

# **236th ECS Meeting 2019**

Meeting Abstracts 2019-02

Atlanta, Georgia, USA  
13 – 17 October 2019

Volume 1 of 5

ISBN: 978-1-5108-9643-7

**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© (2019) by The Electrochemical Society  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2019)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## VOLUME 1

<b>THE IMPACT OF COAL MINERAL MATTER (ALUMINA AND SILICA) ON CARBON ELECTROOXIDATION IN THE DIRECT CARBON FUEL CELL</b> .....	1
<i>Simin Moradmand, Jessica A Allen, Scott W Donne</i>	
<b>FABRICATION AND CHARACTERIZATION OF MICROTUBULAR SOLID OXIDE CELL SUPPORTED WITH NANOSTRUCTURED MIXED CONDUCTING PEROVSKITE FUEL ELECTRODE</b> .....	2
<i>Yun Gan, Chunlei Ren, Myongjin Lee, Chunyang Yang, Xingjian Xue</i>	
<b>FABRICATION AND CHARACTERIZATION OF HIGH PERFORMANCE INTERMEDIATE TEMPERATURE MICRO-TUBULAR SOLID OXIDE FUEL CELLS</b> .....	3
<i>Chunlei Ren, Yun Gan, Myongjin Lee, Chunyang Yang, Robert Green, Xingjian Xue</i>	
<b>DEVELOPING NEW CHEMISTRIES FOR REDOX FLOW BATTERIES</b> .....	4
<i>T. Leo Liu</i>	
<b>BISPYRIDINYLDENES: TUNABLE ANOLYTES FOR ORGANIC REDOX FLOW BATTERIES</b> .....	5
<i>Fahad Alkhayri, C. Adam Dyker</i>	
<b>THERMAL STABILITY OF CATHOLYTE DURING OPERATION OF VANADIUM FLOW BATTERIES</b> .....	6
<i>Daniela Oboroceanu, Nathan Quill, D. Noel Buckley, Robert P. Lynch</i>	
<b>NOVEL METAL OXIDE ELECTRODE MATERIALS FOR VANADIUM REDOX FLOW BATTERY APPLICATION</b> .....	8
<i>Anteneh Wodaje Bayeh, Yu-Chung Chang, Ting-Ruei Liu, Hsueh-Yu Chen, Hsin-Chih Huang, Daniel Manaye Kabtamu, Chen-Hao Wang</i>	
<b>DELAMINATION OF REINFORCED MEMBRANES IN VANADIUM REDOX BATTERY CELLS</b> .....	9
<i>Mike L. Perry, Robert M. Darling, Steve Buelte, Derek Weber</i>	
<b>MODIFYING CARBON FELT ELECTRODES BY POLY(O-TOLUIDINE) TO ENHANCE THE PERFORMANCE OF ALL-VANADIUM REDOX FLOW BATTERIES</b> .....	11
<i>Laszlo Eifert, Kerstin Koble, Roswitha Zeis</i>	
<b>EFFECTIVE ADDITION OF THE ACTIVE SITES FOR REDOX FLOW BATTERY BY THE ELECTRON-BEAM IRRADIATION</b> .....	13
<i>Hirokazu Ishitobi, Honoka Doki, Kosuke Oba, Ryusuke Obata, Shunya Yamamoto, Nobuyoshi Nakagawa</i>	
<b>(BATTERY DIVISION POSTDOCTORAL ASSOCIATE RESEARCH AWARD SPONSORED BY MTI CORPORATION AND THE JIANG FAMILY FOUNDATION) SYNCHROTRON CHARACTERIZATION TO INFORM DESIGN FOR CATHODE MATERIALS IN LI/NA BATTERIES</b> .....	15
<i>Linqin Mu, Feng Lin</i>	
<b>9 KW VRFB EXPERIMENTAL FACILITY: HIGH CURRENT POLARIZATION TESTS AND ENERGY ANALYSES</b> .....	16
<i>Massimo Guarnieri, Andrea Trovo', Piorgiorgio Alotto</i>	
<b>TOWARDS BOTTOM-UP ENGINEERED ELECTRODE MICROSTRUCTURES FOR REDOX FLOW BATTERIES</b> .....	18
<i>Antoni Forner-Cuenca, Charles Tai-Chieh Wan, Remy Jacquemond, Cees Weijers, Kevin Tenny, Katharine Virginia Greco, Fikile R. Brushett</i>	
<b>UNDERSTANDING THE INTERPLAY BETWEEN ELECTROLYTE VELOCITY DISTRIBUTION AND CURRENT DISTRIBUTION IN VANADIUM FLOW BATTERY ELECTRODE</b> .....	20
<i>Tugrul Yavuz Ertugrul, Jacob Houser, Michael Daugherty, Douglas Aaron, Matthew M. Mench</i>	
<b>ELECTROLYTE FLOW IN VANADIUM REDOX FLOW BATTERIES</b> .....	22
<i>Nico Bevilacqua, Laszlo Eifert, Rupak Banerjee, Kerstin Koble, Tomas Farago, Marcus Zuber, Aimy Bazylak, Roswitha Zeis</i>	
<b>EFFECT OF ELECTRODE STRUCTURE AND ELECTROLYTE FLOW ON PERFORMANCE OF REDOX FLOW BATTERY</b> .....	24
<i>Sota Osanai, Yutaka Tabe, Takemi Chikahisa</i>	
<b>MIXTURES OF IONIC LIQUID AND ORGANIC ELECTROLYTE WITH IMPROVED SAFETY AND ELECTROCHEMICAL PERFORMANCE WITH NANOSTRUCTURED SILICON-ANODE FOR LI-ION BATTERIES</b> .....	26
<i>Gaind P. Pandey, Lamartine Meda, Jun Li</i>	
<b>LONG LIFE FULLY REVERSIBLE LITHIUM-CO<sub>2</sub> BATTERY</b> .....	27
<i>Alireza Ahmadipardari, Larry A Curtiss, Amin Salehi-Khojin</i>	
<b>EFFECT OF SWELLING IN ELECTROLYTE POLYMER BINDER POSITIVE ELECTRODE ON THE CHARACTERISTICS OF LITHIUM-SULFUR BATTERIES</b> .....	28
<i>Elena Kuzmina, Liana Dmitrieva, Dmitrii Durasov, Tatyana Prosochkina, Elena Karaseva, Vladimir Kolosnitsyn</i>	
<b>PETROLEUM COKE AS ACTIVE MATERIAL OF NEGATIVE ELECTRODE FOR LITHIUM-SULFUR BATTERIES</b> .....	31
<i>Elena Kuzmina, Nadezhda Chudova, Liana Dmitrieva, Alexey Ivanov, Elena Karaseva, Vladimir Kolosnitsyn</i>	
<b>POSSIBILITY OF USING PETROLEUM COKE AS REDUCING AGENT FOR V<sub>2</sub>O<sub>5</sub> IN SOLID-PHASE SYNTHESIS OF LI<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub></b> .....	33
<i>Elena Kuzmina, Ilgam Isyngulov, Nadezhda Chudova, Tatyana Prosochkina, Elena Karaseva, Vladimir Kolosnitsyn</i>	

<b>OPERANDO ENERGY DISPERSIVE X-RAY DIFFRACTION (EDXRD) OF BULK CATHODE MATERIAL FOR MULTIVALENT SECONDARY BATTERIES</b> .....	35
<i>Matthew A Kim, Ankur Jadhav, Brendan E. Hawkins, John Okasinski, Joshua Gallaway</i>	
<b>LOW AND HIGH VOLTAGE LI-ION BATTERIES USING DINITRILE BASED ELECTROLYTES</b> .....	37
<i>Fouad Ghamouss, Douaa Farhat, Daniel Lemordant</i>	
<b>MATHEMATICAL MODELING OF PRIMARY ZN/MNO<sub>2</sub> ALKALINE BATTERIES</b> .....	38
<i>Xiaotong Chadderdon</i>	
<b>ELASTOMERIC POLYETHYLENE GLYCOL-B-POLYPROPYLENE GLYCOL-B-POLYETHYLENE GLYCOL DIMETHACRYLATE POLYMER NETWORK AS POLYMER ELECTROLYTE MEMBRANE FOR LI-ION BATTERIES</b> .....	39
<i>Suresh T Narute, Juan C Marin Angel, Kevin Cavicchi, Thein Kyu</i>	
<b>DESIGN, SYNTHESIS, AND CHARACTERIZATION OF A WATER-STABLE LI<sup>+</sup> ION-CONDUCTING SULFONATE-BASED NEUTRAL METAL-ORGANIC FRAMEWORK</b> .....	40
<i>Dillip K. Panda, Andrei Palukoshka, Faysal Ibrahim, Sourav Sourav</i>	
<b>EFFECT OF MOLECULAR STRUCTURES ON THE CHARGE-DISCHARGE PERFORMANCE FOR ORGANIC REDOX FLOW BATTERY</b> .....	41
<i>Akihiro Ohira, Takashi Funaki, Erika Ishida, Yukari Sato</i>	
<b>MODELING THE CHARGE AND DISCHARGE BEHAVIORS OF AN AGM LEAD-ACID BATTERY</b> .....	43
<i>Jaewoo Lee, Boram Koo, Chee Burm Shin</i>	
<b>OUTSTANDING LOW-TEMPERATURE PERFORMANCE OF STRUCTURE-CONTROLLED CRUMPLED GRAPHENE BATTERY ANODE BASED ON SURFACE-CONTROLLED CHARGE STORAGE MECHANISM</b> .....	44
<i>Michael J Lee, Byeongyong Lee, Seung Woo Lee</i>	
<b>MODELING OF THE THERMAL BEHAVIORS OF AN ULTRACAPACITOR AND COMPARISON WITH MEASUREMENT DATA</b> .....	45
<i>Boram Koo, Chee Burm Shin, Ha-Young Lee, Jongrak Choi</i>	
<b>CAN ENERGY STORAGE PACK HYBRIDIZATION IMPROVE THE BEST THEORETICALLY-ACHIEVABLE BATTERY STATE ESTIMATION ACCURACY?</b> .....	46
<i>Timothy Cleary, Chu Xu, Hosam Fathy</i>	
<b>NEW INSIGHTS ON THE SURFACE AND STRESS BEHAVIOR OF MANGANESE-OXIDE AS OXYGEN REDUCTION REACTION CATALYST IN ALKALINE ELECTROLYTE</b> .....	48
<i>Or Keisar, Yair Ein-Eli, Yair Cohen</i>	
<b>CONDUCTIVITY, THERMAL AND ELECTROCHEMICAL STABILITY OF SOLUTIONS OF LITHIUM BIS(OXALATO) BORATE IN SULFOLANE</b> .....	50
<i>Ludmila Sheina, Elena Kuzmina, Elena Karaseva, Alexey Ivanov, Vladimir Kolosnitsyn</i>	
<b>TRANSITION METALS ION BEHAVIOR OF CATHODE MATERIALS FOR LI ION BATTERY BY ELECTRON BEAM IRRADIATION IN SCANNING TRANSMISSION ELECTRON MICROSCOPY</b> .....	52
<i>Jae-Hyun Shim, Young-Min Kim</i>	
<b>COMPUTATIONAL STUDY OF K/MG ADSORPTION ON (110) MO<sub>2</sub> (M= MN, TI, V) SURFACES</b> .....	53
<i>Khomotso P Maenetja, Phuti E Ngoepe</i>	
<b>HYDROTHERMALLY PREPARED MNSE<sub>2</sub> NANOSHEETS AS A NOVEL ELECTRODE MATERIAL FOR SUPERCAPACITOR</b> .....	54
<i>Shaolan Wang, Xian Jiaotong University</i>	
<b>SIMULATIONS OF A NEW FLOW CHANNEL DESIGN OF BIPOLAR PLATES FOR A FUEL CELL TYPE PEM BY CFD</b> .....	55
<i>Locksley Fabian Castaneda Ulloa, Jose Luis Nava, Tzayam Perez-Segura, Tatiana Romero</i>	
<b>A NEW DEVELOPED FLUORINATED ELECTROLYTE FOR ANODE-FREE LITHIUM METAL BATTERY</b> .....	56
<i>Tesfaye Tekla Hagos, Wei -Nien Su, Bing-Joe Hwang</i>	
<b>EFFECT OF HYDROXYAPATITE COATINGS ON PHOTOCATALYTIC CHARACTERISTICS OF TITANIUM DIOXIDE PHOTOANODE</b> .....	57
<i>Htoo Nay Wunn, Motoaki Morita, Shinichi Motoda</i>	
<b>9 KW VRFB EXPERIMENTAL FACILITY: EARLY RESULTS FROM A MULTICHANNEL ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY</b> .....	58
<i>Massimo Guarnieri, Andrea Trovo'</i>	
<b>A TRI-ELECTRODE CONFIGURATION FOR ZINC-AIR BATTERIES USING POLY(ACRYLIC ACID) TO ENHANCE CYCLING PERFORMANCE</b> .....	60
<i>Wendy Tran, Hyun-Joong Chung, Douglas G Ivey</i>	
<b>ENHANCED PERFORMANCE OF COBALT VANADIUM OXIDE UPON DOPING WITH SULFUR FOR HYBRID SUPERCAPACITOR APPLICATION IN AQUEOUS AND NON-AQUEOUS MEDIUM</b> .....	61
<i>Gyan Prakash Sharma, Prashant Kumar Gupta, Raj Ganesh Pala, Sri Sivakumar</i>	
<b>EXPLORING THE EFFECT OF STRONG COMPLEXING AGENTS AS ELECTROLYTE ADDITIVES ON ANODE PERFORMANCE IN MG-AIR PRIMARY BATTERIES</b> .....	62
<i>Bahram Vaghefinazari, Daniel Hoeche, Sviatlana V Lamaka, Darya Snihirova, Linqian Wang, Min Deng, Mikhail L Zheludkevich</i>	
<b>LASAGNA-INSPIRED ZN ANODE DESIGN FOR HIGH-ENERGY RECHARGEABLE AQUEOUS BATTERIES</b> .....	63
<i>Yamin Zhang, Yu Yan, Zhuo Zhou, Nian Liu</i>	

<b>ION-SIEVING CARBON NANOSHELLS FOR DEEPLY RECHARGEABLE ZN-BASED AQUEOUS BATTERIES</b> .....	65
<i>Yutong Wu, Nian Liu</i>	
<b>HIGHLY ENERGY-DENSE, RECHARGEABLE, ALKALINE BIRNESSITE-ZINC BATTERIES FOR GRID-SCALE APPLICATIONS</b> .....	66
<i>Gautam Ganapati Yadav</i>	
<b>DESIGN OF PREFERENTIALLY FACETED ZINC TO IMPROVE THE RECHARGEABILITY OF ALKALINE BATTERIES</b> .....	69
<i>Ehsan Faegh, Benjamin Ng, Dillon Hayman, William E. Mustain</i>	
<b>RECHARGEABLE SOLID-STATE COPPER SULPHIDE CATHODES FOR ALKALINE BATTERIES</b> .....	70
<i>Timothy N. Lambert, Jonathon Duay, Maria Kelly, Ivan Pineda-Dominguez</i>	
<b>RECENT ADVANCES IN LOW-COST, HIGHLY EFFICIENT BI-FUNCTIONAL OXYGEN ELECTROCATALYSTS FOR HIGH-PERFORMANCE ZINC-AIR BATTERIES</b> .....	72
<i>Gyutae Nam, Jaephil Cho, Meilin Liu</i>	
<b>CARBON-FREE NICO<sub>2</sub>O<sub>4</sub>-BASED BIFUNCTIONAL AIR ELECTRODE FOR METAL-AIR BATTERY APPLICATION</b> .....	73
<i>Jiahong Zhu</i>	
<b>MOLECULARLY ENGINEERED NANOPOROUS MEMBRANES FOR SAFETY ENHANCED BATTERY SEPARATORS</b> .....	74
<i>Weibing Xing</i>	
<b>RAPID STATE-OF-HEALTH (SOH) DETERMINATION AND SECOND-LIFE GRADING OF AGED AUTOMOTIVE BATTERY MODULES VIA ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY (EIS)</b> .....	76
<i>Oliver James Curnick, Jonathan Edward Harrison Sansom, John Harper, Maria Tsiantsouri, Rohit Bhagat, David Greenwood</i>	
<b>ENERGY STORAGE DESIGN USING PHYSICS-BASED BATTERY MODELS IN HYBRID POWER SYSTEMS WITH UNCERTAINTIES</b> .....	77
<i>Mayur P Bonkile, Venkatasailanathan Ramadesigan, Santanu Bandyopadhyay</i>	
<b>PV-WIND-BATTERY HYBRID POWER SYSTEMS: POWER MANAGEMENT CONTROL STRATEGY USING P2D BATTERY MODEL</b> .....	79
<i>Mayur P Bonkile, Venkatasailanathan Ramadesigan</i>	
<b>EFFECTS OF NATIVE SOLID ELECTROLYTE INTERPHASE LAYER FORMATION OF CU ELECTRODE ON LITHIUM ELECTRODEPOSITION/DISSOLUTION PROCESSES</b> .....	81
<i>Toshihiro Kondo, Yukina Uchino, Kumar Sai Smaran, Ayano Ohama, Asako Niida, Kaho Nishihara</i>	
<b>STRESS-CONTROLLED THREE-DIMENSIONAL PHASE EVOLUTION IN LITHIUM IRON PHOSPHATE</b> .....	82
<i>Kaiqi Yang, Ming Tang</i>	
<b>DIFFUSIONAL MOTION OF SOLVATED IONS IN SUPER-CONCENTRATED ELECTROLYTES</b> .....	84
<i>Kee Sung Han, Vijayakumar Murugesan, Lin Ma, Kang C. Xu, Karl T Mueller</i>	
<b>THE PIEZOELECTROCHEMICAL COUPLING FACTOR AND MECHANICAL ENERGY HARVESTING</b> .....	86
<i>Juliane Irine Preimesberger, Craig B. Arnold</i>	
<b>A REVERSIBLE ELECTROCHEMICAL SIDE REACTION OF LI ELECTRODEPOSITION / DISSOLUTION USING N(SO<sub>2</sub>)X(SO<sub>2</sub>)Y ANION-CONTAINING MOLTEN SALT (X, Y = F, CF<sub>3</sub>)</b> .....	87
<i>Hikaru Sano, Keigo Kubota, Zyun Siroma, Susumu Kuwabata, Hajime Matsumoto</i>	
<b>DUAL STORAGE MECHANISM INDUCED HIGH CAPACITY CATHODE FOR RECHARGEABLE ALUMINIUM ION BATTERY</b> .....	89
<i>Vijaya Kumar Saroja Ajay Piriya, Sundara Ramaprabhu, Kamaraja M</i>	
<b>CONTROLLING THE ELECTROCHEMICAL PROPERTIES OF SPINEL INTERCALATION COMPOUNDS</b> .....	90
<i>Sanjeev Krishna Kolli, Anton Van Der Ven</i>	
<b>PLASTIC CRYSTAL POLYMER ELECTROLYTES WITH ANION-TRAPPING BORON MOIETIES FOR ROOM TEMPERATURE ALL-SOLID-STATE SODIUM BATTERIES</b> .....	91
<i>Suli Chen, Haiying Che, Fan Feng, Yimei Yin, Zi-Feng Ma</i>	
<b>EFFECTIVE SHIELDING OF SODIUM POLYSULFIDES USING TWO-DIMENSIONAL CERAMIC BASED POLYMER MEMBRANE FOR AMBIENT TEMPERATURE SODIUM SULFUR BATTERY</b> .....	92
<i>Sundara Ramaprabhu, Vijaya Kumar Saroja Ajay Piriya, Arunkumar Rajamani, Kamaraj M</i>	
<b>A METAL-AIR SCAVENGER FROM HYDROGEL ELECTROLYTES FOR POWERING ROBOTICS</b> .....	93
<i>Min Wang, Unnati Joshi, James Henry Pikul</i>	
<b>(KEYNOTE) BETA ALUMINA - PRELUDE TO A REVOLUTION IN SOLID STATE ELECTROCHEMISTRY</b> .....	95
<i>M. Stanley Whittingham</i>	
<b>(BATTERY DIVISION TECHNOLOGY AWARD) MATERIALS AND INTERFACE DESIGN OF LITHIUM METAL ANODES</b> .....	96
<i>Yi Cui</i>	
<b>(KEYNOTE) SOLID STATE IONICS; APPLYING WHAT I LEARNED FROM BOB HUGGINS TO ADVANCING ELECTROCHEMICAL ENERGY CONVERSION AND STORAGE</b> .....	97
<i>Eric D. Wachsman</i>	
<b>(INVITED) PROGRESS IN SOLID STATE ION CONDUCTORS- HAVE YOU MADE ANY SIGNIFICANT IMPACT?</b> .....	98
<i>Venkataraman Thangadurai</i>	

<b>(INVITED) SYNTHESIS, CHARACTERIZATION, AND INVESTIGATION OF NON-ARRHENIUS BEHAVIOR IN ANTI-PEROVSKITE ION CONDUCTORS</b> .....	99
<i>Fei Wang, Ping-Chun Tsai, Yiliang Li, Stephanie L. Eiler, Seoung-Bum Son, Yet-Ming Chiang</i>	
<b>(INVITED) INSIGHTS INTO PROTON TRANSPORT IN SUPERPROTONIC SOLID ACIDS</b> .....	101
<i>Sossina M Haile</i>	
<b>ROLE OF LI DISTRIBUTION IN HIGH LI CONDUCTIVITY OF <math>Li_x(GE,P)_3S_{12}</math></b> .....	102
<i>Yoyo Hinuma, Takeshi Yajima, Satoshi Hori, Rui Iwasaki, Zenji Hiroi, Ryoji Kanno</i>	
<b>THE CHEMICAL STABILITY OF NASICON AS A SOLID ELECTROLYTE FOR SEAWATER BATTERIES</b> .....	103
<i>Tae-Ung Wi, Chanhee Lee, Fahmi Rahman, Wooseok Go, Min-Ho Kim, Su Hwan Kim, Daeyeon Hwang, Sang Kyu Kwak, Youngsik Kim, Hyun-Wook Lee</i>	
<b>UNDERSTANDING AND ENGINEERING INTERFACIAL TRANSPORT IN <math>K\beta\text{-Al}_2\text{O}_3</math>-ALUMINA AT ROOM TEMPERATURE</b> .....	105
<i>Antonio C Baclig, Geoff McConohy, Nathan Kong, William C Chueh</i>	
<b>PORE STRUCTURE ANALYSIS OF SILICA-GEL SOLID NANOCOMPOSITE ELECTROLYTES WITH SURFACE CONDUCTION ENHANCEMENT</b> .....	106
<i>Akihiko Sagara, Hiroki Yabe, Xubin Chen, Brecht Put, Thomas Hantschel, Maarten Mees, Hidekazu Arase, Yukihiro Kaneko, Akira Uedono, Philippe M. Vereecken</i>	
<b>(INVITED) THIN FILM BATTERIES STILL HAVE INTERESTING LESSONS FOR LITHIUM BATTERIES</b> .....	109
<i>Nancy J. Dudney, Andrew S. Westover, Gabriel M. Veith, Miaofang Chi, Sergiy Kalnaus</i>	
<b>LITHIUM METAL ELECTRODE - UNDERSTANDING ITS UNIQUE CHARACTERISTICS AND FUNCTIONS</b> .....	110
<i>Gorakh Pawar, Boryann Liaw, Eric J. Dufek</i>	
<b>THE PYRIDINIC-TO-GRAPHITIC CONFORMATIONAL CHANGE OF NITROGEN OF GRAPHITIC CARBON NITRIDE ON LITHIUM COORDINATION DURING LITHIUM PLATING</b> .....	111
<i>Yuju Jeon, Sujin Kang, Se Hun Joo, Sung O Park, Minjae Cho, Sang Kyu Kwak, Hyun-Wook Lee, Hyun-Kon Song</i>	
<b>(INVITED) FROM LIQUIFIED GAS ELECTROLYTES TO SOLID STATE ELECTROLYTES - FAST ION CONDUCTION AT EXTREME TEMPERATURES</b> .....	112
<i>Ying Shirley Meng</i>	
<b>(INVITED) ELECTROCHEMICAL ENERGY HARVESTING SYSTEMS FROM A MECHANICAL PERSPECTIVE</b> .....	113
<i>Seok Woo Lee</i>	
<b>(INVITED) HARNESSING THE ARCHITECTURAL POWER OF IONICS: ELECTROLYTICALLY FORMED BATTERIES</b> .....	114
<i>Kimberly Scott, Anna Halajko, Glenn G Amatucci</i>	
<b>(INVITED) PRUSSIAN BLUE ANALOGUES MATERIALS FOR ENERGY STORAGE APPLICATIONS</b> .....	115
<i>Mauro Pasta</i>	
<b>NEW MEMBRANES FOR REDOX FLOW BATTERIES BASED ON HETEROPOLY ACID-POLYMER COMPOSITES</b> .....	117
<i>Douglas I. Kushner, Andrew R Motz, Mei-Chen Kuo, Ahmet Kusoglu, Andrew M. Herring, Adam Z. Weber</i>	
<b>IMPROVING THE IONIC CONDUCTIVITY OF <math>Li_{15}P_4S_{16}Cl_3</math> BY DOPING</b> .....	118
<i>Zhantao Liu, Xingfeng He, Shan Xiong, Jianming Bai, Yifei Mo, Sylvio Indris, Hailong Chen</i>	
<b>SIDE-VIEW OPERANDO MICROSCOPY OF GRAPHITE ANODES TO UNDERSTAND KINETIC HYSTERESIS</b> .....	119
<i>Sujin Kang, Su Jeong Yeom, Hyun-Wook Lee</i>	
<b>INNATE VOIDS OF HALLOYSITE ENABLING HIGH-VOLUMETRIC DENSITY ANODES FOR SILICON/GRAPHITE COMPOSITES</b> .....	120
<i>Su Jeong Yeom, Cheol Min Lee, Sujin Kang, Jungki Ryu, Hyun-Wook Lee</i>	
<b>(KEYNOTE) A SOLID STATE ELECTROCHEMIST'S VIEW ON THE REQUIREMENTS FOR SOLID STATE ELECTROLYTES AND ELECTRODES FOR ALL-SOLID-STATE BATTERY APPLICATIONS</b> .....	121
<i>Werner J. F. Weppner</i>	
<b>(INVITED) A CRITICAL VIEW ON THE APPLICATION OF DISTRIBUTION OF RELAXATION TIMES</b> .....	122
<i>Bernard Abraham Boukamp</i>	
<b>(INVITED) "DECREPITATION" AND MECHANICAL DEGRADATION: IN SITU INVESTIGATION TO UNDERSTAND CHEMO-MECHANICAL STABILITY IN BATTERIES</b> .....	123
<i>Matthew T McDowell</i>	
<b>FUNDAMENTAL STUDIES OF ION CONDUCTING GLASSES: THE COMBINED USE OF NMR AND IMPEDANCE SPECTROSCOPES TO CREATE MODELS OF THE CONDUCTION ENERGY LANDSCAPES IN SOLID ELECTROLYTES</b> .....	124
<i>Steve W Martin, Steven Kiniec, Ananda Shastri, Deborah Watson</i>	
<b>(INVITED) INTERFACE ENGINEERED LITHIUM GARNETS FOR LITHIUM-METAL BATTERIES</b> .....	125
<i>Murugan Ramaswamy</i>	
<b>(INVITED) GARNET-BASED ADVANCED SOLID-STATE BATTERIES</b> .....	126
<i>Liangbing Hu</i>	
<b>LI PLATING/STRIPPING REACTIONS ON <math>Li_{6.6}La_3Ta_{0.4}Zr_{1.6}O_{12}</math></b> .....	127
<i>Munekazu Motoyama, Yuki Tanaka, Takayuki Yamamoto, Yasutoshi Iriyama</i>	
<b>(INVITED) HIGH-THROUGHPUT SCREENING OF SOLID-STATE LI-ION CONDUCTORS USING LATTICE-DYNAMICS DESCRIPTORS</b> .....	128
<i>Sokseitha Mui, Yang Shao-Horn</i>	

<b>DISCOVERY OF NOVEL OXIDES AND SULFIDES SOLID STATE IONIC CONDUCTORS FOR ALL-SOLID-STATE LI-ION BATTERIES</b> .....	129
<i>Shan Xiong, Zhantao Liu, Xingfeng He, Yifei Mo, Hailong Chen</i>	
<b>AB INITIO COMPUTATION DESIGN FOR FAST IONIC CONDUCTORS</b> .....	131
<i>Yifei Mo</i>	
<b>PARADIGMS OF STRUCTURAL, CHEMICAL, AND DYNAMICAL FRUSTRATION IN SUPERIONIC CONDUCTORS</b> .....	132
<i>Brandon C. Wood, Kyoung Kweon, Joel Basile Varley, Patrick Shea, Nicole Adelstein</i>	
<b>(INVITED) SOLID STATE ELECTROCHEMISTRY AND FUTURE BATTERY CHEMISTRIES</b> .....	133
<i>Kristina Edstrom, Christofer Sangeland, Jonas Mindemark, Daniel Brandell</i>	
<b>(INVITED) UNDERSTANDING ROLE OF LI SUBSTITUTION AT ALKALI-SITE OF <math>\text{Na}_x[\text{Fe}_{0.5}\text{Mn}_{0.5}]\text{O}_2</math> AS CATHODE FOR SODIUM ION BATTERIES</b> .....	135
<i>Ji Eun Wang, Young Hwa Jung, Do Kyung Kim</i>	
<b>(INVITED) STRUCTURE PROPERTIES CORRELATION IN MXENES: 2D ANODIC MATERIALS FOR SODIUM ION BATTERIES</b> .....	136
<i>Riccardo Ruffo, Antonio Gentile, Stefano Marchionna, Marcella Balordi, Federico M. Cernuschi</i>	
<b>(INVITED) NANOCREVASSE-RICH CARBON FIBERS FOR SCALABLE PRODUCTION AND STABLE PERFORMANCE OF LITHIUM AND SODIUM METAL ANODES</b> .....	138
<i>Min-Ho Kim, Wooseok Go, Tae-Ung Wi, Youngsik Kim, Hyun-Wook Lee</i>	
<b>HOW NOT TO CHASE THE WRONG RABBITS: MENTORSHIP AND SCIENCE LESSONS FROM BOB HUGGINS</b> .....	140
<i>Candace K. Chan</i>	
<b>CRITICAL PARAMETERS AND THEIR INFLUENCE ON HYBRID SUPERCAPACITOR WITH SILICON BASED ANODE</b> .....	141
<i>Fang Dai, Robert Lapierre, Mei Cai</i>	
<b>ELECTROCHEMICAL ENERGY STORAGE PROPERTIES OF HYDROGEN TITANATES AS A FUNCTION OF INTERLAYER STRUCTURAL PROTONATION</b> .....	142
<i>Simon Fleischmann, Veronica Augustyn</i>	
<b>INVESTIGATION OF ELECTROCHEMICAL MECHANISMS IN REDOX-ACTIVE POLYMER THIN-FILMS</b> .....	144
<i>Quinton Wyatt, Matthias J Young</i>	
<b>POLYMORPHIC STRUCTURE OF <math>1\text{T}'\text{-Mo}_6\text{Te}_6</math> NANOPATES AND FEW-ATOMIC-LAYERED <math>2\text{H-MoTe}_2</math> FOR EFFICIENT PSEUDOCAPACITOR</b> .....	145
<i>Sachin A. Pawar, Dipali S. Patil, Donghwan Kim, Rochelle Lee, Taewan Kim, Jae Cheol Shin</i>	
<b>INVESTIGATING THE VARIOUS COMPOSITE CATHODE CONFIGURATIONS COMBINING BATTERY AND CAPACITOR MATERIALS IN AN INTERNAL HYBRID CAPACITOR</b> .....	146
<i>Annadanesh Shellikeri, Jim P. Zheng, Qiang Wu</i>	
<b>INTERCALATION PSEUDOCAPACITANCE IN <math>\text{M-Nb}^{\text{V}}\text{-O}</math> COMPOUNDS AS ANODES ENABLING FAST-CHARGING IN LITHIUM-ION BATTERIES</b> .....	148
<i>Frederico Augusto Carneiro, Robson Monteiro</i>	
<b>ELECTRODEPOSITED <math>\text{MoS}_2</math> AND <math>\text{WS}_2</math> THIN FILMS FOR PSEUDOCAPACITANCE STUDIES</b> .....	149
<i>Ian Ivar Suni, Bamidele Daniel Falola, Li Fan</i>	
<b>BOOSTING ENERGY DENSITY OF AN ALL SOLID-STATE ASYMMETRIC SUPERCAPACITOR BASED ON <math>\text{RGONi}(\text{OH})_2</math> AND ACTIVATED CARBON VIA MODEL GUIDED DESIGN</b> .....	151
<i>Man Chen Huang, Hsun-Yi Chen</i>	
<b>ENHANCED IONIC AND ELECTRONIC TRANSPORT IN NANO-TiO<sub>2</sub>/SHEARED CNT COMPOSITE ELECTRODE FOR HIGH PERFORMANCE <math>\text{Na}^+</math> INSERTION-BASED PSEUDOCAPACITORS</b> .....	153
<i>Sainan Luo, Tao Yuan, Luke P Soule, Junhe Yang, Meilin Liu, Shiyou Zheng</i>	
<b>INSIGHTS INTO THE SURFACE SCIENCE, STORAGE MECHANISM AND ELECTROCHEMICAL PHASE EVOLUTION OF <math>\text{MoS}_2/\text{CNT}</math> HYBRID ELECTRODES FOR SUPERCAPACITIVE APPLICATION</b> .....	154
<i>Pranjala Tiwari, Ramesh Chandra</i>	
<b>(INVITED) STUDY OF ION ADSORPTION-TRANSFER MECHANISMS IN NANOPOROUS CARBON ELECTRODES: APPLICATION TO SUPERCAPACITORS</b> .....	156
<i>Yih-Chyng Wu, Wan-Yu Tsai, Patrice Simon, Pierre-Louis Taberna</i>	
<b>GRAVIMETRIC AND VOLUMETRIC CHANGES OF CARBON ELECTRODES IN ELECTROCHEMICAL CAPACITORS WITH AQUEOUS ELECTROLYTES</b> .....	157
<i>Anetta Platek, Jakub Menzel, Paulina Bujewska, Elzbieta Frackowiak, Krzysztof Fic</i>	
<b>EFFECT OF TIME, TEMPERATURE AND POTENTIAL ON PRE-CONDITIONING OF SUPERCAPACITORS</b> .....	158
<i>Alexander John Roberts</i>	
<b>(INVITED) STORING ELECTRONS AND HOLES IN THE ELECTROLYTE - A NEW OPPORTUNITY FOR SUPERCAPACITORS</b> .....	159
<i>Charlotte Bodin, Steven Le Vot, Pierre-Louis Taberna, Patrice Simon, Frederic Favier, Olivier Fontaine</i>	
<b>GRAPHENE-BASED ASSEMBLIES AS ELECTRODE MATERIALS FOR SUPERCAPACITORS</b> .....	160
<i>Florence Duclairoir, Harish Banda, Sandy Perie, Barbara Daffos, Pierre-Louis Taberna, Lionel Dubois, Olivier Crosnier, Patrice Simon, Daniel Lee, Gael De Paepe</i>	

<b>CAPACITY ENHANCEMENT OF LOW-COST AND FLEXIBLE MICRO-SUPERCAPACITORS BY A REDOX-ACTIVE ELECTROLYTE AND LASER-INDUCED FIBROUS GRAPHENE</b> .....	162
<i>Aamir Minhas-Khan, Gerd Grau</i>	
<b>ELECTROANALYTICAL CHARACTERIZATION OF ELECTROCHEMICAL CAPACITOR SYSTEMS</b> .....	165
<i>Helena Mavroudis, Marveh Forghani, Scott W Donne</i>	
<b>EDGE PLANES ORIENTED ELECTROCHEMICALLY EXFOLIATED HOPG FOR ELECTROCHEMICAL CAPACITORS</b> .....	166
<i>Rupesh M Tamgadge, Anupam Shukla</i>	
<b>(INVITED) NANOARRAY ELECTRODES FOR HIGH-RATE THIN-FILM BATTERIES</b> .....	167
<i>Hong Jin Fan</i>	
<b>COMPROMISED POWER CAPABILITY OF YARN-SHAPED SUPERCAPACITORS AND ITS MITIGATION STRATEGIES</b> .....	168
<i>Wei Gao</i>	
<b>NOVEL NANOCOMPOSITES FOR HIGH-PERFORMANCE SUPERCAPACITORS</b> .....	169
<i>Jae-Jin Shim, Debananda Mohapatra, Ganesh Dhakal</i>	
<b>PSEUDOCAPACITIVE STORAGE IN NANOLAYERED <math>Ti_2NT_xMXENE</math> USING MG-ION ELECTROLYTE</b> .....	170
<i>Abdoulaye Djire, Andre Bos, Jun Liu, Hanyu Zhang, Elisa M. Miller, Nathan Neale</i>	
<b>THE INFLUENCE OF ANODE/CATHODE CAPACITY RATIO ON CYCLE LIFE AND POTENTIAL VARIATIONS OF LITHIUM-ION CAPACITORS</b> .....	171
<i>Roya Naderi, Amadanesh Shellikeri, Mark Andrew Hagen, Jim P. Zheng</i>	
<b>INVESTIGATION OF <math>Li_4Ti_5O_{12}</math> AS A HIGH POWER ANODE MATERIAL IN LI-ION CAPACITOR (LIC)</b> ,.....	173
<i>TaojEEK Akintola, Amadanesh Shellikeri, Tawakalt Akintola, Omonayo Bolufawi, Jim P. Zheng</i>	
<b>CREATING SCALABLE FARADAIC CARBON NANOTUBE ELECTRODES WITH MILD CHEMICAL OXIDATION</b> .....	174
<i>Robert K Emmett, Michael J Kowalske, Hansen Mou, Mikaela Grady, Mark E. Roberts</i>	
<b>TITLE UNAVAILABLE</b> .....	175
<i>Chen Cheng, Xiaojuan Jin</i>	
<b>SUPERCAPACITORS FROM WASTE: CONVERTING PULP AND PAPER MILL WASTE TO NITROGEN DOPED SUPERCAPACITORS</b> .....	176
<i>Kenneth G Latham</i>	
<b>INFLUENCE OF DOPANTS ON THE ELECTROCHEMICAL PROPERTIES OF CONDUCTING POLYMERS AS ELECTRODES FOR SUPERCAPACITORS</b> .....	177
<i>Miaomiao Zhang, Amit Nautiyal, Haishun Du, Xinyu Zhang</i>	
<b>CARBON ALLOTROPES GRAFTED WITH POLY (PYRROLE) DERIVATIVES VIA LIVING RADICAL POLYMERIZATIONS: ELECTROCHEMICAL ANALYSIS OF NANO-COMPOSITES FOR ENERGY STORAGE</b> .....	178
<i>Anna Ignaszak</i>	
<b>ELECTROCHEMICAL STUDIES OF ONE-POT SYNTHESIZED TETRAGONAL HAUSMANNITE MANGANESE OXIDE/ NITROGEN-DOPED REDUCED GRAPHENE OXIDE NANOHYBRID FOR SUPERCAPACITOR APPLICATIONS</b> .....	180
<i>Katlego Makgopa, Mpho Sofnee Ratsoma</i>	
<b>SYNTHESIS OF POLYANILINE/<math>CO(OH)_2/Ni(OH)_2</math> NANOCOMPOSITE ELECTRODE MATERIAL FOR SUPERCAPACITOR APPLICATIONS</b> .....	181
<i>Vijaykumar Jadhav</i>	
<b>DECORATION OF VANADIUM PENTOXIDE ON CONDUCTIVE CARBON NANOTUBE FRAMEWORK AS ELECTROACTIVE MATERIALS FOR AQUEOUS SUPERCAPACITORS</b> .....	182
<i>Jeng-Yu Lin, Shih-Yu Lin</i>	
<b>UNEXPECTED HIGH RATE CAPABILITY ENHANCEMENT BY <math>MnO_2</math> INCORPORATION IN CELLULOSE-DERIVED CARBON NANOFIBER ELECTRODES FOR ELECTROCHEMICAL CAPACITORS</b> .....	183
<i>Qi Li, Volodymyr Kuzmenko, Mazharul Haque, Anderson Smith, Per Lundgren, Peter Enoksson</i>	
<b>ENHANCING CAPACITANCE OF ELECTROCHEMICAL CAPACITORS BY MULTI-LAYER ELECTRODEPOSITION OF MANGANESE DIOXIDE</b> .....	185
<i>Fahad Mujammami, Hayden Cameron, Yaser Beyad, Scott W Donne</i>	
<b>LOW TEMPERATURE SYNTHESIS OF IRON OXIDE AND NICKEL PHOSPHIDE BASED FLEXIBLE REDOX ELECTRODES FOR SUPERCAPATTERY APPLICATION</b> .....	186
<i>Ha Yeun Lee, Subramani Surendran, Uk Sim</i>	
<b>ENABLING HIGH-RATE MN OXIDE PSEUDOCAPACITORS USING HIGHLY DISPERSED <math>Mn_3O_4</math> NANOCRYSTALLITES</b> .....	187
<i>Nae-Lih Wu, Mozaffar Abdollahifar</i>	
<b>USING HMPA AS AN ADDITIVE IN SODIUM SUPERCAPACITOR ELECTROLYTE TO INCREASE THERMAL STABILITY</b> .....	188
<i>Jameson Landon Tyler, Frank M. Delnick, Guang Yang, Jagjit Nanda</i>	
<b>EFFECTS OF HEXAMETHYLENETETRAMINE CONCENTRATION ON THE STRUCTURE AND CAPACITANCE CHARACTERISTICS OF <math>Ni(OH)_2</math> PSEUDOCAPACITORS PRODUCED BY ELECTRODEPOSITION.</b> .....	189
<i>Dong Yeon Kim, Young-Min Jeong, Injoon Son, Seong-Ho Baek</i>	



<b>FABRIC SUPERCAPACITORS FABRICATION FOR SMART TEXTILES BY USING ALL SOLUTION PROCESS</b> .....	190
<i>Yunseok Jang, Jeongdai Jo, Seung-Hyun Lee</i>	
<b>APPLICATION OF AG NANOPARTICLES THAT ANCHORED ON F-GRAPHENE INTO NIO/NI(OH)<sub>2</sub> FOR IMPROVEMENTS IN STORAGE CAPACITY AND ENERGY DENSITY: NANOTECHNOLOGY OFFERS HIGHER STORAGE ABILITY</b> .....	192
<i>Su Young Ryu, Michael R Hoffmann</i>	
<b>DESIGN OF MACHINE-WASHABLE AND WEARABLE SUPERCAPACITORS USING COMPOSITE LAMINATES</b> .....	193
<i>Nasim Anjum, Caiwei Shen</i>	
<b>(INVITED) THE INTERSECTION OF BATTERY AND CAPACITOR FUNCTION IN NANOSTRUCTURED MANGANESE OXIDES FOR ZINC-ION CELLS: INSIGHTS FROM 2D INTERFACES TO 3D ARCHITECTURES</b> .....	194
<i>Jeffrey W. Long, Megan B. Sassin, Christopher R So, Jesse S. Ko, Seokmin Jeon, Joseph F. Parker, Christopher N. Chervin, Debra R. Rolison</i>	
<b>ELECTROCHEMICAL CHARACTERISTICS OF VERTICALLY-ALIGNED Ti<sub>3</sub>C<sub>2</sub> NANOSHEET ELECTRODE FOR HIGH-SPEED CHARGE/DISCHARGE SUPERCAPACITORS</b> .....	195
<i>Sho Hideshima, Yusuke Kawasaki, Daisuke Takimoto, Yury Gogotsi, Wataru Sugimoto</i>	
<b>BA<sub>0.5</sub>SR<sub>0.5</sub>CO<sub>x</sub>FE<sub>1-x</sub>O<sub>3-<math>\lambda</math></sub>: INVESTIGATION AND USE OF MULTICATIONIC PSEUDOCAPACITIVE OXIDES</b> .....	197
<i>Thierry Brousse, Pierre Lannelongue, Steven Le Vot, Olivier Fontaine, Charlotte Bodin, Camille Douard, Olivier Crosnier, Antonella Iadecola, Frederic Favier</i>	
<b>(INVITED) FACTORS AFFECTING ELECTROCHEMICAL CAPACITOR PERFORMANCE</b> .....	198
<i>Scott W Donne</i>	
<b>INVESTIGATION OF THE FE / W / O SYSTEM FOR AQUEOUS ELECTROCHEMICAL CAPACITOR ELECTRODE MATERIALS</b> .....	199
<i>Olivier Crosnier, Nicolas Goubard, Julio Cesar Espinosa Angeles, Camille Douard, Frederic Favier, Thierry Brousse</i>	
<b>TUNNEL STRUCTURAL HETEROGENEITY IN MnO<sub>2</sub> POLYMORPHS: ORIGINS AND EFFECT ON ION TRANSPORT</b> .....	200
<i>Yifei Yuan, Wentao Yao, Bryan Byles, Kun He, Cong Liu, Boao Song, Meng Cheng, Zhennan Huang, Khalil Amine, Ekaterina Pomerantseva, Jun Lu, Reza Shahbazian-Yassar</i>	
<b>INTEGRATING PSEUDOCAPACITIVE FUNCTION INTO AIR-CATHODES WITH 3D-WIRED NANOSCALE MnOX: ENABLING PULSE-POWER FOR ZN-AIR BATTERIES</b> .....	202
<i>Christopher N. Chervin, Jeffrey W. Long, Megan B. Sassin, Joseph F. Parker, Brandon J. Hopkins, Debra R. Rolison</i>	
<b>MnCO LAYERED DOUBLE HYDROXIDE BASED PSEUDOCAPACITOR: EFFECT OF MORPHOLOGY AND ELECTROCHEMICAL CYCLING</b> .....	203
<i>Dipali S. Patil, Jongwon Ryu, Sachin A. Pawar, Jae Cheol Shin, Hyo Jin Kim</i>	
<b>(INVITED) LITHIUM-ION BATTERY-CAPACITOR HYBRID ENERGY STORAGE DEVICES</b> .....	204
<i>Jim P. Zheng, Annadanesh Shellikeri, Mark Andrew Hagen, Wanjun Cao</i>	
<b>AN ULTRA-FAST AND ULTRA-STABLE ALL-GRAPHENE LITHIUM ION CAPACITOR</b> .....	205
<i>Liming Jin, Jun-Sheng Zheng, Jim P. Zheng</i>	
<b>POROUS CARBON DERIVED FROM SALACCA PEEL SYNTHESIZED UNDER HYDROTHERMAL CONDITION FOLLOWED BY MICROWAVE ASSISTED CHEMICAL ACTIVATION AS LITHIUM ION CAPACITOR'S ELECTRODE</b> .....	206
<i>Ratna Frida Susanti, Hans Kristianto, Arenst Andreas Arie, Hary Devianto</i>	
<b>EDGE-DOMINATED GRAPHENE CLUSTER WRAPPED METAL NANOPARTICLES ON CARBON FIBERS FOR AC-LINE FILTERING ELECTROCHEMICAL CAPACITORS</b> .....	207
<i>Wenyue Li, Zhaoyang Fan</i>	
<b>(INVITED) A VERSATILE APPROACH FOR PRE-LITHIATION OF LIC AND INCREASE OF THEIR ENERGY DENSITY VIA PYRENE CHEMISTRY</b> .....	208
<i>Joel Gaubicher, Bihag Anothumakkool, Yuman Sayed Ahmad-Baraza, Simon Wiemers-Meyer, Pierre-Louis Taberna, Barbara Daffos, Patrice Simon, Chris Ewels, Dominique Guyomard, Martin Winter, Thierry Brousse</i>	
<b>THE INFLUENTIAL PROPERTIES OF POLYMER ELECTROLYTES ON THE PERFORMANCE AND LONGEVITY OF SOLIDS-STATE FLEXIBLE SUPERCAPACITORS</b> .....	210
<i>Keryn Lian, Alvin Virya, Jak Li, Haoran Wu</i>	
<b>FABRICATION OF ZIF-67 DERIVED CO<sub>3</sub>S<sub>4</sub>-WS<sub>2</sub> HETEROSTRUCTURES FOR ALL-SOLID-STATE SYMMETRICAL SUPERCAPACITORS</b> .....	212
<i>Vishal Shrivastav, Shashank Sundriyal, Umesh K. Tiwari, Ki Hyun Kim, Akash Deep</i>	
<b>FLEXIBLE TRANSPARENT MOLYBDENUM TRIOXIDE NANOPAPERS FOR SUPERCAPACITORS</b> .....	213
<i>Bin Yao, Liang Huang, Yat Li</i>	
<b>ON-CHIP MICROSUPERCAPACITORS USING ULTRATHIN LIPON FILM</b> .....	215
<i>Valentin Sallaz, Sami Oukassi, Sylvain Poulet, Frederic Voiron, Messaoud Bedjaoui, Raphael Salot, David Berardan</i>	
<b>(INVITED) THE PROCESSING SCIENCE AND ENGINEERING RESEARCH PORTFOLIO FOR ADVANCED VEHICLE BATTERIES AT THE U.S. DEPARTMENT OF ENERGY</b> .....	217
<i>Peter W. Faguy</i>	
<b>(INVITED) COMMERCIALIZATION OF HIGH-ENERGY DENSITY, LONG-LIFETIME LI-ION CELLS WITH NI-RICH CATHODES</b> .....	218
<i>Kevin Dahlberg, John Camardese, Kristopher Inman, Veselin Manev, Steven Cochran, Lisa McKenzie</i>	

<b>(INVITED) ADVANCES IN COATING TECHNOLOGY FOR IMPROVING ELECTRODE MANUFACTURING</b> .....	219
<i>Stuart D. Hellring</i>	
<b>(INVITED) PROCESS DEVELOPMENT AND QUALITY CONTROL FOR MANUFACTURING OF LITHIUM-ION-BATTERIES</b> .....	220
<i>Margret Wohlfahrt-Mehrens, Wolfgang Braunwarth, Lea Sophie Kremer, Rares Scurtu, Michaela Memm, Alice Hoffmann, Stefan Roessler</i>	
<b>(INVITED) ENABLING AQUEOUS PROCESSING OF HIGH-ENERGY AND HIGH-POWER ELECTRODES FOR LITHIUM ION BATTERIES - ISSUES AND MITIGATION STRATEGIES</b> .....	221
<i>Markus Borner, Lukas Ibing, Elizaveta Kessler, Karina Ambrock, Iris Dienwiebel, Martin Winter</i>	
<b>(INVITED) ACCELERATING OPTIMIZATION OF LITHIUM ION BATTERY MANUFACTURING VIA MULTISCALE COMPUTATIONS</b> .....	223
<i>Alejandro A. Franco</i>	
<b>ELEVATED MIXING AND COATING TEMPERATURES YIELD BENEFICIAL PROCESSING PROPERTIES OF ORGANIC SOLVENT-BASED LITHIUM-ION BATTERY CATHODE SLURRIES</b> .....	225
<i>William Blake Hawley, Jianlin Li</i>	
<b>A NOVEL TECHNIQUE TO ANALYZE THE ELECTROLYTE WETTING RATE THROUGH LI-ION BATTERY ELECTRODES</b> .....	226
<i>Ali Davoodabadi, Jianlin Li, David L. Wood, Congrui Jin</i>	
<b>A STUDY OF FACTORS RESPONSIBLE FOR CRACKING DURING DRYING OF THICK AQUEOUS-PROCESSED NMC811 CATHODES</b> .....	228
<i>Ritu Sahore, Jianlin Li, David L. Wood</i>	
<b>UNDERSTANDING THE SILICON/BINDER INTERACTION AND INFLUENCE ON ANODE PROPERTIES</b> .....	229
<i>Mary Kathryn Burdette, Alexander M Rogers, Beth Armstrong, Gabriel M. Veith</i>	
<b>MECHANOFUSION-DERIVED SI ALLOY-GRAPHITE COMPOSITE ELECTRODE MATERIAL FOR LI-ION BATTERY</b> .....	230
<i>Yidan Cao, Jun Wang, Timothy Hatchard, Congxiao Wei, R. A. Dunlap, M. N. Obrovac</i>	
<b>MICROSCALE SIMULATIONS OF DRYING AND CALENDERING PROCESSES TO MANUFACTURE POROUS ELECTRODES</b> .....	231
<i>Mojdeh Nikpour, Nathan Barrett, Chelsea Ann Harrison, Dean Wheeler, Brian A Mazzeo</i>	
<b>INVESTIGATING A NOVEL LAYER-BY-LAYER COATING ELECTRODE MANUFACTURING PROCESS FOR HIGH ENERGY BATTERIES</b> .....	233
<i>Qiang Wu, J. P. Zheng</i>	
<b>(INVITED) TUNING ELECTROCHEMICAL PERFORMANCE OF LITHIUM-ION CELLS BY INTRODUCING LASER-GENERATED ELECTRODE ARCHITECTURES</b> .....	234
<i>Wilhelm Pfleging, Yijing Zheng, Huijeng Shi, Yuefei Zhang, Peter Smyrek</i>	
<b>(INVITED) 3- D PRINTED ELECTRODE MATERIALS FOR LOW-COST, FLEXIBLE, AND STRETCHABLE ENERGY STORAGE DEVICES</b> .....	235
<i>Poonam Sundriyal, Shantanu Bhattacharya</i>	
<b>(INVITED) MANUFACTURING AND CHARACTERIZATION OF ADVANCED HIGH ENERGY SILICON/GRAPHITE ELECTRODES</b> .....	237
<i>Yijing Zheng, Chantal Rietdorf, Oliver Hoppchen, Huijeng Shi, Yuefei Zhang, Hans Jurgen Seifert, Wilhelm Pfleging</i>	
<b>(INVITED) ELECTRODE/BATTERY ENGINEERING TO INCREASE THE ENERGY DENSITY OF HIGH-NI NMC CATHODE</b> .....	238
<i>Hui Zhou, Ben Pei, Fengxia Xin, M. Stanley Whittingham</i>	
<b>ASYMMETRIC MEMBRANES FOR HIGH CAPACITY LITHIUM ION BATTERIES: A LOW COST, EFFICIENT, AND SCALABLE METHOD</b> .....	240
<i>Ji Wu, Jianlin Li</i>	
<b>MANUFACTURING METHOD FOR LARGE-FORMAT, RECHARGEABLE ZN-SPONGE ELECTRODES</b> .....	242
<i>Brandon J. Hopkins, Christopher N. Chervin, Joseph F. Parker, Jeffrey W. Long, Debra R. Rolison</i>	
<b>CHARACTERIZING LITHIATION/DELITHIATION OF THICK ELECTRODES WITHOUT BINDERS AND CONDUCTIVE ADDITIVES USING NEUTRON IMAGING</b> .....	243
<i>Gary Koenig, Ziyang Nie, Dipankar Ghosh, Rohan Parai</i>	
<b>EFFICIENT 3D PRINTED PSEUDOCAPACITIVE ELECTRODES WITH ULTRAHIGH MNO<sub>2</sub> LOADING</b> .....	244
<i>Bin Yao, Swetha Chandrasekaran, Marcus A. Worsley, Yat Li</i>	
<b>3D PRINTED MXENE MICRO-SUPERCAPACITORS WITH ULTRA-HIGH ENERGY DENSITY</b> .....	246
<i>Jafar Orangi, Majid Beidaghi</i>	
<b>LONG-LIFE NI-RICH NMC CATHODES WITH HETEROGENEOUS PARTICLE STRUCTURE USING ADVANCED HIGH-SPEED SYNTHESIS PROCESS</b> .....	247
<i>Youngmin Chung, Youngho Shin</i>	
<b>3D ARCHITECTED PYROLYTIC CARBON ELECTRODES WITH MULTI-SCALE CONTROLLING FACTORS</b> .....	248
<i>Kai Narita, Michael A Citrin, Heng Yang, Xiaoxing Xia, Julia R Greer</i>	
<b>ALIGNMENT OF CONDUCTIVE ADDITIVE IN LI-ION BATTERY ELECTRODES THROUGH USE OF ELECTRIC FIELDS</b> .....	249
<i>Noah Clemens, Dean Wheeler, Brian Mazzeo</i>	

<b>A FACILE AND SCALABLE PROCESSING METHOD FOR 3-D NANOSTRUCTURED COPPER CURRENT COLLECTORS TO ENABLE HIGH ENERGY LI-METAL BATTERIES</b> .....	250
<i>Yifan Ma, Xuetian Ma, Hailong Chen</i>	
<b>A TAPE-CASTING/FREEZE-DRYING APPROACH TO PREPARE LOW-TORTUOUS GRAPHITE ELECTRODES</b> .....	251
<i>Dingying Dang, Yikai Wang, Shuang Gao, Yang-Tse Cheng</i>	
<b>SCALABLE POROUS METALS FROM LITHIUM ALLOYS</b> .....	252
<i>Sang Yun Han, Matthew G Boebinger, David Yeh, Matthew T McDowell</i>	
<b>(INVITED) TOWARDS SCALABLE MANUFACTURING OF SOLID STATE BATTERIES</b> .....	253
<i>Marca Doeff, Eongyu Yi, Hao Shen, Guoying Chen, Stephen Sofie</i>	
<b>(INVITED) PRIMARY ELECTRODEPOSITION OF LITHIUM METAL FOR SECONDARY BATTERIES</b> .....	254
<i>Daniel Steingart, Wesley Chang, Jeung Hun Park</i>	
<b>(INVITED) KEEPING IT SIMPLE: ANODE FREE LITHIUM METAL CELLS WITH LIQUID ELECTROLYTES AS A PATH TO HIGHER ENERGY DENSITY</b> .....	255
<i>Matthew Genovese, Alex Louli, Rochelle Weber, Cameron Martin, Jeff R. Dahn</i>	
<b>(INVITED) THIN FILM PROCESSING FOR INNOVATIVE SOLID STATE LITHIUM BATTERIES</b> .....	257
<i>Sami Oukassi, Helene Porthault, Raphael Salot</i>	
<b>FABRICATION OF CARBON-COATED 3D NI NANOMESH AND ITS APPLICATION AS A HIGH SURFACE AREA ELECTRODE MATERIAL FOR LI-O<sub>2</sub> BATTERY</b> .....	258
<i>Yongho Kee, Fanny Barde, Philippe M. Vereecken</i>	
<b>ACHIEVING SCALABLE PRODUCTION OF HYBRID ELECTROLYTES THROUGH SLOT-DIE COATING</b> .....	260
<i>Marm Dixit, Kelsey B. Hatzell</i>	
<b>3D PRINTING OF SOLID-STATE ELECTROLYTES FOR LI-ION BATTERIES: PROCESSING AND MORPHOLOGY OPTIMIZATION</b> .....	261
<i>Marissa Wood, Xiaosi Gao, Liwen Wan, Leonardus Bimo Bayu Aji, Jianchao Ye</i>	
<b>ANALYSIS OF THE FORMATION, EVOLUTION, AND ALTERNATIVES OF THE SOLID-ELECTROLYTE INTERFACE IN LI-METAL BATTERIES</b> .....	262
<i>Jorge M. Seminario, Diego Eduardo Galvez-Aranda, Milenka Gamero T, Luis Selis, Victor H Ponce, Franz Franco-Gallo</i>	
<b>DECONVOLUTING LI-ION BATTERY ELECTRODE CROSSTALK WITH ELECTROCHEMICAL GENERATOR-COLLECTOR MEASUREMENTS</b> .....	263
<i>Oliver Clyde Harris, Maureen H Tang</i>	
<b>ADVANCING BATTERY TECHNOLOGY THROUGH OPERANDO NEUTRON SCATTERING</b> .....	264
<i>Bohang Song</i>	
<b>MICROSCOPY AND SPECTROSCOPY DIAGNOSIS GUIDED OPTIMIZATION OF ELECTRODE MATERIALS FOR LITHIUM ION BATTERIES</b> .....	265
<i>Chongmin Wang</i>	
<b>EVOLUTION OF DYNAMIC HETEROGENEITIES IN PHASE-SEPARATING ELECTRODES DURING ION INTERCALATION</b> .....	266
<i>Shubham Agrawal, Peng Bai</i>	
<b>(INVITED) NANOSCALE (XPEEM) SPECTROSCOPY UNVEILS THE COMPLEX LOCAL (ELECTRO-) CHEMICAL SURFACE REACTIONS OF CYCLED ELECTRODES IN LI-ION BATTERIES</b> .....	268
<i>Daniela Leanza, Marta Mirolo, Carlos A. F. Vaz, Petr Novak, Mario El Kazzi</i>	
<b>NEUTRON DARK-FIELD ANALYSIS OF COMMERCIAL LITHIUM-ION BATTERIES</b> .....	270
<i>Daniel S Hussey, Adam J Brooks, Jacob M Lamanna, David L Jacobson, Leslie G Butler</i>	
<b>SIMULTANEOUS NEUTRON AND X-RAY TOMOGRAPHY FOR NON-DESTRUCTIVE CHARACTERIZATION OF RECHARGEABLE BATTERIES</b> .....	272
<i>Jacob M Lamanna, Daniel S Hussey, Elias Baltic, David L Jacobson</i>	
<b>IN-SITU DIAGNOSTICS OF COUPLED ELECTROCHEMICAL-MECHANICAL PROPERTIES OF SOLID ELECTROLYTE INTERPHASES ON LITHIUM METAL FOR RECHARGEABLE BATTERIES</b> .....	273
<i>Xingcheng Xiao</i>	
<b>INVESTIGATION OF LITHIUM-SILICON ALLOY PHASE PROPAGATION USING HIGH RESOLUTION OPERANDO X-RAY MICROSCOPY</b> .....	274
<i>Paul Choi, Laisuo Su, B. Reeja-Jayan, Shawn Litster</i>	
<b>HOW TRANSITION METALS FACILITATE CHARGE-TRANSFER THROUGH THE SEI IN LI-ION BATTERIES</b> .....	275
<i>Oliver Clyde Harris, Maureen H Tang</i>	
<b>QUANTITATIVE MEASUREMENTS OF THE GAS EVOLUTION IN LI-ION BATTERIES VIA OEMS (ONLINE ELECTROCHEMICAL MASS SPECTROMETRY)</b> .....	276
<i>Haotian Zheng, Kewei Liu, Jason R. Croy, Zhengcheng Zhang, Yan Yao, Chen Liao</i>	
<b>(INVITED) INVESTIGATING FAILURE IN ANODE-FREE LITHIUM-METAL POUCH CELLS WITH LIQUID ELECTROLYTES</b> .....	277
<i>Rochelle Weber, Matthew Genovese, Alexander J Louli, Jeff R Dahn</i>	
<b>REVEALING HIDDEN CHEMISTRY OF ANODE-FREE LITHIUM METAL BATTERY</b> .....	278
<i>Chen-Jui Huang, Balamurugan Thirumalraj, Hogiartha Sutiono, Li-Ming Kuo, Wei -Nien Su, Bing-Joe Hwang</i>	
<b>MULTIFUNCTIONAL GEL POLYMER/MICROSPHERES COMPOSITE ELECTROLYTE COATED SEPARATOR FOR LITHIUM METAL BATTERIES</b> .....	279
<i>Saebom Ryu, Jang Wook Choi, Toshinori Sugimoto, Yong-Gun Lee, Dongmin Im</i>	

<b>TRIPLING THE ENERGY DENSITY OF INSERTION-TYPE ELECTRODE MATERIALS FOR RECHARGEABLE ALKALI-ION BATTERIES BY INTRODUCING CAREFULLY SELECTED DOPANTS</b> .....	280
<i>Yanjiao Ma, Stefano Passerini, Dominic Bresser</i>	
<b>EFFECT OF THE DIRECT PRE-LITHIATION ON CYCLING PERFORMANCE OF LI ION BATTERY WITH SILICON-CONTAINING ANODES</b> .....	282
<i>Kyoung Hwan Kim, Jeong-Kuk Shon, Hwi-Yeol Park, Huisu Jeong, Sungjin Lim, Jin S. Heo</i>	
<b>(INVITED) SI ANODES FOR LI-ION BATTERIES: EXPERIMENTAL STUDIES ON LI-INVENTORY AND PRE-LITHIATION APPROACHES</b> .....	283
<i>Wesley M Dose, James Blauwkamp, Christopher S. Johnson</i>	
<b>IN-SITU FORMATION OF SURFACE COATINGS ON SILICON ANODES</b> .....	284
<i>John T. Vaughey, Baris Key, Binghong Han, Fulya Dogan, Saul Lapidus, Chen Liao</i>	
<b>INFLUENCE OF ELECTRODE DESIGN AND LITHIUM SOURCE FORMAT ON THE PERFORMANCE METRICS OF PRE-LITHIATION OF ANODES IN AN ENERGY STORAGE DEVICE</b> .....	285
<i>Annadanesh Shellikeri, Jim P. Zheng</i>	
<b>THE EFFECT OF AMORPHOUS SILICON ANODE THICKNESS ON THE CYCLING BEHAVIOR OF HIGH ENERGY DENSITY SOLID STATE LI-ION BATTERIES</b> .....	287
<i>Sami Oukassi, Isabelle Chevalier, Arnaud Bazin, Christophe Secouard, Severine Poncet, Francoise Geffraye, Raphael Salot</i>	
<b>THE EFFECT OF VOLUME CHANGE ON THE ACCESSIBLE CAPACITIES OF POROUS SILICON-GRAPHITE COMPOSITE ANODES</b> .....	289
<i>Taylor R Garrick, Drew Joseph Pereira, John W. Weidner</i>	
<b>STABILIZING SILICON ANODE CHEMISTRY FOR LONG CYCLE AND CALENDAR LIFE ELECTRODES</b> .....	292
<i>Binghong Han, Chen Liao, Fulya Dogan, Stephen E. Trask, Saul Lapidus, John T. Vaughey, Baris Key</i>	
<b>DEVELOPMENT OF NOVEL BINDERS FOR SILICON ANODES FOR LITHIUM ION BATTERIES</b> .....	293
<i>Brett Lucht, Kaveendi Chandrasiri</i>	
<b>TUNING PAA-BASED BINDERS TOWARDS OPTIMIZED PERFORMANCE FOR SILICON ANODE IN LITHIUM-ION BATTERIES</b> .....	294
<i>Zhangxing Shi, Sisi Jiang, Jan Ilavsky, Tao Li, Lu Zhang</i>	
<b>ON IONIC AND COVALENT CROSS-LINKING OF ALGINIC ACID DERIVED BINDERS FOR HIGH CAPACITY SILICON ANODES</b> .....	295
<i>Nils P. Wagner, Sidsel Meli Hanetho, Anne Tondervik, Harvard Sletta, Mari Juel, Jan Petter Maehlen, Ann Mari Svensson, Jorunn Voje, Trond Helgerud</i>	
<b>RATIONAL DESIGN OF BIAN BASED ANODE BINDER/ADDITIVE FOR HIGH PERFORMANCE LI ION SECONDARY BATTERIES</b> .....	297
<i>Noriyoshi Matsumi, Sai Gourang Patnaik, Raman Vedarajan</i>	
<b>EFFECT OF POLYMER CAPPING LAYERS ON INITIAL FRACTURE MECHANISM OF SILICON ANODES</b> .....	298
<i>Jaclyn Coyle, Chunmei Ban, Anthony Burrell</i>	
<b>POLY(IONIC LIQUID) BASED ANODIC BINDER WITH ENHANCED CYCLABILITY FOR LITHIUM-ION BATTERIES</b> .....	299
<i>Tejviran Pindi Jayakumar, Rajashekar Badam, Noriyoshi Matsumi</i>	
<b>DUAL-FUNCTIONAL POLYMER BINDERS FOR SILICON BASED ELECTRODES</b> .....	301
<i>Pengfei Cao, Bingrui Li, Alexei P. Sokolov, Jagjit Nanda, Tomonori Saito</i>	
<b>BUCKY-SI-BUCKY SANDWICHED STRUCTURED ANODE FOR LI-ION BATTERY</b> .....	303
<i>Shailendra Chiluwal, Nawraj Sapkota, Apparao M. Rao, Ramakrishna Podila</i>	
<b>HIGH PERFORMANCE SILICON ANODES ENABLED BY NONFLAMMABLE LOCALIZED HIGH CONCENTRATION ELECTROLYTES</b> .....	304
<i>Haiping Jia, Ji-Guang Zhang, Wu Xu</i>	
<b>(INVITED) ADVANCED NANOSTRUCTURE DESIGN AND NOVEL ELECTROLYTE DEVELOPMENT FOR SI ANODES TOWARDS PRACTICAL APPLICATIONS</b> .....	305
<i>Xiaolin Li, Haiping Jia, Ji-Guang Zhang</i>	
<b>FACTORS AFFECTING CONTACT RESISTANCE BETWEEN ELECTRODE AND CURRENT COLLECTOR</b> .....	306
<i>Jarom Glen Sederholm, John E. Vogel, Brian Mazzeo, Dean Wheeler</i>	
<b>RATE AND VOLTAGE DEPENDENCE OF THE ELECTRODE-ELECTROLYTE INTERFACE IN NI CONTAINING LITHIUM-ION CATHODE MATERIALS</b> .....	307
<i>Gordon H. Waller, Azzam N. Mansour</i>	
<b>UNDERSTANDING ELECTROLYTE DEGRADATION MECHANISMS OVER THE LIFESPAN OF LI-ION CELLS USING DIFFERENTIAL THERMAL ANALYSIS (DTA) AND HIGH PRECISION COULOMETRY (HPC)</b> .....	309
<i>Kathlyne J Nelson, Tim Sarkar, Ryan I Fielden, David Stevens</i>	
<b>INVESTIGATING ELECTRODE-ELECTROLYTE INTERPHASE FORMATION, REACTIVITY AND EVOLUTION IN LITHIUM-ION BATTERIES WITH OPERANDO SPECTROSCOPIC TECHNIQUES</b> .....	311
<i>Bertrand J. Tremolet De Villers, Yeyoung Ha, Sang-Don Han</i>	
<b>PELTIER HEATS OF LIFEPO<sub>4</sub> ELECTRODES FROM A THERMOELECTRIC CELL</b> .....	313
<i>Astrid Faqertun Gunnarshaug, Signe Kjelstrup, Dick Bedeaux, Odne Stokke Burheim, Preben J. S. Vie</i>	
<b>A NEW INSIGHT IN THE REDOX MECHANISM INVOLVED DURING THE DELITHIATION/LITHIATION OF SPINEL MATERIALS PROVIDED BY RAMAN SPECTROSCOPY</b> .....	314
<i>Ankush Bhatia, Rita Baddour-Hadjean, Nicolas Emery, Jean-Pierre Pereira-Ramos</i>	

<b>CORRELATING DIRECTLY RECYCLED CATHODE PERFORMANCE TO AGING CONDITIONS</b> .....	317
<i>Han Wang, Jay Whitacre</i>	
<b>INVESTIGATION OF THE AGING BEHAVIOR OF LARGE LI-ION CELLS BY A NOVEL REASSEMBLING PROCESS USING COIN CELLS</b> .....	319
<i>Alexander Uwe Schmid, Kai Peter Birke</i>	
<b>LOW-FREQUENCY ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY TO DIAGNOSE THE EFFECT OF THE AGING PROCESS ON MASS TRANSFER IN CATHODE PARTICLES</b> .....	320
<i>Valerie Charbonneau, Andrzej Lasia, Robert Morasch, Gessie M. Brisard</i>	
<b>THE EFFECTS OF CYCLING ON IONIC AND ELECTRONIC CONDUCTIVITIES OF 18650 LI-ION CELLS</b> .....	322
<i>Andrea I Thompson, Fezzeh Pouraghajan, Brian A Mazzeo, Dean Wheeler</i>	
<b>EXPERIMENTAL INVESTIGATION OF CASCADING FAILURE IN 18650 LITHIUM ION CELL ARRAYS: IMPACT OF CATHODE CHEMISTRY</b> .....	324
<i>Ahmed O. Said, Christopher Lee, Stanislav I. Stolarov</i>	
<b>INTRINSIC PROPERTIES OF SILICON-ELECTROLYTE INTERPHASE (SIEI) STUDIED THROUGH INDIVIDUAL INORGANIC COMPONENTS</b> .....	325
<i>Sang-Don Han, Kevin N Wood, Caleb Stetson, Andrew G Norman, Michael Brumbach, Jaclyn Coyle, Yun Xu, Steve Harvey, Glenn Teeter, Andriy Zakutayev, Anthony Burrell</i>	
<b>ENABLING FAST CHARGING LITHIUM-ION BATTERIES THROUGH THE RATIONAL DESIGN OF 3-D ANODE ARCHITECTURES</b> .....	327
<i>Kuan-Hung Chen, Min Ji Namkoong, S. M. Mortuza, Saeed Kazemiabnavi, Chenglin Yang, Jyoti Mazumder, Katsuyo Thornton, Jeff Sakamoto, Neil P. Dasgupta</i>	
<b>OPTIMIZATION OF SI/GR BASED ANODE FORMULATION FOR HIGH ENERGY DENSITY LI-ION BATTERIES</b> .....	329
<i>Jianhan Xiong, Rabeb Grissa, Nicolas Dupre, Lionel Roue, Dominique Guyomard, Bernard Lestriez</i>	
<b>(INVITED) BEYOND SI AND SiO<sub>x</sub>: SiN<sub>x</sub> AND SiC<sub>x</sub> ANODE MATERIALS FOR LITHIUM-ION BATTERIES</b> .....	331
<i>Jaephil Cho, Jaekyung Sung</i>	
<b>SI ANODE IN HIGH-SALT CONCENTRATION IONIC LIQUID ELECTROLYTES BASED ON PYRROLIDINIUM AND PHOSPHONIUM SYSTEMS FOR HIGH-ENERGY LI-ION BATTERIES</b> .....	332
<i>Khrsllyn Guzman Arano, Driss Mazouzi, Robert Kerr, Bernard Lestriez, Jean Le Bideau, Patrick C Howlett, Nicolas Dupre, Maria Forsyth, Dominique Guyomard</i>	
<b>OXIDATIVE PYROLYSIS OF SI/POLYACRYLONITRILE COMPOSITES AS AN UNCONVENTIONAL APPROACH TO FABRICATE HIGH PERFORMANCE LITHIUM ION BATTERY NEGATIVE ELECTRODES</b> .....	334
<i>Jiazi Hu, Andrew W Meyer, Xiaosong Huang, Yang-Tse Cheng</i>	
<b>THE IMPACT OF PARTICLE SIZE ON CYCLE LIFE AND STRESS EVOLUTION IN SILICON-BASED COMPOSITE ELECTRODES</b> .....	335
<i>Mok Yun Jin, Kai Guo, Wei Zhang, Xingcheng Xiao, Huajian Gao, Brian W. Sheldon</i>	
<b>ROBUST DESIGN OF SILICON/GRAPHITE COMPOSITE VIA ATOMIC-SCALE REARRANGEMENT FOR HIGH PERFORMANCE LITHIUM ION BATTERIES</b> .....	336
<i>Taeyong Lee, Jaephil Cho</i>	
<b>THE EFFECT OF WATER CONCENTRATION IN CARBONATE-BASED ELECTROLYTES ON THE SI ANODE/ELECTROLYTE INTERFACE</b> .....	337
<i>Yeyoung Ha, Manuel Schnabel, Bertrand J. Tremolet De Villers, Steven P. Harvey, Caleb Stetson, Elisabetta Arca, Pauls Stradins, Chun Sheng Jiang, Glenn Teeter, Sang-Don Han</i>	
<b>IN-SITU STUDY OF MULTISTEP LITHIUM-BISMUTH ALLOYING MECHANISMS</b> .....	339
<i>Yifei Yuan, Wentao Yao, Vitaliy Yurkiv, Lu Ma, Tongchao Liu, Farzad Mashayek, Jun Lu, Khalil Amine, Reza Shahbazian-Yassar</i>	
<b>REVERSIBLE LI INSERTION IN GUEST FREE TYPE II SI CLATHRATES FOR LI-ION BATTERIES</b> .....	340
<i>Andrew Dopilka, Jon Mark Weller, Svilen Bobev, Candace K. Chan</i>	
<b>STRUCTURE AND ELECTROCHEMISTRY OF SiO<sub>x</sub> MADE BY REACTIVE GAS MILLING</b> .....	342
<i>Yidan Cao, J. Craig Bennett, R. A. Dunlap, Mark N Obrovac</i>	
<b>THREE-DIMENSIONAL RESISTIVITY VS. DEPTH PROFILING FOR ADVANCED CHARACTERIZATION OF THE LITHIUM-ION BATTERY SOLID ELECTROLYTE INTERPHASE</b> .....	344
<i>Caleb Stetson, Yanli Yin, Steven P. Harvey, Andrew G Norman, Chun-Sheng Jiang, Steven C. Decaluwe, Mowafak M. Al-Jassim</i>	
<b>INSTRUMENT FOR MEASURING LOCAL IONIC CONDUCTIVITY OF POROUS ELECTRODES</b> .....	346
<i>Baichuan Liu, Kayci Nielsen, Brian Mazzeo, Dean Wheeler</i>	
<b>HETEROGENEITY OF IONIC CONDUCTIVITY IN LITHIUM-ION BATTERY ELECTRODES</b> .....	347
<i>Kayci Nielsen, Baichuan Liu, Brian Mazzeo, Dean Wheeler</i>	
<b>EFFECT OF STRESS ON LI TRANSPORT IN HIGH ENERGY DENSITY ELECTRODE MATERIALS</b> .....	349
<i>Subhajit Rakshit, Akshay Pakahare, Igor Bezonov, Siva Nadimpalli</i>	
<b>TEMPORAL MAPPING OF NMC-GRAPHITE CELLS DURING FAST CHARGING</b> .....	350
<i>Harry Charalambous, Kamila M Wiaderek, Yang Ren</i>	
<b>INVESTIGATIONS OF THE STRUCTURAL AND ELECTROCHEMICAL PROPERTIES OF OVERHEATED LI-ION BATTERIES AND ITS EFFECTS IN SINGLE CELLS VS. MULTI-CELLS PACKS</b> .....	351
<i>Lorraine Torres-Castro, Joshua Lamb, Eric Deichmann, Mohan Karulkar</i>	

<b>THE IMPACT OF CALENDERING ON THE ELECTRONIC CONDUCTIVITY HETEROGENEITY OF LITHIUM-ION ELECTRODE FILMS</b> .....	353
<i>Emilee E Hunter, John E. Vogel, Dean Wheeler, Brian A Mazzeo</i>	
<b>(INVITED) EVALUATION OF REACTION SITES OF GRAPHITE ELECTRODE</b> .....	355
<i>Takeshi Abe, Kohei Miyazaki, Yuto Miyahara, Akane Inoo</i>	
<b>ELECTROCHEMICAL KINETICS OF DEGRADATION OF CARBON ANODES IN LITHIUM ION BATTERIES</b> .....	356
<i>Supratim Das, Martin Z. Bazant</i>	
<b>DETERMINATION OF TRANSFERENCE NUMBER AND THERMODYNAMIC FACTOR BY USE OF ANION-EXCHANGE CONCENTRATION CELLS AND CONCENTRATION CELLS</b> .....	357
<i>Nathan Craig, Scott Mullin, Russell Pratt, Gabriel Crane</i>	
<b>DIAGNOSTIC AND PROGNOSIS OF LI-ION BATTERY STATE-OF-HEALTH BASED ON ELECTRODES POTENTIALS SHIFTS</b> .....	358
<i>Joel-Louis Kone, Maxime Montaru, Sebastien Fiette, Yann Bultel</i>	
<b>ELECTRODE-SPECIFIC STATE OF HEALTH DIAGNOSTICS FOR LITHIUM ION BATTERIES USING CELL VOLTAGE AND EXPANSION</b> .....	361
<i>Suhak Lee, Peyman Mohtat, Jason B Siegel, Anna G Stefanopoulou</i>	
<b>(INVITED) OPERANDO ANALYSIS FOR CHARGE/DISCHARGE REACTION MECHANISM OF GRAPHITE ANODE OF LI ION BATTERY</b> .....	363
<i>Hiroyuki Fujimoto, Hisao Kiuchi, Shigeharu Takagi, Keiji Shimoda, Kenichi Okazaki, Zempachi Ogumi, Takeshi Abe</i>	
<b>INVESTIGATING SEI FORMATION METHODS ON THE GRAPHITE ANODE INTERFACE USING NUCLEAR REACTION ANALYSIS</b> .....	364
<i>Spencer Flottman, Matthew Chebuske, Donald M Derosa, Seiichiro Higashiya, Harry Efstathiadis, Konstantinos Byron Antonopoulos, Filippo Maglia, Forrest S Gittleson, Odysseas Paschos</i>	
<b>FORMATION OF THE SOLID ELECTROLYTE INTERPHASE ON THE GRAPHITE ANODE IN LITHIUM-ION BATTERIES - AN OPERANDO NEUTRON DEPTH PROFILING STUDY</b> .....	365
<i>Fabian Linsenmann, Markus Trunk, Philip Rapp, Lukas Werner, Roman Gernhauser, Zsolt Revay, Ralph Gilles, Bastian Markisch, Hubert A. Gasteiger</i>	
<b>TOWARD MAXIMIZED VOLUMETRIC ENERGY DENSITY USING GRAPHITE VIA POLYMER COATING WITH HIGH DEGREE OF ELECTROLYTE IMPREGNATION</b> .....	368
<i>Jaekyung Sung, Jaephil Cho</i>	
<b>LITHIUM INTERCALATION EDGE EFFECTS AND DOPING IMPLICATIONS FOR GRAPHITE ANODES</b> .....	369
<i>Chao Peng, Denis Kramer</i>	
<b>(INVITED) ACOUSTIC DETECTION OF UNWANTED LITHIUM DEPOSITION IN LITHIUM ION BATTERIES</b> .....	370
<i>Daniel Steingart, Thomas Hodson, Greg Davies, Clement Bonnier, Katherine Denner</i>	
<b>IDENTIFYING THE ROLE OF LITHIUM PLATING IN LI-ION POUCH CELLS</b> .....	371
<i>Sobana Perumaram Rangarajan, Partha P. Mukherjee, Yevgen Barsukov</i>	
<b>EXAMINATION OF REVERSIBILITY OF LITHIUM PLATING</b> .....	372
<i>Conner Fear, Rachel E. Carter, Corey T Love, Partha P. Mukherjee</i>	
<b>ELUCIDATING THE IMPLICATIONS OF LITHIUM PLATING AND STRIPPING IN LI-ION CELLS</b> .....	373
<i>Venkatesh Kabra, Conner Fear, Partha P. Mukherjee</i>	
<b>THE EFFECTS OF CELL DESIGN ON LI PLATING IN LI-ION CELLS: A REAL INSIGHT INTO CELL DESIGN OPTIMIZATION FOR MINIMIZING LI PLATING</b> .....	374
<i>Mehdi M. Forouzan, Saeed Khaleghi Rahimian, Sangwoo Han, Ying Liu, Yifan Tang</i>	
<b>ID BULIDING BLOCK STRATEGIES FOR HIGH ENERGY DENSITY LI-ION BATTERIES</b> .....	376
<i>Ju-Myung Kim, Sang-Young Lee</i>	
<b>SYNTHESIS AND CHARACTERIZATION OF ALUMINA-DOPED LITHIUM BOROVANADATE GLASSES AS A PROMISING CATHODE MATERIAL FOR LITHIUM BATTERIES</b> .....	377
<i>Michael Kindel, Steven Kmiec, Igor D'Anciães Almeida Silva, Steve W Martin, Hellmut Eckert, John S. McCloy, Min-Kyu Song</i>	
<b>SULFIDATION OF ELECTROSPUN VANADIUM OXIDE FIBER MATS FOR LITHIUM-ION BATTERY ELECTRODES</b> .....	378
<i>Samantha Husmann, Aura Tolosa, Volker Presser</i>	
<b>PERFORMANCE OF CARBON FIBERS WITH VARIOUS COATINGS IN COMPOSITE LITHIUM-ION STRUCTURAL BATTERIES</b> .....	379
<i>Yasemin Duygu Yücel, Goran Lindbergh, Dan Zenkert</i>	
<b>CHEMICALLY SYNTHESISED Y-MNO<sub>2</sub>, AND B-MNO<sub>2</sub>/SINGLE WALL CARBON NANOTUBE COMPOSITES AS A PROMISING HIGH CAPACITY CATHODE MATERIALS FOR LITHIUM-ION BATTERIES</b> .....	381
<i>Zahoor Ahmed, Hayden Cameron, Scott W Donne</i>	
<b>(INVITED) IMPROVING ELECTROCHEMICAL STABILITY AND RATE CAPABILITY OF LAYERED OXIDES IN LI-ION BATTERIES VIA CONTROLLABLE FORMATION OF TWO-DIMENSIONAL HETEROINTERFACE</b> .....	382
<i>Ekaterina Pomerantseva</i>	
<b>INTEGRATED EXPERIMENT-THEORY APPROACH TO ELUCIDATE COMPLEX INTERFACIAL CHEMISTRY IN SOLID-STATE BATTERIES</b> .....	383
<i>Liwen Wan, Marissa Wood, Brandon C. Wood</i>	

<b>TWO-DIMENSIONAL LAYERED WS<sub>2</sub>/R-GO COMPOSITE CATHODE FOR NEXT-GENERATION HIGH-CAPACITY LITHIUM ION BATTERIES</b> .....	384
<i>Uijin Chang, Hwon-Gi Lee, Kwangsup Eom</i>	
<b>(INVITED) FROM INTERCALATION/INSERTION TO CONVERSION MECHANISM; EFFORTS FOR INCREASING ENERGY</b> .....	387
<i>Hikari Sakaebe</i>	
<b>DEFECT-DRIVEN NIOBIUM OXIDE ELECTRODE FOR LITHIUM-ION BATTERIES</b> .....	388
<i>Pete Barnes, Kiev Dixon, Yunxing Zuo, Shyue Ping Ong, Yingge Du, Hui (Claire) Xiong</i>	
<b>A MECHANISM STUDY OF STRUCTURAL TRANSITION OF LITHIUM VANADIUM PHOSPHATE DURING THE 1ST CHARGE/DISCHARGE IN COMPARISON TO</b>	
<b>TI-DOPED ONE</b> .....	389
<i>Hyunyoung Park, Woong Oh, Mansoo Choi, Bong-Soo Jin, Won-Sub Yoon</i>	
<b>(INVITED) NI-RICH AND LOW-CO CATHODE MATERIALS FOR ADVANCED LITHIUM ION BATTERIES</b> .....	391
<i>Jie Xiao</i>	
<b>INVESTIGATING THE ELECTROCHEMICAL EFFECT OF CORE-MULTI SHELL STRUCTURED NICKEL-RICH NMC CATHODE MATERIALS</b> .....	392
<i>Youngmin Chung, Youngho Shin</i>	
<b>INVESTIGATING THE ORIGIN OF CATION MIXING IN NICKEL RICH CATHODES</b> .....	393
<i>Nitin Muralidharan, Rachid Essehli, Ethan Craig Self, Jagjit Nanda, Ilias Belharouak</i>	
<b>DISCLOSING THE COMPLEX SURFACE REACTIVITY OF LN<sub>1-0.8</sub>CO<sub>0.15</sub>AL<sub>0.05</sub>O<sub>2</sub> AT HIGH POTENTIAL BY COMBINING XPEEM, XAS AND XPS MEASUREMENTS</b> .....	394
<i>Marta Mirolo, Carlos A. F. Vaz, Petr Novak, Mario El Kazzi</i>	
<b>INVESTIGATING THE DECOMPOSITION OF DELITHIATED LN<sub>1-x</sub>M<sub>x</sub>O<sub>2</sub> (M = AL, CO, MN OR MG, X = 0 OR 0.05)</b> .....	396
<i>Aaron Liu, Hongyang Li, Ning Zhang, Julie Inglis, Marc Cormier, Jeff R Dahn</i>	
<b>(INVITED) PROGRESS IN HIGH-CAPACITY CONCENTRATION GRADIENT CATHODE FOR NEXT-GENERATION ELECTRIC VEHICLES</b> .....	399
<i>Yang-Kook Sun</i>	
<b>LARGE BATCH COATING PROCESS FOR IMPROVING THERMAL STABILITY OF NCM622 CATHODE</b> .....	400
<i>Jessica L Durham, Timothy T Fister, Michael J. Murphy, Lixin Wang, Fu Zhou, Lei Lu, Kitae Kim, Derek C Johnson, Albert L. Lipson</i>	
<b>NICKEL-RICH LAYERED OXIDE CATHODES FOR NEXT GENERATION LITHIUM ION BATTERY</b> .....	402
<i>Shankar Aryal, Jessica L Durham, Albert L. Lipson, Ozgenur Kahvecioglu Feridun</i>	
<b>NEW SEPARATOR MATERIALS FOR LITHIUM-ION AND LITHIUM PRIMARY BATTERIES OPERATING IN EXTREME ENVIRONMENTS</b> .....	403
<i>Erik J. Brandon, Keith J. Billings, Bugga V. Ratnakumar, Simon C. Jones, Jasmina Pasalic, Jessica Seong, William N. Warner, Carl Hu, Brian Morin</i>	
<b>MELT-PROCESS FOR THE PREPARATION OF POROUS COMPOSITE ELECTRODES FOR BATTERY APPLICATION</b> .....	404
<i>Nina Verdier, Soumia El Khakami, David Lepage, Arnaud Prebe, Mickael Dolle, Dominic Rochefort</i>	
<b>(INVITED) FUNCTIONAL BINDERS FOR LI-, NA-, AND K-ION BATTERIES</b> .....	405
<i>Shinichi Komaba, Tatsuo Horiba, Kei Kubota, Mika Fukunishi</i>	
<b>ADHESIVE AND HEAT RESISTANT SEPARATOR FOR LONG-TERM STABLE LITHIUM ION BATTERIES</b> .....	406
<i>Eun Ji Park, Jinhyeok Ahn, Minjeong Yoo, Jinsol Im, Eun Kwang Jang, Jong Hyun Lee, Kuk Young Cho</i>	
<b>WATER-DISPERSIBLE CONDUCTING POLYMER COMPOSITE:A PROMISING BINDER FOR CATHODE OF LITHIUM ION BATTERIES</b> .....	407
<i>At Van Nguyen, Christian Kuss</i>	
<b>(INVITED) SEARCHING FOR HIGH POTENTIAL ORGANIC CATHODE MATERIALS FOR HIGH ENERGY GREEN AND SUSTAINABLE BATTERIES</b> .....	409
<i>Alia Jothara, Franck Dolhem, Dominique Guyomard, Nicolas Dupre, Philippe Poizat</i>	
<b>REDUCED SURFACE AREA CATHODE PARTICLES BY MECHANOFUSION PROCESSING</b> .....	410
<i>Lituo Zheng, M. N. Obrovac</i>	
<b>DESIGN CRITERIA OF SEI LAYERS FOR LITHIUM-ION BATTERIES WITH AQUEOUS ELECTROLYTES</b> .....	411
<i>Dahyun Oh, Usha Subramanya, Charleston Chua, Sanyam Pusri</i>	
<b>PROTOTYPE AQUEOUS LITHIUM-ION BATTERY WITH A LITHIUM-ION CONDUCTIVE SOLID ELECTROLYTE SEPARATOR</b> .....	412
<i>Hayato Seki, Kazuomi Yoshima, Yasunobu Yamashita, Shinsuke Matsuno, Norio Takami</i>	
<b>PROBING AND TUNING LATTICE OXYGEN REDOX IN LI<sub>2</sub>RU<sub>x</sub>M<sub>(1-x)</sub>O<sub>3</sub> FOR DESIGN OF HIGH-ENERGY LI-ION BATTERIES</b> .....	415
<i>Yang Yu, Pinar Karayaylali, Dimosthenis Sokaras, Livia Giordano, Magali Gauthier, Wesley T Hong, Ronghui Kou, Qinghao Li, Chengjun Sun, Wanli Yang, Nenian Charles, Filippo Maglia, Roland Jung, Yang Shao-Horn</i>	
<b>QUENCHING CATHODE ELECTROLYTE INTERPHASE ON NI-RICH CATHODE MATERIALS FOR PREVENTING SHORT CIRCUIT PROBLEM IN LITHIUM ION BATTERY</b> .....	417
<i>Fu-Ming Wang</i>	
<b>GAS FORMATION AND CROSSOVER EFFECT IN HIGH VOLTAGE LI-ION FULL CELLS WITH NI-RICH NMC CATHODES</b> .....	418
<i>Linxiao Geng, Chengyu Mao, Rose E. Ruther, David L. Wood, Ilias Belharouak</i>	

<b>QUATERNARY LAYERED LI[Ni<sub>0.89</sub>CO<sub>0.05</sub>MN<sub>0.05</sub>AL<sub>0.01</sub>]O<sub>2</sub> (NCMA) CATHODE FOR HIGH-ENERGY DENSITY LITHIUM-ION BATTERIES</b> .....	419
<i>Un-Hyuck Kim, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>THE STRUCTURAL STABILIZATION EFFECT OF TUNGSTEN DOPING ON LAYERED LINO<sub>2</sub> CATHODES FOR HIGH-ENERGY-DENSITY LITHIUM-ION BATTERIES</b> .....	420
<i>Hoon-Hee Ryu, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>(INVITED) LOW-COBALT AND COBALT-FREE CATHODES FOR NEXT-GENERATION LITHIUM-ION BATTERIES</b> .....	421
<i>Arumugam Manthiram</i>	
<b>BULK / SURFACE STABILIZED TUNGSTEN DOPED NI-RICH LI[Ni<sub>x</sub>CO<sub>y</sub>MN<sub>(1-x-y)</sub>]O<sub>2</sub> LAYERED CATHODE MATERIAL FOR HIGH-ENERGY-DENSITY LITHIUM-ION BATTERIES</b> .....	422
<i>Geon-Tae Park, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>THERMAL STABILITY ANALYSIS OF NMCS WITH VARIOUS CO CONCENTRATIONS</b> .....	423
<i>Mami Oda, Takeshi Nakagawa, Jumpei Yahiro, Chikashi Tanikawa, Mitsuharu Tabuchi</i>	
<b>DESIGNING HIGH POWER LITHIUM ION CELLS</b> .....	425
<i>Michael J. Lain, James Brandon, Emma Kendrick</i>	
<b>THE EFFECT OF FUNCTIONAL GROUPS AND CO-ADDITIVES ON THE PERFORMANCE OF AN ELECTROLYTE ADDITIVE FOR LI-ION CELLS</b> .....	426
<i>Roby Gauthier, David S Hall, Toren Hynes, Jeff R. Dahn</i>	
<b>DUAL SALT ELECTROLYTE OF LFSI AND LIPF<sub>6</sub> FOR FAST-CHARGING LITHIUM ION BATTERY</b> .....	427
<i>Tianyi Liu, Xianyang Wu, Feng Lin, David L. Wood, Ilias Belharouak, Zhijia Du</i>	
<b>NEW ELECTROLYTE ADDITIVES FORMED BY IN SITU METHOD FOR HIGH VOLTAGE LITHIUM ION BATTERY</b> .....	428
<i>Jianzhong Yang, Ilya A Shkrob, Qian Liu, Nancy L. Dietz Rago, Zhengcheng Zhang, Chen Liao</i>	
<b>EXTENDING CYCLE LIFE AND SAFETY OF SI BASED HIGH ENERGY LI ION BATTERIES USING LOCALIZED HIGH CONCENTRATION ELECTROLYTES</b> .....	429
<i>Ji-Guang Zhang, Haiping Jia, Xiaolin Li, Xia Cao, Ran Yi, Qiuyan Li, Wu Xu</i>	
<b>SOLVATION STRUCTURE AND LI-ION TRANSPORT PROPERTIES OF HIGHLY CONCENTRATED SULFONE-BASED ELECTROLYTES</b> .....	430
<i>Shohei Sasagawa, Yosuke Ugata, Kazuhide Ueno, Kaoru Dokko, Masayoshi Watanabe</i>	
<b>LITHIUM FSI-BASED LOW ETHYLENE CARBONATE CONTENT ELECTROLYTE FOR HIGH-POWER LIB</b> .....	432
<i>Masashi Ishikawa, Satoshi Uchida</i>	
<b>SOLVATE STRUCTURES AND TRANSPORT PROPERTIES IN HIGHLY CONCENTRATED LI[FSI]/SUCCINONITRILE LIQUID ELECTROLYTES</b> .....	434
<i>Yosuke Ugata, Kazuhide Ueno, Kaoru Dokko, Masayoshi Watanabe</i>	
<b>LITHIUM-ION TRANSPORT AND CYCLING CHARACTERISTICS OF FLUORINATED ELECTROLYTES</b> .....	436
<i>Deep B. Shah, Hien Q. Nguyen, Lorena S. Grundy, Kevin R. Olson, Sue J. Mecham, Joseph M. Desimone, Nitash P. Balsara</i>	
<b>EFFECTS OF ESTERS USED IN LIQUID ELECTROLYTE FOR LI(Ni<sub>0.6</sub>MN<sub>0.2</sub>CO<sub>0.2</sub>)O<sub>2</sub>/GRAPHITE POUCH CELLS UNDER FAST CHARGING</b> .....	438
<i>Xianyang Wu, Tianyi Liu, Kejie Zhao, Feng Lin, David L. Wood, Ilias Belharouak, Zhijia Du</i>	
<b>HIGHLY SAFE AND HIGH ENERGY DENSITY LITHIUM-ION BATTERY USING LESS VOLATILE ELECTROLYTE</b> .....	440
<i>Atsushi Unemoto, Hiroaki Komishi, Katsunori Nishimura, Eiji Seki, Jun Kawaji, Takefumi Okumura</i>	
<b>ELECTROLYTE ADDITIVE EFFECTS OBSERVED BY GRADIENT POLARITY SOLVENT WASH</b> .....	441
<i>Chen Fang, Gao Liu</i>	
<b>ELECTROCHEMICAL APERTURE ENABLING RAPID DELIVERY OF LIQUID ELECTROLYTE FOR LITHIUM-ION RESERVE BATTERIES</b> .....	442
<i>Danny X. Liu, Stephen Snyder, Timothy D. Hall, Maria Inman, E. J. Taylor</i>	
<b>SYNTHESIS OF SINGLE CRYSTALLINE NI-RICH NMC811 CATHODE MATERIALS AND IMPROVED PERFORMANCE ENABLED BY ULTRATHIN SURFACE COATING LAYER</b> .....	444
<i>Haidong Liu, Reza Younesi, Kristina Edstrom</i>	
<b>CAPACITY FADING MECHANISM OF NI-RICH NCA CATHODE FOR LITHIUM-ION BATTERIES</b> .....	446
<i>Kang-Joon Park, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>COMPOSITIONALLY AND STRUCTURALLY RE-DESIGNED HIGH-ENERGY LI[Ni<sub>0.886</sub>CO<sub>0.049</sub>MN<sub>0.050</sub>AL<sub>0.015</sub>]O<sub>2</sub> CATHODE FOR LITHIUM BATTERIES</b> .....	448
<i>Un-Hyuck Kim, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>SPHERICAL SHAPED PARTICLE OF RANDOMLY PACKED LIFEPO4 NANOPLATES FOR HIGH-RATE OF LI-ION BATTERIES</b> .....	449
<i>Woong Oh, Virendra Patil, Jong Won Yoo, Won-Sub Yoon, Gi-Ra Yi</i>	
<b>APPLICATION AND COMPARISON OF DIFFERENT STRUCTURING CONCEPTS FOR ULTRA-THICK NMC 622 CATHODES IN HIGH ENERGY LITHIUM ION BATTERIES</b> .....	450
<i>Lea Sophie Kremer, Alice Hoffmann, Timo Danner, Simon Hein, Benedikt Prifling, Daniel Westhoff, Carmen Fuchs, Sonja Radloff, Arnulf Latz, Volker Schmidt, Margret Wohlfahrt-Mehrens</i>	
<b>(INVITED) UNDERSTANDING INTERFACIAL REACTIVITY IN LI-ION BATTERY CATHODES AND THE EFFECT OF SURFACE MODIFICATIONS</b> .....	452
<i>Jordi Cabana</i>	



<b>REDUCTION OF ELECTRONIC CONDUCTIVITY WITHIN SECONDARY PARTICLES REVEALING A DEGRADATION MECHANISM OF NI-RICH CATHODE FOR LITHIUM ION BATTERIES</b> .....	453
<i>Jae-Hyung Kim, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>EFFECT OF FAST-CHARGING ON AGEING OF ENERGY-OPTIMIZED AUTOMOTIVE LNI<sub>1/3</sub>MN<sub>1/3</sub>CO<sub>1/3</sub>O<sub>2</sub>/GRAPHITE PRISMATIC LITHIUM-ION CELLS</b> .....	454
<i>Rakel Wreland Lindstrom, Abdilbari Mussa, Anti Liivat, Fernanda Marzano, Matilda Klett, Bertrand Philippe, Carl Tengstedt, Goran Lindbergh, Kristina Edstrom, Pontus Svens</i>	
<b>UNRAVELING THE ROLE OF AL SUBSTITUTION IN ANIONIC OXYGEN ACTIVITY OF NI-RICH LAYERED OXIDE CATHODES</b> .....	455
<i>Ning Li, Shawn Sallis, Joseph K Papp, Bryan D. McCloskey, Wanli Yang, Wei Tong</i>	
<b>INVESTIGATING THE EFFECTS OF MAGNESIUM DOPING IN VARIOUS NI-RICH MATERIALS</b> .....	456
<i>Aaron Liu, Hongyang Li, Ning Zhang, Julie Inglis, Jeff R Dahn</i>	
<b>INSIGHT INTO PERFORMANCE DEGRADATION OF NI-RICH LAYERED CATHODE MATERIALS</b> .....	458
<i>Sheng S. Zhang</i>	
<b>UNDERSTANDING SURFACE REACTIVITY ON NI-RICH LAYERED OXIDE CATHODES</b> .....	459
<i>Guoying Chen, Jian Zhu</i>	
<b>TRACKING BATTERY SWELLING IN UNCOMPRESSED LI-ION CELLS VIA IN-OPERANDO X-RAY RADIOGRAPHY AND MICRO-TOMOGRAPHY</b> .....	461
<i>Kieran F. Fahy, Hisan Waleed Shafaque, Pranay Shrestha, David Ouellette, Nan Ge, Nobuhisa Ikeda, Toshikazu Kotaka, Yuichiro Tabuchi, Aimy Bazylak</i>	
<b>(BATTERY DIVISION POSTDOCTORAL ASSOCIATE RESEARCH AWARD SPONSORED BY MTI CORPORATION AND THE JIANG FAMILY FOUNDATION) TOWARD THE STABLE AND REVERSIBLE LATTICE OXYGEN REDOX IN LI-RICH LAYERED OXIDES</b> .....	463
<i>Shirley Meng, Minghao Zhang</i>	
<b>EXPERIMENTAL VALIDATION OF A SIMPLIFIED ELECTROCHEMICAL-THERMAL MODEL FOR A NCM532 LARGE FORMAT BATTERY CELL</b> .....	465
<i>Benjamin Ng, Paul T. Coman, William E. Mustain, Ralph E. White</i>	
<b>UNDERSTANDING LOCAL DISTORTIONS IN NMC CATHODES</b> .....	467
<i>Liang Yin, Zhuo Li, Gerard Mattei, Peter Khalifah</i>	
<b>(INVITED) PRESERVING A HIGH ENERGY DENSITY OF THE LITHIUM-RICH LAYERED OXIDES (LLO) AND NEW LITHIUM DIFFUSION MODEL FOR LLO</b> .....	468
<i>Kisuk Kang</i>	
<b>UNRAVELING THE RAPID REDOX REACTIONS THROUGH SUPERSTRUCTURE OF LITHIUM-EXCESS LAYERED OXIDES</b> .....	469
<i>Wooyoung Jin, Jaephil Cho</i>	
<b>ANOMALOUS SEGREGATION IN LITHIUM-RICH LAYERED OXIDE UNCOVERS NEW THEORETICAL DESIGN RULE FOR STABLE CATHODE IN LITHIUM-ION BATTERY</b> .....	470
<i>Huolin Xin, Ruoqian Lin, Enyuan Hu, Seong-Min Bak, Xiqian Yu, Kristin A Persson, Qin Wu, Xiao-Qing Yang</i>	
<b>STRUCTURAL DISTRIBUTION OF REDOX-ACTIVE OXYGEN GOVERNING CHEMICAL REVERSIBILITY IN LI- AND MN-RICH LAYERED OXIDES</b> .....	471
<i>Jaeseong Hwang, Jaephil Cho</i>	
<b>LATTICE PARAMETER HYSTERESIS IN LI- AND MN-RICH LAYERED OXIDES AND ITS DEPENDENCE ON STATE OF CHARGE AND OPEN CIRCUIT VOLTAGE</b> .....	472
<i>Benjamin Strehle, Tanja Zund, Hubert A. Gasteiger</i>	
<b>IMPROVEMENTS TO DISORDERED ROCK-SALT LI-EXCESS CATHODE MATERIALS</b> .....	474
<i>Tanghong Yi, Kyler J. Carroll, Dee Strand, Bin Li</i>	
<b>INTERFACIAL ORIGINS OF DEGRADATION IN HIGH ENERGY LI-RICH NMC CATHODES PROBED BY ONLINE ELECTROCHEMICAL MASS SPECTROMETRY</b> .....	475
<i>Srini Ramakrishnan, Byungchun Park, Bryan D. McCloskey</i>	
<b>COBALT-BASED LITHIATED SPINEL OXIDE AS A NOVEL ZERO-STRAIN CATHODE</b> .....	476
<i>Eungje Lee, Jinhyup Han, Bob Jin Kwon, Fulya Dogan, Jason R. Croy, Michael M. Thackeray</i>	
<b>(BATTERY DIVISION STUDENT RESEARCH AWARD SPONSORED BY MERCEDES-BENZ RESEARCH &amp; DEVELOPMENT) DEGRADATION OF CARBONACEOUS NEGATIVE ELECTRODES IN LITHIUM-ION BATTERIES ACROSS MULTIPLE LENGTH SCALES</b> .....	477
<i>Peter Attia</i>	
<b>A NOVEL APPROACH TO RECYCLE PRECIOUS METALS FROM SPENT LI-ION BATTERIES</b> .....	479
<i>Shan Xiong, Aijie Han, Xuetian Ma, Hailong Chen</i>	
<b>ELECTROCHEMICAL PERFORMANCE AND RATE CAPABILITY STUDIES OF LI-ION BATTERY SEPARATORS FOR FAST CHARGING APPLICATIONS</b> .....	481
<i>Dhrupad Parikh, Jianlin Li, Chien-Te Hsieh</i>	
<b>DRYING PROCESS RESEARCH ON HIGH ENERGY DENSITY LNI<sub>1/3</sub>CO<sub>1/3</sub>MN<sub>1/3</sub>O<sub>2</sub> ELECTRODE IN LI-ION BATTERIES</b> .....	482
<i>Yanbao Fu, Xiangyun Song, Gao Liu, Vince Battaglia</i>	
<b>CATHODE ADDITIVE FOR LNI<sub>0.8</sub>CO<sub>0.1</sub>MN<sub>0.1</sub>O<sub>2</sub> /LI METAL BATTERY OPERATING AT 4.3V</b> .....	483
<i>Minjeong Yoo, Eun Ji Park, Jinhyeok Ahn, Jinsol Im, Eun Kwang Jang, Kuk Young Cho</i>	
<b>PROBING THE CHEMICAL AND STRUCTURAL STABILITY OF OXIDE CATHODES USING A SURFACE MODEL REACTION</b> .....	484
<i>Crystal K Waters, Feng Lin</i>	

<b>ELECTROCHEMICAL MODELING ON CRACK PROPAGATION WITHIN NI-RICH LAYERED CATHODE MATERIALS</b> .....	485
<i>Sunho Park, Joonam Park, Jihun Song, Myung-Hyun Ryou, Yongmin Lee</i>	
<b>ENHANCED CYCLING STABILITY OF MICROSTRUCTURE-MODIFIED LI[NI<sub>0.90</sub>CO<sub>0.05</sub>MN<sub>0.05</sub>]O<sub>2</sub> CATHODE VIA MICROSCALE COMPOSITIONAL PARTITIONING FOR NEXT-GENERATION ELECTRIC VEHICLES</b> .....	486
<i>Hoon-Hee Ryu, Gyeong Won Nam, Yang-Kook Sun</i>	
<b>STRATEGY OF ENHANCING ENERGY DENSITY OF LAYERED NI-RICH LI[NI<sub>1-2x</sub>CO<sub>x</sub>MN<sub>x</sub>]O<sub>2</sub> CATHODES (X = 0.05, 0.1, 0.2)</b> .....	487
<i>Jae-Hyung Kim, Gyeong Won Nam, Nam-Yung Park, Assylzat Aishova, Dae Ro Yoon, Yang-Kook Sun</i>	
<b>SIMULATED CRYSTAL GROWTH OF INTERMEDIATE PHASES FORMED DURING LI AND O EXTRACTION OF NANO-LI<sub>2</sub>MNO<sub>3</sub> CATHODE MATERIAL</b> .....	488
<i>Tshidi Malibe, Raesibe Sylvia Ledwaba, Malili G Matshaba, Phuti E Ngoepe</i>	
<b>IMPLEMENTATION OF TIN DIOXIDE/GRAPHENE/GRAPHENE OXIDE FOR HIGH CAPACITY AND LONG CYCLE LIFE LITHIUM ION BATTERIES</b> .....	489
<i>Valerio Dorvilien, Monica Lopezdevictoria, Valerio Dorvilien, Frank Mendoza, Brad R. Weiner, Gerardo Morell</i>	
<b>ELECTROCHEMICAL PERFORMANCE OF ALF<sub>3</sub>-COATED LINI<sub>0.5</sub>MN<sub>1.5</sub>O<sub>4</sub> 5-V CATHODES AT ELEVATED TEMPERATURE</b> .....	490
<i>Jeng-Yu Lin, Ching-Teng Chu</i>	
<b>DILUTION EFFECTS OF HIGHLY CONCENTRATED DIMETHYL CARBONATE-BASED ELECTROLYTE SOLUTIONS FOR LI<sub>0.8</sub>CO<sub>0.1</sub>MN<sub>0.1</sub>O<sub>2</sub> POSITIVE ELECTRODE</b> .....	491
<i>Ziyang Cao, Masakazu Haruta, Takayuki Doi, Minoru Inaba</i>	
<b>THE CORRELATION BETWEEN THE PARTICLE MORPHOLOGY AND THE ELECTROCHEMICAL STABILITY FOR HIGH-NI CATHODE AND UNDERSTANDING OF THE MECHANISM OF PARASITIC REACTION.</b> .....	494
<i>Jihyeon Gim, Tongchao Liu, Bryan T Yonemoto, Youngho Shin, Luis Estevez, Yang Ren, Jason R. Croy, Zonghai Chen, Khalil Amine</i>	
<b>INVESTIGATION OF « CROSS-TALKING » PHENOMENON WITHIN LI-ION BATTERIES</b> .....	495
<i>Guillaume Portalis, Bernard Simon, Vincent Vivier</i>	
<b>ELECTROCHEMICAL-SHOCK RESISTANT SINGLE-CRYSTAL NI-RICH LAYERED CATHODE MATERIALS</b> .....	497
<i>Guannan Qian, Zi-Feng Ma, Lisen Li</i>	
<b>GRAPHENE-INCORPORATED NANO-STRUCTURED IRON OXYFLUORIDE WITH EXCELLENT PERFORMANCE AS CATHODE MATERIALS FOR LI-ION BATTERIES</b> .....	498
<i>Yadong Liu, Fan Yang, Kang Yu, Chenzhao Li, Yang Ren, Chengjun Sun, Yuzi Liu, Jian Xie</i>	
<b>THE INFLUENCE OF POLYVINYLIDENE FLUORIDE (PVDF) BINDER PROPERTIES ON LI<sub>0.33</sub>CO<sub>0.33</sub>MN<sub>0.33</sub>O<sub>2</sub> (NMC) ELECTRODES MADE BY A DRY-POWDER-COATING PROCESS</b> .....	500
<i>Ming Wang, Jiazhi Hu, Yikai Wang, Yang-Tse Cheng</i>	
<b>IMPEDANCE INFORMED, HIGH FREQUENCY PULSE CHARGING AS METHOD TO ENABLE STABLE LOW TEMPERATURE LI-ION BATTERY OPERATION</b> .....	501
<i>Emily J Klein, Rachel E. Carter, Corey T Love</i>	
<b>DIRECT OBSERVATION OF ELECTROCHEMICALLY ACTIVE FE<sup>3+</sup>/FE<sup>4+</sup> IN LICO<sub>0.8</sub>FE<sub>0.2</sub>MNO<sub>4</sub> BY IN SITU MOSSBAUER AND IN SITU X-RAY ABSORPTION SPECTROSCOPY</b> .....	503
<i>Sylvio Indris, Christoph Drager, Helmut Ehrenberg</i>	
<b>LITHIUM/OXYGEN INCORPORATION-INDUCED STRUCTURAL TRANSFORMATION DURING SYNTHESIS OF COBALT-FREE LI-MN-RICH OXIDES</b> .....	504
<i>Weibo Hua, Bjorn Schwarz, Michael Knapp, Martin Etter, Alexander Schokel, Joachim R. Binder, Sylvio Indris, Helmut Ehrenberg</i>	
<b>MOLECULAR DYNAMICS SIMULATION STUDY OF ION TRANSPORT, STRUCTURAL AND MECHANICAL PROPERTIES OF LI<sub>2</sub>CO<sub>3</sub> AND MN-LI-CO<sub>3</sub></b> .....	505
<i>Mahsa Ebrahimi, Cun Wang, Justin B. Hooper, Dmitry Bedrov</i>	
<b>ENABLING HIGH TEMPERATURE LITHIUM ION BATTERIES THROUGH NMR ANALYSIS</b> .....	506
<i>Noah Mark Johnson, Zhengcheng Zhang</i>	
<b>IMPROVEMENT OF SPECIFIC CAPACITANCE IN LITHIUM ION BATTERIES BY MESOPOROUS CARBON HYBRID NANOSTRUCTURES</b> .....	507
<i>Valerio Dorvilien, Carolina Valeria Rojas, Neida Santa Cruz, Frank Mendoza, Brad R. Weiner, Gerardo Morell</i>	
<b>PHASE EQUILIBRIA AND LITHIATION OF INDUSTRIALLY PRODUCED HETEROGENEOUS TIN SULPHIDE ANODE MATERIALS FOR LITHIUM ION BATTERIES</b> .....	508
<i>Damian Marlon Cupid, Martin Artner, Raad Hamid, Arlavinda Rezgita, Viktor Bauer, Albina Glibo, Hans Flandorfer, Marcus Jahn</i>	
<b>COBALT PHOSPHIDE ANCHORED ON GRAPHENE NANOSHEET AS HIGH-CAPACITY ANODES FOR LI-ION BATTERY</b> .....	510
<i>Yang Yang, Zi-Feng Ma, Faisal M. Alamgir</i>	
<b>CONDUCTIVE METAL-ORGANIC FRAMEWORK COATED SILICON NANOPARTICLES AS AN ANODE MATERIAL FOR HIGH POWER LITHIUM-ION BATTERIES</b> .....	512
<i>Aqsa Nazir, Chan-Jin Park</i>	
<b>SILICON ANODE CONFINED IN CARBON NANO-SPACES FOR EFFICIENT LITHIUM STORAGE</b> .....	513
<i>Hyunyoung Jung</i>	

<b>ANALYSIS OF IRON OXIDE POWDER FORMATION BY HYDROTHERMAL METHOD THROUGH A STATISTICAL EXPERIMENTAL DESIGN AND EVALUATION OF ITS USE AS ANODES FOR LIBS</b> .....	514
<i>Feryat Gulcan, Billur Deniz Karahan</i>	
<b>THERMOPLASTIC ELASTOMER COATED-SNSB AS AN ANODE ELECTRODE FOR LI-ION BATTERIES</b> .....	515
<i>Alexander Teklit Tesfaye, Frederic Dumur, Didier Gignes, Sebastien Maria, Laure Monconduit, Thierry Djenizian</i>	
<b>ULTRASMALL SN NANODOTS DISPERSED IN CROSS-LINKED N-DOPED CARBON CAGES FOR HIGH-PERFORMANCE LITHIUM STORAGE</b> .....	517
<i>Hangjun Ying, Weiqiang Han</i>	
<b>HIGH C-RATE LITHIUM ION BATTERIES WITH NIOBIUM TUNGSTEN OXIDE</b> .....	518
<i>Yumi Kim, Quentin Jacquet, Bernardine L. D. Rinkel, Kent J. Griffith, Clare P. Grey</i>	
<b>EXPERIMENTAL STUDY ON THE FABRICATION OF METAL OXIDE ANODES BY HYDROCHLORIC LEACHING OF FERRO-CHROME ALLOYS</b> .....	519
<i>Feryat Gulcan, Billur Deniz Karahan</i>	
<b>STUDY ON ANION DOPED POLYPYRROLE AS ANODE MATERIAL FOR AQUEOUS SODIUM ION BATTERY</b> .....	520
<i>Dianxue Cao, Pengfei Wang</i>	
<b>INVESTIGATION OF NOVEL ELECTROLYTE FORMULATIONS FOR <math>Li_4Ti_5O_{12}/LiMn_2O_4</math> CELLS</b> .....	521
<i>Brett Lucht, Jongjung Kim, Martin Payne, Jennifer Hoffmann, Mickly Milien</i>	
<b>SMALL FUNCTIONAL MOLECULES AS SLURRY ADDITIVES FOR SI-ALLOY COATINGS WITH CMC/SBR BINDER</b> .....	522
<i>Congxiao Wei, M. N. Obrovac</i>	
<b>THIN FILM LITHIUM NIOBITES WITH INTRINSIC HIGH-RATE PERFORMANCE FOR LITHIUM-ION BATTERIES</b> .....	524
<i>Dong-Chan Lee, Joshua C. Shank, W. Alan Doolittle, Faisal M. Alamgir</i>	
<b>SYNTHESIS OF SILICON-GERMANIUM COMPOUNDS ANODE MATERIAL BY POTENTIOSTATIC ELECTROLYSIS METHOD IN MOLTEN SALT FOR LITHIUM-ION BATTERY</b> .....	525
<i>Yongde Yan, Yali Song</i>	
<b>INVESTIGATION ON FORMATION PROCESS OF LITHIUM-ION BATTERIES</b> .....	527
<i>Youngmin Kim, Kyeong-Min Jeong</i>	
<b>ONE-STEP PREPARATION OF LIF COATED LI TO STABILIZE LI METAL ANODE</b> .....	528
<i>Dianxue Cao, Zhe Gong</i>	
<b>IMPROVING THE ELECTROCHEMICAL PERFORMANCE OF <math>Li_4Ti_5O_{12}</math> ANODE BY PHOSPHORUS REDUCTION AT A RELATIVELY LOW TEMPERATURE</b> .....	529
<i>Wenwen Deng</i>	
<b>NEW 2.1 V LITHIUM- ION BATTERY WITH SULFURIZED POLYACRYLONITRILE (SPAN) ANODE AND <math>LiMn_2O_4</math> CATHODE</b> .....	530
<i>Gebregziabeh Brhane Berhe, Wei-Nien Su, Bing-Joe Hwang</i>	
<b>USE OF ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY TO REVEAL AGEING MECHANISMS IN SILICON ANODES FOR LITHIUM-ION BATTERIES</b> .....	531
<i>Lena Spitthoff, Michael Tobias Rauter, Ann Mari Svensson</i>	
<b>A BENIGN SOL-GEL ROUTE TOWARDS POROUS CARBON COATED SB NANOPARTICLES: A HIGH-PERFORMANCE LI-ION BATTERIES ANODE</b> .....	533
<i>Love Dashairya, Partha Saha, Vikash Chaturvedi, Manjusha Shelke</i>	
<b>A NEW METHOD TO STUDY DEPTH PROFILES IN SILICON/CARBON COMPOSITE ELECTRODES</b> .....	535
<i>Karsten Richter, Thomas Waldmann, Michael Kasper, Claudia Pfeifer, Michaela Memm, Peter Axmann, Margret Wohlfahrt-Mehrens</i>	
<b>X-RAY PHOTOELECTRON STUDY OF THE BINDER/ELECTRODE INTERFACE ON SILICON ANODES FOR LITHIUM ION BATTERIES</b> .....	537
<i>Richard Johnson, Gordon H. Waller, Siva Nadimpalli</i>	
<b>DIRECTLY ELECTRODEPOSITED POROUS Si/Cu COMPOSITES AS LI-ION BATTERIES ANODE MATERIALS</b> .....	539
<i>Guomin Li, Bing Li</i>	
<b>AN APPROACH FOR HIGHLY IMPROVED CYCLIC PERFORMANCE OF SiO<sub>x</sub> ACTIVE FOR LITHIUM ION BATTERY; DESIGN OF PHYSICALLY DURABLE AND PERFORMANCE SENSITIVE SEI</b> .....	540
<i>Hyeon-Woo Yang, Sun-Jae Kim</i>	
<b>CO<sub>2</sub>-DERIVED, IN-SITU CARBON-COATED MACROPOROUS SILICON AS A HIGH PERFORMANCE ANODE MATERIAL FOR LITHIUM-ION BATTERIES</b> .....	542
<i>Younghwan Cha, Panpan Dong, Xiahui Zhang, Min-Kyu Song</i>	
<b>UNDERSTANDING THE ROLE OF FLUOROETHYLENE CARBONATE AS A ELECTROLYTE ADDITIVE IN SILICON ANODE LITHIUM-ION BATTERIES</b> .....	543
<i>Anil Daliprasad Pathak, Kousik Samanta, Kisor Kumar Sahu, Soobhankar Pati</i>	
<b>INVESTIGATION OF THERMODYNAMIC NONIDEALITY OF SOLID LI-ION ELECTRODES USING CONCENTRATED SOLUTION THEORY</b> .....	544
<i>Xinfang Jin</i>	
<b>ELECTROCHEMICAL-THERMAL TANKS-IN-SERIES MODELS FOR LITHIUM-ION BATTERIES</b> .....	546
<i>Akshay Subramaniam, Suryanarayana Kolluri, Caitlin D. Parke, Manan Pathak, Shriram Santhanagopalan, Venkat R. Subramanian</i>	

<b>HIGH ACCURACY BATTERY MODELING : FULLY 3D-RESOLVED LITHIUM-ION BATTERY MESOSTRUCTURE INCLUDING CARBON BINDER DOMAINS</b> .....	548
<i>Mehdi Chouchane, Alexis Rucci, Zeliang Su, Arnaud Demortiere, Alejandro A. Franco</i>	
<b>CHARACTERIZATION OF FLOWING AQUEOUS SOLID DISPERSIONS OF ELECTROACTIVE LITHIUM-ION BATTERY MATERIALS</b> .....	550
<i>Gary Koenig, Sonia Foley, Linxiao Geng, Devanshi Gupta</i>	
<b>MOLECULAR ANALYSIS OF TRANSPORT CHARACTERISTICS OF LI ION IN SOLID STATE ELECTROLYTE</b> .....	551
<i>Koki Nakajima, Takuya Mabuchi, Takashi Tokumasu</i>	
<b>SINGLE PARTICLE CHARACTERIZATION OF DYNAMIC MORPHOLOGICAL AND PHASE CHANGES IN SELENIUM-DOPED GERMANIUM ANODE DURING (DE)LITHIATION PROCESSES</b> .....	553
<i>Tianyi Li, Xinwei Zhou, Yi Cui, Melissa Meyerson, Jason A. Weeks, Charles Buddie Mullins, Vincent De Andrade, Francesco De Carlo, Yuzi Liu, Likun Zhu</i>	
<b>CHARACTERIZATION OF AGED LI-ION BATTERY ELECTRODES FOR DIRECT RECYCLING PROCESS DESIGN</b> .....	555
<i>Kae Fink, Shriram Santhanagopalan</i>	
<b>OBTAINING RELIABLE KINETICS FROM NANOSIZED BATTERY MATERIALS</b> .....	556
<i>Steen Brian Schougaard</i>	
<b>IN SITU FOCUSED ION BEAM-SCANNING ELECTRON MICROSCOPE STUDY OF CRACK AND NANOPORE FORMATION IN GERMANIUM PARTICLE DURING (DE)LITHIATION</b> .....	557
<i>Xinwei Zhou, Tianyi Li, Yi Cui, Yuzi Liu, Charles Buddie Mullins, Melissa Meyerson, Likun Zhu</i>	
<b>ROLE OF OXYGEN VACANCY DEFECTS IN THE ELECTROCHEMICAL PERFORMANCE OF SUBSTOICHIOMETRIC MOLYBDENUM OXIDE</b> .....	559
<i>Yanhua Cui, Kaiyuan Wei, Yu Zhao, Chao Zeng, Yixiu Cui</i>	
<b>INTEREST OF CROSS-SECTION SURFACE ANALYSIS FOR LI-ION BATTERIES AND BEYOND</b> .....	560
<i>Lenaic Madec, Jean-Bernard Ledeuil, Gregory Gachot, Gael Coquil, Cecile Courreges, Laure Monconduit, Herve Martinez</i>	
<b>(INVITED) MOLECULAR SCALE MODELING OF STRUCTURE, TRANSPORT AND ELECTROCHEMISTRY OF AQUEOUS AND NON-AQUEOUS ELECTROLYTES</b> .....	561
<i>Oleg Borodin, Travis P Pollard, Jenel Vatamanu</i>	
<b>MODELLING TRANSPORT MECHANISMS IN THE SOLID ELECTROLYTE INTERPHASE</b> .....	562
<i>Birger Horstmann, Lars Von Kolzenberg, Fabian Single, Tobias Schmitt, Linda Bolay, Arnulf Latz</i>	
<b>THE INTERPLAY OF ELECTRODE HETEROGENEITY, SEI GROWTH, AND LI PLATING IN LI-ION BATTERIES</b> .....	565
<i>Fezzeh Pouraghajan, Fei Sun, Brian Mazzeo, Dean Wheeler</i>	
<b>COMPUTATIONAL DESIGN OF ELECTRODE-ELECTROLYTE INTERFACES FOR SOLID-STATE LITHIUM ION BATTERIES</b> .....	566
<i>Chuhong Wang, Tim Mueller</i>	
<b>EFFECTS OF ACTIVE MATERIAL LOSS ON LI PLATING, SEI GROWTH, AND LIFETIME BY A COMPREHENSIVE PHYSICS-BASED LIFE MODEL</b> .....	567
<i>Mehdi M. Forouzan, Saeed Khaleghi Rahimian, Sangwoo Han, Ying Liu, Yifan Tang</i>	
<b>ELECTRONIC STRUCTURE ELUCIDATION OF TWO-STEP ELECTROLYTE DECOMPOSITION MECHANISM ON LI(X)MN(1.5)NI(0.5)O(4) (001) SURFACES</b> .....	569
<i>Kevin Leung</i>	
<b>MODELING THERMAL DECOMPOSITION OF METAL OXIDE CATHODES IN NON-AQUEOUS ELECTROLYTES FOR PREDICTION OF THERMAL RUNAWAY IN LITHIUM-ION BATTERIES</b> .....	570
<i>Randy C. Shurtz, John Hewson</i>	
<b>(INVITED) ATOMISTIC INSIGHTS INTO CATHODE DISSOLUTION AND ION TRANSPORT IN LI-ION BATTERIES</b> .....	571
<i>Badri Narayanan</i>	
<b>A NEW STATE OF HEALTH DIAGNOSIS METHOD UTILIZING SELF-SUPERVISED DEEP LEARNING VIA VIRTUAL TESTS</b> .....	572
<i>Daniel Weber, Clemens Guhmann</i>	
<b>(INVITED) TOWARDS THE REALIZATION OF SUSTAINABLE HIGH-PERFORMANCE LITHIUM-ION BATTERIES: AQUEOUS PROCESSING OF COBALT-FREE HIGH-ENERGY CATHODES</b> .....	574
<i>Matthias Kuenzel, Arefeh Kazzazi, Guk-Tae Kim, Dominic Bresser, Stefano Passerini</i>	
<b>(INVITED) TOWARDS FAST CHARGING OF HIGH ENERGY DENSITY LI-ION BATTERIES</b> .....	576
<i>Zhijia Du, Tianyi Liu, Xianyang Wu, Feng Lin, Kejie Zhao, David L. Wood, Ilias Belharouak</i>	
<b>SPECIFIC INFLUENCES AND GENERAL TRENDS IN LI-ION CELLS - ELECTRODE PARAMETERS, CELL FORMAT, AND FAST-CHARGING CAPABILITY</b> .....	577
<i>Thomas Waldmann, Jason B. Quinn, Karsten Richter, Michael Kasper, Margret Wohlfahrt-Mehrens</i>	
<b>10-MIN FAST CHARGING OF AUTOMOTIVE LI-ION BATTERIES AT AN ELEVATED TEMPERATURE</b> .....	579
<i>Xiao-Guang Yang, Teng Liu, Chao-Yang Wang</i>	
<b>(INVITED) INVESTIGATION OF MEGAHERTZ FREQUENCY MODULATION EFFECTS ON CHARGE AND DISCHARGE BEHAVIOR OF LITHIUM ION BATTERIES</b> .....	580
<i>Bohua Wen, Ping-Chun Tsai, Yet-Ming Chiang</i>	
<b>MODELING IMPACT SAFETY OF LITHIUM-ION BATTERIES IN ELECTRIFIED VEHICLES</b> .....	581
<i>Jie Deng, Chulheung Bae, Ted J. Miller, Pierre L'Eplattenier</i>	

<b>FOR BATTERY SAFETY SAKE: OPERANDO QUANTIFICATION OF LITHIUM CONCENTRATION GRADIENTS IN THE GRAPHITE ANODE OF LI-ION CELLS USING SYNCHROTRON ENERGY DISPERSIVE X-RAY DIFFRACTION</b> .....	582
<i>Koffi P. C. Yao, John Okasinski, Kaushik Kalaga, Ilya A Shkrob, Daniel P Abraham</i>	
<b>LITHIUM-ION BATTERY SAFETY TESTS MONITORED BY LABVIEW AND COMSOL SOFTWARE FOR ELECTRICAL AND MECHANICAL CHARACTERISTICS</b> .....	584
<i>Snigdha Sharma, Amrish K Panwar, Madan Mohan Tripathi</i>	
<b>PREDICTING THE THICKNESS CHANGE OF A LARGE FORMAT POUCH CELL DURING OPERATION</b> .....	585
<i>Drew Joseph Pereira, Miguel Fernandez, Kathryn Corine Streng, Jay Gao, Taylor R Garrick, John W. Weidner</i>	
<b>ANALYZING THE EFFECTS OF LITHIUM PLATING ON THE SAFETY PERFORMANCE OF LITHIUM-ION BATTERIES</b> .....	587
<i>Eric Deichmann, Loraine Torres-Castro, Mohan Karulkar, Joshua Lamb, Fernando H Garzon</i>	
<b>DEGRADATION OF COMMERCIAL LITHIUM-ION CELLS BEYOND 80% CAPACITY</b> .....	588
<i>Yuliya Preger, Armando Fresquez, Babu R. Chalamala, Summer Ferreira</i>	
<b>STEP POTENTIAL ELECTROCHEMICAL SPECTROSCOPY (SPECS) ANALYSIS USING VARIOUS DIFFUSION MODEL FOR COMPARISON OF SPINEL <math>\text{LiMn}_2\text{O}_4</math> AS CATHODE MATERIAL FOR LI-ION BATTERY (LIBS)</b> .....	589
<i>Zahoor Ahmed, Scott W Donne</i>	
<b>UNDERSTANDING THE ELECTROCHEMICAL PERFORMANCE OF RECHARGEABLE <math>\text{LiFePO}_4/\text{Li}_4\text{Ti}_5\text{O}_{12}</math> DESIGN USING MATHEMATICAL MODEL</b> .....	590
<i>Miaomiao Ma, Christopher E. Hendricks, Azzam N. Mansour, Jonathan K. Ko, Gordon H. Waller, Daphne A. Fuentevilla</i>	
<b>STEP BY STEP PROCESS FOR FORMULATING A DFN MODEL FOR A LITHIUM ION FULL CELL BATTERY</b> .....	592
<i>Gregory Dan Chipman, Thomas F. Fuller</i>	
<b>HIGH C-RATE DIFFERENTIAL EXPANSION AND VOLTAGE MODEL FOR LI-ION BATTERIES</b> .....	593
<i>Peyman Mohtat, Jason B Siegel, Anna G Stefanopoulou</i>	
<b>NUMERICALLY EFFICIENT ALGORITHM FOR SOLVING PSEUDO 2-DIMENSIONAL LI-ION CELL MODEL</b> .....	595
<i>Sangwoo Han, Saeed Khaleghi Rahimian, Ying Liu</i>	
<b>HIGH-THROUGHPUT STUDIES OF LI-BATTERY MATERIALS</b> .....	596
<i>Eric McCalla</i>	
<b>ENVIRONMENTAL LIFE CYCLE MODELLING OF THE PRODUCTION AND USE OF LITHIUM-ION BATTERIES UTILISING NOVEL ELECTRODE CHEMISTRIES IN CHINA</b> .....	597
<i>Evangalos Kallitsis, Anna Korre, Geoff Kelsall, Magdalena Kupfersberger, Zhenggang Nie</i>	
<b>MESOSCALE IMPLICATIONS OF ELECTRODE-SCALE HETEROGENEITY ON PERFORMANCE AND DEGRADATION</b> .....	599
<i>Mukul Parmananda, Aashutosh N Mistry, Partha P. Mukherjee</i>	
<b>THERMODYNAMIC ORIGIN OF REACTION INHOMOGENEITY IN THICK BATTERY ELECTRODES</b> .....	600
<i>Fan Wang, Ming Tang</i>	
<b>ELECTROCHEMICAL MODELING AND EXPERIMENTAL INVESTIGATION OF AGING MECHANISMS ON NCA AND GRAPHITE ELECTRODES HARVESTED FROM OFF-GRID PV LITHIUM-ION CELLS</b> .....	601
<i>Fabian Andres Benavente, Jing Ying Ko, Anders Olof Lundblad, Henrik Ekstrom, Goran Lindbergh</i>	
<b>(INVITED) REQUIREMENTS AND CHALLENGES FOR NEXT GENERATION AUTOMOTIVE BATTERIES</b> .....	603
<i>Forrest S Gittleston</i>	
<b>LITHIUM ION BATTERIES AND NEXT GENERATION ENERGY STORAGE TECHNOLOGY - ADOPTION TO AIRCRAFT AND AEROSPACE</b> .....	604
<i>Roger Alan Brewer</i>	
<b>SYNTHETIC VS. REAL DRIVING CYCLES: A COMPARISON OF EV BATTERY DEGRADATION</b> .....	605
<i>George Baure, Matthieu Dubarry</i>	
<b>RELITHIATION OF CATHODE MATERIALS FOR THE RECYCLING OF LITHIUM-ION BATTERIES</b> .....	606
<i>Anthony Montoya, John T. Vaughey</i>	
<b>A SCALABLE FROTH-FLOTATION SEPARATION PROCESS FOR DIRECT RECYCLING OF LI-ION BATTERIES AND ITS TECHNICAL FEASIBILITY</b> .....	607
<i>Hosop Shin, Ruiting Zhan, Kulwinder Dhindsa, Lei Pan, Taehee Han</i>	
<b>PROBING THE EFFECT OF THE DEPTH OF DISCHARGE RANGE AND C-RATE ON THE LIFETIME OF LI-ION CELLS AT DIFFERENT TEMPERATURE</b> .....	608
<i>Roby Gauthier, Alexander J. Louli, Jeff R. Dahn</i>	
<b>INSIGHTS FROM A COMPREHENSIVE COMMERCIAL LITHIUM ION BATTERY CYCLING AND AGING STUDY</b> .....	609
<i>Summer Ferreira, Yuliya Preger, Armando Fresquez, Heather Barkholtz, Frank Austin Mier, Babu R. Chalamala</i>	
<b>LIFE PREDICTION OF LITHIUM ION BATTERY FOR GRID SCALE ENERGY STORAGE SYSTEM</b> .....	610
<i>Tsutomu Hashimoto, Kiyoshi Kanamura</i>	
<b>RECYCLE OF END-OF-LIFE NMC 111 CATHODES BY ELECTROCHEMICAL RELITHIATION</b> .....	612
<i>Jaclyn Coyle, Xuemin Li, Shriram Santhanagopalan, Anthony Burrell</i>	
<b>RECOVERY OF UNWANTED LITHIUM FROM GRAPHITE ANODES VIA THERMAL GRADIENT</b> .....	613
<i>Robert W. Atkinson, Rachel E. Carter, Corey T Love</i>	
<b>RECYCLING AND RE-USE OF LITHIUM-ION BATTERIES (RELIB)</b> .....	614
<i>Wojciech Mrozik</i>	

<b>LITHIUM PLATING PATTERNS ON LITHIUM ANODE REVEALED WITH OPERANDO NANOSCALE X-RAY IMAGING</b> .....	616
<i>Bharathy Parimalam, Yubai Li, Paul Choi, Shawn Litster</i>	
<b>K<sub>0.54</sub>[CO<sub>0.5</sub>MN<sub>0.5</sub>]O<sub>2</sub>: NEW CATHODE WITH HIGH POWER CAPABILITY FOR POTASSIUM-ION BATTERIES</b> .....	617
<i>Ji Ung Choi, Jongsoon Kim, Seung-Taek Myung</i>	
<b>PAVING THE WAY FOR K-ION BATTERIES: ROLE OF THE ELECTROLYTE REACTIVITY</b> .....	619
<i>Laure Caracciolo, Gregory Gachot, Vincent Gabaudan, Emmanuel Petit, Lorenzo Stievano, Laure Monconduit, Herve Martinez, Lenaic Madec</i>	
<b>INVESTIGATION INTO THE INFLUENCES OF CO-SOLVENTS IN IONIC LIQUID BASED ELECTROLYTES FOR LITHIUM-SULFUR CELLS</b> .....	621
<i>Quinton James Meisner, Qian Liu, Zhengcheng Zhang</i>	
<b>DEGRADATION ANALYSIS OF FEF<sub>3</sub> POSITIVE ELECTRODE USING TWO-COMPARTMENT TYPE CELL</b> .....	622
<i>Kazuki Yoshii, Takeshi Miyazaki, Masahiro Shikano, Hikari Sakaebe</i>	
<b>INVESTIGATING THE DYNAMIC BEHAVIOR OF ZINC OXIDE DISCHARGE PRODUCT IN RECHARGEABLE ZINC ELECTRODES</b> .....	624
<i>Brendan E. Hawkins, Damon Turney, Ankur Jadhav, Gautam Ganapati Yadav, Robert J. Messinger, Sanjoy Banerjee</i>	
<b>A COUPLED TANK-IN-SERIES ELECTROCHEMICAL ENGINEERING AND THERMAL MODEL FOR LITHIUM SULFUR BATTERIES</b> .....	626
<i>Caitlin D. Parke, Akshay Subramaniam, Suryanarayana Kolluri, Manan Pathak, Venkat R. Subramanian</i>	
<b>ELECTROLYTE SCIENCE FOR DIVALENT METAL BATTERIES</b> .....	628
<i>Nathan T Hahn, Kevin R Zavadi</i>	
<b>A HIGH-ENERGY-DENSITY AND LONG-LIFE CHALCOGENIDE-IODIDE REDOX FLOW BATTERY</b> .....	629
<i>Zhejun Li, Yi-Chun Lu</i>	
<b>NOVEL CELL AND MANUFACTURING ARCHITECTURE ENABLING NEXT-GENERATION, HIGH ENERGY DENSITY CHEMISTRIES</b> .....	630
<i>Naoki Ota</i>	
<b>AGING STUDY OF THE LITHIUM METAL BATTERIES USING NICKEL-RICH CATHODE MATERIALS</b> .....	632
<i>Juan Pablo Badillo Jimenez, Markus Borner, Thomas Beuse, Falko Schappacher, Martin Winter</i>	
<b>IN SITU CHARACTERIZATION OF THE LITHIUM METAL INTERFACE</b> .....	634
<i>Jeffrey Lopez, Yang Shao-Horn</i>	
<b>IN-SITU CHARACTERIZATION OF ELECTROLYTE DEGRADATION PRODUCTS WITH LITHOGRAPHICALLY PATTERNED ELECTRODE ARRAYS</b> .....	635
<i>Sophia E Lee, Maureen H. Tang</i>	
<b>A STUDY OF PRACTICAL OBSTACLES IN PRIMARY AND RECHARGEABLE ALKALINE ZINC-AIR BATTERIES</b> .....	637
<i>Wei Sun, Mengyi Zhang, Peter Bieker, Martin Winter</i>	
<b>THE THERMODYNAMIC AND KINETIC INFLUENCE OF SOLVENT, COUNTER ANION AND SALT CONCENTRATION ON ORR IN LI-O<sub>2</sub> BATTERIES</b> .....	638
<i>Graham Leverick, Ryoichi Tatara, Shuting Feng, Emily Crabb, Arthur France-Lanord, Michal Tulodziecki, Ryan M. Stephens, Jeffrey C. Grossman, Yang Shao-Horn</i>	
<b>RECHARGEABLE ALUMINUM ORGANIC BATTERIES</b> .....	639
<i>Dong Jun Kim, Dong-Joo Yoo, Michael T Otley, Aleksandrs Prokofjevs, Cristian Pezzato, Magdalena Owczarek, Seung Jong Lee, Jang Wook Choi, J. Fraser Stoddart</i>	
<b>(BATTERY DIVISION RESEARCH AWARD) ADVANCED ENERGY STORAGE SYSTEMS FOR ENABLING ELECTRIFICATION OF VEHICLES "LITHIUM ION &amp; BEYOND"</b> .....	641
<i>Khalil Amine, Jun Lu, Gui-Liang Xu, Zonghai Chen, Larry A Curtiss</i>	
<b>(INVITED) DESIGNING HIGHLY STABLE SODIUM METAL ANODES FOR SODIUM BATTERIES</b> .....	642
<i>Weiyang Li</i>	
<b>(INVITED) ELECTROLYTE DESIGN AND SOLUTION MEDIATION PROCESSES IN METAL-OXYGEN AND METAL-SULFUR BATTERIES</b> .....	643
<i>Yi-Chun Lu</i>	
<b>SOLVING BARRIERS TO COMMERCIALIZATION OF CELLS WITH LITHIUM METAL ANODES</b> .....	644
<i>Owen Crowther</i>	
<b>ENABLING HIGH-ENERGY LITHIUM METAL BATTERIES THROUGH ELECTROLYTE STRATEGY</b> .....	646
<i>Wu Xu, Ji-Guang Zhang</i>	
<b>MOLECULAR-LEVEL ENGINEERING OF PROTECTED LI METAL ANODES FOR HIGH PERFORMANCE NEXT-GENERATION BATTERIES</b> .....	647
<i>Keegan Adair, Yang Zhao, Qian Sun, Ruying Li, Xueliang Sun</i>	
<b>SINGLE-COMPONENT SOLID ELECTROLYTE INTERPHASES ON LITHIUM</b> .....	648
<i>Betar M. Gallant, Mingfu He, Rui Guo</i>	
<b>PLAN-VIEW OPERANDO VIDEO MICROSCOPY OF LI METAL ANODES</b> .....	650
<i>Adrian J. Sanchez, Yuxin Chen, Eric Kazyak, Kuan-Hung Chen, Ethan Pattison, Neil P. Dasgupta</i>	
<b>DESIGNING IN-SITU FORMED INTERPHASES ENABLES HIGHLY REVERSIBLE COBALT-FREE LINIO<sub>2</sub> CATHODE FOR LITHIUM METAL/ION BATTERIES</b> .....	651
<i>Tao Deng, Chunsheng Wang</i>	
<b>(INVITED) THIOPHOSPHATE BASED SOLID ELECTROLYTES AND CATHODES INTERFACES</b> .....	653
<i>Jagjit Nanda, Ethan Craig Self, Frank M. Delnick</i>	

<b>(INVITED) SOLID-ELECTROLYTE INTERPHASE ON LI METAL SURFACES</b> .....	654
<i>Perla B. Balbuena</i>	
<b>ADVANCED LI METAL BATTERIES: THERMAL SAFETY EVALUATION, ANALYSIS AND MECHANISTIC ELUCIDATION</b> .....	655
<i>Dhanya Puthusseri, Vilas G. Pol</i>	
<b>LOW-TEMPERATURE BEHAVIOR OF LITHIUM METAL ANODES IN CARBONATE AND ETHER ELECTROLYTES</b> .....	656
<i>Akila C Thenuwara, Stephanie Sandoval, Emily J Klein, Matthew T McDowell</i>	
<b>HIGHLY REDUCED AQUEOUS POLYOXOMETALATE SOLUTIONS FOR ON-DEMAND HYDROGEN GENERATION AND ENERGY STORAGE IN REDOX FLOW BATTERIES</b> .....	657
<i>Mark Symes, Jia Jia Chen, Leroy Cronin</i>	
<b>DEVELOPMENT OF HIGH-PERFORMANCE ION SELECTIVE MEMBRANES FOR LITHIUM POLYSULFIDE REDOX FLOW BATTERIES (LI-PS RFBS)</b> .....	658
<i>Sangil Kim, Tongshuai Wang, Yuechen Gao, Azadeh Amiri, Chulsung Bae</i>	
<b>PROGRAMMING THE KNOWLEDGE: A TRIAL QSAR STUDY TOWARDS THE STABILITY OF DIALKOXY BENZENE BASED CATHOLYTE MOLECULES FOR NONAQUEOUS REDOX FLOW BATTERIES</b> .....	659
<i>Lu Zhang, Jingjing Zhang, Benjamin Silcox, Ilya A Shkrob, Rajeev Assary, Lei Cheng, Levi Thompson</i>	
<b>AQUEOUS FLOW BATTERIES UTILIZING REDOX-ACTIVE ORGANIC MOLECULES: PHENAZINE DERIVATIVES AS A PROMISING ANOLYTE MATERIAL</b> .....	661
<i>Aaron Hollas, Ruozhu Feng, Nadeesha Wellala, Vijayakumar Murugesan, Zimin Nie, Ed Thomsen, Yuyan Shao, Wei Wang, David Reed, Vincent Sprenkle</i>	
<b>(INVITED) RECENT PROGRESS IN ORGANIC-BASED AQUEOUS FLOW BATTERIES</b> .....	662
<i>Michael J. Aziz</i>	
<b>ZINC ANODE DESIGN FOR RECHARGEABLE AQUEOUS HIGH-ENERGY ZN BATTERIES</b> .....	664
<i>Yamin Zhang, Yutong Wu, Yu Yan, Zhuo Zhou, Nian Liu</i>	
<b>LOW COST ZINC-IRON RECHARGEABLE FLOW BATTERY WITH HIGH ENERGY DENSITY</b> .....	666
<i>Alessandra Accogli, Gabriele Panzeri, Eugenio Gibertini, Luca Magagnin</i>	
<b>EFFECT OF ZNO-SATURATED ELECTROLYTE ON RECHARGEABLE ALKALINE ZN-NI AND ZN-MNO<sub>2</sub> BATTERIES AT HIGH ZINC DEPTH-OF-DISCHARGE</b> .....	667
<i>Matthew B. Lim, Igor V. Kolesnichenko, David J. Arnot, Timothy N. Lambert</i>	
<b>NASICON Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> FACILITATES ANOMALOUS TWO-STAGE Na<sup>+</sup> AND ZN<sup>2+</sup> INTERCALATION FOR ZINC-ION BATTERIES</b> .....	669
<i>Jesse S. Ko, Partha P. Paul, Natalie Seitzman, Ryan Deblock, Bruce S. Dunn, Johanna Nelson Weker</i>	
<b>(AMAZON CATALYST AT ECS GRANT WINNER) INVESTIGATIONS OF MAGNESIUM POLYSULFIDE FLOW BATTERIES</b> .....	670
<i>Peng He, Hunter O. Ford, Seancarlos Gonzalez, Emily Doyle, Jennifer L. Schaefer</i>	
<b>(INVITED) MILLIMETER-THICK ALL ORGANIC BASED ELECTRODES FOR LOW COST AQUEOUS BATTERIES</b> .....	671
<i>Softa Perticarari, Patrick Soudan, Yann Pellegrin, Dominique Guyomard, Fabrice Odobel, Philippe Poizat, Joel Gaubicher</i>	
<b>(INVITED) CONSIDERATIONS OF IONIC CHARGE CARRIERS FOR AQUEOUS RECHARGEABLE BATTERIES</b> .....	672
<i>Xiulei Ji</i>	
<b>DETERMINING INTERPHASE IDENTITY AND DIRECTING CATION TRANSPORT PROPERTIES AT MG AND CA ELECTRODES</b> .....	673
<i>Kevin R Zavadil, Nathan T Hahn, Xuefei Feng, Yi-Sheng Liu, Jinghua Guo</i>	
<b>(INVITED) ORDERING AND STRUCTURAL TRANSFORMATIONS UPON LI, NA, K AND MG INTERCALATION IN TRANSITION METAL OXIDES AND SULFIDES</b> .....	674
<i>Anton Van Der Ven, Jonas Kaufman, Sanjeev Krishna Kolli, Julija Vinkeviciute</i>	
<b>GOING BEYOND INTERCALATION CAPACITY OF AQUEOUS METALLIC ZN-ANODE BATTERIES</b> .....	675
<i>Gautam Ganapati Yadav</i>	
<b>SYNTHESIS, CATHODE PROPERTIES AND CRYSTAL AND ELECTRONIC STRUCTURAL CHANGE IN CHARGE/DISCHARGE PROCESS OF SPINEL TYPE CATHODE-MATERIALS MG<sub>4</sub>V<sub>5-x</sub>NI<sub>x</sub>O<sub>12</sub> FOR MAGNESIUM SECONDARY BATTERY</b> .....	676
<i>Yasushi Idemoto, Natsumi Kawakami, Naoya Ishida, Naoto Kitamura</i>	
<b>ELECTROLYTE CHEMISTRIES OF MG BATTERIES</b> .....	678
<i>T. Leo Liu</i>	
<b>INVESTIGATION OF MANIPULATED INTERFACE IN CONVENTIONAL ELECTROLYTES FOR RECHARGEABLE MAGNESIUM BATTERY APPLICATION</b> .....	679
<i>Hui Wang, Xuefei Feng, Yi-Sheng Liu, Vijayakumar Murugesan, Ji-Guang Zhang, Jinghua Guo, Karl T Mueller, Yuyan Shao</i>	
<b>CONTROLLED OXYGEN REDOX FOR EXCELLENT POWER CAPABILITY IN LAYERED SODIUM-BASED COMPOUNDS</b> .....	680
<i>Hee Jae Kim, Seung-Taek Myung</i>	
<b>HIGH-RATE AND LONG CYCLE-LIFE OF BULK Na<sub>2/3</sub>[Ni<sub>1/3</sub>Mn<sub>2/3</sub>]O<sub>2</sub> SODIUM-ION BATTERY CATHODE ENABLED THROUGH STRUCTURAL INCLUSION</b> .....	682
<i>Eric Detsi, Jintao Fu, John S Corsi, Manni Li</i>	
<b>(INVITED) REVERSIBLE ASYMMETRIC STRUCTURE EVOLUTION AND BATTERY PERFORMANCE IN LAYERED SODIUM TRANSITION METAL OXIDES</b> .....	683
<i>Xin Li</i>	

<b>(INVITED) PUSHING THE CAPACITY OF LAYERED OXIDE CATHODE TO THE LIMIT</b> .....	684
<i>Lufeng Yang, Xiang Li, Shan Xiong, Yan-Yan Hu, Hailong Chen</i>	
<b>(INVITED) ROOM TEMPERATURE ALL SOLID STATE SODIUM BATTERIES BASED ON GLASSY ELECTROLYTES</b> .....	685
<i>Ying Shirley Meng</i>	
<b>A NON-AQUEOUS NAF6-BASED ELECTROLYTE DEGRADATION STUDY: FORMATION AND MITIGATION OF HF</b> .....	686
<i>Pete Barnes, Kassiopeia Smith, Quinn White, Eric Storch, Riley Parrish, Devan Karsann, Chris Jones, Changjian Deng, Joseph Dumais, Eric J. Dufek, Claire Xiong</i>	
<b>TAILORING MATERIALS CHEMISTRY TO ADVANCE LOW TEMPERATURE MOLTEN SODIUM BATTERIES</b> .....	687
<i>Erik D. Spoecker, Stephen Percival, Amanda Peretti, Leo J. Small</i>	
<b>LIQUID STRUCTURE AND BATTERY APPLICATION OF HIGHLY CONCENTRATED SULFOLANE-BASED SODIUM ELECTROLYTES</b> .....	688
<i>Yukihiro Okamoto, Seiji Tsuzuki, Kazuhide Ueno, Kaoru Dokko, Masayoshi Watanabe</i>	
<b>UNDERSTANDING THE REVERSIBLE ANIONIC REDOX IN NEW LAYERED NA-ION CATHODES</b> .....	690
<i>Jue Liu, Bohang Song, Enyuan Hu, Yiman Zhang, Xiao-Qing Yang, Jagjit Nanda, Ashfia Huq, Katharine Page</i>	
<b>(INVITED) AN EVALUATION OF ELECTROCHEMICAL PROPERTIES FOR A SERIES OF SODIUM-ION BATTERY ANODES</b> .....	692
<i>Christopher S. Johnson</i>	
<b>(INVITED) UNDERSTANDING THE PROPERTIES THAT AFFECT THE REVERSIBILITY OF SODIUM TITANATE ANODES</b> .....	693
<i>Judith Alvarado, Marca Doeff</i>	
<b>REVEALING THE DOPING EFFECT IN STABILIZING LAYERED CATHODE MATERIALS FOR SODIUM-ION BATTERY</b> .....	694
<i>Pengfei Yan</i>	
<b>(INVITED) CARBON FIBER-PAPER-SUPPORTED CARBON NANOFIBERS AS FREE-STANDING ELECTRODE ARCHITECTURES FOR REVERSIBLE SODIUM-ION STORAGE</b> .....	695
<i>Jeffrey W. Long, Ryan Deblock, Megan B. Sassin, Debra R. Rolison, Ashley Hoffmaster, Jesse S. Ko</i>	
<b>UNDERSTANDING CHEMO-MECHANICAL DEGRADATION IN HIGH-CAPACITY ELECTRODE MATERIALS FOR BEYOND-LITHIUM-ION BATTERIES</b> .....	696
<i>Matthew G Boebinger, Baolin Wang, Marc Papakyriakou, Maksym Yarema, Vanessa Wood, Shuman Xia, Ting Zhu, Matthew T McDowell</i>	
<b>STRUCTURAL EVOLUTION OF SOLID-STATE LI<sub>2</sub>O<sub>2</sub> WITH REDUCED CHARGE OVERPOTENTIAL IN LI-O<sub>2</sub> BATTERIES</b> .....	698
<i>Guoqiang Tan, Jun Lu, Lina Chong, Jianguo Wen, Lu Ma, Yifei Yuan, Xiaoqiao Zeng, Tao Li, Tianpin Wu, Cong Liu, Di-Jia Liu, Khalil Amine</i>	
<b>ELECTROLYTE SELECTION CRITERIA FOR ELECTROCHEMICAL CONVERSION OF CO<sub>2</sub> IN APROTIC, LI-CO<sub>2</sub> BATTERIES</b> .....	700
<i>Aliza Khurram, Betar M. Gallant</i>	
<b>LOW CONCENTRATION ELECTROLYTES FOR LITHIUM-SULFUR BATTERIES</b> .....	702
<i>Rebecca Glaser, Billy Johnson, Feixiang Wu, Jud Ready, Mohan Sanghadasa, Gleb Yushin</i>	
<b>THERMODYNAMIC PERSPECTIVE ON CO-INTERCALATION BEHAVIOR OF LI/MG DUAL CATIONS IN INTERCALATION CATHODE MATERIALS</b> .....	703
<i>Hongyi Li, Takuya Hatakeyama, Norihiko L. Okamoto, Yu Kumagai, Fumiyasu Oba, Tetsu Ichitsubo</i>	
<b>PROMISES AND CHALLENGES FACING LITHIUM METAL BATTERIES</b> .....	704
<i>Sheng-Hui Wu, Wei-Hsin Wu, Chung-Hsiang Chao, Chih-Ching Chang, Jason Fang</i>	
<b>LOW POLARIZATION AIR ELECTRODE PREPARED BY PDL METHOD FOR AIR RECHARGEABLE BATTERY</b> .....	705
<i>Kenji Kawaguchi, Shizuki Kino, Masatsugu Morimitsu</i>	
<b>FABRICATION AND CHARACTERIZATION OF HIGH CAPACITY AND LONG CYCLE LIFE LITHIUM-SULFUR BATTERY USING POROUS MATERIAL AS A POLYSULFIDE ADSORBENT</b> .....	707
<i>Tilahun Awoke Zegeye, Wei -Nien Su, Chung-Feng Jeffrey Kuo, Bing-Joe Hwang</i>	
<b>ELECTRODE PERFORATION INDUCED PERFORMANCE INCREASE IN VANADIUM REDOX FLOW BATTERIES</b> .....	708
<i>Ian Lin, Masahiro Katou, Takashi Kanno</i>	
<b>EXPLORING IONIC LIQUID-SOLVENT BLEND FORMULATIONS FOR THE STABLE CYCLING OF LI-METAL ANODES IN LI-O<sub>2</sub> BATTERIES</b> .....	710
<i>Alex Ryan Neale, Ryan Sharpe, Stephen Yeandel, Pooja Goddard, Enrico Petrucco, Laurence J. Hardwick</i>	

## VOLUME 2

<b>ON IMPROVING THE CYCLING STABILITY OF P2-TYPE NA<sub>0.67</sub>NI<sub>0.33</sub>MN<sub>0.67</sub>O<sub>2</sub> CATHODE MATERIAL BY TI-SUBSTITUTION FOR NA-ION BATTERIES</b> .....	712
<i>Debanjana Pahari, Sreeraj Puravankara</i>	



<b>EXPERIMENTAL AND THEORETICAL INVESTIGATION OF LITHIUM SULFIDE DEPOSITION ON A POLISHED GRAPHITE CATHODE FOR LITHIUM-SULFUR BATTERIES DURING DISCHARGE</b> .....	714
<i>Chao Shen, Petru Andrei, Jim P. Zheng</i>	
<b>SYMMETRIC ALL-QUINONE AQUEOUS BATTERY</b> .....	715
<i>Yan Jing, Liuchuan Tong, Michael J. Aziz, Roy G. Gordon</i>	
<b>A WATER-MISCIBLE QUINONE FLOW BATTERY WITH HIGH VOLUMETRIC AND ENERGY DENSITY</b> .....	717
<i>Shijian Jin, Yan Jing, Michael J. Aziz, Roy G. Gordon</i>	
<b>A HIGH VOLTAGE SODIUM ION BATTERY BASED ON LOW-COST SODIUM IRON SULFATE CATHODE MATERIAL</b> .....	719
<i>Shiyu Li, Jianqing Zhao, Lijun Gao</i>	
<b>SYNERGISTIC EFFECT OF 3D CURRENT COLLECTORS AND ALD SURFACE MODIFICATION FOR HIGH COULOMBIC EFFICIENCY LITHIUM METAL ANODES</b> .....	720
<i>Kuan-Hung Chen, Adrian J. Sanchez, Eric Kazyak, Andrew L. Davis, Neil P. Dasgupta</i>	
<b>LI-SUBSTITUTED LAYERED-SPINEL CATHODE MATERIAL FOR SODIUM-ION BATTERIES</b> .....	721
<i>Changjian Deng, Paige Skinner, Yuzi Liu, Riley Hunt, Miu Lun Lau, Meiling Sun, Chunrong Ma, Wei Tong, Jing Xu, Hui (Claire) Xiong</i>	
<b>HOLLANDITE-TYPE VO<sub>1.75</sub>(OH)<sub>0.5</sub>: EFFECTIVE SODIUM STORAGE FOR HIGH-PERFORMANCE SODIUM ION BATTERIES</b> .....	723
<i>Jae Hyeon Jo, Jongsoon Kim, Seung-Taek Myung</i>	
<b>EXPLORING THE EFFECT OF VARYING REDUCED GRAPHENE OXIDE CONTENT ON THE STABLE ELECTROCHEMICAL PERFORMANCE OF SB NANOPARTICLES ANODE FOR NA-ION BATTERIES</b> .....	725
<i>Love Dashairya, Debasish Das, Subhasish B Majumder, Partha Saha</i>	
<b>OXYGEN BARRIER COMPOSITE MEMBRANE FOR LI-AIR BATTERY USING CUBOID LIALTIPO<sub>4</sub> IN ORTHOGONAL ARRAY</b> .....	726
<i>Kyounghwan Choi, Wonsung Choi, Dongmin Im</i>	
<b>POTENTIAL-DEPENDENT OXIDATION MECHANISM OF LI<sub>2</sub>O<sub>2</sub> AND ITS APPLICATION IN LI-O<sub>2</sub> BATTERIES</b> .....	727
<i>Yu Wang, Yi-Chun Lu</i>	
<b>SOLVATE IONIC LIQUID ELECTROLYTES FOR MG BATTERIES</b> .....	729
<i>Kaoru Dokko, Soma Suzuki, Shoshi Terada, Kei Hashimoto, Seiji Tsuzuki, Morgan L. Thomas, Toshihiko Mandai, Masayoshi Watanabe</i>	
<b>STARCH DERIVED HARD CARBON ANODES FOR SODIUM ION BATTERY</b> .....	731
<i>Arenst Andreas Arie, Hans Kristianto, Henky Muljana</i>	
<b>NOVEL POROUS COMPLEX FRAMEWORK MATERIALS (CFM) BASED SULFUR HOSTS FOR HIGH ENERGY DENSITY LI - S BATTERIES</b> .....	732
<i>Pavithra Murugavel Shanthy, Bandi Ramalinga, Bharat Gattu, Moni Kanchan Datta, Oleg I Velikokhatnyi, Prashant Nagesh Kumta</i>	
<b>TAILORING OF LIQUID ELECTROLYTES FOR ROOM-TEMPERATURE FLUORIDE SHUTTLE BATTERIES</b> .....	734
<i>Mitsuo Kawasaki, Ken-Ichi Morigaki, Gentaro Kano, Taketoshi Minato, Takeshi Abe, Zempachi Ogumi</i>	
<b>SOLUBILITY AND STABILITY OF NAO<sub>2</sub> IN DIGLYME-BASED NA-O<sub>2</sub> BATTERIES</b> .....	736
<i>Bin Qin, Chi-Ying Vanessa Li, Kwong-Yu Chan</i>	
<b>OPERANDO X-RAY DIFFRACTION OF LITHIUM-SULFUR BATTERIES WITH CONCURRENT RESISTANCE MEASUREMENT</b> .....	738
<i>Yu-Chuan Chien, Ashok Sreekumar Menon, William Robert Brant, Daniel Brandell, Matthew J. Lacey</i>	
<b>CHARACTERIZATION OF THE EFFECT OF ELECTROLYTE-TO-SULFUR RATIO ON THE LITHIUM-SULFUR CELL RESISTANCE USING ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY METHOD</b> .....	740
<i>Aysegul Karakus, Damla Eroglu</i>	
<b>PRE-LITHIATION METHOD WITH SPAN-CNT CATHODE IN LI-S BATTERIES</b> .....	742
<i>Donghao Ye, Chao Shen, Jim P. Zheng</i>	
<b>IMPROVEMENT OF THE LI DISSOLUTION/DEPOSITION REVERSIBILITY UNDER OXYGEN ATMOSPHERE BY EMPLOYMENT OF LINO<sub>3</sub>-BASED ELECTROLYTE</b> .....	743
<i>Minoru Sohmiya, Taichi Fujinami, Yoshiya Hayashi, Hiromi Otsuka, Kimihiko Ito, Yoshimi Kubo, Morihiro Saito</i>	
<b>NITROGEN-CONTAINING ORGANIC ELECTRODE MATERIALS FOR LI-ION BATTERIES AND BEYOND</b> .....	746
<i>Chao Luo, Chunsheng Wang</i>	
<b>MASTERING OF PARTICLE SIZE AND MORPHOLOGY OF THE PUCKERED LAYER <math>\gamma</math>-V<sub>2</sub>O<sub>5</sub> POLYMORPH FOR ENHANCED NA ELECTROCHEMICAL PROPERTIES</b> .....	747
<i>Rita Baddour-Hadjean, Marianne Safrany-Renard, Nicolas Emery, Barbara Laik, Dauren Batyrbekuly, Zhumabay Bakenov, Jean-Pierre Pereira-Ramos</i>	
<b>LITHIUM ION CONDUCTING BLOCK COPOLYMERS: CONDUCTIVITY AND BATTERY PERFORMANCE</b> .....	750
<i>Yubin He, Youn Ji Min, Nian Liu, Paul A Kohl</i>	
<b>CONDUCTING POLYMERS FOR BATTERIES</b> .....	751
<i>Danny Chhin, Laura Padilla-Sampson, David Lepage, Laurence Savignac, Ali Nazemi, Steen Brian Schougaard</i>	
<b>EARTH ABUNDANT IRON-BASED FLUORO(HYDROXY)PHOSPHATE AS CATHODE MATERIALS FOR AQUEOUS BATTERIES</b> .....	752
<i>Lalit Sharma, Shigeto Okada, Prabeer Barpanda</i>	

<b>CARBON INVERSE OPALS AS A SULFUR HOST FOR ADVANCED LITHIUM-SULFUR BATTERIES</b> .....	753
<i>David McNulty, Sigita Trabesinger</i>	
<b>INVESTIGATION OF OLIVINE AND NASICON STRUCTURED PHOSPHATES AS POTENTIAL CATHODE MATERIALS FOR MAGNESIUM ION BATTERIES</b> .....	755
<i>Martina Romio, Damian Marlon Cupid, Jurgen Kahr, Yuri Surace, Marcus Jahn, Isaac Abrahams</i>	
<b>IMPROVEMENT OF ELECTROCHEMICAL STABILITY OF LAYERED OXIDE ELECTRODES IN NA-ION BATTERIES VIA CONTROL OF CHEMICAL COMPOSITION IN THE INTERLAYER REGION</b> .....	757
<i>Ekaterina Pomerantseva</i>	
<b>NEW NITRILE TYPE BI-FUNCTIONAL ADDITIVE FOR HIGH-PERFORMANCE LI-METAL BATTERIES</b> .....	758
<i>Seon-Hwa Lee, Yang-Kook Sun</i>	
<b>SCALABLE SYNTHESIS OF <math>Li_2S</math>-BASED COMPOSITE CATHODES FROM <math>Li_2SO_4</math></b> .....	759
<i>Billy Johnson, Rebecca Glaser, Kyle Ewers, Bryston Spivock, Mohan Sanghadasa, Gleb Yushin</i>	
<b>UNRAVELING THE ENHANCED CYCLING PERFORMANCE OF LITHIUM-OXYGEN BATTERIES BASED ON METAL ORGANIC FRAMEWORKS</b> .....	760
<i>Xiahui Zhang, Panpan Dong, Jake T. Gray, Younghwan Cha, Su Ha, Min-Kyu Song</i>	
<b>EFFECT OF THE PARTICLE-SIZE DISTRIBUTION ON THE ELECTROCHEMICAL PERFORMANCE OF A RED PHOSPHORUS-CARBON COMPOSITE ANODE FOR SODIUM-ION BATTERIES</b> .....	762
<i>Isaac Capone, Mauro Pasta</i>	
<b>HIGH-ENERGY LITHIUM/SES<sub>2</sub> BATTERIES WITH HIERARCHICAL NANOCOMPOSITE CATHODE AND IONIC LIQUID-BASED ELECTROLYTES</b> .....	764
<i>Panpan Dong, Jung-In Lee, Younghwan Cha, Xiahui Zhang, Min-Kyu Song</i>	
<b>CROSSLINKED QUATERNIZED POLY(ARYLENE ETHER BENZONITRILE) MEMBRANES FOR VANADIUM REDOX FLOW BATTERIES</b> .....	766
<i>Eun Joo Park, Sandip Maurya, Yu Seung Kim, Rangachary Mukundan</i>	
<b>MGCR<sub>2-x</sub>V<sub>x</sub>O<sub>4</sub> HIGH VOLTAGE SPINEL OXIDE CATHODES FOR MG-ION BATTERIES</b> .....	767
<i>Bob Jin Kwon, Krista L Hawthorne, Ka-Cheong Lau, Soojeong Kim, Yimin Wu, Timothy T Fister, Chen Liao, Robert F Klie, Saul Lapidus, Baris Key, John T. Vaughey</i>	
<b>FACET ENGINEERING OF LOW-COST TRANSITIONAL METAL OXIDES FOR TUNABLE ORR/OER KINETICS</b> .....	768
<i>Yifei Yuan, Wentao Yao, Guoqiang Tan, Cong Liu, Meng Cheng, Vitaliy Yurkiv, Xuanxuan Bi, Fei Long, Craig Friedrich, Khalil Amine, Jun Lu, Reza Shahbazian-Yassar</i>	
<b>PB-BASED NANOCOMPOSITE ANODES FOR LI- AND NA-ION BATTERIES</b> .....	770
<i>Jinhyup Han, Jehae Park, Youngsik Kim, Shabbir Ahmed, Eungje Lee, Christopher S. Johnson</i>	
<b>SODIATION DRIVEN MECHANO-ELECTROCHEMICAL INTERACTION IN ALLOY ELECTRODES</b> .....	771
<i>Susmita Sarkar, Ankit Verma, Partha P. Mukherjee</i>	
<b>CONTROLLABLE CHARGE CAPACITY USING A BLACK ADDITIVE FOR HIGH-ENERGY-DENSITY SODIUM-ION BATTERIES</b> .....	772
<i>Chang Heum Jo, Kisoo Lee, Seung-Taek Myung</i>	
<b>NA<sub>2</sub>MPO<sub>4</sub>F (M: FE, MN, CO): BIFUNCTIONAL ELECTROCATALYSTS FOR NA-AIR BATTERIES</b> .....	774
<i>Lalit Sharma, Prabeer Barpanda</i>	
<b>ELECTROCHEMICAL MEASUREMENTS OF SINGLE POSITIVE ELECTRODE PARTICLE FOR LITHIUM (SODIUM)-ION BATTERIES</b> .....	776
<i>Takahiro Saito, Tatsuya Nakamura, Takeshi Kobayashi, Shiro Seki</i>	
<b>NOVEL SULFONATED AROMATIC POLYMER MEMBRANES FOR BREAKING THE COULOMBIC AND VOLTAGE EFFICIENCY TRADE-OFF LIMITATION IN VANADIUM REDOX FLOW BATTERY</b> .....	779
<i>Sangil Kim, Tongshuai Wang, Junyoung Han, Kihyun Kim, Andreas Munchinger, Klaus-Dieter Kreuer, Chulsung Bae</i>	
<b>LAYERED IRON VANADATE AS A HIGH-ENERGY CATHODE MATERIAL FOR NONAQUEOUS CALCIUM-ION BATTERIES</b> .....	780
<i>Munseok S. Chae, Dedy Setiawan, Hyojeong J. Kim, Seung-Tae Hong</i>	
<b>VON-ALPEN TYPE NASICON FOR SEAWATER BATTERY APPLICATION</b> .....	781
<i>Wooseok Go, Youngsik Kim</i>	
<b>METAL PHOSPHIDE-EMBEDDED PHOSPHORUS-BASED NANOCOMPOSITE ANODE MATERIALS FOR RECHARGEABLE BATTERIES</b> .....	782
<i>Sang-Ok Kim</i>	
<b>CONTROLLING ELECTROCHEMICAL LITHIUM DEPOSITION AND SULFUR REDUCTION MECHANISM THROUGH LIQUID ELECTROLYTES</b> .....	783
<i>Tzu-Yun Lin, Chun-Yao Wang, Heng-Liang Wu</i>	
<b>INVESTIGATION OF THE KINETICS OF RECHARGEABLE AQUEOUS ZINC ION BATTERIES</b> .....	784
<i>Christian Bischoff, Oliver Fitz, Harald Gentischer, Daniel Biro, Hans-Martin Henning</i>	
<b>ADVANCED NANOPOROUS SEPARATORS FOR STABLE LITHIUM METAL ELECTRODEPOSITION AT ULTRA-HIGH CURRENT DENSITIES IN LIQUID ELECTROLYTE</b> .....	785
<i>Jingling Yang, Chung-Yuan Mou, Heng-Liang Wu</i>	
<b>HIGHLY ACTIVE TRANSITION METAL DICHALCOGENIDES AS BIFUNCTIONAL ELECTROCATALYSTS FOR LI-OXYGEN BATTERIES</b> .....	786
<i>Leily Majidi, Amin Salehi-Khojin, Larry A Curtiss</i>	
<b>ION TRACKING IN AQUEOUS SODIUM-ION BATTERIES</b> .....	787
<i>Karl Oleson, Thomas Madden</i>	

<b>THE INFLUENCE OF IONOMERIC COATINGS AT THE ELECTROLYTE-ELECTRODE INTERFACE IN METAL BATTERIES</b> .....	788
<i>Laura C. Merrill, Hunter O. Ford, Jennifer L. Schaefer</i>	
<b>UNDERSTANDING THE BEHAVIOR OF LITHIUM BIS(FLUOROSULFONE)IMIDE AND LITHIUM BIS(TRIFLUOROMETHANESULFORYL)IMIDE IN LOCALIZED SUPERCONCENTRATED ELECTROLYTES</b> .....	789
<i>Sebastian Mai, Svetlozar Ivanov, Andreas Bund, Travis Thompson, Pierre Etienne Cabelguen, Karolien Vasseur, Stephane Levasseur</i>	
<b>LITHIUM-MEDIATED AMMONIA SYNTHESIS FROM WATER AND NITROGEN BASED ON A MEMBRANE-FREE IMMISCIBLE AQUEOUS/ORGANIC HYBRID ELECTROLYTE SYSTEM</b> .....	791
<i>Kwiyong Kim, Yifu Chen, Wenzhen Li</i>	
<b>ADVANCES IN LITHIUM AIR BATTERIES</b> .....	792
<i>Tedric Campbell, Lonnie Johnson</i>	
<b>PROPERTIES OF THIN LITHIUM METAL ELECTRODE IN CARBONATE ELECTROLYTES</b> .....	793
<i>Juchen Guo, Jian Zhang</i>	
<b>DICYANOBENZOQUINONE FUNCTIONALIZED CARBON NANOTUBES AS CATHODE MATERIALS FOR RECHARGEABLE LITHIUM AND SODIUM ION BATTERIES</b> .....	794
<i>Hailong Lyu, Charl J Jafta, Ilja Popovs, Jingsong Huang, Bobby G. Sumpter, Sheng Dai, Xiao-Guang Sun</i>	
<b>ENHANCING THE PERFORMANCE OF VANADIUM REDOX FLOW BATTERIES USING CARBON CLOTH ELECTRODE DECORATED WITH C/WO<sub>x</sub> NANOCOMPOSITES</b> .....	795
<i>Farah El Diwany, Ehab N El Sawy, Nageh Allam</i>	
<b>DEVELOPING HIGH SURFACE AREA FLOW THROUGH ELECTRODES WITH ENHANCED ELECTRICAL CONDUCTIVITY FOR FLOW BATTERY APPLICATION</b> .....	796
<i>Muhammad Awais Murtaza, Jeff T. Gostick</i>	
<b>ELECTROCHEMICAL PROPERTIES OF CHEMICAL COMPOSITION-TUNED SNP<sub>x</sub>/C NANOCOMPOSITE ANODE IN A SODIUM-ION BATTERY</b> .....	798
<i>Hayong Song, Hwon-Gi Lee, Kwangsup Eom</i>	
<b>POROUS RED PHOSPHORUS AND REDUCED GRAPHENE OXIDE COMPOSITE ANODE WITH HIGH CAPACITY AND STABILITY IN A SODIUM-ION BATTERY</b> .....	801
<i>Hwon-Gi Lee, Uijin Chang, Hayong Song, Kwangsup Eom</i>	
<b>NAM<sub>2</sub>(PO<sub>4</sub>)(SO<sub>4</sub>)<sub>2</sub> (M= FE, V, CR) AS ELECTROACTIVE MATERIALS FOR NA-ION BATTERIES</b> .....	803
<i>Hamdi Ben Yahia, Alaa Alkhateeb, Rachid Essehli</i>	
<b>DEVELOPMENT OF CATHODE AND ELECTROLYTE MATERIALS FOR LITHIUM-OXYGEN BATTERIES FOR ELECTRIC AVIATION</b> .....	805
<i>Donald A. Dornbusch, Balachandran Radhakrishnan, Rocco Viggiano, Frederick W. Dynys, John W Lawson</i>	
<b>LITHIUM-ION EXCHANGE POLYMER MEMBRANES LIMIT MIGRATION OF DISSOLVED POLYSULFIDE SPECIES IN LI-S BATTERIES</b> .....	806
<i>Hui Xu, Mario Moreira, Castro Laicer, Katherine Harrison</i>	
<b>A POLYMER SCAFFOLD BINDER STRUCTURE FOR IMPROVING LONG-TERM CYCLE PERFORMANCE OF LITHIUM METAL POWDER ELECTRODE</b> .....	807
<i>Dahee Jin, Youngjoon Roh, Seoungwoo Byun, Dohwan Kim, Myung-Hyun Ryou, Yongmin Lee</i>	
<b>HIGH EFFICIENT ION SELECTIVE MEMBRANE SEPARATOR FOR ROOM TEMPERATURE SODIUM POLYSULFIDE REDOX FLOW BATTERIES</b> .....	808
<i>Azadeh Amiri, Tongshuai Wang, Chulsung Bae, Sangil Kim</i>	
<b>INVESTIGATING THE EFFECT OF CARBONACEOUS HOST MATERIALS ON THE PERFORMANCE OF ALKALI METAL COMPOSITE ANODES</b> .....	809
<i>David Kautz, Feng Lin</i>	
<b>EFFECT OF THERMALLY EVAPORATED SILVER NANOPARTICLES ON THE SURFACE MORPHOLOGY AND STABILITY OF ELECTRODEPOSITED LITHIUM METAL ANODE</b> .....	810
<i>Ki-Yeop Cho, Junhwa Kwon, Hwon-Gi Lee, Hayong Song, Kwangsup Eom</i>	
<b>FINITE ELEMENT SIMULATION OF ELECTROCHEMICAL IMPEDANCE SPECTRA IN LI-S BATTERIES</b> .....	813
<i>Chao Shen, Petru Andrei, Jim P. Zheng</i>	
<b>A HIGHLY CONDUCTIVE ARTIFICIAL INTERFACE LAYER BASED ON VO-RICH ZIRCONIA/POLYMER HYBRID NANOPARTICLES FOR STABLE LITHIUM PLATING/STRIPPING</b> .....	814
<i>Sipei Li, Jay Whitacre, Krzysztof Matyjaszewski</i>	
<b>DIAGNOSTICS FOR FAILURE MODES IN NON-AQUEOUS FLOW BATTERIES</b> .....	815
<i>Harry D. Pratt, Leo J. Small, Travis M. Anderson</i>	
<b>COMPOSITE ANODE OF LITHIUM METAL POWDER AND GRAPHITE FOR IMPROVING PERFORMANCE OF LITHIUM METAL ANODE</b> .....	816
<i>Nak Gyu Go, Seung Taek Lee, Woo Young Yoon</i>	
<b>ELECTROCHEMICAL BEHAVIOR OF LITHIUM CHLORIDE/POLYMER HYBRID LAYER COATED LITHIUM POWDER ANODE</b> .....	817
<i>Seung Taek Lee, Nak Gyu Go, Woo Young Yoon</i>	
<b>STABILIZING NACRO<sub>2</sub> BY SODIUM SITE DOPING WITH CALCIUM</b> .....	818
<i>Lituo Zheng, J. Craig Bennett, M. N. Obrovac</i>	

<b>SYNTHESIS OF MESOPOROUS CARBON USING WASTE ORANGE PEEL AS AN ANODE MATERIAL FOR POTASSIUM-ION BATTERIES WITH LONG CYCLABILITY</b> .....	820
<i>Rakesh Verma, Chan-Jin Park</i>	
<b>RAPID LI DIFFUSION BY FERROELECTRIC POLARIZATION FOR SMOOTH LITHIUM DEPOSITION</b> .....	821
<i>Chihyun Hwang, Woo-Jin Song, Yutong Wu, Nian Liu, Soojin Park, Hyun-Kon Song</i>	
<b>UNDERSTANDING THE LINK BETWEEN ANION STRUCTURE AND LITHIUM COORDINATION</b> .....	822
<i>Dale A Osborne, Michael Breedon, Gavin Collis, Michelle J S Spencer</i>	
<b>A NOVEL TERNARY ORDERED INTERMETALLICS CU<sub>3</sub>ZNSB AS ANODE FOR SODIUM-ION STORAGE</b> .....	824
<i>Debanjana Pahari, Samiran Misra, Partha P Jana, Sreeraj Puravankara</i>	
<b>NANOSTRUCTURED METAL OXIDE BASED INTERLAYERS FOR LITHIUM-SULFUR BATTERIES</b> .....	826
<i>Teng Zhao, Renjie Chen, R Vasant Kumar</i>	
<b>PHASE INVERSION STRATEGY TO FLEXIBLE FREESTANDING ELECTRODES: CRITICAL COUPLING OF BINDERS AND ELECTROLYTES FOR HIGH PERFORMANCE</b>	
<b>LI-S BATTERY</b> .....	828
<i>Wandi Wahyudi, Zhen Chao, Pushpendra Kumar, Mengliu Li, Yingqiang Wu, Mohammed N. Hedhili, Luigi Cavallo, Lain-Jong Li, Jun Ming, Thomas D. Anthopoulos</i>	
<b>STABLE STRUCTURE AND ELECTRONIC STRUCTURE FOR MGCO<sub>2-x</sub>MN<sub>x</sub>O<sub>4</sub> AS CATHODE MATERIAL FOR MAGNESIUM SECONDARY BATTERY IN DISCHARGE</b>	
<b>PROCESS USING FIRST PRINCIPLE CALCULATION</b> .....	830
<i>Chiaki Ishibashi, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto</i>	
<b>INSTIGATION OF LOW COST, NON-TOXIC AND ENVIRONMENTALLY BENIGN BINDERS FOR MILD AQUEOUS ZN/MNO<sub>2</sub> SYSTEMS</b> .....	832
<i>Hee Jung Chang, Huilin Pan, Daiwon Choi, Ismael Rodriguez-Perez, Xiaolin Li, David Reed, Vincent Sprenkle</i>	
<b>IN SITU AMBIENT PRESSURE X-RAY PHOTOELECTRON SPECTROSCOPY STUDIES OF POTASSIUM-OXYGEN REDOX REACTIONS</b> .....	833
<i>Wanwan Wang, Yu Wang, Chia-Hsin Wang, Yaw-Wen Yang, Yi-Chun Lu</i>	
<b>PERFORMANCE ENHANCEMENT OF RECHARGEABLE LITHIUM-SULFUR BATTERY UTILIZING HIGH MASS-LOADING CATHODES OF AZULMIC CARBON COMPOSITE</b> .....	834
<i>Yukiko Matsui, Hidenori Hinago, Shigeaki Yamazaki, Masashi Ishikawa</i>	
<b>P2-NA<sub>0.66</sub>LI<sub>0.18</sub>FE<sub>0.12</sub>MN<sub>0.7</sub>O<sub>2</sub>, A HIGH-PERFORMANCE CATHODE MATERIAL FOR SODIUM ION BATTERIES</b> .....	836
<i>Lufeng Yang, Xiang Li, Jue Liu, Shan Xiong, Xuetian Ma, Pan Liu, Jianming Bai, Wenqian Xu, Yuanzhi Tang, Yan-Yan Hu, Meilin Liu, Hailong Chen</i>	
<b>EFFECTS OF FIXED REDOX MEDIATOR IN AIR ELECTRODE FOR LITHIUM-AIR BATTERIES</b> .....	838
<i>Yoshiya Hayashi, Reo Honda, Minoru Sohmiya, Yasuhiko Takamuki, Hiromi Otsuka, Kimihiko Ito, Yoshimi Kubo, Morihito Saito</i>	
<b>IN SITU FORMED LI-B-H COMPLEX ENABLES HIGH-PERFORMANCE SOLID ELECTROLYTE FOR LI BATTERIES</b> .....	840
<i>Shiyu Zheng, Yuepeng Pang</i>	
<b>NANO-SIZED IRON OXIDE MATERIAL FOR SODIUM ION BATTERIES</b> .....	842
<i>Wen Liu, Luozeng Zhou, Yong Wang, Yong Li, Bin Shi, Rui Guo, Haijuan Pei, Jingying Xie</i>	
<b>PROMISING LITHIUM METAL ANODE WITH STRUCTURED DESIGN</b> .....	844
<i>Sheng-Hui Wu, Wei-Hsin Wu, Chung-Hsiang Chao, Chih-Ching Chang, Jason Fang</i>	
<b>IMPACTS OF MICROSTRUCTURES ON THE IONIC DIFFUSIVITY OF SOLID ELECTROLYTES: MESOSCALE MODELING APPROACH</b> .....	845
<i>Tae Wook Heo, Andrew Grieder, Liwen Wan, Nicole Adelstein, Brandon C. Wood</i>	
<b>FASTER HIGH THROUGHPUT ELECTROCHEMICAL TESTING FOR BATTERIES</b> .....	846
<i>Michael Breedon, Gavin Collis, Adam Samuel Best</i>	
<b>REVEALING ORIGINS FOR SLUGGISH REACTION KINETICS IN LI-O<sub>2</sub> BATTERY VIA OPERANDO LIQUID ELECTRON MICROSCOPY</b> .....	848
<i>Yifei Yuan, Kun He, Xuanxuan Bi, Tara Foroozan, Boao Song, Khalil Amine, Jun Lu, Reza Shahbazian-Yassar</i>	
<b>(INVITED) X-RAY ABSORPTION SPECTROSCOPY: INVESTIGATIONS OF CATALYSIS AND BATTERIES AT APS BEAMLINE 9-BM</b> .....	850
<i>Tianpin Wu</i>	
<b>ORIGIN OF LOW PERFORMANCE OF LITHIUM-SULFUR BATTERIES UNDER LEAN ELECTROLYTE CONDITION</b> .....	851
<i>Yifan Zhao, Juchen Guo</i>	
<b>(INVITED) EXPLOITING SURFACE REACTIVITY TO PREPARE ELECTRODE MATERIALS IN A SINGLE STEP</b> .....	852
<i>Gabriel M. Veith, Beth Armstrong, Mary Kathryn Burdette, David Hoelzer</i>	
<b>(INVITED) MULTISCALE CHEMICAL COMPLEXITIES IN LAYERED OXIDES FOR SODIUM ION BATTERIES</b> .....	853
<i>Feng Lin</i>	
<b>PREDICTING THE ROLE OF INTERFACIAL REACTIVITY ON SEI LAYER EVOLUTION USING MULTIMODAL ANALYSIS</b> .....	854
<i>Vijayakumar Murugesan, Venkateshkumar Prabhakaran, Karl T Mueller, Vaithiyalingam Shutthanandan, Roy Swadipati</i>	
<b>LITHIUM AIR BATTERIES; CHALLENGES AND OPPORTUNITIES</b> .....	855
<i>Amin Salehi-Khojin</i>	
<b>IN-SITU ELECTROCHEMICAL POLYMERIZATION TO ENHANCE THE ELECTROCHEMICAL PERFORMANCES OF SELENIUM-CARBON COMPOSITE CATHODE</b> .....	856
<i>Seungmin Lee, Haeun Lee, Kwangsup Eom</i>	

<b>(INVITED) ADVANCED NA-METAL HALIDE BATTERIES: CHALLENGES AND OPPORTUNITIES</b> .....	858
<i>Guosheng Li</i>	
<b>(INVITED) SULFUR-EQUIVALENT CATHODE MATERIAL FOR ROOM-TEMPERATURE LI-S AND NA-S BATTERIES</b> .....	859
<i>Yanguang Li</i>	
<b>ENHANCED CYCLING PERFORMANCE OF LITHIUM METAL BATTERIES BY SEPARATOR ARCHITECTURE DESIGN</b> .....	860
<i>Wenxiu Wang, Partha P. Mukherjee</i>	
<b>DISCHARGING-CHARGING LI SYMMETRIC BATTERIES AT HIGH CURRENT DENSITIES</b> .....	861
<i>Fangzhou Wang, Xianglin Li</i>	
<b>EVALUATION OF TRIHALIDE ION'S ABILITY AS REDOX MEDIATORS IN LITHIUM OXYGEN BATTERIES</b> .....	862
<i>Hun Kim, Yang-Kook Sun</i>	
<b>INVESTIGATING THE PROMISE OF INCORPORATING A REDOX MEDIATOR IN LI-O<sub>2</sub>/CO<sub>2</sub> BATTERIES</b> .....	863
<i>Filipe Marques Mota, Hye Ryung Byon, Dong Ha Kim</i>	
<b>DEVELOPMENT OF SILICON ANODE FOR ALL-SOLID-STATE THIN-FILM SECONDARY BATTERY</b> .....	864
<i>Akiyoshi Suzuki, Shunsuke Sasaki, Takehito Jimbo</i>	
<b>SELF-ORGANIZED TITANIA NANOTUBES FOR ADVANCED LI-ION MICROBATTERIES</b> .....	866
<i>Thierry Djenizian</i>	
<b>WHAT IS THE RATE LIMITING MECHANISM IN SOLID-STATE LITHIUM CELLS AT DIFFERENT PULSE OPERATING CONDITIONS?</b> .....	868
<i>Mei-Chin Pang, Yucang Hao, Huizhi Wang, Monica Marinescu, Mu Chen, Gregory James Offer</i>	
<b>PRECISION ELECTROANALYTICAL MEASUREMENTS OF LI/SOLID-STATE ELECTROLYTE INTERFACES</b> .....	870
<i>Andrew S. Westover, Nancy J. Dudney</i>	
<b>FAST-CHARGING ALL-SOLID-STATE 3D LI-ION BATTERY WITH ULTRA-THIN LIPON AND HIGH-CAPACITY ELECTRODES USING LARGE-AREA ATMOSPHERIC-PRESSURE SPATIAL ALD</b> .....	871
<i>Mahmoud Ameen, Mateusz Poplawski, Lucas Haverkate, Frank Grob, Bihag Anothumakkool, Dorothee Hermes, Sepideh Khandan Del, Fred Roozeboom, Sandeep Unnikrishnan</i>	
<b>ATOMIC LAYER DEPOSITION OF ULTRATHIN GLASSY LITHIUM BORATE-CARBONATE SOLID ELECTROLYTES</b> .....	872
<i>Eric Kazyak, Andrew L. Davis, Seung-Ho Yu, Kuan-Hung Chen, Adrian J. Sanchez, Jose Lasso, Travis Thompson, Jeff Sakamoto, Donald J Siegel, Neil P. Dasgupta</i>	
<b>REACTIVE WETTING OF ATOMIC LAYER DEPOSITION AL<sub>2</sub>O<sub>3</sub> BY MOLTEN LITHIUM METAL</b> .....	873
<i>Yunhui Gong, Zhechen Fu, Lei Zhang, Tanner R. Hamann, Eric D. Wachsman</i>	
<b>A NEW "SOLUTION" TOWARDS WET CHEMICAL PROCESSING OF LITHIUM GARNET FILMS</b> .....	874
<i>Zachary David Hood, Jennifer L. M. Rupp</i>	
<b>THE ROLE OF METALLIC PROTECTION LAYERS IN EXTENDING THE STABILITY OF NASICON ELECTROLYTES FOR SOLID-STATE BATTERIES</b> .....	875
<i>Francisco Javier Quintero Cortes, John A Lewis, Jared Tippens, Neha Kondekar, Matthew T McDowell</i>	
<b>SYNTHESIS AND COMPARISON OF CHITOSAN AND METHOCEL BASED FLEXIBLE GELS FOR POTENTIAL USE AS ORGANIC ELECTROLYTES IN BATTERIES</b> .....	876
<i>Aswani Poosapati, Deepa Madan</i>	
<b>(INVITED) A BREATH OF FRESH AIR IN SOLID STATE BATTERY: MOVING BEYOND SULFIDE SOLID ELECTROLYTE</b> .....	878
<i>Mike Zimmerman, John Muldoon</i>	
<b>IMPACT OF SALT CONCENTRATION ON LITHIUM DENDRITIC GROWTH IN A RIGID SEO POLYMER ELECTROLYTE</b> .....	879
<i>Louise Frenck, Jacqueline A. Maslyn, Nitash P. Balsara</i>	
<b>ELECTROCHEMICAL KINETICS IN SOLID BATTERY ELECTROLYTES</b> .....	880
<i>Daniel T. Hallinan, Muneeb Majeed, Kyoungmin Kim, Marc Berliner</i>	
<b>THE IMPACT OF SELECTIVELY PLASTICIZED POLY (ETHYLENE OXIDE) (PEO) BLOCK IN NANOSTRUCTURED POLYSTYRENE-PEO-POLYSTYRENE TRIBLOCK COPOLYMER ELECTROLYTES</b> .....	881
<i>Guang Yang, Pengfei Cao, Xi Chelsea Chen, Ethan Craig Self, Sheng Zhao, Sirui Ge, Chenhui Zhu, Michelle Lehmann, Tomonori Saito, Frank M. Delnick, Jagjit Nanda</i>	
<b>ACHIEVING HIGH UNITY LI TRANSFERENCE NUMBER VIA SINGLE-ION CONDUCTING POLYMER ELECTROLYTE FOR LI-ION BATTERIES</b> .....	883
<i>Kewei Liu, Sisi Jiang, Chen Liao</i>	
<b>(INVITED) OPPORTUNITIES AND CHALLENGES FOR IN-SITU SYNCHROTRON CHARACTERIZATION OF ALL SOLID STATE BATTERIES</b> .....	884
<i>Kelsey B. Hatzell, Marm Dixit</i>	
<b>INTERPHASE MORPHOLOGY BETWEEN A SOLID-STATE ELECTROLYTE AND LITHIUM CONTROLS CELL FAILURE</b> .....	885
<i>John A Lewis, Francisco Javier Quintero Cortes, Jared Tippens, Matthew G Boebinger, Thomas S Marchese, Neha Kondekar, Matthew T McDowell</i>	
<b>ANALYSIS OF APPARENT DIFFUSION COEFFICIENT IN COMPOSITE ELECTRODE OF SOLID STATE BATTERY USING AG-ION</b> .....	886
<i>Yuki Orikasa, Koji Kandori, Hisao Yamashige, Noritoshi Furuta, Takamasa Nonaka</i>	

<b>NANOMETER-SCALE OPERANDO IMAGING ON IONIC AND ELECTRONIC TRANSPORT THROUGH POLYCRYSTALLINE CERAMIC SOLID ELECTROLYTES</b> .....	888
<i>Chun-Sheng Jiang, Ping Liu, Yejing Li, Mowafak M. Al-Jassim</i>	
<b>MEASUREMENTS OF TRANSPORT PROPERTIES OF LITHIUM SALT IN BLOCK COPOLYMER ELECTROLYTE</b> .....	890
<i>Kyoungmin Kim, Daniel T. Hallinan</i>	
<b>STATUS AND TARGETS FOR POLYMER-BASED SOLID-STATE BATTERIES FOR ELECTRIC VEHICLE APPLICATIONS</b> .....	891
<i>Hong-Keun Kim, Venkat Srinivasan</i>	
<b>(INVITED) PREDICTING THE PERFORMANCE OF LITHIUM METAL ELECTRODES STABILIZED BY POLYMER ELECTROLYTES</b> .....	893
<i>Nitash P. Balsara, Danielle Marie Pesko, Jacqueline A. Maslyn</i>	
<b>ELASTIC SINGLE-ION CONDUCTING POLYMER ELECTROLYTE</b> .....	894
<i>Pengfei Cao, Guang Yang, Jagjit Nanda, Alexei P. Sokolov, Tomonori Saito</i>	
<b>EXPERIMENTAL MEASUREMENT OF THE LOCAL CURRENT DENSITY IN THE VICINITY OF A LITHIUM PROTRUSION: PLATING AND STRIPPING</b> .....	895
<i>Jacqueline A. Maslyn, Kyle D. McEntush, Katherine J. Harry, Nitash P. Balsara</i>	
<b>(INVITED) COOPERATIVE ION MIGRATION IN LI-ION CONDUCTING GLASSES</b> .....	896
<i>Donald J Siegel</i>	
<b>COMPUTATION-GUIDED EXPLORATION FOR NEW-CHEMISTRY SOLID ELECTROLYTE WITH FAST ION CONDUCTION AND GOOD ELECTROCHEMICAL STABILITY</b> .....	897
<i>Yifei Mo</i>	
<b>EFFECTS OF CELL SIZE AND STRUCTURE ON LI+DIFFUSION IN LLZO: INSIGHTS INTO THE NATURE OF GRAIN BOUNDARY DIFFUSION</b> .....	898
<i>Andrew Grieder, Tae Wook Heo, Sneha A Akhade, Brandon C. Wood, Nicole Adelstein</i>	
<b>BAYESIAN OPTIMIZATION GUIDED COARSE-GRAINED MOLECULAR DYNAMICS FOR DESIGNING HIGHLY CONDUCTIVE SOLID POLYMER ELECTROLYTES</b> .....	900
<i>Yanming Wang, Tian Xie, Arthur France-Lanord, Arthur Berkley, Jeremiah A. Johnson, Yang Shao-Horn, Jeffrey C. Grossman</i>	
<b>COMPUTATIONAL INVESTIGATION OF THE BINDING ENERGY AND ELECTROCHEMICAL STABILITY OF POLY(ETHYLENE OXIDE) WITH LI-ION SALTS</b> .....	901
<i>Shruti Venkatram, Lihua Chen, Rampi Ramprasad</i>	
<b>GARNET-BASED FLEXIBLE COMPOSITE SHEET ELECTROLYTE</b> .....	902
<i>Eric Jianfeng Cheng, Takeshi Kimura, Hirokazu Munakata, Kiyoshi Kanamura</i>	
<b>EXPERIMENTAL AND THEORETICAL ANALYSIS OF LI-STUFFED GARNET-TYPE ELECTROLYTES</b> .....	903
<i>Sanoop Palakkathodi Kammampata, Hirotoshi Yamada, Tomoko Ito, Reginald Paul, Venkataraman Thangadurai</i>	
<b>UNDERSTANDING THE COMPOSITION-PHASE-MECHANICAL (IN)STABILITY OF LI-LA-ZIRCONATE BASED SOLID ELECTROLYTE UPON EXPOSURE TO AIR AND ADDRESSING THE SAME VIA MG-DOPING</b> .....	904
<i>Sushobhan Kobi, Amardeep Verma, Amartya Mukhopadhyay</i>	
<b>LI GARNET DOPANT STABILITY AGAINST LI METAL: A TOF-SIMS STUDY</b> .....	906
<i>Lei Zhang, Yunhui Gong, Tanner R. Hamann, Eric D. Wachsman</i>	
<b>RESEARCH ON SOLID ELECTROLYTES FOR LITHIUM BATTERIES</b> .....	908
<i>Chang-An Wang</i>	
<b>NEW FAST LI-ION CONDUCTING SOLID STATE ELECTROLYTE</b> .....	909
<i>Jan L Allen</i>	
<b>THERMAL GRADIENTS THROUGH SINTERED SOLID STATE ELECTROLYTES IN LITHIUM-ION BATTERIES</b> .....	910
<i>Robert Bock, Morten Andreas Onsrud, Havard Karoliussen, Bruno G. Pollet, Frode Seland, Odne Stokke Burheim</i>	
<b>NEW FAST ION CONDUCTING GLASSES AS ENABLERS FOR ALL SOLID STATE BATTERIES</b> .....	912
<i>Steve W Martin, Guantai Hu, Steven Kmiec, Ran Zhao</i>	
<b>LITHIUM METAL SOLID STATE BATTERIES: IN SITU SEM DETECTION OF CARBIDE NATURE OF DENDRITES</b> .....	913
<i>Karim Zaghib, Maryam Golozar, Andrea Paoletta, Patrick Bouchard, Hendrix Demers, Raynald Gauvin</i>	
<b>TOWARD GARNET-BASED ELECTROLYTE LI-METAL BATTERIES: A HIGHLY EFFECTIVE SOLID-STATE ELECTROLYTE- LI METAL INTERFACE</b> .....	914
<i>Asma Sharafi</i>	
<b>ELECTROCHEMICAL PROPERTIES OF COMPOSITE ELECTRODES CONTAINING LITHIUM-ION CONDUCTING SOLID PARTICLES AND LIQUID ELECTROLYTES</b> .....	915
<b>IN LITHIUM-ION BATTERIES</b> .....	
<i>Tetsuya Sasakawa, Kazuomi Yoshima, Tomoko Sugizaki, Tomoe Hayamizu Kusama, Wen Zhang, Keigo Hoshina, Norio Takami</i>	
<b>MICROSTRUCTURED ELECTRODES SUPPORTED ON SERPENTINES FOR STRETCHABLE MICROBATTERIES</b> .....	917
<i>Thierry Djenizian</i>	
<b>LITHIUM ELECTRODEPOSITION AT THE SOLID ELECTROLYTE AND LITHIUM METAL INTERFACE</b> .....	919
<i>Deepti Tewari, Partha P. Mukherjee</i>	
<b>PREDICTION OF SOLVENTS AND NON-SOLVENTS FOR POLYMERS USING MACHINE LEARNING TECHNIQUES</b> .....	920
<i>Shruti Venkatram, Chiho Kim, Anand Chandrasekaran, Rampi Ramprasad</i>	
<b>SINGLE LITHIUM-ION CONDUCTING COVALENT ORGANIC FRAMEWORKS</b> .....	921
<i>Sodam Park, Kihun Jeong, Sang-Young Lee</i>	

<b>A NOVEL EUTECTIC ALUMINUM-SILICON ALLOY DOPED <math>\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}</math> GARNET-TYPE SOLID ELECTROLYTES FOR SOLID STATE LITHIUM ION BATTERIES</b> .....	922
<i>Rohit Anand, Anil Daliprasad Pathak, Kisor Kumar Sahu</i>	
<b>STUDY ON PHASE EVOLUTION AND MATERIAL PROPERTIES OF <math>\text{Li}_{10}\text{SiP}_2\text{S}_{12-x}\text{O}_x</math></b> .....	923
<i>Kwanghyun Kim</i>	
<b>SOLID STATE BATTERIES</b> .....	924
<i>Lazbourn Allie, Lonnie Johnson</i>	
<b>ENHANCED PERFORMANCE AND SAFETY IN INTERMEDIATE TEMPERATURE LITHIUM-SULFUR BATTERIES</b> .....	925
<i>Jack E. Gritton, Zhezhen Fu, Dennis W. McOwen, Gregory T. Hitz, Eric D. Wachsman</i>	
<b><math>\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}</math>-PEO COMPOSITE ELECTROLYTES AND THE ROLE OF INTERFACE RESISTANCE</b> .....	926
<i>Frederieke Langer, Ingo Bardenhagen, Doriano Brogioli, Julian Schwenzel, Robert Kun, Fabio La Mantia</i>	
<b>HIGHLY CONDUCTIVE <math>\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}</math>/PVDF COMPOSITE POLYMER ELECTROLYTE FOR RECHARGEABLE LITHIUM ION BATTERIES</b> .....	927
<i>Junhao Li, Ruigang Wang</i>	
<b>A COMPOSITE SOLID POLYMER ELECTROLYTE CONTAINING POLY(PROPYLENE CARBONATE) AND <math>\text{Li}_{1.5}\text{Al}_{0.5}\text{Ge}_{1.5}(\text{PO}_4)_3</math> FOR ALL-SOLID-STATE LI-ION BATTERIES</b> .....	928
<i>Bong-Joon Sung, Pravin N. Didwal, Chan-Jin Park</i>	
<b>ALL-SOLID-STATE ORGANIC/INORGANIC COMPOSITE POLYMER ELECTROLYTE WITH ENHANCED IONIC CONDUCTIVITY PERFORMANCE</b> .....	929
<i>Jiali Wang, Xiaoqiang Zhang, Yixiu Cui, Yu Zhao, Su Wei, Yanhua Cui</i>	
<b>MITIGATING LI-LOSS DURING PROCESSING OF THIN-FILM <math>\text{Li}_{6.22}\text{Al}_{0.26}\text{La}_3\text{Zr}_2\text{O}_{12}</math> SOLID ELECTROLYTES</b> .....	930
<i>Anand Parejiya, Jianlin Li, David L. Wood</i>	
<b>MITIGATING INTERFACIAL ISSUES IN ALL-SOLID-STATE LI BATTERY BY USING A POLYMER-SOLID-ELECTROLYTE-INCORPORATED COMPOSITE ELECTRODE</b> .....	932
<i>Kyu-Nam Jung, Hyun-Seop Shin, Jong-Won Lee</i>	
<b>A METAL ORGANIC FRAMEWORK ELECTROLYTE THAT IMPROVES THE HIGH-TEMPERATURE PERFORMANCE OF LITHIUM METAL BATTERIES</b> .....	933
<i>Nan Chen, Renjie Chen</i>	
<b>LITHIUM DENDRITE GROWTH IN ALL-SOLID-STATE BATTERIES BASED ON LI-ARGYRODITE <math>\text{Li}_6\text{PS}_5\text{Cl}</math></b> .....	935
<i>Ruth Schlenker, Dominik Stepien, Pascal Koch, Thomas Hupfer, Sylvio Indris, Helmut Ehrenberg</i>	
<b>POLYACRYLONITRILE AND POLYPROPYLENE CARBONATE BLENDED SOLID POLYMER ELECTROLYTES FOR APPLICATION TOWARD SOLID STATE LITHIUM ION BATTERIES</b> .....	936
<i>Jed Donovan Lacoste, Ling Fei, Zizhou He, Drew Matherne, Saraj Banjara</i>	
<b>SYNTHESIS, STRUCTURE, AND ELECTROCHEMICAL PROPERTIES OF ANION-DOPED <math>\text{Li}_{10}\text{GEP}_2\text{S}_{12}</math>-TYPE SOLID ELECTROLYTE IN THE LI-SI-P-S SYSTEM</b> .....	937
<i>Satoshi Hori, Yuxiang Li, Daiki Hayashi, Xueying Sun, Kota Suzuki, Masaaki Hirayama, Ryoji Kanno</i>	
<b>MESOSCALE CHEMOMECHANICAL INTERPLAY OF THE <math>\text{LiNi}_{0.8}\text{CO}_{0.15}\text{Al}_{0.05}\text{O}_2</math> CATHODE IN SOLID-STATE POLYMER BATTERIES</b> .....	939
<i>Muenir Mustafa Besli, Saravanan Kuppan, Michael Metzger, Alpesh Khushalchand Shukla, Jake Christensen, Marca Doeff, Yijin Liu</i>	
<b>MOLECULAR-LEVEL ORGANIC-INORGANIC HYBRID SOLID STATE ELECTROLYTE</b> .....	941
<i>Yejing Li, Ping Liu</i>	
<b>THE FUNCTION MECHANISM OF A NOVEL QUASI-SOLID-STATE LI-S BATTERY</b> .....	943
<i>Yi Cao, Pengjian Zuo, Shuai Feng Lou, Hua Huo, Yulin Ma, Chunyu Du, Yunzhi Gao, Geping Yin</i>	
<b>APPROACHES AND NEEDS FOR THE VALIDATION OF LITHIUM METAL PLATING STABILITY MODELS WITH A SOLID ELECTROLYTE</b> .....	945
<i>Paul Albertus</i>	
<b>UNDERSTANDING CRYSTALLIZATION KINETICS OF WET-CHEMICALLY AND LOW-TEMPERATURE PROCESSED LI-GARNETS FROM AMORPHOUS TO CRYSTALLINE PHASES</b> .....	946
<i>Yuntong Zhu, Zachary David Hood, Won-Seok Chang, Lincoln J. Miara, Jennifer L. M. Rupp</i>	
<b>(INVITED) BEYOND DENDRITES, CYCLING LI-METAL ACROSS GARNET AT HIGH CURRENT DENSITIES</b> .....	948
<i>Eric D. Wachsman</i>	
<b>PROPERTIES OF <math>\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}</math> SOLID ELECTROLYTES SYNTHESIZED FROM HIGHLY BASIC MOLTEN SALTS FLUXES</b> .....	949
<i>Jon Mark Weller, Candace K. Chan</i>	
<b>DESIGN OF HIGH VOLTAGE ALL-SOLID-STATE BATTERIES BASED ON SULFIDE ELECTROLYTES</b> .....	950
<i>Xin Li</i>	
<b>EFFECT OF PRESSURE ON SULFIDE BASED ALL SOLID-STATE BATTERIES</b> .....	951
<i>Jean-Marie Doux, Abhik Banerjee, Xuefeng Wang, Darren Huan Shen Tan, Erik Wu, Han Nguyen, Shirley Meng</i>	
<b>(INVITED) A TRIP TO OZ AND A LOOK BEHIND THE CURTAIN: SOLID-STATE BATTERIES</b> .....	952
<i>Patrick Bonnick, John Muldoon</i>	

<b>(INVITED) VOIDS AT THE ALKALI METAL / SOLID ELECTROLYTE INTERFACE .....</b>	<b>953</b>
<i>Peter G. Bruce, Jitti Kasemchainan, Stefanie Zekoll, Dominic Spencer Jolly, Gareth Hartley, Ziyang Ning, Paul Adamson, Mauro Pasta</i>	
<b>A THREE-DIMENSIONAL, INTERCONNECTED COMPOSITE AS A THIN FILM SOLID ELECTROLYTE .....</b>	<b>954</b>
<i>Max Jared Palmer, Xi Chelsea Chen, Sergiy Kalnaus, Andrew S Westover, Nancy J. Dudney</i>	
<b>INVESTIGATING ALL-SOLID-STATE BATTERY CELL INHOMOGENEITIES AND THEIR COUPLING TO INTERFACIAL PHENOMENA BY CONTINUUM MODELLING AND SIMULATION .....</b>	<b>955</b>
<i>Katharina Becker-Steinberger, Anton Neumann, Simon Hein, Karsten Urban, Arnulf Latz</i>	
<b>MICROSTRUCTURE RAMIFICATIONS ON ELECTRODEPOSITION FOR SOLID-STATE ELECTROLYTES .....</b>	<b>957</b>
<i>Ankit Verma, Partha P. Mukherjee</i>	
<b>PREDICTING POLYMER FLAMMABILITY USING MACHINE LEARNING METHODS .....</b>	<b>958</b>
<i>Madeline Shelton, Shruti Venkatram, Rampi Ramprasad</i>	
<b>COMPARISON OF CORRELATED LI<sup>+</sup> DIFFUSION FROM MOLECULAR DYNAMICS OF PROMISING SOLID ELECTROLYTES .....</b>	<b>959</b>
<i>Nicole Adelstein, Vanessa Yi Zhen Wei, Zerina Mehmedovic, Andrew Grieder, Nima Leclerc, Alby Musaelian, Leonid Kahle, Nicola Marzari, Boris Kozinsky, Terrence John Udovic, Prateek Mehta, Vitalie Stavila, Oleg Borodin, Sneha A Akhade, Patrick Shea, Kyoung</i>	
<b>ATOMIC-SCALE SIMULATIONS OF GRAIN BOUNDARY MECHANICAL PROPERTIES IN THE SOLID ELECTROLYTE LI<sub>7</sub>LA<sub>3</sub>ZR<sub>2</sub>O<sub>12</sub> .....</b>	<b>961</b>
<i>Seungho Yu, Haesun Park, Donald J Siegel</i>	
<b>ELECTROCHEMICAL STABILITY WINDOW OF POLYMERIC ELECTROLYTES .....</b>	<b>962</b>
<i>Lihua Chen, Shruti Venkatram, Chiho Kim, Rohit Batra, Anand Chandrasekaran, Rampi Ramprasad</i>	
<b>(INVITED) IN SITU IMAGING OF INTERPHASE EVOLUTION AND DEGRADATION PROCESSES IN SOLID-STATE BATTERIES .....</b>	<b>963</b>
<i>Matthew T McDowell</i>	
<b>X-RAY CT MEASUREMENT OF ALL SOLID STATE LITHIUM-ION BATTERY UNDER HIGH PRESSURE CONDITION .....</b>	<b>964</b>
<i>Manabu Kodama, Suguru Uemura, Takuhiro Miyuki, Shuichiro Hirai</i>	
<b>DIRECT OBSERVATION OF LITHIUM DENDRITE MORPHOLOGY, PROPAGATION, AND REVERSIBILITY IN GARNET SOLID ELECTROLYTES VIA OPERANDO VIDEO MICROSCOPY .....</b>	<b>967</b>
<i>Eric Kazyak, Regina Garcia-Mendez, William S. Lepage, Andrew L. Davis, Adrian J. Sanchez, Asma Sharafi, Kuan-Hung Chen, Jeff Sakamoto, Neil P. Dasgupta</i>	
<b>TRACKING PERCOLATION AND TRANSPORT PATHWAYS IN HYBRID SOLID ELECTROLYTES FOR ALL SOLID STATE BATTERIES .....</b>	<b>968</b>
<i>Wahid Zaman, Nicholas Hortance, Marm Dixit, Vincent De Andrade, Kelsey B. Hatzell</i>	
<b>ELUCIDATION OF THE COMPLEX (DE-)LITHIATION REACTIONS OF SNO<sub>2</sub> IN ALL SOLID-STATE BATTERY USING OPERANDO X-RAY PHOTOELECTRON SPECTROSCOPY .....</b>	<b>970</b>
<i>Marta Mirolo, Xiaohan Wu, Carlos A. F. Vaz, Petr Novak, Mario El Kazzi</i>	
<b>CHARACTERIZATION OF TIN PHOSPHIDE FILMS FOR ALL-SOLID-STATE BATTERY ANODE FABRICATED BY AEROSOL DEPOSITION .....</b>	<b>972</b>
<i>Ryoji Inada, Daiki Azuma, Mike Wang, Jeff Sakamoto, Yoji Sakurai</i>	
<b>INVESTIGATION OF VOLUME CHANGE INDUCED DELAMINATION AND SUBSEQUENT CAPACITY FADE AT CATHODE/SOLID-STATE-ELECTROLYTE INTERFACE .....</b>	<b>974</b>
<i>Pallab Barai, Anh Ngo, Larry A Curtiss, Venkat Srinivasan</i>	
<b>(INVITED) DIRECT FABRICATION OF CATHODE LAYER ONTO OXIDE-BASED SOLID ELECTROLYTE WITH GOOD INTERFACE .....</b>	<b>976</b>
<i>Kiyoshi Kanamura</i>	
<b>CHARACTERIZATION OF NA<sub>4</sub>P<sub>2</sub>S<sub>6</sub> AND LI<sub>2</sub>NA<sub>2</sub>P<sub>2</sub>S<sub>6</sub> AS POTENTIAL ELECTROLYTES FOR NA ION BATTERIES .....</b>	<b>978</b>
<i>Yan Li, Zachary David Hood, Natalie A. W. Holzwarth</i>	
<b>4.2V COST EFFECTIVE ALL-SOLID-STATE NA ION BATTERIES WITH A NA<sub>3</sub>PS<sub>4</sub> ELECTROLYTE OPERATING AT ROOM TEMPERATURE .....</b>	<b>979</b>
<i>Abhik Banerjee, Hanmei Tang, Erik Wu, Han Nguyen, Minghao Zhang, Shyue Ping Ong, Shirley Meng</i>	
<b>NA CONDUCTIVE POLYMER/INORGANIC COMPOSITE ELECTROLYTE FOR HIGH PERFORMANCE ALL-SOLID-STATE NA BATTERY .....</b>	<b>980</b>
<i>Koji Hiraoka, Masaki Kato, Hidefumi Motobayashi, Hiroshi Kaneko, Yuzo Tasaki, Shiro Seki</i>	
<b>DECIPHERING THE STRUCTURE-PROPERTY RELATIONSHIP IN SULFIDE-BASED SOLID ELECTROLYTES FOR ALL-SOLID-STATE NA-ION BATTERIES .....</b>	<b>984</b>
<i>Shan Xiong, Zhantao Liu, Hailong Chen</i>	
<b>SIMULTANEOUS REALIZATION OF ELECTROCHEMICAL STABILITY AT LITHIUM METAL POTENTIAL AND HIGH LITHIUM IONIC CONDUCTIVITY IN LITHIUM HALIDE SOLID ELECTROLYTES .....</b>	<b>985</b>
<i>Masashi Sakaida, Tetsuya Asano, Akihiro Sakai, Akinobu Miyazaki, Shinya Hasegawa</i>	
<b>HYBRID CERAMIC SOLID STATE ELECTROLYTE FOR HIGH PERFORMANCE SOLID STATE BATTERIES .....</b>	<b>987</b>
<i>Piyathip Thanapisitikul, Bharat Gattu, Moni Kanchan Datta, Bandi Ramalinga, Prashant Nagesh Kumta</i>	



<b>GRAPHENE MESOSPONGES FOR THE CONDUCTIVE ADDITIVE OF CATHODE COMPOSITES IN LITHIUM<sup>+</sup>SULFUR ALL-SOLID-STATE BATTERIES</b> .....	989
<i>Masanori Yamamoto, Hiroto Nishihara, Shunsuke Goto, Youichi Yoshioka, Masashi Ito, Tomohiro Mitsuyama, Masahiro Morooka, Takashi Kyotani</i>	
<b>A DOUBLE-LAYERED SOLID POLYMER COMPOSITE SEPARATOR WITH IMPROVED ELECTRODE/SEPARATOR INTERFACIAL STABILITY</b> .....	990
<i>Weiqiang Lv</i>	
<b>ELECTROCHEMICAL ANALYSIS USING MICROELECTRODE FOR CATHODE MATERIALS DEPOSITED ON A SOLID ELECTROLYTE PELLETT BY USING AEROSOL DEPOSITION METHOD</b> .....	991
<i>Yuto Yamada, Takeshi Kimura, Yosuke Kushida, Mao Shoji, Kiyoshi Kanamura</i>	
<b>GARNET-BASED ELECTROLYTES FOR ALL-SOLID-STATE LI-S BATTERIES</b> .....	993
<i>Chengtian Zhou, Venkataraman Thangadurai</i>	
<b>SOLID-STATE BATTERY FABRICATED BY <math>Li_{3.5}Ge_{0.5}V_{0.5}O_4</math> ELECTROLYTE</b> .....	994
<i>Toyoki Okumura, Tomonari Takeuchi, Hironori Kobayashi</i>	
<b>SUPERIOR DOPED OLIVINE CATHODES FOR FAST CHARGE/DISCHARGE LITHIUM BATTERIES</b> .....	996
<i>Vito Di Noto, Gioele Pagot, Marco Bandiera, Ketii Vezzu, Federico Brombin, Angeloclaudio Nale, Giovanni Crivellaro, Andrea Migliori, Renzo Bertonecello, Vittorio Morandi, Enrico Negro</i>	
<b>(BATTERY DIVISION STUDENT RESEARCH AWARD SPONSORED BY MERCEDES-BENZ RESEARCH &amp; DEVELOPMENT) SOLUTION-PROCESSABLE CLOSO-BORATE ELECTROLYTE FOR ALL-SOLID-STATE SODIUM-ION BATTERIES</b> .....	998
<i>Leo Duchene, Dong Hyeon Kim, Romain Moury, Arndt Remhof, Hans Hagemann, Yoon Seok Jung, Corsin Battaglia</i>	
<b>ELECTROCHEMICAL OXIDATION CHARACTERISTICS OF BORON DOPED DIAMOND ELECTRODES</b> .....	999
<i>Tae-Gyu Kim</i>	
<b>CARBON NANO ONIONS MATERIAL USED AS SUPPORT FOR ELECTROCATALYSIS BY APPLYING THE ROTATING DISC ELECTRODE TECHNIQUE FOR THE IMPROVEMENT OF THE OXYGEN REDUCTION REACTION</b> .....	1000
<i>Joed E. Ortiz-Santiago, Harim Delgado-Seo, Lisandro Cunci Perez</i>	
<b>SYNTHESIZING A NOVEL JANUS CARBON NANO-ONIONS MODIFIED AS A SUPPORT FOR ELECTROCATALYTIC NANOPARTICLES</b> .....	1001
<i>Angelica Del Valle-Perez, Kattia Michelle Gonzalez-Aponte, Joshua Reyes-Morales, Yashira N Escalera-Torres, Lisandro Cunci Perez</i>	
<b>DIRECT CONVERSION OF NATURAL DATE PULP TO HIERARCHICALLY POROUS CARBON SPHERES AS EFFICIENT AND STABLE OXYGEN-REDUCTION ELECTROCATALYSTS</b> .....	1002
<i>Chao Su, Zongping Shao</i>	
<b>CARBON NANOFIBER COMPOSITES AS ANODE MATERIALS IN <math>Li^+</math> AND <math>Na^+</math> BATTERIES</b> .....	1003
<i>Xinyang Liu, Sylvio Indris, Helmut Ehrenberg</i>	
<b>STUDY OF ANODIC ELECTROCHEMICAL EXFOLIATION OF GRAPHITE UNDER ACIDIC ELECTROLYTE FOR SCALABLE PRODUCTION OF GRAPHENE</b> .....	1004
<i>Hoyoung Lee, Ji Il Choi, Seung Soon Jang, Seung Woo Lee</i>	
<b>FUNDAMENTAL UNDERSTANDING OF REDOX CHARACTERISTICS OF DEFECT-RICH HOLEY GRAPHENE FOR LITHIUM ION ENERGY STORAGE DEVICES</b> .....	1005
<i>Shikai Jin, Seung Woo Lee</i>	
<b>CHEMICAL DOPING OF CELLULOSE NANOCRYSTAL</b> .....	1006
<i>Sukyung Choi, Nae-Man Park, Jee Eun Oh</i>	
<b>INVESTIGATION OF THE STABILIZATION MECHANISM OF AIR STABLE N-TYPE SINGLE-WALLED CARBON NANOTUBES SHEETS BASED ON ADSORPTION ISOTHERM MEASUREMENTS</b> .....	1007
<i>Ryohei Yamaguchi, Yuki Nakashima, Tsuyohiko Fujigaya</i>	
<b>PREPARATION OF THREE-DIMENSIONAL NITROGEN-DOPED HOLLOW FIBER CARBON AND ITS APPLICATION TO ELECTROCHEMICAL ENERGY DEVICE</b> .....	1008
<i>Katie Heeyun Lim, Hansung Kim, Heeyoung Park, Hyun S. Park, Jong Hyun Jang</i>	
<b>MWCNTS-COOH/COTTON FLEXIBLE SUPERCAPACITOR ELECTRODE PREPARED BY IMPROVEMENT ONE-TIME DIPPING AND CARBONIZATION METHOD</b> .....	1009
<i>Tianqi Hao, Wei Wang, Dan Yu</i>	
<b>PULSED LASER DEPOSITED NANOPOROUS CARBON AS A LITHIUM ION BATTERY ANODE</b> .....	1011
<i>Subrahmanyam Goriparti, Matthaesus A. Wolak, Paul Cuillier, Michael P. Siegal, Katharine Lee Harrison</i>	
<b>DECONVOLUTING THE EFFECTS OF SURFACE AREA, FUNCTIONALIZATION, AND WETTING ON THE PERFORMANCE OF POROUS CARBON ELECTRODES IN AQUEOUS REDOX FLOW BATTERIES</b> .....	1013
<i>Katharine Virginia Greco, Jane K. Bonesteel, Fikile R. Brushett</i>	
<b>PENCIL PEEL DERIVED HIGHLY POROUS AND CONDUCTIVE ACTIVATED CARBON FOR ALL-SOLID-STATE 1.8 V SYMMETRICAL SUPERCAPACITORS</b> .....	1015
<i>Shashank Sundriyal, Vishal Shrivastav, Sunita Mishra, Ki Hyun Kim, Akash Deep</i>	
<b>(INVITED) NEAR-FIELD OPTICAL MICROSCOPY AND SPECTROSCOPY OF NANOCARBON HYBRID MATERIALS</b> .....	1016
<i>Tetyana Ignatova, Slava V. Rotkin</i>	
<b>CONTROL OF THE ANISOTROPIC CONDUCTIVITY OF CARBON NANOTUBE SHEET AND THEIR THERMOELECTRIC PROPERTIES</b> .....	1017
<i>Tsuyohiko Fujigaya, Masamichi Matsumoto, Keisuke Shima, Masakazu Mukaida, Takao Ishida, Takanobu Watanabe</i>	

<b>OPTICAL RECTENNA ARRAYS USING CARBON NANOTUBES: FROM FUNDAMENTAL UNDERSTANDING TO NEXT GENERATION DEVICES</b> .....	1018
<i>Erik C. Anderson</i>	
<b>PHOTOSYSTEM I-MODIFIED MULTI-WALLED CARBON NANOTUBE ANODES FOR ENHANCED SOLAR ENERGY CONVERSION</b> .....	1019
<i>Christopher Stachurski, Dilek Dervishogullari, Jade Stanley, Kody Wolfe, G. Kane Jennings, David E. Cliffler</i>	
<b>PHOTO-ACTIVATED CARBON DOTS FOR COMBATING DRUG RESISTANT BACTERIA</b> .....	1020
<i>Liju Yang</i>	
<b>CONSTRUCTION OF PORPHYRIN-SENSITIZED SOLAR CELLS CONTAINING TORAY, <math>\mu</math>/TGP-H-060 CARBON - BASED CATHODES</b> .....	1021
<i>Juan Manriquez, Jaxiry Shamara Barroso-Martinez, David Ortega-Diaz, Erika Bustos, Silvia Gutierrez-Granados</i>	
<b>(INVITED) NANOTUBULAR FULLERENES: PART BUCKYBALL, PART NANOTUBE</b> .....	1023
<i>Tiffany L. Seeler, Ryan M. Koenig, Katelyn R. Tepper, Hannah M. Franklin, Steven Stevenson</i>	
<b>PROBING ION SOLVATION AND TRANSPORT IN SINGLE-DIGIT NANOPORES WITH FIRST-PRINCIPLES SIMULATIONS</b> .....	1024
<i>Tuan Anh Pham, Cheng Zhan, Eric Schwegler</i>	
<b>FIRST-PRINCIPLES INVESTIGATION OF PT-GRAPHENE HYBRID SYSTEM</b> .....	1025
<i>Ji Il Choi, Faisal M. Alamgir, Seung Soon Jang</i>	
<b>DYNAMIC-STACKING OF REDUCED GRAPHENE OXIDE FOR ACTIVE HYDROGEN EVOLUTION</b> .....	1026
<i>Ning Ling, Zhen Wang, Sara Kim, Sang Ho Oh, Jong Hyeok Park, Hyunjung Shin, Heejun Yang</i>	
<b>CONFORMAL DIELECTRIC THIN FILM BY ELECTRODEPOSITION IN 3D POROUS CARBON FIBER SHEETS</b> .....	1028
<i>Wenyue Li, Zhaoyang Fan</i>	
<b>GRAPHENE-ASSISTED EPITAXY OF GROUP IV SEMICONDUCTOR NANOSTRUCTURES AND THIN FILMS</b> .....	1029
<i>M Arslan Shehzad, Amar T Mohabir, Michael A Filler</i>	
<b>CARBON NANOTUBES DERIVED FROM PLASTIC WASTE- A NEW WAVE OF MATERIALS FOR CIRCULAR ECONOMY</b> .....	1030
<i>Grzegorz Lisak, Apostolos Giannis, Ashiq Ahamed, James Guo Sheng Moo, Andrei Veksha, Liya Ge, Piyarat Weechachanchai</i>	
<b>OPTIMIZATION OF LASER-REDUCED GRAPHENE WITH AUTOMATED PARAMETER TUNING: TOWARDS HUMAN-LESS ADVANCED MANUFACTURING</b> .....	1032
<i>Hud Wahab, Vivek Jain, Alexander Tyrrell, Lars Kothhoff, Patrick Johnson</i>	
<b>IN-SITU HYDROGEN-INDUCED DEFECTS ON THE SINGLE LAYER CVD GROWTH GRAPHENE</b> .....	1033
<i>Daniela Ion-Ebrasu, Adrian Enache, Stanica Enache, Viorica Parvulescu, Elena Carcadea, Mihai Varlam</i>	
<b>PREPARATION OF METAL-GR COMPOSITE COATINGS VIA ELECTRO-PLATING FOR HIGH CORROSION RESISTANCES</b> .....	1034
<i>Sishi Li, Yanpeng Yang, Gongsheng Song, Chunxu Pan</i>	
<b>PYROLYTIC CARBON FILMS WITH TUNABLE ELECTRONIC STRUCTURE AND SURFACE FUNCTIONALITY: A PLANAR STAND-IN FOR ELECTROANALYSIS OF ENERGY-RELEVANT REACTIONS</b> .....	1035
<i>Christopher N. Chervin, Jeffrey W. Long, Megan B. Sassin, Joseph F. Parker, Christopher R So, Seokmin Jeon, Debra R. Rolison</i>	
<b>MICROSTRUCTURE EFFECTS ON THE ELECTROCHEMICAL PROPERTIES OF GRAPHENE/MANGANESE OXIDE POROUS ELECTRODES</b> .....	1036
<i>Fatima Hamade, James Radich, Virginia Angelica Davis</i>	
<b>PHOSPHORUS AND IRON DOPED-POROUS CARBON AS AN EFFICIENT ELECTROCATALYST FOR OXYGEN REDUCTION REACTION IN ALKALINE MEDIUM</b> .....	1037
<i>Nazgol Norouzi, Fatema Akthar Choudhury, Hani M El-Kaderi</i>	
<b>INTERPLAY BETWEEN ACTIVATION PROCESSES, PHYSICOCHEMICAL PROPERTIES AND ELECTROCHEMICAL PERFORMANCE OF "CORE-SHELL" CARBON NITRIDE PT-NI ORR ELECTROCATALYSTS BASED ON HIERARCHICAL GRAPHENE SUPPORTS</b> .....	1039
<i>Angeloclaudio Nale, Enrico Negro, Yannick Bang, Ketii Vezzu, Gioele Pagot, Giuseppe Pace, Stefano Polizzi, Renzo Bertonecello, Vito Di Noto</i>	
<b>THIN FILM ELECTROCATALYTIC COAT OF POLYTHIOPHENE DERIVATIVES FOR OXYGEN REACTIONS</b> .....	1041
<i>Shayan Kaviani, Elham Tavakoli, Stamak Nejati</i>	
<b>CARBON NANOTUBE-BASED NON-PRECIOUS METAL ELECTROCATALYSTS WITH HIGH PERFORMANCE AND DURABILITY</b> .....	1043
<i>Jin Nishida, Jun Yang, Shunsuke Uchimura, Junko Matsuda, Naotoshi Nakashima</i>	
<b>CHARACTERIZATION OF FLAME SYNTHESIZED METAL AND NITROGEN DOPED NANOCARBONS FOR OXYGEN REDUCTION REACTION</b> .....	1044
<i>Abhinav Poozhikunnath, Jiale Xing, Haoran Yu, Leonard J. Bonville, Radenka Maric</i>	
<b>CONFINED LITHIUM-SULFUR REACTIONS IN NARROW-DIAMETER CARBON NANOTUBES</b> .....	1046
<i>Juchen Guo</i>	
<b>DEVELOPMENT OF BIMETALLIC NON-PLATINUM GROUP METAL CATALYSTS BASED ON METAL ORGANIC FRAMEWORK PRECURSORS</b> .....	1047
<i>Lynne Larochelle Richard, Li Jiao, Ershuai Liu, Qingying Jia</i>	
<b>EFFECT OF IN-SITU DEVELOPED CARBON DERIVED FROM WASTE AS EFFICIENT SUPPORTIVE ELECTROCATALYST FOR ELECTROCHEMICAL APPLICATIONS</b> .....	1048
<i>Rameez Ahmad Mir, O. P. Pandey</i>	

<b>IN-SITU MONITORING OF BOTH PT AND CU DISSOLVED FROM PT-CU ALLOYS USING CHANNEL FLOW MULTI ELECTRODE .....</b>	<b>1049</b>
<i>Azusa Ooi, Eiji Tada, Atsushi Nishikata</i>	
<b>REAL-TIME CROSS-SECTIONAL SURFACE OBSERVATION OF BRASS TO INVESTIGATE DEZINCIFICATION CORROSION .....</b>	<b>1051</b>
<i>Yoshinao Hoshi, Yukihiko Uchisawa, Yoshihiro Nishihara, Isao Shitanda, Masayuki Itagaki</i>	
<b>CHEMICAL IMAGING OF REACTIVE SURFACES USING MICROSENSORS AS TIPS IN SCANNING ELECTROCHEMICAL MICROSCOPY: APPLICATIONS IN CORROSION RESEARCH AND PROTECTION .....</b>	<b>1052</b>
<i>Ricardo M. Souto</i>	
<b>ANALYSIS OF LOCAL DISSOLUTION BEHAVIOR OF INTERMETALLIC PARTICLES ON CHROMATE-TREATED AA1050 USING MICRO-ELECTROCHEMICAL SYSTEM .....</b>	<b>1054</b>
<i>Hiroshi Kakinuma, Izumi Muto, Yoshiyuki Oya, Mihoko Kikuchi, Yu Sugawara, Nobuyoshi Hara</i>	
<b>ELECTROCHEMICAL IMPEDANCE STUDY OF CAST AND ALM STAINLESS STEEL ELECTROPOLISHING IN ACIDS MEDIA AND DEEP EUTECTIC SOLVENTS .....</b>	<b>1056</b>
<i>Chloe Rotty, Marie-Laure Doche, Audrey Mandroyan, Vincent Vivier, Jean-Yves Hihn</i>	
<b>COMPLEX CAPACITANCE ANALYSIS ON ELECTROCHEMICAL PROPERTIES OF PASSIVE FILM FORMED ON REBAR IN CONCRETE .....</b>	<b>1058</b>
<i>Kanaho Inohira, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki</i>	
<b>IDENTIFYING, PREDICTING AND PREVENTING LOCALIZED CORROSION IN KR-85 STORAGE CANISTERS .....</b>	<b>1059</b>
<i>Charles Demarest, John R. Scully</i>	
<b>CORROSION BEHAVIOUR OF MG ALLOYS IN ALKALINE SOLUTIONS AND IN ALKALI-ACTIVATED BINDERS .....</b>	<b>1060</b>
<i>Caroline Faria Barros, Benoist Muzeau, Raoul Francois, Valerie L'Hostis</i>	
<b>CORROSION MONITORING AND CONTROL IN MOLTEN CHLORIDE BASED CONCENTRATED SOLAR POWER SYSTEMS .....</b>	<b>1062</b>
<i>Jicheng Guo, Nathaniel C. Hoyt, Mark A. Williamson</i>	
<b>CAVITATION CORROSION OF CAST AL-ALLOY IN AN ETHYLENE GLYCOL-WATER SOLUTION .....</b>	<b>1063</b>
<i>Lin Zhou, Zhenning Chen, Xindi Wang, Yanan Shi, Xingyue Yong</i>	
<b>GALVANIC CORROSION OF ALUMINUM ALLOY COUPLED WITH ULTRA HIGH-STRENGTH STEEL UNDER THIN CHLORIDE SOLUTION LAYERS .....</b>	<b>1064</b>
<i>Nam Van Tran, Azusa Ooi, Eiji Tada, Atsushi Nishikata</i>	
<b>ROLE OF ALLOYING ELEMENTS ON THE SECONDARY PASSIVATION OF NI-CR BASED ALLOYS.....</b>	<b>1066</b>
<i>Benoit Ter-Ovanessian, Zhiheng Zhang, Sabrina Marcelin, Bernard Normand</i>	
<b>CORROSION SUSCEPTIBILITY OF AUSTENITIC STAINLESS STEELS IN DIRECT CARBON FUEL CELL.....</b>	<b>1067</b>
<i>Bobby Mathan, Monirul Islam, Michael Glenn, Yaser Beyad, Jessica A Allen, Scott W Donne</i>	
<b>INVESTIGATION OF CORROSION BEHAVIOR OF STAINLESS STEELS AS A FUNCTION OF COMPOSITION, GRAIN SIZE AND AUSTENITE TO MARTENSITE PHASE RATIO .....</b>	<b>1068</b>
<i>Hasan Kotan, Aytakin Uzunoglu</i>	
<b>PASSIVATION BEHAVIOR OF FRICTION STIR WELDED 304L SS IN THIN LAYER ELECTROLYTE.....</b>	<b>1069</b>
<i>Arnab Kundu, Alen Korjenic, Krishnan S. Raja, Indrajit Charit, Saumyadeep Jana, Jens Darsell</i>	
<b>EFFECT OF GAS SWITCHING ON CORROSION BEHAVIOR OF 304 STAINLESS STEEL IN CARBONATE MELT AT 650°C.....</b>	<b>1070</b>
<i>Santosh Prasad Sah, Eiji Tada, Atsushi Nishikata</i>	
<b>INHIBITION OF HYDROGEN ENTRY INTO PURE IRON BY FORMATION OF NITROGEN SOLID SOLUTION LAYER IN THE SURFACE.....</b>	<b>1071</b>
<i>Yu Sugawara, Takuya Sawai, Tomoki Hayashi, Izumi Muto</i>	
<b>GALVANIC CORROSION OF AUTOMOTIVE MIXED METAL SUBSTRATES: FUNDAMENTAL UNDERSTANDING.....</b>	<b>1072</b>
<i>Balaji Kannan, Susanna Fraley, Marvin Pllum, Richard Fleischauer, Mary Lyn Lim</i>	
<b>DEVELOPING HIGH-THROUGHPUT ASSAYS FOR SCREENING AND STUDYING CHEMICAL INTERACTIONS OF NOVEL CORROSION INHIBITORS IN SOLUTION AND COATINGS .....</b>	<b>1074</b>
<i>Michael Breedon, Paul White, Gavin Collis, Kishore Venkatesan, Wayne Ganther, Melissa Skidmore</i>	
<b>TUNING THE PERFORMANCE OF CONVERSION COATINGS WITH VARIOUS ADDITIVES.....</b>	<b>1075</b>
<i>Kuldeep Kumar, Silvia Bezer</i>	
<b>CHARACTERIZATION OF BIOFILM FORMATION AND COATING DEGRADATION BY ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY .....</b>	<b>1076</b>
<i>Samanbar Permeh, Kingsley Lau, Matthew Duncan</i>	
<b>HIGHLY UV AND CORROSION - RESISTANT POLY(VINYLLIDENE FLUORIDE)-CO-HEXAFLUOROPROPYLENE - CARBON NANOTUBES SUPERHYDROPHOBIC NANOCOMPOSITE COATING FOR C-STEEL .....</b>	<b>1078</b>
<i>A. Bahgat Radwan, N M El Basiony, Aboubakr Moustafa Abdullah</i>	
<b>UNDERSTANDING THE SCALES FORMATION INHIBITION MECHANISM ON C-STEEL IN A SOUR MEDIA.....</b>	<b>1079</b>
<i>Noora Al-Qahtani, Jiahui Qi, Aboubakr Moustafa Abdullah, Nick Laycock, Mary P. Ryan</i>	
<b>TINPLATE CORROSION UNDER A BPA-NI POLYESTER LACQUER.....</b>	<b>1080</b>
<i>Yongchao Si</i>	

<b>(CORROSION DIVISION H. H. UHLIG AWARD) SHEDDING LIGHT ON CORROSION</b> .....	1081
<i>Alison J Davenport</i>	
<b>ELECTROCHEMICAL IMPEDANCE ANALYSIS ON HYDROGEN PENETRATION MECHANISMS ON STEEL</b> .....	1082
<i>Haruka Fukada, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki</i>	
<b>LINEARITY ASSESSMENT FOR ELECTROCHEMICAL IMPEDANCE OF 625 AM INCONEL IN AQUEOUS SODIUM CHLORIDE SOLUTIONS</b> .....	1084
<i>Olga A Baturina, Farrel J Martin</i>	
<b>LOCALIZED CORROSION ANALYSIS USING COMPLEX POTENTIAL DISTRIBUTION RATIO AS A NEW TRANSFER FUNCTION</b> .....	1086
<i>Noriyuki Furukawa, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki</i>	
<b>APPLICATION OF MULTIPOINT IMPEDENCE SPECTROSCOPY TO CORROSION MONITORING ON SHAPE MEMORY ALLOYS IN SMART BUILDING MATERIALS.</b> .....	1087
<i>Jaehwan Kim, Hyunbae Lee, Heesu Hwang, Jiwon Oh, Eunsoo Choi, Jin-Ha Hwang</i>	
<b>ANALYSIS ON ANODIC PARTIAL CURRENT OF MAGNESIUM BY IN-SITU GC-EC CELL</b> .....	1088
<i>Yusuke Hirayama, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki</i>	
<b>PROTECTIVE COATING ON ALUMINUM ALLOY CREATED BY COMBINED SOLVOTHERMAL AND CHEMICAL METHODS: CORROSION TEST</b> .....	1090
<i>Bharat Baruah, Altug Suleyman Poyraz</i>	
<b>CORROSION POTENTIAL MEASUREMENT TO INVESTIGATE COPPER DISSOLUTION IN SIMULATED PORE ENVIRONMENT ON ANT NEST CORROSION</b> .....	1091
<i>Keisuke Honda, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki, Kengo Kumagai, Shinnichi Ito, Tetsuro Hosogi</i>	
<b>CORROSION PROTECTION OF MG BASED ALLOY IN NEUTRAL SODIUM CHLORIDE SOLUTION BY ELECTRODEPOSITED NI-TIO<sub>2</sub> - SILANE COMPOSITE COATING</b> .....	1092
<i>Mohammad Binsabt, Faizah M Al-Kharafi, Maryam Abditon, Ahmed Galal</i>	
<b>INFLUENCES OF PORE WATER CONTENT AND COVERING DEPTH ON CARBON STEEL CORROSION IN SOIL</b> .....	1093
<i>Ryo Hirata, Azusa Ooi, Eiji Tada, Atsushi Nishikata</i>	
<b>CORROSION BEHAVIOR OF ELECTRODEPOSITED ZNFE SACRIFICIAL COATINGS IN SALINE SOLUTION: ALTERNATIVE TO CONVENTIONAL ELECTRODEPOSITED SACRIFICIAL COATINGS</b> .....	1094
<i>Lucas Baissac, Celine Arrighi, Catherine Savall, Juan Creus, Jason Rolet</i>	
<b>(CORROSION DIVISION MORRIS COHEN GRADUATE STUDENT AWARD ADDRESS) ACTIVE METALLIC CORROSION IN WEAK ACID SOLUTIONS: A UNIFIED MECHANISTIC VIEW TO CATHODIC REACTIONS</b> .....	1095
<i>Aria Kahyarian, Srdjan Nesic</i>	
<b>(INVITED) ORIGIN OF WEAK POINTS IN SURFACE OXIDES AT THE ATOMIC SCALE ON CR-CONTAINING ALLOYS</b> .....	1097
<i>Philippe Marcus, Li Ma, Frederic Wiame, Vincent Maurice</i>	
<b>(INVITED) THE MORPHOLOGICAL STABILITY OF PASSIVE OXIDE FILMS</b> .....	1098
<i>Rohit Ramanathan, Peter W Voorhees</i>	
<b>THE ABILITY OF PVD CHROMIUM (III) OXIDE FILMS TO INHIBIT THE CORROSION-DRIVEN CATHODIC DELAMINATION OF ORGANIC COATINGS FROM THE SURFACE OF MILD STEEL</b> .....	1099
<i>Hamilton Neil McMurray, Natalie Wint, Arnaud C. A. De Vooy, David Warren</i>	
<b>(INVITED) FORMATION, CHARACTERIZATION AND APPLICATIONS OF NANOWIRE FILMS FORMED BY ANODIZING OF METALS</b> .....	1101
<i>Hiroki Habazaki, Keisuke Wada, Chunyu Zhu, Yoshitaka Aoki</i>	
<b>(INVITED) USE OF PERIODIC PULSES AND NON-NATIVE SUBSTRATES TO FORM NANOPOROUS METAL OXIDE FILMS BY ANODIZATION</b> .....	1102
<i>Karthik Shankar</i>	
<b>MODEL FOR FORMATION OF SELF-ORDERED ANODIC OXIDE NANOMATERIALS</b> .....	1104
<i>Pratyush Mishra, Kurt Hebert</i>	
<b>ANODIC OXIDE GROWTH ON HEAT-TREATED TITANIUM</b> .....	1105
<i>Hiroaki Tsuchiya, Yuka Kamimura, Shinji Fujimoto</i>	
<b>ROLES OF MECHANICAL STRESS AND LOWER-VALENT OXIDE IN THE FORMATION OF ANODIC TIO<sub>2</sub>NANOTUBE LAYERS</b> .....	1106
<i>Qi Dou, Pranav Shrotriya, Wenfang Li, Kurt Hebert</i>	
<b>ELECTROCHEMICAL PREPARATION OF TIO<sub>x</sub>-ELECTRODES: EFFECT OF THE COUNTER ELECTRODE ON THE CHARGE TRANSFER PROPERTIES</b> .....	1108
<i>Robert Bruninghoff, Ainoa Paradelo Rodriguez, Guido Mul, Bastian Timo Mei</i>	
<b>(INVITED) RAPID CATHODIC PROCESS ON ANODIZED METALS BY FAST CURRENT-CONTROLLED POLARIZATION</b> .....	1110
<i>Shinji Fujimoto, Tetsuya Kurokawa, Hiroaki Tsuchiya, Sayaka Miyabe</i>	
<b>FORMATION OF POROUS ALUMINA FILM BY INDIRECT OXIDATION UNDER AC ELECTRIC FIELD</b> .....	1111
<i>Hidetaka Asoh, Mami Ishino, Sayuri Miura, Hideki Hashimoto</i>	
<b>FORMATION MECHANISMS OF ANODIC OXIDE NANOTUBULAR/NANOPOROUS STRUCTURES</b> .....	1112
<i>Krishnan S. Raja</i>	

<b>FABRICATION OF STICKY AND SLIPPERY ALUMINUM ALLOYS BASED ON ANODIC ALUMINA NANOFIBERS</b> .....	1113
<i>Tatsuya Kikuchi, Ryunosuke Kondo, Daiki Nakajima, Ryosuke O. Suzuki, Shungo Natsui</i>	
<b>STABILITY OF FLUORINE DOPED TIN OXIDE (FTO) COATED SUBSTRATES UNDER EXTREME POLARIZATION CONDITIONS</b> .....	1115
<i>Alen Korjenic, Krishnan S. Raja</i>	
<b>(INVITED) THE COMPLEMENTARITY OF CR AND MO IN REINFORCING OXIDE PROTECTIVENESS ON NI-CR-MO ALLOYS</b> .....	1116
<i>Jeffrey D. Henderson, Nafiseh Ebrahimi, Xuejie Li, Kevin Ogle, James J. Noel</i>	
<b>CORROSION OF DIRECTED ENERGY DEPOSITED CANTOR ALLOY IN MOLTEN KNO<sub>3</sub>-NANO<sub>3</sub> FOR SOLAR THERMAL APPLICATIONS</b> .....	1117
<i>Jeremy Moon, Kodi Summers, Michael Anthony Melia, Andrew Kustas, Nicolas Argibay, Eric John Schindelholz, Dev Chidambaram</i>	
<b>METAL-IONIC PHASE REACTIONS IN MOLTEN SALT IONIC LIQUIDS: EXPERIMENTAL, THERMODYNAMIC AND KINETIC ANALYSIS OF THE ALTERATION OF PREFORMED-OXIDES ON FE-CR ALLOYS</b> .....	1118
<i>Junsoo Han, Marlene Grace Wartenberg, John R. Scully</i>	
<b>CORROSION OF CANDIDATE ALLOYS IN MOLTEN LiCl-Li<sub>2</sub>O-Li FOR PYROPROCESSING OF USED NUCLEAR FUEL</b> .....	1120
<i>Jeremy Moon, William Phillips, Dev Chidambaram</i>	
<b>(INVITED) ADVANCED TECHNIQUES FOR THE STUDY OF ELEMENTARY MECHANISMS OF OXIDE FORMATION AND GROWTH ON CO-AL-W MODEL ALLOYS AT HIGH TEMPERATURES</b> .....	1121
<i>Sannakaisa Virtanen</i>	
<b>PASSIVATION PHENOMENA IN SINGLE PHASE HIGH ENTROPY ALLOYS: THE EVOLUTION OF OXIDE COMPOSITION IN CHLORIDE</b> .....	1122
<i>Angela Yu Gerard, Keren M Freedy, Kang Wang, Junsoo Han, Bi-Cheng Zhou, Stephen McDonnell, Dan Schreiber, James Saal, Pin Lu, Sarita Sahu, Tianshu Li, Wolfgang Windl, Gerald S. Frankel, John R. Scully</i>	
<b>PASSIVATION PHENOMENA IN SINGLE PHASE HIGH ENTROPY ALLOYS: AN EVALUATION OF THE ROLE OF CHROMIUM CONTENT IN A NI-Fe-CR-MN-CO ALLOY</b> .....	1124
<i>Angela Yu Gerard, Keren M Freedy, Kang Wang, Bi-Cheng Zhou, Stephen McDonnell, Dan Schreiber, James Saal, Pin Lu, Sarita Sahu, Tianshu Li, Wolfgang Windl, Gerald S. Frankel, John R. Scully</i>	
<b>CORROSION BEHAVIOR OF REINFORCING STEEL WITH MILL SCALE IN CONCRETE</b> .....	1126
<i>Kotaro Doi, Sachiko Hirohara, Tadashi Shinohara, Koichi Tsuchiya, Eiji Akiyama</i>	
<b>ENHANCED ANTIBACTERIAL CAPABILITY AND CORROSION RESISTANCE OF Ti6Al4V IMPLANT COATED WITH ZRO<sub>2</sub>/ORGANOSILICA NANOCOMPOSITE SOL-GEL FILMS</b> .....	1128
<i>Federico R. Garcia-Galvan, Miguel Angel Pacha-Olivera, Amir A. El Hadad, Alicia Paez-Pavon, Santiago Fajardo, Violeta Barranco, Juan Carlos Galvan</i>	
<b>LEAD DIOXIDE BASED OXIDE-SURFACTANT COMPOSITES</b> .....	1130
<i>Tatiana Luk'Yanenko, Olesia Shmychkova, Alexander Velichenko</i>	
<b>STRUCTURAL CHARACTERIZATION OF ANODIC POROUS ALUMINA FORMED BY GALVANOSTATIC ANODIZING IN ETIDRONIC ACID</b> .....	1132
<i>Mana Iwai, Tatsuya Kikuchi, Ryosuke O. Suzuki, Shungo Natsui</i>	
<b>ALKALINE CORROSION-RESISTANT ANODIC ALUMINUM OXIDE FORMED BY ETIDRONIC ACID ANODIZING</b> .....	1134
<i>Yusuke Suzuki, Kai Kawahara, Tatsuya Kikuchi, Ryosuke O. Suzuki, Shungo Natsui</i>	
<b>REVIEW OF SIMPLIFIED MODELS FOR THE PITTING POTENTIAL AND THE CRITICAL PITTING TEMPERATURE, TAKING INTO ACCOUNT RECENT OBSERVATIONS</b> .....	1136
<i>Nicholas J Laycock, Van Anh T. Nguyen, Roger C. Newman</i>	
<b>ON THE DEVELOPMENT OF A FLOW-TYPE ELECTROCHEMICAL MICROCELL</b> .....	1138
<i>Kodi Summers, Bryan J. Kaehr, Eric John Schindelholz, Dev Chidambaram</i>	
<b>A NEW FRAMEWORK FOR PIT GROWTH STABILITY AND ITS EXPERIMENTAL VALIDATION</b> .....	1139
<i>Tianshu Li, John R. Scully, Gerald S. Frankel</i>	
<b>EXPLANATION OF THE ELECTROCHEMICAL BEHAVIOR OF SALT FILM IN PIT GROWTH</b> .....	1141
<i>Tianshu Li, John R. Scully, Gerald S. Frankel</i>	
<b>PITTING CORROSION IN STEEL CONTROLLED BY THE ELECTROCHEMICAL POTENTIAL COMBINED WITH SYNCHROTRON X-RAYS</b> .....	1142
<i>Debi Garai, Vlasyav Solokha, Axel Wilson, Ilaria Carlomagno, Mukul Gupta, Carlo Meneghini, Ajay Gupta, Jorg Zegenhagen</i>	
<b>MG THIN FILM PIT GROWTH AND ANOMALOUS HYDROGEN EVOLUTION</b> .....	1144
<i>Aline D Avila Gabbardo, Gopal B Viswanathan, Gerald S. Frankel</i>	
<b>APPLICATION OF A REACTION-TRANSPORT MODEL WITH CATION COMPLEXATION AND VARIABLE DIFFUSIVITY TO GALVELE'S CRITERIA FOR PITTING CORROSION</b> .....	1145
<i>Van Anh T. Nguyen, Roger C. Newman</i>	
<b>IN-SITU OPTICAL MICROSCOPY CORROSION EXPERIMENTS FOR CORRELATING MICROSTRUCTURE TO CORROSION SUSCEPTIBILITY IN ALUMINUM ALLOY</b> .....	1146
<i>Jahnvi Desai Choundraj</i>	
<b>MICROSTRUCTURE AND ELECTROCHEMISTRY OF AL-RICH PRIMER</b> .....	1147
<i>Shan-Shan Wang, Xi Wang, Siva Palani, Alan Rose, Gerald S. Frankel</i>	

<b>EFFECT OF COPPER ON THE LOCALIZED CORROSION AND STRESS CORROSION RESISTANCE OF HIGH STRENGTH ALUMINUM ALLOYS</b> .....	1149
<i>Ganesh Bhaskaran, Preet Singh, Yudie Yuan, Rashmi Mohanty, Rajeev Kamat, Tudor Piroteala</i>	
<b>THE ROLE OF LITHIUM SALT CONCENTRATION IN THE ACTIVE CORROSION PROTECTION OF ALUMINIUM ALLOYS</b> .....	1150
<i>Emmanouela Michailidou, Peter Visser, Johannes M. C. Mol, Yaiza Gonzalez-Garcia</i>	
<b>VISUALIZATION OF PH AND CL<sup>-</sup> DISTRIBUTIONS INSIDE CREVICE OF TYPE 430 STAINLESS STEEL</b> .....	1152
<i>Kengo Matsumura, Izumi Muto, Yu Sugawara</i>	
<b>USING MACRO AND MICRO ELECTROCHEMICAL METHODS TO UNDERSTAND THE CORROSION BEHAVIOR OF STAINLESS STEEL THERMAL SPRAY COATINGS &amp; MG/AL DIFFUSION COUPLES</b> .....	1153
<i>Janine Mauzeroll</i>	
<b>INVESTIGATION OF LOCALIZED CORROSION PHENOMENA IN SELECTIVE LASER MELTED 316L STAINLESS STEEL</b> .....	1154
<i>Duane Armell Macatangay, Alex Piotr Chmielinski, Robert G. Kelly</i>	
<b>LONG-TERM ATMOSPHERIC CORROSION OF 304 STAINLESS STEEL USED IN SPENT DRY NUCLEAR FUEL STORAGE CONTAINERS</b> .....	1155
<i>Jayendran Srinivasan, Jenifer (Warner) Locke, Tim Weirich, Jason Mark Taylor, Charles Bryan, Eric John Schindelholz</i>	
<b>PIT INITIATION BEHAVIOR AT SULFIDE PARTICLES IN SINTERED STAINLESS STEELS</b> .....	1157
<i>Masashi Nishimoto, Izumi Muto, Yu Sugawara, Nobuyoshi Hara</i>	
<b>CHARACTERIZING STAINLESS STEEL OXIDES UNDER OXYGEN REDUCTION REACTION CONDITIONS</b> .....	1158
<i>Rachel M Anderson, Carlos M Hangarter, Steven A Policastro</i>	
<b>PITTING CORROSION BEHAVIOR AT SULFIDE INCLUSIONS ON TYPE 304 STAINLESS STEEL WITH APPLIED STRESS</b> .....	1159
<i>Shimpei Tokuda, Izumi Muto, Yu Sugawara, Nobuyoshi Hara</i>	
<b>THE PASSIVATION OF NI-CR-MO ALLOYS: TIME RESOLVED ENRICHMENT AND DISSOLUTION OF CR AND MO DURING PASSIVE-ACTIVE CYCLES</b> .....	1161
<i>Xuejie Li, Kevin Ogle</i>	
<b>HIGH-RATE DISSOLUTION OF CORROSION RESISTANT ALLOYS IN NONAQUEOUS SOLUTIONS AT ROOM TEMPERATURE</b> .....	1163
<i>Pedro Atz Dick, Michael Beekwilder, Robert G. Kelly</i>	
<b>CORROSION BEHAVIOR OF HIGH ENTROPY ALLOYS MADE BY DIRECTED ENERGY DEPOSITION ADDITIVE MANUFACTURING</b> .....	1164
<i>Michael Anthony Melia, Jay Carroll, Nicolas Argibay, Andrew Kustas, Eric John Schindelholz</i>	
<b>MECHANISM FOR PROPAGATION OF INTERGRANULAR CORROSION IN PIPELINE STEEL</b> .....	1165
<i>Pratyush Mishra, Denizhan Yavas, Abdullah Ashehri, Ashraf Bastawros, Pranav Shrotriya, Kurt Hebert</i>	
<b>ELLIPSOMETRY AND RAMAN INVESTIGATIONS INTO THE INFLUENCE OF CHLORIDE ON STEEL CORROSION RATES IN ALKALINE ENVIRONMENTS</b> .....	1167
<i>Daniel John Blackwood, Le Xu</i>	
<b>UNDER DEPOSIT CORROSION IN STEAM GENERATORS: TOWARDS UNDERSTANDING CRITICAL DEPOSIT THRESHOLDS</b> .....	1169
<i>Abitha Ramesh, Milla E Puolamaa, Nick Laycock, Andrew Barnes, Aarthi Thyagarajan, Aboubakr M Abdullah, Camilla Stitt, Mary P. Ryan</i>	
<b>BIOCORROSION REDUCTION OF PIPELINE STEEL IN DESULFOVIBRIO FERROPHILUS CULTURE IN THE PRESENCE OF CARBOXYMETHYL CHITOSAN GRAFTED POLY(2-METHYL-1-VINYLMIDAZOLE)/CERIUM MOLYBDATE NANOCOMPOSITE</b> .....	1171
<i>Ubong Eduok, Jerzy Szpunar</i>	
<b>A MODEL FRAMEWORK FOR LINKING CHANGING ELECTROLYTE PROPERTIES TO GALVANIC CORROSION SIMULATIONS</b> .....	1172
<i>Steven A Policastro, Carlos M Hangarter, Rachel M Anderson</i>	
<b>INVESTIGATIONS OF THE EFFECTS OF ELECTROCHEMICAL, ENVIRONMENTAL AND GEOMETRIC PARAMETERS ON GALVANIC COUPLING THROUGH FINITE ELEMENT MODELING</b> .....	1173
<i>Rebecca Joan Skelton, Robert G. Kelly</i>	
<b>FINITE ELEMENT MODELLING OF MICROELECTRODE ARRAYS OF MG AND AA2024 GALVANIC COUPLE</b> .....	1175
<i>Carolina Vicente Moraes, Robert G. Kelly</i>	
<b>FURTHER DEVELOPMENTS OF A MODULAR ONE-DIMENSIONAL ANALYTICAL GALVANIC CORROSION MODEL</b> .....	1176
<i>Yong Teck Tan, Daniel John Blackwood</i>	
<b>MODELING POTENTIAL THRESHOLDS OF SACRIFICIAL METALLIC COATINGS FOR PROTECTION OF AL-MG ALLOYS IN MARINE ENVIRONMENTS</b> .....	1177
<i>Jason S Lee</i>	
<b>ELECTROCHEMICAL INVESTIGATION OF OXYGEN REDUCTION REACTION ON TYPE 316L STAINLESS STEEL IN NaCl SOLUTIONS IN A CONFINED SPACE</b> .....	1178
<i>Eiji Tada, Junho Jang, Azusa Ooi, Atsushi Nishikata</i>	
<b>ICME DESIGN OF CORROSION RESISTANT HIGH ENTROPY ALLOYS FOR HARSH ENVIRONMENTS</b> .....	1179
<i>Pin Lu, Greg Olson, Tianshu Li, Gerald S. Frankel, Angela Yu Gerard, John R. Scully</i>	

<b>MACHINE LEARNING FOR CORROSION RESISTANCE ALLOYS</b> .....	1180
<i>Szu-Chia Chien, Gerald S. Frankel, Wolfgang Windl</i>	
<b>A CHLORIDE SUSCEPTIBILITY INDEX (CSI) : AN AB INITIO BASED CORROSION RESISTANCE INDICATOR</b> .....	1181
<i>Huibin Ke, Christopher Taylor</i>	
<b>SIMULATING POLARIZATION CURVES OF COMMONLY IDENTIFIED INTERMETALLIC PARTICLES FROM HIGH STRENGTH ALUMINUM ALLOYS VIA FIRST PRINCIPLES</b> .....	1182
<i>Sirui Li, Yakun Zhu, Christopher Taylor, Gerald S. Frankel</i>	
<b>COMBINED DFT AND MOLECULAR DYNAMICS STUDY OF NI DISSOLUTION ACTIVATION ENERGY</b> .....	1184
<i>Huibin Ke, Christopher Taylor</i>	
<b>BOND ENERGY MODELS FOR BOND ENERGIES IN ALLOYS AND ALLOY OXIDES</b> .....	1185
<i>Szu-Chia Chien, Gerald S. Frankel, Wolfgang Windl</i>	
<b>FIRST-PRINCIPLES INVESTIGATION OF THE EFFECT OF INTERSTITIAL CARBON ON CORROSION RESISTANCE OF MARTENSITIC MEDIUM-CARBON STEEL</b> .....	1186
<i>Mariko Kadowaki, Arkapol Saengdeejing, Izumi Muto, Ying Chen, Hiroyuki Masuda, Hideki Katayama, Takashi Doi, Kaori Kawano, Hideo Miura, Yu Sugawara, Nobuyoshi Hara</i>	
<b>(INVITED) NEGATIVE CAPACITANCE III-V FINFETS FOR ULTRA-LOW-POWER APPLICATIONS</b> .....	1188
<i>Edward Yi Chang, Quang-Ho Luc, Nhan-Ai Tran, Yueh-Chin Lin</i>	
<b>GERMANIUM-TIN JUNCTIONLESS P-FINFETS: EFFECTS OF CHANNEL DOPING CONCENTRATION AND FIN WIDTH</b> .....	1189
<i>Yen Chuang, Po-Yuan Chiu, Ching-Tsung Huang, Pao-Chuan Shih, Chia-You Liu, Guang-Li Luo, Jiun-Yun Li</i>	
<b>(INVITED) HIGH-PERFORMANCE 2D TELLURIUM TRANSISTORS TOWARDS CMOS LOGIC APPLICATIONS</b> .....	1191
<i>Gang Qiu, Yixiu Wang, Wenzhuo Wu, Peide D Ye</i>	
<b>(INVITED) MID-INFRARED COLLOIDAL QUANTUM DOT BASED NANOELECTRONICS AND NANO-OPTOELECTRONICS</b> .....	1192
<i>Shihab Bin Hafiz, Michael R. Scimeca, Ayaskanta Sahu, Dong-Kyun Ko</i>	
<b>GATE-DEFINED QUANTUM DOTS IN GE/SIGE QUANTUM WELLS AS A PLATFORM FOR SPIN QUBITS</b> .....	1193
<i>Will J Hardy, Yi-Hsin Su, Yen Chuang, Leon N Maurer, Mitchell Brickson, Andrew Baczewski, Jiun-Yun Li, Tzu-Ming Lu, Dwight Luhman</i>	
<b>TEMPERATURE AND ENVIRONMENTAL EFFECTS ON RESISTANCE OF NANO-RESISTOR DEVICES</b> .....	1195
<i>Wen-Shan Lin, Lingguang Liu, Yue Kuo</i>	
<b>(INVITED) STONER FERROMAGNETISM IN TWO-DIMENSIONAL MATERIALS</b> .....	1197
<i>Michel Houssa, Ruishen Meng, Konstantina Iordanidou, Geoffrey Pourtois, Valery V. Afanas'Ev, Andre Stesmans</i>	
<b>CHARGE INJECTION AT METAL-POLYMER INTERFACES A FIRST-PRINCIPLES STUDY</b> .....	1198
<i>Deepak Kamal, Lihua Chen, Zongze Li, Shamima Nasreen, Yang Cao, Rampi Ramprasad</i>	
<b>DESIGN PRINCIPLES OF DIELECTRIC LAYERS FOR HIGH DENSITY FLASH MEMORIES</b> .....	1199
<i>Seung Jae Baik</i>	
<b>EFFECT OF SCHOTTKY CONTACT EMITTER ON ELECTRICAL CHARACTERISTICS IN 2-TERMINAL VERTICAL THYRISTOR BASED CAPACITORLESS MEMORY</b> .....	1200
<i>Min-Won Kim, Byoungseok Lee, Ji-Hun Kim, Gyu-Jin Oh, Chang-Wan Ahn, Sang-Dong Yoo, Tae-Hun Shim, Eun Kyu Kim, Jea-Gun Park</i>	
<b>DEPENDENCY OF MULTI-LEVEL-CELL BEHAVIOR ON THICKNESS OF TOP MGO TUNNELING BARRIER IN DOUBLE PINNED STRUCTURE PERPENDICULAR SPIN-TORQUE-TRANSFER MAGNETIC RANDOM ACCESS MEMORY</b> .....	1202
<i>Han-Sol Jun, Miri Park, Sunhwa Jung, Jin-Young Choi, Kei Ashiba, Jong-Ung Baek, Tae-Hun Shim, Jea-Gun Park</i>	
<b>(INVITED) PHASE CHANGE MATERIALS FOR NON-VOLATILE MEMORIES : PROPERTIES AND OPTIMIZATION THROUGH AB INITIO SIMULATION</b> .....	1204
<i>Jean-Yves Raty</i>	
<b>TAILORING THE PERMITTIVITY IN TELLURIUM DIOXIDE BY CO-DOPING</b> .....	1205
<i>V. Keerthana, Venimadhav Adyam</i>	
<b>NOVEL DEGRADATION MODEL OF IGZO TFT ON HIGH DRAIN BIAS STRESS</b> .....	1207
<i>Kihwan Kim, Miseon Seo, Byoung-Deog Choi</i>	
<b>FORMATION OF OHMIC CONTACTS TO N-GAAS AT TEMPERATURES COMPATIBLE WITH INDIUM FLIP-CHIP BONDING</b> .....	1209
<i>Michael G Wood, Christopher P Hains, Patrick Sean Finnegan, Chad A Stephenson, John F. Klem, Quinn Looker</i>	
<b>ELECTRO-OPTICALLY ACTIVE POLYANILINE-POLYPYRROLE DOUBLE LAYER POLYMER SEMICONDUCTING COMPOSITE</b> .....	1212
<i>Kyoka Komaba, Hiromasa Goto</i>	
<b>INTERFACIAL TREATMENT OF THE SIC-SIO<sub>2</sub> INTERFACE BY SHALLOW BORON AND BARIUM MULTI-CHARGED ION IMPLANTATION</b> .....	1214
<i>Md Haider Shaim, Hani Elsayed-Ali</i>	
<b>THE LINE ROUGHNESS IMPROVEMENT IN SELF-ALIGNED MULTIPLE PATTERNING</b> .....	1215
<i>Erhu Zheng, Qiuhua Han, Haiyang Zhang</i>	
<b>THE METAL GATE CUT PROCESS(PART I): PLASMA ASSISTANT CD SHRINKAGE</b> .....	1216
<i>Shi-Liang Ji, Shaoxiang Liu, Haiyang Zhang</i>	

<b>(INVITED) A DEEP LEVEL TRANSIENT SPECTROSCOPY STUDY OF HOLE TRAPS IN <math>Ge_xSe_{1-x}</math>-BASED LAYERS FOR OVONIC THRESHOLD SWITCHING</b>	
<b>SELECTORS</b> .....	1217
<i>P.-C. Hsu, Eddy Roger Simoen, D Lin, Andre Stesmans, Laurent Goux, Romain Delhougne, Gouri Sankar Kar</i>	
<b>TRAP CHARACTERIZATION OF ALD <math>Al_2O_3/4H</math>-SIC METAL-OXIDE-SEMICONDUCTOR INTERFACES</b> .....	1220
<i>Isanka Udayani Jayawardhena, Ayayi Ahyi, Tamara Isaacs-Smith, Ramamurthy P Ramamurthy, Dallas Morisette, Sarit Dhar</i>	
<b>DATA-DRIVEN MODELING OF DIELECTRIC BREAKDOWN PHENOMENA IN POLYMERS</b> .....	1223
<i>Pranav Shetty, Lihua Chen, Rohit Batra, Chao Wu, Zongze Li, Yang Cao, Rampi Ramprasad</i>	
<b>(INVITED) CHALLENGES AND OPPORTUNITIES FOR HIGH-K DIELECTRICS FOR ADVANCED TECHNOLOGY NODES</b> .....	1224
<i>Kandabara Tapily, Robert D. Clark, Steven Consiglio, H Niimi, D. Triyoso, Cory S. Wajda, Gert J. Leusink</i>	
<b>STUDY ON THE EFFECTS OF POST-DEPOSITION ANNEALING ON <math>SiO_2/\beta</math>-<math>Ga_2O_3</math> MOS CHARACTERISTICS</b> .....	1225
<i>Koji Kita, Eiki Suzuki, Qin Mao</i>	
<b>NON-AQUEOUS ELECTRODEPOSITION OF 2-D LAYERED <math>MoS_2</math> FROM A TAILORED SINGLE SOURCE PRECURSOR</b> .....	1227
<i>Shibin Thomas, Philip N. Bartlett, Andrew L Hector, Gill Reid, William Levason, Danielle E Smith, Victoria K Greenacre, C. H De Groot</i>	
<b>MONITORING OF HIGH SELECTIVITY CHEMISTRY FOR <math>Si_3N_4</math> ETCH</b> .....	1229
<i>Chuannan Bai, Guang Liang, Paul Okagbare, Eugene Shalyt</i>	
<b>DIELECTRIC PROPERTIES OF SILICA-BASED NANOSCALE ORGANIC-INORGANIC HYBRID MATERIALS (NOHMS)</b> .....	1231
<i>Emmanuel Urandu Mapesa, Nelly M. Cantillo, Sara Triana Hamilton, Ah-Hyung Park, Thomas A. Zawodzinski, Joshua R Sangoro</i>	
<b>A DIELECTRIC AND VIBRATIONAL SPECTROSCOPY STUDY OF THE CONFINEMENT EFFECTS ON ION DYNAMICS IN A METHACRYLATE BASED POLYMERIZED IONIC LIQUID WITHIN NANOPOROUS SILICA MEMBRANES</b> .....	1232
<i>Thomas Kinsey, Kaitlin Glynn, James Tyler Cosby, Joshua R Sangoro</i>	
<b>PUMPING CHARGES FOR ULTRAHIGH-PERFORMANCE TRIBOELECTRIC NANOGENERATORS AT AMBIENT CONDITIONS</b> .....	1233
<i>Liang Xu, Tianzhao Bu, Xiaodan Yang, Chi Zhang, Zhong Lin Wang</i>	
<b>MANIPULATION OF A SINGLE CRYSTAL NANOWIRE ON AN ATOMIC LEVEL</b> .....	1234
<i>Martin Kosicek, Gregor Filipic, Janez Zavasnik, Uros Cvelbar</i>	
<b>APPLICATION OF BROADBAND MICROWAVE METROLOGY TO EMERGING INTEGRATED CIRCUIT DEVICE RELIABILITY ANALYSES</b> .....	1235
<i>Yaw S. Obeng, Papa K. Amoah</i>	
<b>ESTIMATION OF THROUGH-PLASTIC VIA (TPV) FILLING THROUGH COMPUTED TOMOGRAPHY FOR DIELECTRICS AND CONDUCTIVE INKS IN FLEXIBLE PRINTED ELECTRONICS</b> .....	1236
<i>Kartik Sondhi, Sai Guruva Reddy Avuthu, Hugh Fan, Toshikazu Nishida</i>	
<b>APPRAISING THE EXTENSIBILITY OF OPTICS-BASED METROLOGY FOR EMERGING MATERIALS</b> .....	1238
<i>Bryan M Barnes, Mark-Alexander Henn, M Y Sohn, Hui Zhou, Richard M Silver</i>	
<b>(INVITED) PLASMA ETCHING AT ULTRA-LOW TEMP, PRESSURE AND RADICAL CONDITIONS FOR NEXT GENERATION NANO CHIP FABRICATION</b> .....	1239
<i>Jongchul Park</i>	
<b>(INVITED) TOWARDS SELECTIVE ETCHING WITH NANOMETRIC CONTROL USING REMOTE PLASMA SOURCE</b> .....	1240
<i>Erwine Pargon, Vincent Renaud, Camille Petit-Etienne, Florian Pinzan, Emilie Despiaud-Pujo, Gilles Cunge, Olivier Joubert</i>	
<b>(INVITED) CHARACTERIZATION OF ISOTROPIC THERMAL ALE OF OXIDE FILMS IN NANOMETER-SIZE STRUCTURES</b> .....	1242
<i>Andreas Fischer, Aaron Routzahn, Thorsten Lill</i>	
<b>(INVITED) PLASMA PROCESSING WITH FEEDBACK CONTROL OF WAFER TEMPERATURE BY NON-CONTACT TEMPERATURE MEASUREMENT SYSTEM</b> .....	1243
<i>Takayoshi Tsutsumi, Hiroki Kondo, Kenji Ishikawa, Keigo Takeda, Takayuki Ohta, Makoto Sekine, Masafumi Ito, Masaru Hori</i>	
<b>MOLYBDENUM CAPPING LAYER EFFECT ON ELECTROMIGRATION FAILURE OF PLASMA ETCHED COPPER LINES</b> .....	1245
<i>Jia Quan Su, Mingqian Li, Yue Kuo, Satoshi Hamaguchi</i>	
<b>PRECISE CONTROL OF POLY-SILICON HEIGHT BY PLASMA ETCHING IN FINFET TECHNOLOGY NODE</b> .....	1247
<i>Yan Wang, Dongping Zhang, Haiyang Zhang</i>	
<b>METALLIC FOAMS PREPARED BY ELECTROLYTIC PLASMA DEPOSITION</b> .....	1248
<i>Frederic Durut, Ronan Botrel, Julien Pinot, Sandrine Rocher, Cedric Chicanne, Marc Theobald, Vincent Vignal</i>	
<b>(INVITED) CHALLENGES AND OPPORTUNITIES IN DYE SENSITIZED SOLAR CELLS USING DBD PLASMA TREATED UPCONVERSION NANOPARTICLES</b> .....	1250
<i>Kunihiro Kamataki, Lesly Fadzaï Chawarambwa, Kazumori Koga, Masaharu Shiratani</i>	
<b>(INVITED) NANOWIRE-BASED AEROGELS FOR ENERGY CONVERSION AND STIMULI RESPONSIVE DEVICE FABRICATION</b> .....	1253
<i>Sreeram Vaddiraju</i>	
<b>(INVITED) PARTICLE FORMATION MECHANISMS IN LOW TEMPERATURE PLASMAS</b> .....	1255
<i>Johannes Berndt, Cedric Pattyn, Eva Kovacevic</i>	



<b>(INVITED) IMPROVING NANOSYNTHESIS BY MEANS OF PULSED ANODIC ARC DISCHARGE</b> .....	1257
<i>Carles Corbella, Sabine Portal, Denis Zolotukhin, Luis Martinez, Li Lin, Madhusudhan Kundrapu, Michael Keidar</i>	
<b>(INVITED) NITROGEN FUNCTIONALIZATION AND DOPING OF CONDUCTIVE CARBONS BY MEANS OF LOW TEMPERATURE PLASMAS</b> .....	1258
<i>Eva Kovacevic, Chantal Boulmer-Leborgne, Thomas Strunskus, Shahzad Hussain, Andrea Jagodar, Erik Von Wahl, Dario Sciaqua, Elena Tatarova, Ana Dias, Uros Cvelbar, Johannes Berndt</i>	
<b>(INVITED) MANIPULATION OF THE ENERGY BAND LEVELS IN PLASMA-PRODUCED ENERGY MATERIALS</b> .....	1260
<i>Davide Mariotti</i>	
<b>(ELECTRODEPOSITION DIVISION RESEARCH AWARD) ELECTRODEPOSITION OF SEMICONDUCTOR FILMS: WHERE ARE WE AFTER THREE DECADES?</b> .....	1262
<i>Krishnan Rajeshwar</i>	
<b>(ELECTRODEPOSITION DIVISION EARLY CAREER INVESTIGATOR AWARD) ADDITIVES IN CU ELECTRODEPOSITION FOR THROUGH-SILICON VIA FILLING AND THE GROWTH OF CU NANOCRYSTALS</b> .....	1263
<i>Myung Jun Kim</i>	
<b>(INVITED) ELECTROPHORETIC DEPOSITION OF ENERGY STORAGE METAL OXIDES</b> .....	1265
<i>Reginald Penner</i>	
<b>(INVITED) ELECTROLESS DEPOSITION REVISITED</b> .....	1266
<i>E. J. O'Sullivan, C Camagong, J. J. Nowak, M Hopstaken, E. A. Galligan, P. L. Trouilloud, R. Kothandaraman, Y. Luo, M. Krishnan</i>	
<b>(INVITED) ELECTRODEPOSITED METALLIC NANOWIRES FOR BIOANALYTIC NANOFLUIDIC DEVICES</b> .....	1268
<i>Sunggook Park, Elizabeth J. Podlaha, Mohammad Beheshti, Junseo Choi, Deyang Li, Xiaohua Geng</i>	
<b>(INVITED) CHALLENGES FOR THE ELECTROCHEMICAL/ELECTROLESS METALLIZATION OF ADDITIVE MANUFACTURED POLYMER PARTS</b> .....	1269
<i>Andreas Dietz</i>	
<b>(INVITED) DO WE NEED 3D METAL STRUCTURES FOR CATALYSIS AND ELECTRONICS WHEN 2D METALS ARE POSSIBLE AND PERFORM BETTER?</b> .....	1271
<i>Faisal M. Alamgir</i>	
<b>(INVITED) ELECTRODEPOSITION OF NICKEL BASED NANOSTRUCTURES FROM DEEP EUTECTIC SOLVENT / WATER MIXTURES AS ELECTROCATALYSTS FOR THE OXYGEN EVOLUTION REACTION</b> .....	1272
<i>El Amine Mernissi Cherigui, Monika Lukaczynska, Mesfin Haile Mamme, Herman Terryn, Sara Bals, Jon Ustarroz</i>	
<b>ELECTRODEPOSITION AND CHARACTERIZATION OF ULTRA-THIN FILMS AS MODEL SYSTEMS FOR ELECTROCATALYSIS</b> .....	1274
<i>Enrico Berretti, Andrea Giaccherini, Francesco Di Benedetto, Giordano Montegrossi, Giovanni Orazio Lepore, Alessandro Puri, Francesco D'Acapito, Vincenzo Dell'Aquila, Alessandro Lavacchi</i>	
<b>TUNABLE ELECTROCATALYTIC ACTIVITY OF ATOMICALLY THIN FILM PLATINUM CATALYST ELECTRODEPOSITED ON SUB-STOICHIOMETRIC TITANIA</b> .....	1275
<i>Crystal Bell, Dong-Chan Lee, Chris Rouleau, Kotaro Sasaki, M D Williams, Faisal M. Alamgir</i>	
<b>CO-ELECTROLESS DEPOSITION OF PT-M BIMETALLIC ALLOYED CATALYSTS FOR METHANOL OXIDATION</b> .....	1276
<i>Benjamin Meekins, Gregory Tate, Wen Xiong, John Weidner, John R. Monnier</i>	
<b>DIRECT SYNTHESIS OF PT CATALYST ON MULTI-WALLED CARBON NANOTUBES</b> .....	1277
<i>Matthew Drexler, Faisal M. Alamgir</i>	
<b>ATOMIC LAYER DEPOSITION BY SURFACE-LIMITED REDOX REPLACEMENT SYNTHESIS OF HIGHLY ACTIVE AND DURABLE <math>\text{Cu}_x\text{Au}_{(1-x)}</math> CATALYSTS FOR NITRATE ELECTROREDUCTION</b> .....	1278
<i>Yunxiang Xie, Nikolay Dimitrov</i>	
<b>HYDROGEN EVOLUTION REACTION ON CO-MO ELECTRODEPOSITS WITH NANOSCALED <math>\text{TiO}_2</math></b> .....	1280
<i>Elizabeth J. Podlaha, Cheng Wang</i>	
<b>CONTROLLED ELECTROCHEMICAL SYNTHESIS OF AG NANOPARTICLES AND THEIR MORPHOLOGY-DEPENDENT PERFORMANCES ON CATALYSING HYDROGEN EVOLUTION REACTIONS</b> .....	1282
<i>Yue Ma, Martin Rosillo-Lopez, Xiaosheng Cai, Emina Hadzifejzovic, John S. Foord</i>	
<b>ENHANCING THE HYDROGEN EVOLUTION REACTION USING OXIDE NANOPARTICLES: ELECTRODEPOSITED NI-W-TIO<sub>2</sub></b> .....	1283
<i>Yujia Zhang, Elizabeth J. Podlaha</i>	
<b>(INVITED) ELECTRODEPOSITION AS A VERSATILE METHOD TO PREPARE MATERIALS FOR THE STORAGE AND CONVERSION OF SUSTAINABLE ENERGY</b> .....	1284
<i>Adriana Ispas, Natalia Borisenko, Dong Wang, Mathias Fritz, Mario Kurniawan, Svetlozar Ivanov, Andreas Bund</i>	
<b>ELECTRODEPOSITION OF BISMUTH TELLURIDE FROM A WEAKLY COORDINATING, NON-AQUEOUS SOLUTION</b> .....	1285
<i>Lingcong Meng, Katarina Cicvaric, Philip N. Bartlett, Yisong Han, Haytham Hussein, Francis Sweeney, Reza Kashtiban, Julie Macpherson, Andrew L Hector, Gill Reid, David Smith, Richard Beanland, K. Groot</i>	
<b>ELECTRODEPOSITION CARBON WITH IMPROVED PERFORMANCE AS ANODE MATERIAL FOR LITHIUM-ION BATTERIES (LIBS)</b> .....	1287
<i>Zahoor Ahmed, Matthew Hughes, Scott W Donne</i>	

<b>WEARABLE SUPERCAPACITOR BASED ON METAL OXIDE GROWN CARBON FIBER ELECTRODES</b> .....	1288
<i>Kowsik Sambath Kumar, Jayesh Cherusseri, Deepak Pandey, Jayan Thomas</i>	
<b>ELECTRODEPOSITED MCRLALY COATINGS FOR GAS TURBINE ENGINE APPLICATIONS</b> .....	1289
<i>Ying Zhang, Brian Bates</i>	
<b>(INVITED) THE ELECTRODEPOSITION OF POROUS CATALYSTS FOR CO<sub>2</sub> REDUCTION</b> .....	1290
<i>Stephen Ambrozik, David Raciti, Thomas P. Moffat</i>	
<b>ELECTROCHEMICAL GENERATION OF METAL NANOSTRUCTURES USING SELF-ASSEMBLED MONOLAYERS AS TEMPLATES</b> .....	1291
<i>Zhen Yao, Zhe She, Andrea Di Falco, Michael Buehl, Manfred Buck</i>	
<b>(INVITED) CHARACTERIZATION AND FUNCTIONAL IMPROVEMENT OF NANOPOROUS METALS</b> .....	1293
<i>Ayman A. El-Zoka, Brian Langelier, Roger C. Newman</i>	
<b>ELECTROCHEMICAL DESIGN OF NANOPOROUS GOLD WITH TUNABLE POROSITY USING LEAD UNDERPOTENTIAL DEPOSITION</b> .....	1295
<i>Natasa Vasiljevic, Vinicius Cruz-San Martin, Alicja Szczepanska, Mattia Cattelan, Neil Fox</i>	
<b>ELECTRODEPOSITION OF POROUS FE-NI-CO NANOWIRES USING HYDROGEN GAS BUBBLES</b> .....	1297
<i>Deyang Li, Elizabeth J. Podlaha</i>	
<b>ELECTRODEPOSITED 3D NANOMESH ELECTRODES: COMBINED HIGH SURFACE AREA, HIGH POROSITY AND STRUCTURAL INTEGRITY AND REGULARITY</b> .....	1298
<i>Philippe M. Vereecken, Stanislaw Piotr Zankowski</i>	
<b>ELECTROCHEMICAL NANOSTRUCTURING OF ELECTRODEPOSITED CU<sub>2</sub>O THIN FILM FOR EFFICIENT HYDROGEN REDUCTION</b> .....	1299
<i>Akhilender Jeet Singh, Chandan Das, Garima Aggarwal, Kavaipatti Ramanathan Balasubramaniam</i>	
<b>(INVITED) ELECTRODEPOSITION OF AU/CU<sub>2</sub>O CORE-SHELL NANOWIRE ARRAYS AS PHOTOCATHODE MODEL SYSTEMS FOR SOLAR HYDROGEN PRODUCTION</b> .....	1300
<i>Florent Yang, Nils Ulrich, Angela Leber, Christina Trautmann, Maria Eugenia Toimil-Molares</i>	
<b>SELF-LIMITING NI-CO ELECTRODEPOSITED GAAS FOR SOLAR WATER OXIDATION</b> .....	1301
<i>Yin Xu, Giovanni Zangari</i>	
<b>PREPARATION OF ZN-AL<sub>2</sub>O<sub>3</sub> AND ZN-TIO<sub>2</sub> COMPOSITE FILMS PLATED FROM NON-SUSPENDED SOLUTION BY USING ELECTROCHEMICAL TECHNIQUES</b> .....	1303
<i>Ichiro Koiwa, Shota Kamiyama</i>	
<b>DESIGN OF COPPER PLATING ON ZINC FROM ORGANIC SOLUTION FOR PHOTOACTIVE CZTS SYNTHESIS</b> .....	1305
<i>Gabriele Panzeri, Ruben Dell'Oro, Dominic Muller, Luca Magagnin</i>	
<b>OPTIMIZATION OF NI/CU PLATING PROCESS FOR SILICON SOLAR CELLS THROUGH UNDERSTANDING OF UNDERLYING ELECTROCHEMICAL REACTION MECHANISMS</b> .....	1307
<i>Cecile Molto, Aurelien Duchatelet, Solene Bechu, Muriel Bouttemy, Arnaud Etcheberry, Etienne Drahi, Daniel Lincot, Pierre-Philippe Grand, Anne-Marie Goncalves</i>	
<b>CONTROLLED ELECTROPOLYMERIZATION OF PORPHYRIN-BASED MATERIALS</b> .....	1309
<i>Elham Tavakoli, Shayan Kaviani, Siamak Nejati</i>	
<b>ELECTROCHEMICAL ATOMIC LAYER DEPOSITION: SELF-TERMINATED ELECTRODEPOSITION REACTIONS</b> .....	1310
<i>Yihua Liu, Dincer Gokcen, Sang Hyun Ahn, Nicole L. Ritzert, Rongyue Wang, Eleanor Gillette, Stephen Ambrozik, Carlos Hangarter, Nikolay Dimitrov, Hoydoo You, Ugo Bertocci, Thomas P. Moffat</i>	
<b>DYNAMIC LIQUID DROP/MENISCUS: A NEW ROUTE TO ELECTRODEPOSITION</b> .....	1311
<i>Marco Balucani, Simone Quaranta</i>	
<b>ELECTRODEPOSITION AND KINETIC-CONTROLLED PHASE SEPARATION IN AG-PD ALLOY FILMS</b> .....	1314
<i>Yunkai Sun, Giovanni Zangari</i>	
<b>COPPER ELECTRODEPOSITION ON TEXTILE FOR WEARABLE ELECTRONICS</b> .....	1316
<i>Sabrina M. Rosa-Ortiz, Arash Takshi</i>	
<b>ALL ELECTRODEPOSITED NANOWIRE ARRAY BASED TANDEM JUNCTION PHOTOELECTROCHEMICAL DEVICES</b> .....	1317
<i>Wei Cheng, Alan Rassoolkhani, Jonathan G Koonce, Joun Lee, Syed Mubeen</i>	
<b>INSIGHT INTO OXIDATION OF ULTRA-FINE LEAD POWDER BY ELECTRODEPOSITION</b> .....	1318
<i>Chang-Jiang Yang, Lv-Xing Zhao, Yu Gu</i>	
<b>SYNTHESIS OF CUINS<sub>2</sub> PARTICLES IN AQUEOUS SOLUTION FOR PRINTABLE PHOTOVOLTAIC DEVICE</b> .....	1320
<i>Hideyuki Takahashi</i>	
<b>A MATHEMATICAL MODEL OF REDUCTION POTENTIALS OF LANTHANIDE ALLOYS CORRELATION WITH ATOMIC RADIUS AND ELECTRONEGATIVITY BASED ON THE HUME-ROTHERY RULES</b> .....	1322
<i>Yongde Yan, Chunqi Wang, Pu Wang</i>	
<b>ELECTRODEPOSITION OF ALUMINUM NANOPATELET FROM ALCL<sub>3</sub>-1-ETHYL-3-METHYLIMIDAZOLIUM CHLORIDE-UREA MIXTURES</b> .....	1324
<i>Tetsuya Tsuda, Ryutarō Miyakawa, Susumu Kuwabata</i>	
<b>INVESTIGATION OF THE ELECTROCHEMICAL KINETICS OF ALUMINUM DEPOSITION FROM IONIC LIQUIDS</b> .....	1326
<i>Rene Bottcher, Adriana Ispas, Andreas Bund</i>	
<b>STABILITY INVESTIGATIONS OF [EMIM]ALCL<sub>4</sub> IONIC LIQUID</b> .....	1327
<i>Meng Shi, Haiyan Zhao, Junhua Jiang</i>	

<b>(INVITED) SURFACE FINISHING WITH CHLOROALUMINATE IONIC LIQUIDS</b> .....	1329
<i>Lorlyn Reidy, Chen Wang, Tetsuya Tsuda, Charles Hussey</i>	
<b>ROOM TEMPERATURE CHLOROALUMINATE DEEP EUTECTIC SOLVENTS AS AN ELECTROLYTE IN ALUMINIUM RECHARGEABLE BATTERIES</b> .....	1331
<i>Karl S Ryder, Christopher Zaleski, Igor Efimov, Tomas Purnell</i>	
<b>THROWING POWER IN CHLOROALUMINATE IONIC LIQUIDS: EFFECTS OF METAL CONCENTRATION, ADDITIVES AND WAVEFORM ON ALUMINUM/ALUMINUM ALLOY DEPOSITION ON COMPLEX GEOMETRIES</b> .....	1332
<i>Joshua G. Abbott, Steve Lucas, Weina Li, Weilong Zhang</i>	
<b>INFLUENCE OF ELECTROLYTIC CONDITION ON SURFACE SMOOTHNESS OF ELECTROLYTIC ALUMINUM FOIL FROM <math>AlCl_3</math>-EMIC MELT</b> .....	1333
<i>Koichi Ui, Satoshi Kobayashi, Toshihiko Mandai, Tatsuya Takeguchi, Tetsuya Tsuda, Mikito Ueda, Junji Nunomura, Yukio Honkawa, Yoichi Kojima</i>	
<b>ELECTROCHEMICAL BEHAVIOR OF COBALT AND SAMARIUM SPECIES IN AN AMIDE-TYPE IONIC LIQUID</b> .....	1335
<i>Marjanul Manjum, Nobuyuki Serizawa, Yasushi Katayama</i>	
<b>ELECTRODEPOSITION OF ALUMINIUM-NICKEL FILMS IN 1-BUTYL-1-METHYLPYRROLIDINIUM-BIS(TRIFLUOROMETHYLSULFONYL) AMIDE</b> .....	1336
<i>Adriana Ispas, Leslie Schlag, Lara Eggert, Rene Bottcher, Andreas Bund, Heiko O. Jacobs</i>	
<b>(INVITED) FROM THE LAB TO TECHNICAL SCALE-ALUMINUM ELECTROPLATING FROM IONIC LIQUIDS</b> .....	1337
<i>Bernhard Gollas</i>	
<b>ELECTRODEPOSITION OF AG-W ALLOY FILMS FROM IONIC LIQUID FOR ELECTRICAL CONTACTS</b> .....	1338
<i>Dominik Hohlich, Markus Muller, Thomas Mehner, Ingolf Scharf, Thomas Lampke</i>	
<b>NIObIUM ELECTROREDUCTION FROM IONIC LIQUIDS USING FLUORIDE BASED PRECURSORS</b> .....	1339
<i>Goktug Yesilbas, Lukas Seidl, Sladjana Martens, Oliver Schneider</i>	
<b>MOLYBDENUM ELECTROREFINING IN IONIC LIQUIDS</b> .....	1341
<i>Ethan Mitchel Gunnell, Ashley Avery, Andrew Ying, Lagrande Gunnell, Michael Stoddard, Matthew Memmott, John N. Harb</i>	
<b>THEORY OF IONIC LIQUIDS IN THE BULK AND AT THE INTERFACE</b> .....	1342
<i>Max Schammer, Birger Horstmann, Arnulf Latz</i>	
<b>TOWARD AN ATOMISTIC UNDERSTANDING OF DEEP EUTECTICS SOLVENTS ELECTROCHEMICAL INTERFACIAL STRUCTURE</b> .....	1344
<i>Mesfin Haile Mamme, Samuel Moors, El Amine Mernissi Cherigui, Monika Lukaczynska, Herman Terry, Johan Deconinck, Jon Ustarroz, Frank De Proft</i>	
<b>FOREIGN METAL-IONS TUNED ELECTROCHEMICAL PROCESSES IN IONIC LIQUIDS FOR BULK-METAL SURFACE TREATMENT</b> .....	1346
<i>Junhua Jiang, Matthew Kerr</i>	
<b>(INVITED) ELECTROCHEMICALLY INDUCED PHASE SEPARATION IN IONIC LIQUID MIXTURES</b> .....	1347
<i>Frank Endres</i>	
<b>IN-SITU SEIRAS OBSERVATION OF CO ELECTRODEPOSITION IN AN IONIC LIQUID: CORRELATION BETWEEN THE REACTION AND INTERFACIAL RESTRUCTURING</b> .....	1348
<i>Kenta Motobayashi, Yuhei Shibamura, Katsuyoshi Ikeda</i>	
<b>INVESTIGATION OF METAL ION DIFFUSION AND REDUCTION POTENTIAL IN SEVERAL IONIC LIQUIDS</b> .....	1349
<i>Corie Horwood, Tuan Anh Pham, Amitesh Maiti, Vanessa N. Peters, Michael Stadermann</i>	
<b>SOLVATION PROPERTIES OF SILVER AND COPPER IONS IN A ROOM TEMPERATURE IONIC LIQUID: A FIRST-PRINCIPLES STUDY</b> .....	1350
<i>Tuan Anh Pham, Corie Horwood, Amitesh Maiti, Vanessa N. Peters, Michael Stadermann</i>	
<b>IN OPERANDO OPTICAL VISUALIZATION OF BR5- ELECTROCHEMISTRY WITH A PLANAR GLASS BATTERY FOR ZN/BR FLOW BATTERIES</b> .....	1351
<i>Yutong Wu, Nian Liu</i>	
<b>INFLUENCE OF THE SUBSTRATE ON THE ELECTRODEPOSITION OF SILICON FROM IONIC LIQUIDS</b> .....	1352
<i>Steffen Link, Svetlozar Ivanov, Anna Dimitrova, Stefan Krischok, Andreas Bund</i>	
<b>(INVITED) ELECTROCHEMICAL PREPARATION OF PD NANOPARTICLES IN DIFFERENT IONIC LIQUIDS</b> .....	1354
<i>Yasushi Katayama, Kosei Masuda, Naoki Tachikawa, Nobuyuki Serizawa</i>	
<b>INVESTIGATION ON PARAMETERS INFLUENCING THE ELECTRODEPOSITION OF NIOBIUM-BASED LAYERS</b> .....	1356
<i>Anna Endrikat, Adriana Ispas, Andreas Bund</i>	
<b>ELECTROCHEMICAL DEPOSITION OF TANTALUM FROM IONIC LIQUIDS</b> .....	1357
<i>Thomas Engemann, Adriana Ispas, Natalia Borisenko, Lennart Frankemoelle, Julian Becker, Andreas Bund, Patricia A Hunt</i>	
<b>ELECTRODEPOSITION OF AL-W ALLOY FILMS USING W(II) SALTS SYNTHESIZED USING DIFFERENT METHODS</b> .....	1358
<i>Shota Higashino, Masao Miyake, Takumi Ikenoue, Tetsuji Hirato</i>	
<b>NOBLE METALS ALLOYS DEPOSITION FROM NON-AQUEOUS SOLVENTS</b> .....	1360
<i>Mila Manolova, Reinhard Bock</i>	
<b>STRUCTURE-PROPERTY RELATIONSHIPS IN PROTOTYPICAL DEEP EUTECTIC SOLVENTS</b> .....	1361
<i>Stephanie Spittle, James Tyler Cosby, Joshua R Sangoro</i>	
<b>NEW REFERENCE ELECTRODES FOR AIR AND MOISTURE STABLE IONIC LIQUIDS</b> .....	1362
<i>Corie Horwood, Michael Stadermann</i>	

<b>STACKED ADDITIVELY MANUFACTURED ELECTROCHEMICAL CELL FOR REDUCTION OF CARBON DIOXIDE TO ETHYLENE</b> .....	1363
<i>Keiran Ball, Christopher Tacon, Sam Reeve, Samuel Charles Perry, Carlos Ponce De Leon</i>	
<b>MOLTEN SALT ELECTROLYSIS FOR THE GRAPHITIZATION OF CARBON BASED MATERIALS</b> .....	1365
<i>Prashant Bagri, Huimin Luo, Sheng Dai</i>	
<b>PROCESS INTENSIFICATION APPROACHES TO ORGANIC ELECTROSYNTHESIS: TOWARDS SUSTAINABLE NYLON PRODUCTION</b> .....	1366
<i>Miguel Antonio Modestino, Daniela Eugenia Blanco</i>	
<b>ELECTROCHEMISTRY ENHANCED ACTIVATION OF ETHANE FOR CO-PRODUCTION OF ETHYLENE AND HYDROGEN WITH LOW-THERMAL-BUDGET AND LOW-CO<sub>2</sub>-EMISSION</b> .....	1367
<i>Wei Wu, Lucun Wang, Dong Ding</i>	
<b>MECHANISTIC STUDY OF THE ELECTROCHEMICAL PATHWAYS FOR METHYL SURFACE INTERMEDIATES DURING ORGANIC OXIDATIONS</b> .....	1368
<i>Xiong Peng, William E. Mustain</i>	
<b>ELECTROCHEMICAL OXIDATION OF METHANE IN SUPERACID</b> .....	1369
<i>Guangfang Li, Yuxin Fang, Christopher George Arges, John Flake</i>	
<b>A THEORETICAL STUDY ON THE ECONOMIC FEASIBILITY OF PROTON EXCHANGE MEMBRANE ELECTROLYSIS CELLS FOR NITROGEN FIXATION</b> .....	1371
<i>Carlos Arturo Fernandez, Marta C. Hatzell</i>	
<b>ELECTROSYNTHESIS OF HYDROGEN PEROXIDE IN A NOVEL FLOW-THROUGH ELECTROCHEMICAL REACTOR WITH IN SITU GENERATED OXYGEN</b> .....	1372
<i>Oscar Miguel Cornejo, Jose Luis Nava</i>	
<b>ELECTROCHEMICALLY ENHANCED PROCESSES FOR LEATHER TANNING</b> .....	1373
<i>Eugenio Gibertini, Filippo Rossi, Luca Magagnin, Maurizio Masi</i>	
<b>METHODS FOR DIRECT DEPOSITION OF COPPER ON GLASS SUBSTRATES</b> .....	1374
<i>Christopher Ernest John Cordonier, Kyohei Okabe, Mitsuhiro Watanabe, Tetsuya Saruwatari, Hideo Honma</i>	
<b>FABRICATION OF COPPER CIRCUIT PATTERN BY USING SOLID-ELECTRODEPOSITION PROCESS</b> .....	1376
<i>Hiroshi Yanagimoto, Rentaro Mori, Kazuaki Okamoto, Junya Murai</i>	
<b>PHYSICAL PROPERTIES OF THREES-DIMENSIONAL STRUCTURES PREPARED BY HIGH-SPEED ELECTROLYTIC COPPER PLATING USING A JET FLOW DEVICE</b> .....	1378
<i>Yohei Suzuki, Christopher E. J. Cordonier, Yasushi Umeda, Hideo Honma, Osamu Takai, Joohyong Noh</i>	
<b>CYCLIC VOLTAMMETRY STRIPPING METHOD FOR DETERMINING ADDITIVE CONCENTRATION IN CU ELECTROPLATING SOLUTION</b> .....	1380
<i>Young Yoon, Tae Young Kim, Seunghoe Choe, Jae Jeong Kim</i>	
<b>MODELING OF INDUSTRIAL ELECTROPLATING PROCESSES WITH COMSOL MULTIPHYSICS IN ORDER TO OPTIMIZE TREATMENT OF COMPLEX PARTS</b> .....	1382
<i>Baptiste Fedi, Jef Canals-Riclot, Jean-Yves Hihn</i>	
<b>ELECTRO-ASSISTED RECYCLING OF LITHIUM ION BATTERIES</b> .....	1384
<i>Luis A. Diaz, Josh S. McNally, John R. Klaehn, Ningshengjie Gao, Eric J. Dufek, Michael Jones, Birendra Adhikari, Tedd E. Lister</i>	
<b>DEVELOPING PLATINUM GROUP METAL FREE CATALYSTS WITH MULTIPLE METAL CENTERS FOR THE OXYGEN REDUCTION REACTION IN ACID</b> .....	1385
<i>Li Jiao, Ershuai Liu, Lynne Larochelle Richard, Sanjeev Mukerjee, Qingying Jia</i>	
<b>APPLICATION OF A SILICON OLIGOMER COATING AS AN ALTERNATIVE TREATMENT TO SUBSTRATE SURFACE ACTIVATION BY ETCHING</b> .....	1386
<i>Daisuke Sadohara, Christopher Ernest John Cordonier</i>	
<b>INTEGRATED ELECTROCHEMICAL-THERMAL SYSTEM FOR HIGH EFFICIENCY AND LOW COST HYDROGEN COMPRESSION</b> .....	1388
<i>Claudio Corgnale, Martin Sulic, Theodore Motyka, Scott Greenway, George Roberts, Trent M. Molter</i>	
<b>FEASIBLE CAPACITY RATIO OF H<sub>2</sub> STORAGE USING ELECTROLYZERS AND BATTERIES IN DISTRIBUTED ENERGY SYSTEMS UNDER LARGE-SCALE IMPLEMENTATION OF SOLAR CELLS</b> .....	1390
<i>Fumitaka Hirahara, Tastsuya Okubo, Kei Hasegawa, Manabu Ihara</i>	
<b>(CARL WAGNER MEMORIAL AWARD OF THE ELECTROCHEMICAL SOCIETY) MATHEMATICAL MODELING OF ELECTROCHEMICAL SYSTEMS</b> .....	1392
<i>John W. Weidner</i>	
<b>(INVITED) THOUGHTS ON THE VISCOUS SUBLAYER</b> .....	1393
<i>John Newman</i>	
<b>MODELING OF TWO-PHASE FLOW DURING THE ELECTROLYSIS OF WATER IN AN ELECTROCHEMICAL REACTOR IN SERPENTINE ARRAY</b> .....	1394
<i>Locksley Fabian Castaneda Ulloa, Jose Luis Nava</i>	
<b>TREATMENT OF A HIGHLY CONCENTRATED INDUSTRIAL EFFLUENT WITH A PRE-PILOT ELECTROCHEMICAL REACTOR - APPROACH TO A PRACTICAL APPLICATION</b> .....	1395
<i>Orlando Garcia-Rodriguez, Si Zhu, Hugo Olvera-Vargas, Zuxin Wang, Olivier Lefebvre</i>	
<b>ELECTROCHEMICAL SELECTIVITY FOR METALS IN MOLTEN SULFIDES</b> .....	1397
<i>Mary-Elizabeth Wagner, Antoine Allanore</i>	
<b>ELECTROCHEMICAL PRECIPITATION OF STRUVITE IN ACIDIC ENVIRONMENT: PURE MAGNESIUM VS. AZ31 ALLOY ANODE</b> .....	1398
<i>Laszlo Kekedy-Nagy, Andrew M. Herring, Bruno G. Pollet, Lauren F. Greenlee</i>	

<b>THE INFLUENCE OF GEOMETRY-INDUCED FREQUENCY DISPERSION ON THE IMPEDANCE RESPONSE OF INTERDIGITATED ELECTRODES</b> .....	1399
<i>Arthur Dizon, Mark E Orazem</i>	
<b>APPLICATION OF THE KRAMERS-KRONIG RELATIONS TO MULTI-SINE ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY</b> .....	1400
<i>Chen You, Mohammed Ahmed Zabara, Burak Ulgut, Mark E Orazem</i>	
<b>PERFORMANCE COMPARISON OF THE ELECTROLYTIC CELLS HAVING DIFFERENT CONFIGURATIONS FOR THE PRODUCTION OF HCL AND NAOH FROM BRINE</b> .....	1402
<i>Jaewon Kim, Ki Bong Lee, Woojoo No, Heung Yong Ha</i>	
<b>(INVITED) MOLECULAR ENGINEERING OF REDOX-ACTIVE ELECTRODES FOR SELECTIVE ION SEPARATIONS AND PROCESS INTENSIFICATION</b> .....	1404
<i>Xiao Su</i>	
<b>A HIGH EFFICIENCY OSMOTIC ENERGY HARVESTER WITH VERTICALLY ALIGNED BORON-NITRIDE-NANOPORE MEMBRANE</b> .....	1405
<i>Sangil Kim, Aaditya Pendse, Semih Cetindag, Sanjay Behura, Vikas Berry, Jerry Shan</i>	
<b>EVALUATION OF SURFACE, BULK, ELECTROCHEMICAL AND DESALINATION PROPERTIES OF Tl3C2Tx MEMBRANES USED FOR SELECTIVE ION REMOVAL FROM BRINE.</b> .....	1406
<i>Yousuf Zohar Bootwala, Wahiduz Zaman, Kelsey B. Hatzell, Marta C. Hatzell</i>	
<b>ENHANCED CAPACITIVE DEIONIZATION PERFORMANCE WITH ACTIVATED CARBON LOADED IN GRAPHITE FELT FRAMEWORK</b> .....	1407
<i>Yang Wang, Julio Lado, Ines Vazquez-Rodriguez, Cleis Santos, Enrique Garcia - Quismondo, Jesus Palma, Marc Arlen Anderson</i>	
<b>CHARACTERIZATION CAPACITIVE DESALINATION CELL BY USING THE <math>Fe^{III}(CN)_6^{3-}/Fe^{II}(CN)_6^{4-}</math> REDOX COUPLE AS AN ELECTROCHEMICAL PROBE</b> .....	1408
<i>Assane Sene, Barbara Daffos, Pierre-Louis Taberna, Patrice Simon</i>	
<b>WATER SPLITTING IN BRINE: ENGINEERING ELECTROLYTES FOR ACTIVE, STABLE, AND TUNABLE PHOTOELECTROCHEMICAL CELLS</b> .....	1409
<i>Linchao Mu, William Abraham Tarpeh</i>	
<b>MATHEMATICAL MODEL AND OPTIMIZATION OF CONTINUOUS ELECTRO-OSMOTIC DEWATERING</b> .....	1410
<i>Arthur Dizon, Mark E Orazem</i>	
<b>A NOVEL METAL-FREE ROBUST RECYCLABLE ELECTROSORBENT FOR REMOVAL Pb(II) FROM LOW CONCENTRATED SOLUTIONS IN COMPLEX AQUEOUS MATRICES</b> .....	1411
<i>Irina Chernyshova, Ponisseril Somasundaran, Wenyan Bi, Darshil Shah, Sara Andreia Da Silva, Chengying Ai, Sathish Pomurangan</i>	
<b>A RATIONAL ASYMMETRIC HOLLOW FIBER MEMBRANE FOR OXYGEN PERMEATION</b> .....	1412
<i>Chunlei Ren, Yun Gan, Chunyang Yang, Myongjin Lee, Xingjian Xue</i>	
<b>(INVITED) RECYCLING OF USED LI-ION BATTERIES BY INNOVATIVE ELECTRODIALYSIS USING NEW LITHIUM IONIC CONDUCTOR MEMBRANE</b> .....	1413
<i>Tsuyoshi Hoshino</i>	
<b>PH SWING CYCLE FOR CO<sub>2</sub> CAPTURE ELECTROCHEMICALLY DRIVEN THROUGH PROTON-COUPLED ELECTRON TRANSFER</b> .....	1415
<i>David G. Kwabi, Michael J. Aziz</i>	
<b>EFFICIENT ELECTROCHEMICAL NITRATE REDUCTION TO AMMONIA VIA ELECTROLYTE ENGINEERING</b> .....	1416
<i>Sarah J. Blair, Joshua M McEnaney, Adam C. Nielander, Jay Schwalbe, Matteo Cargnello, Thomas F. Jaramillo</i>	
<b>DISSOLUTION OF RARE EARTH ELEMENTS FROM Nd MAGNET SCRAPS USING GAS ELECTRODES IN MOLTEN CHLORIDES</b> .....	1418
<i>Hirokazu Konishi, Yuichiro Koizumi</i>	
<b>INSIGHTS INTO CARBONATE FUEL CELL OPERATION UNDER CARBON DIOXIDE CAPTURE CONDITIONS</b> .....	1419
<i>Heather Elsen, Conrad Sawicki, Tim Barckholtz, Jonathan Rosen</i>	
<b>ROAD SALT REDUCTION FROM SOURCE WATER USING 3-COMPARTMENT BOROHYDRIDE/HYDROGEN PEROXIDE DESALINATION CELL</b> .....	1421
<i>Shawn Nicholas Hamilton, Amarjeet Bassi, Dimitri Karamanev</i>	
<b>A NOVEL THREE-DIMENSIONAL DESALINATION SYSTEM UTILIZING HONEYCOMB-SHAPED LATTICE STRUCTURES FOR FLOW-ELECTRODE CAPACITIVE DEIONIZATION</b> .....	1422
<i>Younghyun Cho, Dong Kook Kim</i>	
<b>ELECTRO-OXIDATION OF NEW FEEDSTOCKS TO VALUE ADDED CHEMICALS</b> .....	1423
<i>Michael James Boyd, Christopher Hahn, Thomas F. Jaramillo</i>	
<b>ELECTRO-OXIDATION OF FURANS TO VALUE-ADDED CHEMICALS</b> .....	1424
<i>Alex Roman, Joseph Hasse, Will Medlin, Adam Holewinski</i>	
<b>MECHANISTIC INVESTIGATIONS FOR ELECTROCATALYTIC OXIDATION OF FURFURAL USING DENSITY FUNCTIONAL THEORY</b> .....	1425
<i>Naveen Agrawal, Li Gong, Alex Roman, Lesli Mark, Will Medlin, Adam Holewinski, Michael J. Janik</i>	

## VOLUME 3

<b>SUSTAINABLE ELECTROCHEMICAL CONVERSION OF LIGNIN TO RENEWABLE CHEMICALS WITH SIMULTANEOUS HYDROGEN PRODUCTION VIA A CONTINUOUS FLOW ELECTROCHEMICAL REACTOR</b> .....	1427
<i>Raziyeh Ghahremani, John A. Staser</i>	
<b>ELECTROCHEMICAL OXIDATION AND BOND CLEAVAGE OF LIGNIN-DERIVED MODEL COMPOUNDS WITH NANOPARTICLE CATALYSTS</b> .....	1428
<i>Ken Ngo, Frederick Baddour, Daniel Ruddy, Joshua Schaidle</i>	
<b>GLUCOSE OXIDATION IN VIOLOGEN-MEDIATED FUEL CELLS USING A NON-PRECIOUS-METAL ANODE</b> .....	1429
<i>Meisam Bahari, Daniel Brown, Matt Roberts, Adam Hawkins, Gerald D. Watt, Randy Lewis, John N. Harb</i>	
<b>PULSE MODULATED ELECTROCHEMICAL CONVERSION OF BIOMASS</b> .....	1430
<i>Rajeswaran Radhakrishnan, Timothy D. Hall, Maria Inman, E. J. Taylor</i>	
<b>UNDERSTANDING METAL STRUCTURE SENSITIVITY DURING THE ELECTROCATALYTIC HYDROGENATION AND OXIDATION OF BIOMASS-DERIVED MOLECULES AT NORMAL TEMPERATURE AND PRESSURE</b> .....	1432
<i>Juan A Lopez Ruiz, Udishnu Sanyal, Katherine Koh, Yang Qiu, Evan Andrews, Manh-Thuong Nguyen, Abhijeet Karkamkar, Mirosław Derewinski, Roger Rousseau, Oliver Y Gutierrez Tinoco, Jamelyn Holladay</i>	
<b>ELECTROCATALYTIC HYDROGENATION AND OXIDATION OF 5-HYDROXYMETHYLFURFURAL FOR EFFICIENT PRODUCTION OF BIOBASED MONOMERS: A PAIRED ELECTROLYZER APPROACH</b> .....	1434
<i>Xiaotong Chadderdon, David J Chadderdon, Wenzhen Li</i>	
<b>ELECTROCHEMICAL DEWATERING OF CELLULOSIC NANOMATERIALS</b> .....	1435
<i>Santosh H. Vijapur, Timothy D. Hall, E. J. Taylor, Maria Inman, Stephen Snyder, Kim Nelson</i>	
<b>ELECTROCHEMICAL UPGRADING OF WASTES TO PRODUCTS- FUNDAMENTAL STUDIES USING A COMBINED EXPERIMENTAL AND COMPUTATIONAL APPROACH</b> .....	1436
<i>Jamelyn Holladay, Juan A Lopez Ruiz, Katherine Koh, Udishnu Sanyal, Oliver Y Gutierrez Tinoco, Vassiliki-Alexandra Glezakou, Roger Rousseau</i>	
<b>EFFECTS OF TEMPERATURE ON THE FARADAIC EFFICIENCY OF HYDROGENATION AND HYDROGENOLYSIS OF FURFURAL</b> .....	1438
<i>Andrew Scott May, Elizabeth J Biddinger</i>	
<b>ELECTROCATALYTIC HYDROGENATION OF GUAICOL USING A SLURRY REACTOR WITH CARBON-SUPPORTED PLATINUM CATALYST IN DIFFERENT AQUEOUS ELECTROLYTES</b> .....	1439
<i>Yanuar Philip Wijaya, Kevin J. Smith, Chang Soo Kim, Elod L. Gyenge</i>	
<b>ELECTROCATALYTIC HYDROGENATION OF LIGNOCELLULOSIC BIOMASS TO HYDROCARBON FUELS: LIFE CYCLE ASSESSMENT AND TECHNOECONOMIC ANALYSIS</b> .....	1441
<i>Sabyasachi Das, Christopher M. Saffron</i>	
<b>COST-CONSTRAINED DESIGN OF ELECTROCHEMICAL HYDROGENATION PROCESSES</b> .....	1442
<i>Michael Julian Orella, Yuriy Roman, Fikile R. Brushett</i>	
<b>(INVITED) DESIGN OF EFFECTIVE PULSE DEPOSITION PROCESS FOR FUNCTIONAL CR COATINGS FROM CR<sup>3+</sup> ELECTROLYTE</b> .....	1444
<i>Kamyar Ahmadi, Timothy D. Hall, E. J. Taylor, Francisco Robles, Stanko Brankovic</i>	
<b>PULSE REVERSE CURRENT CR+3 DEPOSITION FOR WEAR APPLICATIONS</b> .....	1445
<i>Timothy D. Hall, E. J. Taylor, Maria Inman, Stephen Snyder, Jing Xu, Rajeswaran Radhakrishnan</i>	
<b>TAILORING COLOR AND SURFACE MORPHOLOGY OF ELECTRODEPOSITED CHROMIUM BY APPLICATION OF PULSED CURRENT</b> .....	1446
<i>Martin Leimbach, Christoph Tschaar, David Zapf, Mario Kurniawan, Udo Schmidt, Andreas Bund</i>	
<b>INFLUENCE OF PULSE-CURRENT PARAMETERS ON PH MEASURED BY LOCAL METHOD</b> .....	1447
<i>Martin Marcelet, Yi-Shan Chao, Bruno Vuillemin, Marie-Pierre Gigandet, Christine Gleyzes, Roland Oltra, Joffrey Tardelli, Jean-Yves Hihn</i>	
<b>PULSE REVERSE ALLOY PLATING FOR INCREASED LIFETIMES FOR BIOCMBUSTORS</b> .....	1449
<i>Jing Xu, Timothy D. Hall, Santosh H. Vijapur, Dan Wang, E. J. Taylor, Maria Inman, Stephen Snyder, Michael Brady</i>	
<b>PARTICLE SIZE AND MORPHOLOGY OF CARBON DIOXIDE REDUCTION ELECTROCATALYSTS FABRICATED BY PULSE/PULSE-REVERSE ELECTRODEPOSITION</b> .....	1451
<i>Brian Skinn, McLain Evan Leonard, Dan Wang, Fikile R. Brushett, E. J. Taylor</i>	
<b>(INVITED) PULSE CURRENT CURRENTS TRANSIENT CURVE STUDY: HYDROGEN DISCHARGE AND MODELING ATTEMPTS</b> .....	1452
<i>Jean-Yves Hihn, Lucia Lain Amador, Jason Rolet, Marie-Laure Doche, Marie-Pierre Gigandet, Mauro Taborelli, Leonel M. A. Ferreira, Joffrey Tardelli, Patrice Bercot</i>	
<b>THE PROPERTIES OF PULSE-PLATED COPPER DERIVED FROM ADDITIVE-BEARING, LOW-METAL ION CONCENTRATION ELECTROLYTES</b> .....	1453
<i>Eden May Dela Pena, Sudipta Roy</i>	
<b>PULSE ELECTRODEPOSITED COPPER FROM LEAN ELECTROLYTES CONTAINING ADDITIVES</b> .....	1455
<i>Sudipta Roy, Eden May Dela Pena</i>	
<b>INFLUENCE OF PULSE PARAMETERS ON A B CUZN ALLOYS ELECTRODEPOSITED COATINGS</b> .....	1457
<i>Amina Dridi, Leila Dhoubi, Jean-Yves Hihn, Patrice Bercot, El-Mustafa Rezaei, Wafa Sassi</i>	
<b>THE EFFECT OF PULSE-CURRENTS ON ZINC COATINGS: DETERMINATION OF OPERATING PARAMETERS BY TRANSIENT STUDY IN ZINCATE ELECTROLYTES</b> .....	1459
<i>Jeanne-Marie Rauch, Marie-Pierre Gigandet, Baptiste Fedi, Jason Rolet, Jean-Yves Hihn</i>	

<b>PULSE ELECTROPLATING OF ZINC/NICKEL ALLOY FROM A DEEP EUTECTIC SOLVENT (DES)</b> .....	1461
<i>Karl Scott Ryder, Chunhong Lei</i>	
<b>SEGREGATION IN ALUMINUM-ZIRCONIUM ALLOYS, ELECTRODEPOSITED FROM IONIC LIQUIDS, AND ITS MODIFICATION BY PULSE PLATING</b> .....	1463
<i>Evgeniya Freydina</i>	
<b>OPTIMAL PULSE CHARGING FOR THE DENDRITIC ELECTRODEPOSITION IN MESOSCALE ELECTRODES</b> .....	1464
<i>Asghar Aryanfar, Agustin J Colussi, William A Goddard, Michael R. Hoffmann</i>	
<b>PULSE REVERSE CURRENT SURFACE FINISHING FOR PLATING ON PASSIVE SURFACES</b> .....	1465
<i>Timothy D. Hall, Jing Xu, Maria Inman, E. J. Taylor</i>	
<b>ELIMINATING THE FORMATION OF HEXAVALENT CHROMIUM IN CHROME STRIPPING OPERATIONS USING PULSE REVERSE PROCESSES</b> .....	1466
<i>Holly Garich, Maria Inman, Brian Skinn, Stephen Snyder, Timothy D. Hall, E. J. Taylor</i>	
<b>MULTIPHYSICS MODELING OF THE TERTIARY CURRENT DISTRIBUTION IN PULSE/PULSE-REVERSE ELECTROCHEMICAL PROCESSING OF MICROSTRUCTURED WORKPIECES</b> .....	1467
<i>Brian Skinn, Alan C. West</i>	
<b>DEVELOPMENT OF AN ELECTROPOLISHING PROCESS FOR ADDITIVELY MANUFACTURED 316L PARTS UNDER DIRECT AND PULSED POTENTIAL CONTROL</b> .....	1469
<i>Estelle Drynski, Marie-Laure Doche, Jean-Yves Hihn, Yann Dugennet, Joffrey Tardelli</i>	
<b>PULSE REVERSE CURRENT SURFACE FINISHING OF ADDITIVELY MANUFACTURED IMPELLERS</b> .....	1471
<i>Timothy D. Hall, Holly Garich, Danny X. Liu, Stephen Snyder, E. J. Taylor</i>	
<b>ACID-FREE ELECTROPOLISHING OF SRF NB CAVITIES</b> .....	1473
<i>Rajeswaran Radhakrishnan, Timothy D. Hall, Stephen Snyder, Maria Inman, E. J. Taylor, Fumio Furuta</i>	
<b>HIGH-RATE ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> TO C<sub>2-3</sub> PRODUCTS UNDER NEUTRAL, AQUEOUS CONDITION, TRACING THE EVOLUTION OF PHASE AND MORPHOLOGY OF CU<sub>2</sub>O NANOCUBES TOWARDS RATIONAL CATALYST DESIGN</b> .....	1475
<i>Tim Frederik Moller, Fabian Scholten, Trung Ngo Thanh, Ilya Sinev, Xingli Wang, Zarko P Jovanov, Manuel Gliech, Beatriz Roldan Cuenya, Ana Sofia Varela, Peter Strasser</i>	
<b>INSIGHTS ONTO THE ACTIVE SITES AND REACTIVITY OF METAL-DOPED CARBONACEOUS ELECTROCATALYSTS FOR THE CO<sub>2</sub> REDUCTION REACTION</b> .....	1477
<i>Tristan Assot, Ivana Matanovic, Yechuan Chen, Kateryna Artyushkova, Plamen Atanassov</i>	
<b>ACCELERATED SCREENING FOR CARBON DIOXIDE REDUCTION ELECTROCATALYSTS AND IMPLICATIONS FOR REACTOR DESIGN</b> .....	1479
<i>John M. Gregoire, Yungchieh Lai, Ryan Jones, Yu Wang, Lan Zhou</i>	
<b>ELECTROCHEMICAL CONVERSION OF CO<sub>2</sub> INTO VALUED ADDED PRODUCTS ON HIGH-SURFACE-AREA TIN CATALYSTS</b> .....	1480
<i>Sheng Zhang, Hai Liu, Rong Xia, Siyu Kuang, Xinbin Ma</i>	
<b>HIGHLY ACTIVE AND SELECTIVE ELECTROCHEMICAL CO<sub>2</sub> REDUCTION TO FORMATE ENABLED BY STRUCTURAL DEFECTS ON CONVERTED BI<sub>2</sub>O<sub>3</sub> NANOTUBES</b> .....	1481
<i>Yanguang Li</i>	
<b>DIRECT ELECTROCATALYTIC CONVERSION OF CO<sub>2</sub> TO CHEMICALS OVER SINGLE ATOM CATALYSTS</b> .....	1482
<i>Di-Jia Liu</i>	
<b>ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE ON LANTHANUM BASED TRANSITION METAL OXIDE ELECTROCATALYSTS</b> .....	1483
<i>Madhurima Barman, Jie Zhang, Arindam Sarkar</i>	
<b>STAINLESS STEEL MESH MODIFIED BY NANOPARTICULATE TiO<sub>2</sub>- AND TiO<sub>2</sub>/C-BASED COMPOSITES FOR PHOTOASSISTED ELECTROCHEMICAL REDUCTION OF AQUEOUS CO<sub>2</sub></b> .....	1485
<i>Juan Manriquez, Jesus Israel Valdez-Nava, Jesus Cardenas, Jose Alberto Garcia-Melo, Erika Bustos, Itzel Leon, Diana Laura Chavez-Martinez, Itzia Yuneli Angeles-Garduno</i>	
<b>GRAND CANONICAL POTENTIAL KINETICS OF CO<sub>2</sub> REDUCTION REACTION OVER GRAPHENE-SUPPORTED SINGLE-ATOM CATALYSTS</b> .....	1487
<i>Md Delowar Hossain, Zhengtang Luo, W. A. Goddard</i>	
<b>H-CELL VS GAS DIFFUSION ELECTROLYZER FOR EVALUATING INTRINSIC ACTIVITY OF NANOCATALYSTS FOR ELECTROCHEMICAL CO<sub>2</sub> REDUCTION</b> .....	1489
<i>David Raciti, Chao Wang, Mark Mao, Yuxuan Wang, Jun Hua Park</i>	
<b>EFFECT OF IONIC LIQUID ADDITIVES ON THE PRODUCT SELECTIVITY AND ACTIVITY IN CO<sub>2</sub> ELECTROREDUCTION OVER CU CATALYSTS</b> .....	1492
<i>Samaneh Sharifi Golru, Elizabeth J Biddinger</i>	
<b>WETTABILITY OF GAS DIFFUSION ELECTRODE MATERIALS FOR CO<sub>2</sub> REDUCTION</b> .....	1493
<i>McLain Evan Leonard, Lauren Clarke, Fikile R. Brushett</i>	
<b>DESIGN AND OPTIMIZATION OF COMMERCIALY-RELEVANT CO<sub>2</sub> ELECTROLYZERS</b> .....	1495
<i>Lien-Chun Weng, Oyinkansola Romiluyi, Alexis T. Bell, Adam Z. Weber</i>	
<b>TOWARDS DURABLE, SELECTIVE CATALYSTS AND ELECTRODES FOR CO<sub>2</sub> ELECTROREDUCTION TO VALUE-ADDED CHEMICALS AND FUELS</b> .....	1497
<i>Uzoma O Nwabara, Emiliana R. Cofell, Danielle A. Henckel, Shawn Lu, Andrew A. Gewirth, Paul J. A. Kenis</i>	

<b>TANDEM CATALYTIC ELECTRO-REDUCTION OF CARBON DIOXIDE INTO ETHYLENE AT INDUSTRIAL SCALE.....</b>	1499
<i>Jingjie Wu, Tianyu Zhang, Xiaojie She</i>	
<b>TUNING THE SENSITIVITY OF CO<sub>2</sub> ELECTROREDUCTION ON COPPER SURFACES VIA ELECTROLYTE ENGINEERING .....</b>	1500
<i>Sneha A Akhade, Stephen Eric Weitzner, Felicia Lucci, Jeremy T. Feaster, Anna N Ivanovskaya, Brandon C. Wood, Joel Basile Varley, Sarah E Baker, Eric B Duoss</i>	
<b>CO<sub>2</sub>ELECTROLYZER DEVELOPMENT: PRELIMINARY RESULTS FROM A BIPOLAR-MEMBRANE-BASED FLOW CELL FOR ELECTROCATALYTIC REDUCTION OF CARBON DIOXIDE .....</b>	1501
<i>Todd G Deutsch, Yingying Chen, Ashlee Vise, Mason Mooney, Guido Bender, Ellis Klein, K C Neyerlin</i>	
<b>MODELING OF A GAS-PHASE, BIPOLAR MEMBRANE CO<sub>2</sub> ELECTROLYZER .....</b>	1502
<i>Andrew G. Star, Todd G Deutsch, K C Neyerlin</i>	
<b>LEVERAGING ADVANCED MANUFACTURED CATALYSTS AND REACTORS FOR ELECTROCHEMICAL CO<sub>2</sub> CONVERSION .....</b>	1503
<i>Jeremy T. Feaster, Felicia Lucci, Zhen Qi, Marissa Wood, Joshua Deotte, Nikola Dudukovic, Siwei Liang, Clara Druzgalski, Victor A Beck, Wenqin Li, Sarah E Baker, Eric B Duoss</i>	
<b>LIQUID FUELS SYNTHESIS FROM CARBON DIOXIDE ON MEMBRANE-ELECTRODE-ASSEMBLY (MEA) UNDER AMBIENT CONDITIONS.....</b>	1504
<i>Kayode Adesina Adegoke, Shankara G. Radhakrishnan, Emil Roduner</i>	
<b>CARBON DIOXIDE ELECTROREDUCTION TO MULTI-CARBON PRODUCTS USING A LARGE-SCALE MEMBRANE ELECTRODE ASSEMBLY .....</b>	1506
<i>Colin P O'Brien, Christine M. Gabardo, Jonathan P. Edwards, Christopher McCallum, Yi Xu, Cao-Thang Dinh, Jun Li, Edward H. Sargent, David Sinton</i>	
<b>IN-OPERANDO CHANGES OF THE CATION EXCHANGE MEMBRANE IN CO<sub>2</sub> ELECTROLYZERS.....</b>	1507
<i>Hisan Waleed Shafaque, Chunghyuk Lee, Kieran F. Fahy, Ainy Bazylak</i>	
<b>STUDIES OF ELECTROCHEMICAL CO<sub>2</sub> REDUCTION IN MEMBRANE-ELECTRODE ASSEMBLIES .....</b>	1509
<i>Oyinkansola Romihuyi, Lien-Chun Weng, David M Larson, Alexis T. Bell, Adam Z. Weber</i>	
<b>TOWARDS EFFICIENT ELECTROCATALYTIC CONVERSION OF CO<sub>2</sub> TO FORMATE VIA NOVEL ELECTROLYZER CONFIGURATIONS .....</b>	1510
<i>Walter Ellis Klein, Yingying Chen, Ashlee Vise, Mason Mooney, Todd G Deutsch, K C Neyerlin</i>	
<b>LOW-OVERPOTENTIAL ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> TO FORMIC ACID ON SURFACE-MODIFIED DOPED TIN OXIDE PELLETS.....</b>	1512
<i>Emmanuel Oluwaseun Abdul, Jason Pitts, Deepak Rajput, Shankar Rananavare</i>	
<b>DOPED TRANSITION METAL NITRIDES AS EFFICIENT ELECTROCATALYSTS FOR ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> .....</b>	1513
<i>Mohammadreza Karamad, Samira Siahrostami, Ian Donald Gates</i>	
<b>ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE TO FORMATE ON TIN AND POLYANILINE-MODIFIED TIN ELECTROCATALYSTS .....</b>	1515
<i>James M. Portela, Francisco Willian Souza Lucas, Fabio H. B. Lima</i>	
<b>BORON-, PHOSPHORUS-DOPED ORDERED MESOPOROUS CARBON ELECTROCATALYSTS FOR THE REDUCTION OF CO<sub>2</sub> TO FORMIC ACID.....</b>	1516
<i>Nihat E. Sahin, Paolo P. Pescarmona</i>	
<b>ZNO/CUO NANOCOMPOSITE FOR GAS PHASE ELECTROCHEMICAL CONVERSION OF CO<sub>2</sub> TO CO AT ELEVATED PRESSURE .....</b>	1518
<i>Karan Malik, Anil Verma</i>	
<b>(INVITED) SELECTIVE ETCHES FOR GATE-ALL-AROUND (GAA) DEVICE INTEGRATION: OPPORTUNITIES AND CHALLENGES .....</b>	1519
<i>Yusuke Oniki, Efrain Altamirano-Sanchez, Frank Holsteyns</i>	
<b>STUDY OF SI NANOWIRE SURFACE CLEANING .....</b>	1520
<i>Shota Iwahata, Yukifumi Yoshida, Kana Komori, Dennis H. Van Dorp, Kurt Wostyn, Farid Sebaai, Frank Holsteyns</i>	
<b>STUDY ON LA<sub>2</sub>O<sub>3</sub> WET CLEAN BY PH CONTROLLED FUNCTIONAL WATER .....</b>	1522
<i>Yuichi Ogawa, Ino Hideaki, Fukui Takeo, Yusuke Oniki, Yuya Akanishi, Efrain Altamirano-Sanchez, Frank Holsteyns</i>	
<b>PROCESS DEVELOPMENT OF RADICAL BASED DRY CLEAN FOR ADVANCED 3D NAND FABRICATION.....</b>	1525
<i>Shanyu Wang, Wilson Zeng, Chun Yan, Hua Chung, Pete Lembesis, Jack Lo, Shawming Ma, Ryan Pakulski, Michael Yang</i>	
<b>COMPARISON OF INORGANIC AND ORGANIC ACID ETCHING PROCESSES ON GERMANIUM(100).....</b>	1527
<i>Stacy Lynn Heslop, Anthony J. Muscat</i>	
<b>(INVITED) REACTION OF AQUEOUS TETRAMETHYLAMMONIUM SULFIDE ON SIGE(100) 25% AS A FUNCTION OF PH.....</b>	1528
<i>Zhonghao Zhang, Anthony J. Muscat</i>	
<b>EFFECT OF CRYSTAL ORIENTATION OF INGAAS ON THE SURFACE REACTIONS IN ACIDIC SOLUTIONS.....</b>	1529
<i>Jihoon Na, Sangwoo Lim</i>	
<b>PLASMA SURFACE PREPARATION OF III-V MATERIALS: QUASI IN-SITU XPS MEASUREMENTS AND INTEGRATION GUIDELINES .....</b>	1531
<i>Nicolas Coudurier, Flore Boyer, Bernard Pelissier, Laura Toseli, Christophe Licitra, Denis Mariolle, Nicolas Chevalier, Philippe Rodriguez</i>	
<b>EFFECT OF SEED LAYER ON GRAIN SIZE OF ELECTROPLATED CU.....</b>	1534
<i>Yen-Chen Lin, Po-Fan Chan, Wei-Ping Dow</i>	



<b>REAL TIME NANOSCALE CLEANING PHENOMENON OBSERVATION DURING PVA BRUSH SCRUBBING BY EVANESCENT FIELD</b> .....	1535
<i>Yutaka Terayama, Panari Khajornrungruang, Keisuke Suzuki, Kohei Kusatsu, Satomi Hamada, Yutaka Wada, Hirokuni Hiyama</i>	
<b>ION-IMPLANTED PHOTORESIST STRIPPING BY USING ORGANIC SOLVENTS</b> .....	1537
<i>Eunseok Oh, Sangwoo Lim</i>	
<b>SURFACE CONTAMINATION WITH SI AND O IMPURITIES FOR GAN SINGLE-CRYSTALLINE LAYERS GROWN BY ULTRA-HIGH-VACUUM SPUTTER EPITAXY</b> .....	1539
<i>Ai Mizuno, Hiroyuki Shinoda, Nobuki Mutsukura</i>	
<b>(INVITED) MOLECULAR DYNAMICS ANALYSIS ON THE BEHAVIOR OF WATER AND ALCOHOL LIQUIDS ON A OH-TERMINATED SiO<sub>2</sub> SURFACE</b> .....	1541
<i>Yasutaka Yamaguchi, Satoshi Nakaoka, Takuya Hayashi, Masayuki Kawakami, Daisaku Yano</i>	
<b>(INVITED) CAPILLARY PATTERN COLLAPSE: PREDICTION AND PREVENTION FROM PAST TO FUTURE</b> .....	1542
<i>Derek W Bassett</i>	
<b>PHYSICAL SIMULATION AND VISUALIZATION OF THE MARANGONI CONVECTION INSIDE MENISCUS REGION UNDER IPA VAPOR IN WAFER DRYING PROCESS</b> .....	1543
<i>Naoki Ono, Takashi Yamada, Shumpei Miura, Tomoatsu Ishibashi, Hisanori Matsuo, Katsuhide Watanabe</i>	
<b>A NEW APPROACH TO TACKLE WAFER CONTACT MARK CONTAMINATION ISSUES IN MARANGONI DRYING</b> .....	1545
<i>Gim Chen, Dennis Nemeth, Ismail Kashkoush</i>	
<b>(INVITED) WET ETCHING INSIDE ADVANCED HIGH ASPECT RATIO STRUCTURES: IMPACT OF DISSOLVED OXYGEN</b> .....	1548
<i>Tetsuya Sakazaki, Hitoshi Kosugi, Derek W Bassett, Ihsan Simms, Antonio Rotondaro, Trace Hurd</i>	
<b>EFFECT OF SiO<sub>2</sub> ETCHING INHIBITOR TO H<sub>3</sub>PO<sub>4</sub> FOR THE SELECTIVE Si<sub>3</sub>N<sub>4</sub> WET ETCHING OF 3D NAND</b> .....	1551
<i>Taehyeon Kim, Changjin Son, Taegun Park, Sangwoo Lim</i>	
<b>SELECTIVE Si<sub>3</sub>N<sub>4</sub> ETCHING IN Si<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub> PAIR-LAYER STACK USING NON-H<sub>3</sub>PO<sub>4</sub>-BASED SUPERHEATED WATER</b> .....	1553
<i>Changjin Son, Sangwoo Lim</i>	
<b>KINETIC EFFECT OF ADDITIVES IN HIGH TEMPERATURE PHOSPHORIC ACID ON THE ETCHING OF Si<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub></b> .....	1555
<i>Taegun Park, Taehyeon Kim, Changjin Son, Sangwoo Lim</i>	
<b>THE ADHESION AND REMOVAL MECHANISM OF CERIA PARTICLES FOR STI POST-CMP CLEANING PROCESS</b> .....	1558
<i>Nagendra Prasad Yerriboina, Samrina Sahir, So-Young Han, Kwang-Min Han, Jin-Goo Park</i>	
<b>DEVELOPMENT OF "SOFT" CLEANING CHEMISTRIES FOR ENHANCED STI POST-CMP CLEANING</b> .....	1559
<i>Carolyn F. Graverson, Katherine M. Wortman-Otto, Abigail N. Linhart, Tala B. Zubi, Jason J. Keleher</i>	
<b>SKIN LAYER EFFECTS ON ADHESION FORCES OF PVA BRUSHES AND ITS TEMPERATURE DEPENDENCE</b> .....	1560
<i>Keishi Yamada, Toshiyuki Sanada, Yuki Mizushima, Akira Fukunaga, Hirokuni Hiyama</i>	
<b>CONTACT AREA DISTRIBUTION DURING PVA BRUSHES SCRUBBING</b> .....	1562
<i>Tsubasa Miyaki, Toshiyuki Sanada, Yuki Mizushima, Akira Fukunaga, Hirokuni Hiyama</i>	
<b>ANALYSIS OF POLYETHYLENE LATEX PARTICLE REMOVAL MECHANISM ON SiO<sub>2</sub> WAFER USING ULTRASONIC SPRAY CLEANING</b> .....	1564
<i>Yoshiyuki Seike, Ryoga Sawaki, Ryosuke Shimizu, Tomomi Hikida, Yuji Honda, Masanori Sato, Tatsuo Mori</i>	
<b>WET CLEANING BY USING AMPHOTERIC ELECTROLYZED WATER FOR MASK CLEANING</b> .....	1565
<i>Kunkul Ryoo, Younwon Jung, Insik Choi, Hyungwon Kim, Jaeyong Lee, Byungsun Choi</i>	
<b>PROACTIVE CONTAMINATION CONTROL FOR SUB 10NM PARTICLE IN ADVANCED SEMICONDUCTOR MANUFACTURING</b> .....	1566
<i>Slava Libman, Gary Van Schooneveld, Bob McIntosh</i>	
<b>QUANTITATIVE MODELLING OF DEPOSITION OF AIRBORNE MOLECULAR CONTAMINATION</b> .....	1567
<i>Paul W. Mertens</i>	
<b>WET METAL RECESS PROCESS FOR ENABLING SCALING BOOSTERS</b> .....	1570
<i>Yuya Akanishi, Els Kesters, Quoc Toan Le, Antoine Pacco, Frank Holsteyns</i>	
<b>VAPOR-PHASE SURFACE CLEANING OF ELECTROPLATED CU FILMS USING ANHYDROUS N<sub>2</sub>H<sub>4</sub></b> .....	1572
<i>Su Min Hwang, Luis Fabian Pena, Kui Tan, Harrison Sejoon Kim, Aswin L. N. Kondusamy, Zhiyang Qin, Yong Chan Jung, Jean-Francois Veyan, Daniel Alvarez, Jeff Spiegelman, Jiyoung Kim</i>	
<b>(INVITED) A TUTORIAL ON ATOMIC LAYER DEPOSITION AND ITS APPLICATION IN LITHIUM-ION BATTERIES</b> .....	1575
<i>Christophe Detavernier</i>	
<b>THE EFFECT OF Al<sub>2</sub>O<sub>3</sub> ALD PRECURSORS ON THE ELECTROCHEMICAL PERFORMANCE OF CATHODE MATERIALS FOR LITHIUM-BASED BATTERY APPLICATIONS</b> .....	1576
<i>Donghyeon Kang, Anil U. Mane, Jeffrey W. Elam, Robert Warburton, Jeffrey Greeley</i>	
<b>SURFACE REORGANIZATION AND RATE ENHANCEMENT OF SPINEL LiMn<sub>2</sub>O<sub>4</sub> (LMO) ON FIRST TRIMETHYLALUMINUM/WATER EXPOSURE</b> .....	1577
<i>Matthias J Young, Steven Letourneau, Robert Warburton, Wesley Dose, Jeffrey Greeley, Christopher S. Johnson, Jeffrey W. Elam</i>	
<b>(INVITED) ALD AND MLD OF FUNCTIONAL THIN-FILM COATINGS FOR ENHANCED PERFORMANCE IN LI-ION AND LI-METAL SOLID-STATE BATTERIES</b> .....	1579
<i>Philippe M. Vereecken, Knut Bjarne Gandrud, Brecht Put, Simon Hollevoet, Nouha Labyedh, Maarten Debuquoy, Maarten Mees, Louis De Taeye, Keerthi Dorai Swamy Reddy, Andrea Piñillas Martinez, Christophe Detavernier</i>	

<b>(INVITED) ATOMIC LAYER DEPOSITION COATINGS FOR MEDICAL DEVICES</b> .....	1581
<i>Tom Blomberg, Riina Ritasalo, Mikko Matvejeff, Oili Ylivaara, Anu Karkkainen, Jani Kivioja</i>	
<b>CHARACTERISTICS OF OXIDE TFT USING CARBON-DOPED <math>\text{In}_2\text{O}_3</math> THIN FILM FABRICATED BY LOW-TEMPERATURE ALD USING ETHYLCYCLOPENTADIENYL INDIUM (IN-ETCP) AND <math>\text{H}_2\text{O}</math> &amp; <math>\text{O}_3</math></b> .....	1583
<i>Riku Kobayashi, Toshihide Nabatame, Kazunori Kurishima, Takashi Onaya, Akihiko Ohi, Naoki Ikeda, Takahiro Nagata, Kazuhito Tsukagoshi, Atsushi Ogura</i>	
<b>PIEZOELECTRIC RESPONSE OF ZNO THIN FILMS GROWN BY PLASMA-ENHANCED ATOMIC LAYER DEPOSITION</b> .....	1586
<i>Julian Pilz, Taher Abu Ali, Philipp Schaffner, Barbara Stadlober, Anna Maria Coclite</i>	
<b>HYDROGEN BARRIER PROPERTIES OF ATOMIC LAYER DEPOSITED <math>\text{Al}_2\text{O}_3</math> WITH DIFFERENT OXIDANTS FOR INGAZNO THIN FILM TRANSISTOR</b> .....	1587
<i>Yujin Lee, Taewook Nam, Seunggi Seo, Chong Hwon Lee, Joon Young Yang, Dong Wook Choi, Choongkeun Yoo, Ho-Jin Kim, Hyungjun Kim</i>	
<b>CHANGE OF ELECTRICAL PROPERTIES OF RUTILE- AND ANATASE-<math>\text{TiO}_2</math> FILMS BY ATOMIC LAYER DEPOSITED <math>\text{Al}_2\text{O}_3</math></b> .....	1589
<i>Toshihide Nabatame, Ippai Yamamoto, Tomomi Sawada, Akihiko Ohi, Thang Duy Dao, Tomoji Ohishi, Tadaaki Nagao</i>	
<b>(INVITED) VAPOR-DEPOSITED MOF AS GAP-FILLING LOW-K DIELECTRICS</b> .....	1591
<i>Rob Ameloot</i>	
<b>CONTROLLING THE OPTICAL AND ELECTRONIC PROPERTIES OF POLYANILINE (PANI) USING VAPOR PHASE INFILTRATION OF TITANIUM TETRACHLORIDE</b> .....	1593
<i>Shawn A. Gregory, Yi Li, Shannon K. Yee, Mark D. Losego</i>	
<b>VAPOR PHASE INFILTRATION OF METAL OXIDES INTO NANOPOROUS POLYMER MEMBRANES FOR ORGANIC SOLVENT SEPARATION</b> .....	1594
<i>Emily Kathryn McGuinness, Fengyi Zhang, Yao Ma, Ryan P. Lively, Mark D. Losego</i>	
<b>(INVITED) ATOMIC LAYER PROCESSING FOR ADVANCED ELECTRONICS</b> .....	1596
<i>Gerrit J Leusink</i>	
<b>(INVITED) EXPANDING THE TOOLBOX OF ATOMIC SCALE PROCESSING: FROM MATERIALS CONTROL TO SELECTIVE PROCESSING BY PLASMA ALD</b> .....	1597
<i>Tahsin Faraz</i>	
<b>AREA-SELECTIVE DEPOSITION BY A COMBINATION OF ORGANIC FILM PASSIVATION AND ATOMIC LAYER DEPOSITION</b> .....	1599
<i>Mattia Pasquali, Stefan De Gendt, Silvia Armini</i>	
<b>(INVITED) SELECTIVE AREA GROWTH OF DEACTIVATING POLYMERS</b> .....	1600
<i>Rudy James Wojtecki</i>	
<b>AREA-SELECTIVE ATMOSPHERIC-PRESSURE SPATIAL ALD OF <math>\text{SiO}_2</math> USING INTERLEAVED BACK-ETCH STEPS YIELDING SELECTIVITY &gt; 10 NANOMETER</b> .....	1602
<i>Alfredo Mameli, Fred Roozeboom, Paul Poodt</i>	
<b>(INVITED) PEALD AND ALE FOR AREA SELECTIVE DEPOSITION</b> .....	1604
<i>Christophe Vallee, Marceline Bonvalot, Remy Gassilloud, Vincent Pesce, Ahmad Chaker, Samia Belahcen, Nicolas Posseme, Bernard Pellissier, Patrice Gonon, Ahmad Bsiesy</i>	
<b>(INVITED) CHALLENGES AND OPPORTUNITIES FOR SELECTIVE AREA PROCESSING IN HIGH VOLUME MANUFACTURING (HVM)</b> .....	1606
<i>Kashish Sharma, Paul Lemaire, Katie Nardi, Dennis Hausmann</i>	
<b>ELECTROCHEMICAL ATOMIC LAYER ETCHING (E-ALE) OF COPPER - THERMODYNAMIC AND DIFFUSION-REACTION CONSIDERATIONS OF THE SURFACE-LIMITED SULFIDIZATION OF COPPER</b> .....	1607
<i>Yukun Gong, Rohan Akolkar</i>	
<b>(INVITED) SELECTIVE ATOMIC LAYER DEPOSITION STRATEGIES FOR CATALYTIC APPLICATIONS</b> .....	1608
<i>Rong Chen, Kun Cao, Xiao Liu, Jiaming Cai, Bin Shan, Yanwei Wen</i>	
<b>(INVITED) ATOMIC LAYER DEPOSITION FOR STABILIZING SURFACE-BOUND MOLECULES FOR PHOTOELECTROCHEMISTRY AND CATALYSIS</b> .....	1609
<i>Mark D. Losego</i>	
<b>APPLICATION OF ATOMIC LAYER DEPOSITION FOR FABRICATION OF SOLAR CELLS</b> .....	1610
<i>Karol Frohlich, Miroslav Mikolasek, Riyas Subair, Vojtech Nadazdy, Alica Rosova, Marian Precner, Nevin Tasaltin, Elif Alturk, Emine Tekin, Emre Aslan, Tulin Ates Turkmen, Eva Majkova</i>	
<b>(INVITED) APPLICATION OF ALD-GROWN METAL OXIDE LAYERS FOR ENERGY APPLICATIONS: PHOTOVOLTAIC AND PHOTOELECTROCHEMICAL WATER SPLITTING</b> .....	1612
<i>Byungha Shin</i>	
<b>APPLICATION OF ATOMIC LAYER DEPOSITION OF CELLULOSIC MATERIALS PREPARED USING 3D PRINTING CONCEPTS</b> .....	1613
<i>Hyunbae Lee, Heesu Hwang, Jiwon Oh, Jaehwan Kim, Myeong-Jin Lee, Jin-Ha Hwang</i>	
<b>(INVITED) ALD AND ALET OF TRANSITION METAL DICHALCOGENIDE MATERIALS</b> .....	1614
<i>Anil U. Mane, Steven Letourneau, Devika Choudhury, J. W. Elam</i>	
<b>MOLYBDENUM DISULFIDES AND DISELENIDES BY ATOMIC LAYER DEPOSITION</b> .....	1615
<i>Raul Zazpe, Jan Prikryl, Jaroslav Charvot, Filip Dvorak, Milos Krbal, Filip Bures, Jan M. Macak</i>	
<b>IMPACT OF ATOMIC LAYER DEPOSITION ON THE PHOTOLUMINESCENCE OF COLLOIDAL QUANTUM DOTS</b> .....	1617
<i>Jakob Kuhs, Andreas Werbrouck, Natalia Zawacka, Emile Drijvers, Philippe F Smet, Zeger Hens, Christophe Detavernier</i>	

<b>DIELECTRIC ALD WITH HYDROGEN PEROXIDE: COMPARATIVE STUDY OF GROWTH AND FILM CHARACTERISTICS FOR ANHYDROUS H<sub>2</sub>O<sub>2</sub>, H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O MIXTURES, H<sub>2</sub>O AND OZONE</b> .....	1618
<i>Daniel Alvarez, Jeffrey Spiegelman, Keisuke Andachi, Gaku Tsuchibuchi, Katsumasa Suzuki</i>	
<b>ATOMIC LAYER DEPOSITION OF AL<sub>2</sub>O<sub>3</sub> WITH ALCOHOL OXIDANTS FOR IMPEDING SUBSTRATE OXIDATION</b> .....	1621
<i>Seunggi Seo, Whang Je Woo, Il-Kwon Oh, Hyungjun Kim, Bonggeun Shong</i>	
<b>INFRARED AND OPTICAL EMISSION SPECTROSCOPY STUDY OF THE SURFACE CHEMISTRY IN ATMOSPHERIC-PRESSURE PLASMA-ENHANCED SPATIAL ALD OF AL<sub>2</sub>O<sub>3</sub></b> .....	1624
<i>Maria Antonietta Mione, Richard Engeln, V. Vandalon, W. M. M. Kessels, Fred Roozeboom</i>	
<b>(INVITED) A SURFACE SCIENCE TOOLBOX FOR UNDERSTANDING ATOMIC LAYER EPITAXY</b> .....	1627
<i>Charles R. Eddy, Samantha G Rosenberg, Jeffrey Michael Woodward, Virginia R Anderson, Scooter D. Johnson, Karl F Ludwig, Christa Wagenbach, Alex C Kozen, Scott G Walton, David R. Boris, Neeraj Nepal</i>	
<b>PROBING THE ATOMIC-SCALE STRUCTURE OF THIN FILMS GROWN BY ATOMIC LAYER DEPOSITION</b> .....	1630
<i>Mathias J Young, Nicholas Bedford, Jeffrey W. Elam, Angel Yanguas-Gil, Steven Letourneau, Matthew Coile, David Mandia, Steven M. George, Andrew S. Cavanagh, Xiaqing He, Ahmed Jasim, Quinton Wyatt, Tommi White, Helmut Kaiser, Thomas W Heimann</i>	
<b>NEAR ROOM TEMPERATURE PE-ALD OF NANOSTRUCTURED GOLD FOR ENHANCED RAMAN SCATTERING</b> .....	1632
<i>Michiel Van Daele, Matthew B. E. Griffiths, Ali Raza, Matthias M. Minjauw, Eduardo Solano, Ji-Yu Feng, Ranjith K. Ramachandran, Stephane Clemmen, Roel Baets, Sean T Barry, Christophe Detavernier, Jolien Dendooven</i>	
<b>(KEYNOTE) BORDER-TRAP CHARACTERIZATION FOR GE GATE STACKS USING DEEP-LEVEL TRANSIENT SPECTROSCOPY</b> .....	1634
<i>Hiroshi Nakashima, Wei-Chen Wen, Keisuke Yamamoto, Dong Wang</i>	
<b>(INVITED) PHOTOEMISSION-BASED CHARACTERIZATION OF GATE DIELECTRICS AND STACK INTERFACES</b> .....	1636
<i>Seiichi Miyazaki, Akio Ohta</i>	
<b>(INVITED) ELECTRICAL ACTIVITY OF EXTENDED DEFECTS IN III-V SEMICONDUCTORS</b> .....	1638
<i>Eddy Roger Simoen, P.-C. Hsu, Yves Mols, Bernardette Kunert, Robert Langer, Clement Merckling, Alireza Alian, Niamh Waldron, Geert Eneman, Nadine Collaert, Marc Heyns, Cor Claeys</i>	
<b>ANISOTROPIC BIAxIAL STRAIN EVALUATION IN CARBON-DOPED SILICON USING WATER-IMMERSION RAMAN SPECTROSCOPY</b> .....	1640
<i>Kazutoshi Yoshioka, Ryo Yokogawa, Naomi Sawamoto, Atsushi Ogura</i>	
<b>(INVITED) EMERGING LOW-DIMENSIONAL MATERIAL ELECTRONICS AND PHOTONICS</b> .....	1642
<i>Han Wang</i>	
<b>(INVITED) (SI)GESN SEMICONDUCTORS FOR INTEGRATED OPTOELECTRONICS, QUANTUM ELECTRONICS, AND MORE</b> .....	1643
<i>Simone Assali, Salim Abdi, Mahmoud Atalla, Anis Attiaoui, Etienne Bouthillier, Patrick Del Vecchio, Leonor Groell, Aashish Kumar, Lu Luo, Samik Mukherjee, Jerome Nicolas, Oussama Moutanabbir</i>	
<b>(INVITED) DEVELOPMENT OF GERMANIUM-TIN-RELATED SEMICONDUCTOR HETEROSTRUCTURES FOR ENERGY BAND DESIGN IN ELECTRONIC AND OPTOELECTRONIC APPLICATIONS</b> .....	1645
<i>Osamu Nakatsuka, Masahiro Fukuda, Mitsuo Sakashita, Masashi Kurosawa, Shigehisa Shibayama, Shigeaki Zaima</i>	
<b>(INVITED) LOW-ENERGY PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION AND IN-SITU DOPING FOR JUNCTION FORMATION IN GROUP-IV SEMICONDUCTOR DEVICES</b> .....	1647
<i>Masao Sakuraba, Shigeo Sato</i>	
<b>GROWTH KINETICS OF MAGNESIUM SILICIDE FORMATION VIA REACTION OF MG GAS AND SI SUBSTRATES</b> .....	1650
<i>Jiaqi Li, Kenneth Sandhage</i>	
<b>(INVITED) TUNNELING FET DEVICE TECHNOLOGY FOR ULTRA-LOW POWER INTEGRATED CIRCUITS</b> .....	1651
<i>Shinichi Takagi, Kimihiko Kato, Dae-Hwan Ahn, Takahiro Gotow, Ryotaro Takaguchi, Tae-Eon Bae, Kasidit Toprasertpong, Mitsuru Takenaka</i>	
<b>(INVITED) VERTICALLY STACKED N CHANNEL AND P CHANNEL TRANSISTORS</b> .....	1653
<i>Chee Wee Liu, Yu-Shiang Huang, Fang-Liang Lu, Hung-Yu Ye</i>	
<b>(INVITED) VERTICAL TUNNEL FET TECHNOLOGIES USING III-V/SI HETEROJUNCTION</b> .....	1655
<i>Katsuhiro Tomioka, Hironori Gamo, Junichi Motohisa</i>	
<b>(KEYNOTE) NITROGEN-ION IMPLANTATION DOPING OF GA<sub>2</sub>O<sub>3</sub> AND ITS APPLICATION TO TRANSISTORS</b> .....	1657
<i>Masataka Higashiwaki, Man Hoi Wong, Ken Goto, Hisashi Murakami, Yoshinao Kumagai</i>	
<b>(INVITED) EPITAXIAL LIFT-OFF OF GAN AND RELATED MATERIALS FOR DEVICE APPLICATIONS</b> .....	1658
<i>Patrick Fay, Jingshan Wang, Lina Cao, J Xie, Edward Beam, Robert McCarthy, Rekha Reddy, Chris Youtsey</i>	
<b>(INVITED) GAN-BASED MULTIPLE 2DEG CHANNEL BRIDGE (BURIED DUAL GATE) HEMT TECHNOLOGY FOR HIGH POWER AND LINEARITY</b> .....	1660
<i>Keisuke Shinohara, Casey King, Eric Regan, M P Gomez, Joshua Bergman, Andrew Carter, Andrea Arias, Miguel Urteaga, Berinder Brar, Ryan Page, Reet Chaudhuri, Moudud Islam, Huili Grace Xing, Debdeep Jena</i>	

<b>(INVITED) HIGH-SPEED AND LINEAR GRADED-CHANNEL GAN FETS</b> .....	1662
<i>Jeong-Sun Moon, Joel Wong, Bob Grabar, Mike Antcliffe, Peter Chen, Andrea Corrion, Erdem Arkun, Isaac Khalaf, Sam Kim, Patrick Fay</i>	
<b>(INVITED) NOVEL CHANNEL ENGINEERING FOR HIGH-PERFORMANCE ALGAN-BASED TRANSISTORS</b> .....	1663
<i>Shahadat H. Sohel, Towhidur Razzak, Hao Xue, Mohammad Wahidur Rahman, Andy Xie, Edward Beam, Yu Cao, Kamal Hussain, Asif Khan, Wu Lu, Siddharth Rajan</i>	
<b>(INVITED) HIGH-PERFORMANCE GAN HBTS WITH REGROWN EMITTERS</b> .....	1665
<i>Lian Zhang, Zhe Cheng, Yujie Ai, Lijang Jia, Yun Zhang</i>	
<b>(INVITED) CHARACTERISTICS OF SEVERAL HIGH-K GATE INSULATORS FOR GAN POWER DEVICE</b> .....	1667
<i>Toshihide Nabatame, Erika Maeda, Mari Inoue, Masafumi Hirose, Hajime Kiyono, Yoshihiro Irokawa, Koji Shiozaki, Yasuo Koide</i>	
<b>(KEYNOTE) MACHINE LEARNING AND HIGH-SPEED CIRCUITRY IN THIN FILM TRANSISTORS FOR SENSOR INTERFACING IN HYBRID LARGE-AREA ELECTRONIC SYSTEMS</b> .....	1669
<i>James Sturm, Yoni Mehlman, Levent E. Aygun, Can Wu, Z Zheng, P Kumar, Sigurd Wagner, Naveen Verma</i>	
<b>(INVITED) SINGLE-CRYSTALLINE SILICON CMOS FABRICATION ON PET BY MENISCUS FORCE MEDIATED LAYER TRANSFER TECHNIQUE</b> .....	1671
<i>Seiichiro Higashi</i>	
<b>SELF-ALIGNED IGZO TFTS WITH BORON IMPLANTED SOURCE/DRAIN REGIONS</b> .....	1673
<i>Rahnuma Rifat Chowdhury, Muhammad Salahuddin Kabir, Robert G. Manley, Karl D Hirschman</i>	
<b>DEVICE STRUCTURE AND PASSIVATION OPTIONS FOR THE INTEGRATION OF SCALED IGZO TFTS</b> .....	1676
<i>Muhammad Salahuddin Kabir, Rahnuma Rifat Chowdhury, Robert G. Manley, Karl D Hirschman</i>	
<b>(KEYNOTE) SILICON-ORGANIC HYBRID PHOTONICS: INTEGRATION OF ELECTRO-OPTICAL POLYMERS IN A PHOTONIC INTEGRATED CIRCUIT TECHNOLOGY</b> .....	1678
<i>Patrick Steglich, Christian Mai, C Villringer, Birgit Dietzel, Sigurd Schrader, Andreas Mai</i>	
<b>(INVITED) SOI TECHNOLOGIES FOR RF AND MILLIMETER WAVE APPLICATIONS</b> .....	1680
<i>Martin Rack, Jean-Pierre Raskin</i>	
<b>(INVITED) DESIGN OF SiO<sub>2</sub>/4H-SiC FORMATION PROCESS WITH H<sub>2</sub>O ANNEALING TO IMPROVE MOSFET PERFORMANCE</b> .....	1682
<i>Koji Kita, Hirohisa Hirai, Mizuki Nishida, Ryota Sakuta</i>	
<b>A NEW LIFTOFF METHOD FOR SMALL AND DENSE NANOSTRUCTURES</b> .....	1684
<i>Tian Li Duan, Yao Wang, Rui Zhang, Xu Hang Ma, Xue Xuan Qu</i>	
<b>ELECTROCHEMICAL BEHAVIOUR OF EXPANDED GRAPHITE FOR THERMOGALVANIC CELLS AND THERMALLY-CHARGED SUPERCAPACITORS APPLICATIONS IN IONIC LIQUIDS</b> .....	1687
<i>Blanca Estela Torres Bautista, Kakoli Bhattacharya, Marco Bonetti, Michel Roger, Sawako Nakamae</i>	
<b>(INVITED) BACTERIAL IDENTIFICATION BY USING PHOTOGATE-TYPE OPTICAL SENSOR</b> .....	1688
<i>Hiromu Ishii, Sawako Tanaka, Makoto Ishida, Kazuaki Sawada, Katsuyuki Machida, Yasuhiko Nikaido, Mitsumasa Saito, Shinichi Yoshida</i>	
<b>(INVITED) NANOENGINEERED THERMOELECTRIC ENERGY DEVICES FOR IOT SENSING APPLICATIONS</b> .....	1691
<i>Takahito Ono, Trung Huu Nguyen, Khairul Fadzli Samat, Jinhua Li, Nguyen Van Toan</i>	
<b>(INVITED) GRAPHENE NANO-ELECTRO-MECHANICAL (NEM) DEVICES AND EXTENSION TO SENSOR APPLICATIONS</b> .....	1693
<i>Hiroshi Mizuta, Gabriel Agbonlahor, Hiroya Miyashita, Kohei Taketomi, Jaewook Lee, Ngoc Huynh, Manoharan Muruganathan</i>	
<b>(INVITED) DIAMOND TECHNOLOGY - INTEGRATION INTO SOLID-STATE BREAKERS AND BIOMEDICAL DEVICES</b> .....	1694
<i>Tom Zimmermann, Alexis Rogien, Grace Jansen, Xiaoxue Wang, Liping Hua, Yuelin Wu, Matthias Muehle, Timothy A. Grotjohn</i>	
<b>(INVITED) MEMS ACCELEROMETER FABRICATED BY GOLD MULTI-LAYER METAL TECHNOLOGY</b> .....	1696
<i>Katsuyuki Machida, Daisuke Yamane, Toshifumi Konishi, Shin-Ichi Iida, Noboru Ishihara, Tso-Fu Mark Chang, Masato Sone, Hiroyuki Ito, Kazuya Masu</i>	
<b>(INVITED) ELECTRON EMISSION STUDY OF PLANAR-TYPE ELECTRON EMISSION DEVICES BASED ON NANOCRYSTALLINE SILICON</b> .....	1698
<i>Hidetaka Shimawaki, Hidenori Mimura, Katsuhisa Murakami, Masayoshi Nagao</i>	
<b>(INVITED) COMPUTING WITH MEMRISTIVE DEVICES AND ARRAYS</b> .....	1699
<i>J. Joshua Yang</i>	
<b>(INVITED) CHALLENGES OF GRAPHENE PROCESS INTEGRATION IN CMOS TECHNOLOGY</b> .....	1701
<i>Marco Lisker, Mindaugas Lukosius, Rasuole Lukose, Christian Wenger, Andreas Mai</i>	
<b>(INVITED) OPTIMIZED HFO<sub>2</sub>-BASED MIM MODULE FABRICATION FOR EMERGING MEMORY APPLICATIONS</b> .....	1703
<i>Mamathamba Kalishettyhalli Mahadevaiah, Marco Lisker, Mirko Frascchke, Steffen Marschmeyer, Detlef Schmidt, Christian Wenger, Eduardo Perez, Andreas Mai</i>	
<b>(INVITED) MICRO-TRANSFER PRINTING TECHNOLOGY FOR GAN TRANSISTORS</b> .....	1705
<i>David J. Meyer, Brian P. Downey, Andy Xie, D. Scott Katzer, Shawn C Mack, Neeraj Nepal, Yu Cao, Robert L Coffie, Matthew T. Hardy, Edward Beam, Cathy Lee</i>	
<b>(INVITED) HYBRID MONOLITHIC NANOMANUFACTURING OF 3D LIQUID-SOLID HETEROJUNCTION DEVICES FOR SELF-POWERED SMART SKIN</b> .....	1707
<i>Wenzhuo Wu</i>	
<b>(KEYNOTE) DEVICES FOR SI BASED QUANTUM COMPUTING</b> .....	1708
<i>Maud Vinet</i>	

<b>(INVITED) CHARACTERISTICS OF SI SINGLE-ELECTRON TRANSISTOR UNDER ILLUMINATION</b> .....	1709
<i>Yasuo Takahashi, Michito Sinozawa, Masashi Arita, Atsushi Tsurumaki-Fukuchi, Akira Fujiwara, Yukinori Ono, Katsuhiko Nishiguchi, Hiroshi Inokawa</i>	
<b>(INVITED) SILICON COUPLED QUANTUM DOTS FOR SPIN-BASED QUANTUM BITS</b> .....	1712
<i>Tetsuo Kodera</i>	
<b>(INVITED) ORGANIC THERMOELECTRIC MATERIALS AND DEVICES</b> .....	1714
<i>Shannon K. Yee</i>	
<b>(INVITED) THERMOELECTRIC PARAMETERS IN BLENDS OF POLYMERS WITH SLIGHTLY OFFSET CARRIER ENERGIES</b> .....	1715
<i>Hui Li, Howard E. Katz</i>	
<b>(INVITED) ELECTROCHEMICAL SYNTHESIS OF CHALCOGEN AND METAL CHALCOGENIDE NANOSTRUCTURES FOR THERMOELECTRIC APPLICATIONS</b> .....	1716
<i>Dung To, Saba Seyedmahmoudbaraghani, Sooyoun Yu, Nosang Vincent Myung</i>	
<b>(INVITED) ROLE OF ANHARMONICITY ON THERMOELECTRIC PROPERTIES OF FULLY DENSE SINGLE-CRYSTALLINE SNSE</b> .....	1717
<i>Sriparna Bhattacharya, Yang-Yuan Chen, Apparao M. Rao</i>	
<b>(INVITED) TUNING OF CATALYTIC ACTIVITY BY THERMOELECTRIC EFFECT</b> .....	1718
<i>Abdenour Achour, Jian Liu, Ping Peng, Kan Chen, Michael Reece, Christopher Shaw, Zhaorong Huang</i>	
<b>(INVITED) PHONON ENGINEERING FOR IMPROVED SEEBECK COEFFICIENT AND THERMAL CONDUCTIVITY OF THERMOELECTRIC NANOLAMINATE FILMS SYNTHESIZED ON POROUS TEMPLATES</b> .....	1720
<i>Helmut Baumgart, Xin Chen, Kai Zhang</i>	
<b>(INVITED) CONTROLLED SYNTHESIS AND THERMOELECTRIC PROPERTIES OF TIN TELLURIDE-BASED TOPOLOGICAL CRYSTALLINE INSULATOR NANOWIRES</b> .....	1721
<i>Shixiong Zhang</i>	
<b>(INVITED) NANOWIRE-BASED BULK THERMOELECTRICS</b> .....	1722
<i>Sreeram Vaddiraju</i>	
<b>(INVITED) PLANAR THERMOELECTRIC MICRO REFRIGERATORS BASED ON NANOGRAINED SIGE THIN FILMS</b> .....	1724
<i>Baoling Huang</i>	
<b>(INVITED) NANOSTRUCTURED SILICON INTEGRATED CIRCUIT THERMOELECTRIC GENERATORS WITH HIGH SPECIFIC POWER GENERATION CAPACITY</b> .....	1725
<i>Mark Lee, Gangyi Hu, Hal Edwards</i>	
<b>EVALUATION OF THERMAL CONDUCTIVITY CHARACTERISTICS IN POLYCRYSTALLINE SILICON GRAINS WITH NANOSTRUCTURES BY RAMAN SPECTROSCOPY</b> .....	1726
<i>Haruki Takeuchi, Ryo Yokogawa, Kazuya Takahashi, Katsuhiko Komori, Tamotsu Morimoto, Naomi Sawamoto, Atsushi Ogura</i>	
<b>TEMPERATURE MEASUREMENT FOR SI NANOWIRE THERMOELECTRIC GENERATORS BY OPERAND RAMAN SPECTROSCOPY</b> .....	1728
<i>Ryo Yokogawa, Tianzhuo Zhan, Hiroki Takezawa, Kohei Mesaki, Motohiro Tomita, Takanobu Watanabe, Atsushi Ogura</i>	
<b>DESIGN OF ELECTRIC FIELD-INDUCED HIGH THERMAL CONDUCTION ROUTES IN POLYMER-BASED NANOCOMPOSITES WITH LOW AMOUNT OF BORON NITRIDE NANOSHEETS (<math>\leq 20</math> VOL%)</b> .....	1731
<i>Hong-Baek Cho, Tadachika Nakayama, Yong-Ho Choa</i>	
<b>A NOVEL APPROACH TO JOIN LARGE COEFFICIENT OF THERMAL EXPANSION (CTE) MISMATCHED THERMOELECTRIC (TE) MATERIALS FOR HIGH TEMPERATURE APPLICATIONS</b> .....	1732
<i>Michell Aranda, Ike Suchih Chi, Vilupanur Ravi, Obed Villalpando, Brooke Singleton, Fivos Drymiotis, Billy Chun-Yip Li, Jean-Pierre Fleurial</i>	
<b>(INVITED) THERMOELECTRIC ENERGY CONVERSION AND THERMAL MEMRISTANCE AND SWITCHING</b> .....	1733
<i>Jeffrey J Urban</i>	
<b>(INVITED) ENGINEERED PARTICLE-PARTICLE CONTACTS FOR IMPROVED THERMAL INTERFACE MATERIALS</b> .....	1734
<i>Robert Y. Wang</i>	
<b>(INVITED) PHONON TRANSPORT IN NANOPOROUS SI FILMS - FROM PERIODIC NANOPORES TO NANOSLOTS</b> .....	1735
<i>Qing Hao</i>	
<b>(INVITED) ENERGY TRANSPORT AT THE NANOSCALE</b> .....	1737
<i>Woochul Lee</i>	
<b>(INVITED) TEMPERATURE-DEPENDENT THERMAL DIFFUSE SCATTERING FOR SCANNING TRANSMISSION ELECTRON MICROSCOPE THERMOMETRY</b> .....	1738
<i>Geoff Wehmeyer</i>	
<b>(INVITED) MIE-LIKE SCATTERING OF PHONONS BY A SINGLE VACANCY IN IV-VI COMPOUNDS</b> .....	1740
<i>Ruiqiang Guo, Sangyeop Lee</i>	
<b>(AMAZON CATALYST AT ECS GRANT WINNER) ACTIVE CONTROL OF HEAT FLOW IN QUANTUM COMPUTING APPLICATIONS THROUGH PIEZOELECTRIC INDUCED MECHANICAL STRAIN</b> .....	1741
<i>Aravindh Rajan, Sampath Kommandur</i>	

<b>(INVITED) 3D CONFORMAL PRINTING OF HIGH-PERFORMANCE AND FLEXIBLE THERMOELECTRIC DEVICES USING COLLOIDAL NANOCRYSTALS</b> .....	1742
<i>Yanliang Zhang</i>	
<b>(INVITED) EFFECTIVE STRATEGIES TO IMPROVE POWERFACTOR OF FLEXIBLE THERMOELECTRIC COMPOSITES</b> .....	1743
<i>Jaeyun Moon</i>	
<b>(INVITED) THERMIONIC TRANSPORT IN VAN DER WAALS HETEROSTRUCTURES</b> .....	1744
<i>Mona Zebarjadi, Golam Rosul, Naiming Liu</i>	
<b>THE EFFECT OF ELECTRON-PHONON INTERACTIONS ON THERMAL CONDUCTIVITY</b> .....	1745
<i>Fanchen Meng, Jinlong Ma, Wu Li, Jian He</i>	
<b>(INVITED) IMPACT OF STOICHIOMETRY AND INTERFACE CONFIGURATION ON THE TIME STABILITY AND THE SPEED-LIMITING STEP IN MEMRISTIVE SRTIO<sub>3</sub> CELLS</b> .....	1746
<i>Regina Dittmann, Christoph Baumer, Sebastian Siegel, Felix V. E. Hensling, Thomas Heisig, Alexander Gutsche, Stephan Menzel</i>	
<b>IMPROVED SWITCHING STABILITY AND RESISTANCE RATIO IN SRTIO<sub>3</sub>-BASED RESISTIVE SWITCHES BY NI NANOPARTICLES EXSOLUTION</b> .....	1748
<i>Juan Carlos Gonzalez-Rosillo, Jonathan Spring, Eva Sediva, Alfonso J. Carrillo, Zachary David Hood, Jennifer L. M. Rupp</i>	
<b>LOW-VOLTAGE, CMOS-FREE SYNAPTIC MEMORY BASED ON LIXTIO<sub>2</sub> REDOX TRANSISTORS</b> .....	1749
<i>Li Yiyang, Elliot James Fuller, Shiva Asapu, Sapan Agarwal, Tomochika Kurita, J. Joshua Yang, Albert Alec Talin</i>	
<b>SWITCHING AN ANALOGUE TO DIGITAL COMPUTING PROPERTY BASED ON MEMRISTANCE BY LITHIATION - OPPORTUNITIES ON LITHIUM TITANATES</b> .....	1750
<i>Juan Carlos Gonzalez-Rosillo, Kaitlyn M Mullin, Reto Pfenninger, Moran Balaish, Jennifer L. M. Rupp</i>	
<b>(INVITED) IN SITU FILAMENTARY RESISTANCE-SWITCHING EXPERIMENTS USING BULK OXIDE SINGLE CRYSTALS AND POLYCRYSTALS</b> .....	1752
<i>I-Wei Chen, Ana Alvarez</i>	
<b>(INVITED) BALANCING THE SOURCE AND SINK OF OXYGEN VACANCIES FOR THE RESISTIVE SWITCHING MEMORY</b> .....	1754
<i>Tae Hyung Park, Cheol Seong Hwang</i>	
<b>RESISTIVE SWITCHING IN ATOMIC LAYER DEPOSITED HFO<sub>2</sub>/ZRO<sub>2</sub> NANOLAYER STACKS</b> .....	1755
<i>Lin Tang, Hiraku Maruyama, Dou Zhang, Juan C. Nino</i>	
<b>MEMRISTIVE DEVICES FORMED BY ALD METAL OXIDE GROWTH ON A HAFNIUM LAYER - STUDY OF THE INTERFACIAL HFO<sub>2</sub> FORMATION</b> .....	1756
<i>Stephan Aussen, Alexander Hardtdegen, Regina Dittmann, Susanne Hoffmann-Eifert</i>	
<b>ELECTRICAL PULSE DRIVEN INSULATOR-METAL TRANSITION OF VO<sub>2</sub> DEVICES AS LEAKY-INTEGRATE-AND-FIRE ARTIFICIAL NEURONS</b> .....	1757
<i>Zhen Xu, Zhaoyang Fan</i>	
<b>PARASITIC CELL-TO-CELL HEAT TRANSFER IN RERAM ARRAYS AND THERMALLY INDUCED MEMORY CELL PERFORMANCE DEGRADATION</b> .....	1758
<i>Mohammad Al-Mamun, Marius Orłowski</i>	
<b>(INVITED) ELECTRON BEAM INDUCED CURRENT MICROSCOPY OF INTERFACIAL BARRIER EFFECTS IN AL<sub>2</sub>O<sub>3</sub>/TIO<sub>x</sub> RESISTIVE SWITCHES</b> .....	1760
<i>Brian Douglas Hoskins</i>	
<b>EXAMINING OXYGEN EXCHANGE KINETICS OF ANOMALOUS RESISTIVE SWITCHING BY OPTICAL TRACKING IN REDOX BASED MEMRISTIVE DEVICES</b> .....	1761
<i>Thomas Defferriere, Harry L. Tuller, Jennifer L. M. Rupp, Dmitri Kalaev</i>	
<b>OPTICALLY SWITCHABLE MEMRISTORS: A ROUTE TO HIERARCHICAL CONTROL IN ARTIFICIAL INTELLIGENT SYSTEMS</b> .....	1763
<i>Neil Timothy Kemp</i>	
<b>MEMRISTIVE BEHAVIOR IN CORE-SHELL NANOWIRE NETWORKS FOR NEUROMORPHIC ARCHITECTURES</b> .....	1765
<i>Shangradhanva Eswara Vasisth, Jadie Palenzuela, Hiraku Maruyama, Juan C. Nino</i>	
<b>(INVITED) ENERGY EFFICIENT NEURAL NETWORK TRAINING WITH ANALOG SYNAPSES: CHALLENGES AND OPPORTUNITIES</b> .....	1766
<i>Matthew J. Marinella, Sapan Agarwal, Christopher Bennett, Robin Bay Jacobs-Gedrim, David R. Hughart, Elliot James Fuller, Alex Hsia, Albert Alec Talin</i>	
<b>PROBABILISTIC SILICON SYNAPSE FOR LEARNING- AND ENERGY-EFFICIENT NEUROMORPHIC SYSTEM</b> .....	1768
<i>Gunuk Wang</i>	
<b>PARALLEL PROGRAMMING OF AN IONIC FLOATING-GATE MEMORY ARRAY FOR SCALABLE NEUROMORPHIC COMPUTING</b> .....	1769
<i>Elliot James Fuller, Scott T Keene, Armantas Melianas, Zhongrui Wang, Sapan Agarwal, Yiyang Li, Yaakov Tuchman, Conrad D. James, Matthew J. Marinella, Alberto Salleo, A. Alec Talin</i>	
<b>ULTRALOW POWER DUAL GATED SUB-THRESHOLD OXIDE NEURISTORS: AN ENABLER FOR HIGHER ORDER NEURONAL TEMPORAL CORRELATIONS</b> .....	1770
<i>Rohit Abraham John, Nidhi Tiwari, Arindam Basu, Nripan Mathews</i>	
<b>SYNTHESIS AND ELECTRICAL PROPERTIES OF ALD DEPOSITED TIO<sub>2</sub>-BASED MEMRISTOR STRUCTURES</b> .....	1771
<i>Kai Zhang, Pengtao Lin, Aswini K Pradhan, Helmut Baumgart</i>	
<b>(INVITED) TRENDS IN 3D MARKETS AND TECHNOLOGY</b> .....	1772
<i>E. Jan Vardaman</i>	

<b>(INVITED) 3D PASSIVE DEVICES AND THROUGH-SUBSTRATE CONNECTIONS FOR MEDICAL AND AUTOMOTIVE APPLICATIONS</b> .....	1773
<i>Catherine Bunel, E Lefevre, S Jacqueline, M Jatlaoui</i>	
<b>(INVITED) MICROFLUIDIC ELECTROLESS INTERCONNECTION (MELI) PROCESS FOR LOW-TEMPERATURE, PRESSURELESS CHIP STACKING APPLICATIONS</b> .....	1774
<i>C Robert Kao, H. T. Hung, Y. H. Chen</i>	
<b>CONTROLLABLE SINGLE CRYSTAL COPPER MORPHOLOGY ON COPPER FOIL BY ELECTRODEPOSITION</b> .....	1775
<i>Chia-Hsiang Chen, Wei-Ping Dow, Liang-Jie Lin</i>	
<b>ENHANCING SURFACE FLATNESS AND BRIGHTNESS OF ZN/CU ALLOY BY ACIDIC ELECTROPLATING COPPER</b> .....	1776
<i>Chien-Lin Chen, Wei-Ping Dow</i>	
<b>(INVITED) CHARACTERISTICS, TYPES AND DEVELOPMENT DIRECTION OF THE COPPER FOILS FOR BATTERIES</b> .....	1777
<i>Young Tae Kim, Sang Hyun Jun, An Na Lee, Ho Gun Kim, Seon Hwa Kim</i>	
<b>(INVITED) INNOVATIVE ADVANCES IN COPPER ELECTROPLATING FOR IC SUBSTRATE MANUFACTURING</b> .....	1778
<i>Kousik Ganesan, Rahul Manepalli, Marcel Wall, Andrew Wentzel, Helme Castro, Wencaho Li, Thomas Heaton</i>	
<b>SELECTIVE CU ELECTRODEPOSITION FOR SUB-MICROMETER REDISTRIBUTION LAYERS</b> .....	1779
<i>Jinhyun Lee, Kimoon Park, Bongyoung Yoo</i>	
<b>ELECTROLESS COPPER DEPOSITION USING COMPLEXED COPPER(II) ION AS CATALYST FOR PRINTED CIRCUIT BOARD FABRICATION</b> .....	1780
<i>Wei-Ping Dow, Yu-Chien Chuang</i>	
<b>USING REDUCE GRAPHENE OXIDE (RGO) AS A CONDUCTING LAYER FOR A PCB METALLIZATION</b> .....	1781
<i>I-Hsuan Chang, Wei-Ping Dow</i>	
<b>(INVITED) ENABLING FAN-OUT WAFER-LEVEL PACKAGE (FOWLP) THROUGH INNOVATIVE COPPER ELECTRODEPOSITION PROCESSES</b> .....	1782
<i>Bryan Buckalew, Kari Thorkelsson, Justin Oberst, Stephen Banik, Thomas Ponnuswamy</i>	
<b>LINE WIDTH AND CAPPING LAYER EFFECTS ON ELECTROMIGRATION FAILURE OF PLASMA ETCHED COPPER LINES</b> .....	1784
<i>Mingqian Li, Jia Quan Su, Yue Kuo</i>	
<b>THERMAL ANNEALING AND IMPURITIES INCORPORATION OF ELECTRODEPOSITED COBALT THIN FILM</b> .....	1786
<i>Yang Hu, Qiang Huang</i>	
<b>CONDUCTIVITY MODIFICATION OF REDUCED GRAPHENE OXIDE (RGO)</b> .....	1788
<i>Yu-Guan Lee, Wei-Ping Dow</i>	
<b>STUDY ON ELECTROMIGRATION OF NANO-SILVER PASTE WITH DIFFERENT HOT PRESSING SINTERING CONDITIONS</b> .....	1789
<i>In Gann Chen, Chia Ming Yang, Yan Ruei Chio, Lien Chung Hsu, Po Tsung Hsieh</i>	
<b>MODEL IDENTIFICATION FOR ADSORPTION DYNAMICS AND SUPPRESSION EFFECT OF POLYETHYLENE GLYCOL USING INVERSE ANALYSIS APPROACH</b> .....	1791
<i>Tsubasa Ishii, Kenji Amaya, Yuki Onishi</i>	
<b>ADDITIVE TRANSPORT, ADSORPTION, AND INCLUSION IN ELECTROLESS DEPOSITION OF COPPER</b> .....	1793
<i>Ronald Anthony Zeszut, Uziel Landau</i>	
<b>COMPUTATIONAL MODELING OF COPPER DEPOSITION IN THROUGH SILICON VIA STRUCTURES</b> .....	1796
<i>Trevor Michael Braun, Daniel Josell, Thomas P. Moffat</i>	
<b>SUPERCONFORMAL AND BOTTOM-UP FILLING OF HIGH ASPECT RATIO FEATURES</b> .....	1797
<i>Daniel Josell, Trevor Michael Braun, Stephen Ambrozik, Thomas P. Moffat</i>	
<b>(INVITED) CDTE/SI-ROIC STACED X-RAY IMAGING SENSOR</b> .....	1798
<i>Toru Aoki, Katsuyuki Takagi, Toshiyuki Takagi, Hiroki Kase, Akifumi Koike</i>	
<b>(INVITED) APPLICATION OF THREE DIMENSIONAL CHIP STACKING TECHNOLOGY FOR FULLY DEPLETED SILICON-ON-INSULATOR QUANTUM BEAM IMAGER</b> .....	1800
<i>Ikuo Kurachi, Toru Tsuboyama, Yasuo Arai, Makoto Motoyoshi</i>	
<b>ADVANCED LOW-K POLYMER DIELECTRIC MATERIALS AND INTERFACES FOR FINE-PITCH REDISTRIBUTION-LAYER (RDL) TO ENABLE 2.5D AND FAN-OUT PACKAGES</b> .....	1802
<i>Shreya Dwarakanath, Pulugurtha Markondeya Raj, Mark D. Losego, Rao R Tummala</i>	
<b>LOW-DIELECTRIC CONSTANT NANOPOROUS EPOXY FOR ELECTRONIC PACKAGING</b> .....	1804
<i>Jisu Jiang, Landon Keller, Paul A Kohl</i>	
<b>(INVITED) HIGH PERFORMANCE PLUG-AND-PLAY NANOELECTRONIC DEVICES</b> .....	1805
<i>Michael A Filler</i>	
<b>(INVITED) HOMOEPITAXIAL GAN GROWTH AND SUBSTRATE-DEPENDENT EFFECTS</b> .....	1806
<i>Jennifer K. Hite, Travis J. Anderson, James C Gallagher, Michael A Mastro, Jaime A. Freitas, Karl D. Hobart, Fritz J Kub, Charles R Eddy</i>	
<b>(INVITED) SPUTTER BEAM EPITAXY FOR ATOMIC ORDERING IN COMPLEX EPITAXIAL THIN FILMS</b> .....	1807
<i>Adam J Hauser</i>	
<b>(INVITED) ION IMPLANTATION AND ACTIVATION OF N- AND P-TYPE DOPANTS IN GAN</b> .....	1808
<i>Travis J. Anderson, James C Gallagher, Alan G Jacobs, Boris Feigelson, Jennifer K. Hite, Michael A Mastro, Geoffrey M Foster, Andrew D Koehler, Karl D. Hobart</i>	

<b>ADVANCEMENTS IN HIGH INDIUM CONTENT ALIN GROWN VIA METAL MODULATED EPITAXY AND APPLICATION TOWARDS POLAR/NON-POLAR OPTICAL DEVICES</b> .....	1809
<i>Zachary Engel, Evan A. Clinton, Christopher M. Matthews, W. Alan Doolittle</i>	
<b>GAN-BASED DILUTE MAGNETIC SEMICONDUCTORS FOR ROOM TEMPERATURE NEUROMORPHIC AND QUANTUM COMPUTING</b> .....	1811
<i>Chuanle Zhou, Amirhossein Ghods, Vishal G. Saravade, Ian Ferguson</i>	
<b>ETCHING MECHANISMS IN III-V SEMICONDUCTORS: ELECTROCHEMICAL ETCHING OF INDIUM PHOSPHIDE</b> .....	1813
<i>D. Noel Buckley, Nathan Quill, Colm O'Dwyer, Robert P. Lynch</i>	
<b>NOT YOUR ORDINARY ETCHING: METAL-ASSISTED CHEMICAL ETCH (MACETCH) FOR III-V AND WIDE BANDGAP SEMICONDUCTORS</b> .....	1815
<i>Xiuling Li</i>	
<b>(INVITED) CONTROLLING LIGHT WITH PHONONS IN POLAR SEMICONDUCTORS: NOVEL APPROACHES TO INFRARED NANOPHOTONICS</b> .....	1816
<i>Joshua David Caldwell</i>	
<b>(INVITED) DEVELOPMENT OF ULTRAVIOLET VERTICAL-CAVITY SURFACE-EMITTING LIGHT SOURCES</b> .....	1817
<i>Russell D Dupuis, Theeradetch Detchphrom, Chuan-Wei Tsou, Youngjae Park, Hoon Jeong, Karan Mehta, Ping Chen, P. Douglas Yoder, Shyh-Chiang Shen</i>	
<b>(INVITED) RECENT ADVANCES IN III-NITRIDE DEVICES USING ULTRAWIDE BANDGAP <math>Al_xGa_{1-x}N</math> ACTIVE LAYERS</b> .....	1818
<i>Asif Khan</i>	
<b>(INVITED) ULTRA-WIDE BANDGAP PHOTODETECTION CONCEPTS</b> .....	1819
<i>Mvs Chandrashekhar</i>	
<b>SELECTIVE ANNEALING EFFECTS OF ASYMMETRIC SCHOTTKY-TYPE ALGAN METAL-SEMICONDUCTOR-METAL UV-B SENSOR</b> .....	1821
<i>Byeong-Jun Park, Jeong-Hoon Seol, Sung-Ho Hahm</i>	
<b>(INVITED) ARTIFICIAL NEURONS AND SYNAPSES WITH CVD <math>MOS_2</math> FACILITATED BY ELECTRODE ENGINEERING</b> .....	1823
<i>Tania Roy</i>	
<b>(INVITED) IMPROVING CONDUCTING AND INSULATING INTERFACES TO 2D MATERIALS</b> .....	1825
<i>Aaron D Franklin</i>	
<b>(INVITED) ADVANCING COMPOUND SEMICONDUCTORS THROUGH HETEROGENEOUS INTEGRATION</b> .....	1826
<i>Erica A. Douglas, Andrew E Hollowell, Mathew Jordan, Thomas Friedmann, Michael G Wood, Christopher Michael, Christian L. Arrington, Kate Musick, Jaime McClain</i>	
<b>(INVITED) HETEROGENEOUS INTEGRATION OF III-V SEMICONDUCTORS FOR IMAGING AND HIGH-SPEED COMMUNICATION</b> .....	1827
<i>Michael G Wood</i>	
<b>(INVITED) HETEROGENEOUS INTEGRATION OF SUB-MICRON THICKNESS EPITAXIAL INGAAS(P) WITH LITHIUM NIOBATE FOR ACTIVE AND NONLINEAR SURFACE ACOUSTIC WAVE DEVICES</b> .....	1829
<i>Lisa Hackett, Aleem Siddiqui, Daniel Dominguez, James Kenneth Douglas, Anna Tauke-Pedretti, Thomas Friedmann, Shawn Arterburn, Gregory Peake, Michael Ross Miller, Erik Skogen, Matt Eichenfield</i>	
<b>INTEGRATED AND INTERCONNECTED ARRAY OF LIGHT-EMITTING TRANSISTORS AND TRANSISTOR LASERS ON SILICON FOR PHOTONIC LOGIC</b> .....	1831
<i>John A. Carlson, Coleman G. Williams, John M. Dallesasse</i>	
<b>DISLOCATION COMPENSATION IN A METAMORPHIC SEMICONDUCTOR HETEROSTRUCTURE UTILIZING A UNIFORM OR GRADED BUFFER LAYER</b> .....	1833
<i>Tedi Kujofsa, Md Tanvirul Islam, John E Ayers</i>	
<b>A MODELING STUDY OF DISLOCATION BEHAVIOR IN INGAAS/GAAS (001) AND INALGAAS/GAAS (001) HETEROSTRUCTURES UTILIZING STRAINED-LAYER SUPERLATTICES</b> .....	1834
<i>Md Tanvirul Islam, Tedi Kujofsa, John E Ayers</i>	
<b>MODEL FOR DISLOCATION PINNING INTERACTIONS IN INGAAS/GAAS (001) HETEROSTRUCTURES</b> .....	1835
<i>Tedi Kujofsa, John E Ayers</i>	
<b>ELECTRICAL DOUBLE LAYER GATED FIELD EFFECT TRANSISTOR BIOSENSORS FOR THE QUANTITATIVE DETECTION OF BETA-HUMAN CHORIONIC GONADOTROPIN</b> .....	1836
<i>B Smith, Liang-Wen Liao, Po-Hsuan Chen, Yu-Lin Wang</i>	
<b>EPITAXIAL GROWTH OF <math>Cu_2O</math> ON AG SUBSTRATE BY ELECTRODEPOSITION</b> .....	1837
<i>Dajin Dai, Pei-Yu Huang, Liuwen Chang</i>	
<b>(INVITED) TRIBOELECTRIC NANOGENERATORS FOR INTERNET OF THINGS AND SELF-POWERED SYSTEMS</b> .....	1838
<i>Zhong Lin Wang</i>	
<b>(INVITED) DESIGN OF BIOMOLECULAR PIEZOELECTRIC MATERIALS FOR ENERGY GENERATORS</b> .....	1839
<i>Ju Hyuck Lee</i>	
<b>(INVITED) HARSH ENVIRONMENTS TREATMENT AND DETECTION: PIEZOCATALYSIS AND WIRELESS TRIBOELECTRIC VIBRATION SENSOR</b> .....	1840
<i>Jyh-Ming Wu</i>	



<b>HYBRIDIZATION OF LUMINESCENT SOLAR CONCENTRATOR AND TRIBOELECTRIC TOUCH SENSOR WITH ITS ENHANCEMENT VIA FERROELECTRIC POLARIZATION .....</b>	<b>1841</b>
<i>Hong-Joon Yoon, Sang-Woo Kim</i>	
<b>(INVITED) CREATING ALL 2D ULTRATHIN OPTO-ELECTRONIC DEVICES USING CVD GROWN MATERIALS .....</b>	<b>1842</b>
<i>Jamie H Warner</i>	
<b>(INVITED) TRANSFER PRINTING OF 2D MATERIALS FOR ULTRATHIN WEARABLE/IMPLANTABLE ELECTRONICS .....</b>	<b>1843</b>
<i>Moon Kee Choi</i>	
<b>(INVITED) TWO-DIMENSIONAL LAYERED MATERIALS TOWARD PHASE-ENGINEERED HYBRID FILMS .....</b>	<b>1844</b>
<i>Yu-Lun Chueh</i>	
<b>THE ULTRAHIGH EFFICIENT DEGRADATION OF RHODAMINE B BY THE PIEZO-CATALYST EFFECT OF SINGLE- AND FEW-LAYERED MOSE2 NANOFLOWERS .....</b>	<b>1845</b>
<i>Jyun-Ting Lee, Jyh-Ming Wu</i>	
<b>(INVITED) MULTIFUNCTIONAL MATERIALS FOR EMERGING TECHNOLOGIES .....</b>	<b>1846</b>
<i>Federico Rosei</i>	
<b>(INVITED) SYNTHESIS OF THERMALLY AND CHEMICALLY STABLE SILVER NANOWIRES FOR TRANSPARENT ELECTRODE .....</b>	<b>1847</b>
<i>Fengru Fan</i>	
<b>(INVITED) SYNTHESIS OF HEAVY-METAL-FREE QUANTUM DOTS AND THEIR APPLICATIONS .....</b>	<b>1848</b>
<i>Hsueh-Shih Chen</i>	
<b>LARGE-SCALE MANUFACTURING OF FUNCTIONALLY-ENCODED SEMICONDUCTOR NANOWIRES FOR ELECTRONICS AND PHOTONICS .....</b>	<b>1849</b>
<i>Maritza Mujica, Amar T Mohabir, Gozde Tutuncuoglu, Sven Behrens, Victor Breedveld, Michael A Filler</i>	
<b>BOTTOM-UP PATTERNING OF SEMICONDUCTOR NANOSTRUCTURES FOR LARGE-AREA ELECTRONICS .....</b>	<b>1850</b>
<i>Amar T Mohabir, Trent Weiss, Gozde Tutuncuoglu, Amy Brummer, Eric M. Vogel, Michael A Filler</i>	
<b>(INVITED) MULTI-FUNCTIONAL FLEXIBLE PHYSICAL AND CHEMICAL SENSOR SHEETS .....</b>	<b>1851</b>
<i>Kuniharu Takei</i>	
<b>(INVITED) INTRINSICALLY STRETCHABLE SEMICONDUCTORS AND ELECTRONICS ENABLED BY POLYMERIC NANOSTRUCTURES .....</b>	<b>1852</b>
<i>Sihong Wang</i>	
<b>(INVITED) HYBRID NANOMANUFACTURING OF HETEROSTRUCTURED WEARABLE DEVICES FOR SELF-POWERED USER INTERFACE .....</b>	<b>1853</b>
<i>Wenzhuo Wu</i>	
<b>TRANSPARENT AND FLEXIBLE SELF-CHARGING POWER FILM AND ITS APPLICATION IN A SLIDING UNLOCK SYSTEM IN TOUCHPAD TECHNOLOGY .....</b>	<b>1854</b>
<i>Jianjun Luo, Wei Tang, Feng Ru Fan, Chaofeng Liu, Yaokun Pang, Guozhong Cao, Zhong Lin Wang</i>	
<b>(INVITED) MULTIFUNCTIONAL TRIBOELECTRIC NANOGENERATORS FOR SELF-POWERED ELECTRONICS .....</b>	<b>1855</b>
<i>Sang-Woo Kim</i>	
<b>(INVITED) ULTRALIGHT TRIBOELECTRIC NANOGENERATORS FOR PORTABLE SELF-CHARGING POWER UNIT AND SELF-POWERED SENSING PLATFORM .....</b>	<b>1856</b>
<i>Min-Hsin Yeh</i>	
<b>(INVITED) TUNABLE ELASTOMERIC OPTICAL GRATINGS BASED ON TRIBOELECTRIC NANOGENERATORS .....</b>	<b>1857</b>
<i>Li Zheng</i>	
<b>ELECTRICAL CONDUCTIVITY OF N-TYPE BEHAVIOR IN BLACK BIOCL .....</b>	<b>1858</b>
<i>Yoon Myung, Chan Woong Na, Yonghwan Kim, Jeunghee Park, Nigel D Browning, Parag Banerjee</i>	
<b>A HIGH-POWER DENSITY TRIBOELECTRIC NANOGENERATOR FOR HARVESTING WAVE ENERGY .....</b>	<b>1859</b>
<i>Tiancong Zhao, Minky Xu, Wang Chuan, Steven L. Zhang, Zhou Li, Zhong Lin Wang</i>	
<b>INVESTIGATION OF GAINP QUANTUM DOTS IN THE ALGAINP-BASED LIGHT EMITTING DIODES .....</b>	<b>1860</b>
<i>Hwa Sub Oh, Jong Min Park, Sung Hoon Jung, Hyung Joo Lee, Young Dae Cho, Kyung Nam Jun</i>	
<b>(INVITED) SCALABLY-NANOMANUFACTURED TELLURENE: AN EMERGING 2-D MULTIFUNCTIONAL MATERIAL .....</b>	<b>1862</b>
<i>Wenzhuo Wu</i>	
<b>(INVITED) MULTI-FUNCTIONAL MEMRISTIVE TRANSISTORS BASED ON VAN DER WAALS HETEROSTRUCTURES .....</b>	<b>1863</b>
<i>Hyunik Park, Jihyun Kim</i>	
<b>(INVITED) NON-VOLATILE RESISTANCE SWITCHING PHENOMENON IN MONOLAYER H-BN .....</b>	<b>1865</b>
<i>Xiaohan Wu, Ruijing Ge, Po-An Chen, Meng-Hsueh Chiang, Deji Akinwande, Jack Lee</i>	
<b>(INVITED) INVESTIGATION OF INTERFACIAL CHARGE TRANSFER DOPING OF 2D MOS2 .....</b>	<b>1867</b>
<i>Saiful I. Khondaker, Bhim Chamlagain</i>	
<b>(INVITED) EMISSION ORIGIN OF LOWLY-OXIDIZED GRAPHENE QUANTUM DOT TOWARD LIGHT EMITTING DEVICES .....</b>	<b>1868</b>
<i>Seokwoo Jeon</i>	

<b>(INVITED) TUNABLE AND EFFICIENT HOT CARRIER GENERATION FROM PLASMONIC AU-PD NANOALLOY PHOTOCATALYST</b> .....	1869
<i>Sara K. F. Stofela, Orhan Kizilkaya, Mohammad Taheri, Tiago R Leite, William A Shelton, Jason B Baxter, Phillip T Springer, Kevin Michael McPeak</i>	
<b>(INVITED) TOWARD HIGHLY EFFICIENT SOLAR WATER SPLITTING: A CONCURRENT ELECTRICAL, OPTICAL, AND CATALYTIC DESIGN</b> .....	1870
<i>Jr-Hau He</i>	
<b>(INVITED) ENGINEERING AU/TIO<sub>2</sub> INTERFACE FOR ELECTRON-DRIVEN HETEROGENEOUS CATALYSIS</b> .....	1871
<i>Wei David Wei</i>	
<b>(INVITED) OPTICS-BASED WEARABLE DEVICE FOR REAL-TIME MONITORING OF NEWBORN JAUNDICE</b> .....	1872
<i>Hiroki Ota</i>	
<b>(INVITED) ELECTROCATALYSTS FOR LITHIUM-OXYGEN AND LI-SULFUR BATTERIES</b> .....	1874
<i>Yi-Chun Lu</i>	
<b>(INVITED) PROGRAMMING THERMAL ENERGY TRANSPORT IN SEMICONDUCTOR NANOWIRES</b> .....	1875
<i>Michael A Filler</i>	
<b>(INVITED) EFFECT OF JUNCTION RESISTANCE ON THE PERCOLATION CONDUCTIVITY OF METAL NANOWIRE NETWORKS FOR TRANSPARENT CONDUCTORS</b> .....	1876
<i>Shreshtha Mishra, Ying Xue, Nicholas Fata, Kevin Destefano, Jeremy Hicks, Ant Ural</i>	
<b>(INVITED) PIEZO-PHOTOTRONICS EFFECTS ON THE COLLECTIVE BEHAVIOR OF INJECTED EXCITONS IN GAN-BASED MULTI-QUANTUM WELLS AT THRESHOLD</b> .....	1878
<i>Ding Li</i>	
<b>(INVITED) A LEAF-INSPIRED PHOTON MANAGEMENT SCHEME FOR GRAPHENE/SILICON SOLAR CELLS</b> .....	1879
<i>Tania Roy</i>	
<b>RUTILE TO CUBIC PHASE TRANSFORMATION INDUCED BY ELECTRON BEAM</b> .....	1880
<i>Mengkun Tian, Lizhi Zhang, Masoud Mahjouri-Samani, Ritesh Sachan, Mina Yoon, Alexander A. Puzetky, David B. Geohegan, Gyula Eres, Gerd Duscher</i>	
<b>(INVITED) LARGE PHOTOLUMINESCENCE ENHANCEMENT OF MONOLAYER MOLYBDENUM DISULFIDE VIA MOLECULAR TREATMENT</b> .....	1882
<i>Daisuke Kiriya</i>	
<b>(INVITED) CROSS-REACTIVE GRAPHENE AND METAL OXIDE SENSORS FOR GAS DISCRIMINATION</b> .....	1883
<i>Qiliang Li, Chen Shi, Dimitris Ioannou</i>	
<b>INFLUENCE OF METAL DOPANTS ON MOS<sub>2</sub> CRYSTALLIZATION INVESTIGATED THROUGH IN SITU ELECTRON MICROSCOPY</b> .....	1884
<i>Neha Kondekar, Matthew G Boebinger, Mengkun Tian, Mohammad Hamza Kirmani, Matthew T McDowell</i>	
<b>FORMATION OF HORIZONTALLY AND VERTICALLY ORIENTED MOS<sub>2</sub> AND MOSE<sub>2</sub> FILMS USING CRACKED SMALL S- AND SE-MOLECULES AND ITS APPLICATIONS FOR TRANSPARENT A-SI:H THIN FILM PHOTOVOLTAIC DEVICES</b> .....	1885
<i>Sun Jin Yun, Kwang Hoon Jung, So Hyun Kim</i>	
<b>(INVITED) A NEW ANALYSIS OF THE DEPENDENCE OF CRITICAL ELECTRIC FIELD ON SEMICONDUCTOR BANDGAP</b> .....	1887
<i>Robert J. Kaplar, Oleksiy Slobodyan, Jack D. Flicker, Mark A. Hollis</i>	
<b>(INVITED) EMERGING ROLE OF SILICON CARBIDE AND GALLIUM NITRIDE BASED POWER ELECTRONICS IN POWER AND TRANSPORTATION SECTORS</b> .....	1889
<i>Prahaladh Panivil, Rajendra Singh</i>	
<b>(INVITED) COMPARISON OF HIGH VOLTAGE, VERTICAL GEOMETRY GA<sub>2</sub>O<sub>3</sub> RECTIFIERS WITH GAN AND SIC</b> .....	1891
<i>Jiancheng Yang, Chaker Fares, Patrick H Carey, Minghan Xian, Fan Ren, Marko J. Tadjer, Yen-Ting Chen, Yu-Te Liao, Chin-Wei Chang, Jenshan Lin, Ribhu Sharma, Mark E Law, Peter E. Raad, Pavel L. Komarov, David J Smith, Akito Kuramata, Stephen J. Pearton</i>	
<b>OPTIMIZATION OF DOPING PROFILES IN INSULATED-GATE BIPOLAR-TRANSISTORS USING A LARGE SCALE OPTIMIZATION TECHNIQUE</b> .....	1893
<i>Chen Zhu, Petru Andrei</i>	
<b>(INVITED) SELECTED ISSUES FOR SIC MOSFET RELIABILITY</b> .....	1895
<i>Ron Green, Daniel Habersat, Aivars Lelis</i>	
<b>(INVITED) RELIABILITY CONSIDERATIONS FOR AL-RICH ALUMINUM GALLIUM NITRIDE POWER SWITCHING TRANSISTORS</b> .....	1896
<i>Albert G. Baca, Brianna Klein, Chad A Stephenson, Andrew M. Armstrong, Andrew A. Allerman, Erica A. Douglas, Torben R. Fortune, Albert Colon</i>	
<b>(INVITED) AG SINTER JOINING TECHNOLOGY FOR DIFFERENT METAL INTERFACE (AU, AG, NI, CU, AL) IN WIDE BAND GAP POWER MODULES</b> .....	1898
<i>Chuantong Chen, Katsuaki Saganuma</i>	
<b>A NUMERICAL STUDY OF THE V/III RATIO IN THE MOCVD PROCESS WITH PULSED INJECTION METHOD</b> .....	1900
<i>Jyh-Chen Chen, Wei-Jie Lin, Chieh Hu</i>	
<b>ANALYTICAL MODEL FOR THE BREAKDOWN VOLTAGE IN PUNCH-THROUGH IGBTs</b> .....	1901
<i>Chen Zhu, Petru Andrei</i>	

<b>SAFE OPERATION OF MAXIMUM TEMPERATURE FOR PLANAR GATE SIC MOSFET UNDER AVALANCHE STRESS SHOCK</b> .....	1902
<i>Xuan Li, Zijie Hou, Xing Tong, Xiaochuan Deng, Junming Jiang, Yourun Zhang, Bo Zhang</i>	
<b>THE THERMAL CHARACTERISTICS OF ALGAN/GAN HEMTS WITH DIFFERENT CHANNEL WIDTH</b> .....	1903
<i>Wei-Chun Lin, Yi Nan Zhong, Ming-Yan Tsai, Wei-Cheng Ho, Yi-Hsuan Yu, Yue-Ming Hsin</i>	
<b>POST-ANNEALING ON THE OHMIC CONTACT AND GATE RECESS SIMULTANEOUSLY IN ALGAN/GAN MIS-HEMT</b> .....	1905
<i>Pei-Chien Shen, Wei-Cheng Ho, Ming-Yan Tsai, Yue-Ming Hsin</i>	
<b>(INVITED) SELECTIVE AREA GROWTH OF P-TYPE GAN FOR GALLIUM NITRIDE POWER SWITCHING TRANSISTORS</b> .....	1907
<i>Andrew A. Allerman, Andrew M. Armstrong, Gregory W. Pickrell, Mary H. Crawford, Albert Alec Talin, Francois Leonard, Kimberly C. Ceilo, Daniel Feezell, Andrew Aragon, Robert J. Kaplar</i>	
<b>(INVITED) ADVANCES IN ION IMPLANTATION OF GAN AND ALN</b> .....	1909
<i>Ramon Collazo, M. Hayden Breckenridge, Andrew Klump, Yan Guan, Qiang Guo, Ji Kim, Shun Washiyama, Biplab Sarkar, Pramod Reddy, Ronny Kirste, Will Mecouch, Seiji Mita, James Tweedie, Michal Bockowski, Zlatko Sitar</i>	
<b>RECENT PROGRESS OF GAN-BASED VERTICAL DEVICES</b> .....	1911
<i>Kazuki Nomoto, Zongyang Hu, Wenshen Li, Mingda Zhu, Kevin Lee, Debdeep Jena, Huili Grace Xing</i>	
<b>(INVITED) EFFECTS OF ANNEALING CAPPED (0001) ORIENTED GAN SAMPLES</b> .....	1914
<i>Kenneth A. Jones</i>	
<b>(INVITED) PERFORMANCE EVALUATION OF III-N BIPOLAR SWITCHES GROWN ON GAN SUBSTRATES</b> .....	1915
<i>Shyh-Chiang Shen, Chuan-Wei Tsou, Mi-Hee Ji, Marzieh Noodeh, Edward Letts, Daryl Key, Tadao Hashimoto, Theeradetch Detchphrom, Russell D Dupuis</i>	
<b>(INVITED) BASIC AMMONOTHERMAL GROWTH OF BULK GAN SINGLE CRYSTAL USING SODIUM MINERALIZERS</b> .....	1916
<i>Young Kuk Lee</i>	
<b>RADIATION-INDUCED DC PARAMETRIC DEGRADATION OF ENHANCEMENT MODE GAN-ON-(111)SILICON HIGH-ELECTRON-MOBILITY TRANSISTORS</b> .....	1917
<i>Yizhou Lu, Aristos Christou</i>	
<b>(INVITED) RECENT PROGRESS IN 4H-SIC CVD GROWTH FOR HIGH-VOLTAGE POWER DEVICES</b> .....	1919
<i>Hidekazu Tsuchida, Isaho Kamata, Norihiro Hoshino, Koichi Murata, Tetsuya Miyazawa</i>	
<b>(INVITED) UNIFIED UNDERSTANDING OF THE SHOCKLEY STACKING FAULT FORMATION IN 4H-SIC CRYSTALS UNDER THERMAL EQUILIBRIUM AND NON-THERMAL EQUILIBRIUM CONDITIONS BASED ON THE QUANTUM WELL ACTION CONCEPT</b> .....	1921
<i>Noboru Ohtani</i>	
<b>(INVITED) DEVELOPMENT OF SIC SCHOTTKY-PN DIODE WITH LOW ON RESISTANCE AND HIGH BLOCKING VOLTAGE</b> .....	1922
<i>Kazutoshi Kojima, Hajime Okumura</i>	
<b>(INVITED) MOCVD-GROWN Ga<sub>2</sub>O<sub>3</sub> FIELD EFFECT TRANSISTORS ON SAPPHIRE</b> .....	1924
<i>Manijeh Razeghi, Ji-Hyeon Park, Ryan McClinton</i>	
<b>(INVITED) ELECTRICAL PROPERTIES OF (100) β-Ga<sub>2</sub>O<sub>3</sub> SCHOTTKY DIODES WITH FOUR DIFFERENT METALS</b> .....	1926
<i>Kunyao Jiang, Luke A. M. Lyle, Elizabeth Favela, Diamond Moody, Tianxiang Lin, Kalyan K. Das, Andreas Popp, Zbigniew Galazka, Guenter Wagner, Lisa M. Porter</i>	
<b>FIELD PLATING FOR IMPROVED Ga<sub>2</sub>O<sub>3</sub> SCHOTTKY RECTIFIER PERFORMANCE</b> .....	1927
<i>Patrick H Carey, Jiancheng Yang, Ribhu Sharma, Fan Ren, Stephen J. Pearton, Mark E Law</i>	
<b>BAND OFFSETS OF INSULATING &amp; SEMICONDUCTING OXIDES ON (AL<sub>x</sub>GA<sub>1-x</sub>)O<sub>3</sub></b> .....	1928
<i>Chaker Fares, Max Kneiss, Holger Von Wenckstern, Marius Grundmann, Marko J Tadjer, Fan Ren, David Hays, Brent P Gila, Stephen J. Pearton</i>	
<b>(INVITED) AL<sup>+</sup> ION IMPLANTED 4H-SIC: ELECTRICAL ACTIVATION VERSUS ANNEALING TIME</b> .....	1929
<i>Roberta Nipoti, Antonella Parisini</i>	
<b>(INVITED) INFLUENCE OF WAFERING, CMP AND SUBSURFACE DAMAGE ON EPITAXIAL DEFECTS AND SURFACE QUALITY IN SIC</b> .....	1931
<i>Hrishikesh Das, Swapna Sunkari, Joshua Justice</i>	
<b>(INVITED) NANOSTRUCTURES AND CRYSTAL DEFECTS IN THICK GAN AND SIC EPITAXIAL LAYERS FOR POWER ELECTRONIC SWITCHES</b> .....	1932
<i>Aristos Christou</i>	
<b>HIGH-QUALITY GAN FILMS GROWN ON ALN/SAPPHIRES FOR POWER ELECTRONIC DEVICE APPLICATIONS</b> .....	1934
<i>Xiajia Feng, Yu Yun</i>	
<b>GROWTH OF ALGAN ON GAN/ALN/SAPPHIRE SUBSTRATES FOR POWER ELECTRONIC APPLICATION</b> .....	1935
<i>Kheam Bun</i>	
<b>(INVITED) DEFECTS AND DEVELOPMENT OF HIGH POWER VERTICAL GAN BASED STRUCTURES</b> .....	1936
<i>Mark S. Goorsky, Tingyu Bai, Michael Liao, Yekan Steven Wang, Kenny Huynh, Peter Hsuan Ming Yu</i>	
<b>ANALYSIS OF BASAL PLANE DISLOCATION DYNAMICS IN PVT-GROWN 4H-SIC CRYSTALS DURING HIGH TEMPERATURE TREATMENT</b> .....	1937
<i>Balaji Raghothamachar, Yu Yang, Jianqiu Guo, Michael Dudley</i>	
<b>RADIATION EFFECTS IN DIAMOND PHEMTS</b> .....	1938
<i>Aayush Thapa, David Shahin, Aris Christou</i>	

<b>(INVITED) X-RAY METROLOGY OF ALN SINGLE CRYSTAL SUBSTRATES</b> .....	1939
<i>Rafael Dalmau, Jeffrey Britt, Baxter Moody, Raoul Schlessler</i>	
<b>RELATIONSHIP BETWEEN BASAL PLANE DISLOCATION AND LOCAL BASAL PLANE BENDING IN PVT-GROWN 4H-SiC CRYSTALS</b> .....	1941
<i>Tuerxun Ailihumaer, Balaji Raghothamachar, Michael Dudley</i>	
<b>CATALYST PARTICLE SCALE ANALYSIS BY TRANSPORT AND REACTION SIMULATION ON 3D NANO-SCALE IMAGES FOR PEMFC</b> .....	1942
<i>Shohei Ogawa, Elliot Padgett, David A. Muller, Anusorn Kongkanand, Shawn Litster</i>	
<b>MOLECULAR DYNAMICS STUDY OF OXYGEN DIFFUSIVITY IN CATALYST LAYER</b> .....	1944
<i>Masataka Nakauchi, Takuya Mabuchi, Yuta Yoshimoto, Toshihiro Kaneko, Ikuya Kinefuchi, Hideki Takeuchi, Takashi Tokumasu</i>	
<b>PREDICTION OF LOCAL WATER DISTRIBUTIONS AND PERFORMANCE OF PEMFC USING PORE NETWORK MODELING</b> .....	1945
<i>Shahriar Alam, Ezequiel Medici, Kazuya Tajiri, Jeffrey S Allen</i>	
<b>NUMERICAL STUDY OF MASS TRANSPORT AND ELECTROCHEMICAL KINETICS INSIDE POROUS STRUCTURE LAYERS OF PEMFC USING DIRECT SIMULATION APPROACH</b> .....	1946
<i>Pongsarun Satjaritanun, Sirivatch Shimpalee, John W. Weidner, Shinichi Hirano, Iryna V. Zenyuk</i>	
<b>MODELING PROTON EXCHANGE MEMBRANE FUEL CELL CATHODE CATALYST LAYERS WITH THE LATTICE-BOLTZMANN-METHOD FRAMEWORK</b> .....	1948
<i>Jonathan B Grunewald, Navneet Goswami, Partha P. Mukherjee, Thomas F. Fuller</i>	
<b>(INVITED) MODELING MECHANICAL BEHAVIORS AND LIFETIME OF A POLYMER ELECTROLYTE MEMBRANE IN FUEL CELL DYNAMIC OPERATIONS</b> .....	1950
<i>Morshed Hasan, Alireza Goshtasbi, Jixin Chen, Michael H Santare, Tulga Ersal</i>	
<b>MULTIPHYSICS SIMULATION OF FUEL CELL CATALYST LAYER PERFORMANCE WITH PORE-SCALE RESOLUTION FROM IONOMER DOMAINS TO INTER-AGGLOMERATE PORES</b> .....	1951
<i>Mohammad Amin Sadeghi, Jake Barralet, Tomislav Friscic, Jeff T. Gostick</i>	
<b>COMBINING PORE-SCALE LIQUID WATER VISUALIZATION AND MODELING TO UNDERSTAND WATER TRANSPORT IN OPERATING FUEL CELLS</b> .....	1953
<i>Pranay Shrestha, Chunghyuk Lee, Kieran F. Fahy, Manojkumar Balakrishnan, Nan Ge, Aimy Bazylak</i>	
<b>A MODEL BASED ANALYSIS OF EVAPORATIVE COOLING FOR POLYMER ELECTROLYTE FUEL CELLS</b> .....	1955
<i>Michael Sriednig, Magali Cochet, Pierre Boillat, Thomas J. Schmidt, Felix N. Buchi</i>	
<b>MULTI-PHYSICS SIMULATION FRAMEWORK OF CARBON SUPPORT CORROSION DURING DYNAMIC STARTUP AND SHUTDOWN: OPTIMIZATION AND MITIGATION STRATEGIES</b> .....	1958
<i>Bolahaga Randrianarizafy, Pascal Schott, Mathias Gerard, Yann Bultel</i>	
<b>MACROSCOPIC MODELING OF LIQUID WATER IN CHANNEL AND GDL BASED ON DETAILED TWO-PHASE CFD</b> .....	1960
<i>Shoichi Tanaka, Ryo Takayama, Tsutomu Takayama, Haruki Motegi, Takayuki Tsukamoto, Masakazu Yoneda</i>	
<b>USING MULTISCALE CO-SIMULATION MODELING TECHNIQUE TO UNDERSTAND THE TRANSPORTS INTERACTION INSIDE GAS CHANNEL, GDL, MPL, AND CL DURING PEMFC OPERATIONS</b> .....	1961
<i>Sirivatch Shimpalee, Pongsarun Satjaritanun, Shinichi Hirano, Iryna V. Zenyuk, John W. Weidner</i>	
<b>PERCOLATION BEHAVIOR IN CATALYTIC POROUS MATERIAL</b> .....	1963
<i>Karar Takleef Alofari, Ezequiel Medici, Kazuya Tajiri, Jeffrey S Allen</i>	
<b>OPTIMAL EXPERIMENTAL DESIGN FOR PARAMETER IDENTIFICATION OF PEM FUEL CELL MODELS</b> .....	1964
<i>Alireza Goshtasbi, Jixin Chen, James Waldecker, Shinichi Hirano, Tulga Ersal</i>	
<b>PERFORATION OPTIMIZATION OF DMFC ANODE POROUS MEDIUM</b> .....	1966
<i>Abdullah Alrashidi, Hongtan Liu, Xu Zhang</i>	
<b>FORMULATING REDUCED-ORDER MODELS TO INCLUDE MESOSCALE METHODS IN FULL PROTON EXCHANGE MEMBRANE FUEL CELL MODELS</b> .....	1967
<i>Jonathan B Grunewald, Aashutosh N Mistry, Ankit Verma, Navneet Goswami, Partha P. Mukherjee, Thomas F. Fuller</i>	
<b>MASS-TRANSPORT RESISTANCES OF ACID AND ALKALINE IONOMER LAYERS: A MICROELECTRODE STUDY PART 1 - MICROELECTRODE DEVELOPMENT</b> .....	1969
<i>John G. Petrovick, Douglas I. Kushner, Meron Tesfaye, Nemanja Danilovic, Clayton J. Radke, Adam Z. Weber</i>	
<b>WATER TRANSPORT IN PEFC COLD STARTUP WITH TEMPERATURE RISE SIMULATING ADIABATIC CONDITION</b> .....	1970
<i>Ken Hirai, Yutaka Tabe</i>	
<b>DEVELOPMENT OF GRAPHENE-BASED PEFC CATALYST LAYER FOR REDUCTION OF OXYGEN TRANSPORT RESISTANCE</b> .....	1973
<i>Keisuke Yada, Yutaka Tabe</i>	
<b>DEVELOPMENT OF HYDROPHOBIC COATING FOR GAS DIFFUSION MEDIA IN PEM-BASED ELECTROCHEMICAL HYDROGEN PUMP</b> .....	1975
<i>Myoungseok Lee, Xinyu Huang</i>	
<b>A STUDY ON THE INFLUENCE OF IONIZATION METHOD ON SINGLE CELL INITIAL PERFORMANCE: ELECTROSPRAY METHOD</b> .....	1976
<i>Seonghun Cho, Kayoko Tamoto, Katsuyoshi Kakinuma, Makoto Uchida</i>	

<b>BETWEEN PHYSICAL COMPLEXITY AND SIMPLICITY: NAILING DOWN THE CATHODIC ACTIVATION OVERPOTENTIAL IN A SMALL-SCALE PEM FUEL CELL</b> .....	1978
<i>Christophe Gerling, Matthias Hanauer, Ulrich Berner, K. Andreas Friedrich</i>	
<b>COMPARING DIFFERENT CROSS-SECTION CUTTING METHODS FOR SEM ANALYSIS OF MEMBRANE-ELECTRODES ASSEMBLIES</b> .....	1979
<i>Susana Merino, Carlos Novillo, Gonzalo De Diego, Julio J Conde, Maria Antonia Folgado, Paloma Ferreira-Aparicio, Antonio M Chaparro</i>	
<b>MEMBRANE ELECTRODE ASSEMBLY FABRICATION METHOD EFFECTS ON CATALYST LAYER STRUCTURE, INTERFACES, AND PERFORMANCE</b> .....	1981
<i>Samantha Medina, Min Wang, Timothy Van Cleve, Scott A Mauger, Michael Ulsh, K C Neyerlin, Svitlana Pylypenko</i>	
<b>CONSTRAINED OPTIMIZATION OF PROTON EXCHANGE MEMBRANE FUEL CELLS USING A FINITE ELEMENT APPROACH</b> .....	1983
<i>James Lamb, Petru Andrei</i>	
<b>(INVITED) A NEW VIEW OF FUEL CELL ELECTROCATALYSTS THROUGH MULTIMODAL ANALYTICAL ELECTRON MICROSCOPY</b> .....	1984
<i>David A. Cullen, Shaohong Cao, Miaofang Chi, Karren L. More</i>	
<b>MICROSCOPIC ANALYSIS OF PEMFC CATALYST LAYERS</b> .....	1985
<i>Kavitha Chintam, Karren L. More, Kimberly Shawn Reeves, Natalie Macauley, Daniel E Hooks, Rod L. Borup</i>	
<b>ADVANCED ELECTRON MICROSCOPY METHODS TO EVALUATE THIN IONOMER FILMS IN PEM FUEL CELL CATALYST LAYERS</b> .....	1987
<i>Karren L. More, David A. Cullen</i>	
<b>DEVELOPMENT OF OPERANDO CONFOCAL MICROPROBE X-RAY FLUORESCENCE TECHNIQUES TO MEASURE CATION TRANSPORT IN PEM FUEL CELLS</b> .....	1988
<i>Andrew M. Baker, Yun Cai, Joseph M. Ziegelbauer, David Agyeman-Budu, Arthur Woll, Anusorn Kongkanand, Rangachary Mukundan, Rod L. Borup</i>	
<b>UNDERSTANDING THE DEGRADATION OF PT ELECTROCATALYSTS IN PROTON EXCHANGE MEMBRANE FUEL CELLS BY 3D IDENTICAL LOCATION STEM</b> .....	1990
<i>Kang Yu, Chenzhao Li, Jian Xie, Paulo Jorge Ferreira</i>	
<b>EVALUATION OF DRY-WET TRANSITION IN PEFC UNDER LOAD CHANGES BASED ON LASER SPECTROSCOPY USING FIBER-OPTIC PROBE</b> .....	1992
<i>Kosuke Nishida, Ryoga Nakauchi, Yuma Tabata, Toyofumi Umekawa, Masahiro Kawasaki</i>	
<b>ADSORPTION BEHAVIOR OF PERFLUOROSULFONIC ACID IONOMERS ON A PT(111) SURFACE OBSERVED BY ATOMIC FORCE MICROSCOPY</b> .....	1994
<i>Ruttala Devivaraprasad, Takuya Masuda</i>	
<b>IMPROVED WATER MANAGEMENT OF ELECTROSPUN NANOFIBER MEMBRANE ELECTRODE ASSEMBLIES AT HIGH CURRENT DENSITIES MEASURED IN OPERANDO USING NEUTRON RADIOGRAPHY</b> .....	1995
<i>Kavitha Chintam, Krysta Waldrop, Andrew M. Baker, Michael J Workman, Rangachary Mukundan, Jacob M Lamanna, Daniel S Hussey, David L Jacobson, Cenk Gumeci, Nilesh Dale, John James Slack, Rod L. Borup, Peter N. Pintauro</i>	
<b>IMPACT OF POROSITY GRADIENTS WITHIN CATALYST LAYER AND MPL OF A PEM FUEL CELL ON THE WATER MANAGEMENT AND PERFORMANCE: A NEUTRON RADIOGRAPHY INVESTIGATION</b> .....	1997
<i>Dena Kartouzian, Arezou Mohseninia, Henning Markotter, Philipp Langner, Joachim Scholta, Ingo Manke</i>	
<b>HIGH RESOLUTION NEUTRON IMAGING DEVELOPMENTS FOR PEMFC, AEMFC, AND ELECTROLYZERS</b> .....	1999
<i>Daniel S Hussey, Jacob M Lamanna, Elias Baltic, David L Jacobson</i>	
<b>(INVITED) EXPLORING SUB-SECOND AND SUB-MICRON X-RAY TOMOGRAPHIC IMAGING OF LIQUID WATER IN PEFC GAS DIFFUSION LAYERS</b> .....	2000
<i>Hong Xu, Federica Marone, Shinya Nagashima, Hai Nguyen, Keisuke Kishita, Felix N. Buchi, Jens Eller</i>	
<b>CORRELATIVE X-RAY TOMOGRAPHIC IMAGING OF CATALYST LAYER DEGRADATION IN FUEL CELLS</b> .....	2001
<i>Robin T White, Dilip Ramani, Sebastian H Eberhardt, Marina Najm, Francesco P Orfino, Monica Dutta, Erik Kjeang</i>	
<b>UNDERSTANDING PYROLYSIS OF PGM-FREE ELECTROCATALYSTS WITH X-RAY COMPUTED TOMOGRAPHY</b> .....	2004
<i>Ying Huang, Andrew Shun, Morteza Rezaei Talarposhti, Tristan Asset, Dilworth Y. Parkinson, Harold Barnard, Plamen Atanassov, Iryna V. Zenyuk</i>	
<b>INFLUENCE OF PORE SIZE DISTRIBUTION ON OPERANDO GAS DIFFUSION LAYER LIQUID SATURATION</b> .....	2006
<i>Hong Xu, Minna Buhner, Federica Marone, Thomas J. Schmidt, Felix N. Buchi, Jens Eller</i>	
<b>INSIGHTS INTO THE EVOLUTION OF CHEMICAL DEGRADATION IN FUEL CELL MEMBRANES USING 4D IN SITU VISUALIZATION</b> .....	2008
<i>Dilip Ramani, Yadvinder Singh, Robin T White, Tylynn Haddow, Francesco P Orfino, Monica Dutta, Erik Kjeang</i>	
<b>IMPROVED METHODS FOR SIMULTANEOUS NEUTRON AND X-RAY TOMOGRAPHY OF OPERATING FUEL CELLS</b> .....	2010
<i>Jacob M Lamanna, Daniel S Hussey, Elias Baltic, David L Jacobson</i>	
<b>EFFECT OF PEFC RIB/CHANNEL WIDTH ON LIQUID WATER ACCUMULATION AND DISCHARGE BY IN-SITU X-RAY IMAGING</b> .....	2011
<i>Takahiro Komiyama, Takashi Sasabe, Katsuyuki Kawamura, Hiroshi Naito, Shuichiro Hirai</i>	

<b>ANALYSIS OF PEFC GAS TRANSPORT BY COMBINATION OF X-RAY RADIOGRAPHY AND NUMERICAL SIMULATION</b> .....	2013
<i>Hiroshi Naito, Katsuyuki Kawamura, Katsunori Sakai, Takashi Sasabe, Shuichiro Hirai</i>	
<b>VISUALIZATION ANALYSIS OF INTERRELATIONSHIP BETWEEN TEMPERATURE PROFILE AND WATER DISTRIBUTION INSIDE THE PEFC</b> .....	2015
<i>Kaito Shigemasa, Hayate Sato, Yota Otsuki, Masato Kurosu, Takuto Araki</i>	
<b>(INVITED) SMALL ANGLE SCATTERING AS UNIQUE PROBE TO QUANTIFY WATER DISTRIBUTION AND IONOMER STRUCTURE IN OPERATING PEMFC</b> .....	2017
<i>Arnaud Morin, Sandrine Lyonnard, Sylvie Escribano, Gerard Gebel, Jongmin Lee, Fabrice Micoud, Fabrice Micoud</i>	
<b>QUANTIFYING WATER IN PEM FUEL CELL CATALYST LAYER WITH SMALL ANGLE NEUTRON SCATTERING</b> .....	2020
<i>Jongmin Lee, Arnaud Morin, Sylvie Escribano, Fabrice Micoud, Gerard Gebel, Sandrine Lyonnard, Lionel Porcar</i>	
<b>EFFECT OF CATHODE CATALYST LAYER STRUCTURE ON THE PERFORMANCE OF PEFC</b> .....	2022
<i>Dalia Heggo, Yulei Ma, Beste Balci, Miho Kageyama, Kazuhiro Yamaguchi, Motoaki Kawase</i>	
<b>INVESTIGATION OF GAS TRANSPORT PROPERTIES OF PEMFC CATALYST LAYERS BY USING A MICROFLUIDIC DEVICE</b> .....	2024
<i>Takahiro Suzuki, Yasuhiro Nakata, Shohji Tsushima</i>	
<b>UNDERSTANDING POLYMER/PARTICLE INTERACTIONS IN FUEL-CELL INKS USING MODEL SYSTEMS</b> .....	2025
<i>Sarah A. Berlinger, Bryan D. McCloskey, Adam Z. Weber</i>	
<b>MECHANISTIC UNDERSTANDING OF THE ROLE OF IONOMER IN THE PEM FUEL CELL CATALYST LAYER</b> .....	2027
<i>Navneet Goswami, Aashutosh N Mistry, Ankit Verma, Jonathan B Grunewald, Thomas F. Fuller, Partha P. Mukherjee</i>	
<b>ANALYSIS OF PEMFC ELECTRODE STRUCTURE - BRIDGING THE MESOSCALE GAP</b> .....	2028
<i>Michael J Workman, J. Beau W. Webber, Mike L. Perry, Robert M. Darling, Karren L. More, Rangachary Mukundan, Rod L. Borup</i>	
<b>CORRELATING CATALYST INK RHEOLOGY WITH FUEL CELL PERFORMANCE AND DURABILITY</b> .....	2031
<i>Fan Yang, Magali Spinetta, Sichen Zhong, Hui Xu</i>	
<b>CATHODE CATALYST LAYER DESIGN WITH GRADED POROUS STRUCTURE FOR PROTON EXCHANGE MEMBRANE FUEL CELLS</b> .....	2032
<i>Yannick Garsany, Robert W. Atkinson, Keith Bethune, Jean St-Pierre, Benjamin D. Gould, Karen Swider-Lyons</i>	
<b>RELATION BETWEEN DEGRADATION REACTION AND MIXING AT FUEL CELL CATALYST INK FABRICATION PROCESS</b> .....	2034
<i>Suguru Uemura, Takashi Sasabe, Katsunori Sakai, Kazuhiko Shinohara, Shuichiro Hirai</i>	
<b>ENGINEERING PGM-FREE ELECTRODES TO FACILITATE IMPROVED PERFORMANCE FOR THE OXYGEN REDUCTION REACTION IN POLYMER ELECTROLYTE FUEL CELLS</b> .....	2036
<i>Luigi Osmieri, Guanxiang Wang, K C Neyerlin</i>	
<b>LOW COST GAS DIFFUSION LAYER MATERIALS AND TREATMENTS FOR DURABLE HIGH-PERFORMANCE PEM FUEL CELLS</b> .....	2038
<i>Daniel Philip Leonard, Rod L. Borup</i>	
<b>STRUCTURING GDL'S FOR IMPROVED WATER MANAGEMENT</b> .....	2039
<i>Christoph Csoklich, Thomas J. Schmidt, Felix N. Buchi</i>	
<b>PAIRING ASYMMETRIC GAS DIFFUSION MEDIA FOR HIGH-POWER FUEL CELL OPERATION</b> .....	2040
<i>Robert W. Atkinson, Yannick Garsany, Keith Bethune, Jean St-Pierre, Benjamin D. Gould, Karen Swider-Lyons</i>	
<b>WATER TRANSPORT IN GAS DIFFUSION LAYER OF PEFC WITH WETTABILITY DISTRIBUTION IN THICKNESS DIRECTION</b> .....	2041
<i>Satoshi Sakaida, Kotaro Tanaka, Mitsuru Konno, Yutaka Tabe</i>	
<b>CONTROL OF THE BALANCE BETWEEN VAPOR AND HEAT TRANSFER FOR THE REDUCTION OF OXYGEN TRANSPORT RESISTANCE IN HIGH CURRENT DENSITY PEMFC OPERATION</b> .....	2043
<i>Yuki Kitami, Yutaka Tabe, Takemi Chikahisa</i>	
<b>THE INFLUENCE OF ARGON, AIR AND HYDROGEN GAS ON THERMAL CONDUCTIVITY OF GAS DIFFUSION LAYERS AND TEMPERATURE GRADIENTS IN PEMFCs</b> .....	2045
<i>Robert Bock, Bjornar Hamre, Morten Andreas Onsrud, Havard Karoliussen, Frode Seland, Odne Stokke Burheim</i>	
<b>WATER TRANSPORT IN THE GAS DIFFUSION LAYER OF PEM FUEL CELLS: AN ENERGY APPROACH</b> .....	2047
<i>Alexandru Herescu</i>	
<b>(OLIN PALLADIUM AWARD OF THE ELECTROCHEMICAL SOCIETY) POLYMER ELECTROLYTE FUEL CELLS: RECOGNITION OF A FIELD OF ELECTROCHEMISTRY FOR TECHNICAL CONTRIBUTIONS MADE BY OUTSTANDING TECHNICAL TEAMS</b> .....	2048
<i>Shimshon Gottesfeld</i>	
<b>(INVITED) QUANTIFYING THE DISTRIBUTION OF CATALYST SUPPORT CARBON CORROSION</b> .....	2050
<i>Joseph D. Fairweather, Paul Taichiang Yu, Jingxin Zhang, Balsu Lakshmanan</i>	
<b>USE AND MISUSE OF ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY (EIS) IN FUEL CELL RESEARCH</b> .....	2051
<i>Pierre Boillat, Felix N. Buchi, Lorenz Gubler, Thomas J. Schmidt</i>	
<b>MODELING WATER UPTAKE AND PT UTILIZATION IN HIGH SURFACE AREA CARBON</b> .....	2053
<i>Anamika Chowdhury, Robert M. Darling, Clayton J. Radke, Adam Z. Weber</i>	

<b>UNDERSTANDING CARBON CORROSION DAMAGE TO FUEL CELL ELECTRODES: TOWARDS REVERSAL INVINCIBLE</b> .....	2054
<i>Leiming Hu, Bo Ki Hong, Jong-Gil Oh, Shawn Litster</i>	
<b>OPERANDO AND EX-SITU INVESTIGATION OF PEMFC DEGRADATION</b> .....	2056
<i>Pawel Gazdzicki, Jens Mittel, Daniel G Sanchez, Pia Aßmann, Joana Sousa, Tobias Morawietz, Renate Hiesgen, Frank Haußler, Jurgen Hunger, Gunther Schlumberger, K. Andreas Friedrich</i>	
<b>IMPROVING THE LONG-TERM OPERATIONAL STABILITY (&gt;1000H) OF AEMFCs BY UNDERSTANDING WATER DYNAMICS THROUGH IN-SITU NEUTRON IMAGING AND X-RAY COMPUTED TOMOGRAPHY</b> .....	2059
<i>Xiong Peng, Andrew Shum, Dinesh C Sabarirajan, Travis J Omasta, Benjamin Ng, Jacob M Lamanna, Daniel S Hussey, John R. Varcoe, Iryna V. Zenyuk, William E. Mustain</i>	
<b>CO AND CE CATION IMPACT ON PEM FUEL CELL PERFORMANCE</b> .....	2061
<i>Yun Cai, Wenbin Gu, Anusorn Kongkanand</i>	
<b>OVERPOTENTIAL ANALYSIS OF LOW LOADING Pt/C ELECTRODES AT LOW HUMIDITY CONDITIONS</b> .....	2062
<i>Ryan J. Ouimet, Haoran Yu, Gholamreza Mirshekari, Zhiqiao Zeng, Leonard J. Bonville, Radenka Maric</i>	
<b>INCREASE IN OXYGEN TRANSPORT RESISTANCE CAUSED BY DEGRADATION IN THE POROUS LAYERS IN A PROTON EXCHANGE MEMBRANE FUEL CELL</b> .....	2064
<i>Xu Zhang, Hongtan Liu, Xuyang Zhang, Abdullah Alrashidi</i>	
<b>(INVITED) STRUCTURAL CHARACTERIZATION OF POLYMER ELECTROLYTE FUEL CELL ELECTRODES USING NANO-SCALE SYNCHROTRON X-RAY COMPUTED TOMOGRAPHY</b> .....	2065
<i>Firat Cetinbas, Vincent De Andrade, Rajesh Ahluwalia, Deborah J. Myers</i>	
<b>GENERAL PROCEDURE FOR 3-DIMENSIONAL NANOSTRUCTURE ANALYSIS OF PEFC ELECTROCATALYST LAYERS</b> .....	2066
<i>Hirokichi Manabe, Yoshiaki Nakazato, Makito Okumura, Zhiyun Noda, Junko Matsuda, Akari Hayashi, Kazunari Sasaki</i>	
<b>ELECTROCHEMICAL AND RHEOLOGICAL INVESTIGATIONS OF CATALYST-SOLVENT-POLYMER INK FORMULATIONS FOR ELECTROSPUN FUEL CELL ELECTRODE STRUCTURES</b> .....	2069
<i>Sadia Kabir, Sunil Khadavalli, Timothy Van Cleve, Samantha Medina, Svitlana Pylpyenko, Nancy N. Kariuki, Debbie Myers, Karren L. More, Scott A. Mauger, Michael Ulsh, K C Neyerlin</i>	
<b>TAILORED CATALYST LAYER AND MICRO-POROUS LAYER POROSITY AND THE EFFECT ON THE PERFORMANCE AND WATER CONTENT IN PEMFC</b> .....	2071
<i>Arezou Mohseninia, Dena Kartouzian, Florian Wilhelm, Henning Markotter, Joachim Scholta, Ingo Manke</i>	
<b>IN-PLANE DISTRIBUTION OF WATER INSIDE NAFION THIN FILM ANALYZED BY NEUTRON REFLECTIVITY AT TEMPERATURE OF 80 °C AND RELATIVE HUMIDITY OF 30-80%</b> .....	2073
<i>Tepei Kawamoto, Aoki Makoto, Taro Kimura, Takako Mizusawa, Norifumi L. Yamada, Junpei Miyake, Kenji Miyatake, Junji Inukai</i>	
<b>A COMPARATIVE STUDY OF ELECTROSPRAY AND AIRBRUSHING PROCESSES FOR DEPOSITION OF CATALYST LAYERS</b> .....	2075
<i>Antonio M. Chaparro, Julio J Conde, Alba Fernandez-Sotillo, Maria Antonia Folgado, Paloma Ferreira-Aparicio</i>	
<b>ANALYSIS OF MASS TRANSPORT PHENOMENA IN PEMFC CATHODE ELECTRODE: EFFECTS OF OPERATING CONDITIONS</b> .....	2077
<i>Tatyana V. Reshetenko, Bonnie L Benn</i>	
<b>LIMITING CURRENT MEASUREMENTS OF OXYGEN TRANSPORT RESISTANCE IN PLATINUM GROUP METAL-FREE FUEL CELL CATHODES</b> .....	2080
<i>Lisa Langhorst, Aman Uddin, Hanguang Zhang, Gang Wu, Shawn Litster</i>	
<b>THE INFLUENCE OF ACIDITY, WATER CONTENT AND TEMPERATURE OF IONIC LIQUIDS ON THE DOUBLE LAYER PROPERTIES OF Pt/PIL INTERFACE</b> .....	2081
<i>Yanpeng Suo, Klaus Wippermann, Christian Rodenbacher, Carsten Korte</i>	
<b>OPTICAL PROPERTIES AND SWELLING OF THIN FILM PERFLUORINATED SULFONIC-ACID IONOMER</b> .....	2083
<i>Shahab Bayani Ahangar, Kishan Bellur, Ezequiel Medici, Kazuya Tajiri, Jeffrey S Allen, Chang Kyoung Choi</i>	
<b>A HIGH-POWER NON-ENZYMATIC GLUCOSE BIOFUEL CELL BASED ON A NANO/MICRO HYBRID-STRUCTURED GOLD ANODE</b> .....	2084
<i>Tien-Fu Chu, Gou-Jen Wang</i>	
<b>MICRO DMFC FOR PORTABLE APPLICATIONS</b> .....	2085
<i>Torsten Lund-Olesen, Kasper Vestentoft, Jacob Lindner Bonde, Oskar Tynelius, Jan Harry Hales, Leif Hojstlet Christensen</i>	
<b>EFFECT OF WATER CONDUCTIVITY ON PROTON EXCHANGE MEMBRANE (PEM) CATALYST DURABILITY USING THERMAL DEGRADATION RESISTANT POLYMER MEMBRANES IN COMBAT APPLICATIONS</b> .....	2087
<i>Theodore Burye</i>	
<b>NEW HYDROGEN-PEMFC PORTABLE SYSTEM AND APPLICATIONS</b> .....	2089
<i>Paloma Ferreira-Aparicio, Antonio Molinero, Juan Carlos Oller, Jose Miguel Barcala, Santiago Santamaria, Jose Luis Serrano, Antonio M Chaparro</i>	
<b>TOWARDS A HIGH-PERFORMANCE DMFC MEMBRANE ELECTRODE ASSEMBLY USING IRON-DOPED METAL ORGANIC FRAMEWORK CATALYSTS ON THE CATHODE</b> .....	2091
<i>Mohamed Elfadil Abdelrahman, Daniel Velez, Hanguang Zhang, Gang Wu, Xianglin Li, Shawn Litster</i>	

<b>THE EFFECT OF CO<sub>2</sub> BUBBLE DISTRIBUTION ON POWER GENERATION PERFORMANCE OF A DIRECT FORMIC ACID FUEL CELL</b> .....	2092
<i>Konosuke Watanabe, Takuto Araki, Gen Inoue, Ryota Mochizuki, Takuya Tsujiguchi</i>	
<b>(INVITED) PERFORMANCE AND DURABILITY OF AUTOMOTIVE FUEL CELL STACKS AND SYSTEMS WITH LOW-LOADED D-PTCO/C CATHODE CATALYST IN MEMBRANE ELECTRODE ASSEMBLIES</b> .....	2094
<i>Rajesh Ahluwalia, Xiaohua Wang, Jui-Kun Peng, Srikanth Arisetty, Swami Kumaraguru, Nagappan Ramaswamy</i>	
<b>IMPACT OF SHUT-DOWN PROCEDURES ON PERFORMANCE RECOVERY OF PROTON EXCHANGE MEMBRANE FUEL CELLS</b> .....	2096
<i>Frano Barbir, Ivan Pivac</i>	
<b>SOFT SENSOR FOR REAL-TIME MONITORING OF AUTOMOTIVE PEM FUEL CELL SYSTEMS</b> .....	2097
<i>Alireza Goshtasbi, Benjamin Pence, Jixin Chen, James Waldecker, Shinichi Hirano, Tulga Ersal</i>	
<b>ELECTROCHEMICAL IMPEDANCE DIAGNOSIS OF ABNORMAL OPERATIONAL CONDITIONS FOR RELIABILITY OF POLYMER ELECTROLYTE FUEL CELLS IN MARINE POWER APPLICATION -SEA SALT CONTAMINATION-</b> .....	2099
<i>Hironori Nakajima, Tatsumi Kitahara, Kenta Dan</i>	
<b>NUMERICAL SIMULATION OF FULL-SCALE CELL AND STACK AT VERY HIGH CURRENT DENSITY: INFLUENCE OF HEAT AND LIQUID WATER SATURATION</b> .....	2100
<i>Takayuki Tsukamoto, Tsutomu Aoki, Hiroyuki Kanesaka, Haruki Motegi, Tsutomu Takayama, Ryo Takayama, Shoichi Tanaka, Masakazu Yoneda</i>	
<b>EFFECTIVE ELECTRODE EDGE PROTECTION FOR PROTON EXCHANGE MEMBRANE FUEL CELL DRIVE CYCLE OPERATION</b> .....	2103
<i>Min Wang, Grace Rome, Adam Phillips, Michael Ulsh, Guido Bender</i>	
<b>MULTI-PHYSICS HPC SIMULATIONS FOR PEM FUEL CELL WITH THE OPEN-SOURCE CODE TRUST</b> .....	2106
<i>Mathias Gerard, Pascal Schott, Benoit Mathieu, Van-Quang Dinh, Stephane Veys, Adrien Bruneton, Pierre Ledac</i>	
<b>ANALYSIS OF PEMFC STACK COMPONENTS DEGRADATION AT MULTIPLE SCALES: IMPACT OF THE AGEING MODES ON THE LOCAL LOSSES</b> .....	2108
<i>Sylvie Escribano, Fabrice Micoud, Laure Guetaz</i>	
<b>TOWARDS ELECTROCHEMICAL SYNTHESIS OF CEMENT - AN ELECTROLYZER-BASED PROCESS FOR DECARBONATING CaCO<sub>3</sub> WHILE PRODUCING USEFUL GAS STREAMS</b> .....	2110
<i>Leah Ellis, Andres F Badel, Miki Chiang, Richard Park, Yet-Ming Chiang</i>	
<b>UNITIZED REGENERATIVE FUEL CELLS IN CONSTANT GAS AND CONSTANT POLARITY MODES FOR PERFORMANCE OPTIMIZATION</b> .....	2112
<i>Yagya Narayan Regmi, Debbie Myers, Adam Z. Weber, Nemanja Danilovic</i>	
<b>EFFECT OF IONOMER SOLVENTS FOR PORE SIZE CONTROL OF IMIDAZOLIUM-BASE IONOMERS IN AEMFC</b> .....	2114
<i>Hyun Jin Park, So Young Lee, Hyoung-Juhn Kim, Young Moo Lee</i>	
<b>INVESTIGATION OF CONCENTRATION OVERVOLTAGE INCREASE IN LOW PT-LOADING PEFC</b> .....	2115
<i>Shota Takei, Keisuke Uda, Mayumi Nagayama, Kazunari Sasaki, Akari Hayashi</i>	
<b>ENHANCED WATER MANAGEMENT AND OXYGEN TRANSPORT IN PGM-FREE CATHODE-CATALYST-LAYERS FOR FUEL CELL APPLICATIONS</b> .....	2117
<i>Dominik Seeberger, Simon Thiele</i>	
<b>DEPENDENCE OF PROTON CONDUCTIVITY ON CATHODE DEGRADATION IN PEFC</b> .....	2119
<i>Taichi Matoba, Hidemasa Miyamoto, Mayumi Nagayama, Kazunari Sasaki, Akari Hayashi</i>	
<b>MULTISCALE MODELING, DESIGN, AND EFFICIENCY ANALYSIS OF HIGH-PRESSURE HYDROGEN WATER-SPLITTING SYSTEM</b> .....	2121
<i>Jie Zhou, Albert Bos, Hans Johansen, Kevin Hartmann, Xiaoyan Luo, Ahmet Kusoglu, Nemanja Danilovic, Adam Z. Weber</i>	
<b>CHARACTERISTICS OF METALLIC BIPOLAR PLATE FOR POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2123
<i>Nadine Pilinski, Nambi Krishnan Nagappan, Peter Wagner, Alexander Dyck</i>	
<b>ELECTROCATALYTIC PERFORMANCE OF PALLADIUM-BASED ELECTROCATALYSTS SUPPORTED ON CARBON NANOTUBES FOR FORMIC ACID OXIDATION</b> .....	2125
<i>Leticia Juarez-Marmolejo, Maria Guadalupe Montes De Oca-Yemha, Manuel Palomar-Pardave, Mario Alberto Romero-Romo, Araceli Ezeta-Mejia, Elsa Arce-Estrada, Sara Perez-Rodriguez, Maria Jesus Lazaro</i>	
<b>SEQUENTIAL DEGRADATION MECHANISM OF STATIONARY PEMFC UNDER DEHYDRATION CONDITION</b> .....	2127
<i>Junhwa Kwon, Seunghyun Jo, Ki-Yeop Cho, Kwangsup Eom</i>	
<b>COMPARATIVE INVESTIGATION OF POLYPHENYLENE SULFIDE POLYMER-GRAPHITE BIPOLAR PLATES FOR FUEL CELL APPLICATION</b> .....	2130
<i>Anastasia Dushina, Barbara Satola, Alexander Dyck, Peter Wagner</i>	
<b>STUDY ON CARBON CORROSION INDUCED CRACK PROPAGATION ON CATHODE CATALYST LAYER IN POLYMER ELECTROLYTE MEMBRANE FUEL CELL UNDER STARTUP-SHUTDOWN OPERATING CONDITION</b> .....	2132
<i>Yunqi Li, Xiran Chen, Jun Xu</i>	



## VOLUME 4

<b>ENTRANCE EFFECTS ON THE FLOW DISTRIBUTION IN MANIFOLD OF COMMERCIAL-SIZE PROTON EXCHANGE MEMBRANE FUEL CELL STACKS</b> .....	2134
<i>Fuxiang Huang, Diankai Qiu, Linfa Peng, Xinmin Lai</i>	
<b>DROPLET DYNAMICS AND REMOVAL FROM POLYMER ELECTROLYTE FUEL CELL CHANNELS USING ACOUSTIC PRESSURE WAVES</b> .....	2136
<i>Preston R. Stolberg, Alexander Coverdill, Mehdi Mortazavi, Jingru Benner, Vedang Chauhan, Anthony D. Santamaria</i>	
<b>EXPERIMENTAL PROOF OF CONCEPT FOR AN INNOVATIVE EVAPORATIVE COOLING CONCEPT FOR POLYMER ELECTROLYTE FUEL CELLS</b> .....	2138
<i>Magali Cochet, Victoria Manzi-Orezzoli, Dirk Scheuble, Pierre Boillat</i>	
<b>(INVITED) POROUS MATERIALS FOR PEM FUEL CELLS AND ELECTROLYZERS: HETEROGENEOUS AND INTERFACIAL CONSIDERATIONS</b> .....	2140
<i>Aimy Bazylak</i>	
<b>IMAGING AND MODELING OF PASSIVE WATER MANAGEMENT IN A MINIATURE FUEL CELL</b> .....	2141
<i>Kavitha Chintam, Michael R. Gerhardt, Andrew M. Baker, Derek Richard, Mahlon S. Wilson, James Raymond Flesner, Tommy Rockward, Daniel S Hussey, Jacob M Lamanna, David L Jacobson, Jon Rau, Adam Z. Weber, Rod L. Borup</i>	
<b>(INVITED) MODELLING ELECTROCHEMICAL CELLS WITH POROUS ELECTRODES. THE PROTON EXCHANGE MEMBRANE FUEL CELL</b> .....	2143
<i>Marco Sauer Moser, Giulio Fossati, Natalya Kizilova, Signe Kjelstrup</i>	
<b>BYPASSING THE JAM: HOW GDLS WITH ENGINEERED WATER HIGHWAYS CAN RE-ENABLE INTERDIGITATED FLOW FIELDS FOR PEFCs</b> .....	2145
<i>Victoria Manzi-Orezzoli, Muriel Siegwart, Thomas J. Schmidt, Pierre Boillat</i>	
<b>A COMPUTATIONAL ANALYSIS ON THE OPERATIONAL BEHAVIOUR OF OPEN-CATHODE POLYMER ELECTROLYTE FUEL CELLS</b> .....	2147
<i>Anand Sagar, Sachin Chugh, Alok Sharma, Erik Kjeang</i>	
<b>THE FIRST DURABLE IMIDAZOLIUM-BASED RADIATION GRAFTED ANION EXCHANGE MEMBRANES FOR ALKALINE FUEL CELLS: THE IMPACT OF WATER MANAGEMENT</b> .....	2149
<i>Ahmed Mohamed Ahmed Mahmoud, Kimio Yoshimura, Akihiro Hiroki, Yasunari Maekawa</i>	
<b>CHALLENGE OF MEMBRANE ELECTRODE ASSEMBLY TO POLYMER ELECTROLYTE FUEL CELL SYSTEMS HAVING HIGHER POWER DENSITY</b> .....	2151
<i>Masao Shibata, Toshiyuki Suzuki, Takahisa Suzuki, Takahiko Asaoka</i>	
<b>OPTIMIZATION OF OPEN PORE CELLULAR FOAMS FOR PEM FUEL CELLS</b> .....	2153
<i>Fredy Nandjou, Sophia Haussener</i>	
<b>ENHANCED POWER PERFORMANCE OF MEMBRANE ELECTRODE ASSEMBLYBASED ON MODIFIED CATALYST SUPPORT FOR PEMFC</b> .....	2154
<i>Nak-Won Kong, Geun Seok Chai, Hee-Tak Kim, Jun Young Kim</i>	
<b>INFLUENCE OF COATING METHOD ON PERFORMANCE OF ROLL-TO-ROLL COATED PEM FUEL CELL CATALYST LAYERS</b> .....	2156
<i>Scott A Mauger, Min Wang, Samantha Medina, Svitlana Pylypenko, Michael Ulsh</i>	
<b>DEVELOPMENT OF MASS-PRODUCTION-SCALE HIGH PERFORMANCE AND RELIABLE CATALYST COATED MEMBRANE (CCM) FOR PEMFC VIA OPTIMIZED ELECTRODE SLURRY FOR DIRECT COATING PROCESS</b> .....	2158
<i>Jung Ho Kim</i>	
<b>PEMFC PERFORMANCE RECOVERY FROM AIR POLLUTANTS CONTAMINATION</b> .....	2160
<i>Yunfeng Zhai, Jean St-Pierre</i>	
<b>DEGRADATION-CONSCIOUS CONTROL FOR PEM FUEL CELL SYSTEMS</b> .....	2162
<i>Alireza Goshtasbi, Tulga Ersal</i>	
<b>ELECTROCHEMICAL PUMPING FOR CARBON DIOXIDE REMOVAL IN AUTOMOTIVE HYDROXIDE EXCHANGE MEMBRANE FUEL CELL SYSTEMS</b> .....	2163
<i>Brian P. Setzler, Stephanie Matz, Yun Zhao, Santiago Rojas-Carbonell, Shimshon Gottesfeld, Yushan Yan</i>	
<b>CONTAMINATION OF Pt CATALYST WITH CARBON MONOXIDE DURING HYDROGEN EVOLUTION</b> .....	2165
<i>Abdurrahman Yilmaz, Ugur Pasaogullari</i>	
<b>TEMPERATURE DEPENDENT MECHANICAL BEHAVIOR OF PERFLUOROSULFONIC ACID MEMBRANES FOR ELECTROCHEMICAL APPLICATIONS</b> .....	2167
<i>Claire Arthurs, Ahmet Kusoglu</i>	
<b>LOCALIZED ELECTROCHEMICAL IMPEDANCE MEASUREMENTS ON NAFION MEMBRANES: OBSERVATION AND ANALYSIS OF SPATIALLY DIVERSE PROTON TRANSPORT USING ATOMIC FORCE MICROSCOPY</b> .....	2168
<i>Qinggang He, Fangming Jiang, Xiaojiang Wang, Bereket Tsegai Habte, Shuomeng Zhang, Houhua Yang</i>	
<b>ANALYSIS OF THE INFLUENCE OF CERIUM IONS ON MASS TRANSPORT PROPERTIES IN POLYMER ELECTROLYTE MEMBRANE BY MOLECULAR DYNAMICS SIMULATION</b> .....	2170
<i>Kyohei Ishikawa, Takuya Mabuchi, Takashi Tokumasu</i>	
<b>ABOUT THE NECESSITY TO CONSIDER MEMBRANE ELECTROLYTE DEGRADATION STATISTICALLY</b> .....	2171
<i>Thomas Dlugosch, Sebastian Kirsch, K. Andreas Friedrich</i>	

<b>CAPTURING HYDROXYL RADICAL GENERATED FROM OXYGEN REDUCTION ON FE/N/C CATALYST BY FLUORESCENCE DETECTION</b> .....	2173
<i>Lina Chen, Na Tian, Zhiyou Zhou, Shigang Sun</i>	
<b>CE CATION MIGRATION AND DIFFUSIVITY IN PERFLUOROSULFONIC ACID FUEL CELL MEMBRANES</b> .....	2175
<i>Andrew M. Baker, Siddharth Komini Babu, Kavitha Chintam, Ahmet Kusoglu, Rangachary Mukundan, Rod L. Borup</i>	
<b>(INVITED) HIGH PERFORMANCE COMMERCIAL NAFION(TM) PFSA MATERIALS FOR FUEL CELLS AND WATER ELECTROLYZERS</b> .....	2177
<i>Andrew Michael Park, Christopher Daly, Evan Augustine, Bora Inci</i>	
<b>CHEMICAL AND MECHANICAL REINFORCEMENT OF PFSA MEMBRANES WITH FUNCTIONAL NANOFIBERS</b> .....	2178
<i>Alia Akrouf, Famy Duquet, Melanie Taillaides, Sara Cavaliere, Jacques Roziere, Deborah J. Jones</i>	
<b>BEYOND NAFION: STRUCTURE-PROPERTY RELATIONSHIPS IN NOVEL PERFLUORINATED IONOMERS WITH TUNABLE TRANSPORT PROPERTIES</b> .....	2179
<i>Miguel Antonio Modestino, Adlai Katzenberg, Minfeng Fang, Yoshiyuki Okamoto, Ahmet Kusoglu</i>	
<b>PHOSPHONIC ACID-FUNCTIONALIZED POLYAROMATIC ELECTROLYTES FOR HIGH TEMPERATURE PROTON EXCHANGE MEMBRANE FUEL CELLS</b> .....	2180
<i>Eun Joo Park, Albert S Lee, Yu Seung Kim</i>	
<b>GRAPHENE-BASED PROTON TRANSMISSION AND HYDROGEN CROSSOVER MITIGATION IN ELECTROCHEMICAL HYDROGEN PUMP CELLS</b> .....	2181
<i>Saheed Bukola, Stephen E Creager</i>	
<b>DEVELOPMENT OF 3-Dimensionally ORDERED MICROPOROUS POLYIMIDE BASED COMPOSITE MEMBRANES APPLY ON NON-HUMIDIFIED INTERMEDIATE TEMPERATURE FUEL CELLS</b> .....	2182
<i>Jie Yu, Hirokazu Munakata, Kiyoshi Kanamura</i>	
<b>PBI-TYPE POLYMERS AND ACIDIC PROTON CONDUCTING IONIC LIQUIDS - CONDUCTIVITY AND MOLECULAR INTERACTIONS</b> .....	2184
<i>Jingjing Lin, Jurgen Giffin, Klaus Wippermann, Carsten Korte</i>	
<b>EFFECT OF SIDE CHAIN LENGTH IN PHOSPHORIC ACID BASED MEMBRANES ON NANOPHASE-SEGREGATION AND TRANSPORT</b> .....	2185
<i>Robin Lawler, Charles Caliendo, Seung Soon Jang</i>	
<b>HIGH TEMPERATURE POLYMER ELECTROLYTE MEMBRANE ACHIEVED BY GRAFTING POLY(1-VINYLMIDAZOLE) ON POLYSULFONE FOR FUEL CELL APPLICATIONS</b> .....	2186
<i>Huijuan Bai, Haining Wang, Jin Zhang, Jujia Zhang, Shanfu Lu, Yan Xiang</i>	
<b>(INVITED) THE GLASS TRANSITION OF PERFLUOROSULFONIC ACID MEMBRANES IN CONSIDERATION OF THERMAL PROCESSING-PROPERTY RELATIONSHIPS</b> .....	2188
<i>Robert B Moore, Christina Marie Orsino, Melissa H Novy, Denis Duchesne, Gregg Dahlke, Lisa Chen</i>	
<b>INVESTIGATION OF CE<sup>3+</sup> MOBILITY IN NR211 UNDER RH GRADIENTS</b> .....	2189
<i>Ashley B McQuarters, Frank D. Coms, Zach Green, Wenbin Gu</i>	
<b>MECHANICAL CHARACTERIZATION OF CATALYST COATED MEMBRANES SUBJECTED TO ISOLATED CHEMICAL DEGRADATION IN PEM FUEL CELLS</b> .....	2191
<i>Sandeep Bhattacharya, Jeremy Leung, Michael Victor Lauritzen, Erik Kjeang</i>	
<b>DEVELOPMENT OF WATER VAPOR TRANSPORT RESISTANCE PROTOCOL AND ANALYSIS</b> .....	2193
<i>Erin L. Redmond, Kentaro U. Hansen, David W. Berg</i>	
<b>ANOMALOUS APPEARANCE OF A DISTINCT GLASS TRANSITION IN PERFLUOROIMIDE ACID IONOMERS</b> .....	2195
<i>Christina Marie Orsino, Matthew Lindell, Michael Yandrasits, Steven Hamrock, Robert B Moore</i>	
<b>BROADBAND DIELECTRIC SPECTROSCOPY STUDY OF THE ION DYNAMICS IN BLENDS OF POLYMERIZED AND MOLECULAR IONIC LIQUIDS</b> .....	2197
<i>Thomas Kinsey, Kaitlin Glynn, Joshua R Sangoro</i>	
<b>CYCLIC HYGRAL SWELLING AND SHRINKAGE BEHAVIOR OF FUEL CELL MEMBRANES</b> .....	2199
<i>Alireza Sadeghi Alavijeh, Sandeep Bhattacharya, Erik Kjeang</i>	
<b>IONOMER AGGREGATION IN DISPERSIONS: REVEALING THE ROLE OF SOLVENT BY A FULLY ATOMISTIC MD STUDY</b> .....	2200
<i>Atefeh Tarokh, Kunal Karan, Sathish Ponnuram</i>	
<b>PHOSPHORIC ACID LOSS MECHANISM OF ACID-BASE AND ION-PAIR COORDINATED PROTON EXCHANGE MEMBRANES</b> .....	2202
<i>Yu Seung Kim, Albert S Lee, Yoong-Kee Choe, Ivana Matanovic</i>	
<b>(INVITED) TRIALS AND TRAVAILS WITH TWO NEW CATALYST LAYER ARCHITECTURES</b> .....	2203
<i>Kunal Karan</i>	
<b>CHARACTERIZING DURABILITY OF PFSA MEMBRANES OF PEM FUEL CELL BASED ON NUMERICAL FATIGUE CRACK PROPAGATION</b> .....	2205
<i>Morshed Hasan, Michael H Santare</i>	
<b>INVESTIGATION OF MEMBRANE CHEMICAL DEGRADATION AS A FUNCTION OF CATALYST PLATINUM LOADING</b> .....	2206
<i>Andre Spears, Tommy Rockward, Rangachary Mukundan, Fernando H Garzon</i>	
<b>MODELING IMPACT OF CE ON FUEL-CELL PERFORMANCE AND DURABILITY</b> .....	2209
<i>Victoria Marie Ehlinger, Ahmet Kusoglu, Adam Z. Weber</i>	

<b>DURABILITY OF NEWLY DEVELOPED POLYPHENYLENE-BASED IONOMER MEMBRANES IN POLYMER ELECTROLYTE FUEL CELLS: ACCELERATED STRESS EVALUATION</b> .....	2210
<i>Makoto Uchida, Ryo Shimizu, Kenji Otsuji, Akihiro Masuda, Nobuyuki Sato, Masato Kusakabe, Akihiro Iiyama, Kenji Miyatake</i>	
<b>A HIGH-PERFORMANCE MEMBRANE ELECTRODE ASSEMBLY FOR PEM FUEL CELL WITH POLY (ETHER SULFONE) NANOFIBERS AS EFFECTIVE MEMBRANE REINFORCEMENTS</b> .....	2213
<i>Yang Zhao, Xue Li, Shubo Wang, Xiaofeng Xie</i>	
<b>EFFECT OF CARBON CORROSION ON WETTABILITY OF PEM FUEL CELL ELECTRODES</b> .....	2214
<i>Zhengyuan J Fang, Andrew Star, Thomas F. Fuller</i>	
<b>VOLTAGE CYCLING DEGRADATION DEPENDENCE ON O<sub>2</sub> PRESSURE: A COMPARATIVE VOLTAGE-LOSS ANALYSIS</b> .....	2215
<i>Leonardo Isaias Astudillo, Hubert A. Gasteiger</i>	
<b>ELECTRODEPOSITION OF PLATINUM CATALYST FROM IONIC LIQUIDS</b> .....	2217
<i>Jonathan Diederich, Sladjana Martens, Ludwig Asen, Oliver Schneider</i>	
<b>IONIC LIQUID INTERLAYER FOR ENHANCED OXYGEN REDUCTION REACTION ELECTROCATALYST ACTIVITY AND DURABILITY</b> .....	2219
<i>Joshua David Snyder, Yawei Li</i>	
<b>TAILORING SHAPES AND SIZES OF PURE PT ELECTROCATALYSTS TO IMPROVE THE OXYGEN REDUCTION ACTIVITY</b> .....	2220
<i>Marlon Rueck, Alessio Gagliardi</i>	
<b>SELF-SUPPORTED NANOCOLUMNAR PLATINUM THIN FILM CATALYSTS FOR OXYGEN REDUCTION REACTION</b> .....	2222
<i>Busra Ergul, Mahbuba Begum, Zhiwei Yang, Mike L. Perry, Natalia Macauley, Karren L. More, Tansel Karabacak</i>	
<b>PEMFC CATALYST TESTING: FROM RDE TO GDE SETUP</b> .....	2223
<i>Matthias Arenz, Masanori Inaba, Jia Du, Alessandro Zana, Anders Westergaard Jensen, Gustav Wilhelm Sievers, Maria Escudero-Escribano</i>	
<b>KINETIC ISOTOPE EFFECT OF THE OXYGEN REDUCTION REACTION ON CARBON-SUPPORTED PLATINUM ELECTROCATALYSTS</b> .....	2224
<i>Morteza Rezaei Talarposhti, Tristan Asset, Sheng Dai, Kateryna Artyushkova, Iryna V. Zenyuk, Plamen Atanassov</i>	
<b>SURFACE MODIFICATIONS OF PT CATHODE CATALYSTS IN POLYMER ELECTROLYTE FUEL CELLS WITH SITE-SELECTIVE OR NONSELECTIVE OVERLAYERS</b> .....	2226
<i>Kensaku Kodama, Akira Kuwaki, Haruhiko Yamada, Yu Morimoto, Kenta Motobayashi, Hisao Kato</i>	
<b>ACCELERATED STRESS TESTS ON FUEL CELL CATHODE CATALYSTS: THIN FILM (EX-SITU) VS. CATALYST LAYER (IN-SITU)</b> .....	2229
<i>Cynthia A. Rice</i>	
<b>TEMPERATURE DEPENDENCE OF DEGRADATION PROCESSES IN LT-PEMFC: FOCUS ON LOW TEMPERATURES</b> .....	2231
<i>Carsten Cremers, Robin Kunkel, Nils Baumann</i>	
<b>PLATINUM NANOPARTICLES ON PLASMA-PRETREATED CARBON NANOTUBES PREPARED BY ATOMIC LAYER DEPOSITION AS POLYMER ELECTROLYTE MEMBRANE FUEL CELL CATALYSTS</b> .....	2234
<i>Junmo Koo, Dong Hwan Kim, Eun Heui Kang, Joon Hyung Shim</i>	
<b>ONLINE CARBON CORROSION ANALYSIS OF A NOVEL, ALLOYED PTI/C IN PEM FUEL CELLS USING A NON-DISPERSIVE-INFRARED SYSTEM</b> .....	2235
<i>Thomas Merzdorf, Stefanie Kuhl, Antonia Herzog, Peter Strasser</i>	
<b>THE IMPROVED PLATINUM UTILIZATION EFFICIENCY AND DURABILITY IN POLYBENZIMIDAZOLE-WRAPPED CARBON BLACK FOR POLYMER ELECTROLYTE MEMBRANE FUEL CELL</b> .....	2237
<i>Samindi Madhubha Jayawickrama, Ziyi Han, Tsuyohiko Fujigaya</i>	
<b>HIGHLY STABLE POLYBENZIMIDAZOLE (PBI) GRAFTED GRAPHENE AS CATALYST FOR POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2239
<i>Chenzhao Li, Yadong Liu, Kang Yu, Jian Xie, Paulo Jorge Ferreira</i>	
<b>RECENT ADVANCES WITH SULFONATED SILICA CERAMIC CARBON ELECTRODES FOR FUEL CELLS</b> .....	2240
<i>E. Bradley Easton, Richard Acheampong, Reza Alipour Moghadam Esfahani, Veronica J Cavallari, Reza B. Moghaddam, Holly M Fruehwald, Foroughzham Afsahi</i>	
<b>DEVELOPMENT OF MESOPOROUS CARBON FIBERS FOR PEFC CATALYST SUPPORTS</b> .....	2242
<i>Ting-Wei Huang, Mayumi Nagayama, Kazunari Sasaki, Akari Hayashi</i>	
<b>SOL-GEL ASSISTED SYNTHESIS OF ENCASED POLYMER ELECTROLYTE FUEL CELL CATHODE CATALYSTS</b> .....	2244
<i>Ahmed A. Farghaly, Deborah J. Myers</i>	
<b>A SYNTHETIC ROUTE FOR THE PREPARATION OF PTRU-NI CORE-SHELL NANOPARTICLES USING POLYDOPMAINE PROTECTIVE COATING FOR A CO TOLERANT ELECTROCATALYST</b> .....	2245
<i>Hojin Lee, Hansung Kim</i>	
<b>DISSOCIATION BARRIER INFORMATICS ON HETEROGENEOUS CATALYSTS</b> .....	2246
<i>Joonhee Kang, Chan-Woo Lee, Jehyun Lee, Byung-Hyun Kim, Kanghoon Yim</i>	

<b>PT NANOPARTICLES SUPPORTED BY HYDROPHILIC NITROGEN-DOPED POROUS CARBON FOR CATHODE CATALYST OF MICRO DIRECT METHANOL FUEL CELL</b> .....	2247
<i>Yujun Zhang, Yufeng Zhang, Chenjun Hou, Xuelin Zhang, Xiaowei Liu</i>	
<b>ELECTROCATALYSTS SUPPORTED ON NANOCRYSTALLINE SnO<sub>2</sub> FOR POLYMER ELECTROLYTE FUEL CELLS</b> .....	2249
<i>Tsubasa Yoshizumi, Masaru Nagamine, Zhiyun Noda, Junko Matsuda, Akari Hayashi, Kazunari Sasaki</i>	
<b>TITANIUM OXIDE NANO-PARTICLES AS SUPPORTS OF CATHODE CATALYSTS FOR POLYMER ELECTROLYTE FUEL CELLS</b> .....	2252
<i>Yongbing Ma, Yunlv Cheng, Yuta Inoue, Takaaki Nagai, Yoshiyuki Kuroda, Koichi Matsuzawa, Shigenori Mitsushima, Yan Liu, Yuan Wang, Akimitsu Ishihara</i>	
<b>PREPARATION AND ELECTROCHEMICAL ACTIVITIES OF PT-TiO<sub>2</sub> NANOCOMPOSITE ELECTROCATALYSTS FOR PEFCs</b> .....	2255
<i>Tetsuya Tonosako, Daiki Kawachino, Zhiyun Noda, Junko Matsuda, Akari Hayashi, Kazunari Sasaki</i>	
<b>EFFECT OF UNDERLYING COBALT CONTENT ON OXYGEN REDUCTION REACTION ACTIVITY AT PT-SKIN/PT<sub>100-x</sub>CO<sub>x</sub> (111) SINGLE CRYSTAL ELECTRODES</b> .....	2257
<i>Shun Kobayashi, Aoki Makoto, Mitsuru Wakisaka, Tepei Kawamoto, Kohei Suda, Donald A. Tryk, Junji Inukai, Toshihiro Kondo, Hiroyuki Uchida</i>	
<b>OXYGEN REDUCTION REACTION ACTIVITY FOR SURFACE-MAGNETIC-ANISOTROPY-CONTROLLED PT-CO/PT(111) BIMETALLIC SURFACE</b> .....	2260
<i>Tetsuro Nagao, Morimichi Kimura, Naoto Todoroki, Toshimasa Wadayama</i>	
<b>ORR PROPERTIES OF TENSILE-STRAINED PT/ZR/PT(111) BIMETALLIC SURFACES PREPARED BY ARC-PLASMA DEPOSITIONS OF PT AND ZR ON PT (111)</b> .....	2263
<i>Daisuke Kudo, Yoshihiro Chida, Soma Kaneko, Naoto Todoroki, Tadao Tanabe, Toshimasa Wadayama</i>	
<b>ELECTROCHEMICAL STABILITY IMPROVEMENTS BY IR FOR ULTRA-HIGH VACUUM PREPARED PT/PD(111) BIMETALLIC SURFACES</b> .....	2266
<i>Keisuke Kusumoki, Daisuke Kudo, Naoto Todoroki, Toshimasa Wadayama</i>	
<b>EFFECT OF CARBON SUPPORT ON THE DURABILITY OF D-PTCO CATALYSTS IN PEM FUEL CELLS</b> .....	2268
<i>Sergio A Herrera, Rangachary Mukundan, David A. Cullen, Karren L. More, Deborah J. Myers, Rod L. Borup</i>	
<b>PT-BASED INTERMETALLIC NANOSTRUCTURES: ACTIVITY ORIGIN AND MULTIFUNCTIONALITY FOR EFFICIENT ELECTROCATALYSIS</b> .....	2270
<i>Ho Young Kim, Jong Min Kim, Yoonhoo Ha, Jinwoo Woo, Hyungjun Kim, Jin Young Kim, Sang Hoon Joo</i>	
<b>NANO-ROD TYPED PTFES TERNARY CATALYST FOR OXYGEN REDUCTION REACTION IN PEMFCs</b> .....	2271
<i>Daejong You, Eunyoung You, Sungchul Lee</i>	
<b>DEVELOPMENT OF POROUS STRUCTURED PTCU/C CATALYST VIA SPUTTERING METHOD FOR EFFICIENT OXYGEN REDUCTION REACTION</b> .....	2272
<i>Dong Wook Lee, Injoon Jang, Jue-Hyuk Jang, Kwan Young Lee, Sung Jong Yoo</i>	
<b>PREPARATIONS OF HIGHLY ACTIVE PD-BASED ORDER INTERMETALLIC COMPOUNDS AND RELATIONSHIP BETWEEN SURFACE STRUCTURE AND ELECTROCATALYTIC ACTIVITY</b> .....	2273
<i>Takao Gunji, Futoshi Matsumoto</i>	
<b>MPL/GDL-SUPPORTED PT ELECTROCATALYSTS FOR PEFCs</b> .....	2274
<i>Hirotooshi Odoi, Daiki Kawachino, Zhiyun Noda, Junko Matsuda, Akari Hayashi, Kazunari Sasaki</i>	
<b>NANO/MICROSCALE SIMULATION OF PROTON TRANSPORT IN CATALYST LAYER</b> .....	2276
<i>Koichi Kobayashi, Takuya Mabuchi, Gen Inoue, Takashi Tokumasu</i>	
<b>THE OPTIMIZATION OF THE REDUCTION TEMPERATURE AND THE LOCAL CRYSTAL STRUCTURE IN TITANIUM-OXIDE NANOSHEETS MODEL-ELECTRODE TO THE OXYGEN REDUCTION REACTION IN ACIDIC ENVIRONMENTAL</b> .....	2278
<i>Takahiro Saida, Miyu Mashiyama, Takahiro Maruyama</i>	
<b>ONE-STEP SYNTHESIS OF MANGANESE DOPED SINGLE ATOM CATALYSTS FOR OXYGEN REDUCTION REACTION IN POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2280
<i>Thomas Stephen Stracensky, Shuo Ding, Judith Lattimer, Sanjeev Mukerjee, Hui Xu</i>	
<b>A SYNTHESIS OF EFFICIENT COMPOSITE CATALYST BASED ON FE-N-C CATALYST AND PLATINUM FOR OXYGEN REACTION REDUCTION</b> .....	2281
<i>Xuelin Zhang, Chenjun Hou, Yujun Zhang, Yufeng Zhang, Xiaowei Liu</i>	
<b>EFFECT OF CARBON SUPPORT ON FE-N<sub>3</sub>/C MODEL ACTIVE SITE FOR THE OXYGEN REDUCTION REACTION</b> .....	2283
<i>Holly M Fruehwald, Olena V Zenkina, E. Bradley Easton</i>	
<b>SYNTHESIS OF HOMOGENEOUS DISTRIBUTED NANOPARTICLES USING A FLUIDIZED BED REACTOR</b> .....	2285
<i>Elisabeth Hornberger, Henrike Schmies, Peter Strasser</i>	
<b>OPTIMIZATION IONOMER DISTRIBUTION ON POROUS CARBON CATALYST SUPPORT TO COMMERCIALIZE LOW PT LOADED PEMFCs</b> .....	2286
<i>Sebastian Ott, Alin Orfanidi, Bjorn Anke, Martin Lerch</i>	
<b>PLATINUM SUPPORTED ON ELECTROCHEMICALLY-EXFOLIATED GRAPHENE OXIDE AS A CATALYST FOR IMPROVING THE PERFORMANCE OF THE HYDROGEN FUEL CELL</b> .....	2287
<i>Zhaoqi Ji, Maria Perez-Page, Romeo Gonzalez Rodriguez, Shaun McKeefry, Stuart Holmes</i>	

<b>(INVITED) RECENT ADVANCES IN ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION COMPRISING A HIERARCHICAL GRAPHENE-BASED "CORE" AND A CARBON NITRIDE "SHELL" WITH A LOW LOADING OF PLATINUM</b> .....	2289
<i>Vito Di Noto, Enrico Negro, Angeloclaudio Nale, Pawel J. Kulesza, Iwona Agnieszka Rutkowska, Yannick Bang, Ketii Vezzu, Gioele Pagot, Giuseppe Pace</i>	
<b>LOW PT LOADED NITROGEN DOPED CARBON AS EFFICIENT CATALYST SUPPORT FOR PROTON EXCHANGE MEMBRANE FUEL CELLS</b> .....	2291
<i>Sundara Ramaprabhu, Kothandaraman Ramanujam, Dipsikha Ganguly</i>	
<b>TOWARDS HIGH-PERFORMANCE PROTON EXCHANGE MEMBRANE FUEL CELLS USING POLYMER COATED HETEROATOM DOPED PARTIALLY UNZIPPED CARBON NANOTUBES AS CATALYST SUPPORT</b> .....	2292
<i>Sundara Ramaprabhu, Garapati Meenakshi Seshadhri, Divya Nechiyi, Wolfgang Bacsá</i>	
<b>FE-N-C WITH ULTRA-LOW PT CONTENT ELECTROCATALYST FOR THE OXYGEN REDUCTION: INVESTIGATION OF THE ELECTROCATALYTIC ACTIVITY AND STABILITY</b> .....	2293
<i>Carlos S. Vasconcellos, Ricardo B Aggio, Nelson Alexandre Galote, Fabio H. B. Lima</i>	
<b>ON THE MECHANISM OF SYNERGISTIC ORR IN PT@PGM-FREE CATALYST</b> .....	2294
<i>Di-Jia Liu, Lina Chong</i>	
<b>EFFECT OF THE CATALYST METAL CONTENT ON PEMFC DURABILITY</b> .....	2295
<i>Dongguo Li, Yung-Tin Pan, Xiaojing Wang, Chenyu Wang, Yu Seung Kim, Jacob S Spendelov</i>	
<b>CO-AXIAL NAFION NANOWIRE ELECTRODE</b> .....	2296
<i>Siddharth Komini Babu, Rangachary Mukundan, David A. Cullen, Jacob S Spendelov</i>	
<b>IONOMER SELF-ASSEMBLY DURING DRYING PROCESS OF ALCOHOL/WATER SOLUTIONS USING COARSE-GRAINED MOLECULAR DYNAMICS SIMULATIONS</b> .....	2298
<i>Takuya Mabuchi, Takashi Tokumasu</i>	
<b>(INVITED) DESIGN OF CATALYST LAYER STRUCTURE FOR HIGH FUEL CELL PERFORMANCE</b> .....	2299
<i>Seon-Ho Lee, Ahmad Zulfikri Taning, Seunghee Woo, Seok-Hee Park, Sung-Dae Yim</i>	
<b>ELECTROSPUN PARTICLE/POLYMER FIBER ELECTRODES WITH A NEAT NAFION BINDER FOR HYDROGEN/AIR FUEL CELLS</b> .....	2300
<i>Krysta Waldrop, John Slack, Cenk Gumeci, Nilesh Dale, Kimberly Shawn Reeves, David A. Cullen, Karren L. More, Peter N. Pintauo</i>	
<b>UNDERSTANDING STABILITY OF THE TRANSITION METAL CARBIDES AND NITRIDES BY COMBINING EXPERIMENTAL AND COMPUTED THERMOCHEMICAL PROPERTIES</b> .....	2302
<i>Ivana Matanovic, Fernando H Garzon</i>	
<b>SURFACE COATING WITH POROUS ZIRCONIA LAYERS PREPARED BY ATOMIC LAYER DEPOSITION FOR STABILIZING FUEL CELL CATALYSTS</b> .....	2303
<i>Jinhyuk Lim, Junmo Koo, Eun Heui Kang, Jong Seon Park, Keun Hee Kim, Hyung Jong Choi, Joon Hyung Shim</i>	
<b>PENTAVALENT METAL DOPED TiO<sub>2</sub> AS CORROSION-RESISTANT ELECTROCATALYST SUPPORTS IN POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2304
<i>Mounika Kodali, Tristan Asset, Sergio Herrera, Cheng He, Shrihari Sankarasubramanian, Ivana Matanovic, Vijay Ramani, Plamen Atanassov</i>	
<b>ULTRA-DURABLE Ti<sub>3</sub>O<sub>5</sub>MO<sub>0.2</sub>Si<sub>0.4</sub> FUEL CELL CATALYST SUPPORTS WITH ENHANCED CONDUCTIVITY</b> .....	2306
<i>Reza Alipour Moghadam Esfahani, Reza B. Moghaddam, E. Bradley Easton</i>	
<b>ATOMIC LAYER DEPOSITION (ALD) OF PT ON SB-SNO<sub>2</sub> NANOPARTICLES PRODUCES ULTRA-STABLE, ACTIVE CATALYSTS FOR PEMFC APPLICATION</b> .....	2308
<i>Cheng He, Xiaofeng Wang, Shrihari Sankarasubramanian, Kaustava Bhattacharyya, Xinhua Liang, Vijay Ramani</i>	
<b>IMPROVEMENT OF THE PERFORMANCE OF PT CATALYSTS SUPPORTED ON NB-DOPED SNO<sub>2</sub> VIA WELL-CONTROLLED INTERFACES</b> .....	2310
<i>Katsuyoshi Kakinuma, Ryo Kobayashi, Tetsuro Tano, Takayuki Asakawa, Isao Amemiya, Chisato Arata, Sumitaka Watanabe, Akihiro Iiyama, Makoto Uchida</i>	
<b>EFFECTS OF VARIOUS OPERATING CONDITIONS ON LOAD CYCLE DURABILITY OF PT/NB-SNO<sub>2</sub> CATHODE CATALYST LAYERS</b> .....	2312
<i>Chikara Takei, Yoshiki Mizushita, Katsuyoshi Kakinuma, Makoto Uchida</i>	
<b>ON THE ACTIVITY OF ELECTROSPUN TANTALUM DOPED SNO<sub>2</sub> FOR DURABLE ULTRA-LOW PGM FUEL CELL CATHODES</b> .....	2314
<i>Fatima Haidar, Ignacio Jimenez Morales, Sara Cavaliere, Deborah J. Jones, Jacques Roziere</i>	
<b>(INVITED) SOLID POLYMER FUEL CELL AND ELECTROLYZER: THE TWO SIDES OF ELECTROCHEMICAL DEVICES IN SUSTAINABLE ENERGY CONVERSION AND STORAGE</b> .....	2316
<i>Kouakou Boniface Kokoh, Aurelien Habrioux, Karine Servat, Claudia Morais, Teko W. Napporn</i>	
<b>FULLY ORDERED Pt<sub>3</sub>Co INTERMETALLIC NANOPARTICLES DERIVED FROM MOFS FOR OXYGEN REDUCTION IN PEMFCs</b> .....	2318
<i>Gang Wu</i>	
<b>NOVEL Pt-Co CATALYST CONCEPT TO BOOST THE OXYGEN REDUCTION REACTION FOR ACIDIC AND ALKALINE POLYMER ELECTROLYTE FUEL CELLS</b> .....	2319
<i>Philipp Weber, Daniel Jochen Weber, Marek Janssen, Mehtap Oezaslan</i>	

<b>PRESSURE-INDUCED CONTROL OF CORE-SHELL NANOPARTICLES FOR OXYGEN REDUCTION REACTION</b> .....	2320
<i>Hyun-Uk Park, Jeongyun Jang, Min Ho Seo, Yongman Choi, Sung-Dae Yim, Seok-Hee Park, Gu-Gon Park</i>	
<b>OXYGEN REDUCTION REACTION ACTIVITY OF COBALT PLATINUM BRONZE NANO-PARTICLES PREPARED BY A SILICA TEMPLATE METHOD</b> .....	2322
<i>Yuji Kamitaka, Noboru Taguchi, Juntaro Seki, Yu Morimoto</i>	
<b>DEVELOPMENT OF COMBINED SMALL-ANGLE X-RAY SCATTERING AND FLUORESCENCE YIELD X-RAY ABSORPTION SPECTROSCOPY MEASUREMENT SYSTEMS FOR CHARACTERIZATION OF STRUCTURAL AND CHEMICAL INFORMATION OF PT ALLOY NANOPARTICLE CATALYST</b> .....	2324
<i>Takeshi Watanabe, Yuji Hiraoka, Kohei Suda, Teppei Kawamoto, Hiroshi Yano, Junji Inukai, Ichiro Hirosawa</i>	
<b>MODELING THE EFFECT OF UNDERLYING COBALT ON THE ELECTROCHEMICAL BEHAVIOR OF PT-SKIN / PT<sub>100-x</sub> CO<sub>x</sub>(111) SINGLE CRYSTAL ELECTRODES</b> .....	2325
<i>Donald A. Tryk, Shun Kobayashi, Junji Inukai, Hiroyuki Uchida</i>	
<b>TRENDS IN STABILITY OF PT-BASED CATALYSTS FOR PEM FUEL CELLS</b> .....	2328
<i>Pietro Papa Lopes, Dusan Strmcnik, Haifeng Lv, Rongyue Wang, Nenad M Markovic, Vojislav R. Stamenkovic</i>	
<b>IN-SITU HEATING AND TEM CHARACTERIZATION OF PT-CU NANOFRAMES</b> .....	2330
<i>Mingxing Gong, Tonghui Zhao, Deli Wang</i>	
<b>UNDERSTANDING ELECTROCHEMICAL DEGRADATION OF POLYMER ELECTROLYTE FUEL CELL CATALYSTS USING TIME-RESOLVED MEASUREMENTS</b> .....	2332
<i>Nancy N. Kariuki, Dionissios D. Papadias, Deborah J. Myers, Rajesh Ahluwalia</i>	
<b>CARBON EFFECT ON THE SYNTHESIS AND MEA PERFORMANCES OF L10 COPT INTERMETALLIC CATALYSTS</b> .....	2333
<i>Chenyu Wang, Dongguo Li, Yu Seung Kim, Jacob S Spendelow</i>	
<b>(INVITED) CREATING HIGH-PERFORMANCE PT-BASED ORR CATALYSTS THROUGH SURFACE ENGINEERING</b> .....	2334
<i>Yu Huang</i>	
<b>IMPACT OF OPERATING CONDITIONS ON PEMFC DURABILITY</b> .....	2335
<i>Vinaykumar Konduru, Nagappan Ramaswamy, Srikanth Arisetty, Swami Kumaraguru</i>	
<b>EFFECT OF CATALYST LOADING ON THE DEGRADATION OF D-PTCO/C CATHODE CATALYST</b> .....	2338
<i>Rangachary Mukundan, Natalie Macauley, Sergio A Herrera, David A. Langlois, David A. Cullen, Karren L. More, Deborah J. Myers, Rajesh Ahluwalia, Rod L. Borup</i>	
<b>OXYGEN TRANSPORT IN ELECTRODES WITH DEGRADED D-PTCO/C CATHODE CATALYST</b> .....	2340
<i>Xiaohua Wang, Firat Cetinbas, Rajesh Ahluwalia, Natalia Macauley, David A. Langlois, Rangachary Mukundan, Rod L. Borup</i>	
<b>MULTIWALLED CARBON NANOTUBES AS NON-PRECIOUS METAL CATALYST FOR THE OXYGEN REDUCTION REACTION</b> .....	2342
<i>Markus Kubler, Pascal Theis, Lingmei Ni, Stephan Wagner, Tilman Jurzinsky, Ulrike Ingrid Kramm</i>	
<b>COMPUTATIONAL SCREENING OF SINGLE-ATOM ELECTROCATALYSTS FOR OXYGEN REDUCTION REACTION BY MACHINE LEARNING ALGORITHM</b> .....	2343
<i>Shiru Lin, Zhongfang Chen</i>	
<b>THEORETICAL PREDICTION OF THE DISTRIBUTION OF SPIN MOMENT ON METAL-N-C CATALYST EMBEDDED IN TRUNCATED GRAPHENE SHEETS</b> .....	2344
<i>Ismail Can Oguz, Frederic Jaouen, Tzonka Mineva</i>	
<b>COMPUTATIONAL ANALYSIS OF RELATIVE GRAPHENE LAYER ORIENTATIONS AROUND FEN<sub>2+2</sub> SITES FOR ORR</b> .....	2346
<i>Charlotte Gallenkamp, Lingmei Ni, Vera Krewald, Ulrike Ingrid Kramm</i>	
<b>ELUCIDATING THE STRUCTURAL COMPOSITION OF A FE-N-C CATALYST BY NUCLEAR AND ELECTRON RESONANCE TECHNIQUES</b> .....	2347
<i>Stephan Wagner, Hendrik Auerbach, Claudia Tait, Ioanna Martinaiou, Chethala Neelakandhan Shyam Kumar, Christian Kubel, Ilya Sergeev, Hans-Christian Wille, Jan Behrends, Juliusz Wolny, Volker Schunemann, Ulrike Ingrid Kramm</i>	
<b>NUCLEAR RESONANCE VIBRATION SPECTROSCOPY STUDY OF 57-FE-ENRICHED ATOMICALLY DISPERSED (AD)FE-N-C OXYGEN REDUCTION REACTION CATALYST FOR POLYMER ELECTROLYTE FUEL CELLS</b> .....	2349
<i>Hoon T Chung, Jaehyung Park, Nancy N. Kariuki, Jiyong Zhao, David A. Cullen, Karren L. More, Deborah J. Myers, Esen E. Alp, Piotr Zelenay</i>	
<b>EFFECT OF NITROGEN DOPING ON OXYGEN REDUCTION ACTIVITY OF TIO<sub>2</sub> IN ACIDIC MEDIA</b> .....	2351
<i>Akimitsu Ishihara, Takaaki Nagai, Noriko Murase, Masazumi Arao, Yoshiyuki Kuroda, Koichi Matsuzawa, Shigenori Mitsushima, Kou Furukawa, Hideto Imai, Kunchan Lee, Ken-Ichiro Ota</i>	
<b>OBSERVATION OF THERMAL FORMATION OF FEN<sub>4</sub> SITES DURING PYROLYSIS</b> .....	2354
<i>Jingkun Li, Li Jiao, Moulay-Tahar Sougrati, Sanjeev Mukerjee, Even Charles Wegener, A. Jeremy Kropf, Deborah J. Myers, Frederic Jaouen, Qingying Jia</i>	
<b>CAN DENSITY FUNCTIONAL THEORY PREDICT MOSSBAUER SPECTRA IN PYROLYZED FE-N-C CATALYSTS?</b> .....	2355
<i>Ismail Can Oguz, Plamen Atanassov, Tzonka Mineva, Ivana Matanovic, Moulay-Tahar Sougrati, Lorenzo Stievano, Frederic Jaouen</i>	
<b>COMPARISON OF IN-SITU <sup>57</sup>FE MOSSBAUER SPECTROSCOPIC DATA FOR DIFFERENTLY PREPARED FE-N-C CATALYSTS</b> .....	2357
<i>Lingmei Ni, Charlotte Gallenkamp, Stephan Wagner, David Wallace, Stephen Paul, Markus Kubler, Vera Krewald, Ulrike Ingrid Kramm</i>	

<b>IN-SITU XAFS STUDY TO MONITOR THE DEGRADATION OF AN FE/N/C CATHODE CATALYST IN PEMFC</b> .....	2359
<i>Yuta Nabae, Shinsuke Nagata, Keizo Kusaba, Tsutomu Aoki, Qiuyi Yuan, Naoki Takao, Takanori Itoh, Masazumi Arao, Hideto Imai, Kotaro Higashi, Tomohiro Sakata, Tomoya Uruga, Yasuhiro Iwasawa</i>	
<b>IRON-NITROGEN-CARBON (FE-N-C) ACTIVE SITES IMAGING BY SCANNING TRANSMISSION ELECTRON MICROSCOPY (STEM)</b> .....	2361
<i>Tristan Asset, Kavita Kumar, Sheng Dai, Mingjie Xu, Xingxu Yan, Yechuan Chen, Xiaoyan Li, Xiaoqing Pan, Frederic Maillard, Laetitia Dubau, Plamen Atanassov</i>	
<b>IN SITU CHARACTERIZATION OF FE-N-C ELECTROCATALYSTS SYNTHESIS BY XPS AND XRD</b> .....	2363
<i>Yechuan Chen, Tristan Asset, Mounika Kodali, Kateryna Artyushkova, Plamen Atanassov</i>	
<b>ROLE OF PROTONS ON ACTIVITY AND SELECTIVITY OF FE-N-C ELECTROCATALYSTS FOR OXYGEN REDUCTION REACTION</b> .....	2365
<i>Yechuan Chen, Tristan Asset, Ivana Matanovic, Kateryna Artyushkova, Plamen Atanassov</i>	
<b>COMPREHENSIVE CHARACTERIZATION OF PGM-FREE PEM FUEL CELLS USING AC AND DC METHODS</b> .....	2366
<i>Tatyana V. Reshetenko, Alexey Serov, Andrei Kulikovskiy, Plamen Atanassov</i>	
<b>ELECTROCHEMICAL CHARACTERIZATION METHODS OF FE-BASED OXYGEN REDUCTION REACTION ELECTROCATALYSTS FOR POLYMER ELECTROLYTE FUEL CELLS</b> .....	2369
<i>Jaehyung Park, Magali Ferrandon, Deborah J. Myers, Hoon T Chung, Siddharth Komini Babu, Piotr Zelenay</i>	
<b>SYNTHESIS OF PT-RARE EARTH METAL ALLOY NANOCATALYSTS</b> .....	2370
<i>Yang Hu, Jens Oluf Jensen, Lars Nilausen Cleemann, Benedikt Axel Brandes, Qingfeng Li</i>	
<b>PREPARATION OF VARIOUS PLATINUM RARE EARTH METAL ALLOY NANOPARTICLES AND THEIR ORR PERFORMANCE</b> .....	2371
<i>Benedikt Axel Brandes, Yang Hu, Lars Nilausen Cleemann, Qingfeng Li, Jens Oluf Jensen</i>	
<b>THE CREATION OF CATALYTIC ACTIVITY MAPS FOR ALLOY PHASE DIAGRAMS</b> .....	2372
<i>Liang Cao, Le Niu, Tim Mueller</i>	
<b>ENHANCED ACTIVITY OF EXTENDED SURFACE PLATINUM NICKEL NANOWIRES FOR THE OXYGEN REDUCTION REACTION</b> .....	2373
<i>Sarah F Zaccarine, William W McNeary, Sarah M Shulda, Scott A Mauger, Katherine E. Hurst, Shaun M Alia, Bryan S. Pivovar, Svitlana Pylypenko</i>	
<b>PLATINUM-NICKEL NANOTUBES ARRAY AS CATHODE FOR PEMFC</b> .....	2375
<i>Othman Lagrichi, Arnaud Morin, Denis Buttard</i>	
<b>ONE-POT SYNTHESIS OF GRAM-LEVEL SHAPE-CONTROLLED PT-NI CATALYSTS WITH ENHANCED ELECTROCATALYTIC PROPERTIES FOR PEMFC</b> .....	2377
<i>Xin Cai, Rui Lin</i>	
<b>SYNTHESIS OF PD CORE-PT SHELL STRUCTURED CATALYST BY A VERY SIMPLE DIRECT DISPLACEMENT REACTION</b> .....	2378
<i>Hideo Daimon</i>	
<b>PT ATOMS ON THE SURFACES OF ORDERED AND DISORDERED Au/C FOR OXYGEN REDUCTION REACTION: COMPARISON OF ELECTROCHEMICAL PERFORMANCE AND MECHANISM</b> .....	2380
<i>Hengquan Chen, Qinggang He</i>	
<b>COMPARING MITIGATION TECHNIQUES FOR EFFECTIVE CO MITIGATION IN A POLYMER ELECTROLYTE FUEL CELL</b> .....	2382
<i>Paran Jyoti Sarma, Chris Gardner, Sachin Chugh, Alok Sharma, Erik Kjeang</i>	
<b>SUPPRESSION OF H<sub>2</sub>O<sub>2</sub> FORMATION AT PT-SKIN/PT ALLOY HYDROGEN ANODE CATALYSTS FOR MITIGATION OF MEMBRANE DEGRADATION</b> .....	2383
<i>Hiroyuki Uchida, Guoyu Shi, Hiroshi Yano, Donald A. Tryk, Akihiro Iiyama</i>	
<b>VIBRATING POWDERS: ELECTROCHEMICAL QUARTZ CRYSTAL MICROBALANCE MEASUREMENT OF POTENTIAL DEPENDENT IRO<sub>2</sub> AND PT/C MASS CHANGES FOR REVERSAL TOLERANT PEMFC ANODES</b> .....	2386
<i>Colin Edward Moore, Foroughazam Afsahi, Alan P Young, Shanna D Knights, Elâ`d L. Gyenge</i>	
<b>HIGHLY REVERSAL TOLERANT ANODES USING TiO<sub>2</sub>-SUPPORTED PLATINUM WITH A VERY SMALL AMOUNT OF WATER SPLITTING CATALYST</b> .....	2389
<i>Tsutomu Ioroi, Kazuaki Yasuda</i>	
<b>EFFECT OF HYDROGEN SULPHIDE CONTAMINATION ON PLATINUM CATALYST DEGRADATION IN POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2390
<i>Anastasia Dushina, Peter Wagner, Alexander Dyck</i>	
<b>LAYERED PGM-FREE ELECTRODE FOR IMPROVED MASS TRANSPORT</b> .....	2392
<i>Siddharth Komini Babu, Xi Yin, Ulises Martinez, Geraldine M Purdy, Piotr Zelenay</i>	
<b>DEVELOPMENT OF FE/N-DOPED CARBON NANOTUBES AS A STABLE NON-PRECIOUS ELECTROCATALYST FOR OXYGEN REDUCTION REACTION</b> .....	2394
<i>Dongsheng Xia, Xin Yang, Feiyu Kang, Jia Li, Lin Gan</i>	
<b>IRON AND NITROGEN DOPED CARBIDE DERIVED CARBON AND COMPOSITE CATALYSTS FOR FUEL CELL CATHODES</b> .....	2395
<i>Sander Rato, Nastaran Ranjbar Sahrtaie, Moulay Tahar Sougrati, Maike Kaarik, Mati Kook, Rando Saar, Sergei Vlassov, Vambola Kisand, Paarm Paiste, Qingying Jia, Jaan Leis, Sanjeev Mukerjee, Frederic Jaouen, Kaido Tammeveski</i>	

<b>NON-PGM ELECTROCATALYSTS FOR OXYGEN REDUCTION REACTION INSPIRED BY METALLOENZYME ACTIVE SITES</b> .....	2397
<i>Masaru Kato, Natsuki Fujibayashi, Naohiro Matsubara, Marika Muto, Takeshi Murotani, Ichizo Yagi</i>	
<b>ACTIVITY AND COMPOSITION OF FE-BASED OXYGEN REDUCTION REACTION ELECTROCATALYSTS SYNTHESIZED AND CHARACTERIZED USING HIGH-THROUGHPUT APPROACHES</b> .....	2398
<i>Deborah J. Myers, Magali Ferrandon, Jaehyung Park, Haifeng Lv, Vojislav R. Stamenkovic, A. Jeremy Kropf, Evan C. Wegener</i>	
<b>DURABLE MN-BASED PGM-FREE ELECTRODES FOR POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2400
<i>Fan Yang, Magali Spinetta, Sichen Zhong, Mengjie Chen, Gang Wu, Hui Xu</i>	
<b>MOLECULAR-LEVEL DESIGN AND SYNTHESIS OF M-N-C NON-PRECIOUS METAL CATALYSTS DERIVED FROM TRANSITION METAL-COORDINATED BIS(IMINO)-PYRIDINE BASED POLYMERS FOR HIGHLY EFFICIENT OXYGEN REDUCTION</b> .....	2402
<i>Zhiqun Tian</i>	
<b>CHEMICAL STRUCTURE CONTROL OF METAL-REDUCED ORGANIC FRAMEWORK-SUPPORTED NITROGEN-DOPED GRAPHENE CATALYST FOR OXYGEN REDUCTION REACTION</b> .....	2403
<i>Shiqiang Zhuang, Harsimranjit Singh, Eon Soo Lee</i>	
<b>MOVING ANION EXCHANGE MEMBRANE FUEL CELLS TOWARDS REALISTIC OPERATING CONDITIONS</b> .....	2404
<i>Noor Ul Hassan, Horie Adabi Firouzjaie, William E. Mustain</i>	
<b>ELECTRODE ENGINEERING FOR HIGH PERFORMING, LONG-LIFE ANION EXCHANGE MEMBRANE FUEL CELLS</b> .....	2405
<i>Horie Adabi Firouzjaie, Noor Ul Hassan, William E. Mustain</i>	
<b>UNDERSTANDING THE FUNDAMENTAL DRIVERS FOR PERFORMANCE LOSSES IN OPERATING AEMFCs IN THE PRESENCE OF CO<sub>2</sub></b> .....	2406
<i>Yiwei Zheng, Travis J Omasta, John R. Varcoe, Bryan S. Pivovar, William E. Mustain</i>	
<b>NON-PRECIOUS METAL-BASED ELECTROCATALYTIC CATHODE MATERIALS FOR ALKALINE MEMBRANE FUEL CELLS (AMFC)</b> .....	2407
<i>Joselyn Del-Pilar, Mit'El Santiago, Carlos R Cabrera</i>	
<b>HIGHLY ACTIVE PD-CEO<sub>2</sub>-NR/C (CERIUM OXIDE NANORODS) BIFUNCTIONAL NANOCATALYSTS WITH REMARKABLE STABILITY FOR THE ETHANOL OXIDATION AND OXYGEN REDUCTION REACTIONS IN ALKALINE MEDIA</b> .....	2409
<i>P. C. Melendez-Gonzalez, Maria Esther Sanchez-Castro, Ivonne Liliana Alonso-Lemus, R. Perez-Hernandez, Beatriz Escobar-Morales, A. M. Garay-Tapia, F. J. Rodriguez-Varela</i>	
<b>Fe<sub>3</sub>O<sub>4</sub>@PT CORE-SHELL NANOCATALYST SUPPORTED ON N-DOPED FUNCTIONALIZED GRAPHENE AS NOVEL CATHODE CATALYSTS FOR MICROBIAL FUEL CELLS</b> .....	2410
<i>Erendira Garza-Duran, Gregorio Vargas-Gutierrez, Beatriz Escobar-Morales, Ivonne Liliana Alonso-Lemus, F. J. Rodriguez-Varela</i>	
<b>STUDY OF ALKALINE DURABILITY AND ANION CONDUCTIVITY USING NEW EXPANDED PYRIDINIUM POLYMER WITH SELF-ASSEMBLY ABILITY</b> .....	2412
<i>Yuki Motoishi, Tsuyohiko Fujigaya</i>	
<b>SULPHUR-DOPED ORDERED MESOPOROUS CARBON HOLLOW SPHERES WITH HIGH CATALYTIC ACTIVITY FOR THE OXYGEN REDUCTION REACTION AND EXCEPTIONAL ELECTROCHEMICAL STABILITY</b> .....	2413
<i>J. C. Carrillo-Rodriguez, Ivonne Liliana Alonso-Lemus, Luis De La Torre Saenz, Beatriz Escobar-Morales, A. M. Garay-Tapia, F. J. Rodriguez-Varela</i>	
<b>BIOCARBON FROM SEWAGE SLUDGE AS ANODE CATALYST FOR THE PRODUCTION OF BIOELECTRICITY IN AN MFC</b> .....	2415
<i>S. Garcia-Mayagoitia, F. Fernandez-Luqueno, Diana Morales-Acosta, Fernando Lopez-Valdez, Ivonne Liliana Alonso-Lemus, Beatriz Escobar-Morales, Luis De La Torre Saenz, F. J. Rodriguez-Varela</i>	
<b>HIGHLY ACTIVE BINDER FREE PLASMA SPRAYED NON-NOBLE METAL ELECTRODES FOR ANION EXCHANGE MEMBRANE ELECTROLYSIS AT DIFFERENT REDUCED KOH CONCENTRATIONS</b> .....	2417
<i>Fatemeh Razmjooei, Regine Reifner, Aldo Saul Gago, Asif Ansar</i>	
<b>CONTAMINATION OF METAL IMPURITIES DURING HYDROGEN EVOLUTION/OXIDATION REACTION</b> .....	2418
<i>Daniel Jochen Weber, Carsten Dosche, Mehtap Oezaslan</i>	
<b>EFFECT OF CATALYST LAYER THICKNESS AND POROSITY ON ETHANOL OXIDATION</b> .....	2420
<i>Ehab N El Sawy, Laura Matchett, Viola Ingrid Birss</i>	
<b>HETEROATOM (N, P, B) DOPED HIERARCHICAL POROUS CARBONS FROM COAL TAR PITCH WITH HIGH SPECIFIC SURFACE AREA FOR OXYGEN REDUCTION REACTION</b> .....	2421
<i>Fang Dong, Jinli Qiao</i>	
<b>IMPROVING REACTANT AND PROTON TRANSPORT IN CATALYST LAYERS FOR DIRECT ALCOHOL FUEL CELLS</b> .....	2422
<i>Pascal Hauenstein, Simon Thiele</i>	



<b>GENERALIZED SILICA-COATING-MEDIATED SYNTHESIS TOWARD ENHANCING THE CATALYTIC ACTIVITY OF Fe<sup>2+</sup>/N/C OXYGEN REDUCTION ELECTROCATALYSTS</b> .....	2423
<i>Jinwoo Woo, Young Jin Sa, Sang Hoon Joo</i>	
<b>THIN FILM MORPHOLOGICAL CHARACTERISTICS OF A PERFLUORINATED ANION EXCHANGE MEMBRANE</b> .....	2424
<i>Ashutosh G Divekar, Nora C Buggy, Peter J Dudenas, Ahmet Kusoglu, Soenke Seifert, Bryan S. Pivovar, Andrew M. Herring</i>	
<b>ETHANOL/FORMIC ACID BLEND AS AN ALTERNATIVE FUEL FOR THE PD-BASED DIRECT FORMIC ACID FUEL CELLS</b> .....	2426
<i>Nashaat Ahmed, Mohamed Zahran, Taher Alnajjar, Ehab N El Sawy</i>	
<b>QUANTIFYING THE EFFECT OF RUTHENIUM CONTAMINATION ON THE ORR ACTIVITY OF DMFC CATHODE CATALYST</b> .....	2427
<i>Chen Olewsky, Tania Ripenbein, Liz Keinan, Ohad Ben Yehuda, Meital Shviro, Dmitri Kaplan, Emanuel Peled</i>	
<b>ELECTROREDUCTION OF OXYGEN ON CARBIDE-DERIVED CARBON SUPPORTED PD CATALYSTS</b> .....	2428
<i>Madis Lusi, Heiki Erikson, Maida Merisalu, Maik Kaarik, Jaan Leis, Vaino Sammelselg, Tiit Kaljuvee, Kaido Tammeveski</i>	
<b>BIO DERIVED ELECTROCATALYST : CO<sub>2P</sub> NANOPARTICLES SUPPORTED ON HETEROATOM DOPED CARBON FOR HIGHLY EFFICIENT OXYGEN REDUCTION</b> .....	2430
<i>Dong Wook Lee, Injoon Jang, Jue-Hyuk Jang, Kwan Young Lee, Sung Jong Yoo</i>	
<b>HIGH-THROUGHPUT ANION EXCHANGE MEMBRANE CHARACTERIZATION AT NREL</b> .....	2431
<i>Kelly M Meek, Christopher M Antunes, Derek Strasser, Zbyslaw R. Owczarczyk, Ami Neyerlin, Bryan S. Pivovar</i>	
<b>DETERMINING KINETIC BARRIERS IN HYDROGEN ELECTROCATALYSIS IN ALKALINE MEDIA THROUGH SINGLE-CRYSTAL VOLTAMMETRY AND KINETIC ISOTOPE EFFECTS</b> .....	2432
<i>Luis Rebolgar, Saad Intikhab, Joshua David Snyder, Maureen H Tang</i>	
<b>ENHANCED ALKALINE HYDROGEN OXIDATION REACTION BY MODIFYING PT NANOPARTICLE SURFACE WITH ANOTHER METAL</b> .....	2434
<i>Junya Ohyama, Keiichi Okubo, Atsushi Satsuma</i>	
<b>NEW INSIGHTS OF HYDROGEN OXIDATION REACTION MECHANISM OF PLATINUM-BASED BIMETALLIC CATALYSTS IN ALKALINE</b> .....	2436
<i>Ershuai Liu, Sanjeev Mukerjee, Qingying Jia</i>	
<b>CARBON-SUPPORTED IR<sub>2</sub>RU<sub>4</sub> ALLOY CATALYST WITH HIGH PERFORMANCE FOR THE HYDROGEN OXIDATION REACTION IN ALKALINE MEMBRANE FUEL CELL</b> .....	2437
<i>Seung Woo Lee, Chae Kyung Baik, Yong-Hun Cho, Chanho Pak</i>	
<b>A NON-NEGLIGIBLE INTERFACE EFFECT FOR ALKALINE HYDROGEN OXIDATION REACTION</b> .....	2439
<i>Tonghui Zhao, Mingxing Gong, Deli Wang</i>	
<b>HYDROGEN OXIDATION REACTION ON PT AND PT ALLOYS AND THE ROLE OF CATIONS IN ALKALINE MEDIA</b> .....	2441
<i>Daniel Jochen Weber, Mehtap Oezaslan</i>	
<b>INVESTIGATING THE EFFECT OF RU(OH)<sub>x</sub> SURFACE DECORATION ON HER/HOR KINETICS</b> .....	2443
<i>Saad Intikhab, Luis Rebolgar, Maureen H. Tang, Joshua David Snyder</i>	
<b>SYNTHESIS AND CHARACTERIZATION OF ELECTROCATALYSTS FOR THE HYDROGEN EVOLUTION AND HYDROGEN OXIDATION REACTIONS IN ALKALINE ENVIRONMENT</b> .....	2445
<i>Stefan T. D. Williams, Gabriel A. Goenaga, Ramez A. Elgammal, Thomas A. Zawodzinski</i>	
<b>A UNIVERSAL PICTURE OF THE HER/HOR KINETICS OF PT IN ALKALINE SOLUTION</b> .....	2447
<i>Ershuai Liu, Li Jiao, Sanjeev Mukerjee, Qingying Jia</i>	
<b>(INVITED) "PT-FREE" ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION (ORR) COMPRISING GRAPHENE-BASED "CORES" AND METAL CARBON NITRIDE "SHELLS"</b> .....	2449
<i>Vito Di Noto, Enrico Negro, Angeloclaudio Nale, Pawel J. Kulesza, Iwona Agnieszka Rutkowska, Yannick Bang, Ketil Vezzu, Gioele Pagot, Giuseppe Pace</i>	
<b>(INVITED) NOVEL INSIGHTS IN THE ACTIVITY, SELECTIVITY AND DURABILITY OF FENC, MN-OXIDES AND FENC/MN-OXIDE COMPOSITES FOR ORR CATALYSIS IN ALKALINE ELECTROLYTE AND AEMFC</b> .....	2451
<i>Frederic Jaouen, Pietro Giovanni Santori, Florian Dominik Speck, Serhiy Cherevko, Xiong Peng, William E. Mustain, John R. Varcoe</i>	
<b>HETEROATOM-DOPED GRAPHDIYNES: ENHANCED OXYGEN REDUCTION/EVOLUTION REACTION ELECTROCATALYTIC ACTIVITY</b> .....	2453
<i>Jinxing Gu, Saneliswa Magagula, Jingxiang Zhao, Zhongfang Chen</i>	
<b>RECENT ADVANCES IN THE DESIGN OF 3D PGM-FREE MOLECULAR CATALYSTS FOR ORR</b> .....	2454
<i>Lior Elbaz, Noam Zion</i>	
<b>THE ROLE OF NITROGEN AND BORON DOPANTS INCORPORATED IN CARBON NANO ONIONS TOWARD ELECTROCATALYTIC OXYGEN REDUCTION REACTION</b> .....	2456
<i>Udari Shyamika Kodithuwakku, Namal Wanninayake, Melonie Thomas, Beth Guiton, Doo Young Kim</i>	
<b>TOWARDS HIGH-PERFORMANCE PGM-FREE ORR ELECTROCATALYSTS: INTERPLAY BETWEEN THEORY AND EXPERIMENT</b> .....	2458
<i>Zhongfang Chen</i>	
<b>PT<sub>3</sub>CO NANOALLOYS DECORATED GRAPHENE ELECTROCATALYST FOR THE OXYGEN REDUCTION, METHANOL OXIDATION, AND DETOXIFICATION OF ALKYL HALIDES</b> .....	2459
<i>Pravin Popinand Ingole, Shwetambara Jha</i>	

<b>FUEL AND WATER MANAGEMENT IN DIRECT METHANOL FUEL CELLS</b> .....	2461
<i>Isaac Blankenau, Lauren Marten, Xianglin Li</i>	
<b>MAKING COPPER AND ALLOYED SINGLE CRYSTAL BEADS BY OXYGEN-HYDROGEN FLAME IN AIR AND BOOSTING THE ELECTROCATALYTIC ACTIVITY TOWARD FORMALDEHYDE OXIDATION BY THE FACTOR OF 12 WITH 1.5 % OF NI</b> .....	2462
<i>Weicheng Liao, Yi-Wei Chen, Shuehlin Yau, Jing-Jong Shyue</i>	
<b>METAL-NICKEL OXYHYDROXIDE NANOSTRUCTURES ON CARBON CLOTHES AS ANODE CATALYSTS FOR DIRECT UREA FUEL CELLS</b> .....	2464
<i>Jaesik Yoon, Doohee Lee, Eunji Lee, Young Soo Yoon, Dong-Joo Kim</i>	
<b>(INVITED) CHEMICAL AND STRUCTURAL FACTORS AFFECTING THE HYDRATED MORPHOLOGY OF ANION EXCHANGE MEMBRANES</b> .....	2466
<i>Stephen J. Paddison</i>	
<b>MOLECULAR DYNAMICS SIMULATION ON QUATERNIZED AMMONIUM POLY (ETHER ETHER KETONE) FOR ANION-EXCHANGE MEMBRANE FUEL CELLS</b> .....	2467
<i>Sian Chen, Haining Wang, Jin Zhang, Shanfu Lu, Yan Xiang</i>	
<b>UNDERSTANDING THE MASS TRANSFER AND DIFFUSION EFFECTS OF CARBON-DIOXIDE ABSORPTION WITH REACTION IN AN ANION EXCHANGE MEMBRANE</b> .....	2469
<i>Ashutosh G Divekar, Christopher M Antunes, Ami C. Yang-Neyerlin, Bryan S. Pivovar, Andrew M. Herring</i>	
<b>HYDROXIDE AND CARBON DIOXIDE TRANSPORT PROPERTIES IN HIGH PERFORMANCE POLY(NORBORNENE) ANION EXCHANGE MEMBRANES</b> .....	2470
<i>Garrett Huang, Mrinmay Mandal, Paul A Kohl</i>	
<b>STRUCTURE-TRANSPORT RELATIONSHIPS OF ANION EXCHANGE MEMBRANES</b> .....	2471
<i>Xiaoyan Luo, Ahmet Kusoglu</i>	
<b>DEVELOPMENT OF HIGHLY DURABLE ANION CONDUCTIVE MEMBRANE WITH ALL-AROMATIC BACKBONE FOR ALKALINE FUEL CELL APPLICATION</b> .....	2472
<i>Shoji Miyanishi, Takeo Yamaguchi</i>	
<b>SYNTHESIS OF POLY(NORBORNENE) ANION CONDUCTING MEMBRANES FOR ALKALINE ELECTROCHEMICAL DEVICES: STRUCTURE-PROPERTY RELATIONSHIPS</b> .....	2474
<i>Mrinmay Mandal, Garrett Huang, Paul A Kohl</i>	
<b>ALKALINE STABILITY AND FUEL CELL PERFORMANCE OF PIPERIDINIUM-BASED ANION EXCHANGE MEMBRANES</b> .....	2475
<i>Zhongyang Wang, Yang Zhao, Vijay Ramani</i>	
<b>ALKALINE EXCHANGE FUEL CELL MEMBRANE IONOMERS CONTAINING SPIROCYCLIC REPEAT UNITS IN AN ALL CARBON BACKBONE FOR ENHANCED DURABILITY</b> .....	2476
<i>Derek Strasser, Kelly M Meek, Ami Neyerlin, Christopher M Antunes, Bryan S. Pivovar</i>	
<b>SYNTHESIS AND CHARACTERIZATION OF COMPOSITE ANION EXCHANGE MEMBRANES (AEM) USING LAYERED DOUBLE HYDROXIDES (LDH) WITH IONIC LIQUIDS (IL) AND METAL ORGANIC FRAMEWORK (MOF)</b> .....	2477
<i>Riccardo Narducci, Maria Luisa Di Vona</i>	
<b>MOLTEN HYDROXIDE DUAL-PHASE MEMBRANES FOR INTERMEDIATE-TEMPERATURE FUEL CELLS</b> .....	2479
<i>Vedasri Vedharathinam, Anna N Ivanovskaya, Maira R. Ceron, Patrick G. Campbell, S Elangovan, Joseph J Hartvigsen, Lyman J Frost</i>	
<b>(INVITED) KINETIC PARAMETERS IN ANION-EXCHANGE MEMBRANE FUEL CELLS</b> .....	2480
<i>Annika Elisabet Carlson, Henrik Grimler, Henrik Ekstrom, Carina Lagergren, Goran Lindbergh, Rakel Wreland Lindstrom</i>	
<b>ANALYSIS AND OPTIMIZATION OF TRANSPORT LOSSES IN HYDROXIDE EXCHANGE MEMBRANE FUEL CELLS</b> .....	2481
<i>Lin Shi, Catherine M. Weiss, Brian P. Setzler, Teng Wang, Santiago Rojas-Carbonell, Lan Wang, Keda Hu, Junhua Wang, Yushan Yan</i>	
<b>(INVITED) POLY(NORBORNENE) HYDROXIDE CONDUCTIVE POLYMERS: STABLE, HIGH CONDUCTIVITY HYDROXIDE CONDUCTING BLOCK COPOLYMER MEMBRANES AND THEIR APPLICATIONS</b> .....	2483
<i>Paul A Kohl, Mrinmay Mandal, Garrett Huang</i>	
<b>RECENT ADVANCES IN LOW AND PT-FREE LOADING IN ANION EXCHANGE MEMBRANE FUEL CELLS</b> .....	2484
<i>Ami Neyerlin, Derek Strasser, Christopher M Antunes, Zbyslaw R. Owczarczyk, Kelly M Meek, Bryan S. Pivovar</i>	
<b>(INVITED) CHARACTERIZING PERFORMANCE LOSSES OVER TIME IN AN ALKALINE EXCHANGE MEMBRANE-ELECTRODE ASSEMBLY BY ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY</b> .....	2485
<i>Alina Amel, Aviv Ashdot, Miles Page, Ervin Tal-Gutmacher</i>	
<b>DURABILITY-LIMITING FACTOR OF ANION EXCHANGE MEMBRANE FUEL CELLS</b> .....	2486
<i>Daniel Philip Leonard, Sandip Maurya, Albert S Lee, Dongguo Li, Yu Seung Kim</i>	
<b>PROPERTIES AND PARAMETERS OF IMPORTANCE FOR ENHANCED PERFORMANCE AND PERFORMANCE STABILITY OF ANION EXCHANGE MEMBRANE FUEL CELLS - A MODELING STUDY</b> .....	2487
<i>Simon Brandon, Karam Yassin, Igal G Rasin, Dario R. Dekel</i>	
<b>COMPARISON OF DIRECT SODIUM BOROXYDRIDE FUEL CELLS WITH CATION AND ANION EXCHANGE MEMBRANES</b> .....	2488
<i>Karen Swider-Lyons, Y Garsany, R. M. E. Hjelm</i>	

<b>(INVITED) EFFICIENT PH-GRADIENT-ENABLED MICROSCALE BIPOLAR INTERFACES IN HIGH PERFORMANCE DIRECT BOROHYDRIDE FUEL CELLS</b> .....	2490
<i>Zhongyang Wang, Javier Parrondo, Cheng He, Shrihari Sankarasubramanian, Vijay Ramani</i>	
<b>PROMOTING ALKALINE HYDROGEN EVOLUTION ACTIVITY USING ORDERED MESOPOROUS A-MOC<sub>1-X</sub> SUPPORTED PT CATALYSTS</b> .....	2492
<i>Du San Baek, Gwan Yeong Jung, Sang Kyu Kwak, Sang Hoon Joo</i>	
<b>ANION EXCHANGE MEMBRANE WITH THERMALLY CONVERTIBLE UNIT FOR ALKALINE WATER ELECTROLYZER</b> .....	2493
<i>Hafis Pratama Rendra Graha, Shoji Miyanishi, Shinji Ando, Takeo Yamaguchi</i>	
<b>P2G SYSTEM TECHNOLOGY DEVELOPMENT AIMING AT BUILDING A CO<sub>2</sub>-FREE HYDROGEN SOCIETY</b> .....	2495
<i>Masaki Sakamoto, Daisuke Izuhara, Hiroko Sotouchi, Fukuo Aoyagi</i>	
<b>THE EFFECT OF GAS DIFFUSION LAYER ON THE STABILITY OF PEM UNITIZED REGENERATIVE FUEL CELL</b> .....	2497
<i>Xinrong Zhang</i>	
<b>A NOVEL WATER OXIDATION CATALYST MADE BY THE FACILE DEPOSITION OF RUTHENIUM ON GRAPHENE OXIDE</b> .....	2498
<i>Holly M Fruehwald, Reza B. Moghaddam, Olena V Zenkina, E. Bradley Easton</i>	
<b>RUTHENIUM-METAL NANOSTRUCTURES FOR HIGH ACTIVITY AND STABILITY ACIDIC OXYGEN EVOLUTION ELECTROCATALYSTS</b> .....	2500
<i>Jesus Adame Solorio, Fernando Godinez-Salomon, Christopher P. Rhodes</i>	
<b>EFFECT OF INNER CATALYST LAYER WITH PTFE BINDER ON PERFORMANCE OF HIGH TEMPERATURE POLYMER ELECTROLYTE MEMBRANE FUEL CELLS</b> .....	2501
<i>Eunae Lee, Do-Hyung Kim, Chanho Pak</i>	
<b>ACTIVITY AND DURABILITY STUDY OF CARBON NANOTUBE-BASED ANODE ELECTROCATALYST FOR WATER ELECTROLYZER</b> .....	2502
<i>Tsuyohiko Fujigaya, Akiko Inada, Yuriko Kakita, Kohei Ito</i>	
<b>(INVITED) U.S. DEPARTMENT OF ENERGY'S LOW TEMPERATURE ELECTROLYSIS R&amp;D ACTIVITIES</b> .....	2503
<i>David Peterson, Eric L. Miller, Katie Randolph</i>	
<b>(INVITED) LARGE SCALE PEM ELECTROLYSIS FOR INDUSTRIAL APPLICATIONS</b> .....	2504
<i>Philipp Lettenmeier</i>	
<b>PERFORMANCE AND 4000 HOURS DURABILITY BEHAVIOR OF NOBLE METAL-COATED POROUS TRANSPORT LAYERS FOR PEM WATER ELECTROLYZERS</b> .....	2506
<i>Chang Liu, Marcelo Carmo, Meital Shviro, Werner Lehnert</i>	
<b>DEVELOPMENT OF ACLS ELECTRODES FOR A WATER ELECTROLYSIS CELL</b> .....	2508
<i>Norihiro Yoshinaga, Yuta Kanai, Taishi Fukazawa, Yoshitiko Nakano, Wu Mei</i>	
<b>MEASUREMENT OF PROTONIC CONDUCTIVITY OF PEM WATER ELECTROLYZER ELECTRODES</b> .....	2510
<i>Manas Mandal, Michael Moore, Marc Secanell</i>	
<b>UNDERSTANDING INTERFACES OF PEM ELECTROLYZERS WITH OPERANDO SYNCHROTRON X-RAY COMPUTED TOMOGRAPHY AND RADIOGRAPHY</b> .....	2512
<i>Emily Leonard, Andrew Shum, Dinesh C Sabarirajan, Christopher B Capuano, Katherine E. Ayers, Nemanja Danilovic, Lalit M. Pant, Adam Z. Weber, Xianghui Xiao, Dilworth Y. Parkinson, Iryna V. Zenyuk</i>	
<b>SEPARATION OF POLARIZATION FOR PROTON EXCHANGE MEMBRANE WATER ELECTROLYZERS</b> .....	2513
<i>Shigenori Mitsushima, Hayato Kashiwagi, Kensaku Nagasawa, Yoshiyuki Kuroda</i>	
<b>DURABILITY LOSS MECHANISMS AND SOURCES IN PROTON EXCHANGE MEMBRANE-BASED ELECTROLYSIS</b> .....	2515
<i>Shaun M Alia, Grace C. Anderson, Shraboni Ghoshal, Sarah F Zaccarine, Svitlana Pylypenko</i>	
<b>ELECTROLYSIS CELL PERFORMANCE AND DURABILITY - A CONTRADICTION IN TERMS?</b> .....	2517
<i>Boris Bensmann, Michel Suermann, Patrick Trinke, Christoph Immerz, Agata Broda, Richard Hanke-Rauschenbach</i>	
<b>(INVITED) OXYGEN EVOLUTION REACTION ON M-IRIDIUM OXIDE (M=Ni, Co) SURFACES: INSIGHTS FROM FIRST-PRINCIPLES COMPUTATIONS AND EXPERIMENTS</b> .....	2518
<i>Perla B. Balbuena, Luis E Camacho-Forero, Fernando Godinez-Salomon, Christopher P. Rhodes</i>	
<b>(INVITED) ADVANCED IN SITU CHARACTERIZATION OF ENERGY CONVERSION ELECTROCATALYSTS</b> .....	2519
<i>Meital Shviro, Martin Gocyla, Seongeun Park, Marcelo Carmo, Rafal E. Dunin-Borkowski, Detlef Stolten</i>	
<b>ELECTROCATALYST PERFORMANCE IN ACIDIC AQUEOUS AND SOLID POLYMER ELECTROLYTES</b> .....	2520
<i>Julius Knoppel, Konrad Ehelebe, Daniel Escalera Lopez, Michael T. Y. Paul, Karl J. J. Mayrhofer, Serhiy Cherevko</i>	
<b>EFFECT OF SUBSTITUENTS ON THE ACTIVITY OF ORGANIC MOLECULAR ELECTROCATALYSTS FOR HYDROGEN EVOLUTION REACTION</b> .....	2521
<i>Xi Yin, Edward F. Holby, Cameron M Moore, Piotr Zelenay</i>	
<b>IMPROVEMENTS OF COP<sub>x</sub> STABILITY BY CATHODIC PROTECTION IN DISCONTINUOUS AND INTERRUPTED OPERATIONS OF ALKALINE WATER ELECTROLYSIS</b> .....	2522
<i>Ik-Sun Kim, Hyun-Seok Cho, Won-Chul Cho, Sang-Kyung Kim, Jong Hoon Joo, Chang Hee Kim</i>	
<b>ULTRA-SMALL IRIIDIUM OXIDE NANOPARTICLES DECORATED CARBON NANOSTRUCTURES; HIGHLY EFFICIENT ELECTROCATALYSTS FOR THE OXYGEN EVOLUTION REACTION</b> .....	2524
<i>Rajashekar Badam, Masanori Hara, Masamichi Yoshimura, Noriyoshi Matsumi</i>	

<b>MICROWAVE-INITIATED SYNTHESIS OF METAL CHALCOGENIDES/GRAPHENE-CATALYST FOR ENHANCED HYDROGEN EVOLUTION REACTION</b> .....	2526
<i>Xinyu Zhang, Shatila Sarwar, Amit Nautiyal, Jonathan Cook</i>	
<b>INFLUENCE OF COMPOSITION AND NANO-SCALE MORPHOLOGY ON ENHANCING THE ACID MEDIATED OXYGEN EVOLUTION ELECTROCATALYSIS OF EARTH ABUNDANT AND LOW PGM CONTAINING TRANSITION METAL OXIDE SOLID SOLUTION OXIDE ANODES</b> .....	2527
<i>Shrinath Dattatray Ghadge, Oleg I Velikokhatnyi, Moni Kanchan Datta, Prashant Nagesh Kumta</i>	
<b>(AMAZON CATALYST AT ECS GRANT WINNER) CARBON CATALYSTS FOR COST-EFFICIENT HYDROGEN PRODUCTION IN PEM ELECTROLYZERS</b> .....	2529
<i>Rajib Kumar Das, Svetlana V Vasilyeva, Chong Zhao, Andrew G. Rinzler</i>	
<b>DEVELOPMENT OF MEMBRANE ELECTRODE ASSEMBLIES FOR STATE-OF-THE-ART ANION EXCHANGE AND PROTON EXCHANGE MEMBRANE ELECTROLYSIS</b> .....	2530
<i>Andrew R Motz, Christopher B Capuano, Katherine E. Ayers</i>	
<b>MODELING ELECTROLYTE COMPOSITION EFFECTS ON ANION-EXCHANGE-MEMBRANE WATER ELECTROLYZER PERFORMANCE</b> .....	2531
<i>Lauren N. Stanislaw, Michael R. Gerhardt, Adam Z. Weber</i>	
<b>ANALYZING AND IMPROVING PERFORMANCE OF ANION EXCHANGE MEMBRANE WATER ELECTROLYSIS</b> .....	2532
<i>Zach Green, Zhang Wang, Wenjuan Shi, Yushan Yan, Hui Xu</i>	
<b>AEM ELECTROLYSIS TESTING UPDATE AND INDUSTRIAL DEVICE REQUIREMENTS</b> .....	2533
<i>Christopher B Capuano, Kathy Ayers, Alex Keane</i>	
<b>POLYMER HYDROXIDE EXCHANGE MEMBRANE ELECTROLYZERS WITH PURE WATER FEED</b> .....	2535
<i>Yushan Yan</i>	
<b>IMPROVEMENTS TO INTEGRATE ALKALINE WATER ELECTROLYZERS FOR H<sub>2</sub> PRODUCTION FROM RENEWABLE SOURCES</b> .....	2536
<i>Hyun-Seok Cho, Won Chul Cho, Sang-Kyung Kim, Srivatch Shimpalee, Chang Hee Kim</i>	
<b>THREE-DIMENSIONAL NUMERICAL COUPLING SIMULATION OF TWO-PHASE FLOW AND ELECTROCHEMICAL PHENOMENA ON ALKALINE WATER ELECTROLYSIS</b> .....	2537
<i>Kenjiro Torii, Manabu Kodama, Shuichiro Hirai</i>	
<b>VARIPORE™: A POWERFUL MANUFACTURING PLATFORM FOR FUEL CELL AND ELECTROLYZER APPLICATIONS</b> .....	2539
<i>Alexey Serov, Alia Lubers, Geoffrey McCool, Samuel McKinney, Henry Romero, Barr Zulevi</i>	
<b>ELUCIDATING THE CATALYST-IONOMER-MEMBRANE INTERFACE IN ALKALINE EXCHANGE MEMBRANE ELECTROLYSIS CELLS</b> .....	2541
<i>Shraboni Ghoshal, Bryan S. Pivovar, Shaun M Alia</i>	
<b>ACTIVITY AND STABILITY OF IRON-BASED SPINEL OXIDES FOR OXYGEN EVOLUTION REACTION</b> .....	2542
<i>Wulv Jiang, Weiyan Liu, Fei Tang, Lin Gan</i>	
<b>HIGHLY ACTIVE AND DURABLE PEROVSKITE OER CATALYST FOR PURE WATER ANION EXCHANGE MEMBRANE ELECTROLYSIS</b> .....	2543
<i>Hoon T Chung, Dongguo Li, Albert S Lee, Cy Fujimoto, Yu Seung Kim</i>	
<b>NEW AVENUES TO MOF-DERIVED COBALT CHALCOGENIDES FOR EFFICIENT ELECTROCATALYSIS</b> .....	2544
<i>Debanjan Das, Karuna Kar Nanda</i>	
<b>INFLUENCE OF ELEMENTAL COMPOSITIONS AND CRYSTALLINE STRUCTURES ON ELECTROCATALYTIC ACTIVITY OF FE-BASED OXIDES FOR OXYGEN EVOLUTION REACTION IN ALKALINE WATER SPLITTING</b> .....	2545
<i>Yuuki Sugawara, Keigo Kamata, Takeo Yamaguchi</i>	
<b>BISMUTH SUBSTITUTED STRONTIUM COBALT PEROVSKITES FOR CATALYZING OXYGEN EVOLUTION</b> .....	2547
<i>Jiayu Peng, Denis Kuznetsov, Livia Giordano, Yuriy Roman, Yang Shao-Horn</i>	
<b>NI-Fe HYDROXIDE/OXIDE NANOSTRUCTURES GENERATED ON STAINLESS STEELS FOR EFFICIENT ALKALINE WATER ELECTROLYSIS</b> .....	2549
<i>Naoto Todoroki, Toshimasa Wadayama</i>	
<b>RATIONAL DESIGN OF PEROVSKITE OXIDE NANOFIBERS AS ELECTROCATALYSTS FOR OXYGEN EVOLUTION REACTION</b> .....	2552
<i>Bote Zhao, Meilin Liu</i>	
<b>PRECIOUS METAL FREE MATERIALS AS EFFICIENT CATALYSTS FOR WATER SPLITTING</b> .....	2553
<i>Pei Kang Shen</i>	
<b>A GENERAL METHOD TO PROBE OXYGEN EVOLUTION INTERMEDIATES AT OPERATING CONDITIONS</b> .....	2555
<i>Huabing Tao, Yinghua Xu, Xiang Huang, Jingguang G Chen, Bin Liu</i>	
<b>BIPOLAR MEMBRANE DEVELOPMENT FOR REVERSIBLE FUEL CELLS</b> .....	2556
<i>Yingying Chen, Ellis Klein, Todd G Deutsch, K C Neyerlin</i>	
<b>MICROSTRUCTURED CATHODES FOR ENHANCED TRANSPORT IN UNITIZED REVERSIBLE FUEL CELLS</b> .....	2558
<i>Siddharth Komini Babu, Zachary Ryan Brounstein, Md. Aman Uddin, Jacob S Spendelow</i>	
<b>INVESTIGATION OF POROUS TRANSPORT LAYER PARAMETERS FOR PROTON EXCHANGE MEMBRANE WATER ELECTROLYSIS</b> .....	2560
<i>Zhenye Kang, Shaun M Alia, James L. Young, Guido Bender</i>	

<b>ON THE ROLE OF THE POROUS TRANSPORT LAYER STRUCTURE IN POLYMER ELECTROLYTE WATER ELECTROLYSIS</b> .....	2563
<i>Tobias Schuler, Thomas J. Schmidt, Felix N. Buchi</i>	
<b>EFFECT OF MICROSCOPIC OXYGEN BUBBLES ON MEASURED OER CATALYST STABILITY - A COMPARATIVE STUDY BETWEEN RDE AND MEA MEASUREMENTS</b> .....	2564
<i>Hany A El-Sayed, Mohammad Fathi Tovini, Alexandra Weiß, Hubert A. Gasteiger</i>	
<b>OPERANDO SUB-SECOND NEUTRON IMAGING OF CATIONIC SPECIES MIGRATION IN A PROTON EXCHANGE MEMBRANE WATER ELECTROLYZER</b> .....	2565
<i>Mateusz Zlobinski, Ugljesa Babic, Lorenz Gubler, Thomas J. Schmidt, Pierre Boillat</i>	
<b>IN-PLANE MASS TRANSPORT IN POLYMER ELECTROLYTE MEMBRANE ELECTROLYZER POROUS TRANSPORT LAYERS WITH THROUGH PORES</b> .....	2567
<i>Pascal Junseob Kim, Chunghyuk Lee, Jason Keonhag Lee, Kieran F. Fahy, Aimy Bazylak</i>	
<b>BALANCING REACTANT TRANSPORT AND PTL-CL CONTACT IN PEM ELECTROLYZERS BY OPTIMIZING PTL DESIGN PARAMETERS VIA STOCHASTIC PORE NETWORK MODELING</b> .....	2568
<i>Jason Keonhag Lee, Aimy Bazylak</i>	
<b>TRANSIENT GAS SATURATION IN POROUS TRANSPORT LAYERS OF POLYMER ELECTROLYTE MEMBRANE ELECTROLYZERS</b> .....	2570
<i>Chunghyuk Lee, Jason Keonhag Lee, Benzong Zhao, Kieran F. Fahy, Aimy Bazylak</i>	
<b>EFFECTS OF CATALYST AND ELECTRODE COMPOSITION ON PERFORMANCE OF UNITIZED REGENERATIVE FUEL CELLS</b> .....	2572
<i>Christopher P. Rhodes, Fernando Godinez-Salomon, Jesus Adame Solorio</i>	
<b>INVESTIGATION OF THE MICROSTRUCTURE AND RHEOLOGY OF IRIIDIUM OXIDE CATALYST INKS FOR LOW-TEMPERATURE POLYMER-ELECTROLYTE-MEMBRANE WATER ELECTROLYZERS</b> .....	2573
<i>Sunilkumar Khandavalli, Jaehyung Park, Nancy N. Kariuki, Deborah J. Myers, Michael Ulsh, Scott A Mauer</i>	
<b>THE SYNTHESIS OF ZIRFON-TYPE POROUS SEPARATOR WITH REDUCED GAS CROSSOVER FOR PRESSURIZED ALKALINE WATER ELECTROLYZER</b> .....	2574
<i>Won-Chul Cho, Hyun-Seok Cho, Sangkyung Kim, Chang Hee Kim</i>	
<b>A PATHWAY TO SIGNIFICANT REDUCTION OF HYDROGEN CROSSOVER WITH PT RECOMBINATION LAYER IN PROTON EXCHANGE MEMBRANE WATER ELECTROLYZERS</b> .....	2575
<i>Gholamreza Mirshekari, Ryan J. Ouimet, Haoran Yu, Zhiqiao Zeng, Leonard J. Bonville, Prasanna Mani, Allison Niedzwiecki, Christopher B Capuano, Katherine E. Ayers, Radenka Maric</i>	
<b>GDL-INTEGRATED ELECTRODES WITH IR-BASED ELECTROCATALYSTS FOR POLYMER ELECTROLYTE MEMBRANE WATER ELECTROLYSIS</b> .....	2577
<i>Masahiro Yasutake, Daiki Kawachino, Zhiyun Noda, Junko Matsuda, Kohei Ito, Akari Hayashi, Kazunari Sasaki</i>	
<b>COMPREHENSIVE OPERANDO ELECTROCHEMICAL XAS STUDY ON NANOPOROUS CU OXIDE FOAMS FOR CO<sub>2</sub> REDUCTION REACTION</b> .....	2579
<i>Mehtap Oezaslan</i>	
<b>CATALYST EFFECTS ON GAS PHASE HCL OXIDATION IN PEM ELECTROLYZER</b> .....	2580
<i>Kris Likit-Anurak, Joseph Steven Lopata, Sirivatch Shimpalee, John W. Weidner, Yottana Khunatorn, Benjamin Highsmith Meekins</i>	
<b>HYBRID AND FUNCTIONALIZED INTERFACES FOR PHOTOELECTROCHEMICAL WATER SPLITTING AND ELECTROCATALYTIC CARBON DIOXIDE REDUCTION</b> .....	2581
<i>Pawel J. Kulesza, Iwona Agnieszka Rutkowska</i>	
<b>(INVITED) OVERVIEW ON THE EUROPEAN FCH JOINT UNDERTAKING PROJECTS &amp; ACTIVITIES IN PEM FUEL CELLS AND ELECTROLYSIS</b> .....	2582
<i>Mirela Atanasiu, Dionisis Tsimis, Lionel Boillot</i>	
<b>(INVITED) TOWARD THE FUTURE FUEL CELL -CHALLENGE FOR 2040-</b> .....	2583
<i>Toshiyuki Suzuki, Akihiro Iiyama, Norio Kubo, Nobuhiro Saito, Kazuhiko Shinohara, Soichiro Shimotori, Yasushi Sugawara, Kohta Yamada</i>	
<b>(INVITED) THE EVOLUTION OF MEMBRANE ELECTRODE ASSEMBLIES FOR AUTOMOTIVE APPLICATIONS</b> .....	2585
<i>Alex Martinez</i>	
<b>(INVITED) HYDROGEN IN AN INTEGRATED ENERGY SYSTEM</b> .....	2586
<i>Christopher Hebling, Tom Smolinka</i>	
<b>(INVITED) ENABLING COST EFFECTIVE HYDROGEN AT LOW TEMPERATURES</b> .....	2587
<i>Sanjeev Mukerjee, Praveen Kolla, Qingying Jia, Ian Kendrick, Yushan Yan</i>	
<b>(INVITED) LATEST ADVANCES IN 2D AND 3D MICROSTRUCTURAL CHARACTERIZATION OF FUEL CELL COMPONENTS</b> .....	2588
<i>Jasna Jankovic</i>	
<b>(INVITED) POLYMERS FOR PROTON AND ANION EXCHANGE MEMBRANE FUEL CELLS</b> .....	2589
<i>Andrew M. Herring</i>	
<b>(INVITED) EFFECT OF WATER AND CARBON DIOXIDE ON ANION-EXCHANGE MEMBRANE FUEL CELLS</b> .....	2590
<i>Dario R. Dekel</i>	
<b>(INVITED) THE KEY PROCESSING ISSUES AND THEIR SOLUTIONS FOR HIGH-QUALITY PEROVSKITE SOLAR CELLS</b> .....	2592
<i>Hojjat Sarvari, Mohsen Nasserri, So Min Park, Poorya Kamali, Douglas Strachan, Kenneth Graham, Vijay Singh, Zhi David Chen</i>	

<b>(INVITED) EFFICIENT AND STABLE METAL HALIDE HYBRID PEROVSKITE SOLAR CELLS</b> .....	2593
<i>Toshinori Matsushima, Chihaya Adachi, Chuanjiang Qin</i>	
<b>RAPID FABRICATION OF THIN FILMS FOR PEROVSKITE SOLAR CELLS</b> .....	2595
<i>Amir Hossein Ghahremani, Thad Druffel</i>	
<b>(INVITED) SCALABLE ROLL-TO-ROLL AND SHEET-TO-SHEET PROCESSING FOR PEROVSKITE PHOTOVOLTAICS</b> .....	2596
<i>Maikel Van Hest</i>	
<b>(INVITED) CRITICAL PARAMETERS FOR GW SCALE PEROVSKITE PV MANUFACTURING</b> .....	2597
<i>Stephan J Deluca, Thomas Tombs</i>	
<b>SCALABLE HOLE TRANSPORT MATERIALS FOR ROLL-TO-ROLL PEROVSKITE PHOTOVOLTAIC MODULES</b> .....	2598
<i>Blake Martin, Amir Hossein Ghahremani, Thad Druffel</i>	
<b>HOLE TRANSPORTING LAYERS IN SOLAR CELLS: STABILIZING NIO PEROVSKITE INKS WITH ORGANIC CAPPING AGENTS</b> .....	2599
<i>Peter Armstrong, Amir Ghahremani, Thad Druffel, Robert Buchanan, Craig Grapperhaus</i>	
<b>PEROVSKITE SOLAR CELLS USING TIN OXIDE AS ELECTRON TRANSPORT LAYER</b> .....	2600
<i>Maniell Workman, Zhi David Chen, Hojjat Sarvari, Guoduan Liu, Kenneth Graham, So Min Park</i>	
<b>PHOTO-ELECTRIC PROPERTIES OF POLYPYRROLE BASED GEL ELECTROLYTE FOR HYBRID PHOTOACTIVE SUPERCAPACITORS</b> .....	2602
<i>Belqasem Aljafari, Fatemeh Khorramshahi, Manoj K. Ram, Arash Takshi</i>	
<b>SCALABLE AND GREEN FABRICATION OF THIN-FILM SOLAR CELLS USING SOLUTION PROCESSED INKJET PRINTING METHOD</b> .....	2603
<i>Poonam Sundriyal, Shantanu Bhattacharya</i>	
<b>EARTH-ABUNDANT SEMICONDUCTORS BASED ELECTRIC POWER WINDOW</b> .....	2605
<i>Malkeshkumar Patel, Dong-Kyun Ban, Thanh Tai Nguyen, Joondong Kim</i>	
<b>MICRO-SOLAR CELLS BY ELECTRODEPOSITION INTO A MICROELECTRODE ARRAY - EFFECT OF DOT DIAMETER</b> .....	2606
<i>Daniel Siopa, Ricardo Goncalinho Poeira, Pedro Anacleto, Sascha Sadewasser, Jan Fransaer, Phillip J. Dale</i>	
<b>ENGINEERING OF SEQUENTIAL-SERIES MULTIUNCTION DYE-SENSITIZED SOLAR CELLS FOR GREATER THAN 10% SOLAR-TO-ELECTRIC EFFICIENCY AND 2.0 V PHOTOVOLTAGE OUTPUT</b> 2608	
<i>Hammad Cheema, Jared H. Delcamp</i>	
<b>(INVITED) A NOVEL OPTICAL CHARACTERIZATION OF A-SI:H/C-SI INTERFACE MICROSTRUCTURES BASED ON DATA OF POSITRON ANNIHILATION SPECTROSCOPY</b> .....	2609
<i>Nobuyuki Matsuki, Takuya Matsui, Koji Michishio, Brian O' Rourke, Nagayasu Oshima, Akira Uedono</i>	
<b>ADHESION FORCE DEGRADATION IN DEGRADED SINGLE JUNCTION AMORPHOUS SILICON MODULE (A-SI:H)</b> .....	2611
<i>Gilbert Osayemwenre</i>	
<b>SPRAY-DEPOSITED AL<sub>2</sub>O<sub>3</sub> FOR REAR PASSIVATION AND OPTICAL TRAPPING IN SILICON SOLAR CELLS</b> .....	2612
<i>Woo Jung Shin, Wen-Hsi Huang, Meng Tao</i>	
<b>ADHERENT LIGHT-INDUCED AL PLATING ON SI FOR SUBSTITUTION OF AG IN SI SOLAR CELLS</b> .....	2613
<i>Lewis Ricci, Mao-Feng Tseng, Woo Jung Shin, Meng Tao, Yunyu Liu, Fangdan Jiang, Guoqiang Xing</i>	
<b>ELECTRICAL PROPERTIES OF MONOCRYSTALLINE THIN FILM SI FOR SOLAR CELLS FABRICATED BY RAPID VAPOR DEPOSITION WITH NANO-SURFACE CONTROLLING DOUBLE LAYER POROUS SI IN H<sub>2</sub></b> .....	2614
<i>Ryotaro Shibahara, Kei Hasegawa, Alain Fave, Erwann Fourmond, Suguru Noda, Manabu Ihara</i>	
<b>FABRICATION OF CZTSSE THIN FILM SOLAR CELL BY SINGLE STEP SULFO-SELENIZATION OF STACKED METAL PRECURSORS</b> .....	2617
<i>Dae-Ho Son, Seung-Hyun Kim, Se-Yun Kim, Young-Il Kim, Jin-Kyu Knag, Kee-Jeong Yang, Dae-Hwan Kim</i>	
<b>DEVELOPMENT OF HETEROJUNCTION SOLAR CELLS COMPRISING OF BORON-DOPED SILICON-CARBON BASED SEMICONDUCTOR THIN FILMS AND N-SI</b> .....	2618
<i>Hiroshi Naragino, Yuta Shimizu, Bunta Kondo, Kensuke Honda</i>	
<b>FLEXIBLE CU<sub>2</sub>ZNSN(S, SE)<sub>4</sub> SOLAR CELLS OVER 7% POWER CONVERSION EFFICIENCY</b> .....	2620
<i>Kee-Jeong Yang</i>	
<b>TRANSPARENT ALL-OXIDE PHOTOVOLTAICS AND INVISIBLE PHOTODETECTORS</b> .....	2621
<i>Malkeshkumar Patel, Dong-Kyun Ban, Joondong Kim</i>	
<b>FABRICATION OF PRBA<sub>0.5</sub>SR<sub>0.5</sub>CO<sub>1.5</sub>FE<sub>0.5</sub>O<sub>5+δ</sub> CATHODE BY INKJET PRINTING FOR HIGH PERFORMANCE PROTONIC CERAMIC FUEL CELLS</b> .....	2622
<i>Eun Heui Kang, Gwon Deok Han, Jong Seon Park, Keun Hee Kim, Kiho Bae, Joon Hyung Shim</i>	
<b>CHARACTERIZATION OF CERIUM DIOXIDE THIN FILMS PREPARED BY PLASMA-ENHANCED ATOMIC LAYER DEPOSITION FOR SOLID OXIDE FUEL CELLS</b> .....	2623
<i>Wonyeop Jeong, Sanghoon Lee, Sangbong Ryu, Gu Young Cho, Jihwan An, Suk Won Cha</i>	
<b>EXPERIMENTAL OPTIMIZATION OF NI-GDC MICROSTRUCTURE WITH VARIOUS PHASE FRACTIONS FOR SOLID OXIDE FUEL CELL ANODE</b> .....	2624
<i>Anna Sciazko, Yosuke Komatsu, Naoki Shikazono</i>	

<b>THE EFFECT OF SRCRO<sub>4</sub> IMPURITY PHASE IN (LA<sub>0.75</sub>SR<sub>0.25</sub>)<sub>0.95</sub>CR<sub>x</sub>FE<sub>1-x</sub>O<sub>3-Δ</sub> (LSCRF) NANOCERAMIC POWDER SERIES AS CATALYST DURING THE PROPANE DEHYDROGENATION .....</b>	<b>2626</b>
<i>Kamil Kucuk, Yunjie Xu, Shankar Aryal, Adam S. Hock, Carlo U. Segre</i>	
<b>LARGE ENHANCEMENT OF OXYGEN SURFACE EXCHANGE KINETICS IN RUDDLESDEN-POPPER THIN FILMS BY THICKNESS CONTROLLED STRAIN .....</b>	<b>2628</b>
<i>Shiyue Zhu, Gene Yang, Wonsang Jung, Yueh-Lin Lee, Kevin Huang, Dongkyu Lee</i>	
<b>COBALT-FREE PEROVSKITE-TYPE OXYGEN REDUCTION REACTION CATALYSTS FOR ENERGY CONVERSION .....</b>	<b>2629</b>
<i>Senthil Velan Venkatesan, Orrsam Aadil Abubaker, Kalpana Singh, Venkataraman Thangadurai</i>	
<b>CATALYST-COATED PRBA<sub>0.8</sub>CA<sub>0.2</sub>CO<sub>2</sub>O<sub>5+Δ</sub> CATHODE WITH HIGH CR-POISONING TOLERANCE FOR INTERMEDIATE-TEMPERATURE SOLID OXIDE FUEL CELLS .....</b>	<b>2631</b>
<i>Yinghua Niu, Yu Chen, Weilin Zhang, Weidong He, Meilin Liu</i>	
<b>FACILE ONE STEP RAPID LASER REACTIVE PROCESSING OF PROTONIC CERAMIC ELECTROCHEMICAL CELLS .....</b>	<b>2633</b>
<i>Hua Huang, Shenglong Mu, Yuqing Meng, Minda Zou, Zeyu Zhao, Fei Peng, Kyle S Brinkman, Hai Xiao, Jianhua Tong</i>	
<b>CONICAL NANOPORES FOR EFFICIENT ION PUMPING AND DESALINATION .....</b>	<b>2635</b>
<i>Yu Zhang, George Schatz</i>	
<b>(INVITED) AMMONIA PRODUCTION BEYOND HABER-BOSCH PROCESS .....</b>	<b>2636</b>
<i>Liangzhu Zhu, Chris Cadigan, Chuancheng Duan, Neal P Sullivan, Ryan O'Hayre</i>	
<b>A PROTON CONDUCTING SOLID OXIDE ELECTROLYSIS CELL WITH TRI-DOPING ELECTROLYTE AND THREE-PHASE CONDUCTING STEAM ELECTRODE FOR SUSTAINABLE HYDROGEN PRODUCTION .....</b>	<b>2637</b>
<i>Hanping Ding, Sathish Rajendran, Leela Arava, Yi Ding, Naresh Kumar Thangavel, Kevin Centeck, Dong Ding</i>	
<b>PROTON CONDUCTING LITHIUM SUPER IONIC CONDUCTOR FOR INTERMEDIATE TEMPERATURE SOLID OXIDE ELECTROLYZER CELL .....</b>	<b>2638</b>
<i>Sathish Rajendran, Naresh Kumar Thangavel, Leela Mohana Reddy Arava</i>	
<b>IMPROVEMENT OF ELECTROCHEMICAL PERFORMANCE OF THIN FILM MIXED IONIC ELECTRONIC CATHODE FOR LOW TEMPERATURE SOLID OXIDE FUEL CELLS BY ADDITIONAL CATALYTIC CURRENT COLLECTING LAYER .....</b>	<b>2640</b>
<i>Sanghoon Lee, Gu Young Cho, Sangbong Ryu, Wonyeop Jeong, Suk Won Cha</i>	
<b>PERFORMANCE ENHANCED SOLID OXIDE FUEL CELL CATHODES BY ELECTROCATALYST SURFACE MODIFICATION .....</b>	<b>2641</b>
<i>Ian Robinson, Yi-Lin Huang, Sam Horlick, Eric D. Wachsman</i>	
<b>DEGRADATION MITIGATION OF INFILTRATED SOLID OXIDE FUEL CELL CATHODES VIA ATOMIC LAYER DEPOSITED ZIRCONIA OVERCOATS .....</b>	<b>2642</b>
<i>Yubo Zhang, Yeting Wen, Kevin Huang, Jason D. Nicholas</i>	
<b>ENHANCING THE ELECTROCHEMICAL PERFORMANCE OF METAL-SUPPORTED SOLID OXIDE FUEL CELLS .....</b>	<b>2645</b>
<i>Fengyu Shen, Emir Dogdibegovic, Grace Y Lau, Mike Tucker</i>	
<b>EPITAXIAL COBALTITE CATALYSTS FOR OXYGEN EVOLUTION REACTION .....</b>	<b>2646</b>
<i>Felix Gunkel, Moritz L. Weber, Christoph Baumer, Regina Dittmann, Rainer Waser</i>	
<b>CATION INSERTION ENGINEERING OF MULTI-GRADIENT OXYGEN ELECTROCATALYSTS FOR RECHARGEABLE QUASI-SOLID-STATE ZINC-AIR BATTERIES .....</b>	<b>2647</b>
<i>Nengneng Xu, Jinli Qiao, Xiao-Dong Zhou</i>	
<b>(INVITED) A DECADE OF PROGRESS UNDER THE U.S. DEPARTMENT OF ENERGY OFFICE OF FOSSIL ENERGY'S SOLID OXIDE FUEL CELL PROGRAM .....</b>	<b>2648</b>
<i>Joseph Stoffa</i>	
<b>(INVITED) SOLID STATE BATTERIES: ENERGY DENSITY, CYCLE- AND MANUFACTURABILITY .....</b>	<b>2649</b>
<i>Grigori L. Soloveichik</i>	
<b>(INVITED) SELF-FORMING HIGH ENERGY DENSITY SOLID STATE RECHARGEABLE BATTERY .....</b>	<b>2650</b>
<i>Esther S Takeuchi, Amy C. Marschilok, Kenneth J Takeuchi</i>	
<b>(INVITED) CHALLENGES OF SOLID STATE ELECTROLYTES FOR HIGH ENERGY BATTERIES .....</b>	<b>2651</b>
<i>Jun Liu</i>	
<b>(INVITED) THE ROLE OF ELECTRONS IN NOMINALLY IONIC CERAMICS: FROM FAST ION CONDUCTORS TO MIXED ION CONDUCTORS .....</b>	<b>2652</b>
<i>I-Wei Chen, Yanhao Dong, Ana Alvarez</i>	
<b>(INVITED) DEVELOPMENT OF CATHODE MATERIALS FOR ALL-SOLID-STATE BATTERIES .....</b>	<b>2654</b>
<i>Leiyang Zeng</i>	
<b>(INVITED) CURRENT STATUS OF SOLID OXIDE FUEL CELL TECHNOLOGY AND COMMERCIALIZATION .....</b>	<b>2655</b>
<i>Subhash C. Singhal</i>	
<b>(INVITED) ELECTRODE ENGINEERING OF SOLID-OXIDE ELECTROCHEMICAL CELLS AT NATIONAL ENERGY TECHNOLOGY LABORATORY .....</b>	<b>2656</b>
<i>Gregory A Hackett, Shiwoo Lee, Harry Abernathy, Thomas Kalapos, Beom-Tak Na, Sixbert P Muhoza, Jack Duffy, Michael D Gross, Kyle S Brinkman</i>	
<b>(INVITED) MEASUREMENT OF POLARIZATION RESISTANCE OF LSM + YSZ ELECTRODES ON YSZ USING AC AND DC METHODS .....</b>	<b>2657</b>
<i>Anil Virkar</i>	

<b>(INVITED) HIGH-PERFORMANCE THIN-FILM SOLID OXIDE FUEL CELLS</b> .....	2658
<i>Nguyen Minh, Yoon Ho Lee, Tuyen Quang Tran, Haowen Ren, Eric Fullerton, Erik Wu, Ying Shirley Meng</i>	
<b>(INVITED) DESIGN CONSIDERATION OF AN IGFC SYSTEM WITH CO<sub>2</sub> CAPTURE</b> .....	2659
<i>Zhien Liu, Pingping Li, Changlei Liu, Hanlin Wang, Chufu Li</i>	
<b>IONIC AND ELECTRONIC TRANSPORT PROPERTIES OF LITHIUM-METAL-OXYGEN SYSTEMS</b> .....	2660
<i>Md Ruhul Amin, Ilias Belharouak</i>	
<b>FABRICATION AND CHARACTERIZATION OF THIN FILM SRCO<sub>0.8</sub>NB<sub>0.1</sub>TA<sub>0.1</sub>O<sub>3-Δ</sub> BY PULSED LASER DEPOSITION</b> .....	2661
<i>Sangbong Ryu, Wonjong Yu, Sanghoon Lee, Wonyeop Jeong, Arunkumar P, Gu Young Cho, Suk Won Cha</i>	
<b>DUAL-PHASE NANOCOMPOSITE CATHODE MATERIALS FOR LOW-TEMPERATURE PROTONIC CERAMIC FUEL CELLS</b> .....	2663
<i>Zeyu Zhao, Jianhua Tong</i>	
<b>RAPID REACTIVE LASER PROCESSING OF PROTONIC CERAMICS</b> .....	2664
<i>Shenglong Mu, Hua Huang, Zeyu Zhao, Minda Zou, Yuzhe Hong, Jincheng Lei, Patrick Kuzbary, Nathan Wan, Kyle S Brinkman, Fei Peng, Hai Xiao, Jianhua Tong</i>	
<b>MULTI-SCALE MODELING OF ANODE-SUPPORTED SOLID OXIDE FUEL CELL</b> .....	2665
<i>Dong Hyup Jeon</i>	
<b>YB DOPING EFFECTS ON STRUCTURE AND PERFORMANCE OF BACO<sub>0.7</sub>FE<sub>0.3-x</sub>YB<sub>x</sub>O<sub>3-Δ</sub> PEROVSKITE</b> .....	2666
<i>Chunyang Yang, Yun Gan, Myongjin Lee, Chunlei Ren, Xingjian Xue</i>	
<b>PHASE-FIELD SIMULATION OF RESISTIVE SWITCHING BEHAVIOR IN BIPOLAR METAL-OXIDE BASED RESISTIVE RANDOM ACCESS MEMORY</b> .....	2667
<i>Kena Zhang, Jianjun Wang, Ye Cao</i>	
<b>INFLUENCE OF ELECTRODE DISTANCE ON THE ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> IN AQUEOUS SOLUTION</b> .....	2668
<i>Junyu Liu, Luwei Peng, Yue Zhou, Jinli Qiao, Joey Jung</i>	
<b>PREPARATION OF BACTERIAL CELLULOSE BASED POLYMER ANION EXCHANGE MEMBRANE AND APPLICATION FOR FUEL CELL</b> .....	2669
<i>Xiaojing Guo, Jinli Qiao</i>	
<b>3D HIERARCHICAL SNO<sub>2</sub>@CARBON CLOTH FOR SELECTIVE ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> TO FORMATE</b> .....	2670
<i>Qi Zhang, Jinli Qiao</i>	
<b>PHASE TRANSITION OF (PR<sub>1-x</sub>ND<sub>x</sub>)<sub>2</sub>NIO<sub>4</sub> UNDER REDUCING ATMOSPHERES</b> .....	2671
<i>Yudong Wang, Xiao-Dong Zhou</i>	
<b>TRI-FUNCTIONAL CATALYSTS DERIVED FROM MNO<sub>2</sub>/CARBON NANOTUBE HYBRIDS FOR FLEXIBLE METAL-AIR BATTERIES AND SUPERCAPACITORS</b> .....	2672
<i>Tianshun Su, Jiawen Liu, Nengneng Xu, Xiao-Dong Zhou, Jinli Qiao</i>	
<b>HIGH PERFORMANCE REVERSIBLE SOLID OXIDE CELLS WITH POROUS LA<sub>0.6</sub>SR<sub>0.4</sub>FeO<sub>3-Δ</sub> OXYGEN ELECTRODES</b> .....	2673
<i>Chengzhi Guan, Kongfa Chen, Jing Zhou, Jian-Qiang Wang, Xiao-Dong Zhou</i>	
<b>INVESTIGATION OF METALLIC DENDRITE GROWTH IN ELECTROLYTES</b> .....	2675
<i>Chong Lei, Taylor D Sparks, Anil V. Virkar</i>	
<b>SOLID ELECTROLYTE FOR LI-ION BATTERIES: SYNTHESIS, CHARACTERIZATION AND SOLID-STATE CELL INTEGRATION</b> .....	2676
<i>Miriam Botros, Oliver Clemens, Ben Breitung, Horst Hahn</i>	
<b>DENSIFICATION AND IONIC-CONDUCTION IMPROVEMENT OF TANTALUM-DOPED GARNET-TYPE LITHIUM LANTHANUM ZIRCONATE SOLID ELECTROLYTES</b> .....	2677
<i>Xingxing Zhang, Jeffrey Fergus</i>	
<b>NEW MIXED GLASS FORMER GLASSY SOLID ELECTROLYTES: A NEW COMPOSITIONAL TOOL TO OPTIMIZE THE PERFORMANCE OF GLASSY SOLID ELECTROLYTES</b> .....	2678
<i>Steve W Martin</i>	
<b>(INVITED) STRUCTURE OF NMC FAMILY CATHODES FROM MONTE CARLO SIMULATION AND NMR SPECTROSCOPY</b> .....	2679
<i>Kristopher J. Harris, Chelsey Hurst, Gillian R. Goward, Jamie M. Foster</i>	
<b>(INVITED) UNDERSTANDING LITHIUM SULFUR BATTERIES AT DIFFERENT SCALES</b> .....	2681
<i>Jie Xiao, Dongping Lu, Jun Liu</i>	
<b>(INVITED) SOLID STATE ELECTROLYTE FOR LI-METAL BASED HIGH CAPACITY BATTERY APPLICATION</b> .....	2682
<i>James J. Wu</i>	
<b>(INVITED) UNDERSTANDING THE SOLID-ELECTROLYTE AND ELECTRODE INTERFACE VIA FIRST-PRINCIPLES PREDICTION OF POTENTIALS AND SPACE-CHARGE LAYERS IN ALL-SOLID-STATE BATTERIES</b> .....	2683
<i>Yue Qi, Michael Swift</i>	
<b>(INVITED) STRUCTURE DESIGN AND PROPERTY ENHANCEMENT OF ELECTRODE MATERIALS OF LITHIUM-ION BATTERY</b> .....	2684
<i>Shi-Gang Sun</i>	
<b>(INVITED) DEVELOPMENT OF HIGH-PERFORMANCE LITHIUM-ION BATTERIES IN THE 21ST CENTURY</b> .....	2685
<i>Yangxing Li</i>	
<b>(INVITED) RECENT DEVELOPMENTS IN INTERMEDIATE-TEMPERATURE REVERSIBLE FUEL CELLS</b> .....	2686
<i>Yu Chen, Yucun Zhou, Nick Kane, Ryan Murphy, Weilin Zhang, Meilin Liu</i>	



<b>(INVITED) ZIRCONIA DOPED CERIA AS A MIXED ION AND ELECTRON CONDUCTOR</b> .....	2687
<i>Sossina M Haile, Weizi Yuan, Ruiyun Huang</i>	
<b>(INVITED) ADDITIVE DUAL NANO CATALYSTS TO ACCELERATE OXYGEN REDUCTION REACTION IN CATHODE OF SOLID OXIDE FUEL CELLS</b> .....	2688
<i>Yun Chen, Kirk Gerdes, Xueyan Song</i>	
<b>(INVITED) ROLE OF MIXED CONDUCTION IN CHROMIUM POISONING OF OXYGEN ELECTRODES OF SOFCs AND SOECs</b> .....	2689
<i>Srikanth Gopalan</i>	
<b>(INVITED) PROGRESS IN METAL-SUPPORTED SOLID OXIDE CELLS WITH INFILTRATED ELECTRODES</b> .....	2690
<i>Michael C Tucker, Emir Dogdibegovic, Fengyu Shen, Ruofan Wang, Grace Y Lau</i>	
<b>(INVITED) SPUTTERED THIN FILMS FOR VERY HIGH POWER, EFFICIENT, AND LOW-COST COMMERCIAL SOFCs</b> .....	2691
<i>Yue Li, Colin M. Gore, Ke-Ji Pan, Johanna Hartmann, Luis Correa, Bryan M. Blackburn, Sean R. Bishop</i>	
<b>(INVITED) SYNCHROTRON-BASED HARD X-RAY MICROSCOPY: INSTRUMENTS FOR 3-D SPECTROSCOPIC IMAGING AT THE NANOSCALE</b> .....	2692
<i>Wilson K. S. Chiu</i>	
<b>(INVITED) DATA SCIENCE IN HIGH TEMPERATURE ELECTROCHEMISTRY: NEW TOOLS FOR QUANTITATIVE CHARACTERIZATION</b> .....	2693
<i>David S Mebane</i>	
<b>A COMPARISON OF STRONTIUM TITANIUM IRON OXIDE PEROVSKITE OXYGEN SURFACE EXCHANGE COEFFICIENTS OBTAINED FROM WAFER CURVATURE VS. OPTICAL RELAXATION</b> .....	2694
<i>Yuxi Ma, Ting Chen, Nicola H. Perry, Jason D. Nicholas</i>	
<b>A STUDY OF THE EFFECTS OF IONS IN AQUEOUS ELECTROLYTE ON CO<sub>2</sub> ELECTROCHEMICAL REDUCTION TO EFFICIENTLY PRODUCE FORMATE</b> .....	2696
<i>Qi Zhang, Xiaolin Shao, Yuyu Liu, Jiujuan Zhang</i>	
<b>DIFFERENCE IN OXIDE ION CONDUCTION PROPERTIES OF OXIDE ION EXCESS AND CATION DEFICIENT PBWO<sub>4</sub>S AND OXIDE ION DEFICIENT CAWO<sub>4</sub></b> .....	2697
<i>Shigeomi Takai, Toshifumi Sano, Takeshi Yabutsuka, Takeshi Yao</i>	
<b>EFFECT OF PRASEODYMIUM IN BARRIER LAYER ON THE PERFORMANCE OF PEROVSKITE CATHODE IN SOFCs</b> .....	2699
<i>Yudong Wang, Xiao-Dong Zhou</i>	
<b>THE EFFECT OF OXYGEN PARTIAL PRESSURE AND COMPOSITION ON THE OXYGEN REDUCTION REACTION PROPERTIES OF BA<sub>0.5</sub>SR<sub>0.5</sub>FE<sub>1-x</sub>CUXO<sub>3-<math>\lambda</math></sub> AS A CATHODE FOR SOLID OXIDE FUEL CELLS</b> .....	2700
<i>Orrsam Aadil Abubaker, Kalpana Singh, Venkataraman Thangadurai</i>	
<b>BOOSTING THE OXYGEN ELECTRODE PERFORMANCE OF REVERSIBLE PROTONIC CERAMIC ELECTROCHEMICAL CELLS BY INTERFACIAL ENGINEERING</b> .....	2701
<i>Minda Zou, Zeyu Zhao, Hua Huang, Shenglong Mu, Jianhua Tong</i>	
<b>INVESTIGATING PHASE AND ELECTRICAL PROPERTIES OF CALCIUM-DOPED YTTRIUM IRON GARNET</b> .....	2703
<i>Zheyu Zhang, Kalpana Singh, Venkataraman Thangadurai</i>	
<b>(INVITED) PROTONIC CERAMIC ELECTROCHEMICAL CELLS FOR ENERGY CONVERSION AND STORAGE</b> .....	2704
<i>Chuancheng Duan, Robert J. Kee, Huayang Zhu, Neal P Sullivan, Liangzhu Zhu, Ryan O'Hayre</i>	
<b>(INVITED) LASER 3D PRINTING OF HIGHLY COMPACTED PROTONIC CERAMIC ELECTROCHEMICAL CELLS</b> .....	2705
<i>Jianhua Tong, Shenglong Mu, Hua Huang, Yuqing Meng, Yuzhe Hong, Minda Zou, Jincheng Lei, Jack Duffy, Zeyu Zhao, Xiao Geng, Fei Peng, Kyle S Brinkman, Hai Xiao</i>	
<b>(INVITED) MIXED PROTONIC-ELECTRONIC MEMBRANE REACTORS; CONVERTING HYDROCARBON RESOURCES AND CO<sub>2</sub> TO FUELS</b> .....	2706
<i>Eric D. Wachsman</i>	
<b>(INVITED) RECENT PROGRESS IN LOW-TEMPERATURE PROTON CONDUCTING CERAMICS FOR HYDROGEN ISOTOPE PROCESSING</b> .....	2707
<i>Kyle S Brinkman, Yuqing Meng, Jun Gao, Zeyu Zhao, Jake Amoroso, Jianhua Tong</i>	
<b>(INVITED) FAST ELECTRODE KINETICS ENABLED BY NEW TRIPLE-CONDUCTING OXIDES FOR BOTH HYDROGEN PRODUCTION AND POWER GENERATION USING REVERSIBLE SOLID OXIDE PROTON-CONDUCTING ELECTROCHEMICAL CELLS</b> .....	2708
<i>Dong Ding, Hanping Ding</i>	
<b>(INVITED) HIGH PERFORMING AND STABLE PROTON-CONDUCTING SOLID OXIDE ELECTROLYSIS CELLS WITH TRIPLE CONDUCTING ANODES</b> .....	2709
<i>Wenyuan Li, Bo Guan, Liang Ma, Zhongqiu Li, Hanchen Tian, Xingbo Liu</i>	
<b>HIGH-PERFORMANCE AND DURABLE REVERSIBLE FUEL CELLS BASED ON PROTON CONDUCTORS</b> .....	2710
<i>Yucun Zhou, Yu Chen, Weilin Zhang, Meilin Liu</i>	
<b>ELECTROCHEMICAL AMMONIA SYNTHESIS USING A BZCYB4411 PROTON CONDUCTOR</b> .....	2711
<i>Nicholas Michael Hortance, Kelsey B. Hatzell</i>	
<b>DEPOSITION OF CONFORMAL CATALYST COATINGS ON POROUS ELECTRODES USING A LAYER-BY-LAYER SURFACE SOL-GEL PROCESS</b> .....	2713
<i>Nicholas John Kane, Meilin Liu</i>	

<b>(INVITED) TITANATE-BASED ELECTRODES FOR SOLID OXIDE CELLS</b> .....	2715
<i>Scott A Barnett, Shan-Lin Zhang, Tenglong Zhu, Matthew Yunching Lu, Lilliana Veronica Mogni</i>	
<b>(INVITED) BUILDING RESILIENCE INTO NI-YSZ ANODES WITH SECONDARY PHASES</b> .....	2716
<i>Martha Welander, Stephen Sofie, Marley S. Zacharaisen, Robert A. Walker</i>	
<b>(INVITED) PERFORMANCE AND STABILITY OF MIXED CONDUCTING SOFC-CATHODES AT HIGH AND LOW OPERATING TEMPERATURES</b> .....	2717
<i>Andre Weber, Ellen Ivers-Tiffée</i>	
<b>(INVITED) MIXED CONDUCTING METAL OXIDES FOR INTERMEDIATE TEMPERATURE SOLID OXIDE CELLS</b> .....	2719
<i>Venkataraman Thangadurai</i>	
<b>(INVITED) HIGH TEMPERATURE ALKALINE ELECTROLYTE FOR ENERGY CONVERSION</b> .....	2720
<i>Kailash Patil, Judith Lattimer, Steeve McCatty, Hui Xu</i>	
<b>(INVITED) DEVELOPING CARBON CATALYSTS FOR SELECTIVE ELECTRO-REDUCTION OF CARBON DIOXIDE INTO TARGET PRODUCTS</b> .....	2721
<i>Jingjie Wu, Tianyu Zhang</i>	
<b>(INVITED) IN SITU GROWN METAL NANOPARTICLE CATALYSTS FROM PEROVSKITES: PROPERTIES AND CONTROL</b> .....	2722
<i>Tae-Sik Oh</i>	
<b>HIGH-TEMPERATURE MEMBRANE FOR WATER REMOVAL IN IN-SITU PROCESS</b> .....	2723
<i>Tae Hyun Lee, Stephen E Dorris, Beihai Ma, Uthamalingam Balachandran</i>	
<b>MIXED ELECTRONIC AND PROTONIC CONDUCTING MEMBRANE FOR NON-OXIDATIVE DEHYDROGENATION</b> .....	2724
<i>Shichen Sun, Kevin Huang</i>	
<b>ELECTROCHEMICAL CO<sub>2</sub> CONVERSION INTO HIGH VALUE ADDED CHEMICALS USING SOLID OXIDE PROTON CONDUCTING MEMBRANE REACTORS</b> .....	2725
<i>Bin Hua, Lu-Cun Wang, Dong Ding</i>	
<b>(INVITED) HIGH-TEMPERATURE MIXED CONDUCTING MEMBRANES AND REACTORS FOR DIRECT CO<sub>2</sub> CAPTURE AND CONVERSION</b> .....	2726
<i>Kevin Huang, Peng Zhang</i>	
<b>(HIGH-TEMPERATURE ENERGY, MATERIALS, &amp; PROCESSES DIVISION J. BRUCE WAGNER, JR. AWARD) IMPACT OF STRUCTURAL DISORDER ON OPTO-ELECTRO-CHEMO-MECHANICAL INTERACTIONS IN MIXED CONDUCTING PEROVSKITE OXIDES</b> .....	2727
<i>Nicola H. Perry</i>	
<b>(INVITED) SURFACE CONTAMINANT EFFECTS ON THE PROPERTIES OF PR-DOPED CERIA DETERMINED VIA WAFER CURVATURE AND X-RAY DIFFRACTION MEASUREMENTS</b> .....	2728
<i>Yuxi Ma, Jason D. Nicholas</i>	
<b>(INVITED) COMPUTATIONAL MODELING OF GRAIN BOUNDARY ELECTROSTATIC EFFECT IN POLYCRYSTALLINE SrTiO<sub>3</sub> THIN FILM</b> .....	2732
<i>Ye Cao</i>	
<b>EFFICIENT EXTRACTION OF ELECTROCHEMICAL IMPEDANCE SPECTRA FROM PHYSICAL MODELS</b> .....	2733
<i>Huayang Zhu, Peter Weddle, Tyrone Vincent, Robert J. Kee</i>	
<b>TAILORING MIXED IONIC/ELECTRONIC CONDUCTIVITY WITH GRAIN BOUNDARIES: (LA,Sr)(GA,MG)O<sub>3-x</sub> CASE STUDY</b> .....	2735
<i>Ting Chen, George Frederick Harrington, Junko Matsuda, David Pham, Erica L. Corral, Kazunari Sasaki, Nicola H. Perry</i>	
<b>SURFACE CATION SEGREGATION ON LA<sub>0.6</sub>SR<sub>0.4</sub>CO<sub>0.2</sub>FE<sub>0.8</sub>O<sub>3</sub></b> .....	2737
<i>Yevgeniy Ostrovskiy, Yi-Lin Huang, Eric D. Wachsman</i>	
<b>MEASUREMENT OF OXYGEN POTENTIAL DISTRIBUTION ON THE SURFACE OF A MIXED CONDUCTING ELECTRODE</b> .....	2738
<i>Toshiki Takasu, Keiji Yashiro, Tatsuya Kawada</i>	
<b>DISTRIBUTION OF OXYGEN PARTIAL PRESSURE IN MULTILAYER ELECTROLYTES: EXPLAINING DEGRADATION OF SOLID OXIDE ELECTROLYZER CELLS</b> .....	2740
<i>Qian Zhang, Beom-Kyeong Park, Scott A Barnett, Peter W Voorhees</i>	
<b>SIMULTANEOUS OPTICAL TRANSMISSION RELAXATION AND ELECTRICAL CONDUCTIVITY RELAXATION MEASUREMENTS OF OXYGEN SURFACE EXCHANGE KINETICS DURING CRYSTALLIZATION</b> .....	2741
<i>Emily Skiba, Ting Chen, Nicola H. Perry</i>	
<b>LOCAL STRUCTURE AND ITS IMPACT ON IONIC CONDUCTIVITY IN CUBIC PEROVSKITE PROTONIC CONDUCTOR, AN AB-INITIO BASED CLUSTER EXPANSION STUDY</b> .....	2743
<i>Lei Zhang, Meilin Liu</i>	
<b>GENERALIZED ELECTRICAL CONDUCTIVITY RELAXATION APPROACH TO DETERMINE ELECTROCHEMICAL KINETIC PROPERTIES FOR MIECS</b> .....	2745
<i>Fei He, Chunlei Ren, Yun Gan, Chunyang Yang, Myoungjin Lee, Robert Green, Xingjian Xue</i>	
<b>UNDERSTANDING OF SOLID OXIDE ELECTROLYSIS CELL DEGRADATION: THE ROLE OF THE ELECTRODE OVERPOTENTIAL</b> .....	2746
<i>Beom-Kyeong Park, Qian Zhang, Qinyuan Liu, Peter W Voorhees, Scott A Barnett</i>	

<b>COMPOSITION DEPENDENT ANOMALY IN OXYGEN VACANCY FORMATION ENERGY OF <math>\text{La}_{0.6}\text{Sr}_{0.4}\text{CO}_{1-y}\text{Fe}_y\text{O}_{3-\lambda}</math> THIN FILMS</b> .....	2747
<i>Daichi Oi, Keiji Yashiro, Tatsuya Kawada</i>	
<b>COMPREHENSIVE KINETICS MODEL WITH COMPETITIVE ADSORPTION REACTION ON WATER ELECTRODE IN REVERSIBLE SOLID OXIDE FUEL CELL / ELECTROLYSIS</b> .....	2749
<i>Kei Hasegawa, Hyojae Lee, Keisuke Kameda, Yuta Iida, Manabu Ihara</i>	
<b>DEVELOPING DATA DRIVEN MODELS TO STUDY ELECTROCATALYTIC <math>\text{CO}_2</math> REDUCTION ON CERIA</b> .....	2751
<i>Alejandro Mejia, Jiaxin Zhu, Stephen S. Nonnenmann, David S Mebane</i>	
<b>ON THE RELIABILITY AND APPLICABILITY OF THE DISTRIBUTION OF RELAXATION TIME ANALYSIS FOR THE PERFORMANCE OF SOFCs</b> .....	2752
<i>Yudong Wang, Xiao-Dong Zhou</i>	
<b>INTEGRATION OF LAYERED DOUBLE HYDROXIDE TO ENHANCE CHARGE CARRIER UTILIZATION OF HEMATITE PHOTOANODES FOR WATER SPLITTING</b> .....	2753
<i>Satirtha Kumar Sarma, Ratan Mohan, Anupam Shukla</i>	
<b>PHOTOELECTROCHEMICAL SUPERCONTINUUM SOLAR LIGHT ZERO BIAS HYDROGEN GENERATION WITH MEMBRANE-BASED CELLS DESIGNED FOR DECREASING OVERALL WATER ELECTROLYSIS VOLTAGE AND WATER DISSOCIATION (23)</b> .....	2754
<i>Kenji Sakamaki, Ayana Watanabe, Honoka Matsuda, Sayuri Usui, Wakana Sakashita, Ryoko Kato, Haruka Endo, Masataka Sato</i>	
<b>AN ABRUPT CHANGE OF CONFIGURATION OF SURFACE LIGANDS AFFECTS THE <math>\text{H}_2</math> PRODUCTION EFFICIENCY OF MEDIATOR-BASED CDS NANOROD/ HYDROGENASE ASSEMBLIES</b> .....	2756
<i>Wenxing Yang, Greg Vansuch, Yawei Liu, Tao Jin, Aimin Ge, Monica Sanchez, R. Brian Dyer, Tim Lian</i>	
<b>QUANTIFYING ELECTROCATALYTIC STRUCTURE-PROPERTY RELATIONSHIPS WITH SURFACE SCIENCE, ELECTROCHEMISTRY, AND DENSITY FUNCTIONAL THEORY</b> .....	2758
<i>Douglas R. Kauffman, Xingyi Deng, Dan Sorescu</i>	
<b>ATOMIC LAYER DEPOSITED TUNGSTEN-BASED COATINGS FOR DURABLE SOLAR HYDROGEN PRODUCTION</b> .....	2759
<i>David W. Palm, Christopher P. Muzzillo, Nicolas Gaillard, Thomas F. Jaramillo</i>	
<b>SELECTIVE SILICON OXIDE OVERLAYERS FOR SOLAR HYDROGEN PRODUCTION BY SEAWATER ELECTROLYSIS</b> .....	2760
<i>Amar A. Bhardwaj, Daniel V. Esposito, Ngai Yin Yip</i>	
<b>MO THIO MOLECULAR COMPLEXES AS WATER-SOLUBLE CATALYSTS FOR THE PHOTOCATALYTIC HYDROGEN EVOLUTION REACTION ON 2D MATERIALS</b> .....	2761
<i>Juliana Barros Barbosa, Pierre-Louis Taberna, Jean-Yves Chane Ching, Iann Gerber, Romuald Poteau, Andrea Balocchi, Xavier Marie</i>	
<b>CATALYTIC WATER OXIDATION REACTION AT NANOSTRUCTURED TITANIA MODIFIED WITH CARBONIZED METAL ORGANIC FRAMEWORK</b> .....	2762
<i>Xiao Li, Shanlin Pan</i>	
<b>NEW ELECTROCHEMICAL SYNTHESIS OF <math>\text{Fe}_2\text{Tio}_5</math> PHOTOANODE FROM METAL-CATECHOL COMPLEXES</b> .....	2763
<i>Dongho Lee, Kyoung-Shin Choi</i>	
<b>SHEDDING LIGHT ON THE STABILITY OF PHOTOELECTROCHEMICAL WATER SPLITTING CELLS</b> .....	2764
<i>Fredy Nandjou, Sophia Haussener</i>	
<b>FABRICATION OF EARTH ABUNDANT <math>\text{Cu}_2\text{O}/\text{CuO}/\text{CUS}</math> PHOTOELECTRODE FOR ELECTROCHEMICAL WATER SPLITTING</b> .....	2765
<i>Gabriele Panzeri, Matteo Cristina, Gianlorenzo Bussetti, Luca Magagnin</i>	
<b>(INVITED) SENSITIZED "THERMAL" CELL</b> .....	2767
<i>Sachiko Matsushita</i>	
<b>(INVITED) BI-FUNCTIONAL ELECTROCATALYSTS FOR WATER SPLITTING AND METAL-ION BATTERIES</b> .....	2768
<i>Hong Jin Fan</i>	
<b>(INVITED) PHOTOCATALYTIC CONVERSION OF METHANE TO HIGHER VALUABLE COMPOUNDS</b> .....	2769
<i>Yun Hang Hu</i>	
<b>(INVITED) EMERGING CHALCOPYRITE PHOTO-ABSORBERS FOR RENEWABLE HYDROGEN PRODUCTION</b> .....	2770
<i>Nicolas Gaillard</i>	
<b>(INVITED) CO-DOPING FOR SOLVING A SHORT-HOLE DIFFUSION LENGTH ISSUE OF HEMATITE IN WATER SPLITTING</b> .....	2771
<i>Ji-Hyun Jang, Hyo-Jin Ahn, Ki-Yong Yoon</i>	
<b>(INVITED) ELECTROCATALYSIS AND PHOTOELECTROCHEMISTRY BASED ON MODIFIED TITANIUM DIOXIDE NANOMATERIALS</b> .....	2772
<i>Aicheng Chen, Jesse Dondapati, Joshua Van Der Zalm, Shuai Chen, Scott Prins</i>	
<b>(INVITED) NANOSTRUCTURED PHOTOELECTRODES FOR UNASSISTED SOLAR WATER SPLITTING WITH ENHANCED STABILITY AND SURFACE CATALYSTS</b> .....	2773
<i>Shanlin Pan</i>	
<b>(INVITED) ENGINEERING HEMATITE PHOTOELECTRODES INTERFACES FOR SUNLIGHT WATER OXIDATION REACTION</b> .....	2774
<i>Dereck N. F. Mucbe, Andre L. M Freitas, Flavio L Souza</i>	

<b>(KEYNOTE) PHOTOELECTROCHEMISTRY - LOOKING BACK TO THE FUTURE</b> .....	2775
<i>Kohei Uosaki</i>	
<b>(KEYNOTE) TRANSIENT ABSORPTION STUDIES OF CHARGE CARRIER DYNAMICS IN PHOTOCATALYSTS AND PHOTOELECTRODES FOR SOLAR DRIVEN WATER SPLITTING</b> .....	2777
<i>James Durrant</i>	
<b>(INVITED) SOLAR FUELS AND THE IMPORTANT ROLE OF HYDROGEN</b> .....	2778
<i>Eric L. Miller, Katie Randolph, David Peterson, Ned T Stetson</i>	
<b>(INVITED) ON THE ANISOTROPIC CHARGE SEPARATION AND THE GROWTH OF HIGHLY ORDERED HETERONANOSTRUCTURES FOR EFFICIENT PHOTOCATALYTIC WATER SPLITTING</b> .....	2779
<i>Lionel Vayssieres</i>	
<b>(INVITED) WHAT LIMITS PHOTOCATALYTIC PERFORMANCE OF METAL OXIDE SEMICONDUCTORS?</b> .....	2781
<i>Nianqiang Wu</i>	
<b>(INVITED) MODIFICATION, ACTIVATION AND STABILIZATION OF COPPER(I) OXIDE PHOTOCATHODES: COMPETITION BETWEEN CATALYTIC AND INHIBITING EFFECTS DURING LIGHT-INDUCED ELECTROREDUCTION OF CO<sub>2</sub></b> .....	2782
<i>Pawel J. Kulesza</i>	
<b>THE ROLE OF MnO<sub>x</sub> AND Ni:MNO<sub>x</sub> CO-CATALYSTS ON THE PHOTOELECTROCHEMICAL PROPERTIES OF TA-O-N PHOTOANODES</b> .....	2783
<i>Rowshanak Irani, Paul Plate, Karsten Harbauer, Peter Bogdanoff, Fatwa Firdaus Abdi, Roel Van De Krol</i>	
<b>(INVITED) MONOLITHICALLY INTEGRATED GALLIUM NITRIDE AND SILICON PHOTOELECTRODE FOR EFFICIENT AND STABLE ARTIFICIAL PHOTOSYNTHESIS</b> .....	2785
<i>Zetian Mi</i>	
<b>(INVITED) QUANTUM-SIZED METAL NANOPARTICLES: BRIDGING PHOTONS AND CHEMICAL TRANSFORMATIONS</b> .....	2786
<i>Yugang Sun</i>	
<b>(INVITED) DIRECT SYNTHESIS OF HYDROGEN CARRIER USING MEMBRANE INTEGRATED-PHOTOCATALYST SHEETS UNDER SUNLIGHT</b> .....	2787
<i>Tsutomu Minegishi</i>	
<b>(INVITED) A "COCKTAIL" APPROACH TO EFFECTIVE PASSIVATION OF METAL HALIDE PEROVSKITE MAGIC SIZED CLUSTERS AND QUANTUM DOTS USING NOVEL PLANAR MOLECULAR LIGANDS BASED ON TRIVALENT METAL NITRATE COORDINATION COMPLEX</b> .....	2788
<i>Jin Z Zhang</i>	
<b>CHARGE SEPARATION ENHANCEMENT MECHANISM BY P-N JUNCTION IN WATER REDUCTION ELECTRODE</b> .....	2789
<i>Zihao Xu, Bingya Hou, Fengyi Zhao, Stephen B. Cronin, Tianquan Lian</i>	
<b>(INVITED) CHALCOPYRITES FOR SOLAR WATER SPLITTING: SOFT X-RAY AND ELECTRON SPECTROSCOPY OF THE CHEMICAL AND ELECTRONIC SURFACE STRUCTURE</b> .....	2790
<i>Clemens Heske</i>	
<b>(INVITED) ELECTRONIC STRUCTURES OF METAL CENTERS IN OER CATALYST MODELS AND ELECTRON/ENERGY RELAYS IN THE EXCITED STATE SUPRAMOLECULAR DINUCLEAR TRANSITION METAL COMPLEXES</b> .....	2791
<i>Lin X Chen</i>	
<b>(INVITED) TRANSIENT ABSORPTION SPECTROSCOPY OF AU/CEO<sub>2</sub> POWDER</b> .....	2792
<i>Ahmed Ziani, Amtiaz Nadeem, Hicham Idriss</i>	
<b>(INVITED) IN SITU X-RAY SPECTROSCOPIES GEAR UP FOR ENERGY SCIENCE</b> .....	2793
<i>Chung-Li Dong</i>	
<b>(INVITED) HAFNIUM OXYNITRIDE-DERIVED ELECTROCATALYST WITH HIGH ACTIVITY AND STABILITY IN STRONG ACID FOR BOTH HYDROGEN EVOLUTION AND OXIDATION REACTIONS</b> .....	2794
<i>Bruce E. Koel</i>	
<b>(INVITED) COLLOIDAL SEMICONDUCTOR NANOCRYSTAL PHOTOCATALYSTS: TEACHING AN OLD DOT NEW TRICKS</b> .....	2795
<i>Rebeckah Burke, Saikat Chakraborty, Nicole Cogan, Kelly Sowers, Leah Frenette, Jill Caputo, Daniel Weix, Kara Bren, Todd D Krauss</i>	
<b>(INVITED) STRUCTURAL ORIGINS OF ELECTRONIC PROPERTIES AND TRANSPORT STATES IN HALIDE PEROVSKITES</b> .....	2796
<i>John B. Asbury</i>	
<b>PLASMONIC HOT-CARRIER-MEDIATED SOLAR ENERGY CONVERSION AND TUNABLEPHOTOCHEMICAL REACTIONS</b> .....	2797
<i>Yu Zhang, Tammie Nelson, Sergei Tretiak, Hua Guo, George Schatz</i>	
<b>SYNTHESIS AND PHOTOCATALYTIC PROPERTIES OF TANTALUM NITRIDE WITH AN INVERSE OPAL STRUCTURE</b> .....	2798
<i>Toshihiro Moriga, Ai Fujisaka, Natsumi Hirayama, Yusuke Furukawa, Lewi Peter Richardo, Kei-Ichiro Murai, Wan-Ting Chen, Geoffrey I N Waterhouse</i>	

<b>PHOTOCATALYSIS USING EARTH-ABUNDANT COPPER-BASED PLASMONIC AND HIGH-DIELECTRIC NANOSTRUCTURES TO PRODUCE HIGH-VALUE CHEMICALS</b> .....	2800
<i>Ravi Teja Addanki Tirumala, Farshid Mohammadparast, Sundaram Bharadwaj Ramakrishnan, Marimuthu Andiappan</i>	
<b>(INVITED) HARVESTING SOLAR ENERGY IN NEAR INFRARED</b> .....	2801
<i>Dongling Ma</i>	
<b>(INVITED) HARVESTING SUNLIGHT USING TITANIUM NITRIDE NANOSTRUCTURES FOR ENHANCED VISIBLE PHOTOCATALYTIC ACTIVITY AND SOLAR HEATING</b> .....	2802
<i>Satoshi Ishii, Satish Laxman Shinde, Manpreet Kaur, Tadaaki Nagao</i>	
<b>(INVITED) ENHANCEMENT OF TRIPLET-TRIPLET ANNIHILATION-BASED UPCONVERSION EMISSION BY LOCALIZED SURFACE PLASMON RESONANCE</b> .....	2804
<i>Kosuke Sugawa, Naoto Takeshima, Shota Jin</i>	
<b>(INVITED) AB-INITIO SIMULATIONS FOR ACCELERATING WATER-SPLITTING TECHNOLOGY RESEARCH</b> .....	2806
<i>Tadashi Ogitsu</i>	
<b>(INVITED) SEMICONDUCTOR DEVICE MODELING FOR PHOTOELECTROCHEMICAL CELLS: BAND DIAGRAMS AND KROEMER'S LEMMA</b> .....	2807
<i>Kirk H Bevan, Asif Iqbal, Botong Miao</i>	
<b>COMPUTATIONAL FLUID DYNAMICS MODELING OF A DIRECT SOLAR DRIVEN SULFURIC ACID DECOMPOSITION REACTOR</b> .....	2808
<i>Claudio Corngale, Pongsarun Satjaritanun, Sirivatch Shimpalee, Zhiwen Ma</i>	
<b>COMPUTATIONAL QUEST FOR HIGH-PERFORMANCE ELECTROCATALYSTS FOR NITROGEN FIXATION</b> .....	2810
<i>Zhongfang Chen, Jingxiang Zhao</i>	
<b>PLASMON-ENHANCED PHOTOFIXATION OF DINITROGEN FOR AMMONIA SYNTHESIS USING VISIBLE LIGHT RESPONSIVE HYBRID HOLLOW AU-AG<sub>2</sub>O NANOCAGES</b> .....	2811
<i>Mohammadreza Nazemi, Mostafa El-Sayed</i>	
<b>(INVITED) ULTRAFAST OPTICAL SPECTROSCOPY OF PLASMONIC AND ENERGY CONVERSION MATERIALS</b> .....	2812
<i>Gary P Wiederrecht</i>	
<b>(INVITED) ENERGETIC HOLE EJECTION INVOLVED IN PLASMON-INDUCED CHARGE SEPARATION: LOCAL OXIDATION AND AN APPLICATION TO NEAR IR PHOTOVOLTAICS</b> .....	2813
<i>Tetsu Tatsuma, Hiroyasu Nishi, Rui Ogata, Seung Hyuk Lee</i>	
<b>(INVITED) PLASMON-MEDIATED CATALYSIS FOR SUSTAINABLE ENERGY</b> .....	2815
<i>Dong Ha Kim</i>	
<b>(INVITED) CHEMICAL INTERFACE DAMPING IN SINGLE PLASMONIC NANOSTRUCTURES</b> .....	2816
<i>Stephan Link</i>	
<b>(INVITED) TOWARD UNITY QUANTUM EFFICIENCY FOR PLASMON INDUCED HOT ELECTRON TRANSFER AT METAL/SEMICONDUCTOR JUNCTIONS</b> .....	2817
<i>Tianquan Lian</i>	
<b>(INVITED) PLASMONIC PHOTOSYNTHESIS</b> .....	2818
<i>Prashant K Jain</i>	
<b>(INVITED) ULTRAFAST EXCITON, BI-EXCITON AND TRION DISSOCIATION DYNAMICS IN METAL@SEMICONDUCTOR HETERO-STRUCTURE INTERFACE</b> .....	2819
<i>Hirendra Nath Ghosh</i>	
<b>(INVITED) WHAT DID THE METALS KNOW, AND WHEN DID THEY KNOW IT? FEMTOSECOND M-EDGE XANES REVEALS SHORT-LIVED STATES IN TRANSITION METAL CATALYSTS</b> .....	2820
<i>Josh Vura-Weis</i>	
<b>(INVITED) OBSERVING ULTRAFAST CHARGE AND SPIN DYNAMICS AT PHOTOCHEMICAL INTERFACES</b> .....	2821
<i>L. Robert Baker</i>	
<b>(INVITED) ELEMENT-SPECIFIC MEASUREMENT OF HOLE TRANSPORT IN A PHOTOANODE BY TRANSIENT EXTREME ULTRAVIOLET SPECTROSCOPY</b> .....	2822
<i>Scott Kevin Cushing</i>	
<b>(INVITED) ULTRAFAST X-RAY STUDIES OF INTERFACIAL ENERGY- AND CHARGE-TRANSFER DYNAMICS</b> .....	2823
<i>Oliver Gessner</i>	
<b>(INVITED) TRACKING STRUCTURES IN SOLAR FUELS CATALYSIS: IN-SITU X-RAY STRUCTURE CHARACTERIZATION OF INTERFACIAL WATER-SPLITTING MOLECULAR AND THIN-FILM CATALYSTS</b> .....	2825
<i>David M Tiede, Tae Wu Kim, Emily Sprague-Klein, Gihan Kwon, Alex B. F. Martinson, Karen L. Mulfort</i>	
<b>(INVITED) EXCITED STATE PROCESSES IN SEMICONDUCTOR NANOCRYSTALS AND THEIR RELATIONSHIPS WITH LIGHT-DRIVEN MULTI-ELECTRON CATALYSIS</b> .....	2827
<i>Gordana Dukovic</i>	
<b>(INVITED) INTERFACIAL CHARGE TRANSFER FROM SI WAFER TO PT</b> .....	2828
<i>Ye Yang</i>	

<b>(INVITED) ATOMIC VIEW OF NICKLE DITHIOLENE ELECTRO- AND PHOTO-CATALYSIS USING X-RAY ABSORPTION SPECTROSCOPY</b> .....	2829
<i>Amy Cordones-Hahn</i>	
<b>NANOCONFINED PORES OF POLY(4-VINYLPYRIDINE) POLYSTYRENE AND POLY(TERT-BUTYL METHACRYLATE)POLYSTYRENE BLOCK COPOLYMERS: ELECTROANALYTICAL STUDY AND CARBON DIOXIDE REDUCTION</b> .....	2830
<i>Habte Ghebremichael, Alexander Sidorenko</i>	
<b>CHARGE CARRIER DYNAMIC STUDY ON DIFFERENT CATALYST-MODIFIED BIVO<sub>4</sub> PHOTOANODES</b> .....	2831
<i>Fengyi Zhao</i>	
<b>PHOTOELECTROCHEMICAL AND SURFACE ANALYSIS OF CDSE-POMA COMPOSITES ON HIGHLY ORIENTED PYROLYTIC GRAPHITE</b> .....	2832
<i>Sophia Maria Casto, Stephanie Dulovic, Justyna Widera, Bartosz Maranowski, Marcin Strawski, Marek Szklarczyk</i>	
<b>WO<sub>3</sub>/TiO<sub>2</sub> HYBRIDS AND THEIR APPLICATIONS FOR THE PHOTOCATALYTIC DEGRADATION OF P-SUBSTITUTED PHENOLS</b> .....	2833
<i>Kelly Zhu, Marisa McLeod, Tomasz Lecki, Justyna Widera, Magdalena Skompska</i>	
<b>PVDF/SiO<sub>2</sub>-TiO<sub>2</sub> PHOTOCATALYTIC MEMBRANES FOR WATER TREATMENT</b> .....	2835
<i>Xinrong Zhang</i>	
<b>HIGH-ENTROPY TRANSITION METAL DICHALCOGENIDES AS EXCEPTIONAL ELECTROCATALYSTS OF HYDROGEN EVOLUTION REACTION (HER)</b> .....	2836
<i>Tian Lan, Ihor Hlova, Vitalij Pecharsky, Arjun Pathak, Viktor Balema, Sonal Padalkar</i>	
<b>FORMATION MANNER OF LATTICE DEFECT IN BANBO<sub>2</sub>N PHOTOCATALYSTS DURING THEIR NITRIDATION IN MOLTEN FLUX</b> .....	2837
<i>Tetsuya Yamada, Shinya Nagafusa, Katsuya Teshima</i>	
<b>TRANSITION METAL PHOSPHIDES FABRICATED THROUGH A CODEPOSITION-ANNEALING TECHNIQUE AS ELECTROCATALYSTS FOR HYDROGEN EVOLUTION REACTION</b> .....	2838
<i>Roberto Bernasconi, Md Ibrahim Khalil, Luca Nobili, Luca Magagnin</i>	
<b>PHOTOELECTROCHEMICAL APPLICATIONS OF SRNBO<sub>2</sub>N THIN FILMS SYNTHESIZED VIA A TWO-STEP PROCESS AT REDUCED TEMPERATURES</b> .....	2840
<i>Karen Heinselman, Shinjae Hwang, Anders B. Laursen, Kevin Talley, James L. Young, Gerard Charles Dismukes, Eric Garfunkel, Andriy Zakutayev</i>	
<b>(INVITED) AQUEOUS THERMAL-ELECTROCHEMICAL CATALYSIS FOR LIGHT ALKANE UPGRADING</b> .....	2841
<i>Coleman X Kronawitter</i>	

## VOLUME 5

<b>(INVITED) SOLAR ENERGY CONVERSION ENHANCED BY THE STRUCTURE AND SURFACE IMPROVEMENTS OF QUATERNARY SEMICONDUCTORS</b> .....	2842
<i>Renata Solarzka, Krzysztof Bienkowski, Michal Jadwiszczak, Adrian Dubiel</i>	
<b>(INVITED) HOLE EXTRACTION LAYER BOOSTING PHOTOELECTROCHEMICAL SOLAR WATER SPLITTING</b> .....	2843
<i>Jong Hyeok Park, Jong Zhang</i>	
<b>(INVITED) HIGH-RATE SOLAR-LIGHT PHOTOCONVERSION OF CO<sub>2</sub> TO FUEL: SYNTHESIS AND CHARACTERIZATION</b> .....	2844
<i>Suil In</i>	
<b>(INVITED) EFFECTS OF THE ELECTROCHEMICAL DOUBLE LAYER ON CO REDUCTION AND HYDROGEN EVOLUTION ON CU ELECTRODES</b> .....	2845
<i>Matthias Waegele</i>	
<b>EVALUATING PHOTOELECTROCHEMICAL REDOX PROCESSES FOR WASTEWATER NITRATE REMOVAL COUPLED WITH ENERGY AND NUTRIENT RECOVERY</b> .....	2846
<i>Luisa Barrera, Rohini Bala Chandran</i>	
<b>EXPLORATION OF VAPOR ELECTROLYSIS FOR CHEMICAL TRANSFORMATIONS</b> .....	2848
<i>Julie C. Fornaciari, Jie Zhou, Alexis T. Bell, Adam Z. Weber</i>	
<b>MULTILAYER PHOTOSYSTEM I FILMS WITHIN POROUS INDIUM TIN OXIDE CATHODES FOR ENHANCED PHOTOCURRENT GENERATION</b> .....	2849
<i>Dilek Dervishogullari, Kody Wolfe, Christopher Stachurski, G. Kane Jennings, David E. Cliffl</i>	
<b>EFFECT OF BIAS AND AEROBIC CONDITIONS ON PHOTOCATALYTIC NITROGEN FIXATION BY TITANIA</b> .....	2850
<i>Yu-Hsuan (Carol) Liu, Sarah Chen, Marta C. Hatzell</i>	
<b>RADICAL REDOX MEDIATOR FREE PHOTOELECTROCHEMICAL BIOMASS VALORIZATION</b> .....	2851
<i>Charles Roger Lhermitte, Pamela Canjura, Nukorn Plainpan, Kevin Sivula</i>	
<b>STRATEGIES FOR TUNING OPTOELECTRONIC PROPERTIES OF TiO<sub>2</sub> NANOMATERIALS FOR SOLAR PHOTOVOLTAIC STUDIES</b> .....	2853
<i>Sagar D. Delekar, Dillip Panda</i>	
<b>PHOTO-RECHARGEABLE PEROVSKITE CELL FOR DIRECT SOLAR ENERGY CONVERSION AND STORAGE</b> .....	2855
<i>Husain Almakrmi, Guanzhou Lin, Fuqiang Liu</i>	

<b>GALVANIC REPLACEMENT OF LIQUID METAL GALINSTAN WITH COPPER FOR THE SYNTHESIS OF CORE-SHELL CUGA-CU<sub>2</sub>O NANOMATERIALS</b> .....	2856
<i>Olawale Oloye, Geoffrey Will, Anthony O'Mullane</i>	
<b>STRONGLY COUPLED NI-MOLYBDENUM CARBIDE GRAFTED N-DOPED CARBON ARCHITECTURES FOR EFFICIENT ELECTROCATALYSIS</b> .....	2858
<i>Debanjan Das</i>	
<b>(EUROPE SECTION HEINZ GERISCHER AWARD) THE PHYSICAL ELECTROCHEMISTRY OF SEMICONDUCTORS</b> .....	2859
<i>Nathan S. Lewis</i>	
<b>(INVITED) THE MATERIALS GENOME AND ELECTROCHEMISTRY</b> .....	2860
<i>James Warren</i>	
<b>(INVITED) DESIGNING MATERIALS TO REVOLUTIONIZE AND ENGINEER THE FUTURE OF CLEAN ENERGY TECHNOLOGIES THROUGH COMPUTATIONALLY-LED AND DATA-DRIVEN APPROACHES</b> .....	2861
<i>John Schlueter</i>	
<b>(INVITED) MATERIALS DISCOVERY FOR ENERGY APPLICATIONS</b> .....	2862
<i>William Tumas</i>	
<b>(INVITED) ACCELERATED DISCOVERY FOR SOLAR FUELS</b> .....	2863
<i>Harry A Atwater, Thomas F. Jaramillo, Frances A Houle, Francesca M. Toma, John M. Gregoire, Adam Z. Weber, Xenia Amashukeli</i>	
<b>(INVITED) DESIGNING AND DISCOVERING TRANSFORMATIONAL MATERIALS FOR ENERGY APPLICATIONS</b> .....	2864
<i>Brian J. Ingram</i>	
<b>(INVITED) MATERIALS DISCOVERY AND DEVELOPMENT FOR THE SUSTAINABLE PRODUCTION OF FUELS AND CHEMICALS</b> .....	2865
<i>Thomas F. Jaramillo</i>	
<b>(INVITED) MOTIVATING THE COLLABORATORY FOR HIGH-THROUGHPUT EXPERIMENTAL MATERIALS SCIENCE AND BEYOND...</b> .....	2866
<i>Zachary Tim Trautt, Martin L. Green</i>	
<b>(INVITED) ACCELERATED MATERIALS DESIGN AND DISCOVERY: NOVEL APPROACHES FOR ACCELERATING SYNTHESIS, CHARACTERIZATION, AND SCREENING OF MATERIALS</b> .....	2867
<i>Santosh K Suram</i>	
<b>(INVITED) HIGH THROUGHPUT SYNTHESIS AS AN ENABLING CAPABILITY FOR MATERIALS AND INTERFACE DISCOVERY</b> .....	2868
<i>John M. Gregoire</i>	
<b>(INVITED) SOFT X-RAY SPECTROSCOPY FOR IN SITU AND OPERANDO STUDIES OF ENERGY CONVERSION MATERIALS</b> .....	2869
<i>Clemens Heske</i>	
<b>(INVITED) IN SITU X-RAY DIFFRACTION DURING PROCESSING UNDER EXTREME CONDITIONS</b> .....	2870
<i>Michael F Toney</i>	
<b>(INVITED) IN SITU/OPERANDO X-RAY CHARACTERIZATION OF ELECTRONIC STRUCTURE IN ENERGY MATERIALS SYSTEMS</b> .....	2871
<i>Jonathan R. I. Lee, Tadashi Ogitsu, Brandon C. Wood, Michael Bagge-Hansen, Tony Van Buuren</i>	
<b>(INVITED) MACHINE LEARNING IN MATERIALS DISCOVERY</b> .....	2872
<i>Bryce Meredig</i>	
<b>(INVITED) COMPUTATIONAL DISCOVERY OF METAL-ORGANIC FRAMEWORKS FOR HYDROGEN STORAGE: COMBINING HIGH-THROUGHPUT SCREENING, MACHINE LEARNING, AND EXPERIMENTAL DEMONSTRATION</b> .....	2873
<i>Donald J Siegel</i>	
<b>(INVITED) COMBINED AB INITIO AND MACHINE LEARNING APPROACHES TO DISCOVER MATERIALS FOR HYDROGEN GENERATION</b> .....	2874
<i>Charles Bruce Musgrave</i>	
<b>(INVITED) FUNCTIONAL DEFECTS BY DESIGN-A HIGH-THROUGHPUT APPROACH TO ENERGY MATERIALS DISCOVERY</b> .....	2875
<i>Panchapakesan Ganesh</i>	
<b>(INVITED) HPC4MATERIALS PROGRAM: A NATIONAL LABORATORY - INDUSTRY PARTNERSHIP IN HIGH PERFORMANCE COMPUTATIONAL SIMULATIONS</b> .....	2876
<i>Robin Miles</i>	
<b>(INVITED) AN EXPERIMENTAL AND COMPUTATIONAL DATA ECOSYSTEM FOR ADVANCING MATERIALS RESEARCH</b> .....	2877
<i>Robert R White, Kristin Munch, John D. Perkins</i>	
<b>(INVITED) CONNECTING THE HYDROGEN DATAHUB TO SCIENTISTS AND THE WORLD</b> .....	2878
<i>Dan Gunter, Angela Cai, Nemanja Danilovic, Anthony H. McDaniel, Richard Karnesky</i>	
<b>(INVITED) THE U.S. DEPARTMENT OF ENERGY'S ENERGY MATERIALS NETWORK</b> .....	2879
<i>Eric L. Miller, Katie Randolph, David Peterson, Ned T Stetson</i>	
<b>(INVITED) THE U.S. DEPARTMENT OF ENERGY'S HYDROGEN CONSORTIUM ADVANCES RESEARCH FOR SUSTAINABLE HYDROGEN PRODUCTION</b> .....	2880
<i>Katie Randolph, Eric L. Miller, David Peterson, James Vickers, Ned T Stetson</i>	

<b>(INVITED) OVERVIEW OF RESEARCH AND DEVELOPMENT WITHIN THE HYDROGEN MATERIALS-ADVANCED RESEARCH CONSORTIUM (HYMARC)</b> .....	2881
<i>Ned T Stetson, Vitalie Stavila, Thomas Gennett, Mark D. Allendorf</i>	
<b>(INVITED) ELECTROCAT: EXPEDITING PGM-FREE FUEL CELL CATALYST AND ELECTRODE DEVELOPMENT</b> .....	2882
<i>Dimitrios C Papageorgopoulos, Simon T. Thompson, Deborah J. Myers, Karren L. More, K C Neyerlin, Piotr Zelenay</i>	
<b>(INVITED) THE FC-PAD CONSORTIUM: ADVANCING FUEL CELL PERFORMANCE AND DURABILITY</b> .....	2883
<i>Gregory Kleen, Dimitrios C Papageorgopoulos, Adam Z. Weber, Rod L. Borup</i>	
<b>(INVITED) H-MAT: ENHANCING THE DURABILITY AND AFFORDABILITY OF METALS AND POLYMERS IN HYDROGEN SERVICE</b> .....	2884
<i>Neha Rustagi, Chris San Marchi, Kevin L Simmons, Laura Hill, Ned T Stetson</i>	
<b>(INVITED) DURAMAT: DURABLE MATERIALS RESEARCH TO IMPROVE MODULE RELIABILITY</b> .....	2885
<i>Laura Theresa Schelhas, Teresa M. Barnes, Margaret Gordon</i>	
<b>(INVITED) THERMOCHEMICAL PROPERTIES OF NON-STOICHIOMETRIC OXIDES FOR SOLAR FUEL GENERATION</b> .....	2886
<i>Xin Qian, Jiangang He, Bianca Baldassarri, Ruiyun Huang, Christopher Wolverton, Sossina M Haile</i>	
<b>HIGH EFFICIENCY PEM WATER ELECTROLYSIS ENABLED BY ADVANCED CATALYSTS, MEMBRANES AND PROCESSES</b> .....	2887
<i>Christopher B Capuano, Kathy Ayers, Judith Manco, Luke Wiles, Iryna V. Zenyuk, Emily Leonard, Ahmet Kusoglu, Adam Z. Weber, Nemanja Danilovic, Shaun M Alia, Michael Ulsh, Scott A Mauger, Jason Pfeilsticker, Karren L. More</i>	
<b>COMPUTATIONAL MODELING AND SCREENING OF SEMICONDUCTOR ELECTRODES FOR SOLAR-TO-FUEL CONVERSION</b> .....	2889
<i>Ismaila Dabo</i>	
<b>DESIGNING CATALYSTS FOR WATER SPLITTING BASED ON ELECTRONIC STRUCTURE CONSIDERATIONS</b> .....	2890
<i>Justin Andrews, Nuwanthi Suwandaratanne, David Watson, Louis F. J. Piper, Jinghua Guo, David Prendergast, Sarbajit Banerjee</i>	
<b>FRAMEWORK MATERIALS AS POROUS LIQUIDS</b> .....	2891
<i>Rachel E. Mow, Wade A. Braunecker, Madison B. Martinez, Sarah M Shulda, Thomas Gennett</i>	
<b>(INVITED) HYDROGEN SUPERNODE: LINKING LOW TEMPERATURE ELECTROLYSIS/HYBRID MATERIALS PROPERTIES TO ELECTRODE PERFORMANCE</b> .....	2892
<i>Shaun M Alia, Guido Bender, Michael Ulsh, Scott A Mauger, Bryan S. Pivovar, Huyen N Dinh, Adam Z. Weber, Nemanja Danilovic, Ahmet Kusoglu, Hector Colon-Mercado</i>	
<b>(INVITED) HYDROGEN PEC SUPERNODE: EMERGENT DEGRADATION MECHANISMS WITH INTEGRATION AND SCALE UP OF PEC DEVICES</b> .....	2893
<i>Nemanja Danilovic, James L. Young, Tobias Kistler, Myles A Steiner, Guosong Zeng, Lien-Chun Weng, Todd G Deutsch, Francesca M. Toma, Frances A Houle, Adam Z. Weber</i>	
<b>(INVITED) RESEARCH PROGRESS OF HIGH TEMPERATURE ELECTROLYSIS (HTE) SUPERNODE</b> .....	2894
<i>Dong Ding, Richard Boardman, James O'Brien, Hanping Ding, David Ginley, Huyen N. Dinh, Mike Tucker, Joshua D Sugar, Brandon C. Wood, Scott A Barnett, Peter W Voorhees</i>	
<b>(INVITED) EMN DATAHUB CAPABILITY TO ACCELERATE DISCOVERY</b> .....	2895
<i>Chitra Sivaraman, Kristin Munch, Matt Macduff, Carina Lansing, Dan Gunter</i>	
<b>(INVITED) HYDROGEN BENCHMARKING: DEVELOPING BEST PRACTICES FOR WATER SPLITTING TECHNOLOGIES</b> .....	2896
<i>Katherine E. Ayers, Karl Gross</i>	
<b>(INVITED) BENCHMARKING AND ROUND ROBIN TESTING FOR PROTON EXCHANGE MEMBRANE WATER ELECTROLYZERS</b> .....	2897
<i>Guido Bender, Marcelo Carmo, Thomas Lickert, Stefanie Fischer, Pankajkumar Kadam, Zhenye Kang, James L. Young, Tom Smolinka</i>	
<b>(INVITED) HYDROGEN STORAGE MEASUREMENTS; PROTOCOLS AND REPRODUCIBILITY</b> .....	2899
<i>Katherine E. Hurst, Philip A. Parilla, Thomas Gennett</i>	
<b>(INVITED) UPDATED CATALYST ACTIVITY TARGETS FOR PERFORMANCE PARITY IN HYDROXIDE EXCHANGE MEMBRANE FUEL CELLS</b> .....	2900
<i>Brian P. Setzler, Teng Wang, Reza Abbasi, Zhongbin Zhuang, Yushan Yan</i>	
<b>(INVITED) MULTISCALE MODELING OF REACTIVE INTERFACES IN SUPPORT OF THE DOE ENERGY MATERIALS NETWORK</b> .....	2902
<i>Brandon C. Wood</i>	
<b>(INVITED) SCAN META-GGA: AN ACCURATE, EFFICIENT, AND PHYSICALLY SOUND DENSITY FUNCTIONAL FOR MATERIALS DISCOVERY AND DESIGN</b> .....	2903
<i>Jianwei Sun</i>	
<b>(INVITED) ATOMISTIC SIMULATIONS OF HYDROGEN STORAGE MATERIALS</b> .....	2904
<i>Xiaowang Zhou, Catalin Spataru, Vitalie Stavila, Mark D. Allendorf, Shinyoung Kang, Tae Wook Heo, Brandon C. Wood</i>	
<b>(INVITED) ATOMIC SCALE MODELS OF PGM-FREE ORR ELECTROCATALYSTS: ACTIVITY, STABILITY, AND EXPERIMENTAL SIGNATURES OF ACTIVE SITE STRUCTURES WITHIN THE ELECTROCATALYSIS CONSORTIUM</b> .....	2905
<i>Edward F. Holby</i>	
<b>(INVITED) MESOSCALE MODELING OF SOLID-STATE HYDROGEN STORAGE MECHANISMS</b> .....	2907
<i>Tae Wook Heo, Shinyoung Kang, Xiaowang Zhou, Rongpei Shi, Brandon C. Wood</i>	
<b>(INVITED) DEVELOPMENT OF A MULTISCALE APPROACH FOR MODELING FUEL CELL ELECTRODES</b> .....	2908
<i>Lalit M. Pant, Anamika Chowdhury, Adam Z. Weber</i>	



<b>(INVITED) ACTIVITY AND STABILITY OF ATOMICALLY DISPERSED (AD) FE-C-N ORR CATALYST IN POLYMER ELECTROLYTE FUEL CELL ENVIRONMENT</b> .....	2910
<i>Rajesh Ahluwalia, Xiaohua Wang, Luigi Osmieri, K C Neyerlin, Hoon T Chung</i>	
<b>(INVITED) PERFORMANCE MODELING OF HYDROGEN-PRODUCTION ELECTROLYSIS CELLS FOR SCALING UP ELECTROCHEMICAL MATERIALS</b> .....	2912
<i>Zhiwen Ma, Liam Witteman, Hailey Boyer, Jeffrey Gifford, Will Callahan</i>	
<b>ENABLING WARM-WHITE LEDS WITH VERY HIGH LUMINOUS EFFICACY BY USE OF URANYL SENSITIZED EU<sup>3+</sup></b> .....	2913
<i>Florian Baur, Thomas Juestel</i>	
<b>(INVITED) DIFFERENCES IN EMISSION PROPERTIES FOR TRIBOLUMINESCENT EUD<sub>4</sub>TEA SYNTHESIZED USING BOTH EUROPIUM NITRATE OR EUROPIUM ACETATE</b> .....	2915
<i>William A Hollerman, Ross S Fontenot</i>	
<b>ELECTROGENERATED CHEMILUMINESCENCE OF PEROVSKITE QUANTUM DOTS</b> .....	2916
<i>Jeetika Yadav, Shanlin Pan</i>	
<b>UV-STABLE INORGANIC PEROVSKITE QUANTUM DOTS/CELLULOSE NANOCRYSTALS HYBRID STRUCTURES</b> .....	2917
<i>Chih-Hao Chiang, Meng-Lin Tsai</i>	
<b>MEASURING IMPORTANT PROPERTIES OF EUD<sub>4</sub>TEA: A MATERIAL SOLUTION LOOKING FOR A PROBLEM</b> .....	2918
<i>John Miller, William A Hollerman</i>	
<b>QUASI-2D HYBRID ORGANIC-INORGANIC PEROVSKITES: DFT MODELING APPROACH</b> .....	2919
<i>Omar Adel Allam, Ilgeum Lee, Dong Ha Kim, Seung Soon Jang</i>	
<b>(INVITED) ELECTRIC DIPOLE-ELECTRIC DIPOLE NON-RADIATIVE ENERGY TRANSFER MEDIATED BY SURFACE PLASMONS ON A METAL SURFACE</b> .....	2920
<i>Kailash C. Mishra, John Collins</i>	
<b>(INVITED) MN<sup>4+</sup> R-LINE EMISSION INTENSITY: THE WAYS OF ITS ENHANCEMENT</b> .....	2922
<i>Mikhail G. Brik, Alok M Srivastava</i>	
<b>LU<sub>2</sub>O<sub>3</sub>:MN CERAMICS FOR THERMOLUMINESCENCE AND THERMOMETRY DUAL FUNCTIONALITY</b> .....	2924
<i>Dagmara Kulesza, Justyna Zeler, Eugeniusz Zych</i>	
<b>(INVITED) ON DILEMMAS OF BAND GAP ENGINEERING IN LUMINESCENCE THERMOMETERS</b> .....	2925
<i>Malgorzata Sojka, Joao Filipe Candeias Baptista Ramalho, Carlos Delgado Sousa Brites, Karolina Fiaczyk, Luis D Carlos, Eugeniusz Zych</i>	
<b>(INVITED) THE IMPACT OF DEFECTS ON THE EFFICIENCY OF RARE EARTH DOPED OXIDES UNDER VACUUM ULTRAVIOLET EXCITATION</b> .....	2926
<i>Anthony L Diaz</i>	
<b>ANALYSIS OF ENERGY-STRUCTURE RELATIONSHIP FOR CE<sup>3+</sup> IN GARNET-TYPE OXIDES BASED ON FIRST-PRINCIPLES CALCULATIONS</b> .....	2927
<i>Kazuyoshi Ogasawara</i>	
<b>NARROW BAND EMISSION OF PR<sup>3+</sup>-ACTIVATED OXIDE-OXYNITRIDE PERVSKITES UNDER NEAR-UV LIGHTS CONTROLLED BY BANDGAP ENGINEERING</b> .....	2928
<i>Yasushi Sato, Natsumi Yoshimura, Koji Tomita, Masato Kakihana</i>	
<b>SIMULATION OF LIGHT EMISSION FROM NANO-RESISTORS IN SOLID-STATE INCANDESCENT LIGHT EMITTING DEVICES</b> .....	2929
<i>Abhinav Shukla, Yue Kuo</i>	
<b>HUMIDITY AND TEMPERATURE ANNEALING EFFECT ON LIGHT EMISSION CHARACTERISTICS OF SSI-LEDS</b> .....	2931
<i>Lingguang Liu, Wen-Shan Lin, Yue Kuo, Xiaoning Zhang</i>	
<b>(INVITED) CONVERSION MATERIALS AND PERFORMANCE IN LASER BASED LIGHT SOURCES</b> .....	2933
<i>Madis Raukas, Alan Lenef, John Kelso, Moritz Engl</i>	
<b>LOW TEMPERATURE SYNTHESIS OF NANOPHOSPHORS FOR WHITE LIGHT EMISSION</b> .....	2934
<i>Ying Zhang, Qilin Dai</i>	
<b>APPLICATION OF WATER-DISPERSED QUANTUM DOTS TO CRACK MONITORING IN SMART COMPOSITE MATERIALS</b> .....	2936
<i>Heesu Hwang, Jiwon Oh, Jaehwan Kim, Hyunbae Lee, Heesun Yang, Jin-Ha Hwang</i>	
<b>EFFECT OF SURFACTANTS ON STRUCTURAL, MORPHOLOGICAL AND LUMINESCENT PROPERTIES OF GD<sub>2</sub>O<sub>3</sub>:EU PHOSPHORS</b> .....	2937
<i>Ruby Priya, O. P. Pandey</i>	
<b>ENHANCING ORGANIC ELECTROSYNTHESIS THROUGH ARTIFICIAL INTELLIGENCE: THE CASE OF ADIPONITRILE ELECTROHYDRODIMERIZATION</b> .....	2938
<i>Daniela Eugenia Blanco, Bryan Lee, Miguel Antonio Modestino</i>	
<b>ELECTROCHEMICAL OXYGEN ATOM TRANSFER REACTIONS</b> .....	2939
<i>Karthish Manthiram</i>	
<b>ON-LINE MONITORING OF THE STABILITY OF ELECTRODES IN NON-AQUEOUS MEDIA</b> .....	2940
<i>Johanna Ranninger, Susanne J. Wachs, Jonas Moller, Karl J. J. Mayrhofer, Balazs B. Berkes</i>	
<b>REDOX CONTROL OF SUPRAMOLECULAR POLYMERIZATION USING ELECTROACTIVE UREIDOPYRIMIDONES</b> .....	2941
<i>Diane K. Smith, Mario Cedano, Katrina Vuong</i>	

<b>UNVEILING PURPLE BACTERIA SALT TOLERANCE MECHANISMS FOR ENVIRONMENTAL MONITORING IN PHOTO-BIOELECTROCHEMICAL SYSTEMS</b> .....	2943
<i>Erin Gaffney, Matteo Grattieri, Shelley D. Minter</i>	
<b>HIGH-EFFICIENCY ENZYMATIC FUEL CELL VIA MULTIENTZYME CASCADE ON DNA SCAFFOLD</b> .....	2944
<i>Sooyoun Yu, Qi Chen, Wilfred Chen, Nosang Vincent Myung</i>	
<b>(INVITED) EXOELECTROGENICITY OF GENETICALLY ENGINEERED HYPERTHERMOPHILES</b> .....	2946
<i>Bavithira Suganthan, Chang-Hao Wu, Dominik K Haja, Michael W. W. Adams, Ramaraja P. Ramasamy</i>	
<b>ENRICHMENT IN METHANE CONTENT IN BIOGAS BY EXTERNAL VOLTAGE SUPPLY</b> .....	2947
<i>Pranita Poudyal, Bikram Prajapati, Suman Bajracharya, Jarina Joshi</i>	
<b>ELECTROCHEMICAL INVESTIGATIONS OF L-TRYPTOPHAN</b> .....	2948
<i>Graham T. Cheek, Pyung O. Choi</i>	
<b>BUCKYPAPER THICKNESS DEPENDENT BILIRUBIN OXIDASE ELECTROCHEMISTRY</b> .....	2949
<i>Sadagopan Krishnan, Charuksha Walgama</i>	
<b>MICROELECTRODE HUMAN ANALYSIS: CIRCUIT BATH PEGGED BY REFERENCE POTENTIAL</b> .....	2950
<i>James D. Burgess</i>	
<b>SINGLE CELL ELECTROCHEMISTRY - UPTAKE OF BIOINORGANIC SILVER-BASED DRUGS</b> .....	2951
<i>Prabhakar Sidambaram, John Collier</i>	
<b>EXTRACELLULAR ELECTRON TRANSFER MECHANISMS IN A MODERATELY HALOPHILIC BACTERIUM FROM THE GREAT SALT LAKE FOR HIGH SALINITY</b> .....	2952
<i>Erin Gaffney, Matteo Grattieri, Shelley D. Minter</i>	
<b>BIOELECTROCHEMICAL APPROACH FOR UREA REMOVAL FROM SYNTHETIC URINE</b> .....	2954
<i>Arnulfo Rojas-Perez, Delmaliz Barreto-Vazquez, Santosh H. Vijapur, Timothy D. Hall, E. J. Taylor, Carlos R Cabrera</i>	
<b>MODIFIED MICROELECTRODES FOR THE DETECTION OF REACTIVE OXYGEN SPECIES IN BIOMEDICAL STUDIES</b> .....	2955
<i>Christine Kranz, Sven Daboss, Andreas Hellmann</i>	
<b>SYNTHESIS AND CHARACTERIZATION OF OSMIUM REDOX POLYMER MEDIATORS FOR TYPE II BIOSENSORS</b> .....	2956
<i>Margaret C Calhoun, Christopher Stachurski, Evan A. Gizzie, Aaron W. Daniel, David E. Cliffl</i>	
<b>LABEL-FREE PAPER SENSOR FOR PICOMOLAR INSULIN DETECTION IN HUMAN SERUM</b> .....	2957
<i>Sadagopan Krishnan, Jinesh Niroula, Gayan Premaratne</i>	
<b>INTEGRATION OF CYCLODEXTRIN-MEDIATED SURFACES WITH ELECTROCHEMICAL FLOW CELL</b> .....	2958
<i>Li Li, McKenna Merrill, Zahra Panahi, Jeffrey M Halpern</i>	
<b>ELECTRODEPOSITED MOS<sub>2</sub> THIN FILMS FOR STABLE IMMOBILIZATION OF THIOLATED BIOMOLECULES</b> .....	2959
<i>Ian Ivar Suni, Hannah Giang, Madhavi L Pali, Li Fan</i>	
<b>A CROSS-LINKER FREE ENZYME IMMOBILIZATION FOR DIRECT BIOELECTROCATALYSIS USING AQUEOUS PHASE INVERSION OF A HIGH-IONIC-STRENGTH, LIQUID COMPLEX COACERVATE</b> .....	2961
<i>Koun Lim, Monika Sima, Russell Stewart, Shelley D. Minter</i>	
<b>ELECTROCHEMICAL BEHAVIOR OF SELENOPHENE IN QUATERNARY AMMONIUM AND PHOSPHONIUM BASED IONIC LIQUIDS</b> .....	2962
<i>Noriaki Yasugi, Katsuhiko Tsunashima, Toshiyuki Higashi, Yuki Sakaguchi, Hirohisa Yamada, Masahiko Matsumiya</i>	
<b>TRANSITION STATE STRUCTURE MODELING AND MECHANISTIC STUDY OF PURINE DERIVATIVES</b> .....	2964
<i>Mulu Alemayehu Abate</i>	
<b>ESTIMATION OF MOLECULAR ORIENTATION USING WATER DROP ANGLE</b> .....	2965
<i>Kohki Hirao, Takuya Murakami, Atsushi Maeda</i>	
<b>ELECTROCHEMICAL DEGRADATION OF PHENOL AND CLOROPHENOL USING BORON DOPED DIAMOND AND COMPOSITE OF FE<sub>3</sub>O<sub>4</sub> NANOPARTICLES + CHITOSAN</b> .....	2967
<i>Alberto Alejandro Pujol, Itzel Leon, Jesus Cardenas, Selene Sepulveda-Guzman, Juan Manriquez, Erika Bustos</i>	
<b>COMPARISON OF PHOTOCATALYTIC ACTIVITIES OF TIN AND ZRN NANOPARTICLES INCORPORATED INTO TiO<sub>2</sub> MATRIX UNDER VISIBLE EXCITATION</b> .....	2968
<i>Olga A Baturina, Albert Epshteyn, Andrew Purdy, Blake Simpkins, Gregory T. Forcherio, Alexander O. Govorov</i>	
<b>WIDE-RANGE RESISTANCE MODULATION ON A SMNiO<sub>3</sub> CHEMICAL TRANSISTOR</b> .....	2970
<i>Azusa N. Hattori, Daiki Kawamoto, Mahito Yamamoto, Hidekazu Tanaka</i>	
<b>ELECTROCATALYTIC EFFECT OF IRO<sub>2</sub>-TA<sub>2</sub>O<sub>5</sub> TI AND RUO<sub>2</sub>-TA<sub>2</sub>O<sub>5</sub> TI DURING THE ELECTROCHEMICAL DEGRADATION OF PHENOL</b> .....	2973
<i>Itzel Leon, Alberto Alejandro Pujol, Jesus Cardenas, Juan Manriquez, Erika Bustos</i>	
<b>ELECTROCATALYTIC AND OPTOELECTRONIC CHARACTERISTICS OF EXFOLIATED TWO-DIMENSIONAL TITANIUM NITRIDE Ti<sub>4</sub>N<sub>3</sub>T<sub>x</sub> MXENE</b> .....	2974
<i>Abdoulaye Djire, Hanyu Zhang, Jun Liu, Elisa M. Miller, Nathan Neale</i>	
<b>ELECTRODEPOSITION OF GRADED METAL COATINGS ON SPHERICAL MANDRELS</b> .....	2975
<i>Vanessa N. Peters, Corie Horwood, Neal Bhandarkar, Michael Stadermann, Thomas Bunn</i>	
<b>HYDROGEN EVOLUTION REACTION ON ATOMIC LAYER DEPOSITED MOLYBDENUM NITRIDE (MON<sub>x</sub>) THIN FILM ON HIGHLY POROUS CARBON CLOTH-BASED SUBSTRATE</b> .....	2976
<i>Rahul Ramesh, Sandesh Y. Sawant, Dip K. Nandi, Moo Hwan Cho, Soo-Hyun Kim</i>	
<b>EFFECTS OF METAL-DOPING AND SURFACE MODIFICATION ON HYDROGEN PRODUCTION ACTIVITY OF METAL NANOCLUSTERS</b> .....	2977
<i>Woojun Choi, Kyuju Kwak, Minseok Kim, Dongil Lee</i>	

<b>NOBLE METAL DECORATED ANODIC TiO<sub>2</sub> NANOTUBES: EXCELLENT (ELECTRO)CATALYST</b> .....	2978
<i>Milos Krbal, Hanna Sopha, Raul Zazpe, Jan Prikryl, Stowwoon Ng, Jan M. Macak</i>	
<b>DEVELOPMENT OF INTEGRATED SCANNING ELECTROCHEMICAL CELL MICROSPECTROSCOPY FOR CHARACTERIZATION OF REDOX AND REACTIVE ELECTROCHEMISTRY</b> .....	2980
<i>Venkateshkumar Prabhakaran, Joseph Edgecomb, Grant Johnson</i>	
<b>IN SITU SPECTROSCOPY INVESTIGATION OF THE SURFACE-INTERFACE CHARGE-TRANSFER PROCESS OVER TAILORED NANO-STRUCTURED BASED PEC FUEL CELLS FOR SOLAR ENERGY HARVESTING AND CONVERSIONS</b> .....	2981
<i>Xinyong Li</i>	
<b>PHYSICAL TRANSLATION OF OPTICAL EXCITATION INTO NANOSCALE SEMICONDUCTOR MORPHOLOGIES</b> .....	2982
<i>Azhar I Carim, Nicolas A. Batara, Kathryn R Hamann, Madeline Claire Meier, Anjali Premkumar, Harry A Atwater, Nathan S Lewis</i>	
<b>VARIATIONS OF MASS-TRANSPORT AND HETEROGENEOUS ELECTRON-TRANSFER RATE WITH THE TEMPERATURE IN IONIC LIQUIDS</b> .....	2983
<i>Claire Lebrun, Mireille Turmine, Vincent Vivier</i>	
<b>ELECTROCHEMICAL BEHAVIOR OF PLUTONIUM IN MOLTEN FLUORIDE MEDIUM</b> .....	2985
<i>Julien Claquesin, Olivier Lemoine, Laurent Massot, Mathieu Gibilaro, Gilles Bourges, Pierre Chamelot</i>	
<b>STABILIZATION OF THE IONIC LIQUID - ELECTRODE INTERFACE FROM LARGE NONPOLAR GROUPS IN IONIC LIQUIDS AND IONIC LIQUID MIXTURES</b> .....	2986
<i>Jeffrey Michael Klein, Henry John Squire, Burcu Gurkan</i>	
<b>NANOSTRUCTURED ELECTROCATALYTIC INTERFACES FOR DUAL ELECTROSYNTHESIS OF HYDROGEN AND ORGANIC MOLECULES IN A BIOMASS-FUELLED LOW EXTERNAL ENERGY INPUT DEVICE</b> .....	2987
<i>Yaovi Holade, Nazym Tuleushova, Sophie Tingry, David Cornu</i>	
<b>MORPHOLOGICAL EFFECTS ON SURFACE OXIDATION TOLERANCE OF METALLIC NANOSHEETS</b> .....	2989
<i>Daisuke Takimoto, Dai Mochizuki, Sho Hideshima, Wataru Sugimoto, Qiuyu Yuan, Naoki Takao, Takanori Itoh, Truong Vinh Truong Duy, Tsukuru Ohwaki, Hideto Imai</i>	
<b>CATALYTIC ELECTRODE MEMBRANE AND APPLICATIONS IN FUEL CELL TYPE REACTORS FOR 3 PHASES POLLUTION CONTROL</b> .....	2991
<i>Lifen Liu</i>	
<b>PROTON-COUPLED-ELECTRON TRANSFER ENHANCES THE ELECTROCATALYTIC REDUCTION OF NITRITE TO NO IN A BIOINSPIRED COPPER COMPLEX</b> .....	2992
<i>Mark Symes, Giacomo Cioncoloni, Isolda Roger, Claire Wilson, Hans Senn, Paul Wheatley, Stephen Sproules, Russell Morris</i>	
<b>INORGANIC PHOTOTROPIC GROWTH OF NANOSCALE SEMICONDUCTOR DEPOSITS</b> .....	2993
<i>Madeline Claire Meier, Azhar I Carim, Sisir Yalamanchili, Wenhui Cheng, Jonathan R Thompson, Harry A Atwater, Nathan S Lewis</i>	
<b>RECENT ADVANCES WITH TERPYRIDINE-BASED MONOLAYER ELECTROCHROMIC MATERIALS</b> .....	2994
<i>E. Bradley Easton, Jade Poisson, Nadio O Laschuk, Heather L Geoffrey, Jesse T. S. Allan, Iraklii Ebralidze, Simone Quaranta, Olena V Zenkina, Franco Gaspari</i>	
<b>ELECTROLYTES BASED ON NANOSCALE ORGANIC-INORGANIC HYBRID MATERIALS (NOHMS)</b> .....	2996
<i>Nelly M. Cantillo, Maria Bruce, Sara Triana Hamilton, Shane Foister, Ah-Hyung Park, Thomas A. Zawodzinski</i>	
<b>CO<sub>3</sub>O<sub>4</sub> NANOCUBE -3DRGO HYBRID STRUCTURE: EFFICIENT NON-NOBLE-METAL ELECTROCATALYST WITH HIGH-PERFORMANCE FOR OXYGEN EVOLUTION REACTION</b> .....	2998
<i>Taniya Purkait, Prashant Pandey, Navpreet Kamboj, Ramendra Sundar Dey</i>	
<b>THERMODYNAMIC AND KINETIC CONTROL OF PHOTOELECTROCHEMICAL CO<sub>2</sub> REDUCTION INTO LIQUID FUELS</b> .....	3000
<i>Young Soo Kang</i>	
<b>GAN PROTECTION LAYER ON SI PHOTOCATHODE FOR PHOTOELECTROCHEMICAL WATER SPLITTING</b> .....	3001
<i>Guosong Zeng, Srinivas Vanka, Guiji Liu, Jason K. Cooper, Zetian Mi, Francesca M. Toma</i>	
<b>HEAT-TREATED TRANSITION METAL HEXACYANOMETALLATES AS ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION</b> .....	3002
<i>Barbara Zakrzewska, Krzysztof Miecznikowski, Beata Dembinska, Anna Jablonska, Sylwia Zoladek, Iwona Agnieszka Rutkowska, Enrico Negro, Pawel J. Kulesza, Vito Di Noto</i>	
<b>IMPACT OF FE(III) ON THE AUTOCATALYTIC PROCESSES OF CORROSION OF STAINLESS STEELS IN CONCENTRATED NITRIC ACID</b> .....	3003
<i>Julien Pelle, Benoit Gwinner, Nathalie Gruet, Vincent Vivier</i>	
<b>REACTION MECHANISM ANALYSIS OF ZN ELECTRODEPOSITION PROCESS IN ACIDIC SULPHATE BATH USING POTENTIODYNAMIC POLARIZATION TECHNIQUE</b> .....	3005
<i>Twinkle Paul, Ramanathan Srinivasan</i>	
<b>SIMULTANEOUS DETECTION OF CARBAMATES AND ORGANOPHOSPHATE PESTICIDES AT BARE BORON-DOPED DIAMOND ELECTRODES</b> .....	3007
<i>Ella Bentin, John S. Foord</i>	
<b>DECENTRALIZED ELECTROCHEMICAL PRODUCTION OF H<sub>2</sub>O<sub>2</sub>: A FOCUS ON CATALYSIS AND SINGLE-ATOM CATALYSTS</b> .....	3008
<i>Sungeun Yang, Jiangbo Xi, Viktor Colic, Ifan Stephens, Luca Silvioli, Jan Rossmeisl, Jakob Kibsgaard, Shuai Wang, Ib Chorkendorff</i>	
<b>OHMIC IMPEDANCE: MYTH OR REALITY?</b> .....	3009
<i>Oumaima Gharbi, Mark E Orazem, Mai Tran, Bernard Tribollet, Vincent Vivier</i>	

<b>UNVEILING FORMATION MECHANISMS OF ATOMICALLY DISPERSED FEN<sub>4</sub> ACTIVE SITES</b> .....	3011
<i>Gang Wu, Guofeng Wang, Zhenxing Feng, David A. Cullen</i>	
<b>KINETIC ANALYSIS OF THE OSCILLATORY ELECTRODEPOSITION OF CU/SN MULTILAYERS: ACTIVATION AND DIFFUSION CONTROL</b> .....	3013
<i>Laura Menezes, Eduardo Parma, Eduardo Giangrossi Machado, Raphael Nagao</i>	
<b>DFT ANALYSIS OF AMINO ACID FUNCTIONALIZATION OF HEMATITE FOR ELECTROREDUCTION CATALYSIS</b> .....	3015
<i>Sharad Maheshwari, Michael John Janik, Yawei Li</i>	
<b>ELECTROCATALYTIC ACTIVITIES OF ATOMICALLY CONTROLLED METAL NANOCCLUSERS FOR CLEAN ENERGY CONVERSION</b> .....	3016
<i>Woojun Choi, Kyuju Kwak, Minseok Kim, Dongil Lee</i>	
<b>IN SITU VIBRATIONAL SFG SPECTROSCOPIC STUDY OF AU-CATALYZED CO<sub>2</sub> REDUCTION IN AQUEOUS SOLUTION</b> .....	3017
<i>Jinhui Meng, Tianquan Lian</i>	
<b>INVESTIGATION OF A NOVEL RHENIUM DISULFIDE ELECTROCATALYST BY SUM FREQUENCY GENERATION VIBRATIONAL SPECTROSCOPY</b> .....	3018
<i>Qiliang Liu, Tianquan Lian</i>	
<b>MACHINE-LEARNING ENABLED SEARCH FOR THE NEXT-GENERATION CATALYST FOR HYDROGEN EVOLUTION REACTION</b> .....	3019
<i>Sichen Wei, Soojung Baek, Kristofer Reyes, Fei Yao</i>	
<b>HYDROGEN EVOLUTION REACTION ON TRANSITION METALS: PROMOTING WATER DISSOCIATION BY TUNING THE SURFACE OXOPHILICITY</b> .....	3020
<i>Pedro Farinazzo Bergamo Dias Martins, Dusan Strmcnik, Pietro Papa Lopes, Justin G. Connell, Edson A. Ticianelli, Vojislav R. Stamenkovic, Nenad M. Markovic</i>	
<b>ENGINEERING ON NI-CO-S BIFUNCTIONAL ELECTROCATALYST FOR WATER-SPLITTING</b> .....	3021
<i>Jing Wu</i>	
<b>EVALUATION OF CHANGES IN BOND PARAMETERS IN SULFOLANE UNDER THE INFLUENCE OF ELECTRON DONATING SUBSTITUENTS</b> .....	3022
<i>Andrey Yasko, Edward Khamitov, Elena Kuzmina, Vladimir Kolosnitsyn</i>	
<b>IONIC CONDUCTIVITY AND THERMAL STABILITY OF POLYETHYLENE GLYCOL BASED POLYMER ELECTROLYTES CONTAINING PHOSPHONIUM IONIC LIQUIDS</b> .....	3024
<i>Daiki Nomizu, Katsuhiko Tsunashima, Yuki Sakaguchi, Toshikazu Higashi, Hirohisa Yamada, Masahiko Matsumiya</i>	
<b>IN SITU RAMAN MICROSCOPY FOR REDOX MECHANISM OF CATHODE MATERIALS</b> .....	3026
<i>Vitalii Ri, Cheolho Jeon, Chunjoong Kim, Joonhee Moon</i>	
<b>SINGLE-CRYSTAL ELECTROCHEMISTRY EXPLAINS WHY CU NANOPATES FORM IN THE PRESENCE OF I<sup>-</sup></b> .....	3027
<i>Mutya A. Cruz, Myung Jun Kim, Benjamin J. Wiley</i>	
<b>THE ELECTROCATALYTIC REDUCTION OF AQUEOUS SELENATE AS MEDIATED BY UNDERPOTENTIAL DEPOSITION OF CU AND CD ON AU ELECTRODES</b> .....	3029
<i>Qi Han, Jonathan R Strobl, Daniel Scherson</i>	
<b>ELECTRODEPOSITION OF CU, CO AND RE FROM WATER IN SALT ELECTROLYTES</b> .....	3031
<i>Qiang Huang, William D. Sides, Shuvodeep De, Yang Hu</i>	
<b>RATIONAL DESIGN OF ELECTROCATALYTIC INTERFACES: CD UPD MEDIATED NITRATE REDUCTION ON Pd:Au BIMETALLIC SURFACES</b> .....	3033
<i>Qi Han, Adriel J. J. Jebaraj, Jose Solla-Gullon, Juan Feliu, Daniel Scherson</i>	
<b>INTERFACIAL PROCESS FOR ELECTROCHEMICAL SYSTEM USING POLYELECTROLYTE MEMBRANES FOR HIGH-PERFORMANCE ELECTROPLATING</b> .....	3036
<i>Kensuke Akamatsu, Ryosuke Fujiwara, Yohei Takashima, Takaaki Tsuruoka, Yuki Sato, Junya Murai, Hiroshi Yanagimoto</i>	
<b>MODELING THE MESOSCOPIC INFLUENCE OF SEI MECHANICAL RESPONSE TO ELECTRODE SWELLING</b> .....	3038
<i>Justin B. Hooper</i>	
<b>UNDERSTANDING THE EFFECT OF POLYMER SURFACE LAYERS ON MAGNESIUM INSERTION IN PEDOT/MNO<sub>2</sub> COAXIAL NANOWIRES</b> .....	3039
<i>Emily Sahadeo, Hakeem Kimani Henry, Sang Bok Lee</i>	
<b>COMBINING CYCLIC SQUARE WAVE VOLTAMMETRY EXPERIMENT AND MODELING TO QUANTIFY UNKNOWN ELECTRON TRANSFER MECHANISMS FOR APPLICATIONS IN RELEVANT ELECTROCHEMICAL SYSTEMS</b> .....	3041
<i>Alexis M. Fenton, Fikile R. Brushett</i>	
<b>DETECTION OF FREE OXYGEN REDUCTION REACTION INTERMEDIATES GENERATED AT Pt NANOPARTICLES BY ELECTRON PARAMAGNETIC RESONANCE SPECTROSCOPY</b> .....	3043
<i>Stephan Alexander Den Hartog, Mohammad Samanipour, Hong Yue Vincent Ching, Sabine Van Doorslaer, Tom Breugelmanns, Annick Hubin, Jon Ustarroz</i>	
<b>PROBING THE REDOX-DEPENDENT ELECTRONIC AND INTERFACIAL STRUCTURES IN FERROCENE-TERMINATED SELF-ASSEMBLED MONOLAYERS WITH PHOTOELECTRON SPECTROSCOPY</b> .....	3045
<i>Raymond A Wong, Yasuyuki Yokota, Mitsuru Wakisaka, Junji Inukai, Yousoo Kim</i>	
<b>NANO-SCALE CONFINEMENT FOR EFFICIENT MULTI-STEP REACTION CASCADES</b> .....	3047
<i>Kanchan Suklal Chavan, Scott Calabrese Barton</i>	

<b>THEORY OF MULTI-ION TRANSPORT AND THERMODYNAMIC PHENOMENA IN SOLVENT-FILLED MEMBRANES</b> .....	3048
<i>Andrew Robert Crothers, Douglas I. Kushner, Robert M. Darling, Ahmet Kusoglu, Clayton J. Radke, Adam Z. Weber</i>	
<b>SPONTANEOUS FORMATION OF DIAZONIUM SALTS THIN FILMS ON SILICON ELECTRODES</b> .....	3050
<i>Malwattage Chandramalika Rukmali Peiris, Simone Ciampi, Nadim Darwish</i>	
<b>PROBING THE INFLUENCE OF SOLVATION ENTROPY ON LI+/LI REDOX IN APROTIC ELECTROLYTES</b> .....	3052
<i>Graham Crabb, Janet Nienhuis, Emily Crabb, Arthur France-Lanord, Ryan M. Stephens, Jeffrey C. Grossman, Yang Shao-Horn</i>	
<b>ELECTRODES MODIFIED WITH REDOX MEDIATORS FOR IMPROVE CHARGE TRANSFER IN REDOX FLOW BATTERIES</b> .....	3053
<i>Robert K Emmett, Mark E. Roberts</i>	
<b>FUNCTIONALIZED GAAS PHOTOCATHODES FOR SPIN-DEPENDENT CHARGE TRANSFER STUDIES</b> .....	3054
<i>Mika Tamski, Felix Blumenschein, Christophe Roussel, Jean-Philippe Ansermet</i>	
<b>FREE-STANDING CARBON ELECTRODES FOR THE OXYGEN EVOLUTION REACTION</b> .....	3056
<i>Feihong Song, Yuxiao Ding, Yangming Lin, Saskia Heumann, Robert Schloegl, Anna Katharina Mechler</i>	
<b>REAL-TIME OBSERVATION OF THE DIFFUSION MECHANISM PROGRESSION FROM LIQUID TO SOLID-STATE OF TRANSITION METAL COMPLEXES</b> .....	3057
<i>Tea-Yon Kim, Yujue Wang, Austin Raithe, Thomas Hamann</i>	
<b>RECENT PROGRESSES IN IONIC LIQUID-BASED ELECTROLYTES FOR HYBRID MULTIVALENT METALS SECONDARY BATTERIES</b> .....	3058
<i>Gioele Pagot, Kei Vezzu, Angeloclaudio Nale, Enrico Negro, Steven Greenbaum, Vito Di Noto</i>	
<b>IMPORTANCE OF INTERFACIAL ACTIVATION AND PROTON TRANSFERS DURING REDOX PROCESSES OF HIGHLY INERT SYSTEMS: ELECTROCATALYTIC DETECTION OF AS(III) AND AS(V) IN ACID MEDIUM</b> .....	3060
<i>Iwona Agnieszka Rutkowska, Weronika Postek, James A. Cox, Pawel J. Kulesza</i>	
<b>A CHARGE-TRANSFER-RESISTANCE MODEL FOR PROTON TRANSMISSION THROUGH CVD SINGLE-LAYER GRAPHENE IN PROTON-EXCHANGE-MEMBRANE CELLS</b> .....	3062
<i>Stephen E Creager, Saheed Bukola</i>	
<b>A KINETIC ANALYSIS OF THE CO ELECTRO-OXIDATION REACTION ON PT BIMETALLICS: UNDERSTANDING THE INTERPLAY OF BIFUNCTIONAL AND ELECTRONIC EFFECTS</b> .....	3063
<i>Adam Baz, Adam Holewinski</i>	
<b>PROTON DISSOCIATION AND TRANSFER IN PROTIC IONIC LIQUIDS (PILS)</b> .....	3064
<i>Zhenghao Zhu, Xubo Luo, Stephen J. Paddison</i>	
<b>MECHANISMS OF MOBILE ION HOPPING IN POLYMERIZED IONIC LIQUIDS</b> .....	3065
<i>Xubo Luo, Hongjun Liu, Stephen J. Paddison</i>	
<b>(INVITED) SPECTROSCOPY TECHNIQUES APPLIED TO OPERANDO CHARACTERIZATION OF PGM-FREE CATALYSTS FOR FUEL CELLS</b> .....	3067
<i>Frederic Jaouen, Jingkun Li, Moulay-Tahar Sougrati, Lorenzo Stievano, Andrea Zitolo</i>	
<b>UNDERSTANDING THE ACTIVE SITES AND REACTION MECHANISM FOR WATER OXIDATION ON RUTHENIUM DIOXIDE</b> .....	3068
<i>Reshma R Rao, Yang Shao-Horn</i>	
<b>PHOTOLUMINESCENCE SPECTROELECTROCHEMISTRY STUDY OF CVD-2D MOS<sub>2</sub> MONOLAYERS TRANSFERRED ONTO A CONDUCTIVE TRANSPARENT ELECTRODE</b> .....	3069
<i>Lyndi Strange, Sourav Garg, Jeetika Yadav, Patrick Kung, Seongsin M Kim, Shanlin Pan</i>	
<b>UNDERSTANDING ELECTROCHEMICAL INTERFACE USING ATOM-BY-ATOM METAL SUBSTITUTION OF REDOX SPECIES</b> .....	3070
<i>Venkateshkumar Prabhakaran, Zhongling Lang, Anna Clotet, Josep M. Poblet, Grant Johnson, Julia Laskin</i>	
<b>CHARACTERIZATION OF SURFACE ADSORPTION OF ENGINEERED NANOPARTICLES BY COLLISION ELECTROCHEMISTRY</b> .....	3071
<i>Farideh Hosseini Narouei, Silvana Andreeescu</i>	
<b>(INVITED) ADVANCED HIGH ENERGY X-RAYS DIFFRACTION TECHNIQUES FOR ELECTROCHEMICAL SCIENCE</b> .....	3072
<i>Jakub Drnec, Isaac Martens, Timo Fuchs, Tim Wiegmann, Antonis Vamvakeros, Raphael Chattot, Olaf M. Magnussen</i>	
<b>OPERANDO PATTERN-ENHANCED RESONANT SCATTERING FOR SUB-NM INTERFACIAL "SPECTROMICROSCOPY"- OF ENERGY MATERIALS</b> .....	3074
<i>Cheng Wang, Isvar A. Cordova, Guillaume Freychet, David Kilcoyne, Wei Xu, Alexander Hexemer</i>	
<b>MULTIMODAL RESONANT X-RAY SCATTERING: ELUCIDATING ELECTROCHEMICAL MEMBRANES</b> .....	3075
<i>Isvar A. Cordova, Ahmet Kusoglu, Gregory M. Su, David Kilcoyne, Jun Feng, Cheng Wang</i>	
<b>USING IN SITU X-RAY DIFFRACTION AND COULOMETRY TO UNDERSTAND THE INTERCALATION OF HYDROGEN INTO PALLADIUM THIN FILMS</b> .....	3076
<i>Alan Taylor Landers, David Koshy, Soo Hong Lee, Jeremy T. Feaster, Kris Brown, John Christopher Lin, Daniel Lee, Jeffrey Beeman, Michael Bajdich, Drew Higgins, Junko Yano, Walter Drisdell, Ryan Davis, Christopher Hahn, Apurva Mehta, Thomas F. Jaramillo</i>	
<b>HIGH ENERGY SAXS-WAXS STUDIES ON THE FLUID STRUCTURE OF MOLTEN LiCl-Li SOLUTIONS</b> .....	3077
<i>Jicheng Guo, Augustus Merwin, Chris Benmore, Zhi-Gang Mei, Nathaniel C. Hoyt, Mark A. Williamson</i>	
<b>(INVITED) AMBIENT PRESSURE X-RAY PHOTOELECTRON SPECTROSCOPY OF ELECTROCHEMICAL SYSTEMS</b> .....	3078
<i>Svitlana Pylypenko</i>	

<b>(INVITED) PEFC ELECTRODE LAYER DEVELOPMENT VIA COMPLEMENTARY IN SITU DIAGNOSTICS AND EX SITU CHARACTERIZATION</b> .....	3080
<i>Timothy Van Cleve, Sunil Khandavalli, Karren L. More, Luigi Osmieri, Guanxiong Wang, Andrew G. Star, Sadia Kabir, Firat Cetinbas, Nancy N. Kariuki, Jaehyung Park, Michael Ulsh, Samantha Medina, Scott A Mauger, Svitlana Pylypenko, Deborah J. Myers, K. C. N</i>	
<b>CHEMICAL AND MORPHOLOGICAL ORIGINS OF IMPROVED TRANSPORT IN PERFLUORO IONENE CHAIN EXTENDED IONOMERS</b> .....	3082
<i>Gregory M. Su, Isvar A. Cordova, Michael Yandrasits, Matthew Lindell, Jun Feng, Cheng Wang, Ahmet Kusoglu</i>	
<b>AFM MODES FOR IN-SITU HYPERSPECTRAL MAPPING OF NANOMECHANICS, CONDUCTIVITY, AND LOCAL ELECTROCHEMICAL ACTIVITY</b> .....	3083
<i>John Thornton, Chunzeng Li, Thomas Mueller</i>	
<b>IN-SITU ELECTROCHEMICAL TECHNIQUES TO DETERMINE IONOMER COVERAGE IN PEFC ELECTRODES</b> .....	3085
<i>Timothy Van Cleve, Sunilkumar Khandavalli, Samantha Medina, Svitlana Pylypenko, Scott A Mauger, K. C. Neyerlin</i>	
<b>SYNCHROTRON-BASED CHARACTERIZATION OF PERFLUORINATED SULFONIC-ACID IONOMERS</b> .....	3086
<i>Peter J Dudenas, Adam Z. Weber, Ahmet Kusoglu</i>	
<b>REAL-TIME CHARACTERIZATION OF ELECTROCHEMICAL REACTION PRODUCTS</b> .....	3087
<i>Peyman Khanipour, Mario Löffler, Andreas M. Reichert, Ricarda Kloth, Iosif Mangoufis-Giasin, Karl J. J. Mayrhofer, Ioannis Katsounaros</i>	
<b>(INVITED) HARD X-RAY OPERANDO TRANSMISSION X-RAY MICROSCOPY OF ELECTROCHEMICAL SYSTEMS</b> .....	3088
<i>Johanna Nelson Weker</i>	
<b>QUANTIFYING CONCENTRATION DISTRIBUTION IN AN ORGANIC REDOX FLOW BATTERY USING IN-PLANE NEUTRON RADIOGRAPHY</b> .....	3089
<i>Antoni Forner-Cuenca, Katharine Virginia Greco, Jeffrey A Kowalski, Pierre Boillat, Fikile R. Brushett</i>	
<b>(INVITED) DISCOVERY OF NEW CAPACITY FADE MECHANISM IN LIXSN BATTERIES WITH DERIVATIVE OPERANDO (DOP) NMR SPECTROSCOPY</b> .....	3091
<i>Jose L. Lorie Lopez, Philip J. Grandinetti, Anne C. Co</i>	
<b>PROBING SULFUR CONTAMINATION MECHANISMS IN SOLID OXIDE FUEL CELLS USING OPERANDO METHODS</b> .....	3093
<i>William A Maza, Elias D Pomeroy, Daniel A Steinhurst, Stanislav Tsoi, Robert A. Walker, Jeffrey C. Owrutsky</i>	
<b>COMBINED SYNCHROTRON NANO X-RAY COMPUTED TOMOGRAPHY AND XANES TO UNDERSTAND PGM-FREE ANODES OF ALKALINE FUEL CELLS</b> .....	3094
<i>Devashish Shashikant Kulkarni, Stanley J. Normile, Emily Leonard, Ying Huang, Morteza Rezaei Talarposhti, Plamen Atanassov, Xianghui Xiao, Iryna V. Zenyuk</i>	
<b>(INVITED) SUCCESSES AND CHALLENGES OF TEACHING AND CONDUCTING ELECTROCHEMISTRY-BASED RESEARCH AT AN UNDERGRADUATE INSTITUTION</b> .....	3096
<i>James Kariuki</i>	
<b>ELECTROCHEMISTRY EDUCATION FOR AN UNDERGRADUATE AUDIENCE</b> .....	3097
<i>Alice H. Suroviec</i>	
<b>UNDERGRADUATE RESEARCH PROJECTS AS A PRELUDE TO GRADUATE RESEARCH</b> .....	3098
<i>James J. Noel</i>	
<b>BIOELECTROCHEMISTRY IN UNDERGRADUATE CURRICULUM AND RESEARCH</b> .....	3099
<i>Michelle Rasmussen</i>	
<b>BALANCING FUNDAMENTAL AND PRACTICAL ASPECTS IN NANO-ELECTROCHEMISTRY RESEARCH AND TEACHING INVOLVING NON-TRADITIONAL STUDENTS</b> .....	3100
<i>Gangli Wang</i>	
<b>WHAT YOUR STUDENTS OUGHT TO KNOW ABOUT ELECTROCHEMISTRY (BUT ASK US INSTEAD)</b> .....	3101
<i>Neil Spinner, Timothy Paschkewitz, Alex Peroff, Li Sun</i>	
<b>MICROELECTRODE BASED DEVICES FOR DIAGNOSIS OF ELECTRON TRANSPORT AND ELECTROCHEMICAL BEHAVIOR OF REDOX-CONDUCTING MATERIALS</b> .....	3102
<i>Pawel J. Kulesza, Iwona Agnieszka Rutkowska, Krzysztof Miecznikowski</i>	
<b>STUDENT DEPLOYED COMPU-GRAPHICAL METHODS FOR ELECTROCHEMISTRY EDUCATION</b> .....	3103
<i>Daniel Lee Parr, Johna Leddy</i>	
<b>CO<sub>2</sub> HYDROGENATION TO METHANOL AND FORMIC ACID IN COMPETITION WITH HYDROGEN EVOLUTION: A SPREADSHEET MODEL FOR USE IN CAPSTONE DESIGN COURSES</b> .....	3106
<i>Stuart B. Adler, Eric M. Stuve</i>	
<b>ELECTROCHEMICAL TUTORIALS ON DIFFUSION: MODELS AND DEMONSTRATIONS WITH PHYSICAL THERAPY PUTTY</b> .....	3108
<i>Daniel Lee Parr, Johna Leddy</i>	
<b>(INVITED) ON TEACHING ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY</b> .....	3109
<i>Mark E Orazem, Bernard Tribollet</i>	
<b>GRADUATE EDUCATION IN ELECTROCHEMISTRY AND CORROSION SCIENCE AT THE UNIVERSITY OF VIRGINIA</b> .....	3110
<i>Robert G. Kelly, John R. Scully, Elizabeth J. Opila, Giovanni Zangari, Gary Koenig, James T. Burns</i>	
<b>GRADUATE ELECTROCHEMISTRY COURSE PROJECTS</b> .....	3111
<i>David E. Cliffe</i>	
<b>STRESS AND MENTAL HEALTH IN CHEMISTRY GRADUATE EDUCATION</b> .....	3112
<i>Evan L Anderson, Maral Ps Mousavi, Katherine Lust, Philippe Buhlmann</i>	

<b>RETHINKING ELECTROCHEMICAL SCIENCE AND ENGINEERING EDUCATION</b> .....	3113
<i>Fernando H Garzon, Lok-Kun Tsui, Vanessa Svihla, Abhaya Datye</i>	
<b>INTEGRATING HANDS-ON BATTERY DESIGN INTO A CHEMICAL ENGINEERING UNIT OPERATIONS LABORATORY</b> .....	3114
<i>William E. Mustain</i>	
<b>CONCEPT INVENTORIES FOR ELECTROCHEMISTRY AND ELECTROCHEMICAL ENGINEERING</b> .....	3115
<i>Thomas F. Fuller, John N. Harb</i>	
<b>ELECTROCHEMICAL BEHAVIOR OF REDOX ACTIVE ORGANIC MOLECULES IN ETHALINE DEEP EUTECTIC SOLVENT</b> .....	3116
<i>Henry John Squire, Jeffrey Michael Klein, Burcu Gurkan</i>	
<b>TEACHING ENGINEERS IN THIN FILM DEPOSITION: A PROJECT BASED APPROACH WITH APPLICATIONS IN PHOTONICS AND LASER TECHNOLOGIES</b> .....	3117
<i>Patrick Steglich</i>	
<b>REUSING A HARD DRIVE PLATTER TO DEMONSTRATE ELECTROCATALYSTS FOR HYDROGEN AND OXYGEN EVOLUTION REACTIONS</b> .....	3118
<i>Ricardo Henrique Goncalves</i>	
<b>(INVITED) SONOELECTROCHEMISTRY: A POWERFUL TOOL FOR ELUCIDATING MECHANISMS AND FOR ACCELERATING ELECTROCHEMICAL PROCESSES</b> .....	3119
<i>Jean-Yves Hihn, Marie-Laure Doche, Loic Hallez, Abdeslam Et Taouil, Bruno G. Pollet</i>	
<b>AQUEOUS EXFOLIATION OF NiFe LDH/CB TO BOOST ITS OXYGEN EVOLUTION REACTION ACTIVITY IN ALKALINE SOLUTIONS</b> .....	3121
<i>Tshimangadzo Saddam Munonde, Haitao Zheng, Philiswa Nosizo Nomngongo</i>	
<b>THE EFFECTS OF ULTRASOUND ON THE ELECTRO-OXIDATION OF SULFATE SOLUTIONS</b> .....	3122
<i>Alexander George Wallace, Patrick J McHugh, Mark Symes</i>	
<b>SONOELECTROCHEMICAL CO<sub>2</sub> REDUCTION ON POLYCRYSTALLINE COPPER ELECTRODES</b> .....	3123
<i>Hamed Mehrabi, Md Hujjatul Islam, Raul Erades De Quevedo, Bruno G. Pollet, Robert Coridan</i>	
<b>(INVITED) THIN LAYER SONOELECTROCHEMISTRY: IMPACTS ON SLOW ELECTRON TRANSFER KINETICS WITHOUT VISIBLE CAVITATION</b> .....	3124
<i>Chester G Duda, Brenna Parke, Johna Leddy</i>	
<b>SONOELECTROCHEMICAL SYNTHESIS OF PROTON EXCHANGE MEMBRANE WATER ELECTROLYZER (PEMWE) ELECTROCATALYSTS</b> .....	3125
<i>Bruno G. Pollet</i>	
<b>THE USE OF ULTRASOUND FOR THE ELECTROCHEMICAL SYNTHESIS OF MAGNESIUM AMMONIUM PHOSPHATE HEXAHYDRATE (STRUVITE)</b> .....	3127
<i>Faranak Foroughi, Laszlo Kekedy-Nagy, Md Hujjatul Islam, Jacob J. Lamb, Lauren F. Greenlee, Bruno G Pollet</i>	
<b>THIN LAYER SONOELECTROCHEMISTRY: ELECTROCATALYSIS IN OXYGEN REDUCTION REACTION (ORR) AND METHANOL ELECTROLYSIS</b> .....	3129
<i>Chester G Duda, Johna Leddy</i>	
<b>(INVITED) NOVEL FUEL PRODUCTION BASED ON SONOCHEMISTRY AND SONOELECTROCHEMISTRY</b> .....	3130
<i>Md Hujjatul Islam, Jacob J. Lamb, Kristian M. Lien, Odne Stokke Burheim, Jean-Yves Hihn, Bruno G. Pollet</i>	
<b>(INVITED) DESIGN AND REALISATION OF ULTRASONIC REACTOR FOR MASKLESS MICROFABRICATION</b> .....	3132
<i>Sudipta Roy</i>	
<b>PULSED ELECTRODEPOSITION OF TRIVALENT CHROMIUM UNDER ULTRASONIC CONDITIONS</b> .....	3134
<i>Timothy D. Hall, Rajeswaran Radhakrishnan, Jeanne-Marie Rauch, Severine Lallemand, Marie-Pierre Gigandet, Jason Rolet, Johann Merlet, Jean-Yves Hihn, Joffrey Tardelli, Maria Inman, E. J. Taylor</i>	
<b>THROUGH-MASK ELECTROCHEMICAL ETCHING OF MICROPILLAR ARRAY WITH MEGASONIC AGITATION</b> .....	3135
<i>Liqun Du, Ke Zhai, Shuxuan Wang, Yikui Wen</i>	
<b>ELECTROLYTIC ZINC COMPOSITE COATINGS: ULTRASOUND ASSISTED DEPOSITION FOR MORPHOLOGICAL AND COMPOSITION MODIFICATION</b> .....	3137
<i>Lucas Baissac, Cedric C. Buron, Jean-Yves Hihn, Ludovic Chantegrel</i>	
<b>SONOELECTRODEPOSITION : MICROSTRUCTURAL STUDIES IN AQUEOUS AND IONIC LIQUID ELECTROLYTES</b> .....	3139
<i>Bouzid Naidji, Loic Hallez, Abdeslam Et Taouil, Francis Touyeras, Jean-Yves Hihn</i>	
<b>MICRO-BUBBLE SONIC-ELECTROCHEMICAL PREPARATION OF POLYANILINE</b> .....	3141
<i>Kyoka Komaba, Hiromasa Goto</i>	
<b>DESALINATION TECHNOLOGIES UTILIZING SOLAR ENERGY</b> .....	3143
<i>Yanjie Zheng, Kelsey B. Hatzell</i>	
<b>THE EFFECTS OF TUNNEL AND LAYER OPENINGS IN ENERGETIC AQUEOUS ZINC ION STORAGE IN MANGANESE DIOXIDES</b> .....	3144
<i>Ethan Ertell, Zeljka Zec, Altug Suleyman Poyraz</i>	
<b>INVESTIGATING CATHODE DISSOLUTION BY HOMOGENEOUS SOL-GEL COATING ON MANGANESE DIOXIDE NANOFIBERS TO EXTEND BATTERY PERFORMANCE</b> .....	3145
<i>Milan Hisham Haddad, Zeljka Zec, Megan Ariana Hammontree, Altug Suleyman Poyraz</i>	
<b>ADVANCES IN E-ALD BY SLRR FOR THE GROWTH OF ULTRA THIN FILMS OF METAL AND ALLOYS - IN RECOGNITION TO JOHN STICKNEY'S CONTRIBUTION TO ELECTRODEPOSITION</b> .....	3146
<i>Nikolay Dimitrov</i>	

<b>(INVITED) ELECTROLESS DEPOSITION OF PB MONOLAYER - PRELUDE TO ELECTROLESS ATOMIC LAYER DEPOSITION AS SURFACE SELECTIVE, SURFACE CONTROLLED, SELF-TERMINATING PROCESS</b> .....	3147
<i>Stanko Brankovic</i>	
<b>ELECTROCHEMISTRY RESEARCH IN THE STICKNEY LAB: A BRIEF SUMMARY OF DR. JOHN STICKNEY'S PAST AND PRESENT RESEARCH</b> .....	3148
<i>Pauline Howell, John Lewellen Stickney, Peter Sisk</i>	
<b>ELECTROCHEMISTRY RESEARCH IN THE STICKNEY LAB: A BRIEF SUMMARY OF DR. JOHN STICKNEY'S PAST AND PRESENT RESEARCH ON GETE</b> .....	3149
<i>Peter W Sisk, Pauline Howell, John Lewellen Stickney</i>	
<b>(INVITED) PD SHAPE-CONTROLLED NANOPARTICLES DECORATED WITH PROMOTER METALS FOR ELECTROCHEMICAL NITRATE REDUCTION</b> .....	3150
<i>Jeonghoon Lim, Jinho Park, Seung Woo Lee, Marta C. Hatzell</i>	
<b>NANOSCALE MATERIALS DESIGN AND IN OPERANDO VISUALIZATION FOR HIGH-ENERGY ULTRA-SAFE BATTERIES</b> .....	3151
<i>Nian Liu</i>	
<b>AT THE INTERSECTION OF PHOTONS AND ELECTRONS: A PERSPECTIVE ON OPERANDO, IN-SITU AND EX-SITU SYNCHROTRON X-RAY STUDIES OF BATTERY AND ELECTROCATALYSIS REACTIONS</b> .....	3152
<i>Faisal M. Alamgir</i>	
<b>(INVITED) MULTISCALE ANALYSIS OF BATTERY MATERIALS USING X-RAY MICROSCOPY</b> .....	3153
<i>George J. Nelson</i>	
<b>(INVITED) CHARACTERIZING LI-ION BATTERY EXTREME FAST CHARGING THROUGH IN SITU MEASUREMENT OF TEMPERATURE DISTRIBUTIONS</b> .....	3154
<i>Shan Huang, Xianyang Wu, Gabriel M. Cavalheiro, Xiaoniu Du, Bangzhi Liu, Zhijia Du, Guangsheng Zhang</i>	
<b>NEXT GENERATION OF MATERIALS FOR LITHIUM-ION BATTERY ANODES, CATHODES, SEPARATORS &amp; ELECTROLYTES</b> .....	3156
<i>Gleb Yushin</i>	
<b>IMPROVING THE ELECTROCHEMICAL PERFORMANCE OF HIGH POWER AND ENERGY AQUEOUS RECHARGEABLE ZN/MNO<sub>2</sub> BATTERIES</b> .....	3157
<i>Altug Suleyman Poyraz</i>	
<b>MORPHOLOGY AND PHASE CHANGES IN FE ANODES FOR RECHARGEABLE ALKALINE BATTERIES</b> .....	3158
<i>Dong-Chan Lee, Gleb Yushin</i>	
<b>(INVITED) ELECTROCHEMISTRY AT GEORGIA TECH: EARLY DAYS OF THE GEORGIA LOCAL SECTION</b> .....	3159
<i>Paul A Kohl</i>	
<b>(INVITED) EXPLORING THE MYSTERIES IN ELECTROCHEMISTRY WITH IN SITU X-RAY CHARACTERIZATIONS</b> .....	3160
<i>Hailong Chen</i>	
<b>COPPER DELAFOSSITES: DIVERSE MATERIALS FOR SOLAR ENERGY CONVERSION AND STORAGE</b> .....	3161
<i>Byron Farnum</i>	
<b>PT-SANDWICHED GRAPHENE ULTRA-DURABLE AND HIGHLY ACTIVE CATALYST FOR OXYGEN REDUCTION REACTION</b> .....	3162
<i>Ali Abdelhafiz, Ji Il Choi, Seung Soon Jang, Faisal M. Alamgir, Meilin Liu</i>	
<b>(INVITED) NANOSTRUCTURED ORGANIC ELECTRODES FOR ELECTROCHEMICAL ENERGY STORAGE APPLICATIONS</b> .....	3164
<i>Seung Woo Lee</i>	
<b>(INVITED) 2D MXENES AS BUILDING BLOCKS FOR ASSEMBLY OF HIGH-PERFORMANCE ELECTRODES FOR ELECTROCHEMICAL ENERGY STORAGE</b> .....	3165
<i>Majid Beidaghi</i>	
<b>(INVITED) CHLORIDE-ION CONCENTRATION FLOW CELLS FOR EFFICIENT SALINITYGRADIENT ENERGY RECOVERY</b> .....	3166
<i>Xiuping Zhu, Guangcai Tan</i>	
<b>NANO-ELECTROCHEMISTRY CONCEPTS IN DESALINATION ENERGY HARVESTING AND ANALYSIS</b> .....	3167
<i>Gangli Wang</i>	
<b>CARBON-BASED AIR-CATHODES FOR HYDROGEN PEROXIDE PRODUCTION IN MICROBIAL FUEL CELLS</b> .....	3168
<i>Negin Kananizadeh, Spencer Lindsay, Anthony Childress, Mohamed Ateia Ibrahim, Michael Naguib, Apparao M. Rao, Sudeep Popat</i>	
<b>(INVITED) ON INTERPRETING POLARIZATION CURVES FOR MICROBIAL FUEL CELLS - HOW STANDARD FUEL CELL INTERPRETATIONS DO NOT APPLY</b> .....	3170
<i>Sudeep Popat</i>	
<b>ANAEROBIC TREATMENT OF HIGH FAT CONTENT WASTEWATER IN MICROBIAL ELECTROCHEMICAL CELLS</b> .....	3171
<i>Sudeep Popat, Ao Xie</i>	
<b>(AMAZON CATALYST AT ECS GRANT WINNER) ENHANCING THE RATE OF ELECTROCATALYTIC CONVERSION OF N<sub>2</sub> TO NH<sub>3</sub> USING BIMETALLIC AU-PD NANOPARTICLES</b> .....	3172
<i>Mohammadreza Nazemi, Mostafa El-Sayed</i>	



<b>(INVITED) TEMPLATE FREE METHOD FOR MACROPOROUS SnO<sub>2</sub> THIN FILM SENSORS</b> .....	3173
<i>Krystelle Lionti, Linda Sundberg, Andrea Fasoli, Mark Sherwood, Luisa Bozano</i>	
<b>(INVITED) ZIRCONIA-BASED ELECTROCHEMICAL OXYGEN SENSOR FOR MONITORING HUMIDITY AT THE CATHODE OF PEM STACKS</b> .....	3175
<i>Richard E Soltis</i>	
<b>DESIGN OF A HIGH SIGNAL TO NOISE BALANCED PLATINUM THERMAL CONDUCTIVITY DETECTOR</b> .....	3178
<i>Ardalan Lotfi, Peter J. Hesketh, Milad Navaei</i>	
<b>AMMONIA-SENSING PROPERTIES OF <math>\alpha</math>-MOO<sub>3</sub> FABRICATED BY REACTIVE SPRAY DEPOSITION TECHNOLOGY (RSDT)</b> .....	3180
<i>Thomas Allen Ebaugh, Abhinav Poozhikunnath, Leonard J. Bonville, Radenka Maric</i>	
<b>TWO-DIMENSIONAL VANADIUM CARBIDE MXENE FOR HIGH PERFORMANCE CHEMIREISISTIVE SENSING</b> .....	3183
<i>Eunji Lee, Armin Vahidmohammadi, Doohee Lee, Jaesik Yoon, Majid Beidaghi, Young Soo Yoon, Dong-Joo Kim</i>	
<b>LEVERAGING NANOSCALE PHENOMENA IN ELECTROCHEMICALLY DEALLOYED NANOPOROUS GOLD FOR GAS SENSING</b> .....	3185
<i>Timothy Wong, Roger C. Newman</i>	
<b>NON-ENZYMATIC ELECTROOXIDATION OF UREA WITH A DISPOSABLE PAPER-BASED SENSOR USING HIERARCHICAL NiO HOLLOW SPHERE</b> .....	3187
<i>Doohee Lee, Jaesik Yoon, Eunji Lee, Young Soo Yoon, Dong-Joo Kim</i>	
<b>ENVIRONMENTAL PERSPECTIVE OF ELECTROCHEMICAL SENSORS</b> .....	3189
<i>Ashiq Ahamed, Grzegorz Lisak, Johan Bobacka</i>	
<b>GOLD NANOPARTICLE EMBEDDED MODIFIED MWCNT ELECTRODES FOR ELECTROCHEMICAL DETECTION OF ARSENIC IN WATER</b> .....	3190
<i>Shirsendu Mitra, Nirmal Roy, Dipankar Bandyopadhyay</i>	
<b>(INVITED) EXTRACELLULAR MATRIX-BASED NEURAL INTERFACES</b> .....	3191
<i>Wen Shen, Mark Allen</i>	
<b>POINT-OF-CARE ELECTROCHEMICAL DETECTION OF SULF MARKER ACTIVITY FOR LUNG CANCER DIAGNOSIS IN HUMAN BODY FLUIDS</b> .....	3192
<i>Zhe Wang</i>	
<b>VERIFICATION OF A STABILITY OF POLYMER MATRIX FOR THE SALIVARY-NITRATE-ISFETS</b> .....	3193
<i>Shuto Osaki, Takuya Kintoki, Takayo Moriuchi, Kenichi Kitamura, Shin-Ichi Wakida</i>	
<b>A NOVEL NON-PLANAR, INTERDIGITATED MICROELECTRODE ARRAY WITH A POROUS, FLOW-THROUGH WORKING ELECTRODE FOR HIGHLY SENSITIVE AND SELECTIVE DETECTION OF VARIOUS CHEM/BIO-MOLECULES</b> .....	3195
<i>Zhenglong Li, Yu Hsuan Cheng, Hansin Kim, Pedro Moura, Juliana Yang, Sagnik Basuray</i>	
<b>DEVELOPMENT OF FLEXIBLE ELECTROCHEMICAL GLUCOSE SENSORS BY INKJET PRINTING OF NOVEL GRAPHENE SURFACES</b> .....	3197
<i>Aytekin Uzunoglu</i>	
<b>FABRICATION OF NON-ENZYMATIC SENSOR UTILIZING CARBON NANOTUBES- NAFION FILM FOR NANOSCALE DETERMINATION OF ANTIVIRAL DRUG</b> .....	3198
<i>Pravin Tarlekar, Sanghamitra Chatterjee</i>	
<b>(INVITED) NEW FLEXIBLE ELECTRODES FOR ELECTROCHEMICAL ANALYSIS: A STEP FORWARD TOWARDS WEARABLE SENSORS</b> .....	3199
<i>Diego F. Pozo-Ayuso, Mario Castano-Alvarez, Ana Fernandez-La-Villa</i>	
<b>SOLID-CONTACT ION-SELECTIVE ELECTRODES COMPRISING HYDROPHOBIC REDOX BUFFERS</b> .....	3201
<i>Celeste R Rousseau, Philippe Buhlmann</i>	
<b>THERANOSTIC APPLICATIONS OF CARBON NANOMATERIAL MODIFIED SENSORS: A PROMISING FUTURE</b> .....	3202
<i>Sanghamitra Chatterjee</i>	
<b>BEHIND MODELING ELECTROCHEMICAL IMPEDANCE RESPONSE OF A CONTINUOUS GLUCOSE MONITOR</b> .....	3203
<i>Ming Gao, Rui Kong, Mark E Orazem</i>	
<b>(INVITED) PORTABLE IRON SCREENING SYSTEM FOR POINT-OF-CARE IRON STATUS DETERMINATION</b> .....	3205
<i>Mary Arugula, Erica Pinchon, Dustin Haithcock, Ketan Bhatt, Prabhakar Pandian, Kapil Pant</i>	
<b>NONINVASIVE UREA MONITORING USING A FLEXIBLE ELECTROCHEMICAL SWEAT BASED SENSOR</b> .....	3206
<i>Jaesik Yoon, Doohee Lee, Eunji Lee, Myeongseok Sim, Tae-Sik Oh, Young Soo Yoon, Dong-Joo Kim</i>	
<b>ZINC OXIDE-CARBON CLOTH NANOSENSORS FOR SIMULTANEOUS DETECTION OF URIC ACID, EPINEPHRINE, AND ASCORBIC ACID</b> .....	3208
<i>Rebekah De Penning, Noahlana Monzon, Ahmad Fallatah, Sonal Padalkar</i>	
<b>CHARACTERIZATION OF ELECTROCHEMICAL PROXIMITY ASSAY OF PLATELET-DERIVED GROWTH FACTOR USING SPR/FLUORESCENCE SPECTROELECTROCHEMISTRY</b> .....	3210
<i>Lang Zhou, Bryan A. Chin, Aleksandr L. Simonian</i>	
<b>TOWARD RAPID ANTIBACTERIAL SUSCEPTIBILITY TESTING USING ELECTROCHEMICAL BIOSENSORS BASED ON ORGANIC-INORGANIC CATALYTIC COMPLEXES</b> .....	3211
<i>Adam Bolotsky, Aida Ebrahimi</i>	

<b>EFFECT OF THE NUMBER OF ME ELEMENTS ON CAPTURE RATE OF A SMALL NUMBER OF PATHOGENS IN THE PROTOTYPE OF PHAGE FILTER WITH A COMPARISON OF ROCKING METHOD</b> .....	3213
<i>Songtao Du, Yuzhe Liu, I-Hsuan Chen, Alana Maclachlan, Tung-Shi Huang, Bryan A. Chin</i>	
<b>IMPROVED MAGNETOELASTIC (ME) SENSING BY USING GELATIN FOR SALMONELLA PICK-UP FROM LARGE SCALE SURFACES</b> .....	3214
<i>Yuzhe Liu, Songtao Du, I-Hsuan Chen, Alana Maclachlan, Tung-Shi Huang, Bryan A. Chin</i>	
<b>DEVELOPMENT OF A 3D-PRINTED FORCE SENSOR WITH CARBON PASTE</b> .....	3215
<i>Alejandro Rubiano, Hamed Shamkhalichenar, Jin-Woo Choi</i>	
<b>GRAPHENE-ENHANCED SPECTRO-ELECTROCHEMISTRY ON BORON-DOPED DIAMOND WAVEGUIDES</b> .....	3216
<i>Boris Mizaikoff</i>	
<b>ELECTRICAL SENSING CAPABILITY OF CARBON NANO-TUBES/ALUMINA CEMENT COMPOSITES, PROBED THROUGH FREQUENCY-DEPENDENT IMPEDANCE SPECTROSCOPY</b> .....	3217
<i>Jiwon Oh, Jaehwan Kim, Hyunbae Lee, Heesu Hwang, Wonjun Jang, Eunsoo Choi, Jin-Ha Hwang</i>	
<b>DETECTION OF PATHOGENIC BACTERIA AND CANCER CELLS IN BODY FLUIDS USING MAGNETOSTRICTIVE PARTICLE (MSP) BIOSENSORS</b> .....	3218
<i>Wei Yi, Jiachen Liu, Bryan A. Chin, Zhongyang Cheng</i>	
<b>PHYSICS OF NEUTRON-GAMMA SENSORS FOR SOIL ELEMENTAL ANALYSIS</b> .....	3220
<i>Aleksandr Kavetskiy, Galina Yakubova, Nikolay Sargsyan, Stephen A. Prior, H. Allen Torbert, Bryan A. Chin</i>	
<b>FABRICATION OF HIGHLY SENSITIVE NON-ENZYMATIC GLUCOSE SENSOR BASED ON HIGHLY POROUS CU/CU<sub>2</sub>O/CUO EMBEDDED IN N DOPED CARBON AEROGEL</b> .....	3221
<i>Saad M. Alsherhi</i>	
<b>(INVITED) WRINKLED PEDOT:PSS FILM BASED STRETCHABLE AND TRANSPARENT TRIBOELECTRIC SENSOR FOR HUMAN MOTION MONITOR</b> .....	3222
<i>Zhen Wen</i>	
<b>PELTIER-DRIVEN TEMPERATURE CONTROL FOR FLUORESCENT SENSING PLATFORM</b> .....	3224
<i>Brianna Robertson, Young-Ho Shin, Jin-Woo Choi</i>	
<b>HIGHLY-SENSITIVITY AND SELF-POWERED OCEAN WAVE SENSOR BASED ON LIQUID-SOLID INTERFACING TRIBOELECTRIC NANOGENERATOR</b> .....	3225
<i>Minyi Xu, Song Wang, Steven L. Zhang, Phan Trung Kien, Wang Chuan, Zhou Li, Zhong Lin Wang</i>	
<b>(INVITED) A NEW APPROACH TO MULTIFUNCTIONAL PIEZOELECTRIC THIN FILMS FOR FLEXIBLE DEVICE APPLICATIONS</b> .....	3227
<i>Seung-Hyun Kim, Sung Sik Won, Masami Kawahara, Chang Young Koo, Angus I Kingon</i>	
<b>3D PRINTABLE PVDF/DMAAM BASED GEL POLYMER ELECTROLYTE FOR LITHIUM ION BATTERIES</b> .....	3228
<i>Md Sazzadur Rahman, Ajit Khosla, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>3D PRINTABLE EDIBLE ACTUATOR</b> .....	3229
<i>Julkarayne M. Habibur Rahman, Kazunari Yoshida, Ajit Khosla, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>CONTROLLING MAGNETIC PROPERTIES IN BULK FERROMAGNETIC METALS BY ELECTROCHEMICAL CHARGING AND DISCHARGING OF HYDROGEN ATOMS</b> .....	3230
<i>Xinglong Ye, Robert Kruk, Horst Hahn</i>	
<b>DEVELOPMENT OF FULL COLOR 3D GEL PRINTER USING COLOR GEL SYSTEM</b> .....	3231
<i>Mizuki Takahashi, Azusa Saito, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>(INVITED) DROPLET MICROFLUIDIC DEVICES FOR CHEMICAL SENSING APPLICATION; 1) PAPER DIGITAL MICROFLUIDICS AND 2) MODULAR MICROFLUIDICS</b> .....	3232
<i>Jinkee Lee</i>	
<b>DEVELOPMENT OF PHYSICAL PROPERTY MEASURING DEVICE FOR 3D FOOD PRINTER GEL</b> .....	3233
<i>Ryo Ishigaki, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>HIGH SENSITIVE AU NANOPARTICLES IGZO FET CANCER SENSOR VIA REAL-TIME ANALYSIS MICRO-FLUID SEPARATION</b> .....	3234
<i>Hyo-Jun Kwon, Hee-Won Yang, Min-Young Kim, Seung-Beck Lee, Chul Geun Kim, Ho-Soon Choi, Jea-Gun Park</i>	
<b>DEVELOPMENT OF TOUCH SENSOR USING ION GEL</b> .....	3235
<i>Yuta Hara, Kazunari Yoshida, Kumkum Ahmed, Ajit Khosla, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>DEVELOPMENT OF FATIGUE LIFE PREDICTION TECHNOLOGY OF HYDROGELS</b> .....	3236
<i>Tetsuro Iijima, Go Murasawa, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>AN IMPEDANCE MEASUREMENT PLATFORM FOR CRYOPRESERVATION APPLICATIONS</b> .....	3237
<i>Hamed Shamkhalichenar, Terrence R Tiersch, Jin-Woo Choi</i>	
<b>CAPACITIVE HUMIDITY SENSING CHARACTERISTICS OF POROUS SILICON OXIDE VIA ELECTRODEPOSITION ASSISTED STRIPPING AND METAL ASSISTED CHEMICAL ETCHING PROCESS</b> .....	3239
<i>Soobin Park, Bongyoung Yoo</i>	
<b>CREATION OF 3D PRINT GEL ACTUATOR</b> .....	3241
<i>Yuki Takishima, Kazunari Yoshida, Azusa Saito, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>(INVITED) DESIGN OF NANOMATERIAL-BASED ELECTROCHEMICAL SENSORS FOR ENVIRONMENTAL AND BIOLOGICAL APPLICATIONS</b> .....	3242
<i>Aicheng Chen, Venkatesh Manikandan, Zhonggang Liu, Syed Ahmed</i>	

<b>DEVELOPMENT OF ELECTROCHEMICAL NANOSENSOR FOR THE DETECTION OF MALARIA PARASITE IN CLINICAL SAMPLES</b> .....	3243
<i>Abolanle Saheed Adekunle, Olaoluwa R. Obisesan, John A. O. Oyekunle, Sabu Thomas, Thabo Ti Nkambule, Bhekie B. Mamba</i>	
<b>BIOSENSOR FOR DETECTION OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS</b> .....	3245
<i>Dhara Patel, Yan Zhou, Ramaraja P. Ramasamy</i>	
<b>ONE-STEP COVALENT IMMOBILIZATION OF <math>\beta</math>-CYCLODEXTRIN ON SP<sup>2</sup> CARBON SURFACES FOR ULTRASENSITIVE AND SELECTIVE GUEST DETECTION</b> .....	3246
<i>Zhi Li, Joachim F. R. Van Guyse, Victor Retamero De La Rosa, Hans Van Gorp, Peter Walke, Hiroshi Uji-I, Richard Hoogenboom, Steven De Feyter, Stijn F. L. Mertens</i>	
<b>SUPERPARAMAGNETIC FE<sub>3</sub>O<sub>4</sub>-AU CORE-SHELL NANOPLASMONIC SENSING ARRAY FOR LABEL-FREE MULTIPLEX CYTOKINE DETECTION</b> .....	3247
<i>Yuxin Cai, Jingyi Zhu, Jiacheng He, Wen Yang, Chao Ma, Feng Li, Weiqiang Chen, Pengyu Chen</i>	
<b>SEMICONDUCTOR-BASED BIOSENSOR FUNCTIONALIZED WITH JACALIN FOR DETECTION OF SECRETORY IGA IN SWEAT SAMPLE</b> .....	3250
<i>Hiroki Hayashi, Naoki Sakamoto, Sho Hideshima, Yoshitaka Harada, Mika Tsuna, Shigeki Kuroiwa, Toshiyuki Momma, Tetsuya Osaka</i>	
<b>ELECTROCHEMICAL DETECTION OF MICRO-RNAS AS POTENTIAL CANCER BIOMARKER</b> .....	3252
<i>Hamid Asadi, Ramaraja P. Ramasamy</i>	
<b>NANOTECHNOLOGY FOR BIOSENSING APPLICATIONS</b> .....	3253
<i>H. Susan Zhou</i>	
<b>WIDE LINEAR RANGE DETECTING NON-ENZYMATIC GLUCOSE SENSOR BASED ON CU-CUO NANOPARTICLES DECORATED TIO<sub>2</sub>NANOTUBES</b> .....	3254
<i>Zhiru Zhou, H. Susan Zhou</i>	
<b>SELECTIVE ISOLATION AND CONCENTRATION OF FOODBORNE BACTERIAL PATHOGENS IN A MICROFLUIDIC DEVICE</b> .....	3256
<i>Alyssa Ghuman, Yan Zhou, Ramaraja P. Ramasamy</i>	
<b>(INVITED) APPLICATION OF HIGH HYDROSTATIC PRESSURE AND NANOFILMS TO THE FABRICATION OF ENZYME BIOSENSORS</b> .....	3257
<i>Jose I Reyes De Corcuera, Daoyuan Yang, Janeal Jackson</i>	
<b>DIRECT PATTERNING OF ANTIBODY CONJUGATED GOLD NANORODS IMMUNOASSAY FOR THE LABEL-FREE AND MULTIPLEXED DETERMINATION OF MOUSE TUMOR-ASSOCIATE MACROPHAGES FUNCTIONAL IMMUNOPHENOTYPE</b> .....	3258
<i>Jiacheng He</i>	
<b>A NANO SENSOR ARRAY FOR METHYL SALICYLATE DETECTION IN GASEOUS FORM</b> .....	3259
<i>Or Zolti, Ramaraja P. Ramasamy</i>	
<b>SURFACE MOLECULAR IMPRINTING STRATEGIES: AN INNOVATIVE TOOL TO DETECT ENGINEERED NANOPARTICLES IN AQUEOUS SOLUTIONS</b> .....	3260
<i>Monika Marjanovic, Leo Schranzhofer, Christoph Jungmann, Peter Alexander Lieberzeit</i>	
<b>PARAMETER OPTIMIZATION FOR A NOVEL PHAGE-BASED BIOMOLECULAR FILTER FOR DETECTION OF PATHOGENS FROM LARGE VOLUMES OF WATER</b> .....	3262
<i>Alana Maclachlan, Jiacheng He, Songtao Du, Shin Horikawa, I-Hsuan Chen, Yuzhe Liu, Bryan A. Chin, Pengyu Chen</i>	
<b>HIGHLY SENSITIVE AND SELECTIVE GAS SENSORS USING P-TYPE OXIDE NANOPARTICLES DECORATED ZNO NANOWIRE NETWORK SENSORS</b> .....	3263
<i>Chan Woong Na, Yonghwan Kim, Yoon Myung</i>	
<b>ZINC OXIDE NANOSTRUCTURE BASED NONINVASIVE AND CONTINUOUS SWEAT PH SENSING AND MONITORING PLATFORM</b> .....	3264
<i>Fahmida Alam, Shahrzad Forouzanfar, Mustafa Karabiyik, Naznin Akter, Randy Matos, Nezhil Pala</i>	
<b>MICRO- AND NANO-ELECTRODES: FABRICATION, CHARACTERIZATION AND APPLICATION. THE DETECTION OF SILVER AND ROS/RNS IN BIOLOGICAL BUFFER</b> .....	3266
<i>Prabhakar Sidambaram, John Colleran</i>	
<b>THE INFLUENCES OF ORGANIC MATTER CONCENTRATIONS IN JUICES FOR PATHOGEN DETECTION USING PHAGE-BASED BIOSENSORS</b> .....	3267
<i>I-Hsuan Chen, Zheyue Zhang, Songtao Du, Yuzhe Liu, Tung-Shi Huang, Bryan A. Chin</i>	
<b>ETHANOL GAS SENSORS BASED ON ZNO NANOTUBE STRUCTURES FABRICATED BY ATOMIC LAYER DEPOSITION</b> .....	3268
<i>Pengtao Lin, Kai Zhang, Helmut Baumgart</i>	
<b>SYNTHESIS AND CHARACTERIZATION OF HIGHLY SENSITIVE PH PROBES BASED ON FLUORESCHEIN-CONJUGATED GOLD NANOCCLUSERS</b> .....	3270
<i>Sangmyeong Han, Kyunglim Pyo, Dongil Lee</i>	
<b>MAGNETIC NANOPARTICLES AS A BIOLOGICAL SENSORS FOR EARLY DIAGNOSIS AND TREATMENT OF CANCER CELLS</b> .....	3271
<i>Ali Reza Bagherpour</i>	
<b>LSPR BIOSENSOR BASED ON AU@AG CORE-SHELL NANOBIPYRAMIDS</b> .....	3273
<i>Chuanyu Wang, Xiong Feng, Pengyu Chen</i>	
<b>(INVITED) HIGH-THROUGHPUT SINGLE CELL NANOMECHANICAL MEASUREMENTS</b> .....	3274
<i>Renee Copeland, Oluwamayokun Oshinowo, Benjamin Brainard, Carolyn Bennett, Wilbur Lam, David Richard Myers</i>	
<b>WIRELESS STRETCHABLE HYBRID ELECTRONICS FOR SMART, CONNECTED, AND AMBULATORY MONITORING OF HUMAN HEALTH</b> .....	3276
<i>Yun-Soung Kim, Musa Mahmood, Shinjae Kwon, Robert Herbert, Woon-Hong Yeo</i>	

<b>ULTRA-STRETCHABLE CONDUCTIVE POLYMER COMPLEX AS A WEARABLE STRAIN SENSOR WITH EXCELLENT LINEARITY AND REPEATABLE AUTONOMOUS SELF-HEALING ABILITY</b> .....	3278
<i>Yang Lu, Jesse Horne, Lauren McLoughlin, Rachel Ploeger, Ju-Won Jeon, Evan K Wujcik</i>	
<b>CONDUCTING POLYMER-BASED AND ELECTRICALLY CONTROLLED SKIN MAPPING FOR DERMATOLOGICAL DIAGNOSTICS AND WOUND HEALING TREATMENT</b> .....	3280
<i>Xiaoxu Fu, Ashiq Ahmed, Yi Heng Cheong, Grzegorz Lisak</i>	
<b>WIRELESS, SOFT, LOW-PROFILE BIOELECTRONICS FOR QUANTITATIVE DIAGNOSTICS OF CERVICAL DYSTONIA</b> .....	3282
<i>Young-Tae Kwon, Woon-Hong Yeo</i>	
<b>PAPER-BASED LATERAL FLOW IMMUNOASSAY FOR DETECTION OF BIOMARKERS IN HUMAN FLUIDS</b> .....	3283
<i>Kathrine Curtin, Xuefei Gao, Nick Wu</i>	
<b>HIGH-RESOLUTION MULTIANALYTE BIOSENSOR ARRAY FOR ANALYSIS OF MODEL ORGAN SYSTEMS</b> .....	3284
<i>Sara Lynn Melow, Dusty R. Miller, Evan A. Gizzie, David E. Cliffe</i>	
<b>HIGHLY ACCURATE, STABLE SOLID-STATE MICROELECTRODE FOR AN ELECTROCHEMICAL GLUCOSE SENSOR</b> .....	3285
<i>Hyo-Ryoung Lim, Nathan Patrick Hillman, Yun-Soung Kim, Woon-Hong Yeo</i>	
<b>3D-PRINTED HYDROGEL CAPSULE FOR TRANSPORTING PARTICLES IN FLOW CHANNEL</b> .....	3286
<i>Kyosuke Nezu, Masato Makino, Kyuichiro Takamatsu, Masaru Kawakami, Hidemitsu Furukawa</i>	
<b>TOWARDS CLOSED LOOP CONTROL OF CELL PRODUCTION: ANALYSIS OF VOLATILE ORGANIC PROFILES IN STEM CELLS BY COMPREHENSIVE TWO-DIMENSIONAL GAS CHROMATOGRAPHY WITH TIME-OF-FLIGHT MASS SPECTROMETRY</b> .....	3287
<i>Christopher A. Heist, Jean-Marie D. Dimandja, Milad Navaei</i>	
<b>ELECTROCHEMICAL SENSOR OF GAS PHASE IODINE</b> .....	3289
<i>Carlos R. Perez, Kyle Christopher Klavetter, Jonathan Joseph Coleman, Michael P. Siegal</i>	
<b>MICROFLUIDICS ENHANCED PERFORMANCE OF ELECTROCHEMICAL DEVICES</b> .....	3290
<i>Joseph R. Stetter</i>	
<b>ESSENCE: A SHEAR-ENHANCED, FLOW-THROUGH, NANOPOROUS AND CAPACITIVE ELECTRODE TECHNOLOGY WITH NON-PLANAR INTERDIGITATED MICRO-ELECTRODES</b> .....	3291
<i>Yu Hsuan Cheng, Zhenglong Li, Juliana Yang, Pedro Moura, Hansin Kim, Sagnik Basuray</i>	
<b>DEVELOPMENT OF LOW POWER MICRO PRECONCENTRATOR (<math>\mu</math>PC) FOR CHEMICAL SENSING APPLICATIONS</b> .....	3293
<i>Ardalan Lotfi, Christopher A. Heist, Milad Navaei</i>	
<b>USING IMPEDANCE MEASUREMENT TO CHARACTERIZE CELL-ELECTRODE ADHESION WITH CUSTOMIZED 3D-NANOSTRUCTURED MULTIELECTRODE ARRAYS</b> .....	3295
<i>Dominique Decker, Rolf Hempelmann, Holger Rabe, Karl-Herbert Schafer, Monika Saumer</i>	
<b>UNIVERSAL BRAIN-MACHINE INTERFACES ENABLED BY FLEXIBLE SCALP ELECTRONICS AND DEEP CONVOLUTIONAL NEURAL NETWORKS</b> .....	3297
<i>Musa Syed Mahmood, Yun-Soung Kim, Robert Herbert, Woon-Hong Yeo</i>	
<b>CORROSION-RESISTANT PRECIOUS METAL COATED OXIDE NANOPARTICLES AS SUPPORTS FOR IRIIDIUM-BASED OXYGEN EVOLUTION REACTION CATALYSTS IN PROTON EXCHANGE MEMBRANE ELECTROLYZERS</b> .....	3298
<i>Eden Tzanetopoulos, Yagya Narayan Regmi, Nemanja Danilovic</i>	
<b>UNDERSTANDING HER/HOR KINETICS THROUGH <math>Ru(OH)_x</math> SURFACE DECORATION ON Pt SINGLE CRYSTALS</b> .....	3300
<i>Saad Intikhab, Luis Rebollar, Maureen H. Tang, Joshua David Snyder</i>	
<b>IONIC LIQUID COMPOSITE ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION</b> .....	3302
<i>Ramchandra Gawas, Yawei Li, Joshua David Snyder</i>	
<b>OPTIMAL BIO-INSPIRED SNIFFING FOR IMPROVED E-NOSE DETECTION</b> .....	3303
<i>Thomas Lee Spencer, Brandon Kim, David L Hu</i>	
<b>SURFACE PLASMON RESONANCE IMAGING: AN INEXPENSIVE TOOL TO STUDY THE WATER TRANSPORT IN THIN FILM PFSA IONOMERS</b> .....	3305
<i>Shahab Bayani Ahangar, Kishan Bellur, Ezequiel Medici, Kazuya Tajiri, Jeffrey S Allen, Chang Kyoung Choi</i>	
<b>COMPUTATIONAL INSIGHTS INTO THE LITHIUM INTERCALATION DYNAMICS IN MANGANESE OXIDE CATHODES</b> .....	3306
<i>Ravindra Kempaiah, Badri Narayanan, Subramanian K. R. S. Sankaranarayanan, Arunkumar Subramanian</i>	
<b>UTILIZING A TUNABLE TRIBLOCK COPOLYMER FOR DESIGN OF MODEL SYSTEMS TO STUDY INTERACTIONS AT THE ANION EXCHANGE POLYMER-CATALYST INTERFACE</b> .....	3307
<i>Nora Catherine Buggy, Mei-Chen Kuo, Ahmet Kusoglu, Soenke Seifert, Andrew M. Herring</i>	
<b>ELECTROCHEMICAL SIGNATURE OF PEROXYNITRITE ON MODIFIED BORON-DOPED DIAMOND ELECTRODES</b> .....	3309
<i>Shaimaa Maher, Haitham Kalil, Mekki Bayachou</i>	
<b>TOWARDS GAS SENSORS FOR AQUATIC CHEMICAL SENSING INSPIRED BY THE STAR-NOSED MOLE</b> .....	3310
<i>Alexander Bo Lee, Morgan Biagioni, Cyrus Tanade, John Joseph Watson, Benjamin Seleb, Thomas Lee Spencer, David L Hu</i>	

<b>POLYANILINE BASED TERNARY HIERARCHICAL MICROSPHERES FOR SUPERCAPACITOR APPLICATION</b> .....	3312
<i>Aadithya Jeyaranjan, Tamil Selvan Sakthivel, Sudipta Seal</i>	
<b>X-RAY ABSORPTION SPECTROSCOPY OF <math>\text{SrTi}_{0.6}\text{Fe}_{0.35}\text{O}_{3-\Delta}</math> : UNDERSTANDING LOCAL STRUCTURE EVOLUTION DURING CRYSTALLIZATION</b> .....	3313
<i>Emily Skiba, Qing Ma, Nicola H. Perry</i>	
<b>MEASUREMENTS OF PRESSURE-STRESS COUPLING IN HYDRATED PALLADIUM</b> .....	3314
<i>Shiv Krishna Reddy Madi Reddy, John W. Weidner</i>	
<b>ELECTROCHEMICAL DETECTION AND DETERMINATION OF VARIOUS BISPHENOL COMPOUNDS</b> .....	3315
<i>Robinson Tom, Michael Nelwood, Thiagarajan Soundappan, Arul Mozhy Varman</i>	
<b>POLYIMIDE-BASED ELECTRODES FOR ELECTROCHEMICAL WATER SPLITTING AND <math>\text{N}_2</math> REDUCTION</b> .....	3316
<i>Yun-Xiao Lin, Xin-Hao Li, Jie-Sheng Chen</i>	
<b>A DEPOSITION COMPARISON OF GOLD PARTICLES MODIFIED BORON DOPED DIAMOND ELECTRODES FOR NITRITE SENSING</b> .....	3317
<i>Xiaosheng Cai, John S. Foord</i>	
<b>RF SPUTTERED BORON CARBON NITRIDE (BCN) THIN FILMS FOR BIOLOGICAL APPLICATIONS</b> .....	3318
<i>Shraddha Dhanraj Nehate, Ashwin Kumar Saikumar, Varsha Naga, Kalpathy B. Sundaram</i>	
<b>STRETCHABLE AND THERMALLY STABLE CELLULOSE FILM</b> .....	3319
<i>Jee Eun Oh, Nae-Man Park, Sukyung Choi</i>	
<b>LITHIUM CYCLING, LIMITING CURRENT, AND ELECTROCHEMICAL CHARACTERIZATION IN SOLID POLYMER ELECTROLYTES</b> .....	3320
<i>Jacqueline A. Maslyn, Louise Frenck, Nitash P. Balsara</i>	
<b>TUNABLE PERMSELECTIVITY IN A ROBUST ANION EXCHANGE MEMBRANE FOR ELECTRODIALYSIS</b> .....	3321
<i>Ivy Wu, Mei-Chen Kuo, Andrew M. Herring</i>	
<b>SURFACE TENSION MEASUREMENT OF WATER SURFACE UNDER IPA VAPOR AND THE IMPACT OF ITS CONCENTRATION DEPENDENCE ON THE MARANGONI CONVECTION IN WAFER DRYING PROCESS</b> .....	3322
<i>Shumpei Miura, Takashi Yamada, Tomoatsu Ishibashi, Hisanori Matsuo, Katsuhide Watanabe, Naoki Ono</i>	
<b>HIERARCHICAL NICO LAYERED DOUBLE HYDROXIDES NANOSHEETS ON CARBONIZED CNT/COTTON AS A HIGH PERFORMANCE FLEXIBLE SUPERCAPACITOR</b> .....	3324
<i>Hao Tianqi, Wei Wang, Dan Yu</i>	
<b>UNIQUE DEVELOPMENT OF BIMETALLIC <math>\text{Pt}_3\text{Ni}</math> OCTAHEDRAL STRUCTURES FOR INCREASED OXYGEN REDUCTION ACTIVITY</b> .....	3325
<i>John Weiss, Laksamee Payattikul, Sirivatch Shimpalee, John Weidner, Konlayutt Punyawudho</i>	
<b>DEVELOPMENT OF MORPHOLOGY CONTROL METHOD OF COATING LAYER UTILIZING THE LIGAND INTERACTION BETWEEN IRON PARTICLE SURFACE AND BUFFER SOLUTION</b> .....	3326
<i>Yuki Asano, Akira Kishimoto, Takahiro Ito, Masanobu Kawata, Shun Yokoyama, Hideyuki Takahashi</i>	
<b>ELECTROLYTIC NICKEL PHOSPHIDE WITH ONE-DIMENSIONAL PORE CHANNELS</b> .....	3328
<i>Yong-Guk Gwon, Jong-Won Lee, Heon-Cheol Shin</i>	
<b>ELECTROCHEMICAL PROPERTIES OF SILVER-ZINC SECONDARY BATTERY</b> .....	3330
<i>Jiung Jeong, Jong-Won Lee, Heon-Cheol Shin</i>	
<b>THE EFFECT OF FLOW FIELD PROPERTY IN TOLUENE DIRECT ELECTRO-HYDROGENATION ELECTROLYZER</b> .....	3332
<i>Junpei Koike, Kensaku Nagasawa, Yoshiyuki Kuroda, Shigenori Mitsuishima</i>	
<b>ELECTROLYTIC PERFORMANCE OF A CATHODE-SUPPORTED HONEYCOMB SOLID OXIDE ELECTROLYSIS CELL</b> .....	3335
<i>Yoshihiro Iwanaga, Hironori Nakajima, Kohei Ito</i>	
<b>OPTIMIZATION OF CATION COMPOSITION ON CHARGE-DISCHARGE BEHAVIOR IN ROCK-SALT TYPE LITHIUM TITANIUM OXYNITRIDE ANODE MATERIAL</b> .....	3336
<i>Kohei Shizukawa, Rie Takahara, Jung-Ting Sun, Yusuke Mizuta, Kei-Ichiro Murai, Toshihiro Moriga</i>	
<b>ELECTROCHEMICAL STUDY ON POROUS SILICON ANODES IN SULFIDE-BASED ALL-SOLID-STATE LITHIUM-ION BATTERIES</b> .....	3338
<i>Ryota Okuno, Mari Yamamoto, Atsutaka Kato, Masanari Takahashi</i>	
<b>SYNTHESIS AND PHOTOLUMINESCENCE PROPERTIES OF NOVEL <math>\text{BaSr}_2\text{O}_6\text{N}_2:\text{Eu}^{2+}</math> PHOSPHOR FOR WHITE-LEDS</b> .....	3340
<i>Kohei Fukumura, Sayaka Hattori, Koki Shibai, Shao-Ju Shih, Kei-Ichiro Murai, Toshihiro Moriga</i>	
<b>EFFECT OF ALCOHOL ADDITION TO SULFURIC ACID ON EFFICIENCY FOR FORMATION OF ANODIC ALUMINA</b> .....	3342
<i>Mikimasa Matsumoto, Hideki Hashimoto, Hidetaka Asoh</i>	
<b>ELECTROCHEMICAL BEHAVIOR OF CITRATE <math>\text{Cu-Zn}</math> ELECTROLYTES FOR COPPER ALLOYS ELECTRODEPOSITION</b> .....	3343
<i>Amina Dridi, Leila Dhoubi, Jean-Yves Hihn, Patrice Bercot, El-Mustafa Rezcrazi, Wafa Sassi</i>	
<b>ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY ANALYSIS OF CARBON DEPOSITION IN AN ANODE-SUPPORTED PLANAR SOLID OXIDE FUEL CELL BY SEGMENTED ELECTRODES</b> .....	3345
<i>Kohei Sasaki, Hironori Nakajima, Tatsumi Kitahara</i>	

<b>MEASUREMENT OF MACMULLIN NUMBER FOR DIFFERENT ELECTROCHEMICAL FUEL CELL GAS-DIFFUSION MEDIA USING A CONDUCTIVITY CELL APPARATUS</b> .....	3346
<i>Mitchell Sepe, Michael Brizes, Joseph Steven Lopata, Sirivatch Shimpalee, John W. Weidner</i>	
<b>EVALUATION METHOD OF ELECTROCATALYSTS FOR OXYGEN EVOLUTION REACTION IN ALKALINE MEDIA</b> .....	3348
<i>Issei Matsuura, Kensaku Nagasawa, Yudai Tsukada, Yoshiyuki Kuroda, Shigenori Mitsushima</i>	
<b>ANALYZING THE BANDGAP OF 3D PEROVSKITE OXIDES: MACHINE LEARNING APPROACH</b> .....	3351
<i>Robert Kuramshin, Omar Adel Allam, Seung Soon Jang</i>	
<b>INVESTIGATING HYBRID ORGANIC-INORGANIC TIN PEROVSKITES FOR LI-ION BATTERY APPLICATIONS: DFT MODELING APPROACH</b> .....	3352
<i>Jihoon Kim, Omar Adel Allam, Seung Soon Jang</i>	
<b>ARTIFICIAL NEURAL NETWORKS FOR ACCURATE PREDICTION AND ANALYSIS OF PEROVSKITE BANDGAPS</b> .....	3353
<i>Zlatomir Stoichev, Omar Adel Allam, Seung Soon Jang</i>	
<b>OXYGEN REDUCTION ACTIVITY OF NB-DOPED TITANATE NANOSHEETS IN AN ACIDIC ELECTROLYTE</b> .....	3354
<i>Yoshiharu Nakashima, Akimitsu Ishihara, Shigenori Mitsushima, Yoshiyuki Kuroda</i>	
<b>THE SHAPE INFLUENCE ON THE PHOTOTHERMAL AND DRUG ADSORPTION PERFORMANCE OF POLYDOPAMINE NANOPARTICLES</b> .....	3358
<i>Yuzhe Sun, Edward Davis</i>	
<b>KINETIC STUDY OF THE REACTION OF ADSORBED CO WITH METHANOL AND ETHANOL ON PT ELECTRODE</b> .....	3359
<i>Keisuke Iida, Yoshiharu Mukoyama</i>	
<b>MECHANISM OF CURRENT OSCILLATION DURING SIMULTANEOUS REDUCTION OF TIN(II) IONS, NITRATE, AND NITROBENZENE AT AU ELECTRODE</b> .....	3362
<i>Masayuki Kurohagi, Yoshiharu Mukoyama, Shinji Yae</i>	
<b>POTENTIAL OSCILLATION DURING HYDROGEN EVOLUTION REACTION: HIDDEN N-SHAPED NEGATIVE DIFFERENTIAL RESISTANCE DUE TO HYDROGEN BUBBLES</b> .....	3364
<i>Terumasa Kuge, Takanobu Nishimoto, Kouji Maeda, Shinji Yae, Shuji Nakanishi, Yoshiharu Mukoyama</i>	
<b>EFFECTS OF ALKALI METAL IONS ON O<sub>2</sub> AND H<sub>2</sub>O<sub>2</sub> REDUCTION REACTIONS AT PT ELECTRODES</b> .....	3366
<i>Haruki Okada, Yoshiharu Mukoyama</i>	
<b>THE EFFECT OF ELECTRODE GEOMETRY AND FLUID FLOW ON ELECTRODEPOSITION OF PB<sup>2+</sup> IN DRINKING WATER</b> .....	3368
<i>Jaesung Lee, Anna Marie Nelson, Mark Andrew Burns</i>	
<b>DESIGNING A SUPRAMOLECULAR PROCESS FOR POST-STI CMP CLEANING</b> .....	3369
<i>Carolyn F. Graverson, Tala B. Zubi, Jason J. Keleher</i>	
<b>PRESSURE RESPONSIVE MULTI-LAYERED COMPOSITE NANOPARTICLES FOR THROUGH SILICON VIA (TSV) CHEMICAL MECHANICAL PLANARIZATION (CMP) APPLICATIONS</b> .....	3370
<i>Maria G Salinas, Allie M Mikos, Madison Hill, Amy Mlynarski, Jason J. Keleher</i>	
<b>ROLE OF MOLECULAR STRUCTURE ON CONTROLLING THE DYNAMIC EQUILIBRIUM OF THE ECOSYSTEM PRESENT IN SHALLOW TRENCH ISOLATION (STI) CHEMICAL MECHANICAL PLANARIZATION (CMP) SLURRY FORMULATIONS</b> .....	3371
<i>Katherine M. Worman-Otto, Carolyn F. Graverson, Cynthia Saucedo, Jason J. Keleher</i>	
<b>DESIGN OF A MULTI-LAYER HYDROGEL NANOCOMPOSITE FOR REAL-TIME EVALUATION OF PROPERTIES RELEVANT TO WOUND MANAGEMENT APPLICATIONS</b> .....	3372
<i>Abigail N. Linhart, Dany M Danhausen, Jason J. Keleher</i>	
<b>CHARACTERIZATION OF GAS DIFFUSION LAYERS THROUGH COMPUTATIONAL FLUID DYNAMICS MODELING AND BET THEORY</b> .....	3373
<i>Michael Brizes, Mitchell Sepe, Pongsarun Satjaritanun, Sirivatch Shimpalee, John W. Weidner</i>	
<b>SELECTIVE CONVERSION TO FORMIC ACID FROM CO<sub>2</sub> BY ELECTROCHEMICAL REDUCTION OVER CU<sub>2</sub>S<sub>2</sub> INTERMETALLIC COMPOUNDS</b> .....	3375
<i>Hiroya Ochiai, Takao Gunji, Futoshi Matsumoto</i>	
<b>MATHEMATICAL MODELING OF A PROTON-CONDUCTING SOLID OXIDE ELECTROLYZER CELL USING COMPUTATIONAL FLUID DYNAMICS SIMULATION</b> .....	3376
<i>Hailey Boyer, Sirivatch Shimpalee, John W. Weidner, Zhiwen Ma</i>	
<b>MULTISCALE ROUGHNESS CHARACTERIZATION OF ELECTROPOLISHED 316L ALM STEEL BY POWER SPECTRAL DENSITY POST-TREATMENT</b> .....	3378
<i>Estelle Drynski, Marie-Laure Doche, Jean-Yves Hihn, Joffrey Tardelli</i>	
<b>CO-DOPING EFFECTS OF IRON AND COPPER INTO CARBON NANOTUBES ON OXYGEN REDUCTION REACTION ACTIVITY</b> .....	3380
<i>Natsuki Fujibayashi, Masaru Kato, Satoshi Yasuda, Ichizo Yagi</i>	
<b>MODELING VOLUME CHANGE OF LARGE FORMAT POUCH CELLS DUE TO INTERCALATION</b> .....	3381
<i>Drew Joseph Pereira, Miguel Fernandez, Kathryn Corine Streng, Jay Gao, Taylor R Garrick, John W. Weidner</i>	
<b>STUDY OF POLYMER-COATING ON VARIOUS TYPES OF CARBON SUPPORTS TO ENHANCE PLATINUM UTILIZATION EFFICIENCY IN POLYMER ELECTROLYTE MEMBRANE FUEL CELL ELECTROCATALYSTS</b> .....	3383
<i>Samindi Madhubha Jayawickrama, Tsuyohiko Fujigaya</i>	

<b>IMPROVEMENT OF HYSTERESIS IN ALUMINUM DOPED INDIUM-TIN-ZINC-OXIDE THIN FILM TRANSISTORS BY MODULATING INTRINSIC FILM STRESS OF MO S/D ELECTRODES</b> .....	3385
<i>Jaehan Bae, Sang-Hee Ko Park</i>	
<b>AMORPHOUS INDIUM-GALLIUM-ZINC-OXIDE TRANSISTOR USED ION GEL DIELECTRIC FOR LOW DRIVING VOLTAGE AND EASY PROCESSING</b> .....	3387
<i>Jinkyoo Kim, Sang-Hee Ko Park</i>	
<b>RELATIONSHIP BETWEEN OXYGEN REDUCTION / EVOLUTION REACTION ACTIVITY AND OXYGEN NON-STOICHIOMETRY OF <math>\text{LaNiO}_{3-\delta}</math></b> .....	3389
<i>Hiroyuki Tanaka, Hiroyuki Asakura, Saburo Hosokawa, Kentaro Teramura, Tsunehiro Tanaka</i>	
<b>DIRECTLY REMOVING OF IRREVERSIBLE CAPACITY IN LITHIUM ION BATTERY BY PRE-LITHIATION USING THROUGH-HOLED CATHODE AND ANODE ELECTRODES IN A LAMINATED CELL</b> .....	3391
<i>Tatsuya Watanabe, Takashi Tsuda, Takao Gunji, Nobuo Ando, Susumu Nakamura, Narumi Hayashi, Naohiko Soma, Takeo Ohsaka, Futoshi Matsumoto</i>	
<b>HIERARCHICAL IRON/NICKEL-BASED SULFIDE SUPPORTED ON NI FOAM AS A BIFUNCTIONAL ELECTROCATALYST FOR EFFICIENT OVERALL WATER SPLITTING</b> .....	3393
<i>Dongwook Lim, Namil Kim, Minsoo Kim, Sung-Hyeon Baek</i>	
<b>TERNARY NIFECO LAYERED DOUBLE HYDROXIDE NANOSHEETS AS HIGH-PERFORMANCE ELECTROCATALYSTS FOR OXYGEN EVOLUTION REACTION</b> .....	3394
<i>Minsoo Kim, Yeji Choi, Minji Hwang, Sung-Hyeon Baek</i>	
<b>EFFECT OF ORGANIC CATION ON THE SURFACE OXIDATION OF PT(111) ELECTRODE IN ALKALINE MEDIA</b> .....	3395
<i>Tomoaki Kumeda, Masashi Nakamura, Nagahiro Hoshi</i>	
<b>ZINC COBALT SULFIDES ON N, S CO-DOPED CARBON DERIVED FROM BIMETALLIC-ORGANIC FRAMEWORK AS AN ADVANCED ELECTROCATALYST FOR OXYGEN REDUCTION REACTION</b> .....	3396
<i>Minji Hwang, Chaewon Lim, Sangjin Kim, Sung-Hyeon Baek</i>	
<b>HEXAGONAL NICKEL/NICKEL HYDROXIDE NANOPLATES AS EFFICIENT BIFUNCTIONAL ELECTROCATALYSTS FOR OVERALL WATER SPLITTING</b> .....	3397
<i>Sangjin Kim, Euntaek Oh, Dongwook Lim, Sung-Hyeon Baek</i>	
<b>FREE-STANDING FLEXIBLE FEF--<sub>3</sub>-C CATHODES FOR SODIUM-ION BATTERIES</b> .....	3398
<i>Zifei Sun, Michael Liu, Wenbin Fu, Peilin Lu, Enbo Zhao, Alexandre Magasinski, Mengting Liu, Shunrui Luo, Jesse McDaniel, Gleb Yushin</i>	
<b>ELECTROCHEMICAL SYNTHESIS OF NI-CU-P ALLOY AS AN EFFICIENT WATER SPLITTING ELECTROCATALYST</b> .....	3399
<i>Byung Keun Kim, Jae Jeong Kim</i>	
<b>EFFECTS OF NITROGEN-DOPED CARBON SUPPORT ON OXYGEN REDUCTION REACTION ACTIVITY OF PT-NI NANOFAME</b> .....	3401
<i>Ryota Nakahoshiba, Tianchi Li, Kazuya Ogura, Masaru Kato, Ichizo Yagi</i>	
<b>OXYGEN REDUCTION REACTIONS IN LOW-VISCOSITY IONIC LIQUIDS BASED ON PHOSPHONIUM CATIONS</b> .....	3402
<i>Toshikazu Higashi, Hirohisa Yamada, Yuki Sakguchi, Daiki Nomizu, Katsuhiko Tsunashima, Chikako Sakai, Katsumi Katakura</i>	
<b>IMPROVED PERFORMANCE OF ZINC COMPOSITE//SECONDARY DOPED LI-PANI COMPOSITE FILM FOR RECHARGEABLE BATTERIES</b> .....	3404
<i>Huijun Cao, Shihui Si</i>	
<b>EFFECT OF PARTICLE SIZE OF CATHODE ACTIVE MATERIAL ON ELECTROCHEMICAL PROPERTIES OF LITHIUM-ION BATTERY INVESTIGATED BY IN-SITU EIS</b> .....	3405
<i>Shinya Omoto, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki</i>	
<b>IN-SITU EIS TO INVESTIGATE INFLUENCE OF CONDUCTIVE ADDITIVE ADDITION RATE ON CHARGE TRANSFER RESISTANCE OF LITHIUM ION BATTERIES</b> .....	3407
<i>Fumiya Kojima, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki</i>	
<b>SELENIUM-CARBON NANOTUBES COMPOSITE CATHODE WITH LONG CYCLE LIFE FOR RECHARGEABLE LI-SE BATTERIES</b> .....	3408
<i>Yi Cui, Xinwei Zhou, Wei Guo, Yuzi Liu, Tianyi Li, Yongzhu Fu, Likun Zhu</i>	
<b>CU/ZN SOD DETECTION BY CATALYTIC AMPLIFICATION FOR THE DESIGN OF A CANCER BIOSENSOR</b> .....	3410
<i>Annelis O Sanchez</i>	
<b>OXYGEN EVOLUTION REACTION OF TITANIUM OXIDE-BASED MATERIALS WITH AND WITHOUT DOPING IN ALKALINE SOLUTION</b> .....	3411
<i>Ryu Suzuki, Akimitsu Ishihara, Ken-Ichiro Ota, Koichi Matsuzawa</i>	
<b>EXCHANGE-COUPLED <math>\text{SM}_2\text{CO}_{17}</math>/FECO CORE-SHELL NANOMAGNETS VIA THE COMBINATION OF ELECTROSPINNING AND ELECTROLESS DEPOSITION</b> .....	3413
<i>Jimin Lee, Bongyoung Yoo, Hee Taik Kim, Jongryoul Kim, Yong-Ho Choa</i>	
<b>EFFECTS OF ELECTRODE MATERIAL ON THE ELECTROCHEMICAL CONVERSION OF CARBON DIOXIDE TO SOLID CARBON</b> .....	3415
<i>Junsung Kim, Jingyu Xia, Woobeen Jeon, Seongyong Eom, Gyungmin Choi</i>	
<b>MATHEMATICAL MODELING OF LITHIUM SULFUR BATTERIES</b> .....	3417
<i>Niloofer Kamyab, Ralph E. White, John W. Weidner</i>	

<b>SINGLE-ATOMS SYNTHESIZED VIA A NOVEL METHOD AS THE ACTIVE SITE WITH HIGHLY SELECTIVITY ELECTROCATALYTIC CONVERSION OF CO<sub>2</sub> TO ETHANOL</b> .....	3418
<i>Haiping Xu, Di-Jia Liu, Tao Xu</i>	
<b>EFFECTS OF POROUS MATERIAL PROPERTIES AND OPERATING CONDITIONS ON PEM ELECTROLYSIS PERFORMANCE AND THE OBSERVATION OF MASS AND HEAT TRANSPORT</b> .....	3420
<i>Joseph Steven Lopata, Guido Bender, Zhenye Kang, James L. Young, Sirivatch Shimpalee, John W. Weidner</i>	
<b>ELECTROCHEMICAL MELTING OF DNA: OPTIMIZATION AND APPLICATION</b> .....	3421
<i>Eddie Madrigal, Ryan M West</i>	
<b>HYDROXYAPATITE THIN FILMS SYNTHESIS BY ELECTRODEPOSITION</b> .....	3422
<i>Estefania Garcia, Altug Suleyman Poyraz, Heather Abbott-Lyon</i>	
<b>DESIGNING CORROSION RESISTANT HIGH ENTROPY ALLOYS VIA CHLORINE SUSCEPTIBILITY INDEX</b> .....	3423
<i>Sirui Li, Huibin Ke, Anup Panindre, Christopher Taylor, Gerald S. Frankel</i>	
<b>ELECTROCHEMICAL POLARIZATION BEHAVIOR OF 304L STAINLESS STEEL IN A THIN LAYER OF CHLORIDE SOLUTION</b> .....	3424
<i>Alen Korjenic, Arnab Kundu, Indrajit Charit, Krishnan S. Raja</i>	
<b>THE ORR AND OER PERFORMANCES OF BISMUTH RUTHENATE AS THE CATHODE OF AIR BATTERY USING KOH SOLUTION</b> .....	3425
<i>Sho Sato, Arisa Shimizu, Miki Matsuoka, Taro Kinumoto</i>	
<b>HYDROGEN EVOLUTION REACTION AND OXYGEN REDUCTION REACTION OF TITANIUM OXYNITRIDE CATALYZED ACTIVATED CARBON IN ACID AQUEOUS SOLUTION</b> .....	3427
<i>Toya Furushiro, Taro Kinumoto, Seitaro Funatsu, Mitsunori Hitomi, Takayuki Yoshikawa, Takayuki Yamada</i>	
<b>COMPOSITIONAL DEPENDENCE OF MOSSBAUER SPECTRA FOR MECHANICALLY MILLED (Fe<sub>1-x</sub>Al<sub>x</sub>)<sub>2</sub>O<sub>3</sub></b> .....	3429
<i>Hayato Nakaishi, Shigeomi Takai, Takeshi Yabutsuka, Takeshi Yao, Shinji Kitao, Makoto Seto</i>	
<b>EFFECTS OF SOLID ELECTROLYTE INTERPHASES FORMED ON CU EQCM ELECTRODES ON LITHIUM ELECTRODEPOSITION/DISSOLUTION REACTION</b> .....	3431
<i>Yukina Uchino, Ayano Ohama, Kumar Sai Smaran, Toshihiro Kondo</i>	
<b>CARBON NANOSTRUCTURE SUPPORTED ION EXCHANGE PLATFORM FOR EFFICIENT ELECTROCHEMICAL REMOVAL OF CESIUM FROM AQUEOUS SYSTEM</b> .....	3433
<i>Harsha Devnani, Pravin Popinand Ingole, Nidhi Sandal</i>	
<b>ULTRASMALL METAL NANOCCLUSERS AS BIFUNCTIONAL ELECTROCATALYSTS FOR OVERALL WATER SPLITTING</b> .....	3434
<i>Woojun Choi, Kyuju Kwak, Dongil Lee</i>	
<b>DEVELOPMENT OF HIGHLY ION-CONDUCTIVE LAYERED DOUBLE HYDROXIDE AS ELECTROLYTE FOR SOLID-STATE ALKALINE FUEL CELLS</b> .....	3435
<i>Yusuke Taniguchi, Hirohisa Yamada, Kazuki Maeda, Chikako Sakai, Katsumi Katakura</i>	
<b>CHARGE-DISCHARGE CHARACTERISTICS ON LOW VISCOSITY PHOSPHONIUM IONIC LIQUID ELECTROLYTES FOR LITHIUM ION BATTERY</b> .....	3436
<i>Yuki Sakguchi, Hirohisa Yamada, Toshikazu Higashi, Daiki Nomizu, Katsuhiko Tsunashima, Chikako Sakai, Katsumi Katakura</i>	
<b>REMOVAL MECHANISM OF CONCRETE DETERIORATION FACTOR USING EXPANDED-CAFE LAYERED DOUBLE HYDROXIDES</b> .....	3438
<i>Yong-Ho Choa, Ji Young Park, Su-Been Yoo, Hong-Baek Cho</i>	
<b>NANOINDENTATION OF POLYETHYLENE/POLYPROPYLENE TRI-LAYER SEPARATOR UNDER DRY AND WET CONDITIONS</b> .....	3439
<i>Andrew William Meyer</i>	
<b>ELECTROCHEMICAL SYNTHESIS OF CONDUCTIVE POLYMERS TO ENHANCE CARBON SUPPORTS FOR METAL CATALYSTS</b> .....	3440
<i>Brenda Lee Vargas Perez, Lisandro Cunci Perez</i>	
<b>THE EFFECT OF HEAT-TREATMENTS ON CORROSION RESISTANCE OF MARTENSITIC STAINLESS STEEL</b> .....	3441
<i>Reiya Kanda, Izumi Muto, Yu Sugawara</i>	
<b>GALVANIC CORROSION PROCESSES OF ALUMINUM COUPLED TO IRON IN CHLORIDE SOLUTIONS AT NEAR-NEUTRAL PH</b> .....	3443
<i>Takumi Kosaba, Izumi Muto, Yu Sugawara</i>	
<b>CORROSION BEHAVIOR OF COCRFEMNNI HIGH ENTROPY ALLOY IN ACIDIC SOLUTIONS</b> .....	3445
<i>Takumi Aiso, Izumi Muto, Yu Sugawara</i>	
<b>INHIBITING DEGRADATION MECHANISMS OF CONVERSION-BASED LI-ION ANODES THROUGH NANOSTRUCTURED HYBRIDS</b> .....	3447
<i>Benjamin Ng, Xiong Peng, Ehsan Faegh, William E. Mustain</i>	
<b>INVESTIGATION OF CHEMICAL CORROSION AND ELECTROCHEMICAL CHARGE/DISCHARGE BEHAVIOR OF PREFERENTIALLY FACETED ZINC PARTICLES FOR BATTERY APPLICATIONS</b> .....	3449
<i>Ehsan Faegh, Benjamin Ng, Dillon Hayman, Kaitlyn Cook, William E. Mustain</i>	
<b>ELECTROLYTE DEPENDENCY ON CA<sup>2+</sup> INSERTION/EXTRACTION PROPERTIES OF V<sub>2</sub>O<sub>5</sub></b> .....	3450
<i>Yoshiaki Murata, Tomohiro Obata, Masashi Hamasaki, Ryoji Inada, Yoji Sakurai</i>	



<b>ASSEMBLY OF <math>\text{SnO}_2</math>-ZNO COMPOSITE HOLLOW NANOFIBERS FOR <math>\text{CO}_2</math> REDUCTION REACTION TO FORMATE</b> .....	3452
<i>Daniel Tan, Young-Eun Kim, Wonhee Lee, Ki Tae Park, Soon Kwan Jeong</i>	
<b>QUANTITATIVE CHARACTERIZATION OF PSEUDOCAPACITANCE ON CARBON-BASED ACTIVE ELECTRODE MATERIALS</b> .....	3453
<i>Jong Chan Hyun, Jin Hwan Kwak, Young Soo Yun</i>	
<b>PYROPROTEIN-BASED ULTRA-THIN CATALYTIC LAYER FOR SODIUM METAL BATTERIES</b> .....	3454
<i>Jin Hwan Kwak, Jong Chan Hyun, Young Soo Yun</i>	
<b>THE ROLE OF SURFACE CHEMISTRY IN IMPEDIMETRIC APtasensing</b> .....	3455
<i>Wei Li Ang</i>	
<b>STRUCTURAL EFFECT OF 10UM DEPTH SURFACE RELIEF ON THE CYCLING BEHAVIOR OF LITHIUM METAL ANODE</b> .....	3456
<i>Jinhyeok Ahn, Eun Kwang Jang, Eun Ji Park, Min Jeong Yoo, Kuk Young Cho</i>	
<b>GROWTH OF METAL NANOPARTICLES ON ELECTROSTATICALLY-CHARGED POLYMERS</b> .....	3457
<i>Jinyang Zhang</i>	
<b>ELECTROCHEMISTRY ON TRIBOCHARGED POLYMERS</b> .....	3459
<i>Jinyang Zhang, Simone Ciampi</i>	
<b>SHORT-RANGE SCATTERING SOURCES OF TWO-DIMENSIONAL HOLE GASES IN UNDOPED GE/GESI HETEROSTRUCTURES</b> .....	3461
<i>Yi-Hsin Su, Yen Chuang, Chia-You Liu, Tzu-Ming Lu, Jiun-Yun Li</i>	
<b>COMPARATIVE STUDIES ON STRUCTURAL PROPERTIES AND TOTAL ENERGETICS OF NONEQUIVALENT HEXAGONAL POLYTYPES FOR A WIDE VARIETY OF METALLIC SYSTEMS</b> .....	3463
<i>Taku Miyakawa, Koji Moriguchi</i>	
<b>TWO-STAGE ELECTROCHEMICAL SYNTHESIS OF COPPER NANOPARTICLES ON HYDROXYAPATITE COATINGS FOR ANTIBACTERIAL IMPLANTS</b> .....	3465
<i>Rashmi Ghosh, Oliver Swart, Sabrina Westgate, Benjamin Miller, Matthew Yates</i>	
<b>(INVITED) NEW CARBON ELECTRODES FOR NEUROCHEMISTRY</b> .....	3466
<i>B. Jill Venton, Qun Cao, Pumidech Puthongkham</i>	
<b>(INVITED) AN ELECTROCHEMICAL PERSPECTIVE ON ELECTROPHYSIOLOGICAL MEASUREMENTS</b> .....	3467
<i>Malcolm H. Yeh, Johna Leddy</i>	
<b>SHINING LIGHT ON THE NERVOUS SYSTEM: FROM BIOMATERIALS TO BIOELECTRONICS</b> .....	3468
<i>Jing Tang</i>	
<b>(INVITED) INTEGRATION OF IN VIVO ELECTROANALYTICAL AND GENETIC TECHNIQUES TO DECODE LOCAL CATECHOLAMINE CIRCUITS IN THE BRAIN</b> .....	3469
<i>Jinwoo Park, Rohan Bhimani, Caroline Bass</i>	
<b>ORGANOTYPIC NEUROVASCULAR UNIT AND ELECTROCHEMICAL PLATFORM FOR PREDICTIVE TOXICOLOGY</b> .....	3470
<i>Dusty R. Miller, Ethan S. McClain, Jacquelyn A Brown, Jody C. May, John Wikswo, John A McLean, David E. Cliffl</i>	
<b>(INVITED) CO-DETECTION OF DOPAMINE AND METABOLITES USING FAST SCAN CYCLIC VOLTAMMETRY AND MODIFIED CARBON FIBER-MICROELECTRODES</b> .....	3471
<i>Alexander George Zestos, Pauline Wommenberg, Victoria Connaughton, Kyle Laurie</i>	
<b>(INVITED) DRIFT SUBTRACTION FOR FAST-SCAN CYCLIC VOLTAMMETRY USING DOUBLE-WAVEFORM PARTIAL LEAST SQUARES REGRESSION</b> .....	3472
<i>Leslie A Sombers, Gregory S McCarty, Carl J Meunier</i>	
<b>EFFECTS OF CHLORPYRIFOS EXPOSURE ON ACETYLCHOLINE METABOLISM ACROSS A MODEL BLOOD-BRAIN BARRIER</b> .....	3473
<i>Ethan S. McClain, Dusty R. Miller, Jacquelyn A Brown, John P Wikswo, David E. Cliffl</i>	
<b>(INVITED) DETECTION OF TRAUMATIC BRAIN INJURY PROTEIN BIOMARKERS WITH A PAPER-BASED POINT-OF-CARE DEVICE</b> .....	3474
<i>Nianqiang Wu, Xuefei Gao, Kathrine Curtin</i>	
<b>NEUROLOGICALLY RELEVANT ENZYME EXPRESSION AND ENGINEERING FOR D-AMINO ACID ENZYMATIC ELECTROCHEMICAL BIOSENSOR DEVELOPMENT</b> .....	3475
<i>Janine Mauzeroll</i>	
<b>(INVITED) NATIONAL SCIENCE FOUNDATION INNOVATION PROGRAMS</b> .....	3476
<i>Jesus Soriano Molla</i>	
<b>(INVITED) GENDER BIAS IN STEM WORKPLACES</b> .....	3477
<i>Roberta Rincon</i>	
<b>EMBRACE THE JOURNEY AND HARNESS THE POWER OF YOUR NETWORK: A WOMAN'S PERSPECTIVE</b> .....	3478
<i>Hariklia (Lili) Deligianni</i>	
<b>ENERGY STORAGE TECHNOLOGY IN AIST; THE BACKGROUND OF THE DIVERSITY</b> .....	3479
<i>Hikari Sakaebe</i>	
<b>A TALE OF TWO ENVIRONMENTS: BEING THE ONLY WOMAN IN THE ROOM DOESN'T HAVE TO BE A NEGATIVE EXPERIENCE</b> .....	3480
<i>Katherine E. Ayers</i>	
<b>(INVITED) BATTERIES TO POWER IMPLANTABLE MEDICAL DEVICES: DEVELOPMENT AND INSPIRATION</b> .....	3481
<i>Esther S Takeuchi, Kenneth J Takeuchi, Amy C. Marschilok</i>	

<b>THE WONDERFUL WORLD OF SCANNING ELECTROCHEMICAL MICROSCOPY (SECM)</b> .....	3482
<i>Janine Mauzeroll</i>	
<b>AN ODYSSEY THROUGH LITHIUM-ION BATTERY DEVELOPMENT, THE TWO BODY PROBLEM AND SURVIVING ACADEMIA IN A FOREIGN LANGUAGE</b> .....	3483
<i>Steen Brian Schougaard</i>	
<b>(INVITED) FINDING CREATIVITY AND BALANCE IN A TECHNICAL CAREER</b> .....	3484
<i>Karrie J. Hanson</i>	
<b>ELECTROCHEMICAL RESEARCH IN THE ENERGY INDUSTRY &amp; THE ROLE OF INTERFACES</b> .....	3485
<i>Elizabeth Endler</i>	
<b>(INVITED) FOUR DECADES OF DIVERSIFICATION AND PROGRESS AT ECS</b> .....	3486
<i>Roque Calvo</i>	
<b>(INVITED) ELECTROCHEMICAL PRODUCTION OF OXYGEN AND FUEL ON MARS</b> .....	3487
<i>S Elangovan, Joseph J Hartvigsen, Dennis Larsen, Tyler Hafen, Megan Adams</i>	
<b>ADVANCED SEMICONDUCTOR-ELECTROCATALYST SYSTEMS FOR PHOTOELECTROCHEMICAL HYDROGEN PRODUCTION IN MICROGRAVITY ENVIRONMENTS</b> .....	3488
<i>Katharina Brinkert</i>	
<b>PROCESSES FOR THE ELECTROWINNING OF METALS AND OXYGEN FROM LUNAR REGOLITH</b> .....	3489
<i>Andreas Dietz, Essam Moustafa</i>	
<b>MAKING FUEL ON MARS: METHANE SYNTHESIS FROM MARTIAN-DERIVED CO<sub>2</sub> AND H<sub>2</sub>O USING A SABATIER ELECTROLYZER BASED ON PROTON-CONDUCTING CERAMICS</b> .....	3491
<i>Duc Nguyen, Long Quoc Le, Zehua Pan, Gregory S. Jackson, Neal P Sullivan</i>	
<b>ELECTROCHEMICAL INTERFACIAL PHENOMENA UNDER MICROGRAVITY</b> .....	3493
<i>Yasuhiro Fukunaka, Hisayoshi Matsushima, Kei Nishikawa, Antoine Allanore, Toshiyuki Nohira, Takuya Goto, Takayuki Homma, Michel Rosso</i>	
<b>(INVITED) AMMONIA OXIDATION REACTION UNDER MICROGRAVITY CONDITIONS</b> .....	3495
<i>Carlos R Cabrera</i>	
<b>NEXT GENERATION WATER RECOVERY FOR A SUSTAINABLE CLOSED LOOP LIVING</b> .....	3497
<i>Santosh H. Vijapur, Timothy D. Hall, E. J. Taylor, Dan Wang, Stephen Snyder, Carlos R Cabrera, Delmaliz Barreto-Vazquez, Arnulfo Rojas-Perez</i>	
<b>ON DEMAND ELECTROCHEMICAL PEROXIDE GENERATION FOR DISINFECTION</b> .....	3499
<i>Santosh H. Vijapur, Timothy D. Hall, E. J. Taylor, Dan Wang, Stephen Snyder, Brian Skinn, Carlos R Cabrera, Armando Pena, Jeffrey Sweterlitsch</i>	
<b>IDENTIFYING AND OVERCOMING RATE-LIMITING STEPS FOR NITROGEN FERTILIZER PRODUCTION FROM URINE</b> .....	3501
<i>Matthew Junjie Liu, William Abraham Tarpeh</i>	
<b>(INVITED) SAFT GEN 6 ELECTROCHEMISTRY FOR GEO/LEO APPLICATION</b> .....	3502
<i>Chengsong Ma, Yannick Borthomieu</i>	
<b>EVALUATING LI/CF<sub>x</sub> CELL COMPONENTS FOR DEEP SPACE SPACE EXPLORATION</b> .....	3503
<i>Erik J. Brandon, Keith J. Billings, Bugga V. Ratnakumar, Keith B. Chin, John-Paul Jones, Simon C. Jones, Jasmina Pasalic, John Paul Ruiz, Jessica Seong, Sarah A. Stariha</i>	
<b>COMMERCIAL 18650 LITHIUM-ION CELLS FOR HIGH-ENERGY, HIGH-POWER, AND RADIATION APPLICATIONS</b> .....	3504
<i>Frederick C. Krause, Ramakumar V Bugga, Keith J. Billings, John Paul Ruiz, Erik J. Brandon</i>	
<b>NEXT GENERATION MATERIALS FOR LITHIUM-ION SPACE BATTERIES</b> .....	3505
<i>Chad Deroy, Arthur Doble, Rob Gitzendanner, Eric Morrison</i>	
<b>(INVITED) ELECTROCHEMICAL PROCESSES FOR IN SITU RESOURCE UTILIZATION</b> .....	3506
<i>Paul Hintze</i>	
<b>DEVELOPMENT OF AN ELECTROCHEMICAL OXYGEN COMPRESSOR AND GENERATOR FOR SPACESUIT OXYGEN RESUPPLY</b> .....	3507
<i>John Graf, Dale Taylor, Javier Alvare, Prabhakar Singh</i>	
<b>PROVING THE VIABILITY OF AN ELECTROCHEMICAL PROCESS FOR THE SIMULTANEOUS EXTRACTION OF OXYGEN AND PRODUCTION OF METAL ALLOYS FROM LUNAR REGOLITH</b> .....	3509
<i>Mark Symes, Bethany Lomax, Melchiorre Conti, Nader Khan, Nick Bennett, Alexey Ganin</i>	
<b>OPPORTUNITIES FOR ELECTROCHEMICAL AND CATALYTIC PROCESSES THAT SUPPORT HUMAN ACTIVITY ON MARS</b> .....	3510
<i>Canan Karakaya, Gregory S. Jackson, Robert J. Kee</i>	
<b>3D PRINTED HIERARCHICAL POROUS CARBON AEROGELS FOR SUPERCAPACITORS AT ULTRALOW TEMPERATURES</b> .....	3513
<i>Bin Yao, Yat Li</i>	
<b>HIGHLY SELECTIVE TOWARD FOUR- OR TWO-ELECTRONS ORR ON NITROGEN DOPED CARBON NANO STRUCTURES IN FUEL CELLS FOR SPACE APPLICATIONS</b> .....	3514
<i>Armando Pena, Santosh H. Vijapur, Timothy D. Hall, Stephen Snyder, Jeffrey Sweterlitsch, E. J. Taylor, Carlos R Cabrera</i>	
<b>REGENERATIVE SOLID OXIDE FUEL CELLS FOR VENUS INTERIOR PROBE ENERGY STORAGE</b> .....	3516
<i>Sarah A. Stariha, Keith J. Billings, John-Paul Jones, R. Bugga</i>	
<b>NITROUS OXIDE AS AN OXIDIZER FOR DUAL USE FUEL CELL / THRUST SYSTEMS IN SPACE APPLICATIONS</b> .....	3518
<i>Lok-Kun Tsui, John Bryan Plumley, Thomas Peng, Fernando H Garzon</i>	

<b>NEW POWER TECHNOLOGY FOR VENUS AERIAL MISSIONS</b> .....	3520
<i>Ratnakumar V Bugga, John-Paul Jones, Michael Pauken, Keith J. Billings, Sarah A. Stariha, Channing Ahn, Brent Fultz, Kerry Nock, James Cutts</i>	
<b>JOHNSON THERMO-ELECTROCHEMICAL CONVERTER FOR SPACE EXPLORATION</b> .....	3522
<i>Lonnie Johnson, Tedric Campbell</i>	
<b>A CELL SELECTION METHOD AND VALIDATION PROCESS FOR THE AEROSPACE BATTERY</b> .....	3523
<i>Jaesik Chung, Kwang Jung, Eric C. Darcy, Samuel P. Russell</i>	
<b>THE USE OF LOW TEMPERATURE LITHIUM-ION BATTERIES TO ENABLE THE NASA INSIGHT MISSION ON MARS</b> .....	3524
<i>Marshall C. Smart, Dhack Muthulingam, Michael E Lisano, Stephen F. Dawson, Richard B. Shaw, Brett T. White, Alex Buonanno, Chad Deroy, Rob Gitzendanner</i>	
<b>HIGH TEMPERATURE PRIMARY BATTERIES FOR VENUS SURFACE MISSIONS</b> .....	3526
<i>Dean Glass, John-Paul Jones, Abhijit V. Shevade, Richard Sim, Bugga V. Ratnakumar, Dharmesh Bhakta, Eric Raub</i>	
<b>ELECTROCHEMISTRY TO POWER OUT-EARTH BASECAMPs FOR SPACE EXPLORATION</b> .....	3527
<i>Florence Fusalba, Thierry Priem</i>	
<b>APTAMER-MODIFIED MICROELECTRODES FOR THE ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY DETECTION OF NEUROPEPTIDE Y</b> .....	3528
<i>Luis F Lopez, Nerika G Hernandez, Krystal Flores, John Cruz, Lisandro Cunci Perez</i>	
<b>OPTIMIZING ELECTROCHEMICAL THERMAL CONTROL DEVICES: INVESTIGATING THE EFFECT OF WATER CONTAMINATION ON REVERSIBLE SILVER THIN-FILM PLATING</b> .....	3529
<i>Emily Nicole Ganley, John Bryan Plumley, Lok-Kun Tsui, Thomas Peng, Fernando H Garzon</i>	
<b>(INVITED) ELECTROCHEMISTRY'S ROLE IN CURRENT AND FUTURE ENVIRONMENTAL CONTROL AND LIFE SUPPORT SYSTEMS</b> .....	3531
<i>Brittany R Brown</i>	
<b>IMPROVED HYDROGEN PEROXIDE GENERATING GAS DIFFUSION ELECTRODES COMBINED WITH BORON DOPED DIAMOND ELECTRODES: A COMPACT IN-SITU OXIDANT PRODUCTION REACTOR FOR SPACE APPLICATION</b> .....	3532
<i>Thorben Muddemann, Dennis Rene Haupt, Michael Sievers, Ulrich Kunz</i>	
<b>MODELING ELECTROLYTIC CONVERSION OF METABOLIC CO<sub>2</sub> AND OPTIMIZING A MICROFLUIDIC ELECTROCHEMICAL REACTOR FOR ADVANCED CLOSED LOOP LIFE SUPPORT SYSTEMS</b> .....	3534
<i>Jesus A Dominguez, Brittany R Brown, Brian Dennis, Wilaiwan Chanmanee, Peter Curreri</i>	
<b>ELECTROCHEMICAL OXIDATION OF AMMONIA ON PLATINUM (100) NANOPARTICLES AT THE INTERNATIONAL SPACE STATION</b> .....	3535
<i>Camila Morales</i>	
<b>(INVITED) CAPILLARY ELECTROPHORESIS INSTRUMENTATION AND METHODS FOR SPACEFLIGHT MISSIONS OF EXPLORATION</b> .....	3536
<i>Maria Fernanda Mora, Florian Kehl, Eric Tavares Da Costa, Nathan Bramall, Jessica Creamer, Aaron C Noell, Peter Willis</i>	
<b>A GLUCOSE MICROFLUIDIC SENSOR TESTED IN ARTIFICIAL MICROGRAVITY</b> .....	3537
<i>Berenice Lopez-Gonzalez, Martin De Jesus Estrada-Solis, David A Lavan, Francisco Mherande Cuevas-Muniz</i>	
<b>IN-SPACE MANUFACTURING OF CARBON NANOTUBE BIOSENSOR FOR CREW HEALTH DIAGNOSTICS</b> .....	3538
<i>Milton Santos Cordeiro, Jessica E. Koehne</i>	
<b>DEVELOPMENT OF SOLID-STATE NANOPORE LIFE DETECTION TECHNOLOGY</b> .....	3540
<i>Kathryn Faye Bywaters, Holger Schmidt, David Deamer, Adam Hawkins, Zeal Panchal, Yucheng Li, Md. Mahnudur Rahman, Richard C. Quinn, Wenonah Vercoutere, Chris McKay</i>	
<b>PRINTED GAS SENSORS FOR CREW CABIN AIR QUALITY MONITORING</b> .....	3542
<i>Beomseok Kim, Dong-Il Moon, M. Meyyappan, Jin-Woo Han</i>	
<b>ELECTROCHEMISTRY AND THE ORIGIN OF LIFE</b> .....	3543
<i>John-Paul Jones, Laura M Barge, Frederick C. Krause, Ninos Y Hermis, Keith J. Billings, Scott M Perl</i>	
<b>CAPILLARY ELECTROPHORESIS AND CONTACTLESS CONDUCTIVITY DETECTION: A POWERFUL TOOL FOR IN SITU ANALYSIS OF SAMPLES FROM OCEAN WORLDS</b> .....	3545
<i>Mauro Sergio Ferreira Santos, Elizabeth A Jaramillo, Aaron C Noell, Maria Fernanda Mora</i>	
<b>MEASURING SOLUBLE PROPERTIES OF PLANETARY SCIENCE SAMPLES: SENSOR AND SYSTEM DEVELOPMENT SINCE THE WET CHEMISTRY LABORATORY</b> .....	3547
<i>Aaron C Noell, Elizabeth A Jaramillo, Richard C. Quinn, Antonio Ricco, Samuel P Kounaves, Michael H Hecht</i>	
<b>ALL-PRINTED TRIBOELECTRIC NANOGENERATOR (TENG) FOR NASA'S IN-SPACE MANUFACTURING PROGRAM</b> .....	3548
<i>Myeonglok Seol, M. Meyyappan, Jin-Woo Han</i>	
<b>ELECTROCHEMISTRY FOR LIFE DETECTION ON OCEAN WORLDS</b> .....	3549
<i>Seamus D. Thomson, Richard C. Quinn, Antonio Ricco, Jessica E. Koehne</i>	
<b>REVERSIBLE ELECTROCHEMICAL MIRROR DEVICES USING SPACE COMPLIANT IONIC LIQUID ELECTROLYTES</b> .....	3550
<i>Holly Garich, Dany X. Liu, Maria Inman, E. J. Taylor, Thomas Peng, James H. Davis, Richard O'Brien, D. Morgan Tench</i>	
<b>REVERSIBLE ELECTROCHEMICAL MIRRORS FOR THERMAL CONTROL IN SPACE VEHICLES</b> .....	3552
<i>John Bryan Plumley, Emily Nicole Ganley, Lok-Kun Tsui, Fernando H Garzon, Sang Han, Thomas Peng</i>	

<b>PULSED ELECTRODEPOSITION OF CARBON DIOXIDE REDUCTION ELECTROCATALYSTS FOR SPACE APPLICATIONS</b> .....	3553
<i>Brian Skinn, Sujat Sen, McLain Evan Leonard, Dan Wang, Fikile R. Brushett, E. J. Taylor</i>	
<b>PULSED ELECTROPHORETIC DEPOSITION OF CARBON NANOTUBES FOR ANTI-REFLECTIVE COATINGS</b> .....	3554
<i>Dan Wang, Timothy D. Hall, Maria Inman, E. J. Taylor, Brian Skinn, Stephen Snyder</i>	
<b>ELECTROPHORETICALLY DEPOSITED GRAPHENE-BASED COATINGS FOR SPACECRAFT CHARGING MITIGATION</b> .....	3556
<i>Dan Wang, Danny X. Liu, Timothy D. Hall, Maria Inman, E. J. Taylor, Brian Skinn, Stephen Snyder</i>	
<b>Author Index</b>	