jeremy Kropf, Nancy N. Kariuki, Ngoc K Dang</i>	
High-Performance Fuel Cell with Integrated Flow Distribution in Porous Transport Layer for Heavy-Duty Vehicular Applications	4233
<i>Preetam Sharma, Jon Owejan, Oladapo Christopher Esan, Garrett Fields, Douglas S Aaron, Matthew M Mench</i>	
Numerical Investigation on Two-Phase Flow Pressure Drop in Cathode Channels of Proton Exchange Membrane Fuel Cells.....	4235
<i>Danan Yang, Himani Garg, Martin Andersson</i>	
Time and Potential-Resolved Studies of Porous Transport Layers for PEM Water Electrolyzers Using on-Line ICP-MS.....	4237
<i>Ngoc K Dang, Nancy N. Kariuki, Deborah J. Myers</i>	
Study on Performance Stability Improvement of Polymer Electrolyte Fuel Cells with Interdigitated Gas Flow Channels on a Gas Diffusion Layer	4238
<i>Tatsuya Inoue, Daiki Sakai, Kazuyuki Hirota, Koichi Sano, Naoki Hirayama, Mitsunori Nasu, Takahiro Suzuki, Shohji Tsushima, Junji Inukai, Masahiro Watanabe, Akihiro Iiyama, Makoto Uchida</i>	
Pore Designing for the Anode Porous Electrode of the Direct Formic Acid Fuel Cell.....	4240
<i>Takuya Tsujiguchi, Kakeru Fujiwara, Yugo Osaka, Akio Kodama, Kouya Yoshida</i>	
Corrosion-Related Degradation Phenomena in PEM Water Electrolysis - an Industrial Perspective.....	4242
<i>Nina Weineck, Florian Kessler, Andrei Ghicov, Ladislaus Dobrenizki</i>	
Analytical Considerations for Hydraulic Resistance Models of Electrochemical Cells.....	4245
<i>Steven B. Beale, Shidong Zhang, Andrei Kulikovsky</i>	

Investigating the Suitability of Printing Metal Current Collectors Directly Onto the GDMs of PEMFCs	4247
<i>Yannick Garsany, Kevin Cronin, Keith Bethune, Alex Cook, Robert Malakov, Patricia Beck, Richard Stroman</i>	

Controlling Current Distributions in a Hydrogen Powered Fuel Cell Hydroxide Exchange Membrane Carbon Capture Device	4248
<i>Justin Harrington, Brian P Setzler, Yushan Yan</i>	

Tailoring Heat and Mass Transfer for Next Generation of PEM Fuel Cells	4249
<i>Željko Penga, Lei Xing, Jure Penga, Tino Vidović, Tomislav Vukoja, Gojmir Radica, Xian Qu, Viktor Hacker</i>	

I01F - Manufacturing, Recycling and Scale-up Considerations

(Invited) Let's Roll – the Roll-to-Roll Consortium for Fuel Cell and Electrolyzer Manufacturing	4251
<i>Scott A Mauger, Alexey Serov, Yuepeng Zhang</i>	

Machine Learning in Fuel Cell Stacks, Systems and Modeling	4252
<i>Karen Swider-Lyons, Liang Du, Shawn Litster, David Mebane, Dustan Skidmore</i>	

Reduction in Fuel Cell Break-in Duration by Accelerating the Removal of Impurities in the Electrode.....	4254
<i>Kensaku Kodama, Shuji Kajiya, Haruhiko Yamada, Ayako Ohshima, Hajime Murata, Noritoshi Oka, Shigemitsu Nomoto</i>	

Prototype Demonstration of Innovative and Sustainable Recycling of Materials in Polymer Electrolyte Membrane Fuel Cells and Electrolyzers	4256
<i>Hakan Yildirim, Mikkel Larsen, Shuang Ma Andersen, Raghunandan Sharma, Swapnil S. Karade, Lars Christian Larsen, Nikolaj Beyer</i>	

Need for Speed: Fast Activation of PEM Electrolyzers for End-of-Line Testing.....	4258
<i>Julius Frederik Rauh, Martin Höglinger, Benedikt Karan, Johannes Steiner, Marie-Gabrielle Macherhammer, Alexander Trattner</i>	

New Designs and Approaches for Enabling the Large-Scale Fabrication of Gas Diffusion Electrodes	4261
<i>Christian Ruiz, Tommy Rockward, Jabari Allen</i>	

Iridium Thrifiting and Circularity: Perspective, Progress, and Demonstration from an OEM	4262
<i>Andrew R Motz, Marcelo Carmo, Christopher B. Capuano, Katherine E. Ayers</i>	

Design and Manufacturing of Cost-Effective Water Electrolyzers at Industrial Current Densities Via an Ink-Free Integrated Dual Electrode Assembly	4263
<i>Weitian Wang, Lei Ding, Jun Li, Zhiqiang Xie, Matthew M Mench, Feng Yuan Zhang</i>	

Technoeconomic Analysis and Comparison of PBI-Based Aqueous and Anhydrous HCl Electrolysis Processes.....	4265
<i>Olusegun Odunayo Felix, Sirivatch Shimpalee, Benjamin Meekins</i>	

I01F - Poster Session

Evaluation of the Performance and Mechanical Stability of PEMFC Single Cell Considering Vibration Characteristics in the Construction Equipment Working Environment	4266
<i>Kyoungho Ho HAN, Ji San Kim, Sang Gyun Park, Jae Duk Kim, Myung Geun Park, Gi Cheon Lee, Hee Su Kim</i>	
Numerical Modeling of a Polymer Electrolyte Membrane Fuel Cell for Electric Aircraft Propulsion	4267
<i>Haruya Oka, Yusaku Katsuki, Hironori Nakajima, Chihiro Inoue</i>	
EIS Analysis and Optimization Using AI for Different Cathode Channel Cross-Sections for Open Cathode Fuel Cell Stack	4268
<i>Shikha Thapa, Harshal Agarwal, A K Sahu</i>	
Novel Approaches for a Time and Cost Efficient Activation of Polymer Electrolyte Membrane Fuel Cell Stacks	4270
<i>Stefan Zink, Ludwig Joerissen</i>	
Improved Water Management in Polymer Electrolyte Fuel Cells Utilizing Hybrid Flow Field.....	4271
<i>Choeun Kim, Youngseung Na</i>	
Preventing Electrode Degradation Against Reverse Current By Interrupting Ion Transfer during Shut-Down in Alkaline Water Electrolysis	4272
<i>Sejin Im, Wan Sik Kim, Asiya M. Tamboli, Junseok Sim, Younghan Jung, JunSeok OH, Chang-Hee Kim</i>	
Enhanced Durability and Performance of SOEC Stacks at Intermediate-Low Temperature Operation.....	4273
<i>Hunmin Park, Sun-Dong Kim, Yoonseok Choi</i>	
Advanced Bipolar Plates for the Next Generation PEM Water Electrolyzers: Flow-Field Design, Fabrication, and Optimization	4274
<i>Ethan Matthew Perkins, Leonard J. Bonville, Radenka Maric, Stoyan Bliznakov</i>	
PGM-Free Catalyst Modification for Air-Breathing Stacks	4275
<i>Mackenzie R. Kieltyka, Julian Singell, Jabari Allen, Tommy Rockward, Cortney R. Kreller, Mahlon S. Wilson, Jeremy D. Jernigen, Rod L. Borup</i>	
A Thermodynamic Analysis of a Proton Exchange Membrane Electrolyzer.....	4276
<i>Eirini Vlachaki, Konstantinos Lekatsas, Torsten Berning</i>	
Performance Characteristics of a Free-Breathing Polymer Electrolyte Fuel Cell with Various Channel Shapes	4277
<i>Kohei Nakashima, Masao Yoshida, Yuki Kondo</i>	
High-Pressure Solid Oxide Electrolysis Cell (SOEC) for Enhanced P2X Efficiency	4279
<i>Yaqi Li, Xiaoti Cui, Søren Højgaard Jensen, Frede Blaabjerg</i>	

I01F - Fuel Cell and Electrolyzer Stacks

(Invited) Fuel Cell Technologies: A U.S. Department of Energy Perspective	4281
<i>Dimitrios C. Papageorgopoulos</i>	
System Level Considerations for Lightweight Kilowatt Scale PEMFCs	4283
<i>Kevin Cronin, Adam Jolley, Richard Stroman</i>	

Asymmetric Diaphragms and Their Influence on Gas Crossover in Alkaline Electrolysis	4284
<i>Mikkel Rykær Kraglund, Florian Gellrich, Yifan Xia, Sinu Charamchirail Rajappan, David Aili, Jens Oluf Jensen</i>	
Synergistic Pairing of Intermittent Renewables with Dynamic Aemion®-Based Alkaline Anion-Exchange Membrane Electrolysis	4285
<i>Benjamin Britton, Andrew M. Baker</i>	
Engineering the Diaphragm to Minimize Gas Crossover in Alkaline Water Electrolysis	4286
<i>Florian Gellrich, Mikkel Rykær Kraglund, Jens Oluf Jensen, Henrik Stiesdal</i>	

I01F - BPP Design and Manufacture

(Invited) Optimised PEM Electrolyzer Bipolar Plates for MW Stacks Enabling Efficient Operation and Industrial Manufacturing	4287
<i>Peter Jaime Bouwman</i>	
Overpotential Characteristic and Flow Field Structure for High Power Output of HT-PEFC.....	4289
<i>Ryosuke Ichikawa, Ryo Sakakibara, Shion Omura, Yusuke Aoyama, Suguru Uemura, Yutaka Tabe</i>	
A Low-Cost Bipolar Plate Comprising a Channeled Porous Transport Layer for Proton and Anion Exchange Membrane Electrolyzers	4293
<i>Archis Amrite, Alexandra M. Oliveira, Yushan Yan, Ajay Krishna Prasad</i>	
Flow-Field Designs for PEM Water Electrolysis Cells: Performance and Contact Behavior	4294
<i>Oskar Weiland, Lukas Stein, Prasad Venkatesan, Patrick Trinke, Boris Bensmann, Thorsten Hickmann, Richard Hanke-Rauschenbach</i>	
Modeling Electrical Conductivity of Injection-Molded Polymer Composite Bipolar Plates	4296
<i>Jonathan K Trimpey, Maxwell T Myers, David B Beevers, Charles E Bakis, Adam S Hollinger</i>	
3D Printing Conductive Filament for Fuel Cell Bipolar Plates	4298
<i>Zachary E Vandervort, Nicholas J Lockhart, Adam S Hollinger</i>	
Advancing PEMFC Bipolar Plate Design: Biomimetics, Simulation, and Surrogate Modeling By Deep Neural Networks for Optimized Performance.....	4299
<i>Baptiste Fedi, Aurélien Boucher</i>	
Time and Potential-Resolved Studies of Bipolar Plate Corrosion for Polymer Electrolyte Membrane Fuel Cells.....	4300
<i>Nancy N. Kariuki, Ngoc K Dang, Deborah J. Myers, Dionissios Papadias, Rajesh Ahluwalia</i>	

I01F - Stack and System: Designs and Testing 1

(Invited) Development of Second Generation New Structure Fuel Cell Stack	4301
<i>Nagayuki Kanaoka</i>	
Single Cell and Short Stack Evaluation of Cathode Backpressure Effects on Low Temperature Proton Exchange Membrane Water Electrolysis Anode Catalyst Performance and Degradation	4303
<i>Samantha Medina, Ai-Lin Chan, Ricardo P. M. Duarte, Matthew J Ruple, Shaun M Alia</i>	
Optimization Potential for Operating PEMFC Systems Under High-Altitude Conditions	4305
<i>Dominik Murschenhofer, Jonas Settele, Simon Stengele, Cornelia Bänsch</i>	

Baselining Unitized Reversible Fuel Cells with Low Catalyst Loadings: Performance and Durability Insights.....	4306
<i>Yuanchao Li, Tanvir Alam Arman, Siddharth Komini Babu, Jacob S. Spendelow</i>	
Big Brother Is Watching You: Leveraging Artificial Intelligence for Automated Fuel Cell Monitoring (Technical Report).....	4307
<i>Lukas Klass, Laurin Holz, Lukas Koenig, Alexander Kabza, Frank Sehnke, Katharina Strecker, Markus Hölzle</i>	
Operational Regime for Maximizing the Durability in Fuel Cell Stacks	4309
<i>Cynthia A. Rice, Karen Swider-Lyons</i>	
A Simple in-situ Voltage Characterization Technique and Coating Methods for Developing Polymer Electrolyte Membrane Water Electrolysis Porous Transport Layer and Bipolar Plates.....	4311
<i>Yujae Jang, Yangjae Kim, Wonyeop Jeong, Suk Won Cha</i>	

VOLUME 7

Improved Understanding of PEMFC Stack Durability Testing through Comprehensive In-Situ and Ex-Situ Characterization Techniques.....	4313
<i>Miriam Schüttoff, Christian Wachtel, Florian Wilhelm, Joachim Scholta, Markus Hölzle</i>	
Investigations on the Corrosion Behavior of a 20 Cell PEMFC Automotive Short Stack Caused By Air/Air Start-Ups at Different Operating Conditions Utilizing a Segmented Current Mapping Board.....	4315
<i>Adrian Jurjević, Christian Mohrdieck, Natascha Weidler</i>	

I01F - Stack and System: Designs and Testing 2

(Invited) Optimized Conditioning and Performance of PEM Fuel Cell Stacks.....	4317
<i>Johanna Dombrovskis, Victor Shokhen, Lisa Kylhammar, Andreas Bodén</i>	
Performance of Pt-Free Catalysts in a Fuel Cell Vehicle.....	4318
<i>Tatiana Santos Andrade, Torbjörn Thiringer</i>	
Degradation Analysis of a PEMFC System Operated Under High-Altitude Conditions.....	4319
<i>Jonas Settele, Cornelia Bänsch, Dominik Murschenhofer</i>	
Assessing the Performance of Gas Diffusion Electrodes: Varying Pt Loading and Manufacturing Techniques.....	4320
<i>Tommy Rockward, Julian Singell, Victoria Kwei, Jabari Allen, Christian Ruiz, Michael McBride, Rod L. Borup, Cortney R. Kreller</i>	
Effect of Phosphomolybdate Anionic Redox Species on the Performance of Redox Flow Polymer Electrolyte Fuel Cells	4321
<i>Shinji Naruse, Hiroki Muroyama, Toshiaki Matsui, Koichi Eguchi</i>	
Investigation of the Effect of Ammonia As Ambient Air Contaminant on PEM Fuel Cell Stack Performance and Degradation Using EIS, Thda and Different Gas Analysis Methods.....	4323
<i>Tansu Özel, Stefan Bürger, Carsten Cremers</i>	
Path-Dependence and Aging Prediction of Catalyst Degradation in Polymer Electrolyte Fuel Cells	4324
<i>Lei Cheng</i>	

I01F - Stack and System Modelling 1

- Dynamic Multi-Physics Modelling of a PEM Stack for a Digital Twin Application..... 4325
Franziska Katharina Engel, Sebastian Ulmer, Hans-Jörg Zander, Sebastian Rehfeldt, Harald Klein
- Advances in Fuel Cell Performance Using Simulation Analysis in Toshiba Energy Systems & Solutions Corporation..... 4326
Hikaru Takamata, Soichiro Shimotori, Shoichi Hidai, Kyohei Yamashita
- Assessing the Performance of a Proton Exchange Membrane Green Hydrogen Generation System through Stack and Balance of Plant Modeling 4328
Diamantis Almpantis, Henrik Davidsson, Martin Andersson
- Oxygen Concentration and Reaction Rate Profiles Analysis of Polymer Electrolyte Fuel Cell..... 4330
Yulei Ma, Hoang Anh Do, Miho Kageyama, Motoaki Kawase
- Dynamic Modeling of Polymer Electrolyte Membrane Water Electrolysis System and Dynamic Response..... 4333
Hee-Sun SHIN, Dohyung Jang, Kyong-Hwan Kim, Chang Hyuck Lim, Sanggyu Kang
- Numerical Modeling of Water Transport in a Microporous Layer-Coated Porous Transport Layer for a Polymer Electrolyte Membrane Water Electrolyzer with an Interdigitated Flow Field for Internal Gas-Liquid Separation 4334
Hironori Nakajima, Linda Bolay, Henrik Ekström, Asuka Shima, Göran Lindbergh, Yoshitsugu Sone
- Optimization of Cathode Catalyst Layer Composition of Polymer Electrolyte Fuel Cell for Maximum Cell Performance Using Machine Learning and Genetic Algorithm 4336
Van Lap Nguyen, Agnesia Permatasari, Magnus So, Takeru Yano, Gen Inoue
- Development of a Dynamic Model for a Shell-and-Tube Type Gas-to-Gas Polysulfone Hollow Fiber Membrane Humidifier and Optimization of Operating Conditions and Fiber Dimensions to Maximize PEMFC Stack Power in Hydrogen Fuel Cell Vehicles..... 4338
Jiwoong Kim, Sehyeon Kim, Hyunsoo Chun, Sanggyu Kang, Kyoungdoug Min

I01F - Stack and System Modelling 2

- Applied Metal Hydride System Optimization to Improve Hydrogen Fuel Cell System Performance in Mobile Heavy-Duty Applications..... 4339
Markus Kordel, Dominik Radler
- Dynamic Simulation of a Hybrid PV/AWE/SOFC Stand-Alone System for Heat and Power Generation 4341
Jinyoung Ham, Sanggyu Kang, Dohyung Jang, Haeseong Shin, Hee-SUN SHIN
- Dynamic Modeling of PEM Water Electrolysis System Based on Detailed 2-D Stack Model 4343
Haeseong Shin, Dohyung Jang, Kilwon Kim, Kyonghwan Kim, Sanggyu Kang
- Electrochemical Modeling of a Commercial Polymer Electrolyte Fuel Cell Using 3-D Micro-Computed Tomography 4345
Zakar White, Karen Swider-Lyons, Shawn Litster

Computational Fluid Dynamics Analysis of Gas Crossover in an Alkaline Electrolyzer Using a Multifluid Model	4346
<i>Diogo Loureiro Martinho, Mohammadmahdi Abdollahzadehsangroudi, Torsten Berning</i>	
Multi-Scale Computational Fluid Dynamics Simulation of Alkaline Water Electrolyzers: A Numerical Investigation	4349
<i>Steffen Hess, Shidong Zhang, Thomas Kadyk, Irina Galkina, Steven B. Beale, Michael Eikerling, Ralf Peters</i>	
Computational Modeling of Proton Exchange Membrane Electrolyzer.....	4351
<i>Shibanul Haque, Majid Aziz, Shabeeb Ali Alkhalidi, Ajay Krishna Prasad</i>	

I01Z-POLYMER ELECTROLYTE FUEL CELLS AND WATER ELECTROLYZERS 24 (PEFC&WE 24) - PLENARY SESSION

I01Z - PEFC&WE24 Plenary Session 1

(Invited) AEM Water Electrolysis: From Materials to System.....	4352
<i>Hui Xu, Thomas Stracensky, Ankur Gupta, James Pilczak, Simon Stone, Benjamin Slenker, J.V. Yang, Chenzhao Li, Yiheng Pang</i>	
(Invited) Fuel Cells to Power Sustainable Mobility and Beyond	4353
<i>Isotta Cerri</i>	
(Invited) A Review of the Current Trends in Japan's Policies and Technological Developments Toward the Realization of a Hydrogen Society	4355
<i>Hidehori Saka</i>	
(Invited) A Retrospective View of the Proton Exchange Membrane Fuel Cell from Renaissance to Commercialization	4357
<i>David P. Wilkinson</i>	
(Invited) Structure/Transport Relations in Electrolytes: What Have We Learned from Modeling in the Past Quarter Century?.....	4358
<i>Stephen J. Paddison</i>	

I01Z - PEFC&WE24 Plenary Session 2

(Invited) Pt-Alloy Anode and Cathode Catalysts for PEFCs.....	4359
<i>Hiroyuki Uchida</i>	
(Invited) Stable Catalysts, Functionalized Supports and Fluorocarbon Additives for Fuel Cell Electrodes	4361
<i>Nagappan Ramaswamy</i>	
(Invited) Degradation Mechanisms, Diagnostics, and Mitigation in Proton Exchange Membrane Water Electrolyzers	4363
<i>Shaun M Alia, Elliot Padgett, Ai-Lin Chan, Sarah J. Blair, Samantha Medina, Kimberly S. Reeves, Haoran Yu, David A. Cullen, Jaehyung Park, Nancy N. Kariuki, A. Jeremy Kropf, Rajesh Ahluwalia, Deborah J. Myers</i>	

I02-SOLID STATE IONIC DEVICES 15

I02 - Defect Chemistry and Transport 1

- In-Situ Electrochemical Impedance Spectroscopy for Characterizing Transport Response during Material Irradiation..... 4365
Tinsley Elizabeth DeForest, Benjamin Derby, Ellis Rae Kennedy, Franziska Schmidt, James Valdez, Yongqian Wang, Shekhar Bhansali, Blas Uberuaga, Cortney R. Kreller
- Ultra-Fast Oxygen Conduction through Vacancy-Mediated Mechanism in Sillén Oxychlorides 4367
Jun Meng, Md Sariful Sheikh, Lane Schultz, William O. Nachlas, Ryan Jacobs, Jian Liu, Dane Morgan
- Multiple New Families of Fast Oxygen Interstitial Conductor Discovered by High-Throughput Computational Screening 4368
Jun Meng, Md Sariful Sheikh, Ryan Jacobs, Jian Liu, William O. Nachlas, Xiangguo Li, Dane Morgan
- Proton Incorporation and Electrical Leakage in BaZrO₃ and BaCeO₃ 4370
Joel Varley, Tadashi Ogitsu, Meng Li, Andrew Rowberg
- Low-Temperature Cation Ordering in Ce_{0.5-X}Zr_{0.5+X}O₂ Under Precisely Controlled P(O₂)..... 4371
Yume Okazaki, Akihiro Ishii, Itaru Oikawa, Hitoshi Takamura

I02 - Defect Chemistry and Transport 2

- (Invited) Low-Temperature Processing of Mixed Conducting Oxides: Control of Defects, Transport, and Reactions Away from Equilibrium 4372
Nicola H. Perry
- Analysis of Crystal Structure and Phase Transition of Partially Cation Substituted SrFeO_{3-δ}..... 4373
Takuya Hashimoto, Kosuke Shido, Keina Nagai, Taizo Yoshino, Chihiro Kato, Hikaru Murakami, Ginga Yamada, Ryutaro Maehara, Shumpei Nimura, Motoyuki Matsuo, Daisuke Morikawa, Kenji Tsuda
- Oxygen Nonstoichiometry of Bulk and Thin Film of Mixed Ionic and Electronic Conductors..... 4375
Nanaha Miyashita, Riyan Achmad Budiman, Mina Yamaguchi, Keiji Yashiro, Tatsuya Kawada
- Proton Solubilities in Candidate Protonic Ceramic Fuel Cell Air Electrode Materials from First Principles..... 4377
Craig Andrew James Fisher, Ayako Taguchi, Takafumi Ogawa, Akihide Kuwabara

I02 - SOFCs operating on CH₄ and NH₃

- Direct Use of Ammonia in Solid Oxide Fuel Cells 4378
Kiho Bae, Jinsoek Park, Kyung Min Lee
- Multiscale Simulation of Internal Reforming Solid Oxide Fuel Cells to Capture Complex Reaction Phenomena 4379
Hamid Abbasi, Masoud Babaei, Constantinos Theodoropoulos

Redox Stability of Co-Doped Barium Niobate Thin Films in Reducing Conditions Analyzed Using Cyclic Voltammetry Measurements.....	4380
<i>Luke H Denoyer, Kannan Ramaiyan, Angelica Benavidez, Andre Santarosa Ferlauto, Fabio Coral Fonseca, Fernando H. Garzon</i>	
Experimental Evaluation and Density Functional Theory Analysis of Activation Barriers in Dry Reforming Reaction Using Ni Nanoparticle-Supported CeO ₂ Novel Flower-like Catalyst	4381
<i>Takaya Fujisaki, Yuta Tsuji, Phuc Hoan Tu, Tin Doan, Duc Minh Trinh Dinh, D. S. Rivera Rocabado, Aleksandar Staykov, Keiji Yashiro, Yusuke Shiratori</i>	
Perovskite Anode for SOFCs Running on Dry Reforming of CH ₄	4383
<i>Sung Pil Yoon, Albert Won Cho, Young Bae Jun, Emilio Audasso, Kab In Kim</i>	
Diagnosing the Nature of Oxygen Site in Yttrium Doped Barium Calcium Niobates and Its Impact Towards Electrochemical Oxidative Coupling of Methane.....	4384
<i>Kannan Ramaiyan, Angelica Benavidez, Fernando H. Garzon</i>	

I02 - Solid State Ionic Devices

Neuromorphic Computing Based on Few-Molecule Vibration Dynamics Achieved By Surface-Enhanced Raman Scattering and Ion-Gating Stimulation	4385
<i>Daiki Nishioka, Yoshitaka Shingaya, Kazuya Terabe, Takashi Tsuchiya</i>	
Iono-Magnonic Reservoir Computing Utilizing Interfered Spin Wave Manipulated By Ion-Gating	4387
<i>Wataru Namiki, Daiki Nishioka, Yuki Nomura, Kazuo Yamamoto, Kazuya Terabe, Takashi Tsuchiya</i>	
Simulating CO ₂ Capture with Synthetic Microstructures in High-Temperature Mixed Conducting Membranes	4390
<i>Xinfang Jin, Yasser Shoukry</i>	
Towards Ultrahigh Osmotic Energy Harvesting By Covalent-Organic Framework Based Ionic Diode Membranes	4391
<i>Li-Hsien Yeh</i>	
(Invited) Pulse-Voltage-Induced Neuromorphic Function of Pt/Anatase-Ti _{0.99} Sc _{0.01} O _{2-δ} /Pt Multilayer with Electron-Ion Mixed Conduction	4392
<i>Airi Maekawa, Riku Kaneko, Tohru Higuchi</i>	

I02 - PCC Electrodes

Resolving the Impact of Sr and Ni Diffusion on Moderate-Temperature Sintered BaZr _{0.44} Ce _{0.36} Y _{0.2} O ₃ /SrZr _{0.4} Ce _{0.4} Y _{0.1} O ₃ -NiO Half-Cells Interface for PCEC/PCFC.....	4394
<i>Leonard Kwati, Ivan Povstugar, Moritz Kindelmann, Wilhelm Meulenberg, Tatsumi Ishihara, Hiroshige Matsumoto</i>	
Stability Study of Doped-PrCoO ₃ Perovskites as Oxygen Electrodes in Proton Conducting Electrolysis Cells.....	4395
<i>Meng Li, Wenjuan Bian, Zeyu Zhao, Dong Ding</i>	
Investigating Protonic Surface Exchange Kinetics in Protonic Conducting Electrolysis Cells Using Electrical Conductivity Relaxation.....	4396
<i>Yuqing Meng, Hao Deng, Bin Liu, Meng Li, Dong Ding</i>	

(Invited) Investigation of Co-Free Cathode Compositd with Proton Conductors for Protonic Ceramic Fuel Cells with Yb-Doped BaZrO ₃ Electrolyte	4397
<i>Konosuke Watanabe, Hiroyuki Shimada, Aman Sharma, Masaya Fujioka, Yuki Yamaguchi, Katsuhiro Nomura, Hirofumi Sumi, Yasunobu Mizutani</i>	
Enhancing Efficiency and Stability with Composite Oxygen Electrodes in Protonic Ceramic Electrochemical Cells	4398
<i>Chuancheng Duan</i>	
Theoretical Investigation on the Stability of Second Phase Formation in Ba(Zr, M)O _{3-Δ} By Electrode Derived Ni and Co Elements	4399
<i>Kaoru Nakamura, Shun Kobayashi, Ryuma Malik Matsuda, Masashi Mori, Hiroyuki Shimada, Yasunobu Mizutani, Yuji Okuyama</i>	
Dissociative Oxygen Adsorption and Incorporation in Co ₃ O ₄ -Dispersed BaZr _{0.9} Sc _{0.1} O _{2.95} for a PCFC Cathode	4401
<i>Shinnosuke Kamohara, Akihiro Ishii, Itaru Oikawa, Hitoshi Takamura</i>	
Electrochemical Properties of Co and Yb Doped BaZrO ₃ and Its Application to PCFC Cathodes	4402
<i>Yuji Okuyama, Yuichi Mikami, Tomoshiro Nishiya, Keita Kasuga, Takehito Goto, Hiroshi Asano, Kosuke Yamauchi, Tomohiro Kuroha</i>	

I02 - PCC Operation Considerations

Ohmic Resistance Response of a Practical Protonic Ceramic Fuel Cell upon Hydration/Dehydration	4403
<i>Takeru Murakami, Kunpeng Li, Takuto Araki, Masashi Mori, Shun Kobayashi</i>	
Faradaic Efficiency Acquisition Along with Hydrogen Generation Measurement of Proton Conducting Solid Oxide Electrolysis Cells: Insights from Idaho National Laboratory	4405
<i>Zeyu Zhao, Hao Deng, Wanhua Wang, Wei Wu, Bin Liu, Dong Ding</i>	
Computational Prediction of Proton-Conducting Perovskite Properties Under Realistic Conditions	4406
<i>Hao Deng, Bin Liu, Dong Ding</i>	

I02 - PCC Interlayer

(Invited) Suppression of Electronic Leakage in Proton-Conducting Cells	4407
<i>Hiroshige Matsumoto, Veeramani Vedyappan, Leonard Kwati</i>	
Sr Doped LaScO ₃ Thin Film As Cathodic Functional Layers for Ni-Fe Metal Supported Protonic Ceramic Fuel Cell Using BaZr _{0.44} Ce _{0.36} Y _{0.2} O ₃ Film	4409
<i>HyoYoung Kim, Tatsumi Ishihara</i>	
(Invited) Interface Engineering to Operate Reversible Protonic Ceramic Electrochemical Cells below 500 °C	4411
<i>Mingi Choi, Donguk Kim, Tae Kyeong Lee, Jaeyeob Lee, Hyun Sik Yoo, Wonyoung Lee</i>	
Ultrathin Triple Conducting Oxide Interlayer for Protonic Ceramic Electrochemical Cells Fabricated by Chemical Solution Deposition	4412
<i>Dongyeon Kim, Hyeonggeun Kim, Hyeongmin Yu, Seeun Oh, Kang Taek Lee</i>	

102 - PCC Electrolyte

New Observations on Material Processing and Investigation on Long Term Stability for Proton Conducting Solid Oxide Electrolysis Cells (P-SOEC)	4413
<i>Wanhua Wang, Wei Wu, Zeyu Zhao, Hanping Ding, Fanglin (Frank) (Frank) Chen, Dong Ding</i>	
Influence of Minor Electronic Conduction in the Electrolyte on the Impedance Response of Proton Conducting Ceramic Fuel Cell Cathode	4414
<i>Koji Amezawa, Motoya Karino, Hiroyuki Shimada, Yuta Kimura, Takashi Nakamura, Yasunobu Mizutani, Tatsuya Kawada</i>	
Experimental Study of the Electric Efficiency and Current Leakage with Bzyb Based Protonic Ceramic Fuel Cell	4416
<i>Kosuke Yamauchi, Yuichi Mikami, Tomohiro Kuroha, Yuji Okuyama</i>	
Proton-Conducting Solid Oxide Electrolysis Cells with Scandia-Doped Barium Zirconate Electrolytes	4418
<i>Matthew Naughton, Yuchen Zhang, Quanwen Sun, Zeyu Zhao, Wei Wu, Yushan Yan, Dong Ding</i>	

102 - SOC and PCC Stacks and Systems

Impact of Technology Improvements on the Cost of Hydrogen Produced Using Solid Oxide Electrolysis Cell Technology at Large Scale	4419
<i>Gregory A. Hackett, Alexander Noring, Kyle L. Buchheit, Arun Iyengar</i>	
Integrated Autothermal Reformer, Heat Exchanger and Solid Oxide Fuel Cell in Single-Stack for Aircraft Gas-Turbine Applications	4420
<i>Fuqiong Lei, Yifan Gu, Akhil Ashar, Cyrus Boushehri, Tyrone L Vincent, Lucas M Pratt, Christopher P Cadou, Eric D Wachsmann, Rob J Braun, Greg S Jackson</i>	
Protonic-Ceramic Supported Intermediate-Temperature Electrolysis Operations: From Unit-Cell to Utility-Scale	4422
<i>Amogh Thatte, Huayang Zhu, Robert J. Kee, Robert Braun</i>	
Utilizing Neural Networks for Optimizing the Performance of Solid Oxide Cell Stacks	4423
<i>Omid Babaie Rizvandi, Robert Braun</i>	
Techno-Economic Analyses on Electric Ship By NH ₃ Fueled Solid Oxide Fuel Cells	4424
<i>Teruhisa Horita, Katherine Develos Bagarinao, Haruo Kishimoto, Toshiaki Matsui, Hiroki Muroyama, Yasuo Kakinuma, Hiroshi Sumi, Paul Adam, Stefan Rothe, Stefan Megel, Mihails Kusnezoff, Mark Hartmann, Julius von Einstedel</i>	
Multiscale Assessment of Solid Oxide Electrolysis with a Combination of Modeling and Material Property Optimization	4426
<i>Moritz Stahl, Malte Rutz, Nga Do, Nicolas Schlüter, Michael Eull, Adaora Ekperechukwu, Fraser McCann, Andrew Steedman, Lewis MacDonald, Edward Brightman, Callum Rae, Priya Bhagavathy, Graeme Burt, Dragos Neagu, Daniel Schröder</i>	

I02 - SOC Degradation Air Electrode

- (Invited) Early-Onset Degradation of (La,Sr)(Co,Fe)O₃ in Solid Oxide Electrolysis Cells 4428
Heather S Slomski, Jonas Kaufman, Michael Dzara, Nicholas A. Strange, Jeremy Hartvigsen, Nicholas Kane, Micah Casteel, Brandon C. Wood, David Ginley, Kyoung E. Kweon, Brian Gorman, Sarah Shulda
- Operando High Temperature XRD Study of Oxygen Electrodes during SOEC Operation..... 4430
Olga A Marina, Christopher Coyle, Surendra B Karki
- (Invited) Impact of Sr-Containing Secondary Phases on Oxide Conductivity in Solid-Oxide Electrolyzer Cells 4431
Andrew Rowberg, Heather S Slomski, Namhoon Kim, Nicholas A. Strange, Brian Gorman, Sarah Shulda, David Ginley, Kyoung E. Kweon, Brandon C. Wood
- Microstructure-Based Modeling of Inner Oxygen Pressure in Solid Oxide Electrolysis Cells: Analysis of Electrode Delamination and Mitigation 4432
FEI Xue, Yinkai Lei, Tianle Cheng, Tao Yang, William K. Epting, Harry W. Abernathy, You-Hai Wen
- (Invited) Bi-Functional Oxygen Electrodes for Reversible Solid Oxide Cells..... 4433
Srikanth Gopalan

I02 - SOC Degradation Electrolyte

- (Invited) Understanding Chemo-Mechanical Degradation Behavior of Solid Oxide Cells in Terms of Ionic and Electronic Transport Properties across Electrode Interfaces 4434
Hyung-Tae Lim
- Modeling Oxygen Partial Pressure in Solid Oxide Electrolysis Cells: The Microstructure Effect..... 4435
Yinkai Lei, Tianle Cheng, FEI Xue, William K. Epting, Harry W. Abernathy, You-Hai Wen
- (Invited) Understanding the Degradation of Oxide Ion Diffusivity in YSZ Electrolyte for Practical SOC 4436
Haruo Kishimoto, Qingchuan Bai, Katherine Develos Bagarinao, Tomohiro Ishiyama, Takuya Yamaguchi, Toshiaki Yamaguchi
- Solid State YSZ Electrolyte Oxygen Partial Pressure Under Dynamic Operation 4437
Jeremy Hartvigsen, Qian Zhang, Micah Casteel, Nicholas Kane, Lucun Wang, Cameron Priest, Joshua Gomez, Dong Ding

I02 - Low Temperature Conductors

- Development of Proton Conductors with Skelton of Lithium-Ion Conducting Oxides..... 4438
Akihiro Ishii, Hiroshi Matsumoto, Hisashi Kato, Itaru Oikawa, Hitoshi Takamura
- Nanoscale Proton-Conducting Oxide Membranes for Low Temperature Water Electrolysis..... 4440
Daniel V. Esposito, Lucas Cohen, Jingjing Jin, Jesse Dondapati, Zhexi Lin, Matthew S Weimer, Sara Harris, Arrelaine A Dameron, Sven Junker, Justin Hawkes, Ryan J. Ouimet, Christopher B. Capuano
- Mechanism of Hydride-Ion Diffusion in the Oxyhydride of Barium Titanate: Insights from Quasielastic Neutron Scattering 4441
Rasmus Lavén, Lucas Fine, Michael Koza, Maths Karlsson

First-Principles Molecular Dynamics Analysis of Hydride-Ion Diffusion in $\text{Ba}_{1.75}\text{LiH}_{2.7}\text{O}_{0.9}$	4442
<i>Jun Haruyama, Fumitaka Takeiri, Genki Kobayashi, Osamu Sugino</i>	

(Invited) Improving the Stability and Transport Properties of a High Concentration of Protons in Phosphate Glass at Intermediate Temperatures	4444
<i>Takahisa Omata, Tomohiro Ishiyama, Junji Nishii</i>	

High Temperature Materials Division Outstanding Achievement Award Address

(High Temperature Materials Division Outstanding Achievement Award) Development of Novel Ion Conducting Materials for Use as Electrolytes and Electrodes in Intermediate Temperature Solid Oxide Cells	4446
<i>Tatsumi Ishihara</i>	

I02 - Perspectives on Solid State Ionic Devices 1

(Invited) Recent Advances in Protonic Ceramic Electrochemical Cells at KAIST	4448
<i>Kang Taek Lee</i>	

(Invited) Topsoe's Vision on the Commercialization of Solid Oxide Electrolysis Cells: Challenges and Accomplishments in Upscaling to the MW Scale.....	4449
<i>Elena Marzia Sala, Anne Hauch, Aiswarya Krishnakumar Padinjarethil, Peter Gustav Blennow, Giovanni Perin, Jeppe Rass-Hansen, Thomas Heiredal-Clausen, Majken Holstebro, Malte Frederik Fittkau Birkmose, Andreas Mai, Karl Tor Sune Thyden, Sune Dalgaard Ebbesen, Michael Hultqvist, Poul Georg Moses</i>	

I02 - Perspectives on Solid State Ionic Devices 2

On Three Fundamental Questions Concerning Activity and Stability in Solid Oxide Cells	4451
<i>Xiao-Dong Zhou</i>	

(Invited) Degradation Mechanisms and Mitigation Strategies for High-Temperature Solid Oxide Cells.....	4453
<i>Kyung Joong Yoon</i>	

(Invited) Effect of Electrode Polarization on Oxide Ion-Conducting and Proton-Conducting Electrolytes	4454
<i>Tatsuya Kawada, You Yamaguchi, Marika Sakai, Riyan Achmad Budiman, Mina Yamaguchi, Keiji Yashiro</i>	

(Invited) Predicting Surface Phase Diagrams of Complex Oxides Under Functionally Relevant Conditions	4456
<i>Bilge Yildiz</i>	

(Invited) Ionic Nanoarchitectonics to Create Novel Functional and High-Performance Devices, Such As Neuromorphic Devices.....	4457
<i>Kazuya Terabe, Takashi Tsuchiya, Tohru Tsuruoka</i>	

I02 - Poster Session

Chromium Poisoning Studies on LSC Air Electrode in SOEC vs. SOFC Modes Using a Three-Electrode System.....	4459
<i>Jun Ho Park, Jang Woo Seo, In-sung Lee, Hyung-Tae Lim</i>	

Theoretical Analysis of Carbon Deposition in the Fuel Electrode of a Reversible Solid Oxide Cell	4460
<i>Gang Yang, Jeremy Joseph Leger, Yudong Wang, Nengneng Xu, Xiao-Dong Zhou</i>	
Influence of Local Environment Under Polarization on Wettability of Ni/YSZ Interface	4461
<i>Sota Ihara, Hiroki Muroyama, Toshiaki Matsui</i>	
Degradation Prediction of Solid Oxide Cell Considering Ni Coarsening Model Based on Electrode Microstructure Measurement.....	4462
<i>Ko Yoshiga, Yohei Nagatomo, Ryota Ozaki, Junko Matsuda, Yuya Tachikawa, Kazunari Sasaki</i>	
Scale-up Synthesis of Oxygen Electrode for Protonic Ceramic Electrochemical Cells (PCECs)	4464
<i>Haixia Li, Wenjuan Bian, Zeyu Zhao, Yuchen Zhang, Quanwen Sun, Dong Ding</i>	
Development of High Performance Nanofibrous Oxygen Electrode Material in a Triple-Layered Perovskite for Protonic Ceramic Fuel Cells	4465
<i>Minji Kim, KwangHo Park, Jun-Young Park</i>	
Effect of Y Doping on Proton Conductivity of $\text{BaCo}_{0.4}\text{Fe}_{0.4}\text{Zr}_{0.2-x}\text{Y}_x\text{O}_{3-\Delta}$ (BCFZY) Proton Ceramic Fuel Cell (PCFC) Cathodes	4467
<i>Chiyoun Kim</i>	
Functional Layer Optimization of Proton Conducting Electrochemical Cells	4468
<i>Yuchen Zhang, Quanwen Sun, Zeyu Zhao, Wei Wu, Jianhua Tong, Dong Ding</i>	
Enhanced Sintering of Refractory Protonic Ceramic Electrolyte by Dual Phase Reaction	4469
<i>Jong-Ho Lee, Junseok Kim, Sihyuk Choi, HO-IL JI, Deok-Hwang Kwon, Sungeun Yang, Kyung Joong Yoon, Ji-Won Son</i>	
Protonation of Metal Oxides By Charge-Transfer-Protonation	4470
<i>Taichi Furukawa, Hiroshige Matsumoto</i>	
Surface Proton Conductivity of Sm-Doped SrCeO_3 - BaCeO_3 Solid Solution Ceramic and Thin Film.....	4472
<i>Riku Tabuchi, Ryota Morizane, Go Notake, Tohru Higuchi</i>	
Reservoir Computing with Graphene-Based Lithium-Ion Operated Electric Double Layer Transistors	4474
<i>Hina Kitano, Daiki Nishioka, Wataru Namiki, Kazuya Terabe, Takashi Tsuchiya</i>	
Mixed Protonic and Electronic Conduction in N-Type Oxide Semiconductor MgIn_2O_4 Under Hydrogen Atmosphere.....	4477
<i>Tomoyuki Yamasaki, Saki Kudo, Takahisa Omata</i>	
Optimization of Reservoir Computing Utilizing Interfered Spin Waves.....	4479
<i>Maki Nishimura, Wataru Namiki, Daiki Nishioka, Kazuya Terabe, Takashi Tsuchiya</i>	
Evaluation of B-Site Doped Barium Niobate Perovskite Anodes for the Electrochemical Oxidative Coupling of Methane.....	4481
<i>Luke H Denoyer, Kannan Ramaiyan, Angelica Benavidez, Adrian Brearley, Fernando H. Garzon</i>	
Processing of Dense $\text{BaCe}_{0.4}\text{Zr}_{0.4}\text{Y}_{0.2}\text{O}_{3-\Delta}$ Proton-Conducting Electrolyte for Direct Ammonia Fuel Cell Applications	4482
<i>Kuan-Zong Fung, Shu-Yi Tsai, Tai-Chen Chen, Yuan Jie Tsai</i>	
Development of Barium-Modified Anodes for Anode-Supported Solid Oxide Fuel Cells Fueled with Ammonia	4483
<i>Akinari Fujita, Hiroki Muroyama, Toshiaki Matsui</i>	

Stability Enhancement of Direct Ammonia Solid Oxide Fuel Cells By Using Barium-Modified Ni/YSZ Anodes	4484
<i>Jun Su Lee, Hyung-Tae Lim</i>	
Designing an Ammonia Compatible SOFC System	4485
<i>Werner Hultinen, Santeri Saxelin, Jari Kiviaho, Olli Himanen</i>	
Evaluation of Properties of $\text{La}_{1-x}\text{Ce}_x\text{Cr}_{0.5}\text{Ni}_{0.5}\text{O}_{3-\Delta}$ for Internal Dry Reforming of Solid Oxide Fuel Cells	4486
<i>JunHo Kim, Seung Woo Kim, Se Han Yu, Gwang Tae Park, Jeong Woo Yun</i>	
In-Situ Exsolved Ni-Co Alloy Nano Catalyst for Direct Utilization of Ammonia Fuel in Solid Oxide Fuel Cells	4487
<i>Hyeongwon Jeong, Yo Han Kim, Bo-Ram Won, Dayoung Park, Jae-Ha Myung</i>	
Influence of Morphology and Surface Chemistry on Ni-Exsolved Perovskite Oxides for Direct Ammonia Solid Oxide Fuel Cells	4488
<i>Keejung Kim, Dong Woo Joh, Hye-Sung Kim, Seung-Bok Lee, Tak-Hyoung Lim, Seok-Joo Park, Rak-Hyun Song, Jong-Eun Hong</i>	
Optimum Operating Conditions By Co-Electrolysis in Solid Oxide Cell for Fischer-Tropsch Synthesis	4489
<i>Takumi Imabayashi, Takayuki Ozeki, Koichi Asano</i>	
Significantly Improved Stability of Carbon/Air Secondary Battery System By Separating Carbon Deposition Area	4490
<i>Keisuke Kameda, Taishiro Wakamiya, Reimi Takagi, Sergei Manzhos, Manabu Ihara</i>	
Metal-Supported Solid Oxide Co-Electrolysis Cells	4493
<i>Riccardo Caldogno, Anke Hagen, Xiufu Sun</i>	
Surface Engineering of High-Nickel NMC Cathode Materials with Fumed Al_2O_3 Via Dry Particle Coating for Enhanced Structure Stability and Battery Performance	4495
<i>Zizhou He, Nengneng Xu, Yudong Wang, Xiao-Dong Zhou</i>	
Cation-Anion Engineering for Conductivity Enhancement in Fluorosulfide $\text{La}_2\text{SrF}_4\text{S}_2$	4496
<i>Chengchao Zhong, Tailei Xu, Yu Shintomi, Shintaro Tachibana, Keiji Shimoda, Yuki Orikasa</i>	
Design of Li-Si Alloy Anodes for Enhancing Mechanical Stability and Electrochemical Performance of Sulfide-Based All-Solid-State Batteries	4498
<i>Yu Hong Jeong, Min Ju Kim, Hyung-Tae Lim</i>	
In Situ NMR Study on Hydrogen Incorporation in Electrochromic Oxides WO_3 and TiO_2	4499
<i>Itaru Oikawa, Yu Sugawara, Akihiro Ishii, Hitoshi Takamura</i>	
Ionic Conductivity of Anisotropically Sintered Apatite-Type Lanthanum Silicon Oxide	4501
<i>Shigekazu Hidaka, Takahisa Yamamoto</i>	
Synthesis, Thermal Stability, and Proton Conductivity of $\text{Na}_{1-x}\text{Li}_{1-x}\text{H}_x(\text{PO}_3)_3 \cdot \text{YH}_2\text{O}$ ($\text{M} : \text{Ni}^{2+}$ and Mg^{2+})	4503
<i>Shota Ishikawa, Haruya Takahashi, Keita Otsuka, Naoya Ueta, Yasuaki Matsuda</i>	
Synthesis, Thermal Stability, and Proton-Conductivity of the Mixed-Cation Phosphate with One-Dimensional Tunnels Formed by PO_4 Tetrahedral Rings	4505
<i>Kazuhiko Hirose, Yasuaki Matsuda</i>	

Intermediate-Temperature Steam Electrolysis Using Phosphate-Based Thin Film Electrolytes	4507
<i>Ayuka Nakagami, Shohei Tada, Ryuji Kikuchi</i>	
Electropositive Metal Doping into Lanthanum Hydride for H ⁻ Conducting Solid Electrolyte Use at Room Temperature	4508
<i>Genki Kobayashi, Yoshiki Izumi, Fumitaka Takeiri, Kei Okamoto, Takashi Saito, Takashi Kamiyama, Akihide Kuwabara</i>	
Oxygen Evolution Reaction on Electrochemically F-Doped La _{0.5} Sr _{0.5} CoO _{3-δ}	4509
<i>Takuya Katsumata, Soma Kobata, Ryotaro Aso, Yuta Kimura, Koji Amezawa, Takashi Nakamura</i>	
Stabilization of a Hydride Superionic Conducting Phase Via Cation Substitution in Ba-Li Based Oxyhydride	4511
<i>Hiroshi Yaguchi, Kei Okamoto, Fumitaka Takeiri, Genki Kobayashi</i>	
Steam Electrolysis Using Solid Acid Electrolytes at Intermediate Temperatures.....	4513
<i>Ke Xu, Keisuke Obata, Masao Katayama, Kazuhiro Takanabe</i>	
Fabrication of Dense Electrolyte for Metal-Supported Solid Oxide Fuel Cells By Plasma Spray Method	4515
<i>Keiji Yashiro, Toshiaki Matsui, Mina Yamaguchi, Takaya Fujisaki, Tatsuya Kawada</i>	
Fabrication of Anode Functional Layer By Reactive Sputtering for Large Area Thin-Film Solid Oxide Cells	4516
<i>Kyoungjae Ju, Hyong June Kim, Dong Won Shin, Byung Chan Yang, Jee Ho Hong, Sung Eun Jo, Wan Woo Park, Ji-Won Son, Jihwan An</i>	
Microstructural Analysis of Stainless Steel Support/Ni-YSZ Anode Interface in Metal-Supported SOFCs	4517
<i>Hikaru Ishiguro, Hiroki Muroyama, Toshiaki Matsui</i>	
Electrochemical Performance of Fuel Electrodes in Solid Oxide Co-Electrolysis Cells Operated Under Various Conditions	4519
<i>Kazuma Nara, Toshihiro Oshima, Yuki Shibata, Mio Sakamoto, Yuya Tachikawa, Kazunari Sasaki</i>	
Reversible Solid Oxide Cells: Durability of Co-Impregnated Fuel Electrodes	4521
<i>Kyoko Matsubara, Kazutaka Ikegawa, Yuya Tachikawa, Junko Matsuda, Kazunari Sasaki</i>	
Fabrication of SOECs Hydrogen Electrode Active Layer Using Liquid Phase Grown NiO/YSZ Nanocomposite Particles	4523
<i>Yurika Sone, Kazuyoshi Sato, Toshiaki Yamaguchi, Haruo Kishimoto</i>	
Influence of Heterogeneous Composite Cathode on La(Sr)Ga(Mg)O ₃ -Based Solid Oxide Fuel Cells.....	4525
<i>YoungWan Ju, Tae Ho Shin</i>	
Development of Nano-Composite Structured Electrode for High Performance Metal-Supported Solid Oxide Cells.....	4526
<i>Dayoung Park, Yo Han Kim, Bo-Ram Won, Hyeonwon Jeong, Jaeha Myung</i>	
Determination of Oxygen Reduction Reaction Process of La _{0.6} Sr _{0.4} CoO _{3-δ} Porous Electrode Using Nonlinear Frequency Response Analysis	4527
<i>Marika Sakai, Riyan Achmad Budiman, Mina Yamaguchi, Keiji Yashiro, Tatsuya Kawada</i>	

Nanoparticles Exsolution on Perovskite Oxides: From Growth Mechanism to Energy Conversion Applications.....	4529
<i>Yo Han Kim, Hyeongwon Jeong, Bo-Ram Won, Dayoung Park, Jae-Ha Myung</i>	
Kinetic Investigation of Electrode Reaction Processes on Ni-GDC Cermet Fuel Electrodes for Reversible Solid Oxide Cells.....	4530
<i>Yohei Nagatomo, Ryota Ozaki, Ko Yoshiga, Masahiro Yasutake, Yuya Tachikawa, Stephen Matthew Lyth, Junko Matsuda, Kazunari Sasaki</i>	
Effect of SOEC Operating Conditions on the YSZ Electrolyte Conductivity	4532
<i>Hajime Toriumi, Katherine Develos Bagarinao, Haruo Kishimoto, Toshiaki Yamaguchi</i>	
High Surface Proton Conductivity of Epitaxial $\text{CeO}_{2-\delta}$ Thin Film below Medium Temperature Range.....	4533
<i>Go Notake, Minami Tani, Mariko Yamada, Ryota Morizane, Riku Tabuchi, Tohru Higuchi</i>	
Surface Oxide Ion Conduction of a - Axis Oriented $\text{Ce}_{0.75}\text{Sm}_{0.25}\text{O}_{2-\delta}$ Thin Film Prepared on (200) YSZ Substrate.....	4535
<i>Ryota Morizane, Riku Tabuchi, Riku Tabuchi, Tohru Higuchi</i>	
Optimization of the Parameters for Developing the Buffer Layer By Reactive Magnetron Sputtering in Order to Increase the Performance of a SOFC.....	4537
<i>Laura Guesnet, Jérôme Laurencin, Julien Vulliet, Pascal Briois</i>	
Surface Ionic Conduction of $\text{Ce}_{0.8}\text{Gd}_{0.2}\text{O}_{2-\Delta}$ Multilayer Thin Films with Large Amount of Oxygen Vacancies.....	4538
<i>Mariko Yamada, Minami Tani, Go Notake, Tohru Higuchi</i>	
Simulation of a Reversible Solid Oxide Cell Operating in Dual Mode with Experimental Validation	4540
<i>Zabihollah Najafianashrafi, Joy Marie Mora, Shadi Salehian, Po-Ya Abel Chuang</i>	
Advances in Solid Oxide Electrolysis Cell (SOEC) Technology for Sustainable, Efficient, and Durable Hydrogen Production.....	4541
<i>Sun-Dong Kim, Yoonseok Choi, Hoonmin Park</i>	
Reversible Solid Oxide Cells: A Study on System Simulation.....	4543
<i>Ryosuke Shigematsu, Ryota Ozaki, Yuya Tachikawa, Yoshio Matsuzaki, Kazunari Sasaki</i>	
Deconvoluting Soecs – One Cell at a Time insights from Single-Cell Analysis of Solid Oxide Electrolysis Cells at Topsoe.....	4545
<i>Aiswarya Padinjarethil, Elena Marzia Sala, Steven Pirou, Karen Brodersen, Peter Gustav Blennow, Elise Despesse, Karl Tor Sune Thyden, Ramchandra Tiruvalam, Lars F. Lundegaard, Søren B Rasmussen, Anne Hauch</i>	
Micro-Scale Thermal Partial Oxidation Reforming of Liquid Fuels and Solid Oxide Fuel Cell Performance and Stability Analysis.....	4546
<i>Guthrie Demers, Adrija Rukmini, Ryan J Milcarek</i>	

102 - SOC Air Electrode Materials Development

Characterization of the Structural and Electrochemical Properties of Praseodymium Oxide as an Efficient Oxygen Electrode for Intermediate Solid Oxide Cells	4547
<i>Bartłomiej Lemieszek, Sebastian Molin, Piotr Jasiński</i>	

Ag Doped LaMnO_3 As a Novel Cathode Material for SOFC Using YSZ Electrolyte	4549
<i>Takaaki Sakai, Akihiro Takamatsu, Hiroki Takemura, Konosuke Mitsushio, Haruo Kishimoto, Masatsugu Oishi</i>	
Sr Oxide Nanoparticle Modified Co_3O_4 as an Active Oxygen Dissociation and Recombination Catalyst for Solid Oxide Reversible Cell.....	4550
<i>Khongorzul Narmandakh, Jun Tae Song, Motonori Watanabe, Tatsumi Ishihara</i>	
Accelerating Discovery of Spinel Oxides for Bifunctional Oxygen Electrocatalysts	4552
<i>Incheol Jeong, Yoonsu Shim, jong Min Yuk, Kimin Roh, Chan-Woo Lee, Kang Taek Lee</i>	
Enhanced Reactivity and Stability in SOFC Cathodes via Thermal Reduction-Induced Surface Amorphization and Ex-Solution in Cu-Doped $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\Delta}$	4553
<i>SungHyun Jeon, Wan-Gil Jung, Hohann Bae, Scott A Barnett, Jongsu Seo, Bong-Joong Kim, WooChul Jung</i>	
Developing Cobalt-Free, Strontium Titanium Ferrite Based Air Electrodes for Solid Oxide Cells	4554
<i>Junsung Hong, Jakob Michael Reinke, Scott A Barnett</i>	
Unveiling the Significant Influence of Metal Oxide Infiltration on Surface Oxygen Exchange Activity in Perovskite Oxides.....	4555
<i>Hyunseung Kim, Han Gil Seo, Sejong Ahn, Harry L. Tuller, WooChul Jung</i>	
Stabilizing the LSCF Oxygen Electrode of Solid Oxide Electrolysis Cell via Adjustment in Stoichiometry: Doping in a-Site with Ca and B-Site with Larger Cations	4556
<i>Surendra B Karki, Renaldo Springer, Lorraine Seymour, Long Le, Tian Liu, Sangbong Ryo, Olga A Marina</i>	

I02 - SOC Interlayers

$\text{Y}_2\text{T}_2\text{O}_7$ -Based Pyrochlores As Alternative Materials for Diffusion Barrier Layer at the Fuel Electrode-Electrolyte Interface in SOFC/SOEC.....	4557
<i>Aleksey Yaremchenko, Aleksandr Bamburov</i>	
Electrochemical Performance of Fuel-Electrode-Supported Reversible Solid Oxide Cells with a Ni-GDC Functional Layer	4559
<i>Ryota Ozaki, Yohei Nagatomo, Ko Yoshiga, Tsutomu Kawabata, Mio Sakamoto, Masahiro Yasutake, Yuya Tachikawa, Junko Matsuda, Kazunari Sasaki</i>	
Grain Controlled Interlayer of Solid Oxide Fuel Cells Via Nitrogen Reactive Sputtering	4562
<i>Davin Jeong, Hyeontaek Kim, Yongchan Park, Soonwook Hong</i>	

I02 - SOC Degradation Fuel Electrode

(Invited) Enabling Materials for Intermediate Temperature Solid Oxide Electrolyzers	4564
<i>Kevin Huang</i>	
(Invited) Elucidation of Degradation Mechanisms of Ni Cermet Electrode during Co-Electrolysis Using Cross-Section Model Electrodes	4565
<i>Takashi Sato, Nanako Bisaka, Riyan Achmad Budiman, Mina Yamaguchi, Keiji Yashiro, Tatsuya Kawada</i>	
Durability of Electrolyte Supported Solid Oxide Cells for Steam Electrolysis: Operation at High Current Density and at Reduced Temperature	4567
<i>Josef Schefold, Aline Léon</i>	

Tracking Microstructural Evolution of the Ni-Cermet Fuel Electrode in Solid Oxide Electrolyzers Using X-Ray Nano Computed Tomography	4569
<i>Michael Dzara, Heather S Slomski, Zhikuan Zhu, Brian Gorman, David Ginley, Mike C Tucker, Sarah Shulda</i>	

The Degradation Study of Ni Patterned Electrode with Various Ceramic Electrolyte for Water Electrolysis	4572
<i>Xiaolin Shao, Takashi Sato, Riyan Achmad Budiman, Mina Yamaguchi, Keiji Yashiro, Tatsuya Kawada</i>	

I02 - SOC Fuel Electrode Materials Development

(Invited) Input of Atomic Layer Engineering for Active and Stable Electrodes for Solid Oxide Cells.....	4574
<i>Jihwan An, Hyong June Kim, Haoyu Li, Minhwan Lee</i>	

Designing SOC Electrodes for Better Lifetime Performance.....	4575
<i>Harry Abernathy, William K. Epting, Yinkai Lei, Jian Liu</i>	

(Invited) Studying Ni-YSZ Fuel Electrode Microstructure and Characteristics Using Symmetric Cells.....	4576
<i>Pattiya Pibulchinda, Scott A Barnett</i>	

Influence of the Transition Metal Doping on the Properties of $\text{Sr}_2\text{Fe}_{1.5}\text{Mo}_{0.5}\text{O}_6$ Double Perovskite for Solid Oxide Fuel Cells.....	4577
<i>Agata Ducka, Patryk Blaszcak, Wiktoria Kąkol, Beata Bochentyn</i>	

I02 - SOC Fabrication

Development of Superior-Performance, High-Durability and Low-Cost Reversible Solid Oxide Cell for Power Generation and Hydrogen Production.....	4579
<i>Nguyen Q. Minh, Sanghoon Lee, Sangbong Ryu, Cam Anh Thieu, Quang Tuyen Tran, Haichen Lin, Ping Liu</i>	

Preparation of Y_2O_3 -Stabilized ZrO_2 Film By Warm Isostatic Press (WIP) Method for Metal-Support Solid Oxide Fuel Cells (SOFCs).....	4580
<i>Niki Nakagawa, Jun Tae Song, Motonori Watanabe, Miki Inada, Tatsumi Ishihara</i>	

Highly Bendable Solid Oxide Fuel Cells Via Phase Control of Zirconia-Based Electrolyte.....	4582
<i>Bo-Ram Won, Yo Han Kim, Hyeongwon Jeong, Dayoung Park, Jae-Ha Myung</i>	

Monolithic Stacks: The Next Evolution for Solid Oxide Electrolysis/Fuel Cell Technology.....	4583
<i>Federico Capotondo, Steven Pirou, Bhaskar Reddy Sudireddy, Chrisitan Goltermann, Matthew Thomas Bishop, Henrik Henriksen, Ebtisam Abdellahi, Anke Hagen</i>	

I02 - Co-Electrolysis

Optimization of Synthesis Gas Composition for e-Fuel By Control of Co-Electrolysis Stack Operation Parameters	4585
<i>Jin Soo Ahn, Sangkuk Kim, Namgi Jeon, Kigyu Ahn</i>	

Concept and Advantages of Carbon/Air Secondary Battery System as a Fixed Compact Power Storage with Large Capacity	4586
<i>Manabu Ihara, Keisuke Kameda, Reimi Takagi, Taishiro Wakamiya, Chen Kexin, Sergei Manzhos</i>	

Advancing Production of e-Fuels through Pressurized Co-Electrolysis in Solid Oxide Electrochemical Cells.....	4589
<i>Jakub Kupecki, Anna Niemczyk, Maciej Bąkała, Konrad Motyliński, Magdalena Kosiorek, Stanisław Jagielski</i>	
Co-Electrolysis of H ₂ O and CO ₂ at Intermediate Temperatures with Protonic Ceramic Cell Reactors.....	4591
<i>Nannan Li, Eirini Marousiadou, Vasileios Kyriakou</i>	
Improvement of CO ₂ Conversion By Infiltration of Metal Additives (Ag, Cu, Ni, Co, and Ce) to Decorate Sr ₂ Fe _{1.5} Mo _{0.5} O _{6-δ} Cathodes for Solid Oxide Electrolysis Cells	4592
<i>Yi-Hsuan Lee, Tengrui Wei</i>	
Improving Catalytic Activity of Solid Oxide Electrolysers for the Electrosplitting of Water Vapor and CO ₂ by the Addition of Affordable and Eco-Friendly Promoter Metals	4593
<i>Patryk Błaszczak, Agata Ducka, Francesco d'Acapito, Krzysztof Matlak, Barbara Wolanin, Matteo Amati, Sea-Fue Wang, Beata Bochentyn, Piotr Jasiński</i>	
Protonic Ceramic Membranes: Up-Scaling and Application to E-Fuels Synthesis	4595
<i>Julian Dailly, Daniel Schmider, Philipp Blanck, Mathieu Marrony, Olaf Deutschmann</i>	

I02 - Electrosynthesis of NH₃

Influence of Ionic and Electronic Transport Properties on Ammonia Electrochemical Synthesis in Protonic Ceramic Fuel Cells.....	4597
<i>Junichiro Otomo, Moe Okazaki, Julián Andrés Ortiz Corrales</i>	
From Mechanism Study to Catalyst Design: Exsolved Ru Nanocatalysts on Proton Conducting Oxide for Efficient Ammonia Synthesis.....	4599
<i>HO-IL JI, Joonhwan Kim, Hayoung Kim, Sungeun Yang</i>	

I02 - Solid State Batteries

(Invited) Synthesis of LiAlO ₂ Polymorphs Under High Pressure and Their Lithium-Ion Conductivity	4600
<i>Toshihiro Nishimura, Akihiro Ishii, Itaru Oikawa, Hitoshi Takamura</i>	
(Invited) Development of Bulk-Type Solid-State Batteries with Oxide-Based Solid Electrolytes.....	4602
<i>Kazunori Takada</i>	
Enabling Rechargeable Thermal Batteries Using Solid-State Electrolytes	4603
<i>David Herman, Eric Allcorn, Aaron Melad, Noah B. Schorr, Dan Wesolowski</i>	
Evaluating Electric Double Layer Effects at Solid Electrolyte Interfaces with Field-Effect Transistor Utilizing p-Doped SiC (100) Single Crystal.....	4605
<i>Kaoru Shibata, Wataru Namiki, Daiki Nishioka, Kazuya Terabe, Takashi Tsuchiya</i>	
Organic-Inorganic Composite Membrane Containing Low-Cost Functionalized Organosilane (FOSi) Polymer for Vanadium Redox Flow Batteries	4607
<i>Kanalli Vinayak Ajeya, Baek Ahm Kim, Sung Chul Park, Ho-Young Jung</i>	
Fluoride Ion Conductivity and Crystal Structure Analysis of Ba ₄ Bi ₃ F ₁₇ with Fluorite-Type Units.....	4608
<i>Saya Hirakawa, Keiji Shimoda, Shogo Kawaguchi, Yuki Orikasa, Chengchao Zhong</i>	

Accelerating Development of Submicron-Thick Initiated Chemical Vapor Deposition (iCVD)-Derived Polymer Electrolytes for All Solid-State Batteries Via Pre-Screening Bulk Surrogates.....	4609
<i>Hunter O. Ford, Ramsay Nuwayhid, Brian Chaloux, Michael W Swift, Nishani Jayakody, Christopher Klug, Youngchan Kim, Xiao Liu, Battogtokh Jugdersuren, Jeffrey W. Long, Debra R. Rolison, Megan B. Sassin</i>	

Enhancing Oxygen Catalytic Performance in Zinc-Air Batteries through Localized Micro-Interface Reconstruction of Cobalt-Manganese Spinel	4610
<i>Nengneng Xu, Christabel Adjah-Tetteh, Yudong Wang, Zizhou He, Xiao-Dong Zhou</i>	

I03-SEAWATER ELECTRODIALYSIS AND ELECTROLYSIS FOR WATER-ENERGY NEXUS

I03 - Seawater Nexus 1

Dopant Engineering of Conductive Polymer for Developing High-Efficiency, Membrane-Free, Full-Polymer Electrochemical Deionization Systems	4611
<i>Hung-Yi Huang, Yi-Heng Tu, Yu-Hsiang Yang, Chi-Chang Hu</i>	

Sustainable Desalination Waste Brine Management through Electrochemically Supported CO ₂ mineralization and Multiple Product Recovery	4615
<i>Weihan Tu, Ya Zhao, Wei Ping Chan, Grzegorz Lisak</i>	

Macroscopic Access Resistances Hinders the Measurement of Ion-Exchange-Membrane Performances for Electro-Dialysis Processes	4617
<i>Timothée Derkenne, Annie Colin, Corentin Tregouet</i>	

I03 - Seawater Nexus 2

Atomically Dispersed Metal Catalysts Promoting Selective Chlorine Evolution Reaction	4619
<i>Sang Hoon Joo</i>	

Mn Oxide / IrO ₂ / Ti Anodes Prepared By Calcination for Oxygen Evolution in Seawater Electrolysis	4620
<i>Soma Takahashi, Yu Monma, Kise Sato, Seira Ito, Yuki Ono, Mohamed Abdel-Galeil, Yasuko Yamada Maruo, Zenta Kato</i>	

Comparative Study of Cobalt Oxide and Cobalt-Molybdenum Oxide Electrodes for Seawater Electrolysis	4623
<i>Mohamed Abdel-Galeil, Soma Takahashi, Seira Ito, Zenta Kato</i>	

Enhancing Electrochemical Seawater Oxidation with Noble Metal-Decorated Co ₃ O ₄ Nanocubes	4626
<i>Joon Yong Park, Gisang Park, MinJeong Kim, Ki Min Nam</i>	

I03 - Seawater Nexus 3

Constructing Membrane-Free Faradaic Deionization Systems with High Capacity and High Rate of Salt Removal/Recovery	4628
<i>Chi-Chang Hu, Yi-Heng Tu, Yu-Hsiang Yang, Hung-Yi Huang</i>	

Advances in Redox-Electrodialysis for Energy-Efficient Desalination.....	4629
<i>Xiao Su, Nayeong Kim, Johannes Elbert</i>	

Compact and Portable Desalination Using Architected Silver Sponge Electrodes.....	4630
<i>Zachary G. Neale, Ryan H. DeBlock, Debra R. Rolison, Jeffrey W. Long</i>	

I03 - Seawater Nexus 4

Redox-Mediated Electrodialysis for Recycling of Spent Lithium Ion Battery	4631
<i>Choonsoo Kim, Hyunjin Kim, Seonghwan Kim</i>	
In-Situ Desalination-Coupled Electrolysis with a Membrane Stack System Producing Value-Added Chemicals	4632
<i>Byeong-ju Kim, Hyunwoong Park</i>	
Solar Desalination Charger for Water Treatment and Value-Added Chemical Production	4633
<i>Seonghun Kim, Hyunwoong Park</i>	
Advanced Chemical-Free Boron Removal Technique through Bipolar Membrane Electrodialysis for Seawater Reverse Osmosis Permeate	4634
<i>MIN Chen WU, Chia-Hung Hou</i>	
Triggering Catalyst-Mediated Electron Transfer for Enhanced Ion Separation in Redox-Flow Battery Desalination System	4636
<i>Tsai-Hsuan Chen, Shih-Kuan Tsai, Chia-Hung Hou</i>	

I03 - Seawater Nexus 5

(Invited) Electrochemical Stripping for Ammonia Recovery: Mechanisms and Impacts of Chlorine Evolution	4638
<i>Jinxing Ma, Jiazhou He</i>	
(Invited) Improvement in Dynamic Operational Stability of Alkaline Water Electrolysis	4639
<i>MinJoong Kim, Changsoo Lee, Sechan Lee, Gisu Doo, Jongsu Seo, Hyun-Seok Cho</i>	

I03 - Seawater Nexus 6

(Invited) Electrocatalytic Synthesis of Ammonia and Urea	4640
<i>Youngkook Kwon</i>	
Molybdenum-Catalyzed Electrochemical Ammonia Synthesis Using Zero-Gap Electrolysis Cell	4641
<i>Yasuhiro Kiyota, Jun Tamura, Mitsuhiro Oki, Masahiko Yoshiki, Kazuya Arashiba, Yoshiaki Nishibayashi, Yoshitsune Sugano</i>	
Enhancing Charge-Transfer Performance of Titanium Electrodes through Surface Coatings for Improved Electrochemical Systems	4643
<i>Eric Krall, Alexandra E. L. Overland, Jesus Rivera, Maira Raquel Ceron, Steven A. Hawks</i>	
Electrocatalytic CO ₂ Conversion to Formate Using Gas-Diffusion Electrodes with Group 12-15 Metals	4644
<i>Guangxia Piao, Hyunwoong Park</i>	

I03 - Seawater Nexus 7

Modeling Hydrogen Crossover in Proton Exchange Membrane Water Electrolyzers with and without Recombination Catalyst Interlayers	4645
<i>Christopher G. Arges, Rajesh Ahluwalia, Xiaohua Wang</i>	
Bifunctional CoFe-Spinel@Cu for Peroxymonosulfate Activation and Electrochemical Nitrate Reduction Towards High Purity Ammonia Production	4646
<i>Yerin Kim, Jimin Lee, Kangwoo Cho</i>	
Cell Design and Optimization for Efficient Hydrogen Production through Ammonia Electrolysis	4647
<i>Haowei Long, Akhil Paliwal, Andrew A. Gewirth, Paul J.A Kenis</i>	
Dynamic Stabilization of Nickel-Based Oxygen Evolution Anodes by Phosphate Additive Functioning in the Presence of Chloride Ions.....	4648
<i>Hiroki Komiya, Keisuke Obata, Kazuhiro Takanabe</i>	

I03 - Poster Session

Redox Chemical Transformation of Organic and Inorganic Compounds in Frozen State - Intrinsic Electron Transfer Processes in Ice.....	4650
<i>Kitae Kim</i>	
A High-Capacity Hybrid Desalination System Using Battery Type and Pseudocapacitive Type Electrodes	4651
<i>Yu-Hsiang Yang, Chi-Chang Hu, Hung-Yi Huang, Yi-Heng Tu, Hsing Mei Chou</i>	
Designing Ni Single Atom Catalysts Mimicking the Ni SOD Enzyme for Efficient H ₂ O ₂ Electrosynthesis	4655
<i>June Sung Lim, Jinjong Kim, Sang Hoon Joo</i>	
Atomically Dispersed Transition Metal Catalysts for Electrochemical Chlorine Evolution Reaction	4656
<i>Jinjong Kim, Sang Hoon Joo</i>	
Sequential Generation of Hydrogen and Oxygen By Water Electrolysis Using Iodine Redox	4657
<i>Asuna Kai, Mai Tomisaki, Hiroshige Matsumoto</i>	
BiVO ₄ -Based Chloride Oxidation for Hypochlorous Acid (HOCl) Production, and Analysis of the Causes of Saturation Phenomenon	4659
<i>Inho Kim, Hyunwoong Park</i>	
Oxide Encapsulated Ruthenium Oxide Catalysts for Selective Oxygen Evolution in Unbuffered pH Neutral Seawater	4660
<i>Daniela Asifiwe Bushiri, Amanda Baxter, Onaolapo Odunjo, Daniela V. Fraga Alvarez, Yong Yuan, Jingguang G Chen, Daniel V. Esposito</i>	
Determining Aqueous and Gaseous Product Composition of High-Preforming Titanium for Nitrate Reduction to Ammonia.....	4661
<i>Wrayzene Willoughby, Thomas F. Jaramillo</i>	
Electrochemical Chloride Activation by Iridium-Doped Tin Oxide for Oxidative Treatment of Urine Wastewater	4663
<i>Jonghun Lim</i>	

I03 - Seawater Nexus 8

Combined Electrolysis of Seawater and Wastewater for Decentralized Water Reuse and H ₂ Production	4664
<i>Kangwoo Cho</i>	
Development of NiFeS _x for Selective Oxygen Evolution Reaction (OER) in Alkaline Seawater: Mitigating Chlorine Evolution in Next-Gen Seawater Electrolysis Devices.....	4665
<i>Muhammad Sohail Riaz, Pau Farràs Costa, Praveen Kumar</i>	
Intermetallic Single-Atom Alloy Bimetallic for Electrosynthesis of Ammonia from Nitrate.....	4667
<i>Sishuang Tang, Minghao Xie, Zhao Li, Guihua Yu</i>	
Advancing Towards Energy Self-Sufficiency in Guam and Micronesia through the Development of Workers for the Blue Economy	4668
<i>John Limtiaco, Juan Lopez-Ruiz</i>	

I03 - Seawater Nexus 9

Machine Learning-Assisted High-Throughput Experiments for Selective Seawater Electrolysis	4669
<i>Masanori Kodera, Kazuhiro Sayama</i>	
In-Situ Visualization and Quantification of Precipitate Fouling on Gas-Diffusion Electrodes in Carbon-Containing and Ocean Water Electrolytes	4671
<i>Rachel Silcox, Nicole France, Rohini Bala Chandran</i>	
NiFeCrMnTiO _x As an Active Electrocatalysts for Hydrogen Production from Anion Exchange Membrane (AEM) Saline Water Splitting	4672
<i>Praveen Kumar Selvam, Muhammad Sohail Riaz, Pau Farràs Costa</i>	

I03 - Seawater Nexus 10

Bipolar Membrane (BPM)-Based Direct Seawater Electrolysis.....	4673
<i>Ji-Hyung Han, Hye Kyoung Shin, Namjo Jeong, Hyunji Eom, Jung Jae Lee</i>	
Low-Temperature Seawater Electrolysis for the Removal of Organic Contaminants and Simultaneous Hydrogen (H ₂) Generation.....	4674
<i>Juan A. Lopez-Ruiz, Bhanupriya Boruah, Lyndi E. Strange, Nathanael Royer, Nickolas W Riedel, Biva Talukdar</i>	
Development of Highly Active, Selective, and Durable Non-Precious Electrocatalysts for Advanced Membrane Electrode Assemblies for Direct Seawater Electrolyzers	4676
<i>Stoyan Bliznakov, Leonard J. Bonville, Radenka Maric</i>	
Continuous in-Situ Monitoring of Aqueous Chlorine Species Formed during Electrolysis of Saltwater.....	4677
<i>Sydney Dronsfield, Anand Singh, Scott Paulson, Viola Ingrid Birss</i>	
Desalination-Coupled (photo)Electrocatalysis for Production of Value-Added Chemicals	4679
<i>Hyunwoong Park</i>	

J01-LUMINESCENCE AND DISPLAY MATERIALS: FUNDAMENTALS AND APPLICATIONS: IN HONOR OF BALDASSARE DI BARTOLO

J01 - Fundamentals and Theory of Luminescence

Tribute to Professor Baldassare Di Bartolo - Rino	4680
<i>Marco Bettinelli, John Collins, Kailash C Mishra, Eugeniusz Zych</i>	
(Invited) A Statistical Model of Thermal Ionization of Excited Ce Ions in YAG	4681
<i>John Collins, Kailash C Mishra</i>	
(Invited) Unraveling the Impact of Different Thermal Quenching Routes on Luminescence Efficiency of $\text{Y}_3\text{Al}_5\text{O}_{12}:\text{Ce}^{3+}$ Phosphor: Insights from Mode-Selective Vibrational Excitation Experiments.....	4682
<i>Maths Karlsson</i>	
A Statistical Interpretation of Thermoluminescence.....	4683
<i>John Collins, Kailash C Mishra</i>	
Understanding the Excited Properties and the Luminescence Mechanisms of ns^2 Type Ion Doped Phosphors: A First-Principles Study	4684
<i>Bibo Lou</i>	
Exploring the Luminescent Properties of Transition Metal Ions in Solids through Theoretical Insights and the Prospects of Machine Learning	4685
<i>Mega Novita, Chong-Geng Ma, Michal Piasecki, Mikhail G. Brik</i>	
First-Principles Investigation of the Optical Transition Energies of Cr^{3+} Impurity Ion.....	4686
<i>Kurboniyon Mekhrdod Subhoni</i>	

Luminescence and Display Materials Division Outstanding Achievement Award Address

(Luminescence and Display Materials Division Outstanding Achievement Award) Fiat Lux ^[1] , or the Lighting Story of the Transition Metal and Rare Earth Ions.....	4687
<i>Mikhail G. Brik</i>	

J01 - Luminescence of Single Crystals, Ceramics and Glass

(Invited) Laser Induced Generation of Emission and Photocurrent of GaN Nanoceramics	4688
<i>Wieslaw Strek, Agata Musialek, Robert Tomala, Mariusz Stefanski</i>	
(Invited) Photoluminescence and Scintillation Properties of Heavy Single Crystal Scintillators for X- and Gamma-Ray Detection	4689
<i>Takayuki Yanagida, Daisuke Nakauchi, Takumi Kato, Noriaki Kawaguchi</i>	
Optical Properties and Application Development of Glass-Ceramics	4690
<i>Xuhui Xu, Xue Yu</i>	
Scintillation Properties of Yb^{2+} -Doped LiBr Single Crystals	4691
<i>Keiichiro Miyazaki, Daisuke Nakauchi, Takumi Kato, Noriaki Kawaguchi, Takayuki Yanagida</i>	

Thermally Stimulated Luminescence and Photoluminescence Properties of Dy-Doped Al ₂ O ₃ -SiO ₂ Glasses.....	4692
<i>Akihiro Nishikawa, Daiki Shiratori, Takumi Kato, Daisuke Nakauchi, Noriaki Kawaguchi, Takayuki Yanagida</i>	

J01 - Luminescence of QDs and Nanocrystals

(Invited) Exploration of Pb-Free Metal Halide Crystal for Scintillator and Sensor Applications	4693
<i>Won Bin Im</i>	
(Invited) Fundamental Photophysics of Lead Halide Perovskites	4694
<i>Yoshihiko Kanemitsu</i>	
Luminescence Properties of Perovskites Doped with Lanthanides Under High-Power Excitation.....	4696
<i>Robert Tomala, Agata Musialek, Mariusz Stefanski, J.M. Goncalves, Wieslaw Strek</i>	
Photoluminescence Properties of Lead Halide Perovskite Nanocrystals Revealed By Single-Dot Spectroscopy	4697
<i>Takumi Yamada, Kenichi Cho, Ryota Sato, Masaki Saruyama, Toshiharu Teranishi, Yoshihiko Kanemitsu</i>	
(Invited) Self-Recovery of Photodegraded CsPbBr ₃ Perovskite Nanocrystals and Problems By Irreversible Damage	4699
<i>Yoshiki Iso, Tetsuhiko Isobe</i>	
Synthesis and Near-IR Photoluminescence Property of Ag-Au-S Quantum Dots.....	4701
<i>Kazutaka Akiyoshi, Mariko Hasegawa, Chie Miyamae, Tatsuya Kameyama, Hiroki Sato, Yusuke Ohshima, Tsukasa Torimoto</i>	
Enhanced Stability and High-Efficiency Lighting with Perovskite Quantum Wires.....	4703
<i>Qianpeng Zhang, Daquan Zhang, Zhiyong Fan, Xiaoliang Mo</i>	
Synthesis of Blue-Light Emitting Ag-Ga-S Quantum Dots for LED Application.....	4704
<i>Makoto Tozawa, Shuto Ofuji, Kazutaka Akiyoshi, Tatsuya Kameyama, Genichi Motomura, Yoshihide Fujisaki, Taro Uematsu, Susumu Kuwabata, Tsukasa Torimoto</i>	

J01 - Phosphors for Lighting and Display

(Invited) Synergistic Interactions of Co-Dopants for Phosphor Functionalization.....	4705
<i>Eugeniusz Zych, Dagmara Kulesza, Justyna Zeler, Paulina Bukowska, Pola K. Łukaszczuk, Małgorzata Sójka, Luis D. Carlos, Carlos D.S. Brites</i>	
(Invited) Synthesis and Development of High-Performance Phosphors to Brighten the Future	4707
<i>Hubert Huppertz</i>	
Exploration of Novel Crystal Structures of Narrow Band Phosphors By Deep Learning Generative Model	4709
<i>Masaya Abe, Hiromitsu Takaba</i>	
Quantum Efficiency Evaluation of Single-Particle Phosphor By the Proximity Measurement.....	4710
<i>Kohsei Takahashi, Naoto Hirosaki, Takashi Takeda</i>	
Phosphor Technology for Display Applications	4712
<i>Younghyun Song, SeungHee Choi, Sie Wook Jeon, InSeok Jang, Ho-Jung Jeong</i>	

Impact of Composition, Pressure and Local Symmetry of Impurity Site on the Optical Properties of Phosphor Materials	4713
<i>Michal Piasecki, Mikhail G. Brik, Alok M. Srivastava, Oleg Y Khyzhun, Wiliam W Beers, William Erwin Cohen, Mega Novita, Marius Stef, Zafari Umar, Tomoyuki Yamamoto</i>	
Temperature Dependence of Mn ⁴⁺ Emission Intensity and Lifetime in TriGain® Phosphor (K ₂ SiF ₆ :Mn ⁴⁺).....	4714
<i>William Erwin Cohen, Fangming Du, William Winder Beers, Mikhail G. Brik, Alok M. Srivastava</i>	
Some Approaches for Theoretical Search of Novel Phosphor Materials Based on First-Principles Calculations and Machine Learning	4716
<i>Kazuyoshi Ogasawara</i>	
Geometrical and Electronic Structures of Red Phosphors Doped with 3d Transition Metals	4717
<i>Tomoyuki Yamamoto, Moe Hirano, Dilshod Nematov, Amondulloi Burkhonzoda, Zafari Umar, Mikhail G. Brik</i>	
Creation of a Two-Step Prediction Model of 4f-5d Transition Energies of Ce ³⁺ in Garnet-Type Oxides Based on the Combination of First-Principles Calculations and Machine Learning.....	4718
<i>Nora Izzati Binti Mohd Razip, Mega Novita, Kazuyoshi Ogasawara</i>	

J01 - Other Luminescent Materials and Applications

(Invited) Applications of Mn ⁴⁺ and Cr ³⁺ Ions for Lighting and Optical Thermometry	4719
<i>Mikhail G. Brik, Miroslav Dramicanin, Alok M. Srivastava, William Winder Beers, William E. Cohen, Michal Piasecki, Chong-Geng Ma, Mekhrdod Kurboniyon, Tomoyuki Yamamoto</i>	
(Invited) Discovery of Static Electricity Induced Luminescence (SEL) Sensing Material Toward Visualizing Invisible Static Electricity Distribution	4720
<i>Nao Terasaki, Yoshitaro Sakata, Daichi Yamaura</i>	
Optimizing Multifunctional Phosphors: Thermoluminescence and Luminescence Thermometry Processes	4722
<i>Justyna Zeler, Dominika Grzesiak, Aleksandra Maloń, Aleksandra Owczarek, Luis D. Carlos, Eugeniusz Zych</i>	
Fabrication of Vertical Light-Emitting Diodes Using Wurtzite InP/AlInP Core-Multishell Nanowires Towards Yellow Wavelength	4723
<i>Ziye Zheng, Shun Kimura, Yuki Azuma, Katsuhiro Tomioka, Junichi Motohisa</i>	
Orthogonal Upconversion Luminescence from Core/Shell-Structured Upconversion Nanophosphors.....	4725
<i>Ho Seong Jang, A-Ra Hong, Jihoon Kyhm, Gumin Kang</i>	
Enhanced Near-Infrared Electrochemiluminescence of Glutathione-Stabilized Au Nanoclusters in Water	4726
<i>Joohoon Kim</i>	
Development of QD-OLED and Thin Film Encapsulation Technology Using Inkjet Printing	4727
<i>Byoung-Hwa Kwon, Jin-Wook Shin, Chan-Mo Kang, Hyunsu Cho, Chul Woong Joo, Sukyung Choi, Nam-Sung Cho, Chun-Won Byun</i>	
Toward Semiconductor Laser Cooling Using CsPbBr ₃ Nanocrystal.....	4728
<i>Yang Ding, Zhuoming Zhang, Sushrut Ghonge, Masaru Kuno</i>	

Thermally Invariant, Highly Sensitive, Ratiometric Luminescent Manometry Based on Cr ³⁺ Emission	4729
<i>Maja Szymczak, Marcin Runowski, Przemyslaw Wozny, Lukasz Marciniak</i>	

J01 - Poster Session

Selective-Area Growth of Crystal Phase Transition Wurtzite InP Film.....	4730
<i>Yuki Azuma, Ziyi Zheng, Junichi Motohisa, Katsuhiro Tomioka</i>	
Charge Transfer Luminescence of LiCa ₃ MgV ₃ O ₁₂ and LiCa ₃ ZnV ₃ O ₁₂ Under Ionizing Radiation Excitation	4732
<i>Noriaki Kawaguchi, Kai Okazaki, Takumi Kato, Daisuke Nakauchi, Takayuki Yanagida</i>	
Composition of Quantum Dot Color Conversion Layer with ZnS Nanoparticle for Facile Ink Formulation and Uniform Inkjet Printing.....	4733
<i>Byung Doo Chin</i>	
Analysis of the Origin of the Centroid Shift in 4f-5d Transition Energies of Eu ²⁺ in Oxide and Fluoride Crystals Using First-Principles Calculations.....	4734
<i>Mamoru Honda, Kazuyoshi Ogasawara</i>	
Photoluminescence and Scintillation Properties of Ce-Doped SrF ₂ Transparent Ceramics	4735
<i>Takumi Kato, Daisuke Nakauchi, Noriaki Kawaguchi, Takayuki Yanagida</i>	
Development of Europium-Doped Barium Fluorochloride Translucent Ceramic Scintillators.....	4737
<i>Shota Otake, Takumi Kato, Daisuke Nakauchi, Noriaki Kawaguchi, Takayuki Yanagida</i>	
Fabrication of (K,Rb) ₂ CuCl ₃ and (K,Rb) ₂ CuBr ₃ Single Crystal Scintillators with Efficient Luminescence.....	4739
<i>Keishi Yamabayashi, Kai Okazaki, Daisuke Nakauchi, Noriaki Kawaguchi, Takumi Kato, Takayuki Yanagida</i>	
Scintillation Properties of LaMgAl ₁₁ O ₁₉ :Er Crystals with NIR Luminescence.....	4740
<i>Daisuke Nakauchi, Takumi Kato, Noriaki Kawaguchi, Takayuki Yanagida</i>	
Siloxane-Encapsulated Perovskite Nanocrystal for Highly Stable Color-Converting Material in Displays.....	4741
<i>Junho Jang, Young-Hoon Kim, Yongmin Shin, Byoung-Hwa Kwon, Byeong-Soo Bae</i>	
Enhancing Efficiency in Perovskite Light-Emitting Diodes through Molecule-Induced Defect Passivation.....	4742
<i>Jin Kyoung Park, Jin Hyuck Heo, Sang Hyuk Im</i>	
Alpha-Ray Detection Properties of Spinel Single Crystals	4743
<i>Yuma Takebuchi, Keitaro Tezuka, Takumi Kato, Daisuke Nakauchi, Noriaki Kawaguchi, Takayuki Yanagida</i>	
Prediction of ¹ E _g energies in Ni ²⁺ in Crystals Based on Racah Parameters B and C By First-Principles Calculations and Machine Learning	4745
<i>Tomoki Kobayashi, Shuma Tanaka, Kazuyoshi Ogasawara</i>	
Prediction of Emission Energy of d ³ Ions in Oxides Based on Local Structures Using First-Principles Calculations and Machine Learning	4746
<i>Fumiya Kimura, Shuma Tanaka, Kazuyoshi Ogasawara</i>	

Study on the Production Mechanism of Fluorescent Species and Its Application to White LED of NH ₄ -Form Y-Type Zeolite	4747
<i>Koki Kubota, Naoya Miyajima, Hideto Sakane</i>	
Radioluminescence Properties of Tb-Doped PbF ₂ Crystals Obtained By Spontaneous Melt Crystallization	4750
<i>Noriaki Kawaguchi, Toshiaki Kunikata, Takumi Kato, Daisuke Nakauchi, Takayuki Yanagida</i>	
First-Principles Analysis of the Influence of the Valence on the Optical Spectra of Uranium Ions in Oxide Crystals	4751
<i>Toshiki Masago, Kazuyoshi Ogasawara</i>	
Synthesis and Evaluation of Photoluminescence and Scintillation Characteristics of Sn Doped HfO ₂ -Al ₂ O ₃ -SiO ₂ Glasses	4752
<i>Daiki Shiratori, Daisuke Nakauchi, Akihiro Nishikawa, Yutaka Fukuchi, Takayuki Yanagida</i>	

K01-NEW DEVELOPMENTS IN SYNTHETIC ORGANIC ELECTROCHEMISTRY: IN MEMORY OF TATSUYA SHONO, TSUTOMU NONAKA AND IKUZO NISHIGUCHI

K01 - Flow, Mechanism, and Catalysis

Constructing Point-of-Care Diagnostics: Developing New Chemistry for the Functionalization and Use of High-Density Microelectrode Arrays	4754
<i>Kevin D Moeller</i>	
Development of a Streaming Potential-Driven Electrolysis System: Reductive Hydroxylation of Aromatic Boronic Acids	4755
<i>Suguru Iwai, Taichi Suzuki, Elena Villani, Kosuke Sato, George Hasegawa, Norio Ishizuka, Kimihiro Matsukawa, Ikuyoshi Tomita, Shinsuke Inagi</i>	
Electrocatalytic Hydrogenation of Pyridines in an Anion-Exchange Membrane (AEM) Reactor and Its Mechanistic Analysis by in Situ XAFS Measurement.....	4757
<i>Juri Harada, Yugo Shimizu, Akizumi Yonezawa, Ryo Kurihara, Shoji Iguchi, Kazuhide Kamiya, Naoki Shida, Mahito Atobe</i>	
Electrocatalytic Hydrogenation of Nitrogen-Containing Compounds Using a Proton-Exchange Membrane Reactor	4759
<i>Seiji Suga, Koichi Mitsudo, Atsushi Osaki, Haruka Inoue</i>	
Electrochemical Oxidation of Xylitol on Ag to Valuable Organic Acids: Mechanistic Study and Product Analysis	4760
<i>David Tran, Zhe Meng, Henrik Høgh Kristoffersen, Jan Rossmeisl, Johan Hjelm</i>	
Sustainable Electrochemical Olefin Epoxidation via Porphyrin Based Molecular Catalysts	4762
<i>Sojin Kim, Dibya Yadav, Eunji Baek, Kyoungsuk Jin</i>	
Phenol-Mediated Proton Shuttling Enables Electrochemical Hydrogenation of Phenol in Alkaline Electrolytes on Rhodium	4763
<i>Brianna Markunas, Joshua David Snyder</i>	
Regioselective Electrocatalytic Deuteration Reactions in PEM Reactor.....	4764
<i>Yosuke Ashikari, Yiyue Yao, Kyoko Mandai, Aiichiro Nagaki</i>	
(Invited) Flash Electroorganic Chemistry Guided By Flow Microreactor Research.....	4765
<i>Aiichiro Nagaki</i>	

K01 - Reaction Media, Catalysis, and Photoredox

Paired Electrosynthetic Oxidations Using Multifunctional Ionic Liquids	4766
<i>Darren Anthony Walsh</i>	
All in One Ionic Liquid. Acts As Catalyst, Electrolyte, and Solvent in Electrochemical Hydrogen Generation	4767
<i>Hisashi Shimakoshi, Aya Sato</i>	
Deep Eutectic Solvents As Novel Solvent-Electrolyte System for Electroreductive Transformations.....	4769
<i>Astrid Kjær Steffensen, Helena Lundberg, Anders Riisager</i>	
Electrolyte Cage Effects in Organic Electrosynthesis: Measuring and Driving Selectivity	4771
<i>Zachary A Nguyen, Dylan G. Boucher, Kevin McFadden, Shelley Minter</i>	
Measuring Hydride Transfer Kinetics to Mhat Relevant Catalysts Using Cyclic Voltammetry	4772
<i>Kevin McFadden, Dylan G. Boucher, Shelley Minter</i>	
Photosynthesis of NH ₃ from NO ₃ ⁻ Using CH ₄ as a Reductant by a Homogenous Re Catalyst	4773
<i>Takahiro Matsumoto</i>	
Visible-Light Induced C-H Oxygenation of Hydrocarbons Using Chlorine Dioxide as a Photoredox Catalyst.....	4774
<i>Kei Ohkubo</i>	
Synthesis of Degradable Polymers Containing Phenylpropanoid Skeleton Via [2+2] Cycloaddition Polymerization Triggered By Electrochemical Oxidation and Photocatalysis	4775
<i>Ryo Nagaya, Tatsuya Seko, Kazuhide Ueno, Naoki Shida, Mahito Atobe</i>	
(Invited) Organic Transformations with Strongly Photoreducing Catalysts	4776
<i>Youngmin You</i>	

K01 - Polymers and Materials

Synthesis of Cationic Azatriphenylene Derivatives by Anodic Pyridination and Their Optoelectronic Properties	4777
<i>Yushi Ohno, Shogo Ando, Daisuke Furusho, Kosuke Sato, Ryoyu Hifumi, Ikuyoshi Tomita, Shinsuke Inagi</i>	
Electrochemical C-H Arylation of Polythiophenes By Using Aryldiazonium Salts	4779
<i>Satoshi Koiso, Kosuke Sato, Shinsuke Inagi</i>	
Synthesis of Polybromothiophene By Electrooxidative Polymerization and Its Polymer Reactions	4781
<i>Yoshimasa Matsumura, Sota Hokimoto</i>	
Phosphonylation of Conjugated Polymers By Redox Mediator-Induced Electrochemical Post-Functionalization	4782
<i>Kohei Taniguchi, Kosuke Sato, Shinsuke Inagi</i>	
An Electrochemiluminescence Device Powered By Streaming Potential for the Detection of Amines	4784
<i>Shinsuke Inagi, Rintaro Suzuki, Suguru Iwai, Elena Villani, Kosuke Sato, George Hasegawa, Norio Ishizuka, Kimihiro Matsukawa</i>	

Electrochemical One-Pot Synthesis of Cyclic Oligoglucosamines	4786
<i>Hirofumi Endo, Azadur MD Rahman, Ochi Masaharu, Tomoaki Hamada, Takahiro Kawano, Norihiko Sasaki, Toshiki Nokami</i>	

K01 - Poster Session

Electrochemical Evaluation of Phenylenediamine/Quinonediimine Redox Systems As Organic Electroactive Materials	4788
<i>Kaori Miyakoshi, Toshiki Tajima</i>	
Synthesis of Tetrabutylammonium Tri(1,1,1,3,3,3-hexafluoro-2-propanol)-Coordinated Fluoride and Its Application to Anodic Fluorination	4790
<i>Aika Mochizuki, Haruka Homma, Nobutaka Kitajima, Toshiki Tajima</i>	
The Effect of Adding Glycerol in Hydrogen Production Using AEM Reactor	4791
<i>Hiroyuki Tateno, Shih-Yuan Chen, Genki Horiguchi, Takehisa Mochizuki</i>	
Synthetic Organic Electrochemistry: From Bulk to Nano Chitin	4792
<i>Thang Hong Tran, Thu Pham Anh Phan, Mikkel Rykær Kraglund, David Tran, Charlotte Jacobsen, Johan Hjelm</i>	
Convergent Paired Electrosynthesis of β -Nitroalcohols Using an Electrogenated Base	4793
<i>Haruka Homma, Ruka Hasegawa, Tomohiro Yokoyama, Toshiki Tajima</i>	

K01 - Molecular Transformations

Development of Electrochemical Reductive C-O/C-N Bond Forming Reactions.....	4795
<i>Toshiki Nokami, Titli Ghosh, Hazuki Kaizawa, Norihiko Sasaki, Manabu Abe, Takashi Nishikata</i>	
Electrochemical Synthesis of Diarylsultones and Dibenzothiophene Dioxide Via C–O/C–S Bond Formation	4796
<i>Yasuyuki Okumura, Koichi Mitsudo, Seiji Suga</i>	
Transition-Metal-Catalyst-Free Electroreductive Hydroarylation of Alkenes with Aryl Halides.....	4798
<i>Kosuke Yamamoto, Kazuhisa Arita, Masashi Shiota, Masami Kuriyama, Osamu Onomura</i>	
Reductive Electrosynthesis Initiated By Mediated Oxalate Oxidation.....	4799
<i>Joshua A. Beeler, Henry S. White</i>	
Synthesis of Thienoacenes By Electrochemical Double C–S Cyclization Promoted By a Halogen Mediator	4800
<i>Koichi Mitsudo, Takuya Nagahara, Seiji Suga</i>	
Electrosynthesis for the Invention of New Organic Reactions.....	4802
<i>Christian Malapit</i>	
Electrogeneration of Oxygen-Centered Radicals from N-Alkoxyphthalimides and Their Use in a Remote C-H Functionalization for 5,5-Spirocycles Construction	4803
<i>Julio Romero Ibañez, Diego Francisco Chicas-Banos, Edgar Alan Colindres-Díaz, Fernando Sartillo-Piscil, Bernardo Antonio Frontana-Uribe</i>	
Electrodes, Mediators, and New Opportunities for Selectivity in Chemical Reactions	4805
<i>Kevin D Moeller</i>	

(Invited) Synthetic Electrochemistry: Leaping into a New Era.....	4806
<i>Yu Kawamata</i>	

K02-PIONEERING THE FUTURE WITH BIOENGINEERING AND ELECTROCHEMISTRY

K02 - Poster Session

Separation of Electrochemical Signals By Ohmic Drop between Electrodes Arranged in a Matrix Configuration.....	4807
<i>Jian Xiong, Yi Deng, Hiroaki Suzuki, Seiya Tsujimura</i>	
Spatiotemporally Controllable Chemical Delivery Via Hydrogel Electroosmotic Pump.....	4809
<i>Yunhao SUN, Chenxing Li, Natsuho Moriyama, Gaobo Wang, Soichiro Tottori, Matsuhiko Nishizawa</i>	
Functional Analysis of Macrophages and Mirnas in the Metastasis Suppression By iPS Cell-Derived Extracellular Vesicles.....	4811
<i>Noa Katayama, Misato Nakano, Mikako Saito</i>	
Single-Cell Analysis of Immune Synapse Formation Associated with Melanoma-T Cell Contact.....	4812
<i>Asuka Tamura, Noa Katayama, Mikako Saito</i>	
Evaluation of Porcine Sperm Activity Using an Electrochemical Device.....	4813
<i>Yuma Terui, Ryoma Kumagai, Yoko Frubayashi, Yuta Sakuranaka, Tamio Matsuzawa, Ryusuke Matsuzawa, Shigenobu Kasai</i>	
Elucidating the Mechanism of Electrochemical Inactivation of Direct Electron Transfer Type Glucose Dehydrogenase Enzyme-Employing Biosensor	4815
<i>Koji Sode, Joseph Kerrigan</i>	
Integrated Photosynthetic Bioprocess through Aerobic-Autotrophic and Electro-Fermentation in Electrolyzer Via Cupriavidus Metallidurans CH34	4817
<i>Young Eun Song, Changman Kim, Justin Panichc, Chang Dou, Steven Singer, Eric Sundstrom</i>	
Reversible Electrically Modulated Electroosmotic Flow Via Carbon Nanotube Membrane.....	4818
<i>Chenxing Li, Yunhao SUN, Natsuho Moriyama, Gaobo Wang, Soichiro Tottori, Matsuhiko Nishizawa</i>	
Development of in-Situ Electrochemical Megabalanus Roseus gene Measurement System	4820
<i>Rino Uejima, Mai Sugimoto, Masakazu Arima, Tsunemasa Saiki, Satoshi Nagai, Eiichiro Takamura, Hiroaki Sakamoto</i>	
Application of Resin Adsorption Process for Mitigating Protocatechuic Acid Cytotoxicity in Corynebacterium Glutamicum Fermentation	4822
<i>Jaehoon Cho, Hee Soo Kim, Wooshik Shin</i>	
Potential Control for Bipolar Electrochemical Systems By Closed Circuits Including Ion-Selective Electrodes	4823
<i>Yi Deng, Nurul Asyikeen Ab Mutalib, An-Ju Hsueh, Jian Xiong, Hiroaki Suzuki, Seiya Tsujimura</i>	
Aptamer Based Stress Detection Biosensor	4825
<i>Rina Uchida, Mai Sugimoto, Yasushi Mitsunaga, Shinsuke Torisawa, Yasuhisa Kobayashi, Tsunemasa Saiki, Eiichiro Takamura, Hiroaki Sakamoto</i>	

Detection of Antibody-Antigen Interactions with Electrochemical Biosensor Based on Bipolar Phenomenon	4827
<i>Arisa Tochigi, Joh Takahashi, Mizuki Kondo, Takashi Kuwahara</i>	

K02 - Bioengineering and Electrosynthesis

Bioengineering of Cyanobacteria for Electrosynthesis.....	4829
<i>Shelley D. Minteer</i>	
Non-Native Bioelectrocatalytic C-C and C-N Bond Formation via Cobalamin Dependent Enzymes.....	4830
<i>Luke Kays, Dylan G. Boucher, Amardeep Kumar, Paras Gupta, Jared Lewis, Shelley D. Minteer</i>	

K02 - New Analytical Tools for Bioelectrochemistry

Autonomous and Closed-Loop Exploration and Optimization of Bioelectrocatalytic Systems	4831
<i>Michael A. Pence, Dylan G. Boucher, Zachary A Nguyen, Joaquin Rodriguez Lopez, Shelley D. Minteer</i>	
(Invited) Integrated Electrochemical Devices for Microphysiological Systems	4833
<i>Kosuke Ino</i>	
(Invited) Development of a New Biopolar Electrode Array and Coreactant for High-Performance Electrochemiluminescence Field Diagnostic Device	4835
<i>young Kwan Cho, Sang-Hyun Jeon, Hyunho Kim, Beom-Jun Shim, Hakho Lee, Ik-Soo Shin</i>	
(Invited) Bringing Electrochemistry to Raman Spectroscopy Again with Unconventional Approach.....	4836
<i>Mijeong Kang, Iris Baffour Ansah, Donghyeon KIM</i>	

K02 - Bioenergy Conversion and Interfaces

(Invited) Engineering of Electrochemical Interface for Highly Sensitive Biomolecular Detection: From Macro to Small Molecules	4837
<i>Jae Hwan Shin, Jong Pil Park</i>	
(Invited) Photosynthetic Microbial Current Generation; The Correlation with Calvin-Cycle Activity.....	4838
<i>Shuji Nakanishi</i>	
(Invited) Protein Film Electrochemistry and Surface-Enhanced Infrared Absorption Spectroscopy of Transmembrane Metalloenzymes.....	4839
<i>Masaru Kato</i>	
Direct Bioelectrocatalysis of Fungal Pyrroloquinoline Quinone-Dependent Pyranose Dehydrogenase Depending on the Alkyl Chain Lengths of Self-Assembled Monolayers	4840
<i>Kota Takeda, Makoto Yoshida, Kiyohiko Igarashi, Nobuhumi Nakamura</i>	
(Invited) Using Molecular Dynamics Simulations to Design Mediated Bioelectrochemical Interfaces	4842
<i>Lincoln Mtemeri, Scott Calabrese Barton, David P. Hickey</i>	
Exploring Novel Minimal-Catalyst Glucose to CO ₂ Pathways for Hybrid Enzymatic Biofuel Cell Development	4843
<i>Adam Milam, Rokas Gerulskis</i>	

Development of Bienzymatic Cascade for Direct Bioelectrochemical Ethanol Oxidation with Alcohol and Aldehyde Dehydrogenases	4844
<i>Taiki Adachi, Kenji Kano, Keisei Sowa, Yuki Kitazumi, Osamu Shirai</i>	
Evaluation of Enzyme Cascade Electrode Reactions at Nanoscale Area	4846
<i>Kotoko Ariga, Seiya Tsujimura, Tsutomu Mikawa</i>	
Photobioelectrodes through Photopolymerization of Pyrrole by Photosystem I	4848
<i>William Lowery, Kane Jennings, David E. Cliffl</i>	

K02 - Microbial and Cellular Electrochemistry

(Keynote) Biologically Targeted Janus Synapse between Ultramicroelectrode and Primary Neuron	4849
<i>Wonkyung Cho, Min-Ah Oh, Sun-heui Yoon, Chang Il Shin, Minji Jung, Taek Dong Chung</i>	
Characterization of Extracellular Vesicles Via Simultaneous Resistive-Pulse Sensing and Fluorescence Imaging.....	4851
<i>Alexandra J. Schmeltzer, Sean R. German, Eric M. Peterson, Henry S. White</i>	
Viable Bacterial Cell Counting Methods Based on Electrochemical Properties of Tetrazolium Salts	4852
<i>Hikaru Ikeda, Akira Tokonami, Hayato Fujimura, Miya Kawanaka, Yasuhiro Sadanaga, Hiroshi Shiigi</i>	
(Invited) Electrochemical Bacterial Sensing	4854
<i>Hiroshi Shiigi</i>	
Whole-Cell Controlled Living Polymerization By Electrochemically-Active Bacteria.....	4856
<i>Gang Fan</i>	
Improving Performance of Microbial Fuel Cells with Molecular Catalysts of Iron Azaphthalocyanine in Air-Breathing Cathode	4857
<i>Hiroya Abe, Edwin Osebe Nyangau, Yuta Nakayasu, Masaki Umetsu, Masaru Watanabe, Chika Tada</i>	
In-Operand Analysis of the Oxidative Stress of E. coli in Contact ZIF-67 by Electrochemical Detection of Hydrogen Peroxide	4859
<i>Maria Martin Martinez, Lorena Alvarez-Contreras, Beatriz Liliana España Sanchez, Walter Noe Velazquez Arjona</i>	

K02 - Biosensors 1

(Keynote) Ion Transport across Bilayer Lipid Membranes	4860
<i>Osamu Shirai</i>	
(Invited) Binding of DNA Aptamers to Target Molecules in Hydrated Ionic Liquids.....	4862
<i>Kyoko Fujita, Kazunori Ikebukuro</i>	
Water-Triggered Self-Wrapping Cuff Electrodes for Nerve Stimulation, Oral Presentation.....	4863
<i>Fumiya Imamura, Natsuki Nozaki, Soichiro Tottori, Shin-ichiro Osawa, Yuki Anzai, Gaobo Wang, Atsuhiro Nakagawa, Matsuhiko Nishizawa</i>	
(Invited) Novel Biosensing Platform Based on Image Analysis of Rotational Diffusion of Probe-Modified Janus Particles.....	4865
<i>Hiroaki Sakamoto</i>	

(Keynote) Separation Detection of Cancer Cells and Metabolites Based on Disposable Electrodynamic Microfluidic Channel and Electrocatalytic Sensors	4866
<i>Yoon-Bo Shim</i>	
A Rapid, Homogeneous, and Universal Electrochemical Immunosensing System Using an Antibody/Split-Enzyme Complex	4868
<i>Daimei Miura, Yuka Tobita, Kensuke Hirano, Yuma Hatano, Wakako Tsugawa, Koji Sode, Kazunori Ikebukuro, Ryutaro Asano</i>	
(Invited) Wet Interfacing Technique for Physiological Chemical Sensing	4870
<i>Kuniaki Nagamine</i>	
(Invited) Development of Biosensors Based on Graphene-Coated Porous Silica Spheres.....	4872
<i>Tetsuji Itoh</i>	
Measurement of Cerium with Tyrosine-Functionalized EF-Hand Loop Peptide Bio-Electrochemical Sensor	4873
<i>Sogol Asaei, Julie N. Renner</i>	

K02 - Biosensors 2

Proof-of-Concept Development of a Point-of-Care Direct Quantification of Glycated Albumin Using a Dual Electrochemical Method Approach	4874
<i>Andrea Rescalli, Mika Hatada, Francesco Cellesi, Pietro Cerveri, Koji Sode</i>	
Creation of pH-Sensitive Bioreceptors for Affinity-Type Electrochemical Biosensor Applications.....	4876
<i>Ellie Wilson, Mai Hamasaki, Miho Oda, Ryutaro Asano, Kazunori Ikebukuro, Koji Sode</i>	
Continuous Levodopa Sensor Employing Engineered Novel Direct Electron Transfer Type Enzyme	4878
<i>David Probst, Kartheek Batchu, Takenori Satomura, Koji Sode</i>	
Development of Convenient Immunosensors Employing Single Chain Variable Fragment (scFv)-Displayed Biogenic Magnetic Nanoparticles	4880
<i>Ayaka Goto, Daimei Miura, Ryoto Tomoe, Koji Sode, Wakako Tsugawa, Kazunori Ikebukuro, Tomoko Yoshino, Ryutaro Asano</i>	
Continuous Monitoring of Therapeutic Monoclonal Antibody Using Regenerable Aptamer Based Electrochemical Sensor	4882
<i>Madoka Nagata, Kazunori Ikebukuro, Hiroyuki Asanuma, Keiji Murayama, Koji Sode</i>	
(Invited) Wearable Electrochemical Biosensors for Continuous Biomarker Monitoring in Daily-Life	4884
<i>Jayoung Kim</i>	
Development of a Direct Electron Transfer-Type Enzymatic Sensor for the Spermine in Saliva, a Marker of Pancreatic Cancer	4885
<i>Yuki Yaegashi, Tong Sheng, Takumi Yanase, Junko Okuda-Shimazaki, Ryutaro Asano, Kazunori Ikebukuro, Koji Sode, Wakako Tsugawa</i>	
(Invited) Development and on-Body Tests of Wearable Electrochemical Sensors Fabricated By Screen Printing	4887
<i>Isao Shitanda</i>	
(Invited) Electrochemical Biosensor Using Direct Electron Transfer and an Antibody-Aptamer Hybrid Sandwich.....	4888
<i>Gyeongho Kim, Haesik Yang</i>	

Creation of Intrinsic Electrochemically-Active Solute Binding Proteins Suitable for Continuous Monitoring Systems	4889
<i>Mika Hatada, Bryant J. Kane, Shouhei Takamatsu, Junko Okuda-Shimazaki, Wakako Tsugawa, Koji Sode</i>	

Electrochemical Sensing for HIV Integrase Activity Detection Employing G4/Hemin Dnazyme.....	4891
<i>Shintaro Inaba, Thy Le, Kazunori Ikebukuro, Rahima Benhabbor, Koji Sode</i>	

K02 - Drug Delivery and Electrostimulation

(Invited) Electrochemical Induction of Insulin Secretion from Cultured Pancreatic β Cells	4893
<i>Hisakage Funabashi</i>	

An Investigation of Cell Death Induced By Electrochemical Stimulation in Ovarian Cancer	4895
<i>Zongyu Yang, Fu-Ming Wang</i>	

(Keynote) Soft Wet Iontronic Devices with Affinity to Biosystems.....	4897
<i>Matsuhiko Nishizawa</i>	

(Invited) Electrochemical Control of Microliter-Scale Fluids Enables Innovative Insulin Pump Technology for Diabetes Management.....	4899
<i>Woonsup Shin, Enhua Zhu</i>	

Breaking the 500-Dalton Rule of Transdermal Drug Delivery by Locally Stretching Skin with Porous Micropost Array	4900
<i>Soichiro Tottori, Sae Ichinose, Fumika Sakai, Kotaro Ishikawa, Natsuho Moriyama, Gaobo Wang, Matsuhiko Nishizawa</i>	

Dual-Mode Drug Delivery By Electroosmotic Flow with Bipolar Porous Microneedles	4902
<i>Sae Ichinose, Kosuke Kato, Natsuho Moriyama, Gaobo Wang, Soichiro Tottori, Matsuhiko Nishizawa</i>	

L01-PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY, ELECTROCATALYSIS, AND PHOTOELECTROCHEMISTRY GENERAL SESSION

L01 - Digital Only Presentations

(Digital Presentation) Study of Hexylamine Adsorption on a Gold Electrode	4904
<i>Gennady I. Ostapenko, Nina A. Kalashnikova</i>	

(Digital Presentation) Electrochemical Behavior of Ti(III) Complexes in the Chloride-Fluoride Melt	4907
<i>Daria A. Vetrova, Sergey A Kuznetsov</i>	

L01 - Novel Materials

Exploring the Potential of Coal: Electrolysis and Extraction for Chemical Recovery, Oral Presentation	4908
<i>Dayana Donneys Victoria, Alamgir Mojibul Haque, Md Sumon Miah, Mahmudul Hassan Riyad, Dipu Saha, Ehsan Abbasi, Gerardine G Botte</i>	

Unravelling the Relationship between Crystallographic Structure and Oxygen Evolution Reaction Activity of Nickel Cobalt Oxide Thin Films	4910
<i>Renee van Limpt, Mengmeng Lao, Michail N. Tsampas, Mariadriana Creatore</i>	

Partially Reduced Tin Oxide As a Selective Electrochemical Ozone Production Catalyst.....	4912
<i>Rayan Alaufey, Maureen H. Tang</i>	
Independent Control of Electrical Conductivity and Thermopower by Chemically Manipulating Ni ²⁺ /Ni ⁰ and Ti ⁴⁺ /Ti ³⁺ Redox Pairs in Ni-Doped SrTiO ₃	4914
<i>Michitaka Ohtaki, Leo Aoki, Koichiro Suekuni</i>	
Phase-Regulatable Ru-Based Nanocages with Near-Zero Overpotentials Toward Alkaline Hydrogen Evolution	4916
<i>Ming Zhao, Wenbin Jiang</i>	
Coherent Workflows for Sustainable Electrocatalytic Hydrogenation Reactions with Pentlandite Catalysts	4917
<i>Mena-Alexander Kraenbring, Leon Wickert, Meinert Hansen, Sebastian Sanden, Kevinjeorjios Pellumbi, Jonas Wolf, Daniel Siegmund, Fatih Özcan, Ulf-Peter Apfel, Doris Segets</i>	
Hydrodynamic Voltammetry of Fe ^{2+/3+} Redox Couple in Eutectic Electrolytes for Flow Batteries	4919
<i>Desiree Mae Prado, Xiaochen Shen, Robert F. Savinell, Clemens Burda</i>	
Synergistic Interfaces of Pd Nanocrystals and Metal Hydroxides for Ethanol Oxidation Reaction.....	4920
<i>Sho Kitano, Hiroya Motohashi, Mana Iwai, Koji Fushimi, Hiroki Habazaki</i>	
The Potential Use of Transition Metal Carbonitrides as Catalyst for Nitrogen Reduction Reaction.....	4922
<i>Atef Iqbal, Egill Skulason, Younes Abghoui</i>	

L01 - Modeling and Computations

First-Principles Study on CO Hydrogenation Promoted By Oxygen Atoms Adsorbed Onto Cu(100)	4923
<i>Kaito Nagita, Kazuhide Kamiya, Shuji Nakanishi, Yuji Hamamoto, Yoshitada Morikawa</i>	
Characterisation of Electrochemical Systems from Periodic Chronoamperometry Signals Using Computational Tools.....	4925
<i>Leopold Kloyer, Adrian C Fisher</i>	
Physical Reservoir Computing with Electrochemical Reactions.....	4926
<i>Ryo Yamada, S. Watanabe, T Fukuoka, S Hirooka, H. Inatsu, M. Nakagawa, H Tada</i>	
The Proton's Potential: How Acidic Is Sulfuric Acid at All?	4928
<i>Valentin Radtke, Regina Stroh, Monika Bäuerle, Daniel Himmel, Ingo Krossing</i>	
Unraveling the Role of Cu ⁺³ in Oxygen Evolution Activity of Copper-Oxides.....	4930
<i>Pooja Basera, Michal Bajdich</i>	

L01 - Novel Methods

Single-Step Electrochemical Upcycling of PET: Waste to Value-Added Chemicals, Oral Presentation	4931
<i>Dayana Donneys Victoria, Zenifar Haque, Gerardine G Botte</i>	
Electrochemical Investigations of Chlorpyrifos-Induced Toxicity Effects in Astrocytic Glutamate Regulation	4933
<i>Kaixuan Xu, M. Diana Neely, Camilla Guel, David E. Cliffl</i>	

Developing Carbon Particles and WS ₂ Platelets Modified Gce Towards the Sensitive Electrochemical Detection of the Anticancer Drug Flutamide	4934
<i>Yiran Luo, Rupa Kasturi Palanisamy, Eithne Dempsey, Carmel B Breslin</i>	
Using Operando Mass Spectrometry to Study Room Temperature C-H Bond Activation of Propane on Pt Electrocatalyst in Aqueous Acidic Electrolyte	4935
<i>Ashutosh Bhadouria, Brian Michael Tackett</i>	
Dissolution and Electrodeposition of Rare Earth Oxides within Acidic Eutectic Solvents	4937
<i>Vaishali Khokhar, Oguz Kagan Coskun, Burcu E Gurkan</i>	
Electrochemical Aptasensor for Progesterone Detection.....	4938
<i>Emily Carroll, Elizabeth Winterholler, Taylor D Sparks, Shelley D. Minteer</i>	
Mechanistic Insights into Hydrogen Transport through Metal Oxides Using Optical Microscopy.....	4939
<i>Shreya Thakkar, Payman Sharifi Abdar, Christopher Wilmer, James McKone</i>	
Shift in Electrochemical Pathway Under Forced Periodic Operation of Potential Applied Due to Catalytic Resonance Effect.....	4940
<i>Sidhanth Chandra Kanth, Evgeny V Rebrov</i>	
Mechanism of Improvement of Electrochemical Properties of Lead Acid Batteries By Antimony Addition Using Advanced Analysis.....	4941
<i>Yoshiki Hayakawa, Ikumi Ban, Eiji Hojo, Kazunari Ando, Ken Sawai, Toshiki Watanabe, Toshiyuki Matsunaga, Yoshiharu Uchimoto</i>	
Study of Behavior of EC Discharges during PMMA Machining by ECDM Process.....	4943
<i>Julfezar Arab, Shih-Chi Chen</i>	

L01 - Photoluminescence, Solar, Polymer Electrolytes

Ion Transport and Solution Behavior of Polyanion-Type Li Salts in Nonaqueous Solvents	4945
<i>Hiroki Nakagaki, Shinji Kondou, Masayoshi Watanabe, Kazuhide Ueno</i>	
Transport Numbers Ion-Exchange Membranes with Mixed Solvent Electrolyte Mixtures Relevant for Electrodialysis and Battery Technology.....	4946
<i>Simon Birger B. Solberg, Øivind Wilhelmsen, Odne Burheim</i>	
Two-Dimensional Covalent Organic Framework Photoanode for High Capacity Solar Battery.....	4947
<i>Bibhuti Bhusan Rath, Bettina Valeska Lotsch</i>	
A Versatile Photoelectrochemical System with FeOOH/MoO _x /BiVO ₄ for Reactive Halogen Species Generation Coupled with Hydrogen Evolution	4948
<i>Doyeon Park, Kangwoo Cho</i>	
Observation of Excited State-Derived Photoluminescence Decay of Organic Dye to Monitor Its Photo-Induced Charge Transfer Efficiency	4950
<i>HyeonOh Shin, Tae_Hyuk Kwon</i>	
Photothermally Enhanced Urea-Assisted Hydrogen Production Using Cu _s /WO ₃ Direct Z-Scheme Electrocatalyst	4951
<i>Yoolim Cha, Wonhyeong Kim, Dong-Joo Kim</i>	

L01 - Capture and Reduction of CO₂

- Redox Behavior of Quinones Bearing Ionic Liquid Moiety for Electrochemical CO₂ Capture..... 4953
Takuma Fujisawa, Seiji Tsuzuki, Masayoshi Watanabe, Kazuhide Ueno
- Electrochemical Studies on CO₂ Reduction at Liquid Gainsn Alloy Electrodes 4954
Peter Bogdanoff, Aya Mohamed, Daniel Lörch, Holger Euchner, Matthias May, Roel van de Krol
- Multi-Shell Copper Catalysts for Selective Electroreduction of CO₂ to Multicarbon Chemicals 4956
Yukun Xiao, Lei Wang, Wei Chen
- Redox-Active Amine for Electrochemical CO₂ Capture and Release 4957
Liang Liang, Frederik Firsche, Peter Strasser

L01 - Electrocatalysts 1

- Exploring on Stainless Steel Based Electrodes for Oxygen Evolution Reaction Under Alkaline Electrolyte 4958
Yong-Wook Choi
- Electrochemical Biomass Upgrading of 5-Hydroxymethylfurfural to 2,5-Furandicarboxylic Acid Under Mild Alkaline Media..... 4959
Eunchong Lee, Yun Jeong Hwang
- Homoleptic and Heteroleptic Coordination Environment of Palladium Molecular Catalysts for Oxygen Reduction to Hydrogen Peroxide..... 4960
Endalkachew Asefa Asefa Moges, Meng-Che Tsai, Wei-Nien Su, Bing Joe Hwang
- Catalytic Electrodes for the Oxygen Reduction Reaction Based on Co-Doped Carbon Quantum Dots and Anion Exchange Ionomer..... 4961
Florence Vacandio, Philippe Knauth, Suanto Syahputra
- A Flexible Electrochemical/Thermochemical Operation to Improve Carrier Release of H₂ and Counter Catalyst Instability 4963
Shyam Deo, Wenyu Sun, Sneha A Akhade, Brandon C. Wood
- Elucidating the Mechanism of Nickel-Mediated Electrochemical Alcohol Oxidation Using in-Situ X-Ray Absorption Spectroscopy and Microkinetic Modeling..... 4965
Tana Siboonruang, Ryan Travis Hannagan, Johanna Schröder, Thomas F. Jaramillo, Adam S. Hoffman, Maureen Tang, Michaela Burke Stevens

L01 - Electrocatalysts 2

- Catalyst Deactivation on Transition Metal Oxides during Ammonia Electrooxidation..... 4966
Sijie Chen, Weiran Zheng
- pH-Dependent Oxygen Reduction on Metal Monoxide/Polypyrrole Hybrid Catalysts 4968
Subhin Yoon, Dong-gyu Lee, Seokmin Shin, Yongdae Lee, Hyun-Kon Song
- Favoring the Originally Unfavored Oxygen for Enhancing Nitrogen-to-Nitrate Electroconversion..... 4970
Xin LI, Michael K.H. Leung

Electrochemical Production of Nitrite and Nitrate via Cathodic Oxygen Activation in Liquefied Ammonia.....	4972
<i>Moritz Lukas Krebs, Ferdi Schüth</i>	

L01 - Poster Session

Expanding Horizons in Electrocatalytic Biomass Valorization for Sustainable Chemical Synthesis.....	4974
<i>Hyun Gil Cha</i>	
Large-Scale DFT Calculations on Size and Site Dependences of Atomic and Electronic Structures in Metallic Nanoparticle Catalysts	4975
<i>Ayako Nakata, Shengzhou Li, Tsuyoshi Miyazaki</i>	
Unraveling the Importance of Electrochemical Activation in Nickel Iron Selenides for Improving Alkaline Oxygen Evolution Activity	4977
<i>Yeongeun Jang, Seunghwa Lee</i>	
Measurement of the Charge Density during the Reduction of Gold (Hydr)Oxides Formed at Different Experimental Conditions.....	4978
<i>Inna Shusterman, Simon Sisorov, Emanuel Peled, Dima Kaplan</i>	
Correlative SECCM and AFM Microscopy Study of Local Electrochemical Activity in HOPG	4980
<i>Myunghoon(Brian) Choi, Ben Schoenek, Gilbert Min, Stefan Kaemmer</i>	
Enhancing Oxygen Evolution Reaction Performance Via Surface Fe Enrichment in Nife Oxalate Catalysts with KF	4982
<i>Seungjoon Ha, Youngji Kim, Seunghwa Lee</i>	
Local Electrochemistry Based on Scanning Probe Technique with Gel Electrolyte	4983
<i>Seongpil Hwang</i>	
MOF-Derived High Entropy Alloy Electrocatalyst with Low Amount of Noble Metal for Alkaline HER.....	4984
<i>Seongje Lim, Jong Hyeok Park</i>	

L02-MOLTEN SALTS AND IONIC LIQUIDS 24 (MSIL-24) IN MEMORY OF YASUHIKO ITO

L02 - Molten Salts & Ionic Liquids 24 in Memory of Yasuhiko Ito

Cathodic Decomposition Reference Electrodes As a Generalized Approach for Thermodynamic Calculations in Complex Molten Salts	4985
<i>Timothy Lichtenstein, Krista Hawthorne</i>	
A Solid-State Reference Electrode for High Temperature Molten Salts.....	4986
<i>Yating Yuan, Shannon Mahurin, Sheng Dai</i>	
Evaluation of an Ag/AgF Reference Electrode for Electrochemical Measurements of Molten 2LiF-BeF ₂	4987
<i>Timothy Ryan Pickarski, Haley Williams, Raluca O. Scarlat, Michael Borrello</i>	
Optical Chlorobasicity Determination in Molten ZnCl ₂ -KCl Via UV-Vis Spectroscopy.....	4988
<i>Kailee Joy Buttice, Adrien Couet, Ruchi Gakhar, Qiufeng Yang</i>	

Electrochemically-Assisted Solvent Extraction: A Novel Approach to Rare Earth Element Separations	4989
<i>Declan McDonald, Alden Spigel, Jacob Wozny, Caleb M. Hill, Kristin R. Di Bona</i>	
Permeation Behavior of La, Ce, Pr, Nd, Gd, Tb, and Dy through a Ni-RE Alloy Diaphragm in Molten LiCl-KCl Systems	4990
<i>Tetsuo Oishi, Miki Yaguchi, Yumi Katasho</i>	
In-Situ X-ray Diffraction/Fluorescence Analysis of Dy-Cu Electrochemical Alloying and Dealloying in Molten LiCl-KCl-DyCl ₃	4993
<i>Yumi Katasho, Tetsuo Oishi</i>	
In-Situ Monitoring of Molten Chloride Salt Chemistry and Corrosion Using Microelectrode	4996
<i>Changkyu Kim, Adrien Couet</i>	
Updates on Molten Salt Ferrofluid	4997
<i>Phillip Halstenberg, Ellie Kim, Dianna Nguyen, Dmitry S. Maltsev, Dustin Gilbert, Sheng Dai</i>	
Three-Layer Electrefining of Molten Zinc Held on Porous Carbon or Silica Sheets in Molten LiCl-KCl-ZnCl ₂	4998
<i>Kouji Yasuda, Shoya Yamada, Tetsuya Uda</i>	
Electrowinning of Light Metals from Molten Salts Electrolytes	4999
<i>Geir Martin Haarberg</i>	
Electrolytic Extraction of Transition Metals from Lithium-Ion Cathodes in Molten Hydroxide Salts	5000
<i>Timothy Lichtenstein, Jarrod Gesualdi, Colin Moore, Sarah Stariha</i>	
A Leading Role of IMSEP for Carbon Negative Technologies by Molten Salt Electrochemical Research	5001
<i>Seiji Terada, Yoshikazu Hyodo, Ryo Nakanishi, Akira Koyama, Santosh Prasad Sah, Yohei Nomura, Takao Kunihiro</i>	
Electrochemical Synthesis of Carbon Materials from Carbon Dioxide in Molten Chloride Systems	5003
<i>Toshiyuki Nohira, Yutaro Norikawa, Yusuke Sakai, Takuya Nukui</i>	
Electrodeposition of Ti in molten AF-ACl-A ₃ TiF ₆ (A = Li, Na, K)	5005
<i>Yutaro Norikawa, Toshiyuki Nohira</i>	
Fabrication of α -W and β -W Films By Using CsF-CsCl-WO ₃ Molten Salt: Effect of Oxygen Contents in W Films	5008
<i>Haochen Wang, Yutaro Norikawa, Toshiyuki Nohira</i>	
Electrochemical Formation of Liquid Tb-Zn Alloys in Molten LiF-CaF ₂ -TbF ₃	5011
<i>Kenji Kawaguchi, Toshiyuki Nohira</i>	
Formation of Crystalline Si Film Using Liquid Zn Electrode in Molten KF-KCl-K ₂ SiF ₆	5013
<i>Wataru Moteki, Yutaro Norikawa, Toshiyuki Nohira</i>	
Theoretical Study of Ion Pairing in Protic Ionic Liquids of ΔpK_a range 6 to 18	5016
<i>Smit S. Rana, Justin Cayer, Allan L. L. East</i>	
An Electrochemically Promoted Approach to Graphitization Via Molten Salts.....	5017
<i>Yating Yuan, Bishnu Prasad Thapaliya, Huimin Luo, Sheng Dai</i>	

Acetylene Synthesis from CO ₂ and H ₂ O Via Electrochemical Formation of Metal Carbides in High-Temperature Chloride Melt	5018
<i>Yuta Suzuki, Seiya Tanaka, Takashi Watanabe, Takane Tsuchii, Tomohiro Isogai, Akiyoshi Yamauchi, Yosuke Kishikawa, Takuya Goto</i>	

Oxygen Evolution Behavior of Ni-Containing Alloy Electrodes in NaOH–KOH Hydrate Melt	5019
<i>Kenji Kawaguchi, Toshiyuki Nohira</i>	

Electrodeposition of Crystalline p-Si in Molten KF–KCl for Application to Solar Cells.....	5021
<i>Zhengyang Hou, Wataru Moteki, Yutaro Norikawa, Toshiyuki Nohira</i>	

L02 - Poster Session

Effect of Deposition Conditions on Properties of Aluminum Deposit Obtained from Aluminum Chloride-Acetamide Melts	5025
<i>Yuga Ito, Tatsuya Takeguchi, Koichi Ui</i>	

Al Electroplating on Etched CFRP Surfaces in AlCl ₃ -EmImCl Ionic Liquids	5027
<i>Naoki Kishi, Hisayoshi Matsushima, Mikito Ueda</i>	

Lithium Redox Behavior at Liquid Lithium-Lead Alloy Electrodes in Molten LiCl–KCl.....	5028
<i>Ryo Ito, Yuzuha Kitagawa, Keisuke Mukai, Juro Yagi</i>	

Polymer Inclusion Membranes Based on Ionic Liquids for Cobalt, Nickel, and Lithium Ions Separation.....	5030
<i>Huimin Luo, Babafemi Adigun, Bishnu Prasad Thapaliya, Sheng Dai</i>	

Testing and Characterization of Tubular Na-ZnCl ₂ Battery Cells for Stationary Energy Storage	5031
<i>Cathrine Kyung Won Solem, Thomas Park Simonsen, Stein Rørvik, Zhaohui Wang, Camilla Sommerseth, Ole Sigmund Kjos</i>	

Introduction of Cyclic Structures into Phosphonium Salts As Potential Guest Substances for Ionic Clathrate Hydrates.....	5032
<i>Keigo Kawabata, Sakura Azuma, Jin Shimada, Yusuke Tsuchida, Katsuhiko Tsunashima, Takeshi Sugahara, Atsushi Tani</i>	

Ether-Functionalized Phosphonium Ionic Liquids: Molecular Dynamics, Ion Conformation, and Intermolecular Interaction	5034
<i>Mitsuhiro Matsumoto, Shoki Nawate, Yohtarō Inoue, Katsuhiko Tsunashima, Hirohisa Yamada</i>	

Dependence of Cation Structures on Electrochemical Polymerization of Aniline in Phosphonium Ionic Liquids.....	5036
<i>Katsuki Hori, Daiki Ito, Shoki Nawate, Mitsuhiro Matsumoto, Yusuke Tsuchida, Katsuhiko Tsunashima, Hirohisa Yamada</i>	

Physicochemical and Thermal Behaviors of Room-Temperature Phosphonium Ionic Liquids Based on Fluorosulfonyl(trifluoromethylsulfonyl)Amide Anion As Potential Electrolytes.....	5038
<i>Seiya Kikuchi, Kosuke Nishikawa, Takatoshi Kawaji, Katsuhiko Tsunashima, Hidekatsu Hotta, Akina Yokobiki, Yusuke Tsuchida, Yusuke Funasako, Hirohisa Yamada</i>	

Dependence of Carboxylate Anions on Physicochemical Properties of Tributylloctylphosphonium-Based Ionic Liquids	5041
<i>Hyoma Akamatsu, Sakika Kubo, Seiya Kikuchi, Yusuke Tsuchida, Katsuhiko Tsunashima, Hidekatsu Hotta, Akina Yokobiki, Yusuke Funasako, Yoshiharu Okuno, Atsuyo Hamada, Hirohisa Yamada, Atsushi Tani</i>	

Anodic Dissolution and Electropolishing of Titanium in an Amide-Type Ionic Liquid Containing Halide Ions	5043
<i>Kentaro Yoneda, Nobuyuki Serizawa, Yasushi Katayama</i>	
Evaluation of the Solid-Electrolyte Interphase Formation in a Bis(fluorosulfonyl)amide Based Ionic Liquid in the Presence Lithium Ion Using Different Redox Probes	5045
<i>Shunosuke Momose, Morgan L. Thomas, Nobuyuki Serizawa, Yasushi Katayama</i>	
Fabrication of Ni-Pt-Ir Ternary Alloy Nanoparticles Throught Ionic Liquid/Metal Sputtering and Their Electrocatalytic Activity for Urea Oxidation	5046
<i>Kento Hiraide, Yixiong Liu, Kazutaka Akiyoshi, Susumu Kuwabata, Tsukasa Torimoto</i>	

L02 - Molten Salts & Ionic Liquids 24 in Memory of Yasuhiko Ito

Electrochemical Study of Zr from Anodic Dissolution using a Consumable Zirconium Nitride Anode	5048
<i>Cathrine Kyung Won Solem, Zhaohui Wang, Karen Sende Osen, Ana Maria Martinez</i>	
Electrochemical Oxygen Evolution in Chloride Melts Using Co-Based Oxide Electrodes	5050
<i>Seiya Tanaka, Yuta Suzuki, Yasuhiro Fukunaka, Takuya Goto</i>	
Low-Temperature Molten Salt Electrochemical CO ₂ upcycling for Advanced Energy Materials	5051
<i>Bishnu Prasad Thapaliya, Sheng Dai, Shannon Mahurin</i>	
Oxide Speciation and Oxy-Fluoro Complexes in Molten Fluoride Salts	5052
<i>Haley Williams, Sander Ratso, Raluca O. Scarlat</i>	
Direct Recycling of LiNi _x Mn _y Co _z O ₂ (NMC) Cathode Materials in Molten Salts	5054
<i>Tao Wang, Huimin Luo, Sheng Dai</i>	
The Role of Asymmetry of Perfluoro anion in Ionic Liquids: From Basic Physical Properties to the Application in Lithium Batteries	5055
<i>Hajime Matsumoto, Keigo Kubota, Hikaru Sano</i>	
Production of High-Purity Aluminum by Combining Lewis Acidic AlCl ₃ –[C ₂ mim]Cl Ionic Liquid and Aluminum Scrap Anode.....	5057
<i>Yichen Fu, Tetsuya Tsuda, Tomo Mikame, Kei Hosoya, Mikito Ueda, Koichi Ui, Masao Miyake, Junji Nunomura, Yoichi Kojima</i>	
Anodic Dissolution of Al–Fe and Al–Fe–Si Alloys in Emimcl–AlCl ₃ Electrolyte	5060
<i>Junji Nunomura, Hisayoshi Matsushima, Yoshihiko Kyo, Yoichi Kojima, Mikito Ueda</i>	
Characterization of Electrochemical Deposition of Aluminum from AlCl ₃ -Urea DES with NaCl	5062
<i>BungUk Yoo, Jun Young Lee, Jooyul Lee, Choe Seunghoe, Kyu Hwan Lee</i>	
Probing Decomposition of Iron Disulfide in Molten Salt Eutectics	5063
<i>Noah B. Schorr, Sam Macchi, Linda Johnson, Bertha Montoya, Alan Harrington, John Taphouse</i>	
Electrodeposition of Aluminum-Silicon Films in Chloroaluminate Ionic Liquids	5064
<i>Krishna Venkatesh, Adriana Ispas, Andreas Bund</i>	
Ternary Ionic Liquid Analogues for Ambient and Low-Temperature Rechargeable Aluminum Batteries.....	5065
<i>Jonah Wang, Theresa Schoetz, Leo W. Gordon, Elizabeth J. Biddinger, Robert J. Messinger</i>	

Ni Nanoparticles in Functionalized Ionic Liquids for Chemoselective Hydrogenation Catalysis.....	5066
<i>Anders Riisager, Deepthy Krishnan, Leonhard Schill, M. Rosa Axet, Karine Philippot</i>	
Melting Behavior and Ionic Conduction of Multicomponent Carbonates Coexisting with Porous Oxides.....	5068
<i>Minoru Mizuhata, Jiayue Wang, Shizuku Sato, Xueling Chen, Hideshi Maki, Hiro Minamimoto</i>	
Development of Dual-Carbon Batteries with Amide-Based Ionic Liquid Electrolytes	5070
<i>Takayuki Yamamoto, Riku Oe, Keigo Uehara, Yoshifumi Ishio, Alisha Yadav, Toshiyuki Nohira</i>	
Insight into Modulation of Ionic Liquids for Li-Ion Batteries: Unprotected Cation	5071
<i>Jinkwang Hwang, Shaoning Zhang, Shengan Wu, Kazuhiko Matsumoto</i>	
Insight into Modulation of Ionic Liquids for Na-Ion Batteries: Cation Modification	5072
<i>Shaoning Zhang, Hiroki Wada, Shengan Wu, Jinkwang Hwang, Kazuki Yoshii, Kazuhiko Matsumoto</i>	
Deep Supercooling of Li Salts By Trace Polymer Additives: An Approach to Single Li Ion Conducting Liquid Electrolytes.....	5073
<i>Taku Sudoh, Goto Takashi, Yosuke Ugata, Frederik Philippi, Masayoshi Watanabe, Kazuhide Ueno</i>	
Study on Ionic Plastic Crystals As Lithium-Ion Electrolytes	5075
<i>Hiroki Sugisawa, Toshifumi Takahashi, Emi Nakatsuka, Hiroyuki Aikyo, Kaoru Fukii, Masahiko Kato, Kenichi Satake, Tomofumi Hamamura</i>	
Ion Transport Properties in Glyme-Based Highly Concentrated Electrolyte with Asymmetric Li Imide Salts.....	5076
<i>Yuna Matsuyama, Frederik Philippi, Taku Sudoh, Seiji Tsuzuki, Masayoshi Watanabe, Kazuhide Ueno</i>	
The Cations Effect on Polymer-Assisted Anti-Crystallization of Alkali Metal Salts	5077
<i>Takashi Goto, Taku Sudoh, Masayoshi Watanabe, Kazuhide Ueno</i>	
Synthesis and Characterization of Dicationic Ionic Liquids with the Difluorophosphate Anion	5078
<i>Kentaro Kamada, Toshiki Nokami, Naoki Inui, Hideto Nakajima, Kohei Nishimoto, Jinkwang Hwang, Kazuhiko Matsumoto</i>	
Ionic Liquid-Based Electrolytes for Advanced Electrochemical Energy Conversion and Storage Systems – an Overview	5079
<i>Vito Di Noto, Ketì Vezzù, Enrico Negro, Gioele Pagot</i>	
Redox Reaction of Some Nitroxyl Radicals in 1-Butyl-1-Methylpyrrolidinium Bis(fluorosulfonyl)amide in the Presence and Absence of Lithium Ion	5081
<i>Yasushi Katayama, Shodai Kato, Nobuyuki Serizawa</i>	
Utilizing Ionic Liquid Mixtures to Modify Lithium Solvation Chemistry and Electrolyte Properties	5082
<i>Elizabeth J. Biddinger</i>	
Enhancing Interfacial Capacitance Using Anionic Amphiphiles in Ionic Liquid Electrolyte Blends.....	5083
<i>Hrishikesh Tupkar, Jack Verich, Sila Alemdar, Jack McAlpine, Matthew A. Gebbie</i>	
Electrochemical Characterization of Silver and Iron Ions in Choline Chloride-Ethylene Glycol DES Electrolyte	5084
<i>Goril Jahrsengene, Zhaohui Wang, Ana Maria Martinez</i>	

Ionic Liquid and Plastic Crystal Battery Electrolytes Utilising New Cation and Anion Structures 5086
Jenny Pringle, Federico Vallana, Faezeh Makhlooghi Azad, Sithy M Sourjah, Anna Warrington, Maria Forsyth

Use of Pulsed Potentials for Electropolishing TA6V Parts Elaborated By Additive Manufacturing in Deep Eutectic Solvent 5087
Florian Roy, Marie-Laure Doche, Quentin Orecchioni, Jean-Yves Hihn, Joffrey Tardelli

Physical and Analytical Electrochemistry Division Max Bredig Award in Molten Salts and Ionic Liquid Chemistry Address

(Physical and Analytical Electrochemistry Division Max Bredig Award in Molten Salts and Ionic Liquid Chemistry Address) Unexpected Energy Applications of Ionic Liquids..... 5089
Douglas Robert MacFarlane

Green Energy Solutions: Metal-Free ORR Electrocatalysts from Mandarin Peel Waste 5090
Nayeon Lee, Sung Yul Lim

L02 - Molten Salts & Ionic Liquids 24 in Memory of Yasuhiko Ito

Gold and Gold Alloys Electropolishing in Choline Chloride-Glycerol Deep Eutectic Solvents 5091
Julymar Rodriguez, Nesly Ziza Ahamadi, Marie-Laure Doche, Jean-Yves Hihn

Online Monitoring of Alkali Chloride Molten Salt Composition, Speciation, and Basicity Using UV-Vis-NIR Absorption Spectroscopy..... 5093
Jeremy Moon, Laurel Sharpless, Dev Chidambaram

The Local Changes in the Physicochemical Properties during Cu Electrodeposition in an Ionic Liquid Composed of $[\text{CuCl}_2]^-$ 5094
Nobuyuki Serizawa, Suguru Kuwahara, Xiaoyi Li, Yasushi Katayama

Synthesis and Characterization of Novel Polymerizable Boronium Ionic Liquids 5096
David P. Durkin, Christopher D. Stachurski, Whirang Cho, Conner M. Kinnaman, Nathaniel E. Larm, James H. Davis, Paul C. Trulove

Generation of Non-Cellulosic Biopolymer Xerogels Using Ionic Liquid Based Natural Fiber Welding 5097
Paul C. Trulove, Nathaniel E. Larm, Christopher D. Stachurski, Whirang Cho, Louis R. Lentz, Sophia Ahearn, David P. Durkin

Creating Neoteric Inorganic-Organic Hybrid Functional Biocomposites By Fiber Welding 5098
Nathaniel E. Larm, Whirang Cho, Christopher D. Stachurski, Piyuni Ishtaweera, Gary Baker, David P. Durkin, Paul C. Trulove

Probing the Surface Properties of Nanoporous Biopolymer Materials from Ionic-Based Natural Fiber Welding 5099
Whirang Cho, Nathaniel E. Larm, Christopher D. Stachurski, David P. Durkin, Paul C. Trulove

Utilization of Cellulose/Ionic Liquids Solution for Additive Manufacturing 5100
W. Matthew Matthew Reichert, Janiya Wright, Edward R. Duranty

Physical and Analytical Electrochemistry Division Max Bredig Award in Molten Salts and Ionic Liquid Banquet (ticket required)

Physical and Analytical Electrochemistry Division Max Bredig Award In Molten Salt and Ionic
Liquid Chemistry Award Recipient Address..... 5101
Douglas Robert MacFarlane

L02 - Molten Salts & Ionic Liquids 24 in Memory of Yasuhiko Ito

Linear Ether-Based Molten Li Salt Solvate Electrolytes for Li-Metal Batteries 5102
*Kazuhide Ueno, Toru Ishikawa, Shohei Haga, Keisuke Shigenobu, Taku Sudoh, Seiji Tsuzuki,
Wataru Shinoda, Kaoru Dokko, Masayoshi Watanabe*

Preparation of Low Melting Temperature Lithium-Based Binary Salts and Their Physicochemical
Properties..... 5103
Rino Masui, Yoshiki Yokoyama, Masayoshi Watanabe, Shiro Seki

VOLUME 8

On the Parasitic Surface Adsorption of Pyrrolidinium and Phosphonium-Based Ionic Liquid
Preventing Accurate Differential Capacitance Measurements..... 5107
*Kilian Fraysse, Lixu Huang, Hua Li, Rob Atkin, Agilio Padua, Michel Armand, Patrick C.
Howlett, Mingjie Zhang*

Evaluating the Transport Behavior of Molten Salt Electrorefining Cells Using Simulations..... 5109
Dakota Scott Banks, Douglas R Tree

Quantification and Correction of Impedance Effects on Square Wave Voltammetry for High-
Concentration Soluble-Soluble Reactions5110
Nora A. Shaheen, Jicheng Guo, Nathaniel C. Hoyt

Electrochemical Interfaces with Non-Cottrellian Current-Time Scaling in Energy Storage5111
*Theresa Schoetz, Parham Ghasemianhangarani, Leo W. Gordon, Jeffrey H. Xu, Jonah Wang,
Brendan Hawkins, Robert J. Messinger*

Solubility of Beryllium Metal in Molten 2LiF-BeF₂5113
Sander Ratso, Haley Williams, Nathanael Gardner, Raluca O. Scarlat

Two-Dimensional, Multi-Reaction, and Multi-Species Porous Electrode Modeling of Metal Oxide
Electroreduction with Applications in Nuclear Fuel Reprocessing and Iron Oxide Reduction.....5115
*Christian John Kellamis, Nicholas Scott Sinclair, Bethany Kersten, Krista Hawthorne,
Matthew Ruehl, Rohan Akolkar*

Terrapower's Molten Chloride Fast Reactor (MCFR): Advancements in Electrochemical
Monitoring and Control5116
Aaron Unger, Sayandev Chatterjee, Nicole Byrne

Investigation of the behavior of manganese, iron, cobalt, and nickel at precipitate formation due to
oxide addition in molten chlorides5117
*Yuri Yamamoto, Yuki Yokoi, Kazuki Minowa, Youko Takahatake, Sou Watanabe, Masahiro
Nakamura, Haruaki Matsuura*

Electrochemistry of Zirconium in Molten Chloride for Processing Fuel Debris.....5119
Tatsuya Emori, Haruaki Matsuura

Radiation-Driven Reactivity of Metal Ions in Molten Salts	5121
<i>James F. Wishart, Kazuhiro Iwamatsu, Bobby Layne, Ellie Kim, Phillip Halstenberg, Sheng Dai, Jay A. LaVerne, Gregory P. Holmbeck, Jacy Conrad, Ruchi Gakhar, Michael E. Woods</i>	
Finding Diffusivity and Solubility of Impurities inside ILs By MD	5122
<i>Dipak Aryal, Antonio Rotondaro, Takeo Nakano, Tamotsu Morimoto</i>	
Hydroformylation of Alkenes by Supported Ionic Liquid Phase (SILP) Catalysis	5123
<i>Rasmus Fehrmann, Anders Riisager, Eduardo Jose Garcia-Suarez, Le Minh Thang</i>	
Molecular Dynamics Simulation Reveals the Transport Mechanism of Molten Alkali Metal Amides	5124
<i>Tetsu Kiyobayashi, Keigo Kubota, Kenji Kiyohara</i>	
Deciphering Structure and Dynamics of Molten Salts	5126
<i>Alexander Ivanov</i>	
Simulation of Voltammetric Measurements of Uranium Electrodeposition in Molten LiCl-KCl Eutectic	5127
<i>Michael Stoddard, Carlos Mejia, Devin Rappleye</i>	
The Specific Adsorption of Chloride Ions from Ionic Liquid.....	5128
<i>Liis Siinor, Heigo Ers, August Luure, Ermo Leuska, Piret Pikma</i>	
Adsorption of Bipyridine at Single-Crystal Electrode Ionic Liquid Interface – from Monolayers to Clusters.....	5130
<i>Heigo Ers, Liis Siinor, Piret Pikma</i>	

L03-ELECTRODE PROCESSES 15

L03 - Poster Session

Electrochemical CO ₂ Reduction Characteristics with Various Copper-Based Alloy Plating Electrodes	5132
<i>Yoshiyuki Takatsuji, Takumi Kimoto, Tetsuya Haruyama</i>	
Nanoparticle Surface Enhanced Raman Spectra of Nb-Doped TiO ₂ Single Crystal Electrodes.....	5134
<i>Mizuki Kobayashi, Masashi Nakamura, Nagahiro Hoshi</i>	
Electrochemical Formation of Layered Organo-MnO ₂ and Its Application to Selective Iodide Recovery.....	5136
<i>Wataru Yoshida, Saki Tanaka, Masaharu Nakayama</i>	
Electric Double Layer Modification Induces Progressive Nucleation and Nanoscale Zinc Deposition for Aqueous Zinc Metal Batteries	5138
<i>Ziqing Wang, Charles Buddie Mullins</i>	
Surface-Enhanced Electronic and Vibrational Raman Spectroscopy of Ionic Liquid [BMI][PF ₆] on Au Electrode.....	5140
<i>Ryo Ueno, Kenta Motobayashi, Katsuyoshi Ikeda</i>	

L03 - Water Splitting Reactions

(Invited) Surface and Interface Structure Control of Water Electrolysis Electrodes	5142
<i>Naoto Todoroki</i>	

Tracking Water Dissociation on Well-Defined Ruthenium Oxide Surfaces	5143
<i>Austin Jerad Reese, Simon Gelin, Maria Maalouf, Neha Wadehra, Darrell Schlom, Ismaila Dabo, Jin Suntivich</i>	
Enhancement of Oxygen Reduction Reaction Activity of Pt By Tuning Its D-band Center Via Transition Metal Oxide Support Interactions	5144
<i>Futoshi Matsumoto, Tamaki Matsumura, Mika Fukunishi</i>	
Lithium-Doped Nickel Iron Oxyhydroxide Nanosheets Coupled Polyaniline As Bi-Functional Electrocatalysts for Hydrogen/Oxygen Evolution Reactions at All pH Levels	5145
<i>Niranjnmurthi Lingappan, Wonoh Lee</i>	
Effect of Micro- and Mesopore Size on Electronic Structure and Oxygen Reduction Kinetics of Platinum	5146
<i>Kota Nakahara, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	
Oxygen Evolution Reaction Activity of Highly Crystalline Hydrated Cobalt Oxyhydroxide Synthesized with Soft Chemistry	5149
<i>Haruhisa Nakata, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	
Electrochemical Hydrogen Evolution Using Proton Transport through Graphene Monolayers.....	5151
<i>Sekar Baranitharan, Kenta Motobayashi, Katsuyoshi Ikeda</i>	
Tuning Hydrogen-Bond Network within Stacked 2D Nanolayer for Enhanced Oxygen Evolution Reaction.....	5153
<i>Tomohiko Utsunomiya, Qing Su, Asuka Morinaga, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
(Fe, N)-Doped Carbon Black Catalysts for Oxygen Reduction Reaction Applied to Gas-Diffusion Electrodes	5155
<i>Guanyu Wang, Atsunori Ikezawa, Keiko Waki, Takeyoshi Okajima, Hajime Arai</i>	
Theoretical View on Alternatives to Oxygen Evolution Reaction Processes.....	5157
<i>Pooja Basera, Chenyu Jiang, Frank Abild-Pedersen, Karthish Manthiram, Michal Bajdich</i>	

L03 - Electrooxidation Reactions

Electrolyte Effects in Ethanol Electro-Reforming at Anode with Acetaldehyde As Target Product.....	5158
<i>Kai Hung Cheng, Motoaki Kawase</i>	
Electrodeposited Pt-Rh Thin Films for Enhanced Ammonia Oxidation Rates Via Electronic Modifications.....	5161
<i>Akhil Paliwal, Haowei Long, Lina Assaf, Paul J.A Kenis, Andrew A. Gewirth</i>	
The Cooperative Effect of Iron Single Atoms on Palladium Catalyst for Electrochemical Oxidation Carbohydrazide	5162
<i>Yaxin Wang, Liting Cui, Li Tao, Shanfu Lu, Haining Wang, Jin Zhang</i>	

L03 - Energy Conversion and Storage

A Single Chamber Urea/Persulfate Fuel Cell: Optimization of Cathode to Use Peroxydisulfate Electron Acceptor	5163
<i>Soeun Kim, Jiseon Kim, Kangwoo Cho</i>	

Effect of Electrolyte pH during Pretreatment of Carbon Electrodes on the Subsequent Kinetics of the V^{II}/V^{III} and V^{IV}/V^V Reactions in Vanadium Flow Batteries	5164
<i>Varsha Sasikumar S P, Robert P. Lynch, Maria Al Hajji Safi, D. Noel Buckley, Andrea Bourke</i>	
Ion Beam Implantation of Graphite Felt for Redox Flow Batteries: Role of Defects Versus Nitrogen Groups	5166
<i>Sophie McArdle, Holger Fiedler, Jérôme Leveneur, John Kennedy, Aaron Timothy Marshall</i>	
Cathode Reaction Studies in Lithium-Oxygen Battery through Operando XRD Measurements	5168
<i>Dilini Geer Dilixiati, Makoto Aoki, Kazuno Maeda, Toshihiro Kondo</i>	
Better Knowing the Carbon Particle Network Structure in Electrode Slurry for Enhanced Lithium-Ion Battery Performance.....	5170
<i>Padarti Jeevan Kumar, Kaito Fukamizu, Hisao Suzuki, Shigeto Hirai, Takeshi Matsuda, Tomoya Ohno</i>	

L03 - Advanced Materials and Reactions

(Invited) Electrolytic Application of Boron-Doped Diamond Powders	5173
<i>Takeshi Kondo</i>	
Efficient Production of Hypochlorite in Water Using Boron-Doped Diamond Electrodes	5175
<i>Yuuri Tsuji, Andrea Fiorani, Yasuaki Einaga</i>	
Experimental and Theoretical Studies of the Solid-State Performance of Electrodeposited Yb_2O_3/As_2Se_3 Nanocomposite Films.....	5177
<i>Adil Alshoaibi</i>	
Formation of Water-Insoluble Polycyclic Aromatic Hydrocarbons Adlayers at Electrochemical Interface Using "Molecular Containers"	5178
<i>Soichiro Yoshimoto</i>	
Highly Sensitive Detection of Redox Species by Current Amplification Using a Thin-Layer Reactor with Boron-Doped Diamond Electrode	5180
<i>Kana Asai, Atsushi Otake, Yasuaki Einaga</i>	
Thermo-Responsive Polymer-Modified Carbon Nanofiber Electrodes with Autonomous and Heteronomous Switchable Selectivity for Catechol Derivatives	5182
<i>Kikuo Komori, Minghao Liu, Kohei Shiraishi</i>	
Oxidative Desorption Behavior of Sulfur Species from Pt and Pt Based Alloy Single Crystal Surfaces	5184
<i>Tetsuro Morooka, Makoto Aoki, Takuya Nakanishi, Atsushi Ishikawa, Takuya Masuda</i>	
Field-Driven Reactivity and Adsorbate Reorientation on Electrode Surfaces	5185
<i>Robert Warburton</i>	
Challenges in Accurate Calculation of Electrochemical Reactions Using First Principles Calculations: Water Adsorption on Pt(111) Surface Under Applied Potential.....	5186
<i>Maxim Shishkin, Takeo Yamaguchi</i>	

L04-PHOTOCATALYSTS, PHOTOELECTROCHEMICAL CELLS, AND SOLAR FUELS 14

L04 - Solar Hydrogen Evolution Reaction or Water Reduction

Area Selective Atomic Layer Deposition for Spatial Control of Reaction Selectivity on Model photocatalysts	5188
<i>William D. H. Stinson, W. Wilson McNeary, Wenjie Zang, Xiaoqing Pan, Katherine Hurst, Daniel V. Esposito</i>	
Enhanced Charge Separation and Hydrogen Evolution from Water over ZnTe-CdTe Solid Solution Based Photocathode with a Composition Gradient	5189
<i>Lionel Sebastian Sebastian Veiga, Masakazu Sugiyama, Tsutomu Minegishi</i>	
The Weyl Semimetals MTe_4 (M = Nb, Ta) as Efficient Catalysts for Dye-Sensitized Hydrogen Evolution	5192
<i>Manisha Samanta, Hengxin Tan, Binghai Yan, Bettin Valeska Lotsch</i>	
Up-Scaling Solar Hydrogen Production: Development and Demonstration of Photoelectrochemical Reactors	5194
<i>George Henry Creasey, Arend W Moelich, John Wilman Rodriguez Acosta, Thomas P Shalvey, Dora Alicia Garcia-Osorio, Tristan W McCallum, Liam O'Neil, Jinjie Zhu, Siddharth Halder, Ray Ai, Jon Major, Alexander J Cowan, Craig McGregor, Andreas G Kafizas, Anna Hankin</i>	
(Invited) Hydrogen Consortium: Advancements in Renewable Hydrogen Production	5197
<i>Huyen N Dinh</i>	
(Invited) Core@Shell and Yolk@Shell Nanocrystals for Hydrogen Production	5198
<i>Yung-Jung Hsu</i>	
(Invited) Modification of Photocatalyst Surface for Selective Conversion of CO_2	5200
<i>Shoji Iguchi, Shimpei Naniwa, Kentaro Teramura</i>	
Solar-Driven Polyvinyl Alcohol Remediation: Black Phosphorus Quantum Dot Sensitized $\text{g-C}_3\text{N}_4$ Photocatalyst Vs. H_2 Evolution in Photocatalytic Fuel Cells	5201
<i>Qiong Sun, Likun Sun, Baoning Zhang, Lifeng Dong</i>	
Semi-Monolithic Multijunction Devices for Unassisted Photoelectrochemical Water Splitting	5202
<i>Kai Outlaw-Spruell, Christopher Muzzillo, Kai Zhu, Nicolas Gaillard</i>	

L04 - Solar Water Splitting by Metal Oxide Photo(electro)catalysts 1

Effects of Rb-Based Mixed Fluxes on Surface Crystal Growth of BaTaO_2N and Photocatalytic Activities	5203
<i>Keito Tashiro, Tetsuya Yamada, Kazumichi Yanagisawa, Mongkol Tipplook, Fumitaka Hayashi, Katsuya Teshima</i>	
(Invited) Morphology-Engineered Hematite for Addressing Short Hole-Diffusion Lengths	5204
<i>Ji-Hyun Jang</i>	
(Invited) Improvement of Photocatalytic Water Splitting Activity By Loading of Ultrafine Rhodium–Chromium Mixed-Oxide Cocatalyst	5205
<i>Yuichi Negishi</i>	

Understanding How Interfacial Properties Affect the Photovoltage of Metal-Insulator-Semiconductor (MIS) Photoelectrodes.....	5207
<i>Alex J King, Alexis T. Bell, Adam Z. Weber</i>	
(Invited) TiO ₂ /MWCNT Composite Photoelectrodes for Water-Splitting Reaction Prepared Via Sol–Gel Electrophoretic Deposition.....	5209
<i>Mariko Matsunaga, Yuhei Yu</i>	
(Invited) Synthesis of Oxyhalides and Exploration of Their Photocurrent Response	5210
<i>Wei Wei</i>	
Developments in Nanostructuring for Enhanced Solar Water Splitting: Investigating Morphology Effects on Photoelectrode Performance.....	5211
<i>Hye Won Jeong, Hyunwoong Park, Csaba Janaky</i>	

L04 - Solar Water Splitting beyond Oxide Photo(electro)catalysts 1

(Invited) Organic Photoelectrochemical Cells for Overall Solar Water Splitting.....	5212
<i>Han-Hee Cho</i>	
(Invited) Transparent Conductive Porous Supports for Photoelectrochemical and Photocatalytic H ₂ Production	5213
<i>Kevin Sivula</i>	
(Invited) Semi-Monolithic Integration of Dissimilar Material Classes into Efficient Water Splitting Devices.....	5214
<i>Nicolas Gaillard</i>	
Bias-Free Environmental Pollutants Conversion By Integrating Bi-Functional Catalyst with Dual Organic Photoelectrode System.....	5215
<i>Yejoon Kim, Sanghan Lee</i>	
(Invited) Operando Spectroscopic Analysis for Understanding Interfacial Photo/Electrocatalytic Processes	5216
<i>Wooyul Kim</i>	
(Invited) Photoreactors for Benchmarking Outdoor Solar Hydrogen Production: Future Designs Based on Lessons from the Past	5217
<i>Todd G Deutsch, Kiseok Oh, Julia Lenef, James L. Young</i>	
Organic π -Conjugated Polymers as a Photoelectrocatalyst for Water-Splitting	5218
<i>Kouki Oka</i>	

L04 - Solar Water Splitting beyond Oxide Photo(electro)catalysts 2

(Invited) Modification of P-N Heterointerface of Ternary CuGaSe ₂ Photochaodes for Efficient Water Reduction Under Sunlight Irradiation	5220
<i>Shigeru Ikeda, Shogo Ishizuka</i>	
(Invited) Extending the Success of Halide Perovskites to Photoelectrochemical and Photocatalytic Solar Fuel Production.....	5221
<i>Salvador Eslava</i>	

(Invited) Experimental Insights into the Local Chemical Environment of Sulfur Atoms and Their Relevance in Photoelectrochemical Water Splitting Devices Made of Cu(In,Ga)(S,Se)₂ and Other Things..... 5222
Clemens Heske

(Invited) Gallium Nitride: An Industry Ready Platform for Scalable Artificial Photosynthesis..... 5223
Zetian Mi

L04 - Nitrogen and Other Compound Conversion via Photocatalysis or Electrocatalysis 1

Oxidizing Gas Reverses Thermal Ripening of Ni Particles into Single Atom for Solar-Driven Biocatalytic Hydrocarbon Oxygenation 5224
Chang Hyun Kim, DongHwan Oh, Hwakyoung Seo, Frank Hollmann, Jeong Woo Han, WooChul Jung, Chan Beum Park

(Invited) Attenuated Total Reflectance UV-Vis Spectroscopy Applied for Organic Semiconductor Films..... 5225
Ichiro Tanabe, Yuki Tanaka

(Invited) Electrocatalytic Ammonia Splitting to Enable the Nitrogen Economy..... 5227
Thomas Hamann

(Invited) Photocatalytic and Photoelectrochemical Systems for Nitrogen Cycles 5228
Wonyong Choi, Shinbi Lee, Shen Zhao, Donglai Pan

Photocatalytic Elimination of Nitrogen Oxides (NO_x), Ozone, BAP and Organic Pollutants from the Contaminated Air in Prague and Milan - 12 Months Field Study..... 5229
JAN Prochazka

(Invited) Modular Electrochemical Synthesis to Exploit Dynamic Electricity Markets and Recover Ammonia Electrochemically 5232
Song Jin

(Invited) Photocatalytic Chemical Transformation in Dye-Sensitized Photoelectrochemical Cells for Lignin Valorization 5233
Jeong Kyeong Lee, Seongsu Park, Gyu Leem, Tae_Hyuk Kwon

(Invited) Integration of Electrochemical Oxidation and Photocatalytic Degradation for Water Purification and Wastewater Treatment..... 5234
Aicheng Chen

MOF-Derived Carbons Coupled CdSe Quantum Dots for Solar Hydrogen Production 5235
Chien-Yi Wang, Yung-Jung Hsu

L04 - Solar Fuel Generation by Light Management of Catalysts

(Invited) All-Solid-State Photoelectric Conversion Cells Employing the Combination of Metal Nanoparticle and p-Type Semiconductors for Plasmon-Induced Charge Separation 5236
Yukina Takahashi

(Invited) Plasmonic Nano-Intermetallics..... 5238
Ryota Sato, Haruka Takekuma, Toshiharu Teranishi

(Invited) Improving Photochemical Properties of I-III-VI-Based Quantum Dots through Size and Composition Control	5240
<i>Tsukasa Torimoto, Tatsuya Mori, Chang Jiang, Kazutaka Akiyoshi, Tatsuya Kameyama, Taro Uematsu, Susumu Kuwabata</i>	
(Invited) Plasmonic Fabrication of Chiral and Magneto-Chiral Nanostructures	5242
<i>Tetsu Tatsuma, Takuya Ishida</i>	
(Invited) Metal and Compound Nanostructures Fabricated Via Photoelectrochemical Reactions	5244
<i>Hiroyasu Nishi</i>	
(Invited) Behaviors of Photogenerated Charge Carriers at the Defects on Photocatalysts	5246
<i>Akira Yamakata</i>	
Colloidal Synthesis and Photoluminescence Properties of Near-IR-Responsive Ag ₈ GeS ₆ Quantum Dots	5247
<i>Nurmanita Rismaningsih, Junya Kubo, Kazutaka Akiyoshi, Tatsuya Kameyama, Hiroshi Yukawa, Yoshinobu Baba, Tsukasa Torimoto</i>	
Aqueous Solution-Gel Synthesis of Copper-Based Ternary Oxides As Efficient Photocathodes in Photoelectrochemical Cells	5248
<i>Ken Elen, Bjorn Joos, Nele Debusschere, Kristy Talukdar, An Hardy, Marlies K. Van Bael</i>	

L04 - Photo(electro)catalytic Carbon Dioxide Conversion 1

(Invited) Unassisted Conversion of Carbon Dioxide and Water into Aliphatic Acids Using Copper and Iron Oxide Photocatalyst Film at Solar-to-Chemical Conversion Efficiency of ~5%	5250
<i>Hyunwoong Park</i>	
(Invited) Photocatalytic and Electrochemical CO ₂ Reduction By Semiconductors, Metal Complexes, and the Combinations	5251
<i>Takeo Arai, Takeshi Morikawa</i>	
(Invited) Photocatalytic CO ₂ Reduction Using Water As an Electron Donor	5254
<i>Akihiko Kudo</i>	
(Invited) Exploring Electrochemical Methods to Enhance Catalytic Activity and Selectivity in Photoelectrochemical CO ₂ Reduction	5256
<i>Ki Min Nam, Ahyeon Ma, Dongho Seo</i>	
(Invited) Supported Design and Synthesis of Energy Materials Towards More Effective and Selective Approaches to Solar Fuels Production	5257
<i>Renata Solarska, Linh Trinh, Karthick Ramalingam, Krzysztof Bienkowski</i>	
(Invited) Paired Photoelectrochemical Conversion of CO ₂ /H ₂ O and Glycerol at High Rate	5258
<i>Csaba Janaky</i>	
(Invited) Organic Molecule and Polymer Nanoparticles in Biohybrid Photocatalysis	5259
<i>Haining Tian</i>	

L04 - Solar Water Splitting by Metal Oxide Photo(electro)catalysts 2

(Invited) Vapor-Fed Photoelectrochemical Water Splitting Using Porous Photoanodes Functionalized with Surface Electrolytes	5260
<i>Fumiaki Amano</i>	

(Invited) Advancing Photocatalysis through Model Systems and Single Particle Measurements	5261
<i>Daniel V. Esposito, William D. H. Stinson, W. Wilson McNeary, Kevin Dunn, Katherine Hurst</i>	
(Invited) Synergistic Effects between Surface Charge and Catalytic Site in Photoelectrochemical Water Splitting Reactions	5262
<i>Dunwei Wang</i>	
Improvement of Photocatalytic Water Splitting Activity by Facet-Selective Loading of Ultrafine Rhodium–Chromium Mixed-Oxide Cocatalyst.....	5263
<i>Tokuhiwa Kawawaki, Sota Oguchi, Yuichi Negishi</i>	
(Invited) Surface Local Structure Dependence of Photoinduced Reaction Process on TiO ₂ Single Crystal Electrode in Aqueous Solution.....	5265
<i>Akihito Imanishi</i>	
(Invited) Neutral Seawater Splitting of Perovskite Oxynitrides Under Sunlight via Alternative Oxidation Reactions	5267
<i>Jeongsuk Seo</i>	
Data-Driven Analysis of Contributing Factors in Spectra Toward Quantitative Prediction of Photocatalytic Activity of BaTaO ₂ N.....	5269
<i>Musashi Yamada, Tetsuya Yamada, Kazumichi Yanagisawa, Mongkol Tipplook, Fumitaka Hayashi, Katsuya Teshima</i>	
Probing Photocatalytic Oxygen and Hydrogen Evolution Reactions via Single Particle Electrochemistry with Photo-SECM	5270
<i>Gaukhar Askarova, Shu Wu, Michael V. Mirkin</i>	
Simultaneous Production of Hydrogen and Chlorine from Brine with Pt-Loaded TiO ₂ Photocatalyst	5271
<i>Takumi Okada, Masanori Koderu, Yugo Maseki, Hitoshi Kusama, Takahiro Gunji, Kazuhiro Sayama</i>	

L04 - Poster Session

Development of Iso-Triazatruxene-Based Hole-Collecting Monolayer Materials for Efficient Perovskite Solar Cells.....	5273
<i>Yuta Adachi, Minh Anh Truong, Atsushi Wakamiya</i>	
Synthesis and Photoelectrochemical Properties of Copper Titanate for Pollutant Removal	5275
<i>Juliana de Almeida, Krishnan Rajeshwar, Christiane de Arruda Rodrigues</i>	
Photo-Electro-Upcycling of Biomass via Dye-Sensitized Photoanode with Passivation Effect	5276
<i>Jeong Kyeong Lee, Tae_Hyuk Kwon</i>	
An Artificial Leaf That Generates Electricity: Coupling Photoelectro-Oxidation of Water to Bioelectro-Reduction of Oxygen.....	5277
<i>Sung Yeol Kim, Giyong Kim, G Tayhas Palmore</i>	
Construction of ITO Nanoparticle Immobilized Substrates and Evaluation of Their Photocurrent Responses	5278
<i>Katsuhiko Kanaizuka, Mei Yamaguchi</i>	
Electrochemical Synthesis and Optimization of CdSe _x Te _{1-x} Thin-Films for Enhanced Solar Cell Performance.....	5279
<i>Amirreza Damaghi, Somayeh Ali Karami, Samuel Adesanoye, Shiljashree Vijay, Wei Cheng, Syed Mubeen Jawahar Hussaini</i>	

Synthesis of Near-IR-Responsive Ag-Au-Te Quantum Dots with a Heating-up Method.....	5280
<i>Atsushi Kikkawa, Chie Miyamae, Kazutaka Akiyoshi, Tatsuya Kameyama, Hiroki Sato, Yusuke Ohshima, Tsukasa Torimoto</i>	
Photoelectrochemical Ammonia Oxidation on Porous Organic Polymer Modified BiVO ₄	5281
<i>Taesik Koh, Subhash Chandra Shit, Wooyul Kim</i>	
Synthesis of Chiral Au-Ag Core-Shell Nanoparticles and Their Localized Surface Plasmon Resonance Properties.....	5282
<i>Takamasa Shoji, Shuji Isogawa, Tsukasa Torimoto, Tatsuya Kameyama</i>	
Synthesis of (9-Triptycyl)Tin Halides for Application in Perovskite Solar Cells.....	5283
<i>Akio Hasegawa, Chien-Yu Chen, Tomoya Nakamura, Minh Anh Truong, Richard Murdey, Atsushi Wakamiya</i>	
Visible-Light Driven Gas Phase Hydrogen Sulfide Degeneration Using g-C ₃ N ₄ Hybrid Photocatalysts and Its Countermeasures of Catalytic Poisoning	5285
<i>Tomofumi Katayama, Morio Nagata</i>	
Hydrogen Production by Photoreforming of Organic Waste Using Cd-ZnS Solid Solution Photocatalyst via MOF Precursor.....	5287
<i>Yusei Kumai, Morio Nagata</i>	
Monolithic Lead Halide Perovskite Based Photoanode with 9.16% Applied Bias Photon-to-Current Efficiency	5289
<i>Tae Gyun Kim, Jong Hyeok Park</i>	
Highly Efficient Hydrogen Production By Photoetched CdS-Pt	5290
<i>Haruki Nagakawa, Tetsu Tatsuma</i>	
Utilization of Waste Melamine Formaldehyde Resin As an Enhancer in g-C ₃ N ₄ Photocatalyst and Photoelectrochemical Applications	5292
<i>Myung Jong Kang</i>	
Nanoconfinement Enables Photoelectrochemical Selective Oxidation of Glycerol Via the Microscale Fluid Effect	5293
<i>Tae-Kyung Liu, Yuan LU, Jong Hyeok Park</i>	
Maintaining High Efficiency of Photoelectrochemical Gas-Phase CO ₂ Reduction Reaction for 500 h By Supplying Water Vapor to Cathode Surface.....	5294
<i>Sayumi Sato, Yuya Uzumaki, Taka-Aki Shinozaki, Yoko Ono, Hironobu Minowa, Atsushi Aratake</i>	
Photoelectrochemical Properties of Water Splitting Reactions Using NiO/InGa _{0.9} N Photoanodes with Different InGa _{0.9} N Thicknesses and Characteristics in Gas-Phase CO ₂ Reduction Reactions	5296
<i>Yuya Uzumaki, Sayumi Sato, Taka-Aki Shinozaki, Yoko Ono, Hironobu Minowa, Atsushi Aratake</i>	
Cu ₂ O@Cu _{2-<i>x</i>} S Core@Shell Nanocrystals: Morphologic Effect on Photocatalytic Hydrogen Production	5298
<i>Shan-Jen Yang, Ying-Chih Pu, Yung-Jung Hsu</i>	
Aspect Ratio-Dependent Charge Carrier Dynamics in CdSe/CdS Dot-in-Rod Nanoheterostructures and the Application in Photocatalytic Hydrogen Evolution	5299
<i>Yu Chen Wei, Ying-Chih Pu, Yung-Jung Hsu</i>	

Au@Cu ₇ S ₄ /ZnS Ternary Yolk@Shell Nanostructures for Photocatalytic Hydrogen Production	5300
<i>Hsuan Hung Kuo, Mei-Jing Fang, Yung-Jung Hsu</i>	
Sustainable Environmental Application of Au@SnO ₂ Core@Shell Nanocrystals	5301
<i>Huai En Chang, Yung-Jung Hsu</i>	
Cu-Doped InP Quantum Dots: Charge Carrier Dynamics and Photocatalytic Hydrogen Production	5302
<i>Jen An Shih, Ying-Chih Pu, Yung-Jung Hsu</i>	

L04 - Solar Oxygen Evolution Reaction

First Principles Modeling of Polaron Formation and Optical Spectroscopy on Titanium-Based Oxides for Oxygen Evolution Photocatalysis	5303
<i>Shay McBride, Moritz Lang, Tanja Cuk, Geoffroy Hautier</i>	
Utilizing a High-Efficiency and Durable Electrocatalyst on GaAs for PEC Water Oxidation	5304
<i>Soon Hyung Kang</i>	
(Invited) Structure and Reactivity of Cobalt-Containing Nanocomposites for Electrocatalytic Oxygen Evolution in Acid Medium.....	5305
<i>Iwona A. Rutkowska, Marzena Krech, Olena Siamuk, Pawel Kulesza</i>	
(Invited) Design of Durable OER Catalyst for Water Splitting	5306
<i>Yu Huang</i>	
(Invited) Evaluation of Oxygen Evolution Reaction Electrodes through Machine-Learning Analysis and in-Situ Electrochemical Spectroscopy	5307
<i>Tomohiro Fukushima, Masaki Itatani, Kei Murakoshi</i>	
Visible-Light-Driven Oxygen Reduction By an Anisotropically Crystallized CuBi ₂ O ₄ Photocathode Synthesized Using a Mixed Metal-Imidazole Casting Method	5308
<i>Masayuki Yagi, Zaki Zahran, Yuta Tsubonouchi, Debraj Chandra, Norihisa Hoshino</i>	
(Invited) Light-Guided Electrodeposition for Functional Integration of Catalyst Pattern on Semiconductor for Efficient Oxygen Evolution Reaction	5309
<i>Suyeon Lee, Hanseo Im, Nayeon Lee, Sung Yul Lim</i>	
(Invited) Understanding Degradation Pathways during the Oxygen Evolution Reaction on Iridium-Based Electrocatalysts Via Liquid Phase Transmission Electron Microscopy	5310
<i>Ivan A. Moreno-Hernandez</i>	
Near Real-Time Evaluation of Hydroxyl Radical Generation on Photocatalytic Electrodes Using Flow-Type Electron Spin Resonance Method	5311
<i>Souta Suzuki, Fumiaki Amano</i>	
A Nitrogen-Doped CuWO ₄ Photoanode with Oriented Crystal Growth for Efficient Visible-Light-Driven Water Oxidation.....	5312
<i>Tomohiro Katsuki, Norihisa Hoshino, Zaki Zahran, Yuta Tsubonouchi, Debraj Chandra, Masayuki Yagi</i>	
Optical and Electrochemical Effects of Semiconductor Nanoparticle Clustering on Photocatalytic Water Splitting Half-Reactions.....	5313
<i>Rebecca Lentz, Rohini Bala Chandran</i>	

L04 - Nitrogen and Other Compound Conversion via Photocatalysis or Electrocatalysis 2

- Enhancing Solar Chemical Conversion Performance through Underlayer Modification on Copper-Based Mixed Oxide Films 5314
Seungyo Choi, Kitae Kim, Tae Woo Kim, Hyunwoong Park
- (Invited) Enhancing Efficiency, Stability and Versatility in Dye-Sensitized Photoelectrochemical Cells Via Spatially Controlled Cascade Charge Transfer 5315
Tae_Hyuk Kwon
- (Invited) Photocatalytic Cleavage of C-C Bond in a Dye-Sensitized Photoelectrochemical Cell at Room Temperature 5316
Gyu Leem
- Unravelling Energy Conversion Mechanisms in Photocatalysts and Biohybrids By Operando Functional Imaging..... 5317
Xianwen Mao

L04 - Photo(electro)catalytic Carbon Dioxide Conversion 2

- Plasmon-Assisted Electrochemical CO₂ Reduction on Copper Nanocubes 5318
Alexander Al-Zubeidi, Briley Bourgeois, Alan Dai, Liam Herndon, Lin Yuan, Amy McKeown-Green, Jennifer Dionne
- Growth and Photoelectrochemical Characterization of Epitaxial ZnTe Photocathodes for Carbon Dioxide Reduction..... 5320
Lily Shiau, Sola Lee, Harry A. Atwater
- (Invited) Engineering Microenvironments for Photo-Electrochemical Reduction of Carbon Dioxide 5321
Chanyeon Kim, Alexis T. Bell
- Photocatalytic CO₂ Reduction to Formic Acid (HCOOH) By an Organocobalt Catalyst - Two Different Mechanisms with Temporal Evolution of Catalysis, Effectuated by Second Coordination Sphere Interactions 5322
Hemlata Agarwala
- Alternating Substrate-Ligand Coordination Provides a Lower Energy C-O Bond Cleavage Pathway for Electrochemically Driven Catalytic CO₂ Reduction 5323
Hemlata Agarwala
- Development of Organic Electrocatalysts for the Production of Solar Fuels 5325
Carlos Enrique Torres Méndez, Haining Tian
- Modeling the Effects of Local Species Concentrations on the Selectivity of a Modified Cobalt Phthalocyanine Catalyst for CO₂ Reduction to Produce Methanol 5326
Rachel Silcox, Libo Yao, Kevin Enrique Rivera Cruz, Charles McCrory, Nirala Singh, Rohini Bala Chandran

L05-ADVANCED TECHNIQUES FOR IN SITU ELECTROCHEMICAL SYSTEMS 7

L05 - In Situ Characterization 1

- (Invited) Operando visualization of Li Metal Anodes: From Liquid to Solid Electrolytes 5327
Neil P. Dasgupta

Determination of the Rate Change of Electrical Resistance of Aluminium Oxide Film By White Light-Optical Interferometry	5328
<i>Khaled Habib</i>	
High Sensitivity of Energy Dispersive X-Ray Spectroscopy Measurement Using Liquid Cell with Electron Transmittance Window Ultra-Thinned by a Gas Cluster Ion Beam	5330
<i>Masaya Takeuchi, Satoru Suzuki, Noriaki Toyoda</i>	
In Situ Electrochemical Transmission Electron Microscopy of Transient Electrodeposition and Coarsening on Graphene	5332
<i>Serin Lee, Shu Fen Tan, Frances M. Ross</i>	
Technological Advances for Temperature-Dependent Operando Electrochemical Liquid Cell Scanning Transmission Electron Microscopy Studies of Energy Materials	5334
<i>Katherine Marusak Stephens, Yao Yang, Franklin Stampley Walden, Nelson Luis Marthe, Patrick Smith Wellborn, Jennifer McConnell, John Damiano</i>	
Solid Oxide Cell Tests inside a Transmission Electron Microscope.....	5336
<i>Soren Bredmose Simonsen, Zhongtao Ma, Kristian Speranza Mølhave, Christodoulos Chatzichristodoulou</i>	
Deposition and Characterization of Photocatalytically Active Nanowires Viascanning Electrochemical Probe Microscopy	5338
<i>Giada Caniglia, Eva Oswald, Andreas Hellmann, Anna-Laurine Gaus, Max von Delius, Christine Kranz</i>	

L05 - In Situ Characterization 2

(Invited) Unravelling Loss Mechanisms in PEM Water Electrolysis Cells Via Elaborated in Situ Techniques.....	5340
<i>Irene Franzetti, Chenke Dai, Niklas Hensle, Thomas Lickert, Tom Smolinka, Richard Hanke-Rauschenbach</i>	
Coupling Time-Resolved Mass Spectrometry Techniques to Unravel Cobalt Degradation Mechanisms in Acidic Media for Oxygen and Hydrogen Electrocatalysis	5342
<i>Ashton M. Aleman, Colin Flynn Crago, Gaurav A. Kamat, Aniket Sandip S. Mule, Adam C Nielander, Michaela Burke Stevens, Thomas F. Jaramillo</i>	
In Operando Diagnosis of Site Density and Turnover Changes of Fe-N-C Cathodes in Oxygen Electroreduction	5343
<i>Geunsu Bae, Minho M. Kim, Man Ho Han, Junsic Cho, Dong Hyun Kim, Moulay-Tahar Sougrati, Jinjong Kim, Kug-Seung Lee, Sang Hoon Joo, William A Goddard, Hyung-Suk Oh, Hyungjun Kim, Frederic Jaouen, Chang Hyuck Choi</i>	
In Situ Stability Analysis of Oxygen Evolution Reaction Via Mass Spectrometry	5345
<i>Dong Young Chung</i>	
Quantitative Differential Electrochemical Mass Spectroscopy Analysis of Electrochemical Carbon Corrosion Reactions in Alkaline Electrolyte Solutions	5346
<i>Shugo Shimizu, Atsunori Ikezawa, Takeyoshi Okajima, Hajime Arai</i>	
(Invited) Unveiling the Structure-Function Relationships of Materials Using in Situ/Operando Neutron Reflectometry	5348
<i>Hanyu Wang, Riccardo Candeago, Mathieu Doucet, Xiao Su, Jim Browning</i>	

In-Situ Neutron Depth Profiling Studies (Measurements and Simulations) to Characterize the Surface of Silicon Anodes and Complementary Neutron Techniques for in-Situ and Operando Characterization.....	5349
<i>Ralph Gilles, Lukas Grossmann, Jiri Vacik, Antonino Cannavo, Giovanni Ceccio</i>	

L05 - In Situ Characterization 3

(Invited) In Situ X-Ray Spectroscopy for Clean Energy: Insights into Reactive Intermediates.....	5351
<i>Yulia Pushkar</i>	
Laboratory-Based X-Ray Emission Spectroscopy (XES) for Determination of Oxidation State and Ligand Species	5352
<i>Paul Aronstein, Zachary Lebens-Higgins, William Holden, Devon Mortensen</i>	
Unveiling Complex Interfaces: A Methodological Approach for Accurate Apxps Data Acquisition of Polymer Electrolyte Membrane Electrolysis Devices	5353
<i>Rebecca Hamlyn, Johannes Mahl, Ethan J. Crumlin</i>	
Probing the Stability of Ni ₂ P Nanoparticle Electrocatalysts via Operando Benchtop X-Ray Absorption Spectroscopy.....	5354
<i>Ricardo Andres Rivera-Maldonado, Anthony Girona, Jared E. Abramson, Abraham Varughese, Gerald Seidler, Brandi Michelle Cossairt</i>	
Shedding Light on Active Site Reconstruction and Structural Transformation of Oxygen Evolution Reaction Catalysts for Water Electrolysis.....	5355
<i>Kahyun Ham, Ahyoun Lim, Ioannis Spanos</i>	
Operando Spectroelectrochemical and Computational Techniques to Describe the Mars-Van Krevelen Mechanism on Nitride Mxenes	5357
<i>Denis Johnson, Hao En Lai, Yu B. Zheng, Abdoulaye Djire</i>	
Redirecting Configuration of Atomically Dispersed Selenium Catalytic Sites for Efficient Hydrazine Oxidation	5358
<i>Kanglei Pang, Kanglei Pang</i>	
(Invited) Coherent X-ray Studies of Electrode Nanoparticles and Surfaces.....	5360
<i>Hoydoo You, Tomoya Kawaguchi, Vladimir Komanicky</i>	
Operando Synchrotron X-Ray Scattering Study of (Bi)Carbonate Precipitation in Gas Diffusion Electrodes for CO ₂ Reduction Using Neutral and Acidic Electrolytes	5361
<i>Alessandro Senocrate, Francesco Bernasconi, Nukorn Plainpan, Marta Mirolo, Corsin Battaglia</i>	

L05 - In Situ Characterization 4

(Invited) Direct Electrochemical Reduction of Carbonate to Formate	5363
<i>Boon Siang Jason Yeo</i>	
Monitoring Surface-Enhanced Infrared Absorption Spectroscopy on a Graphitic Electrode for in-Situ Surface-Sensitive Electrochemistry: Designing Electrode Interfaces for Carbon Capture	5364
<i>Abdur-Rahman Siddiqui, Jeanne N'Diaye, Kristin Martin, Aravind Baby, Jahan M Dawlaty, Veronica Augustyn, Joaquin Rodriguez Lopez</i>	
Selective Electrochemical CO ₂ Reduction Reaction By Tuning Electrolyte Conditions.....	5367
<i>Yun Jeong Hwang</i>	

Method Development and Applications of Online Inductively Coupled Plasma-Mass Spectrometry for Investigating Cathodic Degradation.....	5368
<i>Katherine Yan, Sang-Won Lee, Kyra M. K. Yap, Aniket Sandip S. Mule, Ryan Travis Hannagan, Jesse E. Matthews, Dong Un Lee, Michaela Burke Stevens, Adam C Nielander, Thomas F. Jaramillo</i>	
Operando Electrochemical Raman Spectroscopy Studies of Working Electrodes in (photo)Electrocatalytic Water Splitting	5369
<i>Jingjing Qiu, Timothy Lin, Kyra M. K. Yap, Thomas F. Jaramillo, Adam C. Nielander</i>	
Immobilization of Dimethylferrocene-Modified Linear Poly(ethylenimine) on Epoxy-Terminated Supports for in-Situ Confocal Raman Microscopy.....	5370
<i>Miharu Koh, Egor Baiareshov, Jay P. Kitt, Carol Korzeniewski, Joel M. Harris, Shelley D. Minteer</i>	
Raman Imaging the Evolution of Additive-Free Silver Molybdate Electrodes	5371
<i>Paul Smith</i>	
Operando Investigation of the Solid Electrolyte Interface in the Electrochemical Lithium-Mediated Ammonia Synthesis.....	5372
<i>Antonia Herzog, Haldrian Iriawan, Yang Shao-Horn</i>	
Study of the Mechanism and Charge-Transfer Processes in Water Oxidation Catalysis by Nickel Hydroxide and Silk Fibroin: A Spectroelectrochemical Approach.....	5374
<i>Eduardo Ruben do Nascimento, Michele Lemos de Souza, Alexandre Brolo, Wendel Andrade Alves</i>	

L05 - Poster Session

Operando Characterization of CO ₂ Reduction Interfaces by Electrochemical Atomic Force Microscopy	5376
<i>Maria Kelly, Sara T Hamilton, Paige N Brimley, Nathan T Nesbitt, Ah-Hyung Alissa Park, Wilson A Smith</i>	
Analyzing Platinum Catalyst Degradation in Fuel Cells Using Accelerated Stress Tests and X-Ray Absorption Spectroscopy.....	5378
<i>Bruna Ferreira Gomes Lobo, Rameshwori Jalan, Carlos M.S. Lobo, Michael Schuster, Bui Duc Long Nguyen, Christina Roth</i>	
Operando X-Ray Absorption Spectroscopy Investigation of Molybdenum (IV) Oxo Benzene 1,2 Dithiolate [Mo ^{IV} O(bdt) ₂] ²⁻ Electrocatalyst Toward Oxygen Atom Transfer Reaction.....	5380
<i>Rathnayake Mudiyanseelage Kumuditha Anjala Rathnayake, Jordi Cabana</i>	

L06-ELECTROCATALYSIS AT THE INTERFACE: FROM FUNDAMENTAL STUDIES TO APPLICATIONS

L06 - Electrocatalysis at the Interface 1

(Invited) First Principles Treatments of Oxygenate Electrooxidation – Structure Sensitivity and Influence of Solvent on Chemically Diverse Elementary Reaction Steps.....	5381
<i>Jeffrey Greeley, Siddharth Deshpande, Brady Dupleiss, Zhenhua Zeng</i>	
Importance of Charge Transfer Descriptor for the Computational Screening of Electrocatalysts.....	5382
<i>Stefan Ringe</i>	

Confinement Effects on Proton Transfer in TiO ₂ Nanopores from Deep Potential Molecular Dynamics Simulations.....	5383
<i>Hyuna Kwon, Marcos Calegari, Shane Ardo, Daniel V. Esposito, Anh Tuan Pham, Tadashi Ogitsu</i>	
Theoretical Studies of Hydrogen Evolution Involving Imidazolium Proton Donors	5384
<i>Zeynep Bagbudar, Robert Warburton</i>	
Computational Design of Electrocatalytic Devices via Continuum Models	5385
<i>Oliviero Andreussi</i>	
Decoding Electrochemical Interfaces with Computational Approaches: The Case of NiOOH Catalyst.....	5386
<i>Piotr M. Kowalski, Yin-Ying Ting, Conor Price, Fabian Tipp, Michael Eikerling</i>	
Contrasting Theories of Electrode Models in Electrocatalysis Under Aqueous Alkaline Solutions.....	5388
<i>Michael T. Tang, Michal Bajdich, Frank Ablid-Pedersen</i>	
Impact of Double Layer on Electrochemical Kinetics via Bottom up Multiscale Modeling Approach	5389
<i>Masao Suzuki Shibata, Yu Chen, Alexandra Zagalskaya, Tadashi Ogitsu, Anh Tuan Pham, Yu Morimoto, Adam Z. Weber, Iryna Zenyuk</i>	
Investigating the Impact of Pt(hkl) Surface Structure on Electrochemical Double Layer Capacitance: Aimd Simulations and Experimental Insights	5391
<i>Payal Chaudhary, Mohammad Reza Nouri, Vitaly Alexandrov</i>	

L06 - Electrocatalysis at the Interface 2

(Invited) Predicting Interfacial Ion Adsorption, Ion Solvation, and Correlated Ion Transport in Advanced Electrolytes.....	5392
<i>Chang Yun Son</i>	
Insights into the Electrochemical Reduction of Nitrate on Metal Surfaces.....	5393
<i>Alexandra Zagalskaya, Sneha A Akhade, Jeremy Feaster</i>	
Predicted Current Density Response Versus Applied Potential for Five Crystallographic IrO ₂ Facets: Comparison with Thin Film Experiment.....	5394
<i>Soonho Kwon, Kelsey A Stoerzinger, Reshma R Rao, Liang Qiao, William A Goddard, Yang Shao-Horn</i>	
Multiscale Modeling Reveals Mass Transport-Controlled Product Selectivity in Electrochemical CO ₂ Reduction on Cu	5395
<i>Adith Ramakrishnan Velmurugan, Stefan Ringe</i>	
(Invited) Towards AI ² Electrochemistry(AI ² = AI × ab initio)	5396
<i>Jun Cheng</i>	
Bridging Physics-Informed and Data-Driven Materials Designs to Catalyze Deep Decarbonization.....	5397
<i>Jiayu Peng</i>	
Exploring the Role of Interfacial Water and Adsorbed Hydroxide in Oxygen Reduction Reaction (ORR) Transients.....	5398
<i>Carolyn Spaulding, Joshua David Snyder</i>	

L06 - Electrocatalysis at the Interface 3

(Invited) Impact of Site Heterogeneity of Cu on the Electrochemical CO ₂ Reduction Reaction	5399
<i>Yifei Xu, Wenqiang Gao, Xiaoxia Chang, Bingjun Xu</i>	
(Invited) Influence of Electric Double Layer Rigidity on CO Adsorption and Electroreduction Rate on Cu	5400
<i>Qi Lu</i>	
(Invited) In Situ Spectroscopic Studies on CO ₂ Reduction	5402
<i>Minhua Shao</i>	
(Invited) Operando Spectroscopy-Inspired Design of Electrolyte-Electrode Interface	5403
<i>Yu Katayama</i>	
(Invited) Operando Probes of Site Densities, Energetics and Activity in Oxygen Evolution Catalysis	5404
<i>Ifan Stephens</i>	
(Invited) In Situ Probing of Interfacial Solvation and Electrocatalytic Processes	5405
<i>Yingjie Zhang</i>	
Tuning Hydrogen Evolution and Oxidation Electrocatalysis through Interfacial Hydrogen Bonds.....	5406
<i>Yirui Zhang, Botao Huang, Abhishek Aggarwal, Graham Leverick, Yang Shao-Horn</i>	
Interplay of Surface Hydride, Hydrogen Evolution, and Oxygen Reduction on Cu(111)	5407
<i>David Raciti, Ally Guo, Thomas P Moffat</i>	

L06 - Electrocatalysis at the Interface 4

(Invited) Double Layer Structure, Electric Fields, and Making and Breaking of Lewis Bonds at an Electrochemical Interface	5408
<i>Jahan M Dawlaty</i>	
(Invited) Linking Electric Double Layer Formation to Electrocatalytic Activity	5409
<i>Matthew A. Gebbie</i>	
(Invited) Direct Observation of Nanoscale Heterogeneity in Ruthenium Oxide Rutile Nanocrystals for the Oxygen Evolution Reaction via Liquid Phase Transmission Electron Microscopy	5410
<i>Ivan A. Moreno-Hernandez</i>	
(Invited) Faradaic Electron Transfer in Inner Helmholtz Plane.....	5411
<i>Moonjoo Kim, Taek Dong Chung, Sangmee Park</i>	
(Invited) Stability of Platinum-Electrolyte Interfaces	5412
<i>Serhiy Cherevko, Valentin Briega Martos, Yunsheng Qiu, Ina Reichmann, Pascal Lauf</i>	
(Invited) Electrocatalysis at Modified Electrochemical Interfaces	5414
<i>Dusan Strmcnik, Dzevad K Kozlica, Milena Martins, Pedro Farinazzo Bergamo Dias Martins, Anja Logar, Ozbej Vodeb, Maris M Mathew, Matjaz Finsgar, Bostjan Genorio, Miran Gaberscek</i>	
(Invited) Well-Defined Electrocatalysis	5416
<i>Alasdair Fairhurst, Chaewon Lim, Benjamin Ransom, Dominik Haering, Vojislav Stamenkovic</i>	

L06 - Poster Session

- Deconvoluting Alkali Metal Cation and Hydroxide Anion Effects on the Alkaline Hydrogen Evolution and Oxidation Reactions on Platinum..... 5417
Sibo Wang, Chengzhang Wan, Amir Shah, Yu Huang, Xiangfeng Duan
- Lignin-Derived Carbons for Electrocatalytic Oxygen Reduction Reaction in Alkaline Media..... 5418
Izabela Irena Rzeznicka, Hideyuki Horino
- Solution Plasma Treatment for the Enhancement of Activity and Durability in Mn-Doped $\text{Ca}_3\text{Co}_4\text{O}_9$ 5420
Shigeto Hirai, Hao He, Padarti Jeevan Kumar, Tomoya Ohno, Takeshi Matsuda
- Investigating the Effect of Alkali Metal Cations on Electrochemical Ammonia Oxidation Reaction on Polycrystalline Platinum Electrode 5421
Junbeom Bang, Sang Hyun Ahn

L06 - Electrocatalysis at the Interface 5

- Incorporation of Trace Metals through in situ Cation Exchange Reactions: Electrochemical and Structural Effects on Nickel Oxyhydroxide Electrocatalysts 5422
Raul A. Marquez, Emma Kalokowski, Michael Espinosa, Jay T Bender, Yoon Jun Son, Kenta Kawashima, Chikaodili E. Chukwunke, Lettie A Smith, Hugo Celio, Andrei Dolocan, Xun Zhan, Nathan Miller, Delia J Milliron, Joaquin Resasco, C Buddie Mullins
- In Situ Probing Electrified Interfacial Molecular Anion Structures at Atomically Flat Gold Electrode..... 5424
Seyedamirhossein Mohseni Armaki, Majid Ahmadi, Arjan Mol, Peyman Taheri
- Co-Ion Identity Affects Double Layer Structure and Reactivity Trends in the Hydrogen Evolution Reaction..... 5425
Seth R. Anderson, Samuel G. Johnstone, Aaron M. Dent, Beichen Liu, Wenxiao Guo, Matthew A. Gebbie
- Understanding Water Dissociation Physics through Controlled Oxide Surface Chemistry..... 5426
Timothy Nathan Stovall, Justin C. Bui, Shannon W. Boettcher, Adam Z. Weber
- Importance of the Cation-Water Interaction on Water Dissociation for Hydrogen Evolution 5428
Hansol Choi, Chang Hyuck Choi
- Exploring the Impact of Excess Cations in Acidic CO_2 Reduction Reaction 5429
Suhwan Yoo, Sejin Park, Yun Jeong Hwang
- Electrolyte Descriptors for Current Efficiency and Stability for Lithium-Mediated Electrochemical Ammonia Synthesis..... 5430
Haldrian Iriawan, Antonia Herzog, Yang Shao-Horn
- Probing the Electrode-Electrolyte Dynamics of Metal Electrocatalysts for Oxygen Reduction with Multimodal X-Ray Scattering and Mass Spectrometry Techniques 5432
Gaurav A. Kamat, Ashton M. Aleman, Aniket Sandip S. Mule, Ryan Travis Hannagan, Johanna Schröder, Joseph T. Perryman, Lingze Wei, Daniela Marin, Alfred Vargas, Peter Benedek, Charline Rémy, Colin Flynn Crago, Brith Milenia Rojas Mendoza, Michaela Burke Stevens, Thomas F. Jaramillo

Hydrogen Dopant Modulated Strain Control of Copper Electrocatalysis for Nitrate Reduction Reaction.....	5434
<i>Zhongcan Xiao, Zhao Li</i>	

PtPdSn Electrocatalysts for Nitrous Oxide Reduction	5435
<i>Masaru Kato, Abinash Chandro Sarker, Jinhang Zheng, Fumie Saito, Mitsuki Kawamura, Yuki Unuma, Ichizo Yagi</i>	

L06 - Electrocatalysis at the Interface 6

Cation Effect on the Product Selectivity of Electrochemical CO Reduction.....	5436
<i>Weiyang Ni, Yongxiang Liang, Yufei Cao, Zhu Chen, Edward H. Sargent</i>	

Reactive Capture and Conversion of CO ₂ with Functionalized Ionic Liquid Electrolytes: A Case Study Showcasing Structural Design and Key Considerations for Performance Evaluation	5437
<i>Saudagar Dongare, Oguz Kagan Coskun, Burcu E Gurkan</i>	

Tuning Water at the Solid–Liquid Interface for Durable Electrocatalysis	5438
<i>Junsic Cho, Haesol Kim, Taejung Lim, Jinjong Kim, Sang Hoon Joo, Chang Hyuck Choi</i>	

Mechanistic Insights into the Electrochemical Oxidation of 5-Hydroxymethylfurfural on a Thin Film Ni Anode	5439
<i>Aditya Prajapati, Nitish Govindarajan, Wenyu Sun, Huiyun Jeong, Jeremy Feaster, Sneha A Akhade, Giovanna Bucci, Christopher Hahn</i>	

Linking the Electrochemical Characteristics of Cr ₂ O ₃ -Ga ₂ O ₃ on Glassy Carbon with the Electrocatalytic Reduction of CO ₂ to C ₂ ⁺ Products	5440
<i>Alma Paola Hernandez Gonzalez, Stephanie Dulovic, Andrew B. Bocarsly</i>	

Controlling Mass Transport in Direct Carbon Dioxide Zero-Gap Electrolyzers via Cell Compression.....	5442
<i>Dong Un (Daniel) Lee, Bjørn Joensen, Joel Jenny, Victoria Marie Ehlinger, Sang-Won Lee, Kabir Abiose, Yi Xu, Amitava Sarkar, Tiras Y Lin, Christopher Hahn, Thomas F. Jaramillo</i>	

Investigating the Effect of Copper Ion Impurities on the Structural Evolution and Electrocatalytic Activity of Catalysts for HER	5443
<i>Sonakshi Saini, Seunghoon Lee, Salem Clay Wright, Sahana Parvin, Juliane Weber, Jonas Baltrusaitis, Matthew Todd McDowell</i>	

L07-FUNDAMENTALS OF CARBON DIOXIDE REDUCTION

L07 - Digital Only Presentations

(Digital Presentation) Investigate the Reaction Mechanism in the C ₃ H ₇ OH Electrochemical Reduction Reaction from CO ₂ Using Dinuclear Cuprous Molecular Catalyst	5444
<i>Naonari Sakamoto, Keita Sekizawa, Soichi Shirai, Takamasa Nonaka, Takeo Arai, Shunsuke Sato, Takeshi Morikawa</i>	

L07 - Structure and Reactivity in CO₂-Electrocatalysis

(Invited) Selective and Economical CO ₂ Reduction in Acid	5445
<i>Tae Hyeon Ha, Jihun Oh</i>	

Investigating the Impact of Electrochemical Active Surface Area of Cu with Surfactant-Modified Carbon on Electrochemical CO ₂ Reduction in Acidic Electrolyte	5448
<i>Hwiyeon Noh, Brian Michael Tackett</i>	
(Invited) Evaluating Protocols for Real-Time Electrochemical CO ₂ Reduction Selectivity Measurements on Gold Rotating Ring Disk Electrodes	5449
<i>Maria Kelly, Rachel A Wnuk, Recep Kas, Glenn Teeter, Wilson A Smith</i>	
High Local CO Concentration Generated By Delicate Control of Au Nanoparticles from Au-Cu ₂ O Tandem Catalyst Boosts Electrochemical CO ₂ Conversion into Value-Added C ₂₊ Products	5450
<i>Suneon Wang, Jihun Oh</i>	
Gold Deposited Gas Diffusion Electrodes by RF Sputtering and Their CO ₂ Reduction Activity to CO	5451
<i>Takuya Yamada, Kazuyuki Iwase, Naoto Todoroki, Itaru Honma</i>	

L07 - Mechanistic Aspects of CO₂-Reduction

Operando Grazing Incidence XAS Study of Pd-Nanoparticle and -Aerogel Catalysts for the Electrochemical Reduction of CO ₂	5453
<i>Maximilian Winzely, Juan Herranz, Justus Sebastian Diercks, Adam Hugh Clark, Olga V. Safonova, Peter Rüttimann, Paul Maurice Leidinger, Meriem Fikry, Tym de Wild, Thomas J. Schmidt</i>	
Operando Insights Uncover Important Role of Hydroxide and Oxide Species in Pulsed CO ₂ Electroreduction Toward Ethanol	5455
<i>Antonia Herzog, Arno Bergmann, Beatriz Roldan Cuenya</i>	
Operando X-Ray Tomography Measurements of a Membrane Electrode Assembly for Electrochemical CO ₂ Reduction	5457
<i>Sola Lee, Myeong Je Jang, Zhiyuan Qi, Laura Paradis-Fortin, Harry A. Atwater, Walter S. Drisdell, Chengxiang("CX") Xiang</i>	
Operando Measurements of Copper Catalyst Morphology in Gas Diffusion Electrodes during Electrochemical CO ₂ Reduction for the Formation of C ₂₊ Compounds	5458
<i>Daiko Takamatsu, Naoto Fukatani, Akio Yoneyama, Tatsumi Hirano, Hiromasa Takahashi, Shin Yabuuchi, Koichi Watanabe</i>	
Unveiling Transport Mechanisms of Cesium and Water in Operando Zero-Gap CO ₂ Electrolyzers	5460
<i>Björt Joensen, José A. Zamora Zeledón, Lena Trotochaud, Andrea Sartori, Marta Mirolo, Asger Barkholt Moss, Sahil Garg, Ib Chorkendorff, Jakub Drnec, Brian Seger, Qiucheng Xu</i>	
Ab Initio Dynamics Insights: The Activity and Selectivity of Supercritical CO ₂ Reduction Reaction on Cu Surfaces.....	5461
<i>Xiaoyan Li, Jiachen Li, Pengfei Ou, Ke Xie, Edward Hartley Sargent</i>	

L07 - Copper-Based Electrocatalysts for CO₂-Reduction

(Keynote) Copper Cathode for Electrochemical CO ₂ Reduction – Unanswered Questions on Reproducibility	5462
<i>Aaron Timothy Marshall, Alex Reynell Heenan, Campbell Maurice Tiffin</i>	
(Invited) Intercalation of Copper into Tungsten Oxide Nanostructures: Development of Highly Active Electrocatalytic Systems for CO ₂ -Reduction	5464
<i>Iwona A. Rutkowska, Anna Chmielnicka, Pawel Kulesza</i>	

L07 - Importance of Electrolyte in CO₂-Reduction

Electrolyte Effects on Reactive Carbon Capture in Ionic Liquids.....	5466
<i>Francois Nkurunziza, Manu Gautam, Baleeswaraiah Muchharla, Bijandra Kumar, Joshua M. Spurgeon</i>	
Establishing a Platform for Probing Reactive Carbon Capture in Ionic Liquids through Non-Aqueous Electrochemistry.....	5467
<i>Rowan Shae Brower, Jesus Velazquez, Charles McCrory, Burcu E Gurkan</i>	
The Mechanism and Enhancement of Imidazolium-Mediated CO ₂ Reduction on Silver in Non-Aqueous Electrolytes.....	5468
<i>Oguz Kagan Coskun, Zeynep Bagbudar, Vaishali Khokhar, Saudagar Dongare, Robert Warburton, Burcu E Gurkan</i>	
(Invited) Manipulating Water Using Aprotic Solvents for CO ₂ Electrochemical Reduction	5469
<i>Chibueze Amanchukwu</i>	
CO ₂ Electrolysis Coupled with Hydrogen Oxidation Reaction in Non-Aqueous Aprotic Electrolytes.....	5470
<i>Francesco Longhin, Jon Bjarke Valbaek Mygind, Frederik Bylov Nielsen, Brian Seger</i>	
Understanding the Role of Organic Cations on the Electrochemical Reduction of CO ₂ in Aprotic Electrolytes.....	5471
<i>Jon-Marc McGregor, Jay T Bender, Amanda S Petersen, Louise Marie Canada, Jan Rossmeisl, Joan F. Brennecke, Joaquin Resasco</i>	

L07 - CO₂-Electroreduction Methodology

Electrochemical Reduction of CO ₂ to Methane Using a Mixed Gas Feed	5472
<i>Chun Yat Sit, Paul J.A Kenis</i>	
Controlling CO ₂ and H ₂ O Mass Transport in Gas Diffusion Electrodes for CO ₂ Reduction by Acting on the Substrate	5473
<i>Alessandro Senocrate, Francesco Bernasconi, Nukorn Plainpan, Corsin Battaglia</i>	
CO ₂ Hydrogenation through Electrochemical Hydrogen Activation in a Gas-Vapor Fed Reactor.....	5475
<i>Samantha Roenigk, James McKone</i>	
The Impact of CO ₂ Dynamics within the Gas Diffusion Electrode on Electrochemical CO ₂ Reduction in Zero-Gap MEA Operation.....	5477
<i>Hyunchul Kim, Hyung-Suk Oh, Young-Jin Ko, Ung Lee</i>	

L07 - Importance of Active Sites in Cu-Based Catalysts

(Keynote) Key Intermediates and Cu Active Sites for the Electrocatalytic Reduction of CO ₂ to Ethylene and Ethanol.....	5479
<i>Beatriz Roldan Cuenya, Antonia Herzog</i>	
(Invited) Investigation of Anion Role during Electrochemical CO ₂ Reduction on Copper Sulfide (CuS) by Potential-Step Method.....	5480
<i>Akira Yamaguchi, Hisanobu Taga, Masahiro Miyauchi</i>	

(Invited) Optimizing CO ₂ Reduction in Aprotic Media: Insights Via Kinetic Modeling of Bimetallic Cu _x Zn _{1-x} Electrocatalysts.....	5481
<i>Niklas Oppel, Ruth Witzel, Philipp Röse, Ulrike Krewer</i>	

Temperature Effects on the Surface Dynamics of the CO ₂ Reduction Reaction over Copper.....	5483
<i>Victor D. Brandão, Oliver Long, Hakhyeon Song, Anush Venkatamaran, Sankar Nair, Marta C. Hatzell, Carsten Sievers, Saket Bhargava, Sukaran Arora, Carlos Villa</i>	

Ion Implantation of Copper Electrodes to Elucidate the Effect of Subsurface Oxygen and Surface Roughness for the Electrochemical CO ₂ Reduction Reaction.....	5485
<i>Alex Reynell Heenan, Vivian Fang, John Kennedy, Aaron Timothy Marshall</i>	

Europe Section Alessandro Volta Medal Address

(Europe Section Alessandro Volta Medal) Structure, Reactivity and Durability of Hybrid Functional Materials in Electrocatalysis: CO ₂ -Reduction Versus N ₂ -Fixation.....	5486
<i>Pawel Kulesza, Iwona A. Rutkowska, Anna Chmielnicka, Beata Rytelewska</i>	

L07 - Fundamental Aspects of CO₂-Reduction Electrocatalysis

(Keynote) Electrochemical Reduction of CO ₂ and Related Feedstocks to Long Carbon Chain Products.....	5488
<i>Boon Siang Jason Yeo</i>	

(Invited) Reconstruction of Metal-Organic Framework-Based Heterogeneous Catalysts during CO ₂ Electroreduction	5489
<i>Dae-Hyun Nam</i>	

Effect of Cathodic Potential in Electrochemical CO ₂ Reduction.....	5490
<i>Lei Wang</i>	

L07 - CO₂-Reduction Electrocatalytic Interface

(Keynote) Understanding Interfaces in Electrochemical CO ₂ Reduction, from Model Systems to Applied Platforms.....	5491
<i>Thomas F. Jaramillo</i>	

(Invited) Understanding on the Fundamental Processes of Electrocatalytic Conversion of CO ₂ to Multi-Carbon Chemicals	5492
<i>Di-Jia Liu</i>	

Activating New Reaction Pathways in Electrochemical CO ₂ Conversion Using Pulsing	5494
<i>Matthew T. Mayer, Alexander Arndt, Laura Carolina Pardo Perez, Chaoqun Ma, Peter Bogdanoff</i>	

Optimizing Electrochemical Interfaces and Device Architectures for Electrochemical CO ₂ Reduction	5496
<i>Kenneth C. Neyerlin</i>	

L07 - CO₂-Reduction Electrolyzers

(Keynote) Controlling CO ₂ Electrolyzer Reactivity Using Alloy and Polymer-Modified Electrodes.....	5498
<i>Andrew A. Gewirth, Xinyi Chen, Heryn Wang, Paul J.A. Kenis</i>	

A Carbon-Efficient Bicarbonate Electrolyzer.....	5499
<i>Zhen Zhang, Ju Li</i>	
Investigation on Electrochemical Reaction for Anion Exchange Membrane Electrode Assembly-Based Electrolyzer.....	5500
<i>Gyeong Ho Han, Sang Hyun Ahn</i>	
Pure-Water-Fed Forward-Bias Bipolar Membrane CO ₂ Electrolyzer.....	5501
<i>Matthias Hebelmann, Jason Keonhag Lee, Sudong Chae, Andrew Tricker, Robert Keller, Matthias Wessling, Ji Su, Douglas I. Kushner, Adam Z. Weber, Xiong Peng</i>	
Full Cell Modeling of Flooding Effects on Ionomer-Based CO ₂ Electrolyzers.....	5502
<i>Nicholas R. Cross, Victoria Marie Ehlinger, Maxwell Goldman, Aditya Prajapati, Thomas Moore, Auston L. Clemens, An Chu, Laura Gutierrez, Michell Marufu, Eric Krall, Eric B Duoss, Christopher Hahn, Sarah Baker</i>	
Comparative Selectivity of CO and CO ₂ Reduction Using Cu Electrocatalysts in Zero-Gap MEA Cells.....	5504
<i>Mustapha Bello, Monsuru Olatunji Dauda, John C Hendershot, Junghyun Park, Ignace Agbadan, Soundarzo Tasnim, John C. Flake</i>	

L07 - Electrocatalytic Systems for CO₂-Reduction

(Keynote) Design and Electrochemical Study of Bimetallic Nanostructured Catalysts for the Reduction of Carbon Dioxide.....	5506
<i>Aicheng Chen</i>	
(Invited) Novel Nitrogen and Sulfur Doped Colloid Imprinted Carbons (CICs) As Catalysts for Electrochemical CO ₂ Reduction.....	5507
<i>Fatemeh Sadat Mousavizadeh Mojarad, Anand Singh, Jialang Li, Viola Ingrid Birss</i>	
Electrocatalyst Design for Carbon Dioxide Co-Reduction with Nitrate for Sustainable Synthesis of Urea	5509
<i>Yu-Han Chen, Camille Roiron, Plamen Atanassov</i>	

L07 - Electrocatalytic and Photoelectrochemical Approaches to CO₂-Reduction

Investigating the Effect of Catalyst Configuration on the Performance of Silver-Based Membrane Electrode Assemblies for Electrochemical CO ₂ Reduction.....	5510
<i>Lydia Weseler, Thomas Turek</i>	
Application of Molecular Silver Complexes for Efficient Electrochemical CO ₂ Reduction in Zero-Gap Electrolyzers	5512
<i>Wiebke Wiesner, Jenny Yurley Maldonado Arias, Daniel Siegmund, Ulf-Peter Apfel</i>	
Scalable Synthesis of AgCl-Derived Ag Structures for Electrochemical CO ₂ Reduction	5514
<i>Younghyun Chae, Da Hye Won</i>	
Enabling Photoelectrochemical CO ₂ Reduction Catalyzed by a Molecular Iridium Catalyst Anchored Onto Oxide-Coated Silicon.....	5515
<i>Samuel Jaeho Shin, Shi He, Landon Keller, Stephen Tereniak, Renato Nevias Sampaio, Christian Y Dones Lassalle, Rebecca Powers, Hyuenwoo Yang, Aldo Jordan, Gregory N. Parsons, James Cahoon, Frank A Leibfarth, Alexander J. M. Miller, Jillian Lee Dempsey</i>	

L07 - Hybrid Electrocatalysts for CO₂-Reduction

- Atomically Dispersed Ni-N-C Catalysts for Electrochemical Carbon Dioxide Reduction 5516
Youngdon Ko, Luigi Osmieri, Hanguang Zhang, Piotr Zelenay
- Electrochemical CO₂ Reduction Reaction to Methanol on a Molecular Cobalt Catalyst 5518
Davide Menga, Sunmoon Yu, Yang Shao-Horn

L07 - Optimizing of CO₂-Reduction Pathways

- (Keynote) Electrocatalysts Design for Carbon Dioxide Reduction and Valorization 5520
Plamen Atanassov
- Attenuation of Electrochemical CO₂ Reduction Via the Electric Double Layer 5522
David Raciti
- Comprehensive Analytical Method with a Standardized Data Pipeline Enables Parallel Experiments
in Electrochemical CO₂ Reduction 5523
Alessandro Senocrate, Peter Kraus, Francesco Bernasconi, Corsin Battaglia
- Energy-Efficient Electrified Reactive Capture to Syngas Via Tuning of Morphology and Energetics
of Catalyst Supports 5525
Hengzhou Liu, Ke Xie, Edward Hartley Sargent

L07 - Optimizing of CO₂-Reduction Parameters

- Decoupling Catalyst and Electrolyte Temperatures to Steer Activity and Selectivity of
Electrochemical CO₂ Reduction 5526
*Sang-Won Lee, Jesse E. Matthews, Ara Cho, Tiras Y Lin, Kyra M. K. Yap, Dongrak Oh, Yi Xu,
Katherine Yan, Adam C. Nielander, Frank Ablid-Pedersen, Michal Bajdich, Dong Un Lee,
Thomas F. Jaramillo*
- Electrocatalytic Functionalized Specialty Paper As Low-Cost Porous Transport Layer Material in
CO₂-Electrolysis 5528
*Ilias Stamatelos, Michael Rentzsch, Chengyu Liu, Franziska Bauer, Joachim Pasel, Stefan
Barwe, Marc Robert*

L07 - New Approaches to CO₂-Reduction Electrocatalysis

- DFT Studies on C–C Bond Formation Mechanism in Electrochemical CO₂ Reduction on Single
Cu-Modified Covalent Triazine Frameworks 5530
Keitaro Ohashi, Kaito Nagita, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya
- Electrocatalytic Reduction of Simulated Industrial CO₂ and CO Mixtures: Revising
Chronoamperometry to Enable Selective Gas Mixture Reduction via Cyclic Voltammetry 5533
*Grzegorz Lisak, Wen Qian Chen, Foo Jit Loong Cyrus, Liya Ge, Andrei Veksha, Wei Ping
Chan, Yafei Shen*
- Enhancing Discovery and Understanding of Atomically Dispersed Single Atom Catalysts for CO₂
Reduction Reaction with Density Functional Theory and Machine Learning 5535
*Megan Christina Davis, Ivana Matanovic, Wilton Kort-Kamp, Piotr Zelenay, Edward F.
Holby*

Oxide-Metal Transition Processes of Cu _x O Foams during CO ₂ RR Probed by Operando Quick-XAS	5536
<i>Sonja Blaseio, Abhijit Dutta, Carsten Dosche, Motiar Rahaman, Kiran Kiran, Alexandra Dworzak, Björn Mahrt, Peter Broekmann, Mehtap Oezaslan</i>	

Investigating the Influence of Hydrogen Evolution By Copper-Palladium Catalyst on Performance of Zero-Gap CO ₂ Electrolyzer through in-Situ Raman and Ex-Situ XPS Techniques.....	5538
<i>Mritunjay P.C. Mishra, Mritunjay Mishra</i>	

L07 - Poster Session

Enhancing Electrochemical Reactive Capture of CO ₂ for Improved Efficiency of Desired Carbon Products	5540
<i>Jenna Ynzunza</i>	

Effect of CO ₂ and HClO ₄ Concentrations on CO ₂ Reduction Reaction Intermediates at Pt Polycrystalline Electrode.....	5541
<i>Shun Kobayashi</i>	

Silver Nanocluster Assemblies As Electrocatalyst for Electrochemical Carbon Dioxide Reduction Reaction.....	5544
<i>Subhabrata Das, Shuntaro Takahashi, Saikat Das, Yuichi Negishi</i>	

Tracing the Structure-Activity Correlation in Cobalt-Doped Heteroatom-Enriched Nanoporous Material for CO ₂ Electroreduction.....	5546
<i>Ruchi Sharma, Jens Jakob Gammelgaard, Sara Frank, Nina Lock</i>	

Tunable Selectivity on Cu-Sb Bimetallic Alloy via Electrodeposition for Electrochemical CO ₂ Reduction	5548
<i>Jungmin Yoo, Gyeong Ho Han, Sang Hyun Ahn</i>	

Research about Cu-Zn Catalysts for Urea Synthesis Depending on Structure Difference	5550
<i>Dongyoung Hwang, Gyeong Ho Han, Sang Hyun Ahn</i>	

CuS _x Catalysts for CO ₂ Electrolyzer Cathode.....	5554
<i>Juho Ha, Sang Hyun Ahn</i>	

Tin Oxide Catalysts for Formate-Selective Electrochemical Reduction of CO ₂	5555
<i>Gisang Park, Dongho Seo, Ki Min Nam</i>	

Preparation and Characterization of Ni/YSZ-Based Tubular Electrochemical Reactor for SOEC Methanation.....	5557
<i>Genki Horiguchi, Toshiaki Yamaguchi, Hajime Toriumi, Hiroyuki Tateno, Katherine Develos Bagarinao, Haruo Kishimoto, Takehisa Mochizuki</i>	

L07 - Optimizing of CO₂-Electroreduction Conditions

(Keynote) From Electrode Development to Process Optimization: A Journey of Scaling-up CO ₂ Electrolysis	5558
<i>Csaba Janaky</i>	

Immobilized Molecular Catalysts for Heterogeneous Electrochemical H ₂ Evolution (HER) and CO ₂ reduction (CO ₂ RR)	5559
<i>Kieran DeMonte, Michael Bennington, Aaron Timothy Marshall, Sally Brooker</i>	

L07 - Design of Catalysts and Efficiency of CO₂-Reduction

(Keynote) Electrochemical Conversion of Atmospheric CO ₂ to Value-Added Products	5560
<i>Youngdon Ko, Sergio Diaz-Abad, Luigi Osmieri, Hanguang Zhang, Piotr Zelenay</i>	
Structure Sensitivity and Catalyst Restructuring for CO ₂ Electro-Reduction on Copper.....	5561
<i>Dongfang Cheng, Khanh-Ly Nguyen, Markus Heyde, Beatriz Roldan Cuenya, Anastassia N Alexandrova, Philippe Sautet</i>	
Electrochemical CO ₂ Reduction Using Porous Cu Electrodes with Polymer Addition.....	5562
<i>Yoshitomo Seki, Hiromu Kumagai, Masakazu Sugiyama, Tsutomu Minegishi</i>	
(Invited) Local Environments on Cu Electrode Surface for Selective CO ₂ Electrolysis	5564
<i>Miho Yamauchi</i>	
Novel Front Contacts for Hydrophobic Gas Diffusion Layers Enable High Energy Efficiency and Durability for Electrochemical CO ₂ Reduction to C ₂₊ Products.....	5566
<i>Maxwell Goldman, Eric Krall, Michell Marufu, Shaffiq A. Jaffer, Amitava Sarkar, Maximilian Fleischer, Elfriede Simon, Andrew Allen Wong, Sarah Baker</i>	

L07 - Electrocatalytic CO₂-Reduction

Electrochemical CO ₂ Conversion to High-Valued Chemicals through a Protonic Ceramic Electrochemical Cell (PCEC).....	5567
<i>Haixia Li, Wenjuan Bian, Lucun Wang, Wei Wu, Dong Ding</i>	
Process Simulations and Technoeconomic Analysis of Ethylene Production By Electrochemical Reduction of Carbon Capture Solutions	5568
<i>Anush Venkataraman, Hakhyeon Song, Victor D. Brandão, Chen Ma, Magdalena Salazar Casajus, Carlos Arturo Fernandez, Carsten Sievers, Marta C. Hatzell, Saket Bhargava, Sukaran Arora, Carlos Villa, Sandeep Dhingra, Sankar Nair</i>	
Electrified Reactive Capture: System and Catalyst Designs	5569
<i>Ke Xie, Edward Hartley Sargent</i>	
Catalysts Tolerant to SO ₂ for Electrified Carbon Capture and Utilization	5570
<i>Pengfei Ou</i>	

L07 - Optimizing of Electroreduction Catalysts

Energy Efficient Methods for Product Separation and Concentration in Scalable CO ₂ Electrolysis	5571
<i>Noho Lee, Sungwon Hong, Minkyung Kim, Kang Hee Cho, Jaeeun Kim</i>	
Monitoring the Activation of a AuCu Aerogel Catalyst for Electrochemical CO ₂ Reduction via in Situ XAS	5573
<i>Maximilian Winzely, Adam Hugh Clark, Piyush Chauhan, Paul Maurice Leidinger, Meriem Fikry, Tym de Wild, Thomas J. Schmidt</i>	
Crossover Management for Practical High Efficiency Carbon Dioxide Reduction	5576
<i>Dawei Xi, Taobo Wang, Zhifei Yan, Zhen Zhang, Hongbin Xu, Ju Li, Daniel G Nocera, Michael J. Aziz</i>	

Identifying an Optimal Post-Capture pH for Hydroxide-Based Reactive Capture in Industrial Applications.....	5577
<i>Siyu Sun, Rui Kai Miao, Yurou Celine Xiao, David Sinton</i>	
Suppressing Electrolyte Flooding in CO ₂ Electrolyzers Via Surface-Functionalized Microporous Layers.....	5578
<i>Fazele Karimian Bahnamiri, Yi Ren, Harris Ng Li, ChungHyuk Lee</i>	
Crystallographically Vacancy-Induced MOF Nanosheet As Rational Single-Atom Support for Accelerating CO ₂ Electroreduction to CO.....	5579
<i>Jin Hyuk Cho, Soo Young Kim</i>	

L07 - Electrocatalytic Conversion of CO₂ to Utility Chemicals

Electrochemical CO ₂ Reduction over Cu-Based Gas Diffusion Electrodes: A Complementary Spectroscopic Study	5580
<i>Santhosh Kumar Matam, Preetam Sharma, Eileen Yu, Charalampos Drivas, Martin Wilding, Nitya Ramanan, D Gianolio, M Isaacs, S Guan, P R Davies, C. Richard A Catlow</i>	
Reactive Capture of CO ₂ via Amino Acid	5582
<i>Yurou Celine Xiao, Siyu Sun, Yong Zhao, Rui Kai Miao, Mengyang Fan, Geonhui Lee, Yuanjun Chen, Christine M. Gabardo, Yu Yan, Chenyue Qiu, Zunmin Guo, Xinyue Wang, Panagiotis Papangelakis, Jianan Erick Huang, Feng Li, Colin P. O'Brien, Jiheon Kim, Kai Han, Paul J. Corbett, Jane Howe, Edward H. Sargent, David Sinton</i>	
Direct Electrochemical Conversion of Amine-Captured CO ₂ into High Concentrated C1 Products.....	5583
<i>Da Hye Won, Kezia Langie, Kyungjae Tak, Ung Lee</i>	
The Effects of Water and Ion Management for Modulate CO ₂ Reduction Selectivity Via Anode Control.....	5585
<i>Dogyeong Kim, Seung-Ho Yu, Hyung-Suk Oh, Woong Hee Lee</i>	

L07 - Toward More Efficient Electrocatalytic Systems for CO₂-Reduction

Water Clustering Modulates Activity and Enables Hydrogenated Product Formation during Carbon Monoxide Electroreduction in Aprotic Media	5587
<i>Hannah Fejzic, Ritesh Kumar, Reginaldo Gomes, Lilin He, Theodore J. Houser, Jaemin Kim, Chibueze Amanchukwu, Nora Molten</i>	
Energy-Efficient Electrified Ethylene Production from Carbonate Capture Liquid in Reactive Capture System.....	5588
<i>Yuanjun Chen, Ke Xie, Edward Hartley Sargent, Issam Gereige, Ammar Alahmed, Aqil Jamal</i>	
Electrochemical CO ₂ Reduction Reactions to Multicarbon Products with a Current Density Exceeding 1.8 a cm ⁻²	5589
<i>Sora Nakasone, Asato Inoue, Ryotaro Yoshida, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya</i>	
Analyzing the Roles of Copper in Carbon Capture and Sequestration Using Mean Field Density Functional Theory and Scanning Transmission Electron Microscopy	5591
<i>Hossein Pourrahmani</i>	
A Strategical Break-in of Accessible and High Surface Area Copper Cathode By Magnesium Oxide/ Hydroxide Incorporation Applied in Zero-Gap CO ₂ RR	5593
<i>Ding Huei Tsai, Wei-Ting Tu, Liao Wei-Chieh, Lu Yu Chueh, Yung-Tin Pan</i>	

LA-LATE POSTER PRESENTATIONS IN BATTERIES AND ENERGY STORAGE

LA - Late Digital Only Poster Presentations in Batteries and Energy Storage

- (Digital Presentation) Rational Material Design on Long-Term-Cyclability of Graphite/Si-based Anode for Room Temperature All-Solid-State Batteries 5594
Hyunjung Park, HeeTae Tak
- (Digital Presentation) Binder Effect on Silicon Anode for All Solid-State Batteries 5595
Hyunjung Park

LA - Late Poster Presentations in Batteries and Energy Storage (Monday)

- Densifying Solid Electrolytes to Mitigate Shorting of Solid State Batteries 5596
Mengchen Liu, Shijie Feng, Shen Wang, Ershuang Lu, Junwei Gao, Jeong Woo Oh, Min-Sang Song, Jian Luo, Ping Liu
- Physics-Informed Neural Networks for State and Parameter Estimation of Li-Ion Batteries 5597
Yuichi Kajiura, Jorge Espin, Dong Zhang
- Electrochemical Study on Rate Characteristics of All-Solid-State Batteries..... 5598
Soyoung Joo, Seong-Yoon Kim, Yu-Jeong Min, Seong-Yoon Kim
- Investigation of the Temperature Behavior of Silicon-Rich Multilayer Pouch Lithium-Ion Battery Cells and Its Effect on Cycle Life and Rate Capability 5600
Hannah Bosch, Felix Diller
- Effect of the External Pressure on Li-Ion Pouch Cell at High C-Rate Conditions 5601
Ha Eun Lee, Hyeonseong Jo, Seong Su Kim
- Sputtering Deposition of Lipon Solid Electrolyte on Slurry-Cast Composite Cathode..... 5603
Hyunjoon Yoo, Woong Oh, Chi Won Ahn, Il-Kwon Oh
- Hydrodynamic Jet Cavitation to Process Natural Graphite for Ultra-Fast Charging Lfp // Graphite Pouch Cells..... 5604
Benjamin Robinson, John Low
- Practical Li-S Battery Design with Lean Electrolyte Using NiCo/NiCoO₂ Nanoparticles as Polysulfide Mediator 5605
Hyeona Park, Jang-Yeon Hwang
- The Effect of Halogen Doping on Li Mobility of Thiophosphate Solid Electrolytes 5606
Junteng Du, Jae Chul Kim
- Numerical Analysis of Operation Characteristics in Thermal Driven Adsorption Systems with Different Adsorbent Packing Method..... 5607
Kyungjin Bae, Ohkyung Kwon
- Strategic Cell Design for Long-Lasting Lithium-Ion Batteries with SiO/Graphite Anodes 5608
Hyoyeong Kim, Chanmyeong Kim, Sang-Min Lee
- Investigating the Redox Dynamics of Rare-Earth Phosphate-Coated Li-Rich Layered Oxides..... 5610
Tristram H. M. Jenkins, Bruce C Cowie, Jose A Alarco, Ian D.R. Mackinnon

New Insights into the Crystal Structure of $\text{Fe}_{0.5}\text{TiOPO}_4$ Anode Material for Lithium-Ion Batteries Using Non-Ambient X-Ray Diffraction Measurements	5611
<i>Karima Lasri, Abdelfattah Mahmoud, Moulay Tahar Sougrati</i>	
The Electrochemical Regulation Method of Cathode Potential during the Reuse Process of Residual Energy from Waste Lithium Batteries	5612
<i>Honghuai Sun, Zhenming Xu</i>	
Improvement of $\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Mn}_{0.1}\text{O}_2$ Positive-Electrode Properties by Introducing Fluorinated Propionic Acid Ester-Based Solvent to Highly Concentrated $\text{Li}(\text{SO}_2\text{F})_2$ Electrolyte Solutions	5613
<i>Yoojin Kang, Minoru Inaba, Takayuki Doi</i>	

LA - Late Poster Presentations in Batteries and Energy Storage (Tuesday)

Modified Interlayer As a Polysulfide Inhibitor for Li-S Batteries	5615
<i>Doohun Kim</i>	
Ultra-Long and Rapid Operating Sodium Metal Batteries Enabled By Multifunctional Polarizable Interface Stabilizer	5616
<i>Won-Hee Ryu, Seo-Young Jun</i>	
Enhanced Lifespan and Performance of Sandwich-Type Structural Batteries with Integrated Pressurization and Thermal Management Systems	5618
<i>Doyun Jeon, Su Hyun Lim, Seong Su Kim</i>	
Regulating Steric Hindrance in Redox Coupling of Single Organic Molecule for High Performance Organic Batteries	5619
<i>Vitalii Ri, Giyeong Son, Chunjoong Kim</i>	
Ferrocene Based Metal-Organic Framework-Carbon Nanotubes Composite in a Zn-Ion Battery Charged By a Novel Perovskite Solar Cell.....	5620
<i>Babneet Kaur, Debanjan Maity, Partha Ghosal, Melepurath Deepa</i>	
FeF_3 Cathode Interfacial Reactions in Thermal Batteries.....	5622
<i>Heonjae Jeong, Myeongjae Heo, Junghun Bae</i>	
Fast Room-Temperature Mg-Ion Conduction in Clay-like Solid Electrolytes	5623
<i>Xiaochen Yang, Sunny Gupta, Gerbrand Ceder</i>	
Ag^+/Li^+ Ion-Exchange in LLZTO to Introduce Surface Layer Compressive Stress and Improve Electrochemical Performance.....	5624
<i>Sydney Morris, Harsh Jagad, Stephen J Harris, Changmin Shi, Yue Qi, Brian W. Sheldon</i>	
Improvement of Air Stability of Garnet-Type $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ Solid-State Electrolyte through F-Doping Strategy.....	5625
<i>Yi-Xiu Chen, Hoong-Zheng Slew, Tsung-Ying Yang, Chuan-Pu Liu</i>	
Two-Dimensional Siloxene: A Promising Silicon-Based Material with Buffered Volume Change As Anode for Lithium Ion Batteries	5627
<i>Xiaoxiao Zhang, Le Xin, Dantong Qiu, Huainan Qu, Miao Liu, Tianyao Ding, Dong Zheng, Deyang Qu</i>	
Molybdenum Incorporated O3-Type Sodium Layered Oxide Cathodes for High-Performance Sodium-Ion Batteries.....	5629
<i>Wajeha Shakoor, Buzaina Moossa, Buzaina Moossa</i>	

Nanocatalysts for High-Energy-Density Lithium-Sulfur Batteries	5630
<i>Biying Wang</i>	
Unlocking BaTiO ₃ - SrTiO ₃ As Anodes for Highly Efficient and Stable Lithium-Ion Batteries.....	5631
<i>Nischal Oli, Nawraj Sapkota, Brad R Weiner, Gerardo Morell, Ram S Katiyar</i>	
Electrochemistry and Cycling Dependent Structural Analysis of High and Low Mn Based Disordered Rocksalt Cathodes for Lithium-Ion Batteries	5632
<i>Shripad Patil, Zhilin Liang, Emma Kaeli, Otavio Marques, Johanna Nelson Weker, Kevin Stone, William C. Chueh, Jagjit Nanda</i>	
Laser-Scribed Battery Electrodes for Ultrafast Zinc-Ion Energy Storage	5633
<i>Bo Liu, Ailun Huang, Xintong Yuan, Xueying Chang, Zhiyin Yang, Katelyn Lyle, Richard Kaner, Yuzhang Li</i>	
Flexible and Stretchable Li Ion Battery Using Origami Scale Structure for Untethered Soft Robot	5635
<i>Seungmin Hyun, Minsub Oh, Bongkyun Jang</i>	
A Catalytic Disproportionation Reaction of Polysulfides Enabled By a Bio-Carbon Host for Li- Sulfur Batteries.....	5636
<i>Dantong Qiu, Dong Zheng, Xiaoxiao Zhang, Huainan Qu, Tianyao Ding, Miao Liu, Deyang Qu</i>	
Structural Modification Effects on Organic Polymer Nano-Photocatalyst Performance for Hydrogen Evolution	5637
<i>Taek MIN KIM, Sanghyeok An, Junho Kim, Gayoung Ham, In Hwan Jung, Hyojung Cha, Dae Sung Chung</i>	
Multifunctional Cyclic Phosphoramidate Solvent for Safe Lithium-Ion Batteries.....	5638
<i>Seongjae Ko, Ayaka Matsuoka, Wenting Chen, Taiga Iwata, Hiromi Otsuka, Shoji Yamaguchi, Takuya Masuda, Qifeng Zheng, Rui Shang, Eiichi Nakamura, Atsuo Yamada</i>	
Imaging in-Situ Silver Reduction Mechanisms By Zn-Ion Cathodes.....	5640
<i>Paul Smith</i>	
A Novel Wet Synthesis Method of High-Conductivity Sulfide Solid Electrolytes with Controlled Particle Size for All-Solid-State Batteries	5641
<i>Jun-Woo Park, Junghwan Sung, Junyoung Heo, Dong-Hee Kim, Hawon Gu, Heetaek Park, Jun-Ho Park, Yoon-Cheol Ha, Doohun Kim</i>	
Dynamic Diagnostic Technique for Real-Time Detection Lithium Plating Using Electrochemical Harmonic Analysis	5643
<i>Safeer Rahman Ottakath Cholakkal, Hongmei Qi, Cheng Zhang, Quirin Kellner, Oliver Curnick</i>	
Cycling Stability Based on the Morphological Characteristics of Si-Based Anode Materials for Sulfide-Based All Solid-State Batteries.....	5645
<i>Hyun-Woo Gong, Hye-Young Cho, Tae-Kyeong Kim, Ji-Min Lim, Hae-Ryoung Kim, Hong-Kyu Kim, Jae-Pyoung Ahn</i>	
Ultrasonic Atomization of New Alloys for Powder-Based Anodes in Next-Generation Non-Lithium Batteries.....	5646
<i>Jakub Ciftci, Bartosz Kalicki, Tomasz Choma, Bartosz Morończyk, Łukasz Żrodowski</i>	
Learning Lithium-Ion Battery Health in Real-Time	5648
<i>Avimanyu Sahoo, Vignesh Narayanan</i>	

Highly Stable Anode-Free Lithium Metal Batteries Via Effective SEI Layer Formation with Lithiophilic Silver Nanoparticle	5649
<i>Doyeon Lee, Min Jae Ko</i>	
Tailoring Surface Oxygen Environments in $\text{LiNi}_{0.5}\text{Mn}_{0.3}\text{Co}_{0.2}\text{O}_2$ Via Post-Calcination Anneal.....	5650
<i>Emma P.K.L. Choy, Emma Kaeli, Stephen D. Kang, William C. Chueh</i>	
Tailoring Ni-Rich Cathode Properties with Mo Doping for Next-Generation Li-Ion Batteries	5651
<i>Jae-Ho Kim, Yang-Kook Sun</i>	
The Effects of the Al Distribution on the Physicochemical and Electrochemical Properties of Ni-Rich NCA Cathodes	5652
<i>In-Su Lee, Geon-Tae Park, Yang-Kook Sun</i>	
Unexpected Effect of Mn Doping in Ni-Rich Layered Cathode for Advanced Lithium-Ion Batteries.....	5653
<i>Min-Su Kim, Geon-Tae Park, Yang-Kook Sun</i>	
Enhancing Ni-Rich Lithium Metal Battery Performance By Mitigating Transition Metal Migration with Functional Separators and Additives	5654
<i>Junhyeok Seo, Minjae Kim, Jaegu Cho, Kuk Young Cho</i>	
Understanding Shelf Life of Electrolytes with LiPF_6 Under Commercially Relevant Storage Conditions	5655
<i>Shipra Garg, Matthew Hennek, Brian M Kerber, Sarah Lucienne Guillot, Michael Giedd, Diana Sadowski, Monica Lee Usrey</i>	
Achieving Superior Li- O_2 Battery Performance through Controlled Formation of Discharge Products within MOF/rGO Structures	5656
<i>Shin Joon Kang, Hyung Mo Jeong</i>	
Doping of Sodium-Ion Cathodes for in-Situ Resource Utilization on the Moon and Mars.....	5657
<i>William Huddleston, Donald Dornbusch, Alexis Maurel, Ana C. Martinez, Eric MacDonald, Myeonglok Seol, Bharat Yelamanchi, Sina Bakhtar Chavari, Pedro Cortes, Cameroun Sherrard, Carol Putman</i>	
Synthesis and Electrochemical Properties of Organic Gel Electrolytes Based on Low Molecular Weight Gelators	5658
<i>Kenta Matsumoto, Takumi Sugiura, Nonoka Suzuki, Yuki Morita, Hiroaki Okamoto</i>	

LA - Late Poster Presentations in Batteries and Energy Storage (Wednesday)

Advanced Solid-State Electrolytes Based on Charge-Transfer Complexes for Lithium Batteries	5660
<i>Caroline Celle, Noeline Tessier, Romain Kunert, Laurent Bernard, Lionel Picard, Margaud Lecuyer, Marc Dechamps</i>	
Optimized Cycling Stability of Single-Crystalline $\text{Na}_{0.67}\text{Ni}_{0.33}\text{Mn}_{0.67}\text{O}_2$ Cathode Material via Molten Salt Synthesis for Advanced Sodium-Ion Battery Applications.....	5661
<i>Yifan Dong, Jiacheng Hu, Riley Schrock, Dewen Hou, Gihyeok Lee, Wanli Yang, Claire Xiong</i>	
Complementary and Hybrid Approaches for Enhanced Solar Utilization in Synthetic Fuel Production	5662
<i>Chanon Pornrungrroj</i>	
Solar Batteries Utilizing Charge Storage and Light Absorption in Bifunctional Carbon Nitrides	5663
<i>Julia Sinisi, Andreas Gouder, Bettina Valeska Lotsch</i>	

Advanced Potassium-Sulfur Batteries Using High-Concentration Electrolytes and Sulfurized Polyacrylonitrile Cathodes	5664
<i>Jeon Changki, Jang-Yeon Hwang</i>	
Electrowritten Three-Dimensional Scaffolds for an Electrosprayed Si-C Composite Anode	5665
<i>Yingxuan Cheng, Yazhou Zhou, Jae Chul Kim</i>	
Surface-Enhanced Ni-Rich Cathodes for Reversible Li Intercalation	5666
<i>Danna Yan, Jae Chul Kim</i>	
Structural and Transport Properties of Lithiated, Sodiated and Magnesiated Nanoporous TiO ₂	5667
<i>Blessing Nkateko Rikhotso, Phuti Esrom Ngoepe</i>	
Sn-Gradient Sulfide Solid Electrolytes with Superior Air-Stability for Practical All-Solid-State Batteries.....	5668
<i>Sumin Ko, Sumin Ko</i>	
A Study on Phase Changes and Ionic Conductivity Characteristics According to Doping Elements in Li _{6-x} Ge _{2-x} M _x O ₇ (M=Al, As, Nb)	5669
<i>Jeonghyeon Song, Megala Moorthy, Yun-Sung Lee</i>	
Hydrothermally Grown Dual-Phase Heterogeneous Electrocatalysts for Highly Efficient Rechargeable Metal-Air Batteries with Long-Term Stability	5670
<i>Sooncheol Kwon</i>	
Computational Analysis of Mixed-Anion Inorganic Materials for Secondary Battery Cathode Materials	5672
<i>Hyungjun Kim, Adolfo Salgado Casanova, Christopher M. Wolverton</i>	
Ore-Chestrating Net-Zero: A Techno-Economic Comparison of Lithium Batteries and Vanadium Flow Batteries in a Western Australian Mine Site	5673
<i>Pujith Rajaguru Senapathy Vijayaratnam, Chris Menictas, Maria Skyllas-Kazacos</i>	
The Development of Rechargeable Magnesium Batteries with Fullerene Cathodes.....	5676
<i>Lauren Rainone</i>	
Studying-Polymers-on-a-Chip (SPOC): Automated, High-Throughput Screening of Increased Ionic Conductivity Polymer Electrolytes.....	5677
<i>Michell Marufu, Johanna Schwartz, Jayvic Jimenez</i>	
Fabricating Solventless Electrodes in Lithium-Ion Batteries through Additive Manufacturing.....	5678
<i>Michael Herchen, Steven Tricarico, Anson Ma, Arjit Bose, Ashutosh Giri</i>	
Rapid Estimation of Differential Capacity in Li-Ion Batteries at Elevated Temperatures Using Neural Networks.....	5679
<i>Eirik Odinsen, Mahshid Nejati Amiri, Odne Stokke Burheim, Jacob Joseph Lamb</i>	
Data-Driven Models Using Impedance Spectroscopy for Predicting Degradation and Optimizing Electrochemical Systems.....	5680
<i>Lucas Murphy, Aidan Polglase, Sophie Janke</i>	
CoO/Co ₃ O ₄ Hybrid Oxide Anode Synthesis Techniques and Performance Improvement for Super-Theoretical Capacity in Lithium-Ion Batteries	5681
<i>Jaturon Kumchompoo, Jyh-Tsung - Lee</i>	

Computational Insights into the Impact of Extreme Concentrations on the Dynamics of Molecular Systems for Nonaqueous Redox-Flow Batteries	5682
<i>Anton Sameera Perera, Sashen Ruhunage, Nathan Stumme, Andrew Horvath, Scott Shaw, Chad M. Risko</i>	
Operando FTIR Measurements of Li-Ion Concentration in a Graphite/NMC Battery During Fast Charging	5683
<i>Lydia Meyer, Ryan Brow, Peter J Weddle, Jason Morgan Porter, Andrew M. Colclasure</i>	
Analysis of Lithium-Ion Distribution Uniformity and Artifacts in Lipon Solid Electrolyte Material Based on Esm	5684
<i>Youngwoo Choi, Seonghyun Kim, Su-Ho Cho, Chi Won Ahn, Seungbum Hong</i>	
Machine-Learning Assisted Analysis on the Transport Behavior of Zn ²⁺ in Room-Temperature Ionic Liquid Electrolytes	5685
<i>Minjoon Hong, Byungchan Han</i>	
Hierarchical Dual-Carbon Anode and Cathode Derived from Zeolitic Imidazolate Frameworks Grown on 3D Graphene Oxide Aerogels for Ultrahigh-Performance Potassium-Ion Hybrid Energy Storage Systems	5686
<i>Min Gyu Park, Jong Hui Choi, Suseong Hyun, Dong Won Kim, Jihoon Kim, Do Hwan Jung, Jeung Ku Kang, Byungchan Han</i>	
Surface Modification Strategies for Improved Electrochemical Performance and Long-Term Cyclability in Aqueous Zinc-Ion Batteries	5687
<i>Myungjun Kwak, Chihyun Hwang, Goojin Jeong, Youngkwon Kim</i>	
Microporous Polymer Membranes Enable Efficient Redox Flow Batteries for Energy Storage.....	5688
<i>Tobias Wong, Qilei Song</i>	
Novel Nonthermal Plasma Injector for the in-Flight Synthesis and Coating of Battery Materials.....	5690
<i>Robyn Iannitto, Dante Filice, Ali Asgarian, Gaofeng Li, Sylvain Coulombe</i>	
Current Transient-Based Electrochemical Method for Detecting Li Plating during Fast-Charging of Li-Ion Batteries.....	5691
<i>Hong Rim Shin, Soo Young Yang, Jong-Won Lee</i>	

LB-LATE POSTER PRESENTATIONS IN CARBON NANOSTRUCTURES AND DEVICES

LB - Late Digital Only Poster Presentations in Carbon Nanostructures and Devices

(Digital Presentation) Camellia sinensis Biochar as Sustainable Dye Removal for Wastewater Treatment in the Textile Industry.....	5692
<i>Tarek M Abdel-Fattah, Nicholas Russo, Daniel Owens</i>	
(Digital Presentation) Catalytic Nanoparticles and Sustainable Carbon-Based Supports for Efficient Hydrogen Production for Advancing Hydrogen Energy	5694
<i>Tarek M Abdel-Fattah, Erik Biehler</i>	
(Digital Presentation) Reusability of Copper Nanoparticle-Graphene Nanocomposite Catalysts for Hydrogen Generation	5696
<i>Tarek M Abdel-Fattah, Erik Biehler, Qui Quach</i>	
(Digital Presentation) Screening Analysis of Hydrogen Absorption in Metal-Modified Carbon Supports.....	5698
<i>Tarek M Abdel-Fattah, Ahemd Elmekawy</i>	

LB - Late Poster Presentations in Carbon Nanostructures and Devices

Biomass-Derived Reduced Carbon-Containing Bimetallic Electrocatalyst for Selective Conversion of CO ₂ to CO	5700
<i>Vaibhav Trivedi, Siddarth Jain, Sankar Bhattacharya, Vikram Vishal, Arnab Dutta</i>	
Effect of Nitrogen and Phosphorous Based Additives on Electrochemical Synthesis of Modified Graphene for Supercapacitor Application	5701
<i>Nadeesha P. W. Rathuwadu, Shehani Sharmila</i>	
Investigation of Hydrogen Isotope Conductivity through Single- and Multi-Layer Graphene	5702
<i>Robert Temme, Bernd Abel</i>	
Pickering Emulsion-Mediated Two-Step Interfacial Assembly of Carbon Film with Catalysts.....	5703
<i>Kang Hee Ku</i>	
The Effects of Bismuth Addition on the Characteristics of Aluminum Alloys for Electric Vehicle Battery Housings	5704
<i>Da Jeong Kim, Sang Il Yoon, Jee Seok Choi, HAN Chan Lee</i>	
Multifunctional Mxene-Infused Textile Toward Energy Harvesting, EMI Shielding, Flame Resistance, and Joule Heating with Thermo-Chemo-Mechanical Robustness	5705
<i>Jiheon Kim, Yong Choi, Byungseok Seo, Wonjoon Choi</i>	

LC-LATE POSTER PRESENTATIONS IN CORROSION SCIENCE AND TECHNOLOGY

LC - Late Poster Presentations in Corrosion Science and Technology

Corrosion Behavior of Additively Manufactured Mg-1Zn Alloy: Comparative Study between As-Built and Heat-Treated Conditions	5706
<i>Raul Reyes, Federico R. Garcia-Galvan, Marcela Lieblich, José Antonio Jiménez, Santiago Fajardo</i>	
Regulating Molybdenum Dissolution through Controlled Oxide Phase Formation in CMP with Catalytic Oxidation.....	5707
<i>Bobae Lee</i>	
An Orthogonal Approach of Corrosion Resistance Performance Evaluation for Passive Layer on Aluminium Alloy Deploying Electrochemistry and GDOES Analysis	5708
<i>Ioannis Lazaros Daniilidis</i>	
Changes in Properties of Superalloy Powder According to Changes in Gas Spray Process Parameters	5709
<i>HAN Chan Lee, Myeong Kyun Son, Keun Hwan Kim, Sol Ham, Da Jeong Kim, Sun ho Choi</i>	

LD-LATE POSTER PRESENTATIONS IN DIELECTRIC SCIENCE AND MATERIALS

LD - Late Poster Presentations in Dielectric Science and Materials

Stabilizing P-Doped Radical Via De-Doping Control for Highly Efficient and Thermal-Stable Perovskite Solar Cells.....	5710
<i>Yun Seop Shin, Dong Suk Kim</i>	

Utilizing the Effect of Chalcogen Atoms in Carbazole Based SAM for Achieving High Efficiency in Inverted Perovskite Solar CELLS	5711
<i>Dongmin Lee, Dong Suk Kim</i>	

LE-LATE POSTER PRESENTATIONS IN ELECTROCHEMICAL/ELECTROLESS DEPOSITION

LE - Late Poster Presentations in Electrochemical/Electroless Deposition

A Computational Approach to Glyme-Based Room Temperature Aluminum Electrodeposition Baths.....	5712
<i>Atsushi Kitada, Tsubasa Otsuki, Tomoya Kanno, Norio Takenaka</i>	
Lattice Oxygen-Catalyzed Bismuth-Cerium Oxyhydroxide Anode for Anion Exchange Membrane Water Electrolyzers	5713
<i>Seunghwan Jo, Ki Hoon Shin, John Hong, Jung Inn Sohn</i>	
High Entropy Stabilized Porous Metallic Glass Nanosheet for Proton Exchange Membrane Water Electrolysis	5714
<i>Seunghwan Jo, Ki Hoon Shin, Jung Inn Sohn</i>	
Fine-Tuning Hole Collection Via Self-Assembled Monolayers for Advancing Versatile Platforms	5715
<i>Min Jong Lee, Jae Won Shim</i>	
Enhanced Electrochemical Performance of Thin, Flexible Supercapacitors: A Comparative Study of MnO ₂ Electrodeposition Methods	5717
<i>Gabriel Casano, Filipe Braga, Marco Caffio, Laurence J. Hardwick, Pablo Lozano Sanchez, Joanne Holmes, Neil Vyas</i>	
Direct Formation of Todorokite Mn Oxide Via Electrodeposition	5718
<i>Jaeyeong Heo, Haesung Jung</i>	
Electrochemical Studies of Perfluorobutanoic Acid (PFBA) and Perfluorodecanoic Acid (PFDA)	5719
<i>Madison Ridgeway, Bizuneh Workie</i>	
Electrochemical Studies of Tricosafuorododecanoic Acid (TCFDA) and Perfluoroundecanoic Acid (PFUDA)	5720
<i>Saniya McGhee, Madison Ridgeway, Bizuneh Workie</i>	

LF-LATE POSTER PRESENTATIONS IN ELECTROCHEMICAL ENGINEERING

LF - Late Poster Presentations in Electrochemical Engineering

Electrochemical Production of Exfoliated Graphene: Scale-up and Applications.....	5721
<i>Edward Roberts, Ashutosh Kumar Singh, Rad Sadri, Yiran Liu, Yifan Cao</i>	
Optimizing Ptx Carbon Capture: Rapid KOH Reaction Dynamics.....	5723
<i>Tessa Lund Biel-Nielsen, Randi Neerup, Sai Hema Bhavya Vinjarapu, Jacob Lindnar Bonde, Sebastian Nis Bay Villadsen, Philip Loldrup Fosbøl</i>	
Electrochemical Removal of Biogas Impurities with Absorption	5725
<i>Sebastian Borgquist, Sebastian Nis Bay Villadsen, Philip Loldrup Fosbøl, Jens Abildskov</i>	
Influence of Electrodes Surface Area Ratio on Titanium Electrorefining Process	5727
<i>Hwa-young Woo, Vladislav Ri, Ki-hong Kim, Byoung-gun Lee, Ga-min Kim, Hong-youul Ryu</i>	

Development of in-Situ Method for Synthesis of TiCl_2 Electrolyte	5728
<i>Lee Se Young, Vladislav Ri, Hyun-woo Kim, Wan-gou Kim, Kwang Mo Ku</i>	
Optimizing Metal Oxide-Carbon Composites Electrodes for Supercapacitors Via Electrothermal Control on Nucleation Energy Barrier.....	5729
<i>Kyungmin Kim, Wonjoon Choi</i>	

LG-LATE POSTER PRESENTATIONS IN ELECTRONIC MATERIALS AND PROCESSING

LG - Late Digital Only Poster Presentations in Electronic Materials and Processing

(Digital Presentation) 2D Transition Metal Borides: Different Etchants for Al Removal from MAB and Application in Cd^{2+} , Pb^{2+} , Cu^{2+} and Hg^{2+} Sensing	5730
<i>Shudan Wei, Girish M Kale, Xiaojun Lai</i>	

LG - Late Poster Presentations in Electronic Materials and Processing (Monday)

Development of a Highly Selective Etching Process for SiO_2 over Si and SiN_x Using F/H-Based Remote Plasmas and a Vapor Phase Solvent	5732
<i>Ji Yeon Lee, Hong Seong Gil, Woo Chang Park, Yun Jong Jang, Dong Woo Kim, Geun Young Yeom</i>	
Etch Characteristics of Indium Tin Oxide (ITO) Using Hydrocarbon-Based Gases in Inductively Coupled Plasma (ICP)	5733
<i>Yun Jae Park, Jong Woo Hong, Hong Seong Gil, Dong Woo Kim, Geun Young Yeom</i>	
Enhanced Selectivity and Reduced Arde in Nanoscale Si Trench Etching: The Effects of Asynchronously Pulsed Plasmas, Bias Parameters, and Fluorocarbon Gas Additives	5734
<i>Su Min Ho, Hee Ju Kim, Min Cheol Kim, Geun Young Yeom</i>	
Effects of Ge and B Concentration in Selective Epitaxial Growth of $\text{Si}_{1-x}\text{Ge}_x(\text{:B})$ at Low-Temperature.....	5735
<i>Hyerin Shin, Dongmin Yoon, Dae-Hong Ko</i>	
Investigation on Characteristics of in Situ Boron-Doped Sige Epitaxy below 600°C	5736
<i>Dongmin Yoon, Seonwoong Jung, Hyerin Shin, Seokmin Oh, Jungwoo Kim, Dae-Hong Ko</i>	
Raman Spectroscopy Analysis of Nitrogen Hyperdoped Cz and Fz Silicon Implanted with Nitrogen at Various Dose Levels for Infrared Absorption	5737
<i>Abdennaceur Karoui, Fouzia Sahtout, Yongqian Wang, Shizhang Yang</i>	

LG - Late Poster Presentations in Electronic Materials and Processing (Tuesday)

Growth of Diamond on Si, SiC, Mo and Diamond Substrates for Heat Spreader, Optical Window, and Surface Graphitized Devices	5739
<i>Linhai Guo, Lingxue Meng, Chunlei Li, Hangyu Yue, Hui Wang, Li Tian</i>	
Solution-Processable Metal-Oxide Thin-Film Transistors with Radiation Resistance	5742
<i>Dongil Ho, Choongik Kim, Myung-Gil Kim</i>	
Formation of Source/Drain Structures Using Nanosecond Laser Annealing for Multichannel GAA Mosfet Devices.....	5743
<i>Hosun Jung, Dae-Hong Ko</i>	

Low Temperature Epitaxy Processes for Contact Resistivity Reduction.....	5744
<i>Joe Margetis, Nico Breil, John Tolle, Abhishek Dube, Saurabh Chopra</i>	

LH-LATE POSTER PRESENTATIONS IN ELECTRONIC AND PHOTONIC DEVICES AND SYSTEMS

LH - Late Poster Presentations in Electronic and Photonic Devices and Systems (Tuesday)

Photophore-Anchored Molecular Switch for High-Performance Nonvolatile Organic Memory Transistor.....	5747
<i>Syed Zahid Hassan, Jieun Kwon, Juhyeok Lee, Hye Ryun Sim, Sanghyeok An, Sangjun Lee, Dae Sung Chung</i>	
Optical and Plasmonic Properties of Epitaxial and Oxidative Controlled Titanium Nitride Thin Films.....	5748
<i>Ikenna Chris-Okoro, Sheilah Cheronon, Dhananjay Kumar</i>	
Fabrication of PbS QD-Mediated Organic-Inorganic Hybrid Swir Opds Using Azide Functional Ligand (FPA-S) and Study of Polymer Morphology Control.....	5749
<i>KyoBin Park, Dae Sung Chung</i>	
Record-High BV_{DS} p-Channel P^{++} -GaN/P-GaN/GaN/AlN/ $Al_{0.3}Ga_{0.7}n$ MOS-HFETs with Drain Field-Plate Design	5750
<i>Ching-Sung Lee, Jian-Hong Ke, Zhong-Liang Liao, Yu-Syuan Cai, Yong-Han Yang, Ke Jian-Hong</i>	
Bidirectional Polarization-Integrated Van Der Waals Ferroelectric Field-Effect Transistor for Multi-State Storage and Dual-Logic-in-Memory Computing	5753
<i>Jingjie Niu, Sumin Jeon, Donggyu Kim, Sungpyo Baek, Hyun Ho Yoo, Jie Li, Jisang Park, Yoonmyung Lee, Sungjoo Lee</i>	
Manipulating Thermal Transport in Porous Organic Frameworks through Pore Wall Engineering	5754
<i>Connor Dionne, Ashutosh Giri</i>	
Temperature and Interface Trap Effects on Hydrogen-Terminated Diamond Metal-Oxide Field-Effect Transistor (HD-MOSFET) Using Tcad Sentauros	5755
<i>Nuwayyir Alshammari, Ory Maimon, Rao V Mulpuri, Qiliang Li</i>	
Dual Side Passivation Strategy with Multifunctional Organic Molecules for High Performance Wide Bandgap Perovskite Solar Cells	5756
<i>Subin Yu, Min Jae Ko</i>	

LH - Late Poster Presentations in Electronic and Photonic Devices and Systems (Wednesday)

Exploring the Stability of Azto Tfts: The Critical Role of Oxygen Partial Pressure in Performance Optimization.....	5757
<i>Sang Ji Kim, Hyeondong Kim, Sang Yeol Lee</i>	
Amorphous Si-Zn-Sn-O/Si-in-Zn-O Bilayer Transistors with P(VDF-TrFE) for Synaptic Integration in Neuromorphic Systems	5758
<i>Sandeep Kumar Maurya, Hyeondong Kim, Sang Yeol Lee</i>	

LI-LATE POSTER PRESENTATIONS IN FUEL CELLS, ELECTROLYZERS, AND ENERGY CONVERSION

LI - Late Digital Only Presentations

- (Digital Presentation) Performance of a Paper-Based Microfluidic Fuel Cell Using Eco-Friendly LaFeO₃ and CaFe₂O₄ Nanoparticles as Anode 5760
Victor Manuel Prado Hernandez, Cindy Vanessa Castellanos Bernal, Kevin Steven Gómez Lara, Andrés Dector, Jimmy Morales
- (Digital Presentation) Fuel Cells, Electrolyzers, and Energy Conversion 5761
Shailesh Gupta

LI - Late Poster Presentations in Fuel Cells, Electrolyzers, and Energy Conversion (Monday)

- Evaluating the Measurement Uncertainty of Single Cell PEMFC Performance 5765
Jonathan Goh, Graham Smith
- Theory Guided Discovery of Superior Ru-Based Electrocatalyst for Durable Acidic Oxygen Evolution Reaction 5766
Li Qin Zhou, Siwen Wang, Chen Ling
- Hydrogen Terminal Braunschweig – a Research Demonstration Facility Along the Hydrogen Value Chain 5767
Frédéric Hasché, David Sauss, Mehtap Oezaslan
- Thermodynamic Approach to Optimal Water Management for Fuel Cell Electric Vehicles 5768
Kyuhyung Park, Jungrok Oh, Kwonwoo Yang, Sukkee Um
- Influence of Microwave Drying on Electrochemical Performance and Morphology of Cathode Catalyst Layers for PEM Fuel Cells 5769
Emanuel Albert Heider, Michael Bayer, Moritz Oesterlein, Ludwig Joerissen
- Performance Recovery in Irreversibly Degraded Polymer Electrolyte Membrane Fuel Cell for Enhanced Water Management 5770
Ji Yeon Kim, Mehdi Mortazavi, Sung Yong Jung
- Electrochemical Cation Implantation-Induced Surface Defect and Phase Engineering of MoS₂ for High-Efficiency pH-Universal Hydrogen Evolution Reaction..... 5771
Byunggon Song, Ji Hoon Lee, Hyung Mo Jeong
- Pulse Oxidation to Mitigate Carbon Monoxide Poisoning in Electrochemical Hydrogen Pumps 5772
Kritika Sharma, Suchithra Ashoka Sahadevan, Vijay K Ramani
- Unveiling the Gas Evolution Dynamics in Electrochemical Processes via Acoustic Emission Analysis 5773
Weihong Li, Zhongyi Fan, Lenan Zhang
- Pore Uniformity Effect of Porous Transport Layers on Bubble Behaviors in PEM Water Electrolysis 5774
Seongkeun Kim, Sung Yong Jung

LI - Late Poster Presentations in Fuel Cells, Electrolyzers, and Energy Conversion (Tuesday)

Nitrogen-Rich Functionalized Carbon Wrapped on Cop/Ag: A Dynamic Multifunctional Electrocatalyst for Zinc-Air Battery Driven Water Splitting System	5775
<i>Subramani Surendran, Dong-Kyu Lee, Gnanaprakasam Janani, Subramanian Yuvaraj, Uk Sim</i>	
In-Situ Integration of Co-Active Sites in MnO@C Composite for Zinc-Air Battery Driven Water Splitting	5776
<i>Gnanaprakasam Janani, Dong-Kyu Lee, Subramani Surendran, Uk Sim</i>	
Highly Porous Ir-Based Catalyst-Integrated Electrode for Efficient Proton Exchange Membrane Water Electrolyzer	5777
<i>Hoyoung Kim, Kyeong-Rim Yeo, Soo Kil Kim, Jinwoo Lee</i>	
Manufacturing of Proton Conducting Solid-Oxide Electrolysis Cells Based on Yttrium-Doped Barium Zirconate Electrolyte	5778
<i>Hanping Ding, Shuanglin Zheng, Saroj Karki, Allison Le</i>	
The Effect of Pt-Skin Surfaces on Electrocatalyst Dissolution at the Atomic Scale	5779
<i>Alasdair Fairhurst, Dominik Haering, Vojislav Stamenkovic</i>	
Molybdenum Disulfide As an Efficient Catalyst for Hydrogen Evolution Reaction.....	5780
<i>Abeer Alarawi</i>	
Recycling of Protonic Solid Oxide Cells with Physio-Electrochemical Networks (RSPEN)	5781
<i>Wei Wu, Wanhua Wang, John Aston, Meng Shi, Luis A Diaz</i>	
Innovative Anode Design Incorporating Sub-Catalyst Layer for Proton Exchange Membrane Water Electrolyzers with Ultra-Low Iridium Loading	5782
<i>Yu Wei Hsu, Lu Yu Chueh, Yung-Tin Pan</i>	
Demonstration of Converting Blast Furnace Gas to High Purity Hydrogen	5783
<i>Eric Flynn, Stefan Reinartz</i>	
Equivalent Circuit Modelling for Electrode-Supported Solid Oxide Cell Based on Analysis of Gas and Temperature Dependence.....	5784
<i>Riyan Achmad Budiman, Rikuto Konishi, Mina Yamaguchi, Tatsuya Kawada, Keiji Yashiro</i>	
In Situ Reference Electrodes in Water Electrolysis	5785
<i>Billie Sherin, Dipak Shinde, Graham Smith</i>	
Sr Migration and Gd-Ce-Zr Interdiffusion in Solid Oxide Cells Under Different Fabrication and Testing Conditions.....	5787
<i>Tian Liu, Surendra B Karki, Sangbong Ryu, Evgueni Polikarpov, Tiffany Kaspar, Matthew Olszta, Olga A Marina</i>	
All-Printed Wearable Triboelectric Nanogenerator with Ultra-Charged Electron Accumulation Polymers Based on Mxene Nanoflakes	5788
<i>Kyeong Nam Kim</i>	
Cathodic Protection System Against a Reverse-Current after Shut-Down in Zero-Gap Alkaline Water Electrolysis.....	5789
<i>Young Jin Lim, Sang-Mun Jung, Yoona Kim, Yong-Tae Kim</i>	

Promoting Oxygen Evolution Reaction Induced By Synergetic Geometric and Electronic Effects of Irco Thin-Film Electrocatalysts	5790
<i>Haeyong Shin, Kyu-Su Kim, Sang-Mun Jung, Yong-Tae Kim</i>	
The Effect of Pt Catalysts with Controlled Hydrophilicity on the Surface on the Dispersibility of Ionomers and Durability in Polymer Electrolyte Fuel Cells.....	5791
<i>Kiyotaka Nagamori, Satoshi Aoki, Mayumi Ikegawa, Yasuhiro Seki, Hiroshi Igarashi, Kayoko Tamoto, Makoto Uchida</i>	
Plasma-Structured Molybdenum Oxycarbides Enabling Ultrastable Acidic Hydrogen Evolution up to 10 a cm ⁻²	5793
<i>Shiwen Wu</i>	
Exploring Na-Based Oxides as Electrode Materials for Alkali Metal Thermal-to-Electric Converters	5795
<i>Tae Woo Kim, Dae-Gyun Lee, Ji-Haeng Yu, Wook Hyun Lee, In Sub Han</i>	
Theory-Guided Experimental Strategies for Effective Materials Design in Fuel Cell and Electrolyzer	5796
<i>Song Jin, Jong min Lee, Minseon Park, Seung-min Woo, Sung Mook Choi, Min Ho Seo</i>	
First-Principles Studies on the Design of Tungsten-Based Platinum Electrocatalyst for Hydrogen Evolution Reaction in Alkaline Environment.....	5798
<i>Haeshik Lee, Jinwoo Park, Jae-Min Myoung, Byungchan Han</i>	
Computational Modeling of Anion Exchange Membrane Water Electrolysis	5800
<i>Youngkeun Kim, Yeonghyun Kim, Donggyun Lee, Junghwan Kim</i>	
P and Bi Doped Pt-Zn Alloy as an Effective Electrocatalyst for Hydrogen Evolution Reaction: A First-Principles Study	5801
<i>Yonghak Park, Byungchan Han</i>	
Space Charge Effects on the Reaction Kinetics of Metal Exsolution and the Coalescence of Exsolved Nanoparticles	5802
<i>Moritz Lukas Weber, Dylan Jennings, Břetislav Šmíd, Moritz Kindelmann, Sarah Fearn, Andrea Cavallaro, Alexander Gutsche, Lisa Heymann, Liam Yasin, Samuel J. Cooper, Stephen J Skinner, Regina Dittmann, Ainara Aguadero, Xufei Fang, Christian Lenser, Slavomír Nemšák, Felix Gunkel</i>	

LJ-LATE POSTER PRESENTATIONS IN LUMINESCENCE AND DISPLAY MATERIALS, DEVICES, AND PROCESSING

LJ - Late Poster Presentations in Luminescence and Display Materials, Devices, and Processing (Tuesday)

Observation of Nonlinear Emission Dynamics in a Quasi-Two-Dimensional Perovskite Crystal By Femtosecond Transient Absorption Microscopy	5803
<i>Tetsuro Katayama, Akihiro Furube</i>	
Surface Engineering of SnO ₂ Electron Transport Layers for Efficient Quantum Dot Light Emitting Diodes.....	5805
<i>Yong Il Kim, Woon Ho Jung, Hyeonjun Lee, Yong Woo Kwon, Jaehoon Lim</i>	

LJ - Late Poster Presentations in Luminescence and Display Materials, Devices, and Processing (Wednesday)

Circularly Polarized Light Emission-Active Two-Dimensional Perovskites Using Helical Nanofilament Network	5807
<i>Jae-jin Lee, Suk-Won Choi</i>	
Fabrication of a Laser Using Aggregation-Induced Emission Dyes Combined with Cholesteric Liquid Crystal Networks	5808
<i>tae-Woong Moon, Suk-Won Choi</i>	

LK-LATE POSTER PRESENTATIONS IN ORGANIC AND BIOELECTROCHEMISTRY

LK - Late Poster Presentations in Organic and Bioelectrochemistry

Electrochemical Synthesis of Novel Ylide Compounds through N-N Bond Formation from Hydrazones	5809
<i>Yongju Chang, Jin Kyoon Park</i>	
Electrocatalytic Direct Halogenation of Aromatic Compounds Using Green Halogen Source	5810
<i>SuHyeok Choi, Jin Kyoon Park, Ki Min Nam, Joon Yong Park, Hyeon Beom Cho</i>	

LL-LATE POSTER PRESENTATIONS IN PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY, ELECTROCATALYSIS, AND PHOTOELECTROCHEMISTRY

LL - Late Poster Presentations in Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry (Monday)

Impact of Solvent-Induced Morphological Changes on Hole Transfer Dynamic during Charge Separation Process	5811
<i>Dongchan Lee, Shinuk Cho</i>	
Sweet Spot in Oxidation Temperature Enhances Conductivity and Oer Activity for IrO ₂ -Coated SnO ₂ Nanofibers	5813
<i>Shizhe Wang, Melisande Kost, Felix Dushimineza, Markus Döblinger, Knut Müller-Caspary, Thomas Bein</i>	
Bulk and Surface Effect of Metal Phosphides Catalysts on Hydrogen Evolution Reaction	5814
<i>Seongyoung Kong, Prashant Singh, Dhruv Raturi, Duane D Johnson, Kirill Kovnir</i>	
Atomically Dispersed Platinum Catalysts for Efficient Hydrogen Production	5815
<i>Juneseo Park, Sungju Yu</i>	
Non-Sacrificial Photocatalytic Water Splitting for Sustainable Hydrogen Production	5816
<i>Jaemin Ryu, Sanghyuk Lee, Juneseo Park, Yeongju An, Sungju Yu</i>	
Hot Carrier Generation and Extraction from Slow Photons	5817
<i>Yeongju An, Sanghyuk Lee, Juneseo Park, Jaemin Ryu, Sungju Yu</i>	

LL - Late Poster Presentations in Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry (Tuesday)

Charge-Selective Electrochemical Detection through Electrolyte Adsorption on Indium Tin Oxide Electrodes	5818
<i>Yuri Kim, Minjee Seo</i>	
Epitaxy Promotes OER Stability of IrO ₂ -Coated SnO ₂ Nanoparticles in PEM Electrolysis	5819
<i>Melisande Kost, Matthias Kornherr, Peter Zehetmaier, Hubert Andreas Gasteiger, Markus Döblinger, Dina Fattakhova-Rohlfing, Melisande Kost</i>	
Novel Nonlinear Laser Wave-Mixing Spectroscopy Coupled with Capillary Electrophoresis for the Sensitive Detection of Sars-Cov-2 Biomarkers.	5820
<i>Nino Shatirishvili</i>	
Influence of Annealing Parameters on the Photoelectrochemical Performance of Spaced TiO ₂ Nanotubes	5821
<i>Younggon Son, Rin Jung, Kiyoun Lee</i>	
Plasmon-Driven Selective Methane Conversion to Higher-Value Products	5822
<i>Sanghyuk Lee, Jaemin Ryu, Juneseo Park, Yeongju An, Sungju Yu</i>	
Unraveling the Electronic and Geometric Effects in Au-Pt Bimetallic Catalysts: A Comparative Study of Electrodeposition and Sputtering Techniques for Formic Acid Oxidation.....	5823
<i>Justyna Piwowar, Adam Lewera</i>	
Quantitative Analysis and Manipulation of Alkali Metal Cations at the Cathode Surface in Membrane Electrode Assembly Electrolyzers for CO ₂ Reduction Reactions	5824
<i>Shintaro Kato, Shotaro Ito, Shoko Nakahata, Ryo Kurihara, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya</i>	

LL - Late Poster Presentations in Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry (Wednesday)

Improving the Stability of Ni-Fe-Based Electrodes Via Bias Modulation in Alkaline Water Electrolyzer	5826
<i>Han Seo Im, Sung Yul Lim</i>	
Engineered Catalyst Patterns on Hematite Photoanodes for Improved Photoelectrochemical Water Oxidation Efficiency	5827
<i>Suyeon Lee, Sung Yul Lim</i>	

LM-LATE POSTER PRESENTATIONS IN SENSORS

LM - Late Digital Only Presentations in Sensors

(Digital Presentation) A Facile Molasse-Assisted Synthesis of LaFeO ₃ Lanthanum Iron Oxide Nanoparticles for Simultaneous Electrochemical Determination of Acetaminophen and 4-Aminophenazone.....	5828
<i>Angela Maria Paredes Cuaran, Cindy Vanessa Castellanos Bernal, Isabella Peñaranda Lopera, Victor Manuel Prado Hernandez, Jimmy Morales</i>	

(Digital Presentation) Electrochemical Detection of Analgesic Acetaminophen Using Sensor Comprised of Low-Cu²⁺-Doped CoFe₂O₄ Nanoparticles from Glycerol-Assisted Synthesis..... 5829
Jose Guillermo Alfonso González, Claudia Patricia Granja, Jimmy Morales, Andrés Dector

(Digital Presentation) Electrochemical Detection of Levofloxacin Using Zn²⁺-Doped Cobalt Ferrite Nanoparticles from Fennel Extract-Assisted Synthesis..... 5830
Victor Manuel Prado Hernandez, Jimmy Morales

LM - Late Poster Presentations in Sensors

Fabricated Nanocomposite ZnO-Loaded PVA/PEDOT:PSS Via Electrospinning for Ammonia Detection 5831
Aizhan Rakhmanova, Bakhtiyar Soltabayev, Almagul Mentbayeva

Novel Model of Field-Effect Sensing Mechanism for Hg (II) Ion Detection on ZnO-Based TFT Sensor with Conjugation of Au Nps and ssDNA Aptamer 5832
Yi-Cheng Huang, Yu-Wen Lai, Zhe-Yu Lin, Hsin-Chiang You, Keng-Hsien Chao, Yen-Shuo Chen, I-Hsin Chen, Kai-Chieh Wen

Functional Group Discrimination of Neurotransmitters: A MOF-Based Electrochemical Sensor Array Approach 5834
Hyunro Kim, Sungwook Park, Kwan Hyi Lee

Multi-Marker Biosensor Integrated Explainable AI-Based Cancer Screening System 5835
Sungwook Park, Hyung Joon Park, Kwan Hyi Lee

A Fully Integrated Handheld Electrochemistry Dx Platform for Diabetic Ketoacidosis Monitoring 5836
Joanne Holmes, Yousillya Bunga, Pablo Lozano Sanchez, Marco Caffio, Prosper Kanyong, Caitlin Ho

Robust Single Object Visual Tracking Using Yolo Object Detection and Adaptive Particle Filtering 5837
Chang Ho Kang, Sun Young Kim

Nanocellulose-Based Chiroptical Sensors for Detecting Circularly Polarized Light 5838
Saewon Kang

LZ-LATE POSTER PRESENTATIONS IN GENERAL TOPICS

LZ - Late Digital Only Presentations in General Topics

(Digital Presentation) Advanced Surface Characterization Techniques in Metals and Alloys 5839
Tarek M Abdel-Fattah

(Digital Presentation) Advanced Nanomagnetic Adsorbents for Heavy Metal Removal 5841
Tarek M Abdel-Fattah, Nicholas Russo, Matthew Freeman, Ahemd Elmekawy

LZ- Late Poster Presentations in General Topics (Monday)

Room Temperature Modification of Carbon Cloth for Water Splitting 5843
Marilia Barreto Dalla Benetta, Carmel B Breslin, Eithne Dempsey

Evolution of Cu-Co-Fe Prussian Blue Analogues with Open Nanoframe Architectures for Enhanced Electrochemical Capacitive Deionization.....	5845
<i>Yanna Guo, Zeqiu Chen, Dong Jiang, Yulin Li, Wenyang Zhang, Kazuya Kozumi, Yunqing Kang, Yamauchi Yusuke, Yoshiyuki Sugahara</i>	
Fuel Cell Electrode Inks with Pre-Formed Particle/Binder Fibers	5846
<i>Xiaozong Fan, Peter Pintauro, Ryszard Wycisk</i>	
Remediation of Aquatic Environments Contaminated with As(III) and Mn ²⁺ (aq) Using Hematite Photocatalyst	5848
<i>Junyeong Choi, Haesung Jung</i>	
Harnessing Hemp: A Natural Solution for PFAS Removal in Water	5849
<i>Sakiya T McGhee, Simone Silent, Saniya McGhee, Madison Ridgeway, Kimberly Milligan</i>	
Ultrasonic Monitoring of Li-Ion Batteries.....	5850
<i>Lorenzo Milano, Luca Magagnin</i>	
Occurrences of per- and Polyfluoroalkyl Substances (PFAS) in the Environment and Their Oxidative Degradation By Modified Fenton Treatment	5851
<i>Tasia Walker</i>	

LZ- Late Poster Presentations in General Topics (Tuesday)

Unique Photothermal Material: Copper Phosphate (Cu ₃ P ₂ O ₈) with Broadband Visible-to-Near-Infrared Absorption Properties for Efficient Solar Steam Generation	5852
<i>Jong Ho Lee, Shridharan Tatachari Santhanagopalan, Runfa Tan, Arumugam Sivanantham, In Sun Cho</i>	
Expanding Single-Entity Electrochemistry with Agarose Hydrogel: Enhanced Signal Stability	5853
<i>Jaedo Na, Seong Jung Kwon</i>	
Dissolution of Spent NCM Cathodes Via Electron Transfer from the Anaerobic Respiration of Shewanella Putrefaciens	5854
<i>Seongryeong Kim, Haesung Jung</i>	
The g-C ₃ N ₄ @Cdo/ZnO Ternary Composite: Photocatalysis, Kinetics and Acute Toxicity Studies	5855
<i>Sintayehu Berhanu Berhanu</i>	
In Situ Formation of Liquid Crystal Interphase for Aqueous Dual-Electrode-Free Batteries.....	5856
<i>Yuqi Li</i>	
Synthesis of Halide-Substituted Bismuth Compounds for Extreme Ultraviolet Photoresist	5858
<i>Youngkwon Kim</i>	
Bipolar Membrane Development and Applications: A Review	5859
<i>Julian Black, Qilei Song</i>	

M01-RECENT ADVANCES IN SENSORS SYSTEMS: GENERAL SESSION

M01 - Digital Only Presentations

(Digital Presentation) An Integrated Platform for Immune Profiling and Cytokine Monitoring.....	5860
<i>Xuejia Kang, Lang Zhou, Chao Ma, Chuanyu Wang, Shuai Wu, Siqu Wu, Weiqiang Chen, Jayachandra Babu Rampauram, Pengyu Chen</i>	

(Digital Presentation) Integration of Multiple Input Multiple Output Underwater Wireless Power Transfer in a Renewable Offshore Facility	5861
<i>Cátia Siueia</i>	

M01 - Biosensors 1

(Invited) Nanosensors for Health Monitoring of Environmental Exposures	5862
<i>Yuehe Lin, Dan (Annie) Du</i>	
Aptamer-Modified DNA Origami Nanopore for ATP Measurement.....	5863
<i>Hiromu Akai, Kan Shoji</i>	
Point-of-Care Neurofilament Light Detection for Neurological Disease Monitoring	5867
<i>Nathan Churcher, Shalini Prasad, Fatima Rizvi</i>	
Multichannel Bioelectronic Sensing: Binary Encoding of Environmental Contaminants.....	5868
<i>Xu Zhang, Marimikel Charrier, Caroline M Ajo-Franklin</i>	
Development of Rapid Diagnostic Platform for Detection of Hepatitis A Virus	5870
<i>Dilmeet Kaur, Ramaraja Ramasamy</i>	
Detection of Essential Biomolecules Using Paper-Based Electrode Sensors	5871
<i>Tonya Tolino, Katelyn Wilson, Makeyla Begay, Joshua Platero, Wayant Billey, Justin Platero, Dallen Plummer, Thiagarajan Soundappan</i>	
Increasing the In Vivo Stability of Electrochemical-Aptamer Based Sensors.....	5872
<i>Kaylyn Leung, Julian Gerson, Alex Downs, Nicole Emmons, Jen Heemstra, Tod Kippin, Kevin Plaxco</i>	

M01 - Biosensors 2

(Invited) Reaction-Based Microcantilever Sensors	5873
<i>Haifeng Ji</i>	
A Novel Electrochemical Biosensor for Oral Cancer Biomarker Detection.....	5874
<i>Sanket Naresh Nagdeve, Bavithira Suganthan, Ramaraja Ramasamy</i>	
Development of a Low-Cost Electrochemical Sensor Based on Oxygen Plasma-Modified Plastic Chip Electrode for Detection of Cxcl-10 Biomarker.....	5875
<i>Sunil Luhar, Kinjal Bajiravbhai Patel, Divesh Narayan Srivastava, Ylias Sabri, Ramkrishna Rane, Samuel Ippolito</i>	
Investigating the Impact of Blocking Monolayer Architecture on the Performance of Electrochemical DNA Biosensors in Microfluidic Channels	5876
<i>Martina Freisa, Claire Poujouly, Isabelle Le Potier, Thi-Hong-Nhung Dinh, Laurent Couraud, David Bouville, Catherine Sella, Laurent Thouin, Jean Gamby</i>	

M01 - Poster Session

Passive Haptic Gloves with Embedded Sensors for Immersive Virtual Reality Training	5878
<i>Vivek Kamat, Isbela Alvarado, Shekhar Bhansali</i>	

Monitoring Water Quality in Navajo Nation Using Paper-Based Electrochemical Sensors.....	5880
<i>Wayant Billey, Justin Platero, Joshua Platero, Makeiyla Begay, Katelyn Wilson, Dallen Plummer, Michael Nelwood, Khaled Abdelazim, Thiagarajan Soundappan</i>	
Enhancing NPK Detection in Agriculture through Electrochemical Sensors Utilizing 2D Nanomaterials.....	5881
<i>Zoran Miroslav Pavlovic, Ana Miodrag Kupresanin</i>	
High-Sensitivity Glucose Sensor Utilizing Various Nanostructures and Electric Double-Layer-Gated Field-Effect Transistor Configuration	5883
<i>Sheng-Chun Hung, YI Hua Lee</i>	
Electrochemical Impedance Spectroscopy Sensors in the Sugar Bush to Detect Biofilms	5884
<i>Ruby Jackson, Thomas Palen, Haley Ketteler, Seth Walk, Jesse Randal, Stephan Warnat</i>	
Low Pressure Sensing Characteristics of Mechanoluminescence Film with 3D Microstructure	5885
<i>Yuki Fujio, Kazuma Kurihara, Tomohiko Nakajima, Kazuya Kikunaga, Chao-Nan Xu, Nao Terasaki</i>	
3-D Mapping Approach for High-Efficiency and High-Precision Latent Flaw Detection	5887
<i>Daichi Yamaura, Yoshitaro Sakata, Nao Terasaki</i>	
Early Diagnosis of Autoimmune Diseases through Electrochemical Bio-Sensing Using Modified Plastic Chip Electrode	5889
<i>Kinjal Bajiravbhai Patel, Sunil Luhar, Divesh Narayan Srivastava, Paul White, Ivan Cole</i>	
Highly Efficient Colloidal Quantum Dot-Based Shortwave Infrared Photodetectors	5890
<i>Yujin Jung, Se-Woong Baek</i>	
Sensors for Inflatable Lunar Habitat Construction	5891
<i>Hosang Ahn</i>	
Biosensing Platform for Neuron Optical and Electrical Signals Monitoring	5892
<i>Siqi Wu, Lang Zhou, Xuejia Kang, Shuai Wu, Pengyu Chen</i>	
Study of Insulin Electrochemical Reaction Mechanism on Modified Ni-Chit/SPCE Electrode	5893
<i>Renata Orinakova, Frederika Chovancová, Ivana Šišoláková, Jana Shepa</i>	
Fabrication of CuO NP for NO ₂ Gas Sensing.....	5895
<i>Sangwoo Kim, Myung Sik Choi</i>	
Simple Preparation of Au Nanoparticles by Arc Plasma Deposition (APD) and Its Application for SERS Sensing.....	5896
<i>Masahiro Takebayashi, Tomohiro Shimizu, Shoso Shingubara, Takeshi Ito</i>	
Recyclable Cardiac Biosensor Based on Light-Triggered Antibody Regeneration Method.....	5898
<i>Masaki Masaki, Yosuke Akimoto, Vivek Shetty</i>	
Development of a Multiplex Colorimetric Genetic Analysis Microchip for Identifying Foodborne Pathogens Using 3D-Printer	5900
<i>Yong Tae Kim</i>	

VOLUME 9

Enhancing the Output Performance of Triboelectric Nanogenerators By Inserting CdS into Dielectric Layer	5902
<i>Jianbin Mao, Soonmin Seo</i>	
Integration of Automated Anomaly Detection with Real-Time Fish Stress Monitoring Using QR Code-Enabled Biosensors in Diverse Aquatic Environments.....	5903
<i>Haiyun WU, Kazuki Ideta, Yusuke Horiguchi, Haruto Matsumoto, Masataka Murata, Hitoshi Ohnuki, Takayuki Shibata, Hideaki Endo</i>	
A Miniature Biosensor Based on Microbial Fuel Cell for Hexavalent Chromium in Wastewater	5905
<i>Chin-Tsan Wang, I-Ting Li, Jer-Huan Jang</i>	
Combining Fiber Optic Sensing with Galvanostatic Intermittent Titration for Improved State of Health Analysis of Lithium-Ion Batteries.....	5906
<i>Neha Tewari, Yin Nee Cheung, Muneeswara Madithedu, Sasan Ghashghaie, Hwa-yaw Tam, Steven T Boles</i>	

M01 - Microfabricated and Printed Sensors 1

(Invited) Hyper-Multimodal Sensing with Heater-Integrated Fluidic Resonators.....	5908
<i>Jungchul Lee, Juhee Ko</i>	
Advancements in the Application of 3D Printed Material Towards Electroanalysis	5910
<i>Jeffrey Gordon Bell</i>	
3D-Printed Molecularly Imprinted Polymers: Advanced Molecular Recognition Interfaces for Chem/Bio Sensors	5911
<i>Boris Mizaikoff</i>	
Improving the Gas Detection Abilities of ZIF-8 Coated ZnO through Titanium Metal Doping	5912
<i>Aidarbek Nuftolla, Bakhtyar Soltabayev, Almagul Mentbayeva</i>	
Rapid Detection of Trace Levels of Perfluorooctanoic Acid Using Photothermal Cantilever Deflection Spectroscopy.....	5915
<i>Yaoli Zhao, Kyle Leatt, Prabakar Krishna Murthy, Thomas Thundat</i>	
Deep Microfabrication of Silica Glass Using Atmospheric Gas-Phase Catalyst Etching for Sensing Applications.....	5916
<i>Kohei Sano, Yoshitaka Ono, Kohei Yasuda, Ryosuke Tobinaga, Yutaka Imamura, Yasuo Hayashi, Takahiko Yanagitani</i>	

M01 - Microfabricated and Printed Sensors 2

(Invited) Effect of Plasma-Assisted Nanoparticle Distribution on Electroactive Surface Area of Microfabricated Electrodes.....	5918
<i>Mubarak A Mujawar, Apurva Sonawane, Pandiaraj Manickam, Shekhar Bhansali</i>	
Micro-Electrochemical Sensor Array for Detection of Serotonin	5920
<i>Milad Navaei, Jinho Park, Christopher A. Heist, Matthew Swarts, Katherine T. Young</i>	
Chemical Sensing Using Thermocouple Cantilevers: Pushing Toward Quantum Sensing	5921
<i>Yaoli Zhao, Patatri Chakraborty, Ali Passian, Thomas Thundat</i>	

Development of an In Vivo, Real-Time and Continuous Insulin Sensor Utilizing an Extended Gate Field Effect Transistor-Based Transducer.....	5922
<i>Mukund Khanwalker, Mika Hatada, Ellie Wilson, David Probst, Jack Twiddy, Michael Daniele, Ryutaro Asano, Kazunori Ikebukuro, Koji Sode</i>	
Development of Sustainable Electronic Device for Non-Enzymatic Glucose Sensing through Extended-Gate-Based Organic Field Effect Transistors	5924
<i>Kshitij RB Singh, Harshita Rai, Safalmani Pradhan, Shyam S. Pandey</i>	
Low-Cost Paper-Based Device Integrated with Nanomaterial-Based Electrochemical Immunosensors for Sensitive Detection of Pancreatic Cancer	5926
<i>Xiujun James Li, Kariate Sudhakara Prasad</i>	
Modification of rGO/ZIF-68 Based on Molecularly Imprinted Polymer Electrochemical Sensor for Detection of Acetamiprid	5927
<i>Esma Mutlu, Duygu Akyuz</i>	

Sensor Division Early Career Award Address

(Sensor Division Early Career Award Address) Advancing Hydrogen Technologies with Real-Time Ion Sensing and Tracking	5928
<i>Dongmei Dong</i>	

M01 - Recent Advances in Sensors 1

Visualization of Surface Layer Defects in Solid Oxide Fuel Cell Using an Infrared Radiation Based on the Infrared Absorption Properties of CO ₂	5929
<i>Takanori Nakano, Kazuhisa Sato</i>	
Integrating Electrokinetics with AI-Assisted Raman Spectroscopy for Bacterial Detection in Wastewater	5931
<i>Yirui Zhang, Liam Herndon, Punnag Padhy, Alexander Al-Zubeidi, Baba Ogunlade, Ariel Stiber, Alexandria Boehm, Jennifer Dionne</i>	
Polydopamine Inspired Silver Nanoflower SERS Substrate for Highly Sensitive Detection of Nivalenol in Food Samples: Unveiling Biocompatibility in Mammalian Cells	5933
<i>Sintayehu Leshe Kitaw, Yihenew Simegniew Birhan, Yohannis Wondwosen Ahmed, hsieh-Chih Tsai</i>	
Inkjet Printed Ti ₃ C ₂ T _x Sensor for External Temperature Monitoring of Batteries	5934
<i>Prisca Viviani, Luca Magagnin</i>	
MXene and Conducting Polymer Composites for Wearable Mask Sensors	5936
<i>Guodong Wu, Kiandokht Pakravan, Wonhyeong Kim, Yoolim Cha, Majid Beidaghi, Dong-Joo Kim</i>	
Self-Powered Device for Ultrasensitive Virus Detection Using Bimetallic Nanorod Co-Catalyst with Pt Tips.....	5938
<i>Akhilesh BABU Ganganboina</i>	
MOF Assisted Ion-Conductive Nanocomposite Hydrogel Based Robust Strain Sensor	5939
<i>MD Sazzadur Rahman, Muhammad Toyabur Rahman, Seonghwan Kim</i>	

M01 - Recent Advances in Sensors 2

Ionic Conduction-Based Polycrystalline Oxide Radiation-Ionic Detection Effects	5940
<i>Thomas Defferriere, Colin Gilgenbach, Matthias Müller, James F Christian, James LeBeau, Harry L. Tuller</i>	
FIPEX: Sensor Kinetics of Thin-Film Solid Electrolyte Atomic Oxygen Sensors for Space Applications.....	5941
<i>Igor Hoerner, Martin Eberhart, Stefan Loehle, Stefanos Fasoulas</i>	
Electrodeposited Magnetoelastic Sensors for Ground Fault Current Detection	5943
<i>Jamin R. Pillars, Ganesh Subramania, Todd Monson, Patrick Sean Finnegan</i>	
Development of Electrochemical Sensors for Dissolved Inorganic Nitrogen Detection at Release Sites into the Great Barrier Reef.....	5944
<i>Jing Fang Tan, Shaneel Chandra, Amie Anastasi</i>	
In-Situ Formation of Porosity and Metallic Particles on 2D Oxides Via Photothermal Effect Toward High Performance Formaldehyde Sensing	5945
<i>Ahrom Ryu, Sahn Nahm, Ji-Soo Jang, Ji-Won Choi</i>	
Qualification and Indexation of Mechanoluminescent (ML) Sensors Toward Crack Monitoring and Visualizing Strain Distribution	5946
<i>Nao Terasaki, Yuki Fujio, Yoshitaro Sakata, Rio Hirakawa</i>	
Highly Sensitive Detection of Genomic DNA Using Rapid Real-Time PCR Based on Oscillating Flow.....	5948
<i>Hidenori Nagai, Shunsuke Furutani</i>	
振兴语言能力：双峰静默交互系统	5950
<i>Yusen Guo, Si Huang, Zixuan Song, Qiliang Li, Guangyang Gou</i>	

M02-CHEMICAL SENSORS 14

M02 - Biosensors 1

(Invited) Multichannel Surface Plasmon Resonance Chip for Cell Evaluation By Medium Pattern Recognition	5952
<i>Ryoji Kurita, Hiroka Sugai, Shunsuke Tomita</i>	
Highly Sensitive Sars-Cov-2 Detection Using Au-Functionalized Laser-Induced Graphene Sensors	5954
<i>Caroline Ji-Mei Brustoloni, Pouya Soltan Khamsi, Vinay Kammarchedu, Aida Ebrahimi</i>	
Preparation of Platinum Nanoelectrodes Using Tapered Tungsten Probes and Their Application to a Single Cell Measurement	5956
<i>Mikito Yasuzawa, Yusuke Sato, Takanori Kido, Yumeng Zhao, Masashi Kurashina, Masao Nagase, Tomoyuki Ueki, Atsushi Tabata</i>	
Asthma Phenotyping Via Multiplex Detection of Cytokines on an Electrochemical Sensor	5957
<i>Nathan Churcher, Shalini Prasad</i>	
Square Wave Voltammetry-Based Sensor for Precise Leucovorin Level Monitoring in Artificial Urine: A Leap Towards Personalized Cancer Treatment	5958
<i>Pui Hang Shum, Lynn Denanny</i>	

M02 - Biosensors 2

- (Invited) Development of Bipolar Electrochemical Microscopy for High-Speed and High-Resolution Monitoring of Biochemical Phenomena..... 5960
Kumi Y. Inoue, Koki Kubota, Ayane Endo, Tomoki Iwama, Takahiro Ito-Sasaki, Hitoshi Shiku
- Power-Free Electrochromic System on Smart Contact Lens for Glucose Sensing..... 5962
Zongkang Li, Jeonghun Yun, Xiaoya Li, Moobum KIM, Jia Li, Donghoon Lee, Angyin Wu, Seok Woo Lee
- Colony Fingerprinting: Image-Based Pathogen Identification for High-Throughput Food Microbiological Testing..... 5964
Hikaru Tago, Takumi Someya, Tae Kyu Lim, Manabu Harada, Tomoko Yoshino, Tadashi Matsunaga, Tsuyoshi Tanaka

M02 - Gas Sensors 1

- Diode-Type Hydrogen Sensor Employing Pd-coated Pt Electrodes and Anodized Titania under Gaseous Atmosphere and Its Application to Oil-Deterioration Monitoring 5966
Takeo Hyodo, Shumon Yamanaka, Kano Yamaguchi, Kentaro Kawashima, Yasuhiro Shimizu, Taro Ueda
- Enhancement of SnO₂-Based Gas Sensor Performance through WO₃ Receptor Surface Modification 5968
Tao Ren, Koichi Suematsu, Ken Watanabe, Kengo Shimanoe
- Development of a Catalytic Combustion Type Gas Sensor with MEMS Heater for Methane 5970
Wataru Kawasaki, Atsuko Miyagi, Masataka Kano, Makiko Shibata, Hironori Hadano, Kimikatsu Isobe, Tomoya Kato, Toshiyuki Doi

M02 - Gas Sensors 2

- (Invited) Development of Fiber-Optic Hydrogen Sensor Using Platinum-Supported Tungsten Trioxide-Silica Composite Film 5972
Shinji Okazaki, Erika Ishii, Yoshiaki Nishijima, Taro Arakawa
- Optimizing Sensitivity of Room Temperature CO₂ Sensors through Co-Doped ZnO Nanorods By Magnetron Sputtering System 5974
Bakhtyar Soltabayev, Abylay Tangirbergen, Yessimzhan Raiymbekov, Aidarbek Nuftolla, Amanzhol Turlybekuly, Gani Yergaliuly, Almagul Mentbayeva
- Catalytic Combustion Type H₂ Gas Sensor Based on Cerium Oxide 5976
Shinji Tamura, Asuki Sakurai, Nobuhito Imanaka
- Prediction of Coexisting Gases By Deep Neural Networks 5979
Yun Ji Hwang, Teajong Hwang, Jongwoo Hong, Seong Chan Jun

M02 - Gas Sensors 3

- (Invited) Design of Three-Dimensional Reaction Sites of Solid-Electrolyte Gas Sensors for Sensitive Detection of VOCs..... 5980
Taro Ueda, Takeo Hyodo

A Combined Mixed Potential Sensor, Machine Learning, and Iot Platform for Methane Emissions Detection and Flare Monitoring	5982
<i>Lok-kun Tsui, Sleight Halley, Fernando H. Garzon, James Smith, Robert Ian, Kamil Agi</i>	
VOC Detection Using p-Type Sm(Fe,Co)O ₃ Perovskite Oxides.....	5984
<i>Yoshiteru Itagaki, Masami Mori, Tatsuya Joutsuka, Hiromichi Aono</i>	
Early Sensing of Hazardous Volatile Organic Compounds to Avoid Disastrous Li-Ion Battery Thermal Runaway	5985
<i>Vilas G. Pol, Palwinder Kaur, Amol Bhondekar, Sudeshna Bagchi</i>	

M02 - Poster Session

Virus Detection Using Functionalized Graphene Oxide Composites	5986
<i>Teajong Hwang, Yun Ji Hwang, Tianci LIU, Seong Chan Jun</i>	
Application of the Signaling Probe-Based DNA Microarray to Pathogenic Fungi Detection	5987
<i>Chika Maemura, Yuko Hirakawa, Eiichi Murakami, Tomoko Yoshino, Tadashi Matsunaga, Tsuyoshi Tanaka, Tomoyuki Taguchi</i>	
Effect of Direct Current and Periodic Polarization on Differential Electrolytic Potentiometric Signal Produced By Carbon Nanotube Electrode.....	5989
<i>Abdalghaffar Mohammad Osman</i>	
Monolithic Integration of Lead Chalcogenide Thin Films on Silicon Substrates via Surface Morphology Engineering for Low-Cost Mid-IR Photodetector Applications	5992
<i>Jeung Hun Park</i>	
Peroxynitrite Sensing Using Glassy Carbon Electrodes Decorated with Grafted Diaryl Selenides.....	5993
<i>Magdy Ibrahim, Haitham Kalil, Farid Fouad, Mekki Bayachou</i>	
All-Fiber-Based High Current Density of Triboelectric Nanogenerators Fabrication and for Human Motion Monitoring	5994
<i>Hao Duo, Haitao Wang, Shima Shota, Eiichiro Takamura, Hiroaki Sakamoto</i>	
Coarse-Grained Molecular Dynamics Simulations on Aggregation and Dispersion Mechanisms of Organically Modified CeO ₂ Nanoparticles for Electrochemical Sensor Applications.....	5995
<i>Miho Nakamura, Kota Jojima, Ryosuke Taniai, Shogo Fukushima, Yusuke Ootani, Nobuki Ozawa, Momoji Kubo</i>	
Outstanding Humidity Sensing Material at Room Temperature: Single Crystal K _{0.8} Ti _{1.73} Li _{0.27} O ₄ (KTLO) with New Structure.....	5999
<i>Jeong Yun Hwang, Yong Hwan Kim, Sang Hyun Ji, Myung Sik Choi, Changhyun Jin, Kyu Hyoung Lee</i>	
Microinjection System for Single-Microalgal Cells Based on Electroosmotic Flow	6000
<i>Kaoruko Akasaka, Rein Yasui, Tomoko Yoshino, Daisuke Nojima, Makoto Mochiduki, Tsuyoshi Tanaka</i>	
Enhanced Reliability of NO ₂ Chemiresistive Room Temperature Sensor Based on SnSe _x and Its Module Integration	6002
<i>Yeongsik Hwa, Yeonjin Je, Hyunsung Jung, Sang-Soo Chee</i>	
Field-Effect Transistor Biosensor By Capture of Nucleic Acid Strands with Isothermal Amplification for RNA Detection	6003
<i>Yuichi Sato, Hiroki Hayashi, Yuka Kataoka, Masayasu Kuwahara, Toshiyuki Momma</i>	

Comparison of Electrochemical Measurement Methods for Amperometric Sensor to Detect RNA with Isothermal Nucleic Acid Amplification	6005
<i>Hiroshi Saze, Hiroki Hayashi, Yuka Kataoka, Masayasu Kuwahara, Toshiyuki Momma</i>	
Significant Changes in Electrical Resistance of Conductive Porous Silicon Films Produced from Thiol-Modified Silicon Nanoparticle Inks.....	6007
<i>Seiichi Sato, Shuhei Tsubota, Takahisa Ichinohe</i>	
Machine-Learning Assisted Micropillar Assay for High-Throughput in-Situ Functional Analysis of Patterned Organoids	6009
<i>Shuai Wu, Chuanyu Wang, Xuejia Kang, Pengyu Chen</i>	
Fabrication of MoS ₂ Nanotube Based Humidity Sensors and Investigation of Their Electrode Formation Position	6010
<i>Tana Matsumura, Shoichi Hirono, Takeshi Ito, Shoso Shingubara, Tomohiro Shimizu</i>	

M02 - Biosensors 3

(Invited) Developing Sensor Strategies for Drug Monitoring and Detection	6012
<i>Lynn Dennany</i>	
Enhancing Nitrous Oxide Chemiresistive Sensing Performance By Reducing Ionic Oxygen Species Adsorption in Gold Functionalized Tungsten Trioxide Nanofibers.....	6014
<i>Dung Thi Hanh To, Bingxin Yang, Nosang V. Myung</i>	
Aptamer Immobilization on Transistor-Based Biosensor Via Crosslinker for Amine-to-Thiol Conjugation Toward Cortisol Detection	6015
<i>Hiroki Hayashi, Akane Ishikawa, Toshiyuki Momma, Junichi Uchida</i>	
Electrochemical Simultaneous Determination of Biohazardous Polyphenols Using a Novel Mesoporous Nickel-Modified Carbon Sensor	6017
<i>Yilei Xue, Meissam Noroozifar, Kagan Kerman</i>	

M02 - Electrochemical & Ion Sensors 1

Simultaneous Speciation of Inorganic Arsenic (III and V) Utilizing Gold-Manganese Oxide Nanoparticles Modified Electrochemical Sensors	6018
<i>Ke Zhao, Canwei Mao, Ruiyu Ding, Dean Song, Liya Ge, Grzegorz Lisak</i>	
Chloride Ion Sensing Using Fiber Brag Grating	6020
<i>Summer Dalgamouni, Driss Benhaddou, Stanko Brankovic</i>	

M02 - Electrochemical & Ion Sensors 2

Multiplex Pulsed Current Sensors for Anion Detection	6021
<i>Shima Mehregan, Colin S. Gopaul, Henry D. Koenig, Will E.M Murphy, Charlie T. Veal, Derek T. Anderson, Matthias J. Young</i>	
Flexible Screen-Printed Electrochemical Sensor Based on Cu, Poly 1,5-Diaminonaphthalene and Carbon Black for Nitrate Detection in Real Water Samples.....	6022
<i>Saad Benhaiba, Amine Ezzahi, Mama El Rhazi</i>	
Bay-Region, Nitrogen Functionalized Perylene Diimides for Printed Electronic Sensors	6023
<i>Gregory Charles Welch</i>	

M02 - Gas Sensors 4

- (Invited) Materials Development and System Integration for Advanced Gas Sensors..... 6024
Jiadeng Zhu, Vijaya Kayastha, Tianyi Liu, Kening Lang, Audra Koch, Christopher Landorf, Steven Younger, Daniel Padilla, Marriana Nelson, Nickolas Boeser, Chandler Murray, Austin Peters, Christopher Robledo, Rebecca Eldredge, David Taggart, Wu-Sheng Shih, Adam Scotch
- Enhancing Sensing Performance of SnO₂-Based Gas Sensors Using Bismuth Ions As Catalytic Additives 6025
Haoyue Yang, Koichi Suematsu, Ken Watanabe, Kengo Shimanoe
- Electrical Properties of Micro-Nano Hierarchically Controlled Tin Dioxide Gas Sensors 6027
Felipe Hiroshi Mashiba, Koichi Suematsu, Ken Watanabe, Kengo Shimanoe

Sensor Division Outstanding Achievement Award Address

- (Sensor Division Outstanding Achievement Award) IoT Enabled Turnkey Solution for Detection of Multiple Vapor Phase Analytes in Real-World Conditions..... 6029
Ajit Khosla

M02 - Gas Sensors 5

- Biofluorometric Ear-Gas Sensing for Non-Invasive Monitoring of Blood EtOH 6030
Kohji Mitsubayashi, Kenta Ichikawa, Kenta Iitani
- Preparation of Spherical Hollow Particles from Polyaniline Derivatives and Their Use in Ammonia Gas Sensing Materials 6032
Masanobu Matsuguchi, Hieoki Kori, Hibiki Kojima
- Investigation of Fundamental Gas Sensing Mechanism of Conductive Metal-Organic Frameworks By in-Situ/Operando Spectroscopy Analysis..... 6033
Seon-Jin Choi

Z01-GENERAL STUDENT POSTER SESSION

Z01 - General Student Poster Session

- An Explorative Approach for Formulating Highly Performant, Scalable, Lithium Battery Separators 6035
Eleonora de Santis, Antonio Rinaldi, Rodolfo Araneo, Giovanni Appetecchi
- Synthesis of Porous Metal Oxides Utilizing Nanosheet Colloid with Liquid Crystallinity..... 6037
Yusuke Adachi, Keisuke Muramatsu, Emiko Mouri, Teruyuki Nakato, Wataru Sugimoto
- Cathode Properties Crystal and Electronic Structures of $\alpha\text{Li}_2\text{MnO}_3-(1-\alpha)\text{Li}(\text{Mn}_{10/24}\text{Ni}_{7/24}\text{Co}_{7/24})\text{O}_2$ in Li Ion Batteries with TiNb₂O₇ anode..... 6039
Takuma Aida, Chiaki Ishibashi, Naoto Kitamura, Yasushi Idemoto
- Redox-Active Metal-Organic Framework As an Anode-Active Material for Rechargeable Air Batteries..... 6041
Ryota Akai, Hitoshi Kasai, Kouki Oka

Oxygen Substitution of $\text{Li}_3\text{PS}_4\text{-LiF}$ Electrolytes for Stable Li Metal / Solid Electrolyte Interface in All-Solid-State Batteries.....	6043
<i>Taichi Asakura, Ryo Izawa, Takuya Kimura, Chie Hotehama, Hiroe Kowada, Kota Motohashi, Atsushi Sakuda, Masahiro Tatsumisago, Akitoshi Hayashi</i>	
Effect of Polyvinylidene Fluoride Binder Distribution on Dry Spray-Coated Graphite Electrodes for Lithium-Ion Batteries for Electric Vehicle Applications.....	6045
<i>Jesus Alberto Barreras Uruchurtu, Nicolas Besnard, Clément Paul, Lauréline Marchal, Samuel Devisme, Bernard Lestriez</i>	
High-Performance Na-Ion Battery Anode Using Graphene Oxide Quantum Dots	6048
<i>Shahd Boud, Hyung Kee Seo</i>	
Advancing Lithium-Ion Battery Manufacturing Sustainability through Microstructural Analysis of Composite Cathodes	6049
<i>Willa Brenneis, Qingsong Liu, Jeffrey J. Richards, Jeffrey Lopez</i>	
New Applications of Knudsen Effusion Mass Spectrometry (KEMS) for Gas Evolution Analysis in Lithium-Ion Batteries	6050
<i>Jonas Buch, Uzair Tahir, Torsten Markus, David Henriques</i>	
Carbon-Based Materials As Negative Electrodes in Sodium-Ion Batteries.....	6051
<i>Marta Chmielniak, Michał Krajewski, Oskar Grabowski, Magdalena Winkowska-Struzik, Andrzej Czerwinski</i>	
Electrochemical Model-Based Capacity Estimation Using Electric Vehicle Driving Data	6053
<i>Kyeongeun Cho, Sanghyun Kim, Wooju Lee, Jung-Il Choi</i>	
Molten Salt Synthesis and Growth Mechanism of Single Crystal Ni-Rich Layered Oxides As Cathode Materials.....	6054
<i>Seung Hyun Choi, Kyu Tae Lee</i>	
Selective Synthesis of Double-Layer Nanosheets Via Layered Ruthenic Acid with a Staged Structure	6056
<i>Tomoya Eda, Keisuke Muramatsu, Wataru Sugimoto</i>	
Mechanism of Internal Crack Formation in All-Solid-State Batteries Due to Expansion and Shrinkage and Its Effects.....	6058
<i>Yuki Eto, Magnus So, Takeru Yano, Gen Inoue</i>	
Cobalt-Free Layered Nickel Oxides with Antisite Defects for Long-Lived Lithium-Ion Batteries.....	6060
<i>Hinata Fujimura, Itsuki Konuma, Yosuke Ugata, Naoaki Yabuuchi</i>	
Development of a High-Capacity MXene Electrode for All-Solid-State Batteries	6063
<i>Masaki Fujita, Mathieu Peeters, Kosuke Kawai, Yuki Nomura, Masashi Okubo</i>	
Factors Affecting Performance on Electrode Materials for Proton Batteries.....	6065
<i>Shun Furuhashi, Yosuke Ugata, Naoaki Yabuuchi</i>	
Investigating the Effects of Electrolytes on Li Deposition By Electrochemical Quartz Crystal Microbalance	6066
<i>Shiyu Ge, Jeffrey Lopez</i>	
Exploring Iron-Containing Electrodes for Use as Negative Electrodes of All-Iron Redox Flow Batteries.....	6068
<i>Inmaculada Gimenez-Garcia, Antoni Forner-Cuenca</i>	

Improved Thermal Stability of Ionic Liquid through Hydrogen Bond Donor As an Electrolyte for Fluoride-Ion Battery	6070
<i>Kaviarasan Govindarajan, Ryo Sakamoto, Susumu Kukita, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Solidification of High-Concentration Electrolytes with Faujasite As Nanosized Porous Zeolite Additive for Solid-Type Batteries.....	6072
<i>Schanth Hacatrcan, Kosuke Nakamoto, Izumi Yamada, Naoki Inui, Kazuhiro Shibahara, Daisuke Inokuchi, Kohei Miyazaki, Takeshi Abe</i>	
Anomaly Detection in Battery Charge-Discharge Experiments Using Multi-Task Auto-Encoder.....	6075
<i>Sangheon Han, JinYoung Jung, Skill Han, Kyeongtaek Kim</i>	
Aligned Nano-Porous Electrospun Composite Electrolyte Based on Cellulose Acetate Casted with Chitosan for Flexible and Wearable Solid-State Sodium-Ion Batteries	6076
<i>Md. Mehadi Hassan, Brett Connors, Mojtaba Ebrahimian Mashhadi, Qingye Lu</i>	
Revisiting the Effect of Interaction between Mobile Ion and Ligand on Phase Evolution and Intercalation Potentials of Berlin Green Cathodes	6077
<i>Jeong Yeon Heo, Ju-Hyeon Lee, Hyeon Jeong Lee, Ji Hoon Lee</i>	
Mechanism of Charge Transfer Via Dielectric Interfaces in Li Ion Battery	6078
<i>Yusuke Higaki, Takashi Teranishi, Shinya Kondo, Akira Kishimoto, Chinatsu Sasaoka, Hikaru Hirabaru, Shingo Katayama</i>	
Flexible Electrolyte Sheets Using Sulfonated Cellulose Nanofiberfor Sheet-Type All-Solid-State Batteries.....	6079
<i>Minato Hino, Yushiro Sonoda, Shota Azuma, Ryotaro Tani, Fumisato Ozawa, Morihiro Saito</i>	
Rechargeable Aqueous Sodium-Ion Batteries with Iron/Titanium-Based Oxides As Negative Electrode Materials.....	6081
<i>Nozomi Hirakuni, Yosuke Ugata, Naoaki Yabuuchi</i>	
Influence of Electrolyte Anions on Lithium-Ion Transfer Kinetics at Electrode/Electrolyte Interfaces	6084
<i>Kou Hiraoka, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
Optimization of Hydride-Ion Conductivity of Perovskite-Type Structure in $\text{SrLiH}_3\text{--CaLiH}_3\text{--NaLiH}_2$ Quasi-Ternary System	6086
<i>Takashi Hirose, Naoki Matsui, Kenta Watanabe, Takashi Saito, Kazuhiro Mori, Kota Suzuki, Ryoji Kanno, Masaaki Hirayama</i>	
Universal Neural Network Potential Driven Molecular Dynamics Study of CO_2 and O_2 Evolution at the Ethylene-Carbonate/Charged-Electrode Interface	6089
<i>Motoki Horibe, Naoto Tanihata, Hayami Takeda, Masanobu Nakayama</i>	
Reaction Transport Analysis and Parameter Identification for Designing Lithium-Sulfur Battery Electrodes	6091
<i>Minami Ihara, Yuki Mori, Takeru Yano, Gen Inoue</i>	
Charge-Discharge Behavior of Electrochemically Prepared NaFePO_4 Electrodes in Aqueous Sodium Ion Batteries	6093
<i>Yoshitaka Ikeda, Shota Tsujimoto, Ryo Sakamoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	

Enhancing the Cycle Life of Silicon Microparticle Anodes for High-Energy Density Lithium-Ion Batteries through a Reinforced Conductive Matrix	6096
<i>HyunJi Im, Young-Jun Kim</i>	
MnO ₂ -Conductive Nanodiamond Composite Electrode for High Energy Density Aqueous Capacitor	6097
<i>Kazuto Imai, Takeshi Kondo</i>	
The Ionic Conduction Properties of Na ₃ OCl with O ²⁻ /Cl ⁻ Non-Stoichiometry	6098
<i>Kana Ishigami, Reona Miyazaki, Takehiko Hihara</i>	
Study on High-Voltage Cathode Li-Ni-Mn Spinel Oxides with Low-Temperature Magnetism.....	6101
<i>Yuki Ishimori, Hiroya Sakurai, Kazunori Takada, Tatsuya Nakamura</i>	
Effect of Li-Mg Alloy Anode on Li Dendrite Suppression for Li-Air Secondary Batteries	6103
<i>Daiki Iwasaki, Kohei Fukuchi, Shota Azuma, Akihiro Nomura, Fumisato Ozawa, Morihiro Saito</i>	
Investigating the Degradation Behavior of Silicon Anodes for Lithium-Ion Batteries.....	6105
<i>Jiyun Jeon, Hochun Lee</i>	
Cationic-Dependent Cooperative Catalysis of Ni _{0.261} Co _{0.739} S ₂ /N-Doped Carbon Nanotubes for Achieving Superior Electrocatalytic Activity and Cycling Stability at High Rate in Li-S Batteries	6107
<i>Junhyuk Ji, Minseon Park, Minh Kim, Song Kyu Kang, Gwan Hyeon Park, Min Ho Seo, Won Bae Kim</i>	
Study on Structure and Electrochemical Properties of Zn-Sulfolane Based Electrolyte Solution.....	6109
<i>Kento Kagaya, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
Effect of Cell Diameter on Charge-Discharge Performance in All-Solid-State Batteries.....	6111
<i>Ayaka Kamei, Chengchao Zhong, Keiji Shimoda, Ken-ichi Okazaki, Yuki Orikasa</i>	
Synthesis and Ion Conduction Properties of Rb ₃ AlF ₆ -Na ₃ AlF ₆ Solid Solution.....	6112
<i>Yudai Kaneda, Reona Miyazaki, Takehiko Hihara</i>	
Synergetic Effect of LiNO ₃ and Fluorine-Containing Additives on Stabilizing Electrode-Electrolyte Interfaces in Lithium Metal Batteries	6115
<i>Heechan Kang, Hyeonmuk Kang, Jung Hyeon Moon, Yeonbeom Cho, EunAe Cho</i>	
水性レドックスフロー電池用アントラキノ系陽極液の機能化.....	6116
<i>Momoka Kawgauchi, Atsushi Okazawa, Kosuke Kawai, Masashi Okubo</i>	
Development of the Electrode for All-Solid-State Lithium Rechargeable Batteries Using MoS ₂ by Liquid Phase Mixing	6118
<i>Fujiwara Kazuto, Eiji Higuchi, Masanobu Chiku, Hiroshi Inoue</i>	
Exploring Conductive Materials for Lithium Iron Phosphate(LFP) Dry Electrodes	6120
<i>Byeongjin Kim, DaeKyom Kim, Youngjae Yoo</i>	
Comprehensive Study on the Role of Proton in the Insertion Chemistry of Aqueous Zn-Ion Batteries.....	6122
<i>Changmin Lee, Dongho Kim, Youngjae Hong, Younghwan Lim, Chang Hyun Park, Sung-Yoon Chung</i>	
Enhancing the Interfacial Stability of Li ₆ PS ₅ Cl through Adsorption of Trimethylsilyl Compound-Based Solid Electrolyte Additives	6124
<i>Kanghyeon Kim, Kyu Tae Lee</i>	

Additive-Free Branch-Structured Electrode for Maximizing Energy Density of Solid-State Lithium-Ion Batteries	6126
<i>Minho Kim, Song Kyu Kang, Gwan Hyeon Park, Junhyuk Ji, Won Bae Kim</i>	
Electrochemical Assessments of Lithium Plating Reversibility on Graphite Anode in Lithium-Ion Batteries.....	6127
<i>Seong-Yoon Kim, Seong-Yoon Kim</i>	
Rechargeable Organic Molecule-Air Battery	6129
<i>Showa Kitajima, Hitoshi Kasai, Kouki Oka</i>	
Effect of Surface Functional Groups on Polymer-Derived Activated Carbon in Aqueous Electrolyte for Supercapacitors	6131
<i>Shuto Kobayashi, Yuki Nishiyama, Daisuke Tashima</i>	
Effect of High-Pressure Treatment on the Crystal Structure and Li ⁺ Conduction Properties of Li ₃ AlF ₆	6133
<i>Yamato Kohama, Reona Miyazaki, Takehiko Hihara</i>	
Effects of Polymer Side Chains on Ion Transport Properties of Gel Electrolytes Containing High Concentration Li Salt Solution	6137
<i>Yukako Konishi, Hisashi Kokubo, Seiji Tsuzuki, Ryoichi Tatara, Kaoru Dokko</i>	
Factors Affecting Electrochemical Properties of P'2-Type Mn-Based Layered Oxides for Sodium Ion Batteries	6139
<i>Tomohiro Kuriyama, Yosuke Ugata, Naoaki Yabuuchi</i>	
Synthetic Graphites as the Cathode Material for Aluminium-Carbon Batteries.....	6140
<i>Helene Lillevestre Langli, Daniel Johan Gustafsson Birkeland, Eirik Bråddland Bjelland, Zhaohui Wang, Ann Mari Svensson</i>	
Inorganic-Rich SEI Derived from Electrochemically Deposited [Cu(TU) _n]Cl Nanowires for Highly Stable Lithium Metal Batteries.....	6142
<i>Changhyeon Lee, Kwang Sup Eom</i>	
Controlling SnO _x Stoichiometry via ALD Deposition on Cu Current Collectors: Investigating Stability and Reversibility Enhancement in Lithium Metal Batteries	6146
<i>Dawon Lee, Roy Byungkyu Chung</i>	
Internal Short-Circuit Tendency of Overdischarged Li-Ion Batteries: Effect of Subsequent Charging Conditions	6148
<i>Ga-Eun Lee, Yu-Jeong Min, Heon-Cheol Shin</i>	
Electrochemical Capacitance and Synthetic Pore Modification in 2D Conductive Metal-Organic Framework.....	6150
<i>Gyuwon Lee, Sarah S. Park</i>	
(General Student Poster Award Winner, 2nd Place) Understanding the Unique Phase Evolution of Prussian White Cathodes Mediated by the Intramolecular Interaction in Hexacyanometallate Complexes	6151
<i>Ju-Hyeon Lee, Jin-Gye Bae, Min Sung Kim, Jeong Yeon Heo, Hyeon Jeong Lee, Ji Hoon Lee</i>	
Effect of Cu As an Additive in the MnO ₂ Cathode in Rechargeable Zn-MnO ₂ Alkaline Batteries	6152
<i>Yi Min Lin, Changhee Lee, Ryo Sakamoto, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	

Electrochemical Properties of LiF-Coated Graphite Negative Electrode Modelized By Atomic Layer Deposition	6156
<i>Shuangyi Liu, Shota Tsujimoto, Ryo Sakamoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Investigating the Morphological Evolution of Lithium Plating/Stripping in Concentrated Electrolyte by Operando X-Ray Computed Tomography.....	6160
<i>Xiaoyu Liu, Toshiki Watanabe, Yuki Orikasa, Yuki Yamada, Kiyoshi Kanamura, Yoshiharu Uchimoto</i>	
Incorporation of Lithium Ultra-Phosphate into Li-Si-S Glass Compositions.....	6161
<i>Cody Lyle, Victor Manuel Torres, Steve Martin</i>	
Cathode Reaction Analysis of Lithium-Oxygen Battery Based on Operando XRD Measurements	6162
<i>Kazuno Maeda, Makoto Aoki, Dilinigeer Dilixiati, Toshihiro Kondo</i>	
Compatibility of LiPON with Different Current Collector Materials for Anode-Free Configuration	6164
<i>Elena Lopez Pazos, Luca Nobili, Luca Magagnin</i>	
Optimization of an Aqueous Zn-Mn Redox Flow Battery System.....	6165
<i>Eleonora Natale, Federico Lissandrello, Eugenio Gibertini, Luca Magagnin</i>	
Synthesis, Conductive Properties, and Crystal and Electronic Structures of Nasicon-Type $\text{Li}_{1.5}\text{Al}_{0.5}\text{Ge}_{1.5-x}\text{M}_x(\text{PO}_4)_3$ [M=Mn, V, Mo].....	6166
<i>Yuta Masuda, Chiaki Ishibashi, Naoto Kitamura, Yasushi Idemoto</i>	
Enhanced Spin-Thermoelectric Generation in Generators Incorporating Liquid Phase Epitaxial Bi-Substituted Yttrium Iron Garnet Films for Constructing an Energy Storage System Combined with Supercapacitors	6168
<i>Ryota Matsuda, Masaaki Imamura, Daisuke Tashima</i>	
Optimization of Recycling Process of Layered NCA Material using Li^+ - H^+ Exchange Reaction.....	6170
<i>Kingo Ariyoshi, Chisa Matsushita, Jo Hirota</i>	
Functional Polyvinylidene Difluoride (PVDF) Separators for Next-Generation Lithium-Sulfur Batteries.....	6172
<i>Jillian W. McNaught, Michael J. Petrecca, Akhil Shenoy, Orlin D. Velev, Peter S. Fedkiw</i>	
Nano-structured and High-performance Mn-based Positive Electrode Materials for Lithium-ion Batteries.....	6173
<i>Yuka Miyaoka, Yosuke Ugata, Yuna Oguro, Naoaki Yabuuchi</i>	
Multi-Dopant Influence on the Volume Changes of Layered-Oxide Cathodes for Lithium-Ion Batteries.....	6174
<i>Tatsuya Miyazaki, Atsusa Minamida, Kosuke Kawai, Kei Kubota, Masashi Okubo</i>	
Electric Vehicle Battery Degradation: Effects of Mixed Fast and Slow Charging on Commercial NCA Cells	6176
<i>Hannah Morin, Jay F Whitacre</i>	
Effect of KOH Concentration on Viscoelastic and Conformational Changes of Xanthan Gum-Based Hydrogel Electrolytes.....	6177
<i>Tomoko Morisaki, Masanobu Chiku, Eiji Higuchi, Hiroshi Inoue</i>	
Factors Affecting Long-Term Cycle Stability of Cobalt-Free Li_2MnO_3 -Based Materials.....	6179
<i>Chihaya Motoki, Yosuke Ugata, Tokuhiko Handa, Naoaki Yabuuchi</i>	

Simulative Analysis of Crucial Effective Transport Parameters of Li-Ion Cells Based on Experimental Voltage and Impedance Behavior.....	6180
<i>Raphael Mühlfort, Leonie Pfeifer, Anne Heß, Thomas Wetzel, Philipp Seegert</i>	
Theoretical Analysis of Anion Intercalation Process into Cathode Conductive Carbon.....	6181
<i>Kou Nakamura, Norio Takenaka, Satoshi Hagiwara, Minoru Otani, Atsuo Yamada</i>	
Spectroscopic Studies of Cation Structure Dependence on Lithium-Ion Conductivity in Phosphonium Ionic Liquid Electrolytes	6183
<i>Shoki Nawate, Abbas Alshehbi, Mitsuhiro Matsumoto, Yohtaro Inoue, Kazuki Yoshii, Katsumi Katakura, Katsuhiko Tsunashima, Hirohisa Yamada</i>	
Structure of the Electric Double Layer in Non-Aqueous Electrolytes for Lithium Metal Batteries.....	6186
<i>Thanh Nguyen, Ziqi Liu, Jeffrey Lopez</i>	
Electrochemical Performance of $\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ Electrode in All-Solid-State Battery	6188
<i>Rin Okochi, Yoshinori Arachi</i>	
Liquid Structure of Super-Concentrated Aqueous Electrolyte Solutions with Various Alkali Metal Salts and Its Effect on Battery Performance	6190
<i>Kota Okuzumi, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
(General Student Poster Award Winner, 3rd Place) Toward High Performance All-solid-state Lithium Batteries with Low Volume Change V-based High-capacity Positive Electrode Materials	6192
<i>Teppei Ono, Itsuki Konuma, Yosuke Ugata, Naoaki Yabuuchi</i>	
Exploration of Low-Temperature Formation Pathways for Garnet-Type Lithium-Ion Conductors	6193
<i>Kana Onoue, Akira Nasu, Hiroaki Kobayashi, Masaki Matsui</i>	
An Aqueous Organic Redox Supercapacitor Fabricated By Supercritical CO_2 Impregnation of Quinones into Activated Carbon.....	6195
<i>Chie Ooka, Yuta Nakayasu, Shu Sokabe, Tomoya Yamada, Naoka Nagamura, Kenichi Ozawa, Masaru Watanabe</i>	
Power Density of a Magnesium Air Fuel Cell with Titanium Dioxide Added to Activated Carbon Derived from Marine Plastic Waste.....	6197
<i>Ryota Osae, Daisuke Tashima</i>	
The Impact of Fluorination/Iodization of the Li Metal Single Ion Conducting Polymer Electrolyte Interface.....	6199
<i>Kyra D'Yana Owensby, Michelle Lehmann, Robert L Sacci, Yan-Ru Lin, Wan-Yu Tsai, Xi Chelsea Chen</i>	
Preparation and Characterization of LGVO/PEO Composite Electrolytes with Wet Process	6201
<i>Taiyo Ozaki, Tatsuya Nakamura, Takeshi Kakibe</i>	
Promoting the Radical-Mediated Pathway and Li_2S Conversion By N-Doped Carbon-Embedded Cobalt-Doped Titanium Nitride Electrocatalyst with High Donor-Number Solvent for Lean Electrolyte Lithium-Sulfur Batteries	6203
<i>Gwan Hyeon Park, Minho KIM, Song Kyu Kang, Junhyuk Ji, Won Bae Kim</i>	
Study on the Structural and Electrochemical Characteristics of End of Life Battery Electrode Delaminating Process	6204
<i>Byeoungseok Kim, Sungjin Jin, Sangho Park</i>	

Comparative Electrochemical Analysis of Lithium and Lithium-Indium Alloy in All-Solid-State Battery	6205
<i>Se-Jin Park, Soyoung Joo, Heon-Cheol Shin</i>	
Investigating the Mechanisms of Li Creeping Driven By High Stack Pressure in Sulfide Solid Electrolytes for All-Solid-State Batteries	6207
<i>YongJun Park, Jaehee Park, Toshiki Watanabe, Kentaro Yamamoto, Toshiyuki Matsunaga, Yoshiharu Uchimoto</i>	
Liquid Metal as a “Self-Healing” Agent for Phosphorus in Li-Ion Batteries	6208
<i>Zachary Park, Rex Edward Colvard, Michael D Dickey, Peter S. Fedkiw</i>	
Developing Ternary Transition Metal-Based Nasicon-Cathodes for High Performance Sodium-Ion Batteries Via Chemical Substitution	6209
<i>Biplab Patra, Keshav Kumar, Subham Ghosh, Madhulika Mazumder, Swapan Kumar Pati, Premkumar Senguttuvan</i>	
(General Student Poster Award Winner, 1st Place) Synthesis and F-Ion Conduction of $Ba_{0.57}M_{0.43}F_{2.43}$ ($M = Y, La, Nd, Sm, Bi$) As Solid Electrolytes for All-Solid-State F-Ion Batteries.....	6211
<i>Chanachai Pattanathummasid, Kazuki Tani, Toshiyuki Matsunaga, Tsuyoshi Takami</i>	
Development of Coal-Derived Graphite for Lithium-Ion Batteries.....	6212
<i>Abigail Paul, Isabel Baca, Regan Magee, Warren Wilczewski, Nathan Wichert, Kody D Wolfe, Jeffrey Lowe, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
Experimental Investigation of the Influence of Different Thermal Aging Conditions on the Thermal Conductivity of Battery Electrodes	6213
<i>Leonie Pfeifer, Sabrina Herberger, Thomas Wetzel, Philipp Seegert</i>	
Investigating the Dissolution - Redeposition Kinetics of Transitions Metals in Alkaline Media for Application in Advanced Material Processes	6215
<i>Anika Tabassum Promi, Feng Lin</i>	
Investigating Reduction Intermediates of Fluoroethylene Carbonate.....	6216
<i>Sapna L Ramesh, Matthew D Krzyaniak, Michael R Wasielewski, Jeffrey Lopez</i>	
Optimization of Hybrid Pulse Power Characterization (HPPC) Protocol for Lithium-Ion Battery Diagnostics	6217
<i>Jinwook Rhyu, Debbie Zhuang, Martin Z. Bazant, Richard D. Braatz</i>	
Li Plating/Stripping Behaviors in Li^+/Na^+ Mixed Li^+ Conductor.....	6219
<i>Mizuki Sakai, Reona Miyazaki, Takehiko Hihara</i>	
Gel Polymer Electrolytes Composed of Highly Concentrated Li Salt/Sulfolane Electrolytes and Homogeneous Polymer Network Having Weakly Coordinating Ability	6221
<i>Riko Sakakieda, Kazuki Miyagawa, Hisashi Kokubo, Kaoru Dokko</i>	
Fabrication of Hybrid Capacitor Electrodes Using Japanese Distilled Liquor Waste and Waste Paint	6223
<i>Tomoya Sano, Daisuke Tashima</i>	
Elucidation of the Effects of Particle Morphology on Stress and Reaction Fields in All-Solid-State Battery Electrode Structures and Structural Design	6225
<i>Koki Sato, Yuki Eto, Shinichiro Yano, Magnus So, Takeru Yano, Gen Inoue</i>	
Dry-Processed Silicon-Graphite Composite Electrodes for Lithium-Ion Battery	6227
<i>JunMyoung Sheem, Young-Jun Kim</i>	

Revisiting the Low-Temperature “Stablization Process” for Starch-Derived Hard Carbon Anodes	6228
<i>Yuke Shen, Linsen Li, Zi-Feng Ma</i>	
NMR Insights into Designing Safe and Efficient Lithium-Ion-Batteries with Solid Electrolyte.....	6229
<i>Yoonju Shin, Ji-Hoon Han, Dokyung Kim, Young Whan Cho, Sangdoo Ahn, Young Joo Lee</i>	
Unraveling Ion Conduction and Interfacial Processes in Sulfide Electrolytes for Emerging Sodium Batteries.....	6230
<i>Varun Shreyas, Sabina Zakhidovna Chertmanova, Yang Li, Selim Halacoglu, Hui Wang, Badri Narayanan</i>	
Highly-Coordinated Iron Complex with Multidentate Ligands for Aqueous Redox Flow Battery Electrolytes	6231
<i>Kodama Soshi, Kosuke Kawai, Okazawa Atsushi, Masashi Okubo</i>	
Mechanical Analysis of Lithium-Ion Batteries via Acoustic Impedance Spectroscopy	6233
<i>Charles Edward Soulen, Stewart Sherrit, Erik Brandon, Ping Liu</i>	
X-Ray CT Study on Sodium-Ion Distribution in All-Solid-State Sodium Battery Electrode	6234
<i>Ami Soyama, Chengchao Zhong, Keiji Shimoda, Ken-ichi Okazaki, Yuki Orikasa</i>	
Electrochemical Properties of Graphite Positive Electrode in Zinc Halide-Based Aqueous Solutions	6236
<i>Yohta Sugimoto, Shota Tsujimoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Pseudo-Solid Aqueous Electrolyte with Widened Potential Window By Encapsulating Water-in-Salt in Silica Matrix	6240
<i>Takaya Sugiyama, Keisuke Muramatsu, Wataru Sugimoto, Bruce S. Dunn</i>	
Utilizing Advanced Spectroscopy Techniques to Investigate Mn-Ligand Bonding Environments in Disordered Rocksalt Oxyfluorides	6242
<i>Neelam Sunariwal, Khagesh Kumar, Jordi Cabana</i>	
Direct Recycling of Spent Lithium-Ion Batteries at Room Temperature and Pressure in Aqueous Media.....	6243
<i>Isha M Sura, Jeffrey Lopez</i>	
Li-Ion Intercalation Kinetics at LiMn_2O_4 Thin Film Electrode/Localized High-Concentration Electrolyte Interface	6244
<i>Kousuke Takeshita, Zhou Zhi, Kaoru Dokko</i>	
An SEI-Forming Fluorophosphate Solvent for High-Temperature Lithium-Ion Batteries	6246
<i>Kazuki Takeuchi, Yasuyuki Kondo, Yu Katayama, Kouki Oka, Yuki Yamada</i>	
Electrolyte Design to Control Sodium Electrode Potentials for High Energy Density Sodium-Ion Batteries.....	6248
<i>Hiroshi Takida, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
Novel Polymeric Morphologies as Positive Electrodes in Lithium-Ion Batteries	6250
<i>Cade T. Tharrington, Michael J. Petrecca, Orlin D. Velev, Peter S. Fedkiw</i>	
Beneficial Impact of Selenate/Selenide Additives on the Performance and Longevity of the Iron Electrode for Alkaline Batteries	6251
<i>A Sundar Rajan, Yeshvi Tomar, Ahamed Irshad Maniyanganam, Debanjan Mitra, Sri Narayan, G. K. Surya Prakash</i>	

Kinetic Analysis of Lithium Titanium Oxide by Applying the Diluted Electrode Method to Various Electrochemical Measurements	6253
<i>Kamma Tsuchida, Kingo Ariyoshi</i>	
Fibrous Porous Composite Interlayer Derived from Soft Dendritic Colloids for Lithium-Sulfur Batteries.....	6255
<i>Tuyen T.T Truong, Michael J. Petrecca, Jaden R. Leatherman, Orlin D. Velev, Peter S. Fedkiw</i>	
Electric Double-Layer Capacitance on Carbon Electrodes in Concentrated Aqueous Electrolytes of Alkaline Metal Salts	6257
<i>Hirota Urai, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
Fabricating Solid-State Batteries for Electric Aviation.....	6259
<i>Donald A Dornbusch, Griffin Usie, William Huddleston, Yi Lin, Rocco P. Viggiano</i>	
Void-Suppression at Low Stack Pressures Using a Microstructurally Engineered Anode	6260
<i>Vijay D. Veeraraghavan, Chiung-Yuan Lo, Sriram S. Murali, Andrew B. Li, Cole D. Fincher, Venkat Viswanathan, Yet-Ming Chiang</i>	
Compositional Development and Characterization of Mixed Glass Former Oxy-Sulfide Materials for an Electrochemically Stable Glassy Solid Electrolyte	6261
<i>Alec Wakefield, Madison Martin, Noah Riley, Steve W Martin</i>	
Soaking Tests to Understand and Mitigate Electrolyte Decomposition Products Etching on Li- and Mn- Rich Cathode Materials	6262
<i>Bingning Wang, Chen Liao, Juan Garcia, Hakim Iddir, Yang Qin, Qijia Zhu, Qian Liu, Adam P. Tornheim</i>	
High-Performance Solid-State Li Metal Batteries Based on a Solid Polymer Electrolyte	6263
<i>Peng Wang, Claudiu Bucur, Petru Andrei</i>	
Innovative Dual Cross-Link Hydrogel for Enhanced Stability and Performance of Zinc-Ion Batteries.....	6264
<i>Peng Wang, Petru Andrei</i>	
Towards a Degradation-Free Solid-State Lithium-Sulfur Battery Using Sulfide Glassy Solid-State Electrolytes.....	6265
<i>Jacob Wheaton, Stuart Leland, Steve Martin</i>	
Improvement in Rate Capabilities of Hybrid Cathodes with through-Holed Layers of Cathode Material and Activated Carbon on Each Side of a Current Collector in Lithium-Ion Batteries	6266
<i>Mitsuru Yamada, Mika Fukunishi, Futoshi Matsumoto</i>	
Intercalation of Solvated Mg^{2+} into Graphite As a Negative Electrode.....	6267
<i>Keito Yamamoto, Atsuhito Nakahigashi, Susumu Arai, Masahiro Shimizu</i>	
Effect of Electrolyte Composition on Positive Electrode Properties of Rechargeable Aluminum-Graphite Batteries.....	6269
<i>Xue Yang, Eiji Higuchi, Masanobu Chiku, Hiroshi Inoue</i>	
Prediction of Li Ion Conductivity Using a Denoising Autoencoder and an Attention for Experimental Data.....	6272
<i>Yumika Yokoyama, Naoto Tanihata, Hayami Takeda, Masanobu Nakayama</i>	
High Performance of Li-CO ₂ Batteries Using the Oxide Solid-State Electrolyte.....	6274
<i>Baeksang Yoon, Dan Na, Dohyeon Yu, Hwan Kim, Inseok Seo</i>	

Lithium Electrodeposition Process in Various Hydrogenated Electrolyte Solutions	6276
<i>Asumi Yorita, Kazuno Maeda, Suzumi Yamada, Toshihiro Kondo</i>	
Self-Assembled N, P Co-Doped 3D Porous Carbon for High-Performance Potassium-Ion Battery Anodes.....	6278
<i>Jeehoon Yu, DaeKyom Kim, Byung-il Choi, Jooheon Kim, Youngjae Yoo</i>	
Modifying Intermolecular Interactions of Single-Ion Conducting Polymer Electrolytes through Salt Additives for Stable and High Performance Lithium Metal Batteries.....	6279
<i>Susung Yun, Puji Lestari Handayani, Naehoon Kim, U Hyeok Choi</i>	
Fabrication and Characterization of Electrochromic Devices Utilizing CVD Graphene	6281
<i>Miki Fukuzawa, Takeshi Watanabe, Sho Kuromatsu, Shinji Koh</i>	
Nitrogen-Doped Mesoporous Carbons Fabricated from Self-Assembled Block Copolymers for Electrochemical Production of H ₂ O ₂	6283
<i>Youngwon Kong, Yuta Miyamori, Kan Hatakeyama-Sato, Teruaki Hayakawa, Yuta Nabae</i>	
(General Student Poster Award Winner, 3rd Place) Designing and Evaluating Microelectrodes for Molten Salt Corrosion Electrochemistry	6285
<i>Ho Lun Chan, Harjot Singh, Valentin Romanovski, Elena Romanovskaia, Joseph Giordano, John R. Scully</i>	
Corrosion Behavior of Al-Zn Alloys Fabricated By Spark Plasma Sintering.....	6287
<i>Euihyuk Chung, Masashi Nishimoto, Shimpei Tokuda, Yoshikatsu Nishida, Izumi Muto</i>	
General Corrosion and Electrode Potential in Metal-Nanoparticle-Assisted Etching of p-Type and n-Type Silicon Using Gold and Silver.....	6288
<i>Tatsuki Hashiguchi, Kyohei Azuma, Rin Nishinaka, Ayumu Matsumoto, Shinji Yae</i>	
Multimodal Analysis of Corrosion for AA6016 Alloy at the Boundaries between Aluminum Matrix/Intermetallic Particles.....	6290
<i>Yuki Hiraoka, Yoshiharu Murase, Hideki Katayama, Yusuke Tsutsumi, Mariko Kadowaki, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
Impedance Analysis on Ant-Nest Corrosion of Copper- Effect of Phosphorus Content in Copper on Corrosion Morphology-.....	6292
<i>Takumi Kashiwa, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki, Shinichi Ito, Tetsuro Hosogi</i>	
Analysis of the Initiation of Pitting Corrosion in Al Alloys Using Model Specimens Prepared by Spark Plasma Sintering.....	6293
<i>Tomoki Katsuyama, Masashi Nishimoto, Izumi Muto</i>	
Growth of Anodic Oxide Layers on Titanium Alloys Including Noble Metal and Transition Metal.....	6294
<i>Jongwon Kim, Hiroaki Tsuchiya, Shinji Fujimoto</i>	
Anodic Dissolution of Stainless Steel Covered with Oxide Thin Film in PEFC Simulated Environment	6295
<i>Yuki Kino, Shinya Kato, Yoshinao Hoshi</i>	
Development of Corrosion Diagnosis Method for Copper with Carbon Film by Potential Difference Measurement	6297
<i>Kaito Kito, Yoshinao Hoshi, Itaru Ikeda, Motoki Kuratani, Noriyuki Tanaka</i>	
Anodic Dissolution Behavior of Si Electrode in HF Solution Containing H ₂ O ₂	6298
<i>Daiki Koketsu, Shinya Kato, Yoshinao Hoshi</i>	

Oxidative Dissolution Behavior of Synthetic Chalcopyrite with Non-Stoichiometric Compositions	6299
<i>Katsuya Komorita, Yu-ki Taninouchi, Hiroaki Nakano</i>	
EIS Study on Dissolution Behavior of Al Alloy Covered with Adhesive.....	6301
<i>Yuri Kuramoto, Yoshinao Hoshi</i>	
Reduction and Oxidation Behavior of Rust Layers Under Aqueous Solution Films with Different Thicknesses	6303
<i>Hayato Kurooka, Hiroaki Tsuchiya, Koushu Hanaki, Masato Yamashita, Shinji Fujimoto</i>	
(General Student Poster Award Winner, 2nd Place) 3D Impedance Analysis on Mg Dissolution and Its Application to Machine Learning	6304
<i>Kohki Nagaya, Yoshinao Hoshi, Yuki Yamaguchi</i>	
An Electrochemical Measurement System Using Electrolyte Gel and a Flexible Printed Three-Electrode Sticker Device for in-Situ Measurements.....	6305
<i>Yuri Okamoto, Yuma Sakaeda, Noya Loew, Naoji Matsuhisa, Kuniaki Nagamine, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
Effect of Bentonite Properties on Corrosion Behavior of Carbon Steel	6307
<i>Yuma Sakaeda, Hideki Katayama, Yusuke Tsutsumi, Mariko Kadowaki, Yoshiharu Murase, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
Comparison of Hydrogen Entry in Pure Iron Subjected to Stress in Solution.....	6309
<i>Keiji Sakuma, Hiroyuki Saito</i>	
Simple Direct Alternating Current Battery Using Iron Electrodes	6310
<i>Ryo Sato, Terumasa Kuge, Shuji Nakanishi, Yoshiharu Mukouyama</i>	
Development of Evaluation Method of Corrosion Resistance and Long-Term Durability of Stainless Steel for PEMFC	6312
<i>Shuntaro Takahashi, Yusuke Tsutsumi, Mariko Kadowaki, Hikari Watanabe, Isao Shitanda, Hideki Katayama, Masayuki Itagaki</i>	
Galvanic Corrosion Behavior of CFRP/Galvannealed Steel Coupling and Corrosion Inhibition	6313
<i>Toshiyuki Takimoto, Masashi Nishimoto, Izumi Muto</i>	
Effect of N on Pit Initiation at MnS in Type 304 Stainless Steel.....	6314
<i>Yusuke Tsuchiko, Masashi Nishimoto, Izumi Muto</i>	
Titanium Compound Coating on SUS Separator for PEFC By Screen Printing	6315
<i>Moeka Yabe, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki, Tomonari Kogure, Hitoshi Tanino</i>	
Corrosion Inhibition of Carbon Steel By Inert Gas Ultrafine Bubbles.....	6316
<i>Miri Yano, Yusuke Tsutsumi, Hideki Katayama, Takaya Akashi</i>	
Grain Boundary Passivation of Wide Bandgap Perovskites using Inorganic Potassium Lead Halides for Tandem Solar Cells.....	6318
<i>Sunwoo Kim, Yeonghun Yun, Devthade Vidyasagar, Doyun Im, Sangwook Lee</i>	
Thermodynamic Analysis of Asteroid Mining Systems: Insights from Optical Mining Bag Materials.....	6319
<i>Hadarou Sare, Dongmei Dong</i>	
Analysis on Electrocaloric Effect in (Ba, Sr)TiO ₃ Ferroelectrics Near Phase Transition Temperature	6320
<i>Yukiya Tanaka, Takashi Teranishi, Ryo Iguchi, Shinya Kondo, Akira Kishimoto</i>	

Charge Recombination and Transport Phenomena in Lead-Free Quantum Dot Solar Cells Probed by Impedance Spectroscopy	6322
<i>Fiona Treber, Elke De Grande, Ute Cappel, Erik Johansson</i>	
Synthesis and Characterization of Superparamagnetic CoPt Alloy Nanoparticles Exhibiting Magneto-Plasmonic Responses	6324
<i>Chen Zhang, Takuya Ishida, Seung Hyuk Lee, Tetsu Tatsuma</i>	
Composition of Active Oxidizing Species in Electrolyzed Sulfuric Acid for Resin Degradation of Carbon Fiber Reinforced Plastics	6327
<i>Miwa Fukuoka, Yuji Okada, Takeshi Kondo</i>	
X-Ray Fluorescence Measurements of Elements in High Matrix Solution Using Solid Substrate Having Nanoporous Structure	6328
<i>Nozomi Hibino, Kenta Hagiwara, Hidetaka Asoh</i>	
Development of Real-Time Simultaneous Determination of Hydrogen and Ammonia Using Machine Learning Techniques by a Rotating Ring-Disk Electrode Method	6329
<i>Yusuke Hiruma, Hyunho Kang, Hidenobu Shiroishi</i>	
Development of a Universal Material Characterization, Evaluation and Estimation System via Microstructure Construction	6331
<i>Yihui Huang, Tatsuya Kawada, Kazuhisa Sato</i>	
The Effect of the Nano-Sized Plastic on Activated Carbon (AC) Electrode and Ion-Exchange Membrane (IEM) in Membrane Capacitive Deionization (MCDI)	6332
<i>Boogyu Hwang, Sanghun Park</i>	
Effect of Charge during Current Recovery on Morphology of Anodic Porous Alumina Film/Substrate Interface	6333
<i>Kazuki Inagawa, Kenta Hagiwara, Hidetaka Asoh</i>	
Structural and Electronic Modification of Electrocatalyst By Se Doping for Hydrogen Evolution Coupled Selective Electrooxidation of Ethylene Glycol to Glycolic Acid	6334
<i>Daehee Jang, Minseon Park, Junbeom Maeng, Min Ho Seo, Won Bae Kim</i>	
Predicting Salt Adsorption Capacity (SAC) and Membrane Fouling in Membrane Capacitive Deionization (MCDI) Using Machine Learning	6335
<i>Soomin Kwon, Sanghun Park</i>	
Effect of Salt Bridge Formation on Proton Transport in CNTs	6336
<i>Akihiro Nakamura, Takuya Mabuchi</i>	
Water Treatment Using Boron-Doped Diamond Powder-Packed Electrolysis Flow Cell	6338
<i>Rina Nomura, Megumi Akashi, Satoshi Matsumoto, Takeshi Kondo</i>	
High Activity pH-Universal Oxygen Reduction Reaction Catalyst: Tri-Doped Porous Carbon Material Derived from Agricultural and Mining Wastes	6340
<i>Edwin Osebe Nyangau, Yuta Nakayasu, Hiroya Abe, Chie Ooka, Kazutoshi Haga, Masaru Watanabe</i>	
Electrochemical Carbon Dioxide Reduction with Heteroatom Doped Ketjenblack Catalyst Using a Fuel Cell-Type Electrolytic Cell	6342
<i>Sho Okuzaki, Kota Shinoku, Hidenobu Shiroishi, Lina Yoshida, Tsukasa Yoshida, Haruto Morinaga</i>	

Impact of Natural Organic Matter (NOM) on Nitrate Adsorption in the Membrane Capacitive Deionization (MCDI) Process	6344
<i>Hui Sang Park, Sanghun Park</i>	
Selective Electrochemical Nitrate Reduction to Ammonia on Co-Based Catalysts	6345
<i>Laura Quinones-Gomez, Cao Thang Dinh</i>	
Effect of Electrode Configuration on Bipolar Anodization of Aluminum	6346
<i>Ryunosuke Satake, Kenta Hagiwara, Hidetaka Asoh</i>	
Removal of Polyvalent Cations from Aqueous Solutions Prepared By Roasting and Dissolving Spent Lithium-Ion Batteries By Ion-Exchange Membrane Electrodialysis.....	6347
<i>Yukari Segami, Kiyoto Shin-mura, Ayumi Kitada, Kazuya Sasaki</i>	
Formation of Ordered Nanostructures By Anodization of Ag Substrates with Depression Patterns	6350
<i>Sayaka Teshima, Takashi Yanagishita</i>	
Bromine Enabled Selective Leaching of Li ⁺ from Battery Cathode Active Material for Li-Ion Battery Recycling	6352
<i>Nathalie Tuyu, Zeyu Wang, Alexandra Stiber, Richard May, Luana Canzian Llanes, Dan Steingart</i>	
Fabrication of Nanopillar Arrays with Wettability Gradients by Nanoimprinting Using Anodic Porous Alumina Molds	6353
<i>Misaki Uchimura, Runa Kitahara, Takashi Yanagishita</i>	
Preparation of Ordered Nanohole Arrays by Anodization of Textured Metal Substrates	6354
<i>Kota Umeki, Takashi Yanagishita</i>	
Evaluation of Internal Microscale Evolution of Electrochemical Devices Based on Elastic-Wave-Based Testing Methods.....	6355
<i>Wei-wei Wu, Yihui Huang, Kazuhisa Sato</i>	
Effect of Ketjenblack Content on Ammonia Electrolytic Synthesis Ability of Ru/Ketjenblack/TiO ₂ /Carbon Paper Catalysts at Low Temperature and Atmospheric Pressure	6357
<i>Taketoshi Yasuda, Hidenobu Shiroishi, Haruka Matsumoto, Mikka Nishitani-Gamo</i>	
Fabrication of Tubular Alumina through-Hole Membranes by Anodization of Al Wires.....	6359
<i>Minori Yoshinaga, Takashi Yanagishita</i>	
An Integrated Experimental-Theoretical Study on the Role of Additives in the Acid Electrodeposition of Copper	6360
<i>Marco Bonechi, Fabio Biffoli, Pierantonio Corsi, Elena Mariani, Claudia Giovani, Carla Bazzicalupi, Giovanni Zangari, Marco Pagliai, Massimo Innocenti</i>	
Co-Deposited Hydrogen in Electrodeposited Pd Films: Insights from High-Temperature Thermal Desorption Spectroscopy	6362
<i>Tomoya Hashimoto, Naoki Fukumuro, Shinji Yae</i>	
Construction of Perovskites Thin Films of Black Orthorhombic Phased Cesium Tin Iodide Using Pulsed Laser Deposition	6363
<i>Kazuha Ikeda, Akira Chikamatsu, Toshihiro Kondo</i>	
Evaluation of the Applicability of Rotating Cylindrical Anodes for Higher Speed Copper Electrolytic Refining	6365
<i>Gen Kaizuka, Masayuki Miyamoto, Kazuhiro Fukami, Kuniaki Murase</i>	

Reaction of Calcium Titanate with Al Metal in Molten CaCl_2	6367
<i>Hisayoshi Kaneda, Toshihide Takenaka</i>	
Study on Pressurized Diesel Reforming with Electrophoretic Deposition Coated Structural Catalyst	6369
<i>Yeongwoo Kim, Joongmyeon Bae</i>	
The Effect of Organic Additive on Electrochemical Fabrication of Micro-Structured Electrode for Reverse Electrodialysis	6370
<i>Eunji Kwon, In Soo Choi</i>	
Recovery of Platinum Group Metals from Spent Catalysts By Hydrometallurgy and Electrodeposition Using Ionic Liquids	6371
<i>Takumi Mishima, Masahiko Matsumiya, Yuji Sasaki</i>	
Effects of Temperature and Different Electrolysis Processes on Mg Metal Deposition in Molten Salt Electrolysis	6372
<i>Ayana Nishi, Tatsuya Sasaki, Toshihide Takenaka, Toshiharu Matsumoto, Katsushi Nagayasu</i>	
Morphological and Composition Variations of Cu-Se Thick Films Electrodeposited on Au Substrate.....	6374
<i>Collen Takaza, Philippe Allongue, Yasuhiro Fukunaka, Takayuki Homma</i>	
Electrochemical and Spectroscopic Analyses for Extracted Rh(III) Complex in Phosphonium-Based Ionic Liquids	6376
<i>Shun Tokumitsu, Masahiko Matsumiya, Yuji Sasaki</i>	
ホスホニウム系イオン液体中の抽出されたPd(II)錯体の電気化学的および分光学的分析	6377
<i>Ryosuke Tsuyuki, Masahiko Matsumiya, Yuji Sasaki</i>	
Fabrication of Near-Infrared Photodetectors with Ag-Cu-in-Te Nanorod Films as an Active Layer	6378
<i>Sho Kubota, Chisato Muto, Tatsuya Kameyama, Susumu Kuwabata, Tsukasa Torimoto</i>	
High-Entropy Materials As Solid State Electrolytes for Fluoride-Ion Batteries.....	6380
<i>Zhihao Chen, Chengchao Zhong, Ken-ichi Okazaki, Keiji Shimoda, Yuki Orikasa</i>	
Solid-State Electrochemical Oxide Pattern Formation on Au Surface Utilizing Polyelectrolyte Membrane Stamps	6381
<i>Tatsuya Fujii, Atsuki Tsuji, Junji Murata</i>	
Non-Contact Reaction of MgO and Al at High Temperature and Under Vacuum	6383
<i>Yuzuki Hamawaki, Toshihide Takenaka</i>	
Coordination and Structural Control of Trinuclear Ruthenium Clusters Using Organic Ligands at HOPG Surface	6385
<i>Aoi Inoue, Soichiro Yoshimoto, Masaaki Abe</i>	
Fluoride Ion Conduction of BiSF with Distorted PbFCl -Type Structure	6388
<i>Yukino Ito, Shintaro Tachibana, Hiroshi Kageyama, Yuki Orikasa, Chengchao Zhong</i>	
Enhanced SnO_2 FETs via Selective Area Fluorination doping process	6389
<i>SeonChang Kim, Roy ByungKyu Chung</i>	
High-Mobility Thin-Film Transistors Based on Polycrystalline GeSn Formed by Selectively Nucleated Solid-Phase Growth.....	6391
<i>Shintaro Maeda, Kenta Moto, Linyu Huang, Atsuki Morimoto, Keisuke Yamamoto, Takashi Suemasu, Kaoru Toko</i>	

Fluoride Ion Conductor of Fluorosulfide with Double-Layer Honeycomb Structure	6395
<i>Honoka Oura, Shintaro Tachibana, Shinziro Hirai, Yuki Orikasa, Chengchao Zhong</i>	
Facile and Customizable Selective Patterning of Silver Nanowires Via Solution Process for Stretchable Electrodes	6396
<i>Jinbo Shim, Jinsu Yoon, Kim Dahyun, Jong Ho Park, Yeeun Jeong, Yongtaek Hong</i>	
Anode Properties of MoSi ₂ Containing Nb and Si in MgCl ₂ -NaCl-CaCl ₂ and Influence of Electrolytic Potential on It.....	6399
<i>Riku Suehiro, Toshihide Takenaka, Toshiharu Matsumoto, Katsushi Nagayasu</i>	
Memristor-like Electrical Resistivity Behavior of SiO ₂ Nanofilms and Their Applicability in Wireless Internet of Things Communications	6401
<i>Takeru Suzuki, Kosei Ando, Takahisa Ichinohe, Seiichi Sato</i>	
Shape- and Size-Controlled Preparation of Columnar Layered Transition Metal Hydroxides Enriched with Edges.....	6403
<i>Akira Watanabe, Keisuke Muramatsu, Wataru Sugimoto</i>	
Electrochemical Intercalation of Fluoride-Ions into Oxyfluorosulfide Via Electrolyte Solution for Liquid-Based Fluoride-Ion Battery	6405
<i>Shicong Zhang, Ken-ichi Okazaki, Chengchao Zhong, Keiji Shimoda, Yuki Orikasa</i>	
A Novel Process to Achieve Enhanced Mechanical and Electrical Properties of (Mn,Co) ₃ O ₄ -Based Electrical Contact Layer for Solid Oxide Cells	6406
<i>Christabel Adjah-Tetteh, Yudong Wang, Zizhou He, Nengneng Xu, Xiao-Dong Zhou</i>	
Activity and Stability of Ruir Binary Oxides with Different Ir/Ru Ratios for Oxygen Evolution Reaction in Acidic Environmental.....	6407
<i>Akichika Banno, Mayu Negishi, Takahiro Maruyama, Takahiro Saida</i>	
Synchrotron X-Ray Micro Computed Tomography Investigation of in-Situ Deformation of PFSA Membranes for Water Electrolyzers	6408
<i>Anyka Bergeson-Keller, Mayank Sabharwal, Ahmet Kusoglu</i>	
(General Student Poster Award Winner, 3rd Place) Probing the Trends of Cation Interactions in Cation Exchange Membranes Using Raman Spectroscopy.....	6409
<i>Rebecca Beswick, Wilson A Smith</i>	
Effect of Carbon Additives on the Performance of Oxide-Based Cathode for PEFC.....	6410
<i>Bokkai Yusuke, Kanta Yamamoto, Yuu Takeuchi, Ryuji Monden, Akimitsu Ishihara, Hiroshi Fukunaga</i>	
Exploring Facile Oxygen Evolution Reaction One-Dimensional Catalyst Synthesis Using K ₂ PtCl ₆	6411
<i>Alexandra Brochoire, Dehua Hou, Shangfeng Du</i>	
Cu-Doped La _{0.3} Sr _{1.7} Fe _{1.5} Mo _{0.5} O _{6-σ} Decorated with Exsolved Nanoparticles for the Improvement of Syngas Production in Solid Oxide Electrolysers	6413
<i>Patryk Błaszczak, Agata Ducka, Aleksander Kwaśnica, Sea-Fue Wang, Beata Bochentyn, Piotr Jasiński</i>	
Direct Imaging of Electrochemical Palladium Hydride Formation from PdCoO ₂ for Highly Efficient Hydrogen Evolution Reaction	6415
<i>Luca Camuti, Se-Ho Kim, Filip Podjaski, Bettin Valeska Lotsch, Siyuan Zhang</i>	

(General Student Poster Award Winner, 3rd Place) Biomimetic Auxiliary Channels for Enhanced PEM Fuel Cell Performance.....	6416
<i>Eric Alexander Chadwick, Pranay Shrestha, Harsharaj Birendrasingh Parmar, Aimy Bazylak, Volker Paul Schulz</i>	
Development of PEMFC Catalyst Layers with Low-Pt Loading Utilizing Stream-Jet Coating Technology	6417
<i>Hyun A Cho, Sang-Ho Lee, Sung Nam Lim, Ju Young Woo, Shin Ae Song</i>	
Reversible Polymer Electrolyte Membrane Fuel Cells - Basic Membrane Electrode Assembly Design.....	6419
<i>Khajidkhand Chuluunbandi, Simon Thiele, Anna T.S. Freiberg</i>	
Fabrication of Scaled-up Protonic Ceramic Fuel Cell By Tape Casting and Co-Sintering Process	6421
<i>Daehan Chung, Joongmyeon Bae</i>	
High-Efficiency Electrocatalytic Oxygen Evolution Reaction for Water Splitting Using Vanadium-Based Transition Metal Oxides.....	6422
<i>Youness El Issmaeli, Amina Lahrichi, Bruno Georges Pollet</i>	
Comparison of O ₂ and H ₂ Crossover and Concurrent Faradaic Efficiency Loss of AEM and PEM Water Electrolysis Cells.....	6423
<i>Anna T.S. Freiberg, Manuel Hegelheimer, Simon Thiele</i>	
Promoted Electrochemical Performance of Direct Methanol Fuel Cell By Using PtRu Deposited and TiO ₂ Coated Porous Carbon Nanofibers	6425
<i>He Gao, Hirokazu Ishitobi, Nobuyoshi Nakagawa</i>	
Enhanced Performance and Durability of Ruddlesden-Popper Oxide Anodes Decorated with Fe Nanoparticles for Direct Ammonia-Fed Solid Oxide Fuel Cells	6427
<i>Jungseub Ha, Junil Choi, Junbeom Maeng, Won Bae Kim</i>	
Periodic 1D Assembly of Diblock Hetero-Nanowires As Tandem Electrocatalysts.....	6429
<i>Yang Liu, Yuxiao He, Enbo Zhu, Jin Huang, Yu Huang</i>	
Pt/C Catalyst Modified with 14-Membered Macrocyclic Complex for Oxygen Reduction Reaction.....	6431
<i>Jiawei Hu, Shinsuke Nagata, Hideo Notsu, Kan Hatakeyama-Sato, Teruaki Hayakawa, Yuta Nabae</i>	
XAS and XPS Analysis on Surface Reconstruction By Chemical Treatment of Ba _{0.5} Sr _{0.5} Co _{0.8} Fe _{0.2} O ₃	6432
<i>Yusaku Ikeda, Daisuke Shibata, Akinori Irizawa, Chengchao Zhong, Ken-ichi Okazaki, Keiji Shimoda, Yuki Orikasa</i>	
The Effect of SOFC Flow Rate Conditions on the Composition of Lean Oxygen Gas Used in Trigenation System.....	6434
<i>Naoyasu Inagaki, Iori Shimada, Mitsumasa Osada, Nobuhide Takahashi, Hiroshi Fukunaga</i>	
Development of Cos-PANI Core-Shell Structure Catalyst for Oxygen Reduction Reaction in Alkaline	6435
<i>Lee Jae Sang, Won Suk Jung</i>	
Heterointerfaced Ni-Fe ₂ O ₃ Nanoparticles Toward Water Oxidation in Alkaline Medium	6436
<i>Wooseok Jeong, Yun-Kun Hong, Don-Hyung Ha</i>	
Electrochemical Pump for Hydrogen Separation and Purification from Exhausted Gas Mixture.....	6437
<i>Hyemin Jung, Jung Min Choi, Insoo Choi</i>	

Estimation of the Active Surface Area on the Pt Catalyst during ORR Proceeds with the in-Situ XAFS Method	6438
<i>Rin Kamino, Hisazaki Kazuma, Mayu Negishi, Takahiro Maruyama, Takahiro Saida</i>	
Influence of Strong Metal-Support Interaction to the Noble Metal Catalyst for the Activity and Durability Oxygen Reduction Reaction.....	6440
<i>Chika Kano, Arisa Nimi, Takahiro Maruyama, Takahiro Saida</i>	
Effects of chloride ions present in brines on lithium recovery by electrodialysis	6442
<i>Ayumi Kitada, Kiyoto Shin-mura, Yukari Segami, Kazuya Sasaki</i>	
Facile, Fast, and Cost-Effective Fabrication of Iron-Based Electrocatalysts on Nickel Foam: Towards Highly Efficient, Stable, and Sustainable Water Splitting Performance	6444
<i>Amina Lahrachi, Youness El Issmaeli, Bruno Georges Pollet</i>	
Developing a Bipolar Membrane-Embedded Carbon-Gradient Reverse Electrodialysis (CG-RED).....	6445
<i>Dong Hyeon Lee, Hea Jung Song, In Soo Choi</i>	
Electrophoretic Deposition of High Entropy Metal Phosphate Nanoparticles for Efficient Oxygen Evolution Reaction in Alkaline Media	6446
<i>Hyeonseok Lee, Don-Hyung Ha</i>	
Perpendicularly Stacked Array of PTFE Nanofibers As a Reinforcement for Highly Durable Composite Membrane in Proton Exchange Membrane Fuel Cells.....	6447
<i>Kyung Ah Lee, Ji Hyun Lee, Chang-Kyu Hwang, Ki Ro Yoon, Yung-Eun Sung</i>	
Analysis of Binder Degradation By Measuring Fluorine Emission Rate in PEMFC MEA Made with Speek Membrane and Nafion Binder	6448
<i>Mihwa Lee, Donggeun Yoo, Kwonpil Park</i>	
Ultrathin Pt Nanowire Network Monolayer for Oxygen Reduction Reaction.....	6449
<i>Yang Liu, Enbo Zhu, Jin Huang, Ao Zhang, Yu Huang</i>	
Plasma-Induced Oxygen Vacancy-Controlled CuO _x /N,Se Co-Doped Porous Carbon for Boosted Nitrate Reduction to Green Ammonia	6450
<i>Junbeom Maeng, Daehee Jang, Jungseub Ha, Won Bae Kim</i>	
Oxygen Electrocatalysis of Perovskite Oxyfluorides in Alkaline Media.....	6452
<i>Kanata Masutani, Kazuhiko Matsumoto, Ryo Sakamoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Synthesis and Electrochemical Properties of Fluorine-Containing Hydrophobic Ionic Liquid Gels with Low-Molecular Gelators	6456
<i>Kenta Matsumoto, Yuki Fujita, Takumi Sugiura, Junya Yamaguchi, Nonoka Suzuki, Yuki Morita, Ban-Peng Cao, Qiang Xiao, Hiroaki Okamoto</i>	
The Relationship between d-Band Center of Pt in Pt-Based Catalysts and Catalytic Activity for Methanol Oxidation in an Alkaline Aqueous Solution	6459
<i>Tamaki Matsumura, Mika Fukunishi, Futoshi Matsumoto</i>	
Electrochemical Extraction of Methanol and Hydrogen from Biomass Under Mild Conditions and Estimation of Their Potential Abundance By Semantic Segmentation.....	6461
<i>Yuto Morimoto, Taiga Yamazaki, Yuto Nakamura, Masahiro Nagao, Takashi Hibino</i>	
Influence of a Tiny Quantity of Ir in Ruir Binary Oxide for Oxygen Evolution Reaction Using the Model Electrode Method.....	6463
<i>Mayu Negishi, Akichika Banno, Takahiro Maruyama, Takahiro Saida</i>	

Synthesis and Characterization of Layered Double Hydroxide Nanoparticles As Anion Conductors Toward Anion Exchange Membrane Water Electrolysis	6465
<i>Hirofumi Oosato, Shigenori Mitsushima, Yoshiyuki Kuroda</i>	
Advancing Pt-Based Catalysts for alkaline Hydrogen Evolution: Achieving Boron Doping using 2D Borophene.....	6467
<i>Minseon Park, Sojin Bae, Won Bae Kim, Min Ho Seo</i>	
Nature Derived Gas Diffusion Layers for Proton Exchange Membrane Fuel Cells	6469
<i>Harsharaj Birendrasingh Parmar, Aimy Bazylak</i>	
Unveiling the Structure-Activity Relationship for Cobalt-Based Spinel Oxide with Superior Acidic Oer Performance.....	6470
<i>Heting Pu, Haotian Liu, Soonho Kwon, William A Goddard, Yu Huang</i>	
Simulation for Elucidating a Formation Mechanism of 6-Coordinated Si in Phosphate Glass	6472
<i>Arata Sakakibara, Tomoyuki Tamura</i>	
Effect of Pore-Forming Agent on Concentration Overpotential of Carbon-free Pt Electrodes for PEFC	6474
<i>Haruki Segawa, Takaaki Sasaki, Iori Shimada, Mitsumasa Osada, Nobuhide Takahashi, Hiroshi Fukunaga</i>	
Tailoring Electrolyzer Catalyst Layer Morphology Via Pore Network Modelling.....	6475
<i>Tess Seip, Jason Keonhag Lee, Nima Shaigan, Marius Dinu, Khalid Fatih, Aimy Bazylak</i>	
Numerical Analysis of Patterned Gas Diffusion Layers with Hydrophilic Surface in Proton Exchange Membrane Fuel Cell	6476
<i>Dong Kun Song, Jung Soo Kim, Seung Heon Lee, Gyeong Won Min, Do Young Jung, Heeyun Lee, Seoung Jai Bai, Gu Young Cho</i>	
Effect of Surface Fluorination on LaNiO ₃ Perovskite-Type Oxides for Oxygen Evolution Reactions	6477
<i>Ayane Sugimura, Daisuke Shibata, Yasuhiro Inada, Chengchao Zhong, Keiji Shimoda, Ken- ichi Okazaki, Yuki Orikasa</i>	
Formation of Atomically Thin Co Layer on Ru Nanoparticles through Surface Limited Redox Replacement of Underpotentially Deposited Zn	6478
<i>Kyota Suyama, Keisuke Muramatsu, Wataru Sugimoto</i>	
Improving Hydrogen Production for the Future: How Does an Ionomer's Morphology and Chemistry Effect the Ionomer-Catalyst Interface in Water-Electrolysis?	6480
<i>Alana Blaise Sweeney, Andrew M. Herring, Mei-Chen Kuo</i>	
Ionomer Adsorption Study during Electrochemical Reaction of Pt Electrode Surfaces Using Electrochemical Quartz Crystal Microbalance.....	6482
<i>Kaede Takei, Takatoshi Noguchi, Satoshi Fujita, Katsumi Chikama, Toshihiro Kondo</i>	
Influence of Dopant Atoms in TiO ₂ for Its Electron Structure and Activity of Oxygen Reduction Reaction in Acidic Environmental.....	6484
<i>Haruto Tsuzuki, Takahiro Maruyama, Takahiro Saida</i>	
Evaluation of the Anode Characteristics of a Solid Oxide Fuel Cell for Electric Aircraft Propulsion	6486
<i>Shuya Wada, Hironori Nakajima, Keiichi Okai, Takayuki Kojima</i>	

Operando Fluorescence Spectroscopy Setup for Radical Detection during Proton Exchange Membrane Water Electrolysis Operation.....	6487
<i>Leonard Winkelmann, Arghyadeep De, Stefan Meier, Maximilian Wagner, Lukas Löttert, Philipp Martschin, Maximilian Maier, Yanik Herrmann, Thomas Boehm, Simon Thiele</i>	
Ab-Initio and Experimental Study of Oxygen Reduction Reaction (ORR) Activity and Durability of Ordered PtNi/C Catalysts	6489
<i>Seung-min Woo, Song Jin, Min Ho Seo</i>	
Ionomer-Free Electrocatalyst of Sulfonate Chemical Group Introduced on Carbon As a Proton-Conductive Support for PEMFC	6490
<i>Dan Wu, Ryo Yoshihara, Tsuyohiko Fujigaya</i>	
Study on Catalyst and Binder Degradation Analysis during Electrode Degradation Using EIS in PEMFC.....	6492
<i>Donggeun Yoo, Kwonpil Park</i>	
Study on the Distribution of Platinum within Polymer Membrane during MEA Degradation in PEMFC.....	6493
<i>Donggeun Yoo, Sohyeong Oh, Sunggi Jung, Junsu Lee, Kwonpil Park</i>	
Elucidation of Structural Phase Diagram of $\text{SrFeO}_{3-\delta}$ -Evidence of Miscibility Gap and Effect of Structural Phase Transition on Electrical Conduction Behavior.....	6494
<i>Taizo Yoshino, Kosuke Shido, Shiho Hatano, Takayuki Sugimoto, Takuya Hashimoto, Motoyuki Matsuo</i>	
Influence of Alkaline-Metals Co-Doping on Luminescence Intensity of Er-Doped Up-Conversion Oxide Phosphors.....	6496
<i>Tomoki Koikawa, Mikhail G. Brik, Tomoyuki Yamamoto</i>	
Size and Composition Dependent Photoelectrochemical Properties of Cu-Ga-S Quantum Dots	6498
<i>Goro Komada, Shuto Ofuji, Makoto Tozawa, Kazutaka Akiyoshi, Tatsuya Kameyama, Tsukasa Torimoto</i>	
Enhancement of Near-IR Photoluminescence of Ag_8GeS_6 Quantum Dots Via Semiconductor Shell Coating	6500
<i>Masayuki Soto, Nurmanita Rismaningsih, Junya Kubo, Kazutaka Akiyoshi, Tatsuya Kameyama, Norikazu Fujihira, Tsukasa Torimoto</i>	
Optimization of Proton Source for Li-Mediated Nitrogen Reduction with Water.....	6501
<i>Kotaro Suzuki, Yasuyuki Kondo, Romain Tort, Matthew Spry, Ifan Stephens, Yu Katayama, Yuki Yamada</i>	
Bioelectrochemical and Structural Study on Catalytic Mechanism of Membrane-Bound Fructose Dehydrogenase	6503
<i>Eole Fukawa, Keisei Sowa, Yuki Kitazumi, Osamu Shirai</i>	
Bioelectrochemical Characterization of a Molybdenum-Containing Aldehyde Dehydrogenase Variant Deleting Its Cytochrome C Subunit	6505
<i>Konatsu Ichikawa, Taiki Adachi, Keisei Sowa, Yuki Kitazumi, Osamu Shirai</i>	
Construction of a Novel Stable Electron Transfer Protein for the Creation of Artificial Direct Electron Transfer Enzymes.....	6507
<i>Niina Inukai, Eiichiro Takamura, Hiroaki Sakamoto, Takenori Satomura, Shinichiro Suye</i>	

Evaluation of Phase Transition Behavior of Nonionic Surfactant Solutions Containing Electrolytes by Rheo-Impedance Measurement	6509
<i>Ryo Kotsubo, Noya Loew, Taku Ogura, Yoshifumi Yamagata, Keisuke Miyamoto, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
Chemical Versus Electrochemical Oxidation of Triclosan: Reaction Yield and Selectivity	6510
<i>Tyra Lewis, Sanela Martić</i>	
Enhanced Electrochemical Hydrogenation of Aromatic Hydrocarbons in Alkaline Electrolytes.....	6512
<i>Brianna Markunas, Joshua David Snyder</i>	
Flexible Array of Rigid Porous Microneedles for Bioelectric Skin Patch	6513
<i>Mirai Matsuura, Soichiro Tottori, Sae Ichinose, Tomoya Nomaguchi, Haechang Cho, Gaobo Wang, Matsuhiko Nishizawa</i>	
Structural and Electrochemical Discussion on Direct Electron Transfer-Type Bioelectrocatalysis By Membrane-Bound Fructose Dehydrogenase from <i>Gluconobacter Japonicus</i>	6515
<i>Yohei Suzuki, Keisei Sowa, Kenji Kano, Yuki Kitazumi, Osamu Shirai</i>	
Facet-Dependent Photocatalytic Deposition of Metal Nanoparticles Onto Rutile TiO ₂	6517
<i>Tomoki Akiyama, Haruki Nagakawa, Tetsu Tatsuma</i>	
(General Student Poster Award Winner, 3rd Place) Ion Transport across Bilayer Lipid Membranes Formed in the Porous Membrane Filter.....	6519
<i>Weipai Chuang, Keisei Sowa, Yuki Kitazumi, Osamu Shirai</i>	
Electrochemically Engineered Domain: Nickel–Hydroxide/Nickel Nitride Composite for Alkaline HER Electrocatalysis.....	6521
<i>Chikaodili E. Chukwuneke, Kenta Kawashima, Hao Li, Raul A. Marquez, Yoon Jun Son, Lettie A Smith, Hugo Celio, Graeme Henkleman, Charles Buddie Mullins</i>	
Experimental Insights into the Reaction Intermediates-Selectivity Relationship for Electrochemical CO ₂ Reduction Reaction.....	6523
<i>Shunsuke Hayase, Asuka Morinaga, Qing Su, Hiroki Yoshimura, Ryansu Sai, Yasuyuki Kondo, Mamoru Ishikiriya, Masaya Ibe, Yu Katayama, Yuki Yamada</i>	
Innovative Approach to Fish Stress Analysis: AI-Enhanced Biosensing and Accelerometer Integration	6525
<i>Yusuke Horiguchi, Haiyun WU, Masataka Murata, Haruto Matsumoto, Hitoshi Ohnuki, Takayuki Shibata, Hideaki Endo</i>	
Novel Spherical Copper Two-Component Self-Curing Adhesive for Heterogeneous Bonding Conductive Thermal Device Application with Carbon Dioxide Reduction.....	6527
<i>Yen-Shuo Chen, Yi-Cheng Huang, Ching Chang Lin, Ching-Chung Ko, Jung-Chin Lin</i>	
Analysis of Redox Properties of Polyphenols with Resorcinol Moiety.....	6529
<i>Sorai Kanno, Yuito Kitagawa, Mayo Shioji, Kenji Matsumoto, Tomohiko Kuwabara, Hitoshi Mizuguchi, Yoshio Tsujino, Toshiyuki Osakai, Hiroki Hotta</i>	
One Scale to Rule them All – A Unified Redox Scale.....	6531
<i>Timo Kienzle, Tanja Oppermann, Valentin Radtke, Ingo Krossing</i>	
Analysis of Redox Reaction of Caffeic Acid Under UV Irradiation By Electrochemical Measurements.....	6533
<i>Yuito Kitagawa, Sorai Kanno, Kenji Matsumoto, Yoshio Tsujino, Toshiyuki Osakai, Hiroki Hotta</i>	

Atomic-Scale Direct Observation on Cation Antisite Intermixing and Identification of Charge Conduction Mechanism in p-Type CuBi_2O_4 for Photocathodes.....	6535
<i>Younghwan Lim, Hyun Joon Jung, Ki Hyun Park, Chang Hyun Park, Sung-Yoon Chung</i>	
Effect of Oxygen Content on Free-Sulfur Defects in Sodium Phosphosilicate Oxy-Sulfide Glasses	6537
<i>Keaton Maier, Alec Wakefield, Nick Tader, Steve Martin</i>	
Electrochemical Activities of Mesoporous Pt Particles/MWCNT/ITO Electrodes for Hydrogen Generation and Glycerol Oxidation.....	6538
<i>Naoki Sugiyama, Mariko Matsunaga</i>	
Enhanced Design: A User-Friendly 3D-Printed Electrochemical Cell for In Situ Raman Spectroscopy	6540
<i>Antony Elvin Fernando Milton, Kenta Kawashima, Yoon Jun Son, Woo Je Chang, Ziqing Wang, Raul A. Marquez, Roger F. Rose, Delia J Milliron, Charles Buddie Mullins</i>	
Catalytic Properties of FeCoNi Alloy Electrode for Alkaline Water Electrolysis Prepared by Anodizing	6541
<i>Tomoya Nagao, Sho Kitano, Mana Iwai, Koji Fushimi, Hiroki Habazaki</i>	
(General Student Poster Award Winner, 3rd Place) Solar CO_2 Reduction to Form Green Syngas Employing a Black Cu_3VS_4 Photocathode Utilizing a Whole Range of Visible Light.....	6543
<i>Kengo Nagatsuka, Yuichi Yamaguchi, Akihiko Kudo</i>	
Search for Stable Structures of Adsorbed Molecules on Material Surfaces by Bayesian Optimization.....	6545
<i>Shogo Nogami, Tomoyuki Tamura, Masayuki Karasuyama</i>	
Structural and Electrochemical Characterization of Nanographenes Adlayers on Au(111).....	6548
<i>Yui Obara, Soichiro Yoshimoto</i>	
Electrochemical Detection of Single Gel Particles via Nanoimpact.....	6550
<i>Haneul Park, Jun Hui Park</i>	
Mixed Oxy-Sulfide Glassy Solid Electrolyte Material: Understanding Structural Compositions through the Use of Raman Spectroscopy, Infrared Spectroscopy, and X-Ray Diffraction	6551
<i>Noah Riley, Alec Wakefield, Keaton Maier, Steve W Martin</i>	
Local Probe Measurements for Designing More Efficient Photocatalyst Systems	6552
<i>William D. H. Stinson, Daniel V. Esposito</i>	
Electrochemical and in Situ Raman Spectroscopic Characterization of Ni Surface Using Inorganic Shell-Isolated Nanoparticle-Enhanced Raman Spectroscopy.....	6553
<i>Akihiro Suzuki, Katsuyoshi Kakinuma, Akiyoshi Kuzume</i>	
Exploring C-C Coupling Conditions of Metalloporphyrins on Au(III) Using Pulsed Power Application	6555
<i>Nene Takao, Daisuke Yamashita, Douyan Wang, Takao Namihira, Soichiro Yoshimoto</i>	
(General Student Poster Award Winner, 3rd Place) Synthesis of Nylon Resin Precursor Materials from Biomass-Derived Pyruvate with Photo/Biocatalyst Using Visible Light As an Energy Source	6557
<i>Kyosuke Yamada, Yutaka Amao</i>	
The Influence of Fluoroalkyl Group in Alcohol on the Interaction between Alcohols and Fluoride Ion.....	6559
<i>Nozomi Yoneda, Kohei Tada, Kazuhiko Matsumoto</i>	

Simultaneous Production of Ammonia and Hydrogen By P/L Reaction Utilizing Efficient Atomic Nitrogen Generation By Dielectric Beads-Filled Packed-Bed Dielectric Barrier Discharge.....	6560
<i>Souma Yoshida, Naoya Murakami, Yoshiyuki Takatsuji, Tetsuya Haruyama</i>	
Hybrid Photocatalytic System with Enzymes and Pt Nanoparticles for Visible Light-Controlled Hydrogen Production from Formate Under Mild Conditions.....	6562
<i>Shintaro Yoshikawa, Yutaka Amao</i>	
Direct Observation of Intermediates for Carbon Dioxide Reduction Reaction in Concentrated Electrolytes.....	6564
<i>Hiroki Yoshimura, Shunsuke Hayase, Asuka Morinaga, Ryansu Sai, Yasuyuki Kondo, Yu Katayama, Yuki Yamada</i>	
Advancements in Paper-Based Electrochemical Sensors for Cancer Biomarker Detection.....	6566
<i>Makeiyala Begay, Katelyn Wilson, Justin Platero, Joshua Platero, Dallen Plummer, Wayant Billey, Thiagarajan Soundappan</i>	
Development of Simple and Rapid Evaluation for Channel Proteins Embedded in Cell-Derived Vesicles Based on Dielectrophoretic Manipulation.....	6567
<i>Ryu Eguchi, Yushi Isozaki, Masato Suzuki, Tomoyuki Yasukawa</i>	
Au paste electrode to increase the intensity of cathodic electrochemiluminescence.....	6569
<i>Ayane Endo, Koki Kubota, Takahiro Ito-sasaki, Kumi Y. Inoue</i>	
Design of Organic-Inorganic Hybrids and Application to Electrochemical Sensor for Detecting Food Poisoning Bacteria.....	6571
<i>Satohiro Itagaki, Shintaro Tsuda, Yojiro Yamamoto, Yasuhiro Sadanaga, Hiroshi Shiigi</i>	
Distinctive Electrochemical Surface-Enhanced Raman Spectroscopy and Its Application for DNA-Sensor.....	6573
<i>Donghyeon KIM, Nakyung Kim, Jihee Kim, Mijeong Kang</i>	
Electrochemical Detection of DNA in Agriculture Using Lamp-Based Amplification.....	6574
<i>Ana Miodrag Kupresanin, Zoran Miroslav Pavlovic, Ljiljana Sasic Zoric, Marija Pavlovic, Mila Djisalov, Teodora Knezic, Ljiljana Janjusevic, Nikola Kanas, Milinko Peric, Ivana Gadjanski</i>	
A Biosensor for miRNA Detection By Electrorotation Rate of Glass Micro-Rods Modified with Peptide Nucleic Acid.....	6576
<i>Misato Matsumoto, Yushi Isozaki, Masato Suzuki, Tomoyuki Yasukawa</i>	
Electrochemical Properties of Copper Oxides Obtained from Layered Copper Hydroxide Acetate for Nonenzymatic Glucose Sensing.....	6579
<i>Yuki Nomura, Norihiro Togasaki, Daisuke Takimoto, Sho Hideshima</i>	
Development of a Magnetic Bead-Based Electrochemical Sandwich Assay to Investigate Inflammatory Cytokines in an Instrumented Fetal Membrane on-a-Chip.....	6581
<i>Hannah A. Richards, Olivia E. Owens, Jacklyn E. Martin, David E. Cliffl</i>	
Fabrication of Screen-printed Glucose Biosensors Using NHS-based Grafted Porous Carbons.....	6582
<i>Takeru Sakai, Takeru Samori, Noya Loew, Seiya Tsujimura, Kosuke Ino, Hikari Watanabe, Isao Shitanda, Masayuki Itagaki</i>	
Multi-Modal Luminescence Manometer Based on Cr ³⁺ Ions Luminescence in Doped Li ₃ Sc ₂ (PO ₄) ₃	6584
<i>Maja Szymczak, Julia Jaśkielewicz, Marcin Runowski, Junpeng Xue, Sebastian Mahlik, Lukasz Marciniak</i>	

Cell Culture Device with a Porous Membrane Electrode for in Situ Electrochemical Measurement of Glucose Uptake and Extracellular pH 6586
Yoshinobu Utagawa, Kosuke Ino, Hiroya Abe, Hitoshi Shiku

Neural Network-Based Electrochemical Sensors for Free Chlorine Detection 6587
Mayano Yamanouchi, Takeshi Watanabe, Masakazu Dohi, Yasufumi Yokoshiki, Nobuyuki Sanari, Isao Hiyama, Yasuyuki Takazawa, Takanori Enomoto, Takashi Tokuda, Shinji Koh

Z02-A LIFETIME OF CLEANING THE PLANET: IN HONOR OF AKIRA FUJISHIMA

Z02 - Honorary Symposium Session 1

(Invited) Introduction/History of Fujishima Laboratory Research 6589
Larry A. Nagahara, Mani Manivannan

(Invited) Mesoscale Design of Semiconductor Photoelectrodes for Energy Conversion 6591
Nathan S Lewis

(Invited) Photocatalytic Water Splitting to Form Green Hydrogen 6592
Akihiko Kudo

(Invited) Silicon a New Electrode for Electrochemical Reduction of Nitrates Comparison with Boron-Doped Diamond 6593
Claude Levy-Clement, Stephane Bastide

(Invited) Analogy between Semiconductor Junction Devices and Single Ion, Solid Polymer Electrolytes 6597
Paul Kohl

(Invited) The Tortuous History of Photoelectrochemistry and Photocatalysis after the Fujishima Discoveries 6598
Krishnan Rajeshwar

(Invited) Application of Structured Electrodes for Photoelectrochemistry Under Dark 6599
Tomohiro Fukushima, Masaki Itatani, Kei Murakoshi

Z02 - Honorary Symposium Session 2

(Invited) Shooting Electron Bullets through Catalyst Pores 6600
Hrvoje Petek

(Invited) Control of Magnetic and Electric Polarization via Electron Transfer in Molecular Crystals 6601
Osamu Sato

(Invited) Independent Control of Visible and NIR Transmission through Electrochromic Windows with Green Solid Electrolyte 6602
Pailin Ngaotrakanwawat, Anan Junsukhon

(Invited) Titanium Dioxide Photocatalyst Treated by in-Liquid Plasma and Its Application in Environmental Purification 6603
Chiaki Terashima, Hiroshi Uetsuka, Katsuya Teshima

Z02 - Poster Session

Efficient Carboxylic Acid Synthesis through Electrolytic Reduction of CO ₂ using BDD Electrodes	6604
<i>Ryoya Okamura, Toya Inaba, Keizo Ishihara, Kai Takagi, Yuvaraj Mohan Hunge, Sujun Guan, Hiroshi Uetsuka, Chiaki Terashima</i>	
Magnetic Separation of Metal Ions Using Wet High-Gradient Magnetic Separation.....	6606
<i>Petru Andrei, Anthony Igboanugo, Pranathi Brungi, Nicholas Carlstedt</i>	
First-Principles Study of Photocatalytic Activity of Amorphous TiO ₂ Surface	6607
<i>Sota Tamura, Motayasu Kato, Tomoyuki Tamura, Mitsuhiro Honda</i>	
Optical Properties of Disulfiram and Its Metal Complexes Toward the Photoactive Anticancer Effects.....	6609
<i>Ayumi Saitsu, Riku Sakai, Hanna Tsuruoka, Yuya Terashima, Yasuo Nakayama, Taisei Yamada, Sujun Guan, Yuvaraj Mohan Hunge, Chiaki Terashima</i>	

Z02 - Honorary Symposium Session 3

(Invited) The Impact of "Fujishima-Honda Effect" in the Early Stage of Photoelectrochemical Research	6611
<i>Kohei Uosaki</i>	
(Invited) Photocatalytic Semiconductor Membrane with Directional Flow of Charge Carriers.....	6612
<i>Prashant V Kamat</i>	
(Invited) The Inestimable Contributions of Akira Fujishima to Science and Technology: Photoelectrochemistry, Photocatalysis and Photoinduced Superhydrophilicity	6613
<i>Donald A. Tryk</i>	
(Invited) Stabilization and Activation of Cuprous Oxide Photocathodes for Effective Reduction of Carbon Dioxide	6615
<i>Pawel Kulesza, Ewelina Szaniawska, Ewelina Seta-Wiaderek, Iwona A. Rutkowska</i>	
(Invited) Semiconductor-Sensitized Thermal Cell: Difference of Photoexcitation and Thermal Excitation	6616
<i>Sachiko Matsushita</i>	
(Invited) Zinc Oxide and Titanium Oxide Photocatalysts Fabricated By Electrochemical Methods and Boron Doped Diamond Electrochemistry.....	6617
<i>Sachio Yoshihara</i>	
(Invited) All-Solid-State Z-Scheme Overall Water-Splitting Photocatalysts for Effective Utilization of Solar Energy.....	6619
<i>Hiroshi Irie</i>	

Z02 - Honorary Symposium Session 4

(Invited) Preparation of AuCu Alloy Nanoparticles Via Ionic Liquid/Metal Sputtering for Electrocatalytic CO ₂ Reduction.....	6621
<i>Tsukasa Torimoto, Ryuichi Ito, Kazutaka Akiyoshi, Tatsuya Kameyama, Yuhki Yui, Masaya Ibe</i>	
(Invited) Roles of Oxygen Vacancies in Photocatalysts for Nitrogen Reduction to Ammonia.....	6623
<i>Nianqiang Wu</i>	

(Invited) Rapid Photochemical Control of Surface Chemical Properties and Molecular Assembly Formation Using Novel Amphiphilic Lophine Dimers	6624
<i>Hideki Sakai, Kenichi Sakai, Masaaki Akamatsu</i>	
(Invited) Influence of Hydrogen Bond Networks on Hydrogen Evolution Reaction in Aqueous Systems.....	6626
<i>Katsuyoshi Ikeda</i>	
Inorganic Photocatalysts for Accelerating Water Dissociation in Bipolar Membrane Interfaces	6627
<i>Julia D. Lenef, Todd G Deutsch</i>	
Titanium Dioxide and Reduced Graphene Oxide-Based Materials for Photocatalytic Water Decontamination	6628
<i>Anna Dotti, Andrea Basso Peressut, Roberto Matarrese, Saverio Latorrata</i>	
Surface and Defect Modulation via Flame Technique for Efficient Photoelectrochemical Water-Splitting	6630
<i>Runfa Tan, YooJae Jeong, In Sun Cho</i>	
Unique Photothermal Materials for Cutting-Edge Interfacial Solar Desalination and Wastewater Purification	6632
<i>Shridharan Tatachari Santhanagopalan, Lee Ho, Runfa Tan, Arumugam Sivanantham, In Sun Cho</i>	
One-Pot Solution Synthesis of Bulk and Surface Simultaneously Optimized BiVO ₄ Photoanode with Enhanced Photoelectrochemical Water-Splitting Activity.....	6634
<i>Sung Won Hwang, Yoo Jae Jeong, In Sun Cho</i>	

Z02 - Honorary Symposium Session 5

(Invited) Synthesis, Arrangement, and Applications of 2D Oxide Nanosheets	6635
<i>Nobuyuki Sakai, Takayoshi Sasaki</i>	
(Invited) Plasmonic Photocatalysis and Near-Field Photocatalysis.....	6636
<i>Tetsu Tatsuma</i>	
(Invited) Integrated Model System of the Biological Membrane on Solid Surface.....	6638
<i>Kenichi Morigaki</i>	
(Invited) Synthesis of TiO ₂ -Based for Electrocatalysts CO ₂ Reduction Using in-Liquid Plasma Method and Control of Their Reduction Properties	6640
<i>Kai Takagi, Yuvaraj Mohan Hunge, Izumi Serizawa, Chiaki Terashima</i>	
(Invited) Boron-Doped Diamond Powder/Nanoparticle Materials for Electrochemical Applications	6643
<i>Takeshi Kondo</i>	
(Invited) Cleaning Coastal Environments through Electrocatalysis and Electromicrobiology	6645
<i>Ryuhei Nakamura</i>	

Z02 - Honorary Symposium Session 6

(Invited) Electrocatalytic Activity and Structural Insights of Cu, Fe and N-Doped Mesoporous Carbon for the Oxygen Reduction Reaction.....	6646
<i>Masaru Kato, Hiroyuki Asakura, Ichizo Yagi</i>	

(Invited) Practical Evaluation Methods of Photocatalyst from Dialogue with the Industry	6647
<i>Tsuyoshi Ochiai, Kengo Hamada</i>	

Z03-INNOVATION IN ELECTROCHEMISTRY

Z03 - Digital Only Presentations

(Digital Presentation) Clarification Using Jarzynski's Equality for Three Unexplained Experimental Results in SOFCs Using Sm-Doped Ceria Electrolytes Based on Wagner's Equation	6649
<i>Tomofumi Miyashita</i>	

Z03 - Innovations in Electrochemical Systems at NSF

(Invited) Innovation in Electrochemical Systems: Recent NSF Trends, Investments and Research Opportunities	6651
<i>Carole J Read</i>	

Z03 - Innovations in Catalysis and Electron Transfer

(Invited) Combining Biocatalysis with Electrochemistry for Organic Electrosynthesis	6652
<i>Shelley D. Minteer</i>	
(Invited) Human-AI-Robotics Collaboration for Catalysts Discovery in Electrochemical Reactions.....	6653
<i>Zhen Zhang, Zhichu Ren, Ju Li</i>	
(Invited) Innovation in Heterogeneous Catalysis: Constructive Interference at the Interface	6654
<i>Johna Leddy</i>	
(Invited) Investigation of Borophene-like 2D Materials for Electronic Devices and Electrocatalysis	6655
<i>Tetsuya Kambe, Nicole Sallier de la Tour, Shigeyuki Masaoka</i>	
(Invited) Tunable Electronic Charge Transport in Hexammineruthenium Hexacyanometallate Double-Complex Crystals and Their Prussian Blue Analog Thermal Decomposition Products	6656
<i>Donald "Donny" A Robinson, Srikrishna Sagar, Maryam Ghotbi, Mohana Shivanna, Michelle A Smeaton, Andrew J Ferguson, Lance M Wheeler, Katherine L Jungjohann, Perla B Babuena, Albert Alec Talin</i>	
(Invited) Mechanical Suppression of Electron Transfer in Subnanometer Confinement between MXene Layers	6657
<i>Yuan Zhang, Danzhen Zhang, Lingyi Bi, Ming Lei, De-en Jiang, Yury Gogotsi</i>	
(Invited) Innovation in Electrocatalysis: Magnetoelectrocatalysis	6658
<i>Johna Leddy</i>	

Z03 - Innovations in Methods 1

(Invited) Active Learning Strategies for Teaching Electrochemical Energy Conversion and Storage: Insights from Science Clubs	6660
<i>Raul A. Marquez, Emma Kalokowski, Michael Espinosa, Victor Hugo Ramos-Sanchez, Luis Carlos Rodriguez, Fernando Valenzuela de la Rosa, C Buddie Mullins</i>	

(Invited) Change of Paradigms in Solid State Electrochemistry: Double-Cait Experiments with Two Clouds of Charge Carriers Representing Ideal Reversible Electrodes.....	6662
<i>Karl-Michael Weitzel</i>	

Z03 - Innovations in Methods 2

(Invited) Ferrofluid Lithography: Advances in Cu(In,Ga)Se ₂ Alkaline Electroplating	6664
<i>Marco Piccinni, Davide Carrea, Davide Peddis, Gary Friedman, Diego Colombara</i>	
(Invited) Development of a New Experimental Procedure for Investigating the Dielectric Behaviour of Water Confined within Nanocavities.....	6665
<i>Daniel P Whitt, Jean-Sébastien G Bouillard, Neil T Kemp</i>	
(Invited) Characterization of Polymers Using Electrochemical Analysis and Thermoamperometry	6666
<i>Byung-Kwon Kim</i>	
(Invited) Dependency of Calcination Temperature on Silanol and Bubble Concentration in High-Purity Synthetic Quartz Powder	6667
<i>Jiho Choi, Woo-Guk Lee, Tae-Hun Shim, Jinsub Park, Jea-Gun Park</i>	

Z03 - Innovations in Electrochemical Energy

(Invited) Generation Integrated Energy Storage (GIES) System Is a New and Specific Category of Integrated Energy System Consisting of a Generator and an Energy Storage System	6669
<i>Gefayehu Tameru Yeserah</i>	
(Invited) Synthesizing Cathode Precursors Directly from Lithium Ores.....	6670
<i>Shilong Wang, Nathan Szymanski, Yan Zeng, Gerbrand Ceder</i>	
(Invited) A Non-Stabilized Supersaturated High-Energy-Density Storage Concept for the Redox Flow Battery and Its Demonstration in an H ₂ -V System	6671
<i>Spencer T Mouron, Trung Van Nguyen</i>	
(Invited) A Versatile Reference Electrode for Lithium Battery Use	6673
<i>Brian Koch, Jing Gao, Anne Zhang, Taylor R. Garrick</i>	
(Invited) Insights from Cyclic Voltammetry into Active Sites on Carbon Electrodes and Their Importance in Vanadium Flow Batteries and Other Electrochemical Applications.....	6674
<i>Maria Al Hajji Safi, Andrea Bourke, D. Noel Buckley, Robert P. Lynch</i>	

Z03 - Poster Session

Battery Recycling: Policy and Technology Trends.....	6675
<i>Jae Eun Shin</i>	
Challenges for Hybrid Water Electrolysis to Replace the Oxygen Evolution Reaction on an Industrial Scale	6677
<i>Till Kahlstorf, Niklas Hausmann, Prashanth Menezes</i>	
A Study on Predicting Material Properties Based on Defects in Fine Metal Mask with Electroplating Process	6679
<i>Changmin Pyo, Jihoon Shin, Jaewoong Kim</i>	

Carbothermal Shock Derived Electrochemical Regeneration of Spent Biochar for Remediation of Ciprofloxacin Contaminated Water 6681
Hye-Jin Hong, Gyubin Lee, Hyeon SU Jeong

Direct Surface Sulfidation of Layered Metal Hydroxides Using Bis(trimethylsilyl) Sulfide 6683
Keisuke Muramatsu, Wataru Sugimoto

Z03 - Innovations and US Patents

(Invited) Patent Citation Analysis to Guide Research and Innovation 6684
Earl Jennings Taylor

Z03 - Innovations for the Environment

(Invited) Electrocatalysis for Complete Aqueous Defluorination of Perfluorooctane Sulfonate 6685
Astrid M Mueller

(Invited) Automation of Electrochemical Water Desalination Processes Using Artificial Intelligence Technologies 6687
Moon Son

(Invited) Innovative Alkaline Electrolyzer for Electrochemical Production of Ammonia from Diverse Waste Nitrogen 6688
Wenzhen Li, Yifu Chen, Hengzhou Liu, Shuang Gu

(Invited) Comparison of Tree-Based Model with Deep Learning Model for Predicting Effluent pH and Concentration in an Electrochemical Water Desalination Process 6689
Zahid Ullah, Nakyeong Yun, Moon Son

(Invited) A Random Forest-Based Artificial Intelligence Model Decoupling Ion Concentrations from Effluent Conductivity in Capacitive Deionization: Implications and Future Directions 6690
Hoo Kim, Byeongwook Choi, Zahid Ullah, Nahyeon Jeong, Kyung Hwa Cho, Sanghun Park, Sang-Soo Baek, Moon Son

(Invited) Two-Dimensional Covalent Organic Framework-Based Nanocomposite Membranes with Light-Enhanced Properties for Efficient Blue Energy Harvesting 6691
Chia-An Lung, Li-Hsien Yeh

(Invited) Electrochemical TEMPO-Mediated Oxidation of Cellulose Nanocrystals: Gaining a Mechanistic Understanding of a New Non-Conventional Process 6692
Alexandra Rousseau, Emily Cranston, David P. Wilkinson

(Invited) Enhancing PET Plastic Circularity and Decarbonization through Process Electrification and Intensification 6694
Samantha Bunke, Hyejin Yu, Hyun Gil Cha, William Abraham Tarpeh, Donghyeon Kang

Author Index