

233rd ECS Meeting 2018

Meeting Abstracts 2018-01

Seattle, Washington, USA
13 - 17 May 2018

Volume 1 of 5

ISBN: 978-1-5108-6275-3

Printed from e-media with permission by:

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- 598 Micro-Patterning Technology and Conformal Protective Coating for Lithium Metal Electrodes
Joonam Park, Dahee Jin, Seoungwoo Byun, Youngjoon Roh, Myung-Hyun Ryou, Yong Min Lee

- 599 Initial Formation of the Solid Electrolyte Interphase in Li Metal Batteries
Robert M Kasse, Natalie R Geise, Michael F Toney
- 600 Lithium Dendrite Suppression through Controlled Mass Transfer
Emily Ryan, Jinwang Tan
- 601 Study of Electrolyte for the Uniform Nucleation and Growth of Lithium for Rechargeable Lithium Metal Batteries
M.S. Lee, J.R. Kim, Y.E Kim, S.I. Han
- 602 Understanding the Lithiation/Delithiation Mechanism of $\text{Si}_{1-x}\text{Ge}_x$ Alloys
Laura Cristina Loaiza, Elodie Salager, Nicolas Louvain, Athmane Boulaoued, Antonella Iadecola, Patrik Johansson, Lorenzo Stievano, Vincent Seznec, Laure Monconduit
- 603 In Situ Observation of Lithium Dendrite of Different Graphite Electrodes
Ruidie Zhu, Jiemin Feng, Zhansheng Guo
- 604 Effects of Electrolyte Volume and Salt Concentration on SEI Stability and Cycling Performance of Lithium Metal Anodes
Sean M. Wood, Shrikant C. Nagpure, Eric J. Dufek, Sergiy V. Sazhin

A04-Materials Recycling for Energy Conversion and Storage

- 605 Lithium-Ion Battery Recycling Process Comparison
Linda Gaines, Jeffrey Spangenberg, Qiang Dai
- 606 A Cost-Effective Lithium-Ion Battery Direct Recycling Process
Zheng Li
- 607 Advances in Direct Recycling of Lithium-Ion Electrode Materials
Steven E Sloop, James E Trevey, Linda Gaines
- 608 A Tale of Two Fridges: Temperature Implications on Long Term Fading, Material Degradation, and Performance Recovery in Lithium-Ion Batteries
Clement Bommier, Andrew Kim, Daniel A Steingart
- 609 Electrochemical Preparation of Nanostructured Silicon from Rice Husks As a Sustainable Source for High Performance Anode in Secondary Lithium Ion Battery
Ding Chou Wu, Shu-Chi Wu, Yuanfei Ai, Yu-Lun Chueh
- 610 A Closed Loop Process for the End-of-Life Electric Vehicle Li-Ion Batteries
Yan Wang
- 611 Recycling Lithium Batteries Using Membrane Technologies
Larry Lien
- 612 Fundamental and Applied Aspects to Recycle NMC Cathode Material in Acidic Solution
Emmanuel Billy, Marion Joulie, Adrien Boulineau, Richard Laucourmet, Eric De Vito, Daniel Meyer
- 613 Extracting Lithium and Metals from Spent Batteries
Rakesh Govind
- 614 Recycling of Spent Lithium Ion Batteries Using Sulfuric Acid with Detailed Mass Balance
Sandip Anwani, Ravi N. Methekar, Venkatasailanathan Ramadesigan
- 615 Analyzing the Legal and Economic Cost Barriers to the Recycling of Advanced Battery Chemistries
John Howes, Redland Energy Howes
- 616 Recell; A Closed-Loop Battery Recycling Model
Jeffrey Spangenberg, Linda Gaines, Qiang Dai
- 617 Recycling of Rare Earth Elements from Nickel Metal Hydride Battery Utilizing Supercritical Fluid Extraction
Yuxiang Yao, Nina Francesca Farac, Gisele Azimi

- 618 Electrolytic Recycling of Primary Alkaline Batteries
William E Mustain, Hanna Soucie, Christiane Nguyen, Paul Petracca, Helen Nguon, Fan Zhang, Abbey Wangstrom

B01-Carbon Nanostructures for Energy Conversion and Storage

- 619 (Invited) Carbon Nanomaterials for Flexible and Stretchable Devices
Yingying Zhang, Huimin Wang, Chunya Wang, Mingchao Zhang
- 620 Energy Storage in a Transition Metal Doped MOF Derived Carbon Nanostructure
Parama Chakraborty Banerjee, Derrek Lobo, Mahdokht Shaibani, Mainak Majumder
- 621 Addition of Redox Additives to Ionic Liquid Electrolyte for High-Performance Supercapacitors of N-Doped Graphene Aerogel
Nattapol Ma, Nutthaphon Phattharasupakun, Montree Sawangphruk
- 622 All-Carbon Supercapacitor, Fullerene-Grafted 3D Graphene As Electrical Energy Storage Material
Maira R. Cerón, Vedasri Vedharathinam, Patrick G. Campbell, Tuan Anh Pham, Brandon C. Wood, Juergen Biener, Luis Echegoyen, Monika M. Biener
- 623 Lithium Storage Behavior of Three-Dimensional Graphene-like Ordered Microporous Carbon Synthesized in a Zeolite Template
Ryong Ryoo, Yonghyun Kwon, Hongjun Park, Kyoungsoo Kim, Jae Won Shin
- 624 (Invited) Flexible Li-Ion Batteries Made of Binder and Collector Free Electrodes Based on Pristine Carbon Nanotubes
Avetik R Harutyunyan, Oleg Anatoli Kuznetsov, Gugang Chen, Elena Pigos
- 625 Facile Synthesis of in-Plane Graphene Micro-Supercapacitor Using Flash Reduction
Seok Hun Kang, In-Kyu You, In Gyoo Kim, Ji Hwan Sul
- 626 A Single Energy Conversion and Storage Device of Cobalt Oxide Nanosheets and N-Doped Reduced Graphene Oxide Aerogel
Montree Sawangphruk
- 627 Novel Multi-Dimensional Nanocarbons and Their Applications in Electrochemical Energy Storage
Churl Seung Lee, Joon-ho Bae
- 628 (Invited) Soft Materials Approaches to Carbon Nanotubes: Gels and Composites
Mohammad F. Islam
- 629 Reduced Graphene Oxide As an Advanced Anode for Li-Ion Battery
Jinho Park, Chris Perini, Milad Navaei, John Hankinson, Byeongyong Lee, Matt West, Eric M Vogel, Seung Woo Lee, Ilan Stern
- 630 (Invited) Functionalization of Low Dimensional Carbons for Highly Efficient Energy Storage
Hsing-Lin Wang
- 631 Preparation of Polymer-Derived Nitrogen-Doped Hollow Carbon Nanofiber As a Free Standing Oxygen Electrode for Li-O₂ Battery
Katie Heeyum Lim, Heejun Kweon, Hansung Kim
- 632 Holey Graphene for Energy Storage
Rohit Kanungo, James Radich
- 633 (Invited) Carbon Based Electrocatalysts
Eric Coleman, Pietro Papa Lopes, Dusan Strmcnik, Rongyue Wang, Nenad M Markovic, Vojislav Stamenkovic
- 634 Nature of Active Sites in Nitrogen-Doped Carbon Nanostructures for Oxygen Reduction and Oxygen Evolution Reactions
Kuldeep Mamtani, Deeksha Jain, Anne C. Co, Umit S. Ozkan
- 635 SWCNT Photocatalysts for Hydrogen Evolution from Water
Takumi Izawa, Kakeru Nishikawa, Ken Watanabe, Tomoyuki Tajima, Hideaki Miyake, Yutaka Takaguchi

- 636 Nitrogen-Doped 3D Graphene-like Carbon Synthesized Using a Zeolite Template As a Metal-Free Oxygen Reduction Electrocatalyst
Seung Won Han, Seung Hyeon Ko, Yonghyun Kwon, Jisuk Bang, Ryong Ryoo
- 637 Nanowire-Templated Three-Dimensional Out-of-Plane Fuzzy Graphene as an Oxygen Reduction Reaction Catalyst
Daniel San Roman, Raghav Garg, Nicholas Lamprinakos, Tzahi Cohen-Karni
- 638 Two Different Carbon Nanotube-Based Non-Pt Fuel Cell Catalysts with High Performance and Durability
Jun Yang, Junfang Cheng, Naotoshi Nakashima
- 639 CVD Graphene Growth for Redox Reactions to Renewable Energy Applications
Daniela Ion-Ebrasu, Adnana Spinu-Zaulet, Stanica Enache, Amalia Soare, Elena Carcadea, Adrian Enache, Mihai Varlam
- 640 Non Noble Metal Catalysts for the Oxygen Reduction Reaction from Mixed MOFs
Jilin Huang, Zhipeng Lin, Yunfeng Zhan, Hui Meng
- 641 (Invited) Individualized Low-Dimensional Carbon Allotropes: Enabling Ground State and Excited State Charge Transfer By NIR Absorbing Heptamethine Cyanine
Dirk M. Guldi
- 642 Carbon Nanotubes for Flexible Perovskite Solar Cells
Shigeo Maruyama
- 643 Carbon Nanotubes - the p-Type Contact of the Future for Perovskite Solar Cells?
Severin N. Habisreutinger, Nakita K. Noel, Henry J. Snaith, Robin J. Nicholas
- 644 (Invited) Genesis, Status, and Future of the Carbon Nanotube Optical Rectenna
Baratunde Cola
- 645 High Performance Optical Rectenna Arrays Using Multiwall Carbon Nanotube–Insulator–Metal Tunneling Diodes
Erik C. Anderson, Thomas L. Bougher, Baratunde Cola
- 646 (Invited) Improved Charge and Exciton Transport in Polymer-Removed SWCNT Thin Films: Implications for Photovoltaic and Thermoelectric Energy Harvesting
Andrew John Ferguson, Jeffrey L. Blackburn, Stephanie Hart, Hyun Suk Kang, Rachelle Ihly, Bradley A. MacLeod, Noah H. Stanton
- 647 (Invited) Large Low Temperature Thermoelectric Power Factor from Completely Organic Thin Films Enabled By Carbon Nanostructures
Jaime Grunlan
- 648 (Invited) From Thermopower Waves to Asymmetric Chemical Doping – New Concepts in Energy Storage and Generation Using Molecular Interactions with Single-Walled Carbon Nanotubes
Albert Tianxiang Liu, Michael S Strano, Yuichiro Kunai, Pingwei Liu, Anton Cottrill
- 649 Tuning the Thermoelectric Properties of Carbon Nanotube Films By Molecular Doping
Yoshiyuki Nonoguchi
- 650 (Invited) Air-Stability Mechanism of n-Type Single-Walled carbon Nanotube Sheet Doped with Benzimidazole Derivative
Tsuyohiko Fujigaya, Aleksandar Staykov, Wenxin Huang, Yuki Nakashima
- 651 (Invited) Harvesting Torsional and Tensile Mechanical Energy as Electrical Energy Using Nanofiber Yarns
Ray H. Baughman
- 652 Study of Structural Formation of the Carbide Derived Carbon By X-Ray Microtomography and Small-Angle X-Ray Scattering Techniques
Eneli Härk, Albrecht Petzold, Günter Goerigk, Sebastian Risse, Matthias Ballauff, Sven Schneider, André Hilger, Nikolay Kardjilov, Indrek Tallo, Riinu Härmas, Enn Lust

- 653 Comparative Study of Edge-Functionalized Graphene Nanoplatelets As Superior Metal-Free Counter Electrodes for Dye-Sensitized Solar Cells
Hwan Kyu Kim, Chang Ki Kim, Hong Mo Kim, Sung Ho Kang, Yu Kyung Eom, In-Yup Jeon, Jong-Beom Baek
- 654 Facile Synthesis of Highly-Graphitic Carbon By the Reaction of Calcium Carbide with Sulfur and the Application in Lithium-Ion Batteries
T. Li, X. Bai, U. Gulzar, R. P. Zaccaria
- 655 Ultra-High Specific Power and Energy of Lithium-Ion Capacitors of the Composite Material between N-Doped Reduced Graphene Oxide (N-rGO) and Carbon Nanotubes (CNTs)
Chalita Aphirakaramwong, Nutthaphon Phattharasupakun, Montree Sawangphruk
- 656 Carbon Nanotube Microparticles for Lithium-Sulfur Battery Cathodes
Donghee Gueon, Jun Hyuk Moon
- 657 DI Water Dispersed Graphene Oxide and Supercapacitors with Photoreduced Graphene Oxide Films
Ji-Hwan Sul, In Gyoo Kim, Seok Hun Kang, In-Kyu You
- 658 Lithium-Ion Capacitors Based on Reduced Graphene Oxide/Carbon Nanotube Thin Films Fabricated By Electrostatic Spray Deposition
Ebenezer Adelowo, Amin Rabiei Baboukani, Chunlei Wang
- 659 Improvement of ORR Catalyst Layer with Highly Graphitized CNF in PEMFC
Sunki Chung, Jae Kwang Lee, Jaeyoung Lee
- 660 Photodynamics at the Heterojunction between Semiconducting Single-Walled Carbon Nanotubes and Perylene Diimide Electron Acceptors
Hyun Suk Kang, Thomas J Sisto, Samuel Peurifoy, Boyuan Zhang, Andrew John Ferguson, Colin Nuckolls, Jeffrey L. Blackburn
- 661 Tunable Surface Modification of Mesoporous Carbon Nanoparticles for Polysulfide Trapping in Lithium-Sulfur Batteries
Ian Alexander Murphy, Yun Li, Sei-Hum Jang, Jihui Yang, Alex Jen
- 662 Nitrogen Doped Graphene-Carbon Nanotubes and Nitrogen Doped Nano-Onion Hybrids As High-Performance Catalysts for Oxygen Reduction Reaction
Eun Yeob Choi, Mu Hyeon Kim, Chang Keun Kim
- 663 Nitrogen/Phosphorus Co-Doped Side-Hole-Rich Carbon Nanotubes As Efficient Metal-Free Catalysts for Oxygen Reduction Reaction
Mu Hyeon Kim, Eun Yeob Choi, Chang Keun Kim

B02-Carbon Nanostructures in Medicine and Biology

- 664 (Invited) Multiscale Topological Design of Biological Interfaces to Novel Nanocarbons
Sahil Rastogi, Anna Kalmykov, Raghav Garg, Daniel San Roman, Tzahi Cohen-Karni
- 665 (Invited) Carbon Nanomaterials for High-Resolution, Multimodal Neural Interfaces
Flavia Vitale
- 666 (Invited) Porous Graphitic Carbon As a Smart Scaffold for Neural Stem Cells
Alexandra Perebikovskiy, Alexander T Hwu, Sunshine Holmberg, Maziar Ghazinejad, Marc J Madou
- 667 (Invited) Non-Covalent Functionalization of Carbon Nanomaterials for Enzyme Electrochemistry
Ramaraja P. Ramasamy
- 668 Electrochemical Responses of Graphene with Biofilm Formation on Various Metallic Substrates By Using Laboratory Biofilm Reactors
Hideyuki Kanematsu, Kodai Shindo, Dana M. Barry, Nobumitsu Hirai, Akiko Ogawa, Daisuke Kuroda, Takeshi Kogo, Hajime Ikegai, Yoshimitsu Mizunoe
- 669 Graphene Oxide-Iron Oxide Nanoconjugates for Drug Transport, Biosensing and Bimodal

- Fluorescence/Magnetic Resonance Imaging
Roberto Gonzalez-Rodriguez, Elizabeth Sizemore, Anton V Naumov
- 670 (Invited) New Aqueous Two-Phase Systems for Sorting DNA-Wrapped SWCNTs
Min Lyu, Juan Yang, Yan Li, Ming Zheng
- 671 (Invited) New Concepts in Biosensing Using Single Walled Carbon Nanotubes and Graphene
Michael S Strano
- 672 (Invited) Length-Dependent Intracellular Bundling of Single-Wall Carbon Nanotubes Influences Retention
Mohammad F. Islam
- 673 Xeno Nucleic Acids for Enhancing the Optical Stability of Nanosensors
Alice Judith Gillen, Carlo Gigli, Ardemis Anoush Boghossian
- 674 Carbon Nanotube-Based Sensors for Early Cancer Detection
Daniel A Heller, Januka Budhathoki-Uprety, Thomas Vito Galassi, Rune Frederiksen, Jackson Harvey, Christopher Peter Horoszko, Prakrit Vaibhav Jena, Rachel E Langenbacher, Daniel Roxbury, Janki Shah, Ryan M. Williams, Hanan Baker
- 675 (Invited) Nanoscale Imaging of Brain Tissue Features with Carbon Nanotubes
Laurent Cognet
- 676 (Invited) Imaging Dopamine Neuromodulation with Single Wall Carbon Nanotube Sensors
Abraham G Beyene, Kristen Delevich, Jackson Travis Del Bonis-O'Donnell, Wan Chen Lin, Wren Thomas, Linda Wilbrecht, Markita P Landry
- 677 Optical Properties of Dyes Confined into Carbon and Boron Nitride Nanotubes for Multimodal Bio-Imaging
Etienne Gaufres, Charlotte Allard, Rafaella Oliveira Nascimento, Frederic Fossard, Emmanuel Flahaut, Annick Loiseau, Richard Martel
- 678 (Invited) Near Infrared Chemical Imaging of Cellular Communication Using Carbon Nanotubes
Daniel Meyer, Florian Mann, Elena Polo, Annika Hagemann, Niklas Herrmann, Sebastian Kruss
- 679 (Invited) Probing the Intracellular Fate of Carbon Nanotube-Based Near-Infrared Sensors
Mohammad Safaee, Mitch Gravely, David Restrepo, Daniel Roxbury
- 680 Characterization of Double-Stranded DNA (dsDNA) on Single-Walled Carbon Nanotubes (SWCNTs)
Shang-Jung Wu, Nils Schuergers, Alice Judith Gillen, Ardemis Anoush Boghossian
- 681 (Invited) Nanocarbons for Multimodal Imaging, and Combination Multidrug/Gene Delivery
Anton V Naumov, Md Tanvir Hasan, Elizabeth Sizemore, Roberto Gonzalez-Rodriguez, Giridhar Akkaraju
- 682 (Invited) Utilization of Single Wall Carbon Nanotube Sensors for Detection of Disease Development
Nicole M Iverson, Joseph A Stapleton, Eric M Hofferber, Janelle J Adams
- 683 (Invited) High Aspect Ratio Nanomaterials Enable Biomolecule Delivery and Transgene Expression or Silencing in Mature Plants
Gozde Demirer, Roger Chang, Huan Zhang, Linda Chio, Markita P Landry
- 684 (Invited) Nanoelectronic Lab-on-a-Chip DNA Sensors Based on Nanocarbon Materials
Delphine Bouilly
- 685 Helical Polycarbodiimide-Cloaked Carbon Nanotubes for Biomedical Applications
Januka Budhathoki-Uprety, Joshua A. Korsen, Rachel E Langenbacher, Alysandria E. Wayne, Prakrit Vaibhav Jena, Daniel A Heller
- 686 Carbon Nanotubes as Nanovectors for Intracellular Delivery
Tatiana DaRos
- 687 Elucidating Protein Corona Formation on Nanocarbons in Complex Biological Fluids
Rebecca L Pinals, Markita P Landry
- 688 (Invited) Antiviral Activity of Self-Assembled Glycodendro[60]Fullerene Monoadducts
Nazario Martin

- 689 (Invited) Assets of Nanodiamonds for Bioapplications
Jean-Charles Arnault
- 690 PET Imaging of Tumor Uptake of a Biocompatible C₆₀ Fullerene Drug Delivery Vector
Nicholas G. Zaibaq, Michael J. Collins, Mark D. Pagel, Lon J. Wilson
- 691 Facial and Controllable Hydrothermal Synthesis of Manganese Doped Carbon Quantum Dots for Targeted Fluorescence and Biomedical Applications
Wubshet Mekonnen Girma, Jin-Sheng Lin, Jia-Yaw Chang
- 692 Nanocarbon-Based Field-Effect Transistor Biosensors (bioFETs) for Real-Time Detection of DNA Sequences
Claudia Marcela Bazan, Madline Sauvage, Elizabeth Huliganga, Amira Bencherif, Godefroy Borduas, Delphine Bouilly
- 693 Dual Color Bioimaging with Nanocarbon Quantum Dots
Md Tanvir Hasan, Roberto Gonzalez-Rodriguez, Elizabeth Sizemore, Anton V Naumov
- 694 Graphene Derivatives As Effective Formulations for Drug Delivery, Imaging, and Sensing
Elizabeth Sizemore, Md Tanvir Hasan, Giridhar Akkaraju, Anton V Naumov

B03-Carbon Nanotubes - From Fundamentals to Devices

- 695 (Invited) Molecular Requirement for Compounds Toward Facile Isolation of Adsorbent-Free Semiconducting Single-Walled Carbon Nanotubes Based on Supramolecular Chemistry
Fumiyuki Toshimitsu, Aleksandar Staykov, Naotoshi Nakashima
- 696 (Invited) New Method Development for Making Structurally Defined DNA-Carbon Nanotube Hybrids
Ming Zheng
- 697 Learning DNA/SWCNT Recognition Sequences
Yoona Yang, Ming Zheng, Anand Jagota
- 698 (Invited) Inner- and Outer-Wall Sorting of Double-Walled Carbon Nanotubes
Benjamin S Flavel
- 699 (Invited) Systematic Aqueous Two-Phase Separations of Carbon Nanotubes to Investigate the Separation Mechanism
Joeri Defiliet, Miles Martinati, Wim Wenseleers, Sofie Cambre
- 700 Influence of Carbon Nanotube Chirality on Sodium Chololate Adsorption in Aqueous Suspensions
Friedrich Schoeppler, Ivonne Vollert, Felix Bergler, Tobias Hertel
- 701 (Keynote) Carbon Nanotubes: Discovery and Beyond
Sumio Iijima
- 702 (Invited) Digital-Coded Isotope Labeling on Individual Single-Walled Carbon Nanotubes Grown on Crystal Quartz
Shigeo Maruyama, Keigo Otsuka, Shun Yamamoto, Bunsho Koyano, Rong Xiang, Taiki Inoue, Shohei Chiashi
- 703 Designing Single-Wall Carbon Nanotube Forest Growth for Nanofluidic Applications
Eric Meshot, Ngoc Bui, Chiatai (Owen) Chen, Steven Buchsbaum, Kuang Jen Wu, Francesco Fornasiero
- 704 (Invited) Structure Characterization of Intermetallic Compound Catalysts and Single-Walled Carbon Nanotubes
Yan Li, Feng Yang, Juan Yang
- 705 Nickel Nanoparticles Synthesized Via Novel Alcolgel Electrolysis for the Growth of Multi-Walled Carbon Nanotubes (MWCNTs) By Chemical Vapor Deposition (CVD) Technique
Zulfiqar Ali
- 706 (Invited) Self-Aligned Short-Channel Heterojunction Diodes and Transistors Based on Carbon Nanotubes and Related Nanoelectronic Materials

Mark C. Hersam

- 707 Confined Shear-Based Alignment of Carbon Nanotubes for Thin Film Transistors
Katherine R Jinkins, Jason Chan, Arganthaël Berson, Michael S Arnold
- 708 (Invited) Inkjet-Printed Terahertz Detector
François Léonard
- 709 Fullerene-Sensitized Carbon Nanotube Array Phototransistor with Responsivity Exceeding 10^7 A/W
Kevin Joseph Bergemann, Frank Patrick Doty, François Léonard
- 710 Effect of Organometallic Interconnects on Transverse Conductivity of Aligned Single-Walled Carbon Nanotubes
Elena Bekyarova, Mingguang Chen, Wangxiang Li
- 711 Molecular Recognition at Local Doped Sites of Locally Functionalized Single-Walled Carbon Nanotubes for Selective Wavelength Shift of Near Infrared Photoluminescence
Tomohiro Shiraki, Hisashi Onitsuka, Tamehito Shiga, Naotoshi Nakashima
- 712 New Methods Towards Designer DNA Sequences for Enantiomeric-Chiral Selective Sorting of Single-Wall Carbon Nanotubes
Brendan Meany, Ming Zheng
- 713 (Invited) Endohedral Filling Effects for Single-Wall Carbon Nanotubes As a Function of Filler Molecule and Nanotube Size
Jeffrey A. Fagan
- 714 (Invited) Degradable Conjugated Polymer with Exceptional Selectivity for Large Diameter Semiconducting Carbon Nanotubes
Padma Gopalan, Catherine Kanimozhi, Matthew J Shea, Gerald J Brady, Michael S. Arnold
- 715 Noncovalent Chemistry of SWNTs Inside-Out
Emilio M Perez
- 716 (Invited) Functionalization of Carbon Nanotubes in a Micellar Environment
Lucile Orcin-Chaix, Géraud Delport, Stéphane Campidelli, Christophe Voisin, Jean-Sébastien Lauret
- 717 (Invited) Light-Directed Creation of Quantum Defects
Xiaojuan Wu, Mijin Kim, Lyndsey Rae Powell, YuHuang Wang
- 718 (Invited) Substituted Aryl Structure Effects on Photoluminescence Properties of Locally Functionalized Single-Walled Carbon Nanotubes
Tomohiro Shiraki, Shunsuke Uchimura, Tomonari Shiraishi, Fumiyuki Toshimitsu, Naotoshi Nakashima
- 719 Constraining Photoluminescent Defect States in Chirality-Sorted Covalently Doped Single-Walled Carbon Nanotubes
Avishek Saha, Xiaowei He, Geyou Ao, Ming Zheng, Sergei Tretiak, Han Htoon, Stephen K. Doorn
- 720 (Invited) Functional Hybrids of Single-Walled Carbon Nanotubes Via π -Preserving Covalent Attachment
Stephanie Reich
- 721 (Invited) Room-Temperature Single Photon Emission from Micrometer-Long Air-Suspended Carbon Nanotubes
Akihiro Ishii, Takushi Uda, Yuichiro K. Kato
- 722 (Invited) Interplay of Spectral Diffusion and Phonon Broadening in Carbon Nanotubes: Implications for Quantum Optics
Théo Claude, Adrien Jeantet, Jean-Sébastien Lauret, Yannick Chassagneux, Christophe Voisin
- 723 Quantum Optical Studies on Sp^3 Defects in Carbon Nanotubes
Xiaowei He, Han Htoon, Stephen K. Doorn
- 724 (Invited) Aryl-Functionalized Single-Walled Carbon Nanotubes Embedded into Metallo-Dielectric Antennas

Kamran Shayan, Xiaowei He, Yue Luo, Xiangzhi Li, Jeffrey L. Blackburn, Stephen K. Doorn, Han Htoon, Stefan Strauf

- 725 (Invited) Biological Imaging Using up-Conversion Photoluminescence of Carbon Nanotubes
Yuhei Miyauchi
- 726 (Invited) Nanoscale Imaging of Luminescent Excitons in sp^3 -Doped Ultra-Short Carbon Nanotubes
Noémie Danné, Mijin Kim, Antoine G Godin, Hyejin Kwon, Zhenghong Gao, Xiaojian (James) Wu, Nicolai F. Hartmann, Stephen K. Doorn, Brahim Lounis, YuHuang Wang, Laurent Cognet
- 727 (Invited) Solvent and Wavelength Dependence of Carbon Nanotube Defect-State Photoluminescence Relaxation Dynamics
Stephen K. Doorn, Xiaowei He, Kirill Velizhanin, George Bullard, Younghee Kim, Nicolai F. Hartmann, Han Htoon, Michael J. Therien
- 728 (Invited) Cryogenic Spectroscopy of Chemistry-Modified Carbon Nanotubes
Alexander Högele
- 729 Magneto-PL Spectroscopy in Aryl Functionalized CNTs
Younghee Kim, Xiaowei He, Stephen K. Doorn, Han Htoon
- 730 (Invited) Variance Spectroscopy Studies of Single-Walled Carbon Nanotube Aggregation
Stephen R. Sanchez, Sergei M. Bachilo, R. Bruce Weisman
- 731 Ionic Strength-Mediated Phase Transitions of Surface-Adsorbed DNA on Single-Walled Carbon Nanotubes
Daniel Salem, Xun Gong, Albert Tianxiang Liu, Volodymyr Koman, Juyao Dong, Michael S Strano
- 732 (Invited) Surfactant-Exchange Equilibrium Constants for Each Semiconducting Single Wall Carbon Nanotube Type
Kirk J Ziegler
- 733 (Invited) Quantification of DNA/SWCNT Solvation Differences By Aqueous Two Phase Separation
Anand Jagota, Yoona Yang, Akshaya Shankar, Thibault Aryaksama, Ming Zheng
- 734 Controlled Assembly of Carbon Nanotube Nanohybrids for Single-Molecule Investigations
Matteo Palma
- 735 (Invited) Interfacial Functionalization of Carbon Nanostructures: From Effective Charge Propagation and Storage to Enhancement of Electrocatalytic and Bioelectrocatalytic Properties
Pawel J Kulesza
- 736 Aqueous Based Asymmetrical-Bipolar Electrochemical Capacitor with a 2.4 V Operating Voltage
Haoran Wu, Keryn Lian
- 737 Kinetics of Lithium - Ion Transfer at Carbon-Electrolyte Interface in Presence of Conducting Nano-Fillers
Salahuddin Ahamad, Amit Gupta
- 738 (Invited) Long-Lived Charge Separation across Interfaces with Semiconducting Single-Walled Carbon Nanotubes
Jeffrey L. Blackburn, Hyun Suk Kang, Andrew John Ferguson, Dylan Arias, Justin C. Johnson
- 739 Dramatic Nano-Fluidic Properties of Carbon Nanotube Membranes As a Platform for Programmable Transdermal Drug Delivery
Bruce J Hinds
- 740 (Invited) Single-Molecule Sensor Arrays with Carbon Nanotube Transistors
Philip G. Collins
- 741 (Invited) Localized Covalent Defects on Carbon Nanotube Devices for Sensor Applications
Delphine Bouilly
- 742 Solution Processable Carbon Nanotube Biosensors with Multisensing Capability
Xinzhao Xu, Pierrick Clement, Johnas Victor Roland Eklöf, Kasper Moth-Poulsen, Jorge Chavez, Matteo Palma

- 743 Dielectrics & Electrostatics: Their Effect on Carbon Nanotube Network Field-Effect Transistors and Gas Sensors
François Lapointe, Patrick R. L. Malenfant, Jacques Lefebvre
- 744 (Invited) Dense Layers of (6,5) Nanotubes for Optical and Charge Transport Applications
Jana Zaumseil
- 745 (Invited) Avalanche Photoemission in Suspended Carbon Nanotubes: Light without Heat
Stephen B. Cronin, Bo Wang
- 746 (Invited) Carbon Nanotube Photoluminescence Spectroscopy for Applications in Cancer Research
Daniel A Heller, Januka Budhathoki-Uprety, Thomas Vito Galassi, Rune Frederiksen, Jackson Harvey, Christopher Peter Horosko, Prakrit Vaibhav Jena, Rachel E Langenbacher, Daniel Roxbury, Janki Shah, Yosef Shamay, Ryan M. Williams, Hanan Baker
- 747 Quantum Yield Effects of Modified DNA Sequences on Single-Walled Carbon Nanotube (SWCNT) Fluorescence
Alice Judith Gillen, Benjamin Paul Lambert, Daniel Molina-Romero, Ardemis Anoush Boghossian
- 748 (Invited) Ultrafast Spectroscopy of Free-Carrier like Dynamics in Heavily Doped Semiconducting Carbon Nanotubes
Klaus H Eckstein, Melanie M Achsnich, Friedrich Schoeppler, Larry Luer, Tobias Hertel
- 749 (Invited) Nanotube Excitonic Emitter at the Subwavelength Scale
Slava V. Rotkin, Benjamin Joseph Sofka
- 750 (Invited) Photoluminescence from an Individual Double-Walled Carbon Nanotube
Thierry Michel, Dmitry Levshov, Matthieu Paillet, R. Arenal, Valentin Popov, Romain Parret, Chuc Nguyenvan, Sergei Rochal, Ahmed Zahab, Jean-Louis Sauvajol
- 751 (Invited) Diameter-Dependent Optical Absorption and Energy Transfer from Encapsulated Dye Molecules to Single Wall Carbon Nanotubes
Wim Wenseleers, Stein Van Bezouw, Jochen Campo, Sofie Cambré, Joeri Defillet, Dylan Arias, Rachelle Ihly, Andrew John Ferguson, Justin C. Johnson, Jeffrey L. Blackburn
- 752 A New Method for Quantifying SWCNT Dispersion Quality from Absorption Spectra
Yu Zheng, Stephen R. Sanchez, Sergei M. Bachilo, R. Bruce Weisman
- 753 (Invited) Delayed Fluorescence from Single-Walled Carbon Nanotubes Induced By Energy Transfer from Singlet Oxygen
Sergei M. Bachilo, Ching-Wei Lin, R. Bruce Weisman

B04-International Symposium on Nanomaterials: Focus - Korea

- 754 DFT Study on the Adsorption of Organic and Organometallic Sensitizers on Nanocrystalline TiO₂ for DSSC Applications
Ramesh Kumar Chitumalla, Joonkyung Jang
- 755 (Invited) How Can We Improve C₂-Products Selectivity in the Electrochemical CO₂ Reduction?
Min Hyung Lee
- 756 (Invited) Multi-Functional Nano-Templates for Solar Spectrum Conversion
Doo-Hyun Ko
- 757 (Invited) First-Principles Simulation Study on the Nanomaterials for Battery and Solar Cell Applications
Arindam Sannyal, Ramesh Chitumall, Joonkyung Jang
- 758 (Invited) Edge-Selectively Functionalized Graphene Nanoplatelets As a Metal-Free Counter Electrode in DSSCs
Myung Jong Ju, Jae cheon Kim, Kicheon Yoo, Jong-Beom Baek, Jae-Joon Lee
- 759 Facile Synthesis of Iron OXIDE/Carbon Shell for High Performance Lithium-ION Battery ANODE
Yaping Yan, Yingbo Kang, Ho Seok Park, Hoo-jeong Lee

- 760 (Invited) Nanopore Batteries: Fast and Slow Ion Transport in 1D and 3D Networked Porous Nanostructure Electrodes
Sang Bok Lee
- 761 (Invited) Design and Synthesis of Hybrid Nanomaterials for Electrochemical Energy Storage Applications
Min-Kyu Song
- 762 (Invited) Two-Dimensional Organic Network Structures for Energy Conversion and Storage
Javeed Mahmood, Jong-Beom Baek
- 763 (Invited) Development of Nanostructured Mesoporous Carbon As a Support and Catalyst for Fuel Cell Application
Chanho Pak, Bong Ho Lee, Ji Yeon Lee, Seung Woo Lee, Do Hyung Kim, Dae Jong You, Ji Man Kim
- 764 High-Performance Flexible Bio-Electronics for Electrophysiological Recordings
Jun-Young Jeon, Byeong-Cheol Kang, Tae-Jun Ha
- 765 (Invited) High Field THz Spectroscopy of Monolayer Graphene: Effect of Grain Size and Doping
Seong Chu Lim
- 766 (Invited) Synthetic Chiral Carbon Nanoforms
Nazario Martín
- 767 (Invited) Transport of Ions Along the Exterior of Single-Walled Carbon Nanotubes
Yun-Tae Kim, Chang Young Lee
- 768 (Invited) Functionalization and Application of Carbon Nanostructures
Akcan Istif, Agnieszka Gajewska, Marco Carini, Valentina Armuzza, Jose Miguel Gonzalez Dominguez, Caroline Hadad, Tatiana DaRos
- 769 (Invited) Graphene Oxide Liquid Crystals and Relevant Functional Nanostructures
Sang Ouk Kim
- 770 (Invited) First-Principles Investigation of Single Layer of Pt on Graphene
Ji Il Choi, Faisal M Alamgir, Seung Soon Jang
- 771 Covalently Fabricated Graphene Interface for Electrochemical Detection of Resorcinol an Endocrine Disruptor in Solubilized Ionic Liquid System
Jahangir Ahmad Rather, Zamzam Alsubhi, Imran Khan, Emad Khudaish, Palanisamy Kannan
- 772 (Invited) Fundamental Understanding and Optimal Design of Low-Dimensional Carbon Nanomaterials for Supercapacitors
Gyeong S Hwang
- 773 (Invited) High Temperature Flexible Supercapacitors
Ho Seok Park, Harpalsinh H. Rana
- 774 (Invited) Flexible and Self-Healing Aqueous Supercapacitors By Polyampholyte Gel Electrolytes with Biochar Electrodes and Their Unique Low Temperature Properties
Hyun-Joong Chung
- 775 (Invited) Redox-Active Carbon Positive Electrodes for High-Performance Hybrid Supercapacitors
Tianyuan Liu, Byeongyong Lee, Michael J Lee, Seung Woo Lee
- 776 (Invited) Advanced Energy Storages Based on Carbon Nanomaterials and 2D Materials
Wonbong Choi
- 777 Understanding Catalytic Behavior of Co-Sn Alloy/Graphene Counter Electrode Electrocatalysts in Liquid-Junction Photovoltaic Devices
Hyo-Jun Oh, Van-Duong Dao, Ho-Suk Choi
- 778 First-Principles Study on the Gase Monolayer As an Anode Material for Alkali Metal Ion Batteries
Arindam Sannyal, Joonkyung Jang

- 779 Enhancement of PEC Water Splitting for Self-Carbon Doped TiO₂ Nanorods / Au Nanoparticle / TiO₂Ternary Structure in All Solution Process
Jungyeon Hwang, Kiryung Eom, Hoseong Han, Hyungtak Seo
- 780 Hybrid Nitrogen-Incorporated Reduced Graphene Oxide-Branched Carbon Nanotubes Architectures for Lithium Ion Battery Anode
Ho Seok Park, Yingbo Kang
- 781 Three-Dimensional Ordered Nanoporous Nickel Electrode for Oxygen Evolution Reaction: Toward Highly Efficient and Ultra-Stable Water Electrolysis
Sungsoon Kim, Yoonjun Cho, Jong Hyeok Park
- 782 Cost-Effective Mo Fe Alloy/Reduced Graphene Oxide Counter Electrodes As a New Avenue for High-Efficiency Dye-Sensitized Solar Cells
Sangho Shin, Van-Duong Dao, Ho-Suk Choi
- 783 Multiple-Heterojunction in Single Titanium Dioxide Nanoparticle for Novel Metal-Free Photocatalysis
Yoonjun Cho, Sungsoon Kim, Jong Hyeok Park
- 784 Highly Conductive and Stable Graphene/PEDOT:PSS Composites As Metal Free Cathodes for Organic Dye-Sensitized Solar Cells
Jae cheon Kim, Myung Jong Ju, Mohammad Mahbubur Rahman, Kicheon Yoo, Jae-Joon Lee
- 785 Vertically Oriented MoS₂ with Spatially Controlled Geometry on Nitrogenous Graphene Sheets for High-Performance Sodium-Ion Batteries
Jong Yeob Jeong, Jong Hyeok Park

B05-Fullerenes - Endohedral Fullerenes and Molecular Carbon

- 786 Magnetic Property of Metallofullerenes within Metal-Organic Framework
Taishan Wang
- 787 The First Molecular Dumbbell Consisting of an Endohedral Sc₃n@C₈₀ and an Empty C₆₀-Fullerene Building Block
Tao Wei, Andreas Hirsch
- 788 Actinide Nitride Clusterfullerene: Synthesis, Isolation and Spectroscopic Characterization of U₂N@C₈₀
Xiaomeng Li, Xingxing Zhang, Ning Chen
- 789 Synthesis, Isolation and Characterization of Two Isomers of Dy₂O@C₈₂
Wei Yang, Jiaxin Zhuang, Yue Shi, Ning Chen
- 790 The Dependence of Electrochemical Property on Carbon Cage in Tb₂C₉₀ Isomers
Mengsi Nie, Wei Dong, Yongfu Lian
- 791 (Invited) Uranium-Based Endohedral Fullerenes: Mono-, Di-Metallic and Cluster Compounds
Luis Echegoyen, Ning Chen, Skie Fortier, Wenting Cai, Jesse Murillo, Maria Gomez
- 792 (Invited) Molecular Structures and Unique Bindings of Actinide Endohedral Fullerenes
Ning Chen, Luis Echegoyen, Lai Feng, Yaofeng Wang, Xingxing Zhang
- 793 (Invited) Recent Developments Regarding Orientation Studies of Endohedral Nitrogen Fullerenes and Their Water-Solubilization
Kyriakos Porfyrakis
- 794 (Invited) Molecular Structures of La₂C₂@C₉₀-C₁₀₄: The Effect of Inserting a C₂-Unit
Xing Lu, Wenting Cai, Shasha Zhao
- 795 (Invited) Isolation and Structural Characterization of Lu₂C_{2n}
Wangqiang Shen, Xing Lu, Fang-Fang Li

- 796 (Invited) Complexation and Electronic Communication of Corannulene-Based Buckybowls and a Curved Electron Donor
Nazario Martín
- 797 (Invited) Mediating Reductive Charge Shift Reactions in Electron Transport Chains
Dirk M. Guldi
- 798 (Invited) Subphthalocyanine-Fullerene Ensembles As Light Harvesting Systems
Tomas Torres, M. Victoria Martínez-Díaz, German Zango, José Antonio González Delgado, Victor Mariñas, Jorge Labella
- 799 (Invited) Chiral-at-Metal Fullerene Hybrids for Catalysis
Salvatore Filippone, Rosa María Girón, Sara Vidal, Nazario Martín
- 800 (Invited) Bodipy-Nanocarbon Hybrids for Mimicking Early Events of Natural Photosynthesis
Francis D'Souza
- 801 (Invited) Growth of Fullerene Fragments Using the Diels-Alder Cycloaddition Reaction
Francisco Méndez, Julio A. Alonso, Martha Mojica
- 802 (Invited) Structures and Properties of Saturn-like Complexes Composed of Oligothiophene Macrocycle with Methano[60]Fullerene and [70]Fullerene
Shinobu Aoyagi, Masahiko Iyoda, Hideyuki Shimizu, Hiroshi Okada, Biao Zhou, Yutaka Matsuo
- 803 (Invited) Structural Studies of Fullerene Cages and Cage Disorder in Crystals
Marilyn M. Olmstead, Xian B. Powers, Alan L. Balch
- 804 (Invited) Synthesis and Isolation of Scandium-Uranium Based Endohedral Fullerenes
María A Gomez Torres, Jesse Murillo, Wenting Cai, Luis Echegoyen
- 805 (Invited) Chemical Isolation of Less Common Metallofullerenes
Amanda J Rothgeb, Katelyn Rose Tepper, Cody Marshall Davison, Steven Stevenson
- 806 (Invited) Gas-Phase Clusterfullerene Doping and Exohedral Modification By Laser-Based Methods
Paul W. Dunk, Marc Mulet-Gas, Alan G. Marshall, Christopher L. Hendrickson, Edison Castro, Luis Echegoyen, Laura Abella, Antonio Moreno-Vicente, Antonio Rodriguez-Forteza, Josep M. Poblet
- 807 (Invited) Relative Stabilities for Isomeric and Non-Isomeric Endohedrals
Filip Uhlik, Zdenek Slanina, Takeshi Akasaka, Xing Lu
- 808 (Invited) Cage Skeletal Transformation of Fullerene Via Chlorination
Shangfeng Yang
- 809 (Invited) Synthesis and Properties of Open-Cage Fullerene Derivatives
Yasujiro Murata
- 810 (Invited) Intermediates Captured By C₆₀ in Combustion
Su-Yuan Xie, Qianyan Zhang, Shun-Liu Deng
- 811 (Invited) Graphene Nanoribbons through Directed Molecular Assembly and Reagent-less Stitching
Yves Rubin, Robert Jordan, Yolanda L. Li, Cheng-Wei Lin, Ryan D. McCurdy, Janice B. Lin, Jonathan L. Brosmer, Kristofer L. Marsh, Saeed I. Khan, K. N. Houk, Richard B. Kaner
- 812 (Invited) Synthesis of Graphene-C₆₀ Hybrids
Fernando Langa
- 813 (Invited) Hierarchical Nanostructures in Multi-Functional Electrocatalysts for the Artificial Leaf
Giovanni Valenti, Massimo Marcaccio, Stefania Rapino, Matteo Iurlo, Maurizio Prato, Paolo Fornasiero, Francesco Paolucci
- 814 (Invited) Fullerene-Based Single Molecule Magnets: Bulk and Surface Magnetism
Alexey A. Popov, Denis Krylov, Chia-Hsiang Chen, Fupin Liu, Stanislav Avdoshenko, Ariane Brandenburg
- 815 (Invited) Synthesis and Stabilization of the Unstable Dimetallofullerenes

Fupin Liu, Lukas Spree, Alexey A. Popov

- 816 (Invited) Changing the Conformation of Paramagnetic Endohedral Fullerenes with Magnetic Fields
Thomas Greber
- 817 (Invited) The Effect of Nitrogen Source on the Production of Uranium Metallofullerenes Possessing Non-IPR Cages
Wenting Cai, Jesse Murillo, Maria A Gomez Torres, Ning Chen, Luis Echegoyen
- 818 (Invited) Stable Azaheterometallofullerene $M_2@C_{79}N$ ($M = Y, Gd, Tb$) in Novel Electronic and Magnetic Applications
Kyle M Kirkpatrick, Xiaoyang Liu, Yanlong Li, James Duchamp, Chenggang Tao, Alexey A. Popov, Harry C Dorn
- 819 (Invited) Exciplex Formation and Decay in Porphyrin-Carbon Nanotube Ensembles
Hiroshi Imahori
- 820 (Invited) Photovoltaic Performance and Stability of Fullerene/Cerium Oxide Double Electron Transport Layer Superior to Single One in P-I-N Perovskite Solar Cells
Su-Yuan Xie, Mei-Lin Zhang, Jun Xiao
- 821 (Invited) Highly Stabilized Perovskite Solar Cells By Li-Ion-Containing Fullerene Salt As Both Dopant and Anti-Oxidant
Yutaka Matsuo, Il Jeon, Hiroshi Ueno
- 822 (Invited) Inverted Planar Perovskite Solar Cells Using Coordination Fullerene Polymers As Acceptor Layer
Krzysztof Winkler, Emilia Gradzka, Monika Wysocka-Zolopa, Marius Enachescu, Calin Moise, Alex Pumnea
- 823 (Invited) Purification and Frontier Orbital Characterisation of 19 Isomers of the OPV Acceptor Material Bis[60]PCBM
John Dennis, Wenda Shi, Xueyan Hou, Tong Liu
- 824 (Invited) Structural Identification of 19 Purified Isomers of Opv Acceptor Material Bis[60]PCBM
Tong Liu, Isaac Abrahams, John Dennis
- 825 (Invited) Lock-in Thremography of Carbon Nanotube Composites and Graphene
Toshiya Okazaki
- 826 (Invited) High Efficient Tumor Therapeutic Technique Based on Water Soluble Metallofullerene Derivatives
Chunru Wang
- 827 (Invited) Paramagnetic Endohedral Fullerenes for Biomedical Applications
Stuart Cornes, Shen Zhou, Timothy Barendt, Xiaoyu Zheng, Sandra Eaton, Gareth Eaton, Jason Davis, Paul Beer, Kyriakos Porfyarakis
- 828 (Invited) Fullerene Nanostructures: Preparation and Application
Shushu Zheng, Xing Lu

B06-2D Layered Materials from Fundamental Science to Applications

- 829 (Nanocarbons Division SES Young Investigator Award Address) Bottom-up Synthesis of Semiconducting Graphene Nanoribbons via CVD
Michael S Arnold
- 830 Probing Electrochemical Structure-Property Relationships at Non-Porous Monolayer Electrodes of Exfoliated Graphene and MoS_2 Single Layers
Wesley R Walker, Luzhu Xu, Olga A Krysiak, Michael A Pope
- 831 Hybrid Li-Ion Electrochemical Capacitor Enabled By Highly Crumpled Nitrogen-Doped Graphene
Atif Saeed AlZahrani, Ran Yi, Jiangxuan Song, Donghai Wang
- 832 Understanding the Effects of Lateral Dimensions on the Electrochemical Performance of 2D Mxenes
Emre Kayali, Majid Beidaghi

- 833 Layered Tin Chalcogenide Electrochemistry: Fundamentals and Implications on Energy-Related Applications
Xinyi Chia, Petr Lazar, Zdeněk Sofer, Jan Luxa, Martin Pumera
- 834 Self-Assembly of Flexible Free-Standing Three-Dimensional Porous MoS₂-Reduced Graphene Oxide Film for High-Performance Lithium-Ion Batteries
Yunfeng Chao, Rouhollah Jalili, Yu Ge, Caiyun Wang, Tian Zheng, Gordon Wallace
- 835 Electrophoretic Deposition of Nitrogen-Boron Co-Doped Graphene for High Performance Supercapacitors
Amit Kumar, Nagesh Kumar, Pragya Singh, Jihperng Leu, Tseung-Yuen Tseng
- 836 Synthesis of WS₂xSe_{2(1-x)} Nanowalls through a Rapid Thermal Annealing Process for Hydrogen Evolution Reaction and Sensor Application
Shin-Yi Tang, Henry Medina, Wen-Chun Yen, Yu-Ze Chen, Yi-Chung Wang, Teng-Yu Su, Chia-Wei Chen, Yu-Lun Chueh
- 837 Suppression of Sulfur Desorption of High-Temperature Sputtered MoS₂ Film By Applying DC Bias
Yusuke Hibino, Seiya Ishihara, Naomi Sawamoto, Takumi Ohashi, Kentarou Matsuura, Hitoshi Wakabayashi, Atsushi Ogura
- 838 Synthesis of Molybdenum Carbide and Formation of an Epitaxial Mo₂C/MoS₂ Hybrid Structure Via Carburization of Molybdenum Disulfide
Jaeho Jeon, Jinhee Lee, Seunghyuk Choi, Byoung Hun Lee, Young Jae Song, Jeong Ho Cho, Yun Hee Jang, Sungjoo Lee
- 839 (Invited) In Situ scanning Tunneling Microscopy Studies of hBN Layer Growth Kinetics and the Influence of Substrate on Electronic Structure of the Layers
Pedro Arias, Abdulfattah Abdulslam, Abbas Ebnonnasir, Cristian V Ciobanu, Suneel Kodambaka
- 840 (Invited) Experimental Synthesis of 2D Borophene
Nathan P Guisinger
- 841 (Invited) Integrated Crystal Growth of 2D Materials
Stephan Hofmann
- 842 (Invited) Layer-Controlled, Wafer-Scale Fabrication of 2D Semiconductor Materials
Daniele Chiappe, Valeri Afanasiev, Yoann Tomczak, Surajit Sutar, Alessandra Leonhardt, Jonathan Ludwig, U. Celano, Steven Brems, Ashish Dabral, Geoffrey Pourtois, Matty Caymax, Tom Schram, Cedric Huyghebaert, Inge Asselberghs, Stefan De Gendt, Iuliana Radu
- 843 (Invited) Large Area Synthesis of 2D Metal Dichalcogenides By Van Der Waals Molecular Beam Epitaxy
Athanasios Dimoulas, Dimitra Tsoutsou, Polichronis Tsipas, Sotiris Fragkos, Roberto Sant, Carlos Alvarez, Hanako Okuno, Gilles Renaud
- 844 (Invited) The Impact of the Phase and Stacking of 2D Materials on Their Properties and Applications
Song Jin
- 845 (Invited) Epitaxy of 2D Transition Metal Dichalcogenide Monolayers and Heterostructures
Xiaotian Zhang, Tanushree Choudhury, Mikhail Chubarov, Joan M. Redwing
- 846 Synthesis and Transfer of High-Quality Graphene Grown on Al₂O₃(0001)/Pt(111) Template Wafers
Ken Verguts, Joao Coroa, Lisanne Peters, Cheng Han Wu, Cedric Huyghebaert, Steven Brems, Stefan De Gendt
- 847 (Invited) Advances in 2D Materials Production; From R&D to Commercialization
Paul Wiper, Gonçalo Gonçalves, Bingan Chen, Alex Jouvray, Ken Teo
- 848 (Invited) Functionalization of 2D Materials: A Molecular Approach
Steven De Feyter
- 849 (Invited) Nanostructured Graphene-Coated Cathodes for High-Performance Lithium-Ion Batteries
Mark C. Hersam
- 850 (Invited) Graphene-Based Membranes for Nanofiltration
Jeffrey C Grossman

- 851 (Invited) Anomalous Corrosion of Bulk 2D Materials Leading to Stable Monolayers
Saptarshi Das
- 852 Black Phosphorus p-Doping By Integration of MoS₂ Nanoparticles
Sumin Jeon, Minwoo Kim, Jianyuan Jia, Jin-Hong Park, Young Jae Song, Sungjoo Lee
- 853 Protected Metallic MoS₂ Nanosheets Outlast Pristine Metallic MoS₂ Nanosheets for Hydrogen Evolution Reaction
Eric E. Benson, Hanyu Zhang, Samuel Schuman, Sanjini U. Nanayakkara, Noah D. Bronstein, Suzanne Ferrere, Jeffrey L. Blackburn, Elisa M. Miller
- 854 (Invited) Graphitic Intercalation Compounds: A Versatile Nano-Template for the Synthesis of Multi-Functional Electrocatalysts
Ferdinand Hof, Alessandro Boni, Giovanni Valenti, Kai Huang, Francesco Paolucci, Alain Penicaud
- 855 Novel Strategies to Interface Molecules and 2D Materials
Emilio M Perez
- 856 Substrate Ligand Effects on Atomically Thin 2D Platinum on Graphenated 3D Structures
Christopher Arnold, Parker Buntin, Jamie H Warner, Josh Kacher, Ali Abdelhafiz, Faisal M Alamgir
- 857 Investigation of HF Treatment Effect on the Structure and Electrical Conductivity of Carbonized Metal–Organic Frameworks
Zhao-Quan Zhang, Bing-Han Li, Chia-Her Lin, Szetsen Lee
- 858 TMDC 2D Materials Synthesis via Two Steps Solution Process at Low Temperature
Woon-Seop Choi
- 859 Development of Formvar-Based Membranes with Controlled Porosities for Microfluidics and Large-Area Graphene Transfer
Enkeleda Dervishi, Eric Auchter, Justin Marquez, Garrison Stevens, Nan Li, Quinn McCulloch, Chris Sheehan, Rebecca Chamberlin, Stephen Yarbro
- 860 Piezopotential-Driven Efficient Piezocatalytic Activity By Single- and Few-Layered MoSe₂ Nanoflowers
Yun-Jung Chung, Jyh-Ming Wu
- 861 Exfoliated Vanadium Dichalcogenides (VS₂, VSe₂, VTe₂) By Lithium Intercalation Exhibit Dramatically Different Properties from Their Bulk Counterparts
Yong Wang, Zdeněk Sofer, Jan Luxa, Martin Pumera
- 862 Thin and Uniform Atomic Layer Deposited ZrO₂ Film on Functionalization Graphene
Jeong Woo Shin, Myung Hoon Kang, Seongkook Oh, Byung Chan Yang, Chan Hyung Park, Hyo-Sok Ahn, Tae Hoon Lee, Jihwan An
- 863 Synthesis of Optically Uniform Single Layer WS₂ for Tunable Photoluminescence
Juhong Park, Minsu Kim, Eunho Cha, Jeongyong Kim, Wonbong Choi
- 864 Anionengineered Molybdenum Disulfide Thin Film/p-Type Si Heterojunction Photocathode for Efficient Hydrogen Evolution Reaction
Kyounghoon Choi, Cheolho Jeon, Ki Chang Kwon, Seokhoon Choi, Joohee Lee, Kootak Hong, Woonbae Son, Younghye Kim, Seungwu Han, Soo Young Kim, Ho Won Jang
- 865 Fabrication of Flexible Optoelectronic Devices Based on MoS₂/Graphene Hybrid Patterns By a Soft Lithographic Patterning Method
Ki-Seok An, Min-A Kang, Wooseok Song, Sung Myung, Sun Sook Lee, Jongsun Lim, Yi Rang Lim
- 866 CVD MoS₂ Transistor Circuit for Organic Light-Emitting Diode
Hyeokjae Kwon, Han Sol Lee, Seongil Im
- 867 Flexible Graphite a Novel Platform for SERS Detection and Outstanding EMI Shielding
Nagaraju Sykam, Naidu Dhanpal Jayram, G Mohan Rao

- 868 Enhancing Light Emission Efficiency without Color Change in Post-Transition Metal Chalcogenides
Can Ataca, Jeffrey C Grossman, Sefaattin Tongay
- 869 (Invited) Resonance Raman Spectroscopy in New 2D Materials
Marcos A Pimenta
- 870 (Invited) Directing Interlayer Photocurrent Dynamics By Twisting and Stacking Van Der Waals Materials
Matt W Graham
- 871 (Invited) Aggregation-Induced Emission in Lamellar Solids of Colloidal Perovskite Quantum Wells
Jakub Jagielski, Sudhir Kumar, Chih-Jen Shih
- 872 Conductivity Mapping in Graphene through Scattering-Type Scanning Near-Field Optical Microscopy in the Mid-Infrared and Terahertz Spectral Region with 25nm Spatial Resolution
Nicolai F. Hartmann, Tobias Gokus, Max Eisele, Andreas J. Huber
- 873 (Invited) 2D Nanosheet Optics and (Opto-)Electronics
Thomas Mueller
- 874 (Invited) Out-of-Plane Polarization of 2D Layers
Hanyu Zhu, Xiang Zhang
- 875 (Invited) Exploring Exciton Physics in Liquid-Exfoliated 2D Materials
Farnia Rashvand, Kevin Synnatschke, Alexey Chernikov, Jonathan N Coleman, Claudia Backes
- 876 Phase Instability and Thermal Properties of Multilayered Vanadium Diselenide: DAC-Based High Pressure Studies
Karuna kara Mishra, T.R Ravindran, K.K. Pandey, Ram Katiyar
- 877 Photovoltage Optimization of Si Devices with a Fluorinated Graphene Interfacial Layer
Annelise C. Thompson, Nathan S Lewis
- 878 (Invited) Improving Conducting and Insulating Interfaces to 2D Materials
Aaron D Franklin
- 879 (Invited) Hot Electron Cooling in a Zener-Klein Graphene on BN Transistor: The Role of Hyperbolic Polaritons
Wei Yang, Emmanuel Baudin, Simon Berthou, Bernard Placais, Christophe Voisin
- 880 (Invited) Vertical Transport through Multi-Layer Van Der Waals Structures
Joerg Appenzeller
- 881 Metal Semiconductor Field Effect Transistors with Conducting NbS₂/n-MoS₂ Van Der Waals Schottky Junction and Graphene Contact
Hyung Gon Shin, June Yeong Lim, Sam Park, Seongil Im
- 882 Charges, Defects and Interfaces in Two-Dimensional Materials and Devices
Yuanyue Liu
- 883 (Invited) Quasi-Two-Dimensional Thermoelectricity in SnSe
Thomas Szkopek, Guillaume Gervais, Alexander Grueneis
- 884 (Invited) Theory and Device Concepts of Novel Electronic, Optoelectronic, and Topological 2D Materials
Xiaofeng Qian
- 885 Electric Double Layer Doping of WSe₂ Field-Effect Transistors Using a Monolayer Electrolyte
Jierui Liang, Ke Xu, Susan Fullerton
- 886 Simulation and Analysis of Phosphorene Nanoribbon Field Effect Transistors Using Non-Equilibrium Green's Function Formalism
Hojjatollah Sarvari, Chaoyuan Liu, Z. Chen, Rahim Ghayour
- 887 Hybrid PN Diode and CMOS Inverters Composed of MoTe₂ Nanosheet-Amorphous in-Ga-Zn-O Thin Film
Han Sol Lee, Hyeokjae Kwon, Seongil Im

- 888 Colloidal, Nanoelectronic State Machines Based on 2D Materials for Aerosolizable Electronics
Volodymyr Koman, Pingwei Liu, Daichi Kozawa, Albert Tianxiang Liu, Anton Cottrill, Michael S Strano
- 889 (Invited) 3D Circuitry and Folding with 2D Crystals
Jiwoong Park
- 890 (Invited) 2D MoS₂ Film Logic Devices: Challenges and Solutions Through Molecular Functionalization
César Javier Lockhart de la Rosa
- 891 (Invited) Autoperforation of 2D Materials for Generating Two Terminal Memresistive Janus Particles
Pingwei Liu, Albert Tianxiang Liu, Daichi Kozawa, Juyao Dong, Max Saccone, Volodymyr Koman, Song Wang, Youngwoo Son, Min Hao Wong, Michael S Strano
- 892 (Invited) 2D Semiconductors in Large-Area Flexible Opto/Electronics
Thomas D Anthopoulos
- 893 (Invited) Emerging Two-Dimensional Materials for Electronic and Photonic Device Applications
Han Wang
- 894 (Invited) 2D and 2D/3D hybrid Photodetectors
Max Christian Lemme
- 895 (Invited) 2D Materials Heterostructures for Electronic Applications
Gianluca Fiori
- 896 (Invited) Atomristor: Universal Non-Volatile Resistance Switching in Monolayer Atomic Sheets of Transition Metal Dichalcogenides
Ruijing Ge, Xiaohan Wu, Myungsoo Kim, Jack Lee, Deji Akinwande
- 897 (Invited) 2D Diffusion Barriers for Ultra-Scaled Interconnect Technology
Chun-Li Lo, Shengjiao Zhang, Zhihong Chen
- 898 (Invited) All-Carbon Interconnects - from 1D to 3D
Cary Y Yang
- 899 (Invited) 2D Semiconductor Electronics: Advances, Challenges and Opportunities
Ali Javey
- 900 Ammonia Sensing Using Transfer-Free in Situ CCVD Grown Nanocrystalline Graphene Field Effect Transistors
Dennis Noll, Philipp Hönicke, Burkhard Beckhoff, Udo Schwalke
- 901 Measurement of Two Dimensional Van Der Waals Materials' Bandgap Using Ambipolar Field Effect Transistor with Graphene Contact and hBN Passivation
Sam Park, June Yeong Lim, Jongtae Ahn, Seongil Im

B07-Inorganic/Organic Nanohybrids for Energy Conversion

- 902 Inorganic/Organic Nanohybrid Materials for Photovoltaic Applications
Alexander E. Kobryn
- 903 Correlation of Band Electronic Structure to Efficiency in Perovskite Solar Cells with Vanadium Oxide Buffers
Kiryung Eom, Il-han Yoo, Hoseong Han, Hyungtak Seo
- 904 (Invited) Lead-Free Perovskite Solar Cells Based on Various Contact Electrodes
Eric Wei-Guang Diau
- 905 (Invited) Colloidal Pb-Free Perovskite Nanocrystals for Optoelectronic Energy Applications
Angshuman Nag
- 906 (Invited) Exploitation of Nanomaterials and Interfacial Engineering in Perovskite Solar Cells
Hyun Suk Jung
- 907 (Invited) Impacts of Nanostructures and Interfaces on Perovskite Solar Cell Performance

Guozhong Cao

- 908 Effect of Iodide Treatment on the Photovoltaic Performance of Mixed Halide Perovskite Solar Cells
Prashant V Kamat, Geetha Balakrishna, Steven Kobosko
- 909 High Photovoltage Sequential Series Multijunction Dye-Sensitized Solar Cells (SSM-DSCs)
Hammad Cheema, Jared H. Delcamp
- 910 (Invited) Linker Group Effects of Linearly Pi-Extended Porphyrins for Solar Energy Conversion
Yi Hu, R.G. Waruna Jinadasa, Shivaraj Yellappa, Whitney Webre, Michael Thomas, Francis D'Souza, Hong Wang
- 911 (Invited) Efficient Dyes with Unexpected Colors for Dye-Sensitized Solar Cells
Ching-Yao Lin
- 912 (Invited) Time Resolved EPR Study on Photoinduced Charge-Transfer Trap States in Thiophene-Thiazolothiazole Copolymers Films
Yasuhiro Kobori, Yuta Yamamoto, Takumi Aki, Hiroki Nagashima, Takashi Tachikawa, Itaru Osaka
- 913 (Invited) Amphiphilic Block Copolymers and Their Hybrids for Efficient Aqueous-Processed Solar Cells
Christine Luscombe, Junhuan Li
- 914 (Invited) Improved Interfaces in Multilayered Organic-Inorganic Hybrid Solar Cells with π -Conjugated Polymers-Antimony Sulfide-Strontium Titanate-Titanium Oxide
Mayumi Yukawa, Akinobu Hayakawa, Takashi Sagawa
- 915 Growth of Hybrid Metal-Organic Perovskites with Controlled Crystal Orientation
Sehmus Ozden, Aditya D. Mohite
- 916 Fullerene Derivatives As Electron Transporting Materials for Perovskite Solar Cells
Olivia Fernandez-Delgado, Edison Castro, Chengbo Tian, Carolina Ruiz, Luis Echegoyen
- 917 Fabrication and Characterization of Cesium-Doped Mixed Cation Perovskite Solar Cells Using Anti-Solvent Spin-Coating Method
Hojjatollah Sarvari, Zongbiao Ye, Feng Wang, Somin Park, Kenneth Graham, Shibin Li, Zhi David Chen
- 918 Additives for TiO₂ Modifications: A Case Study of Dye-Sensitized Solar Cells
Hammad Cheema
- 919 A Novel Catalyst for Electroreduction of CO₂ to Ethanol
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- 920 Low Molecular Mass Organogelators As Additives in Liquid Electrolyte Dye Sensitized Solar Cells
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- 921 (Invited) Ag-Loaded Hydroxide-Modified Solid-State Photocatalysts for Photocatalytic Reduction of CO₂ by H₂O as an Electron Donor
Kentaro Teramura
- 922 (Invited) Controlling Carrier Dynamics in Mesoscale Quantum Dot Assemblies: From Efficient Solar Cells to Ultrafast Photodetectors
Istvan Robel
- 923 (Invited) Influence of Nanoscale Surface Structure of TiO₂ Single Crystal Electrode on Water Photooxidation Reaction Process
Akihito Imanishi
- 924 (Invited) Nanostructured Conjugated Polymers As Promising Electrodes for Li-Ion Batteries
Qichun Zhang
- 925 (Invited) Plasmon-Induced Photocurrent Generation for Exploring the Near-Field of Strongly Coupled Plasmonic Systems
Kosei Ueno, Jingchun Guo, Xu Shi, Tomoya Oshikiri, Hiroaki Misawa

- 926 (Invited) Near Infrared Plasmon-Induced Charge Separation in Heterostructured Nanoparticles
Toshiharu Teranishi
- 927 (Invited) Controlling Energy Flow in Plasmonic Photocatalysis through the Design of Hybrid Plasmonic Nanostructures
Suljo Linic
- 928 (Invited) Quantum Confinement Controls Effective Band Gap, Photocatalytic H₂ Evolution and Photovoltage in CdSe Nanocrystals
Frank E. Osterloh, Jing Zhao, Michael A. Holmes, Benjamin A Nail
- 929 (Invited) Precision Synthesis of Subnanoparticles Using a Dendrimer Reactor
Kimihisa Yamamoto
- 930 (Invited) Probing Charge Density and Surface Chemistry of Nanostructured Electrodes Using Single-Particle Spectro-Electrochemistry
Stephan Link
- 931 (Invited) Reaction Site Analysis for Plasmon-Induced Charge Separation
Tetsu Tatsuma, Hiroyasu Nishi, Koichiro Saito, Takuya Ishida, Kun-Che Kao
- 932 (Invited) Carbon Nanotube and Porphyrins: Materials for Optics and Energy Applications
Manel Hanana, Géraud Delport, Stéphane Le Gac, Christophe Voisin, Bruno Jousset, Bernard Boitrel, Jean-Sébastien Lauret, Stéphane Campidelli
- 933 Electrochemical Control of Plasmonic Metal Nanogap for Ultra-Small Light Confinement
Shunpei Oikawa, Hiro Minamimoto, Kei Murakoshi
- 934 (Invited) Assembling Different Functional Molecules into Multifunctional, Crystalline, Molecular Solids
Christof Wöll
- 935 (Invited) Multielectron Oxygen Reduction in Photocatalytic Organics Decomposition By Nano/Micrometer-Sized Hierarchical Structured Bismuth Tungstate Particles
Bunsho Ohtani, Haruna Hori, Mai Takase, Mai Takashima
- 936 (Invited) Light-Driven H₂ Generation Using 1D and 2D Multicomponent Semiconductor/Catalyst Nanoheterostructures
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- 937 Solid-Surface Modification with Two-Dimensionally Ordered Oriented Molecular Films
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- 938 (Invited) Circularly Polarized Luminescence from Planar Chiral Molecules Based on [2.2]Paracyclophane
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- 939 (Invited) Strongly Antiaromatic Porphyrins with Singlet Biradical Character
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- 940 (Invited) Structural and Photophysical Properties of Pentacene-Based Self-Assembled Monolayers on Gold Nanomaterials
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- 941 (Invited) Synthesis and Redox Property of Sumanenyl Trication
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- 942 (Invited) Luminescent Mechanochromic Gold Complex Exhibiting Phase Transition Between Crystalline Phases
Tomohiro Seki
- 943 Electrophoretic Co-Deposition of Graphene/Metal Oxide Platelets for Composite Electrode Fabrication
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- 944 (Invited) Effect of Substrate-Metal Interaction on the Oxygen Reduction Reactivity at Pt-Ni Nanoframe

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Yu Katayama, Yang Shao-Horn
- 946 (Invited) Boron Nitride Nanosheets Decorated with Small Gold Nanoparticles (~ 5 nm) of Narrow Size Distribution on Gold Substrate As an Efficient Electrocatalyst for Oxygen Reduction to Water
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- 947 Electrochemical Reduction of Carbon Dioxide with Nitrogen-Doped Copper Nanoparticles
Shutang Chen, Gugang Chen
- 948 (Invited) Fabrication of Ordered Semiconductor Nanostructures for Energy Conversion Based on Anodization Processes
Hideki Masuda, Toshiaki Kondo, Takashi Yanagishita
- 949 (Invited) Controlling the Properties of Colloidal Quantum Dots for Energy Conversion Applications
Matthew C Beard
- 950 (Invited) Acceleration of Electrocatalytic Reaction By Photoexciting Localized Surface Plasmon of Octahedral Au@Pt Core-Shell Nanoparticles
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- 951 (Invited) Fast CO₂ Sorption Kinetics Using Nanowire Based Materials
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- 952 Sensitization of p-Gap Photocathodes
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- 953 Organic Photovoltaic Switches Using DBP/C₆₀ Cells and Blue Light to Trigger Logic and Amplifier Electronics
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- 954 (Invited) Nanoscale Electrocrystallization: A Site-Selective Electrochemical π -Figuration of Nanocrystals for Electronic Devices
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- 955 (Invited) A Role of Graphene Fabricated on Surfaces of Metal Halide Perovskite Compounds. A First-Principles Study
Manabu Sugimoto
- 956 (Invited) Configuration of Organic Conjugated Molecular/Polymer Systems at the Interfaces and Under High Pressure: Non-Contact Assessment By Microwave Electrical Conductivity Measurements
Shu Seki
- 957 (Invited) Thermoelectric Properties of π -Conjugated Polymers in Ionic-Liquid-Gated Transistors
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- 958 (Invited) Full Atomistic Kinetic Monte Carlo with Direct Counting Approach for Ion Dynamics in Electrochemical Cells
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- 1002 Formation of Hydrogen-Bonded Supramolecular Hetero-Triads with a Diprotonated Porphyrin
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- 1005 Supramolecular Chemistry of Cobalt-Corrins
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- 1006 Encoding Polymers with Information. A Supramolecular Porphyrin Approach
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1025 Nanowire-Templated Three-Dimensional out-of-Plane Fuzzy Graphene As Thin Film Supercapacitor

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1026 Composites of Carbon Nanotubes and Graphene for Energy Conversion and Wearable Sensing

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1027 Catalytically Graphitized Nanostructured Carbon Xerogels As High Performance Anode Material for Lithium Ion Battery

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1028 Expanding the Potential Window of Aqueous Hybrid Supercapacitors with Electrostatically Sprayed Manganese Oxide Composite Cathodes

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1031 Micro-Molded Glassy Carbon Electrodes for High Throughput Dielectrophoresis

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1032 Fabrication of SU-8 Based Three-Dimensional Carbon Microelectrodes Array As Anode Material for Lithium Ion Batteries

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1033 Enhanced Bioelectrocatalytic Reduction of O₂ By Laccase Using an Ethanol-Induced Immobilization on Nitrogen-Rich Carbon Nanofibers

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1034 Fabrication of Lightweight 3D Complex Shapes of Cellular Carbonaceous Material

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1035 A Novel Approach for the Sustainable Synthesis of Carbon Fibers Using Light Induced Dielectrophoresis of Bacteria

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1036 Bacterial Cellulose Derived Carbon Nanofibers As High Capacity Anode for Lithium-Ion Batteries

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- 1039 3D Printing of Carbides Using Renewable Resources
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- 1040 Assessing the Importance of Crease Parameters and Infiltration in Creating Miura-Ori Tungsten Carbide Parts
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- 1048 Microbial Corrosion Assessment of Ag-Doped Hybrid Coatings in a Microbial Fuel Cells System
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- 1053 Long-Term Behavior of Carbon Steel in Alkaline Nitrate Solutions Related to Radioactive Waste Storage
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- 1054 Dissolution Behaviors of Dual Phase Steel during Pickling
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- 1055 Effect of Magnetic Field on Anodic Dissolution and Pitting of Iron in a Molybdenum Nitrate Solution with

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- 1056 Anodic Polarization Behavior of Zn in Aqueous $MgCl_2$ Solutions
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- 1058 Electrochemical Monitoring of Degradation Process of Galvanized Steels in Atmospheric Environments
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- 1059 EIS of Zinc Under Thin Solution Films with Various Thicknesses Analyzed By a Transmission Line Equivalent Circuit
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- 1060 Galvanic Corrosion of Mild Steel Under Iron Sulfide Layers
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- 1070 Effect of Si-Addition in Stainless Steel on Surface Oxidation in High Temperature Water Environments
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- 1072 Corrosion Monitoring and Inhibition of Buried Pipes in a Nuclear Power Plant Using a FEM Method or Mixed Inhibitors
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- 1074 Effect of Pad Type on Passivation Film Formation Relevant to Copper Chemical Mechanical Planarization
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- 1075 The Effect of Grain Size on the Corrosion Behavior of Mg-RE Alloy ZE10A
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- 1076 Corrosion Characteristics and Workability of Cold Rolled Ti-4Mo-X (1, 2, 3, 4 Cr or V) Ternary Alloys
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- 1077 Mechanistic Study of Zr Based Nano-Anti-Corrosion Surface Pretreatment
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- 1078 Mechanism and Kinetics of Goethite Dissolution in Water By First-Principles Simulations
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- 1079 Electrochemical Corrosion Studies of Molybdenum Disulfide, Boron Nitride, and Tungsten Disulfide– Coated Stainless Steel
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- 1080 A Computational Approach to Understand Corrosion Under an Externally Applied Magnetic Field
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- 1081 The Corrosion Behavior of a Fully Homogenized Equimolar Co-Cr-Fe-Ni-Mn and Co-Cr-Fe-Ni-Al High Entropy Alloys in Sulfuric Acid and Saline Solutions
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Michael A. Fusco, Christopher J. Oldham, Gregory N. Parsons
- 1088 Investigation of Protective Coatings for Bronze Using Combined Techniques
Angelja Kjara Surca, Mohor Mihelčič, Ervin Šest, Ivan Jerman, Miran Gaberscek, Gabriella Di Carlo, Chiara Giuliani, Martina Salzano de Luna, Marino Lavorgna
- 1089 Electrochemical Investigation of the Role of Alkaline Pretreatment in Anticorrosion Performance of Silicone-Epoxy Coatings on 2024 Al-Alloy
Xin Yuan
- 1090 Anticorrosive Coating Based on Glycerol and Polyurethane Organic-Inorganic Hybrids
Alvaro Guimarães Braz, Sandra Helena Pulcinelli, Celso Valentim Santilli
- 1091 Hybrid Silicone-Epoxy Coating Reinforced with Silanized Graphene Oxide Nanosheets with Improved Anti-Corrosion Performance
Xia Chen, Zhufeng Yue, Xin Yuan, Shifeng Wen, Ziqiang Liu, Tao Feng
- 1092 Innovative Routes for the Fabrication of Advanced Multifunctional Protective Coatings with Combined

Improved Barrier, Smart Active Feedback, Self-Repairing, and Antimicrobial Properties for Materials Protection

Demian Ifeanyi Njoku, Miaomiao Cui, Baihua Shang, Ying Li

1093 A Novel Inhibitor for L921A alloy Steel in a 3.5 % NaCl Solution

Xingyue Yong, Zhenglin Chen, Lin Zhou, Lin Jiang, Rihui Chen

1094 Investigation of Pit Initiations on Copper during Anodic Polarization By Real-Time Surface Observation System with Channel Flow Double Electrode

Yoshinao Hoshi, Tomohiko Oda, Isao Shitanda, Masayuki Itagaki

1095 Techniques for in-Situ Liquid Cell TEM of Aluminum Localized Corrosion

David Duquette, Ainsley Pinkowitz, Robert Hull

1096 Terahertz Spectrum Measurement of Corrosion Products on Coated Steel Sheet Surface

Ryo Hasegawa, Takashi Kimura, Tadao Tanabe, Katsuhiro Nishihara, Akira Taniyama, Yutaka Oyama

1097 Improving the Relative Calculations of Volta Potential Differences Acquired from Scanning Kelvin Probe Force Microscopy (SKPFM) By Comparing Inert Standards to First-Principle Calculations

Corey Efaw, Thiago da Silva, Paul Davis, Lan Li, Michael Hurley

1098 A New and Cheap Methodology to Study Tridimensionally Pitting Corrosion in Stainless Steel

Dyovani Coelho, Oscar Cuadros Linares, Aloadir Oliveira, Marcos Andrade Jr., Emerson Rios, Alexandro Mendes Zimer, Lucia Helena Mascaro, Joao do Espirito Santo Batista Neto, Odemir Martinez Bruno, Ernesto Chaves Pereira

1099 Reactive Molecular Dynamics Modeling of Chloride-Induced Depassivation of Iron Passive Film in Alkaline Media

Hossein DorMohammad, Qin Pang, Líney Árnadóttir, O. Burkan Isgor

1100 Density Functional Theory Study of the Interactions of Cl and α -Fe₂O₃ Surfaces: The Role of Cl in the Depassivation Process

Qin Pang, Hossein DorMohammad, O. Burkan Isgor, Líney Árnadóttir

1101 Anodic Oxidation of Bismuth Towards Various Nanostructures

Hanna Sopha, Jan M. Macak

1102 Impedance Analysis of Ti-Based Porous Alloy

Mamié Sancy, Carolina Guerra, Daniela Silva, Magdalena Walczak, Claudio Aguilar

1103 Microstructure and Corrosion Behavior of Fe-Cr-Ni-Co-Mn High Entropy Alloys

Jun-Kai Chang, Kuo-Min Hsu, Chao-Sung Lin

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1104 (Invited) High Temperature Corrosion of Chromia-Forming Alloys By CO₂: Effects of H₂O and so₂

Yun Xie, Chun Yu, Thuan Dinh Nguyen, Jianqiang Zhang, David John Young

1105 Alloy Corrosion in Direct-Fired CO₂ Power Cycle Environments

Richard P. Oleksak, Joseph H. Tylczak, Gordon R. Holcomb, Ömer N. Doğan

1106 The Effect of Nickel Alloy Chromium Content in Indirect-Fired CO₂ Power Cycle Environments

Gordon R. Holcomb, Richard P. Oleksak, Casey S. Carney, Joseph H. Tylczak, Ömer N. Doğan

1107 Mesoscale Modeling of Inelastic Deformation and Stress in High Temperature Oxidation of Metals

Tian-Le Cheng, You-Hai Wen, Jeffrey A. Hawk

1108 Utilizing the FeCrAl Alloys Oxidation Properties in Water, Air, and Steam

Raul B. Rebak, Vipul K. Gupta

1109 Oxide Stability in High-Temperature High-Velocity Steam

E. Opila

1110 Corrosion Mechanisms of a Turbine Blade from Shipboard Engine Service

Kevin J. Meisner, Elizabeth J. Opila

- 1111 Influence of Ni and Cu on Oxide-Scale Structure of Steel
Aya Harashima, Yasumitsu Kondo
- 1112 Thermal Oxidation-Induced Self-Healing on Yttrium Silicate Composites Dispersed with Silicon Carbides
Makoto Nanko, Huy Dinh Vu
- 1113 Pt-Rh Alloy Corrosion By Phosphorous Diffusion
Anna Nakano, Jinichiro Nakano, James P Bennett, John Morral
- 1114 (Invited) Corrosion in Concentrating Solar Power Applications
Judith C Vidal
- 1115 Testing and Evaluating of Structural Materials for CSP Applications
Madjid Sarvghad, Geoffrey Will, Theodore A Steinberg
- 1116 Understanding Corrosion of Ni-Cr Alloys in Molten Chloride Salts
Stephen S Raiman, Jake McMurray, Richard Mayes, Carter Abney, James Keiser, Bruce Pint
- 1117 Oxidation Characteristics of Nano-Oxide Dispersed Ferritic Stainless Steel Alloys for Solid Oxide Fuel Cell Interconnects
Muhammad Taqi Mehran, Rak-Hyun Song, Tak-Hyoung Lim, Seung-Bok Lee, Jong-Eun Hong
- 1118 (Invited) Chromia Semiconducting Properties Study: A Textbook Case?
Laurence Latu-Romain, Yohan Parsa, Yves Wouters
- 1119 New Insights into Thermal Chromia Growth on Fe18Cr(10Ni) Model Alloys at 900°C: Scaling Kinetics and Microstructures
Michael Hänsel, Vladimir Shemet, Torsten Markus
- 1120 Auxiliary Electrodes for Chromium Vapor Sensors
Jeffrey Fergus, Moaiz Shahzad, Tommy Britt
- 1121 Surface Pretreatment of Alumina Forming Alloys and Its Implication on Cr Evaporation
Ashish N Aphale, Lakshmi Ravi Narayan, Boxun Hu, Amit Pandey, Prabhakar Singh
- 1122 Hydrogen Interaction Properties of Cr₂O₃ Passive Films upon Helium Ions Irradiation
Yunhan Ling, Dehui Wu, Zhiyuan Xin
- 1123 Investigation of Surface Interactions between Volatile Chromium Species and Ceramics
Greg Tatar, Paul Gannon, Spencer Dansereau, Emily Remington
- 1124 Electrochemical Studies of Hydrogen in LiF-BeF₂ (FLiBe)
Francesco Carotti, Huali Wu, Ertai Liu, Bonita Goh, Raluca Olga Scarlat
- 1125 Hydrothermal Corrosion of SiC and FeCrAl for Accident Tolerant Fuel Cladding
Stephen S Raiman, Peter Doyle, Kurt Terrani, Raul B. Rebak
- 1126 Long-Term Corrosion Testing of Inconel Alloy 625 in Molten LiCl-Li₂O-Li
William Phillips, Dev Chidambaram
- 1127 Electrodeposited Inconel and Stellite like Coatings for Improved Corrosion Resistance in Biocombustors
Timothy D Hall, Santosh H. Vijapur, Dan Wang, E. J. Taylor, Maria Inman, Stephen Snyder, Michael Brady
- 1128 (Invited) Developing Environmental Barrier Coatings Resistant to Molten Calcium-Magnesium-Aluminosilicate (CMAS)
Valerie L Wiesner, Bryan J Harder, Anita Garg, Narottam P Bansal
- 1129 The Influence of Aluminum Nitrate Pre-Treatment on High Temperature Oxidation Resistance of Dip-Coated Silica Coating on Galvanized Steel
Tzu-Chin Yang, Jun-Kai Chang, Chao-Sung Lin
- 1130 EBSD Study of 55 Wt.% Al-Zn Coating and Its Corrosion Behavior Effected By Austenitization Heat

Treatment

Jun-Kai Chang, Tzu-Chin Yang, Chao-Sung Lin

- 1131 Hot Corrosion Behavior of Multilayered Titanium Aluminum Carbide/Yttria-Stabilized Zirconia Coatings for Silicon Carbide
Madisen McCreary, Roberta Amendola, Zoe Benedict, James L. Smialek
- 1132 Thermal, High and Low Cycle Fatigue Life of 80 Micron Thick Graded Alumina PVD Coatings for Oxidation Resistance Application
Thulasi Raman K H
- 1133 Formation Process and Stability of Co-W Oxide from an Electroplated Co-W Alloy Coating at 1000 °C for Cr-Based Steels
LU Gan, Hideyuki Murakami, Isao Saeki
- 1134 Low Cost Corrosion and Oxidation Resistance Coatings for Improved System Reliability
Jing Xu, Timothy D Hall, Stephen Snyder, Maria Inman, E. J. Taylor, Ying Zhang
- 1135 Effect of the Composition of Co-W Oxide Conversion Layer on the Cr-Diffusion Barrier Property for SOFC Interconnect
Isao Saeki, LU Gan, Hideyuki Murakami
- 1136 (Invited) High-Temperature Behaviors of MXenes
Mykola Serebych, Mohamed Alhabeb, Babak Anasori, Yury Gogotsi
- 1137 Novel Approach to the Formation of Carbide-Derived Carbons Using NH₄Cl
Emily Remington, Spencer Dansereau, Devin McGlamery, Greg Tatar, Nicholas Stadie, Paul Gannon
- 1138 Development of an Advanced Knudsen Effusion Mass Spectrometer for Measurements of Vapor Pressures and Determination of Basic Thermodynamic Data
Torsten Markus, David Henriques
- 1139 Electrolytic Reduction of Cerium Oxide
David Rodriguez, Marisa Monreal, Matt Jackson, Kirk Weisbrod
- 1140 Masking Contaminant-Induced SOFC Anode Degradation with H₂
Kyle W. Reeping, Jessica M. Bohn, Robert A. Walker
- 1141 The Mechanisms of Spinel/Solid Solution Formation and Wear in Gasification High Chrome Oxide Refractories Caused By Carbon Feedstock Impurities
James P Bennett, Kyei-Sing Kwong, Jinichiro Nakano, Anna Nakano, William Nealley
- 1142 Real-Time Analysis on Structural Variations of Alumina-Supported Cu/Fe Spinel and Natural Hematite Particles in Cyclic Redox Environments
Jinichiro Nakano, William Nealley, Anna Nakano, James P Bennett

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- 1143 (Invited) Optical Properties of All-Inorganic Perovskite Nanocrystals
Tom Gregorkiewicz
- 1144 High Stable Perovskite-Quantum-Dot Using Ligand Engineering for Liquid-Crystals-Display Applications
Ji-Eun Lee, Seung-Jae Lee, Yun-Hyuk Ko, Prabhakaran Prem, Kwang-Sup Lee, Jea-Gun Park
- 1145 Color Pure Green and Blue Electroluminescence Using Colloidal Quantum Confined Perovskites
Jakub Jagielski, Sudhir Kumar, Chih-Jen Shih
- 1146 (Invited) Photo- and Cathodo-Luminescence of InAs_xP_(1-x)/InP Quantum Well Structures Under the Effects of Low-Energy Ion Bombardment
Jean-Pierre Landesman, Christophe Levallois, Juan Jiménez, Alfredo Torres, Merwan Mokhtari
- 1147 (Invited) Light on EuO_x Nanostructured Films

Antonio Mariscal, Rosalia Serna

- 1148 (Invited) In Situ Accurate Analysis of Colloidal Nanoparticles via Four Wave Mixing
Reuven Gordon
- 1149 “White” Photoluminescence of Carbon Nanoclusters Dispersed in Fumed Silica
A. V. Vasin, D. V. Kysil, L. Lajaunie, G. Yu. Rudko, Vladimir Sergeevitch Lysenko, S. V. Sevostianov, V. A. Tertykh, Yu. P. Piryatinski, M. Cannas, L. Vaccaro, R. Arenal, A. N. Nazarov
- 1150 (Invited) Controlling Optical Properties of Semiconductor Nanocrystals: Chiral Quantum Dots and Luminescent Solar Concentrators
Vivian E. Ferry
- 1151 (Invited) One-Pot Syntheses of Polymer/Cd Chalcogenide Hybrids for Optoelectronic Applications
Christine Luscombe
- 1152 (Invited) Advanced Semiconductor Hetero-Nanocrystals for Lasing
Burak Guzelturk, Hilmi Volkan Demir
- 1153 (Invited) Optical Phenomena in Bio-Assembled Nanostructures with Plasmonic and Excitonic Resonances
Alexander O. Govorov
- 1154 Carbon Dots Based Fluorescence Nanoprobe for Cell Imaging and Single Particle Tracking
Yang Song, Dan Du, Yuehe Lin
- 1155 (Invited) Excitation Mechanism of Rare Earth Ions in Silicon Rich Hosts
Leandro R. Tessler
- 1156 (Invited) Naked Eye Blue Emission in Ce³⁺ Codoped SiO_xN_y: Toward Si-Based Light-Emitting Devices
Florian Ehre, Christian Dufour, Fabrice Gourbilleau, Xavier Portier, Cédric Frilay, Philippe Marie, Hervé Rinnert, Julien Cardin, Delphine Lagarde, Xavier Marie, Wojciech Jadwisienczak, David C. Ingram, Christine Labrugère, Christophe Labbé
- 1157 (Invited) Luminescent Rare Earth Doped Nanoparticles
Fiorenzo Vetrone
- 1158 (Invited) Size Controlled Silicon Quantum Dots: A Model System for Understanding the Physics of Indirect Quantum Dots
Sebastian Gutsch, Julian López-Vidrier, Daniel Hiller, Margit Zacharias
- 1159 (Invited) RF Pump-Probe Modulation Spectroscopy of Silicon Nanocrystals: Determination of the Carrier Dynamics and Quantum Efficiency
Iain F Crowe, Matthew P Halsall
- 1160 (Invited) All-Inorganic Water-Dispersible Silicon Quantum Dots
Minoru Fujii, Hiroshi Sugimoto, Shinya Kano
- 1161 Influence on the Porous Silicon Photoluminescence By Magnetic Nanostructures
Petra Granitzer, Klemens Rumpf, Peter Poelt, Michael Reissner
- 1162 Progress in Light Emission from Silicon and Germanium Nanostructures
David J Lockwood
- 1163 Effects of the Heat Treatment on the Photoluminescence Properties for La_{1-x}Pr_xVO₄ Phosphor Prepared by a Hydrothermal Method
Hao-Long Chen, Mu-Tsun Tsai, Sheng - Joue Young, Yee-Shin Chang
- 1164 (Invited) Light Management for Engineering Luminescence in Nanoscale Environments By Numerical Optimization
Philipp-Immanuel Schneider, Xavier Garcia-Santiago, Felix Binkowski, Philipp Gutsche, Theresa Hoehne, Martin Hammerschmidt, Lin Zschiedrich, Sven Burger
- 1165 (Invited) High-Index Dielectric Nanoantennas for Light Management, Nonlinear Optics, and Controlled

Photoluminescence of Quantum Emitters

Peter R. Wiecha, Aurélien Cuche, Christian Girard, Arnaud Arbouet, Vincent Paillard

- 1166 Enhancement of SSE-LED Light Emission By Embedding CdS in Zr-Doped HfO₂ High-K Film
Shumao Zhang, Yue Kuo
- 1167 (Invited) Light Emitting Nanomaterials with Light Detection, Biosensing and Memristive Properties
Blas Garrido
- 1168 A Method to Improve Quantum Efficiency of Phosphors in the Submicron Size Regime Using a Flux for Solid State Lighting Applications
Jungmin Ha, Ekaterina Novitskaya, Gustavo Hirata, Chenhui Zhou, Robyn Ridley, Olivia A Graeve, Zhenbin Wang, Shyue Ping Ong, Joanna McKittrick
- 1169 (Invited) Semiconductor Nanowires for Optoelectronics Applications
Chennupati Jagadish, Leigh M. Smith, Howard E. Jackson
- 1170 (Invited) AlGaN Nanowire Deep Ultraviolet Photonics
Zetian Mi
- 1171 (Invited) Emission from Strained Germanium Nanocrystals
Nelson L. Rowell, David J. Lockwood
- 1172 (Invited) Strain Assisted Band Gap Engineering of SiGe Core–Shell Nanowires using Low-Temperature Condensation Process
Isabelle Berbezier, Thomas David, Antoine Ronda, Luc Favre, Marc Gailhanou, Pascal Gentile, Denis Buttard, Vincent Calvo, Michele Amato, Jean-Noël Aqua
- 1173 (Invited) Silicon Photonics Based on Ge/SiGe Quantum Well (QW) Structures and Ge-Rich Materials for Near-IR and Mid-IR
Joan Manel Ramirez, Vladyslav Vakarin, Papichaya Chaisakul, Samuel Serna, Qiankun Liu, Jacopo Frigerio, Andrea Ballabio, Xavier Le Roux, Laurent Vivien, Giovanni Isella, Eric Cassan, Nicolas Dubreuil, Delphine Marris-Morini
- 1174 (Invited) CMOS-Compatible Germanium Light Sources
Kentarou Sawano, Xuejun Xu, Takuya Maruizumi

D02-Plasma and Thermal Processes for Materials Modification, Synthesis, and Processing 2

- 1175 (Invited) Plasma Biofilm Decontamination: What Happens to the Underlying Surface?
James Leon Walsh, Martina Modic, Janez Kovac, Mohammad Hasan, Uros Cvelbar
- 1176 (Invited) Atmospheric Pressure Plasma and Depositions of Antibacterial Coatings
Martina Modic, Anton Nikiforov, Christophe Leys, Iryna Kuchakova, Mike De Vrieze, Milena Petrovska, Andrea Zille, Gheorghe Dinescu, Bogdana Mitu, Uros Cvelbar
- 1177 (Invited) Diagnosing Turbulent Reactive Flow in Non-Equilibrium Plasma Liquid Systems
Stephan Reuter, Arthur Dogariu, Ben Goldberg, Jan Schäfer, Mikhail Shneider, Andrey Starikowskiy, Klaus-Dieter Weltmann, Yibin Zhang, Richard B Miles
- 1178 (Invited) Low Pressure and Atmospheric Pressure Plasma Interactions with Molten Metals and Liquid Droplets for Materials Processing
Mahendra Kumar Sunkara, Daniel Felipe Jaramillo-Cabanzo, Babajide Ajayi
- 1179 (Invited) Building Graphene Nanowalls with Plasma: Processing, Functionalization, and Challenges
Uros Cvelbar, Neelakandan Marath Santhosh, Gregor Filipič
- 1180 (Invited) Fundamentals and Applications of Directional and Isotropic Atomic Layer Etching
Vahid Vahedi, Thorsten Lill
- 1181 (Invited) Beyond the Highs and Lows: A Selectively Colorful Yet Chilly Perspective on the Future of Dielectrics in Nanoelectronic Devices

Sean W. King

1182 Effect of Cu, Ni Seeds on the Formation of Uniform Ag Layer on PET Film Via Atmospheric Pressure Plasma Reduction

Hyo-Jun Oh, Van-Duong Dao, Ho-Suk Choi

1183 UV Assisted Densification of Perhydropolysilazane (PHPS) Based Spin-on Glass in High Aspect Ratio Gap Fill Structure

Sanjay Mehta, Haifeng Sheng, Rishikesh Krishnan, Bala Haran, Tao Han, Marc Berardi, Zeynel Bayindir, Brett Yatzor, Jinping Liu, Joseph Shepard, Stephan Grunow

1184 Effect of Cathodic Current on the Microstructure and Characteristics of Micro-Arc Oxidation Ceramic Coatings on 7075 Aluminum Alloy

Ting-Yi Wang, Hsin-Chih Lin

1185 Reaction Mechanisms of Halogenated Silanes on N-Rich Surfaces during Atomic Layer Deposition of Silicon Nitride

Gregory Peter Hartmann, Peter Venzek, Toshihiko Iwao, Kiyotaka Ishibashi, Gyeong S Hwang

1186 Internal Photoemission Spectroscopy Measurements of the Energy Barrier Heights between ALD Dielectrics and Ta-Based Amorphous Metals

Melanie A. Jenkins, Tyler Klarr, John M. McGlone, John F. Wager, John F. Conley

1187 Characterization of Low-Temperature Atomic Layer Deposited Cobalt Oxide

Konner Eric Kurt Holden, Melanie A. Jenkins, John F. Conley

1188 Properties of Annealed ALD Ru from Ru(DMBD)(CO)₃ and Oxygen

Michael Howard Hayes, John F. Conley

1189 Optical and Electrical Properties of ECR-PECVD Grown SiCN Thin Films

Aysegul Abdelal, Zahra Khatami, Peter Mascher

1190 Versatile Duplex Electrochemical Sensor for the Detection of CO₂ and Relative Humidity Using Room Temperature Ionic Liquid

Ashlesha Bhide, Badrinath Jagannath, Edward Graef, Shalini Prasad

1191 Atomic Layer Deposition of ZnO and Doped ZnO As Alternative Transparent Conducting Oxides for Photovoltaics

Louise P Ryan, Adrian Walsh, Melissa M. McCarthy, Scott Monaghan, M Modreanu, Cosmin Romanitan, Odette Chaix-Pluchery, S O'Brien, Martyn E Pemble, Ian M Povey

1192 A-Si Planarization By Inductively Coupled Plasma Etch with Advanced Process Control

Yan Wang, Dongping Zhang, Haiyang Zhang

1193 Plasma Etch Variation Control in Double Patterning Based Metal Hard Mask Open Process

Shijing Wang, Da-Lin Yao, Jing-Yong Huang, Min-Da Hu, Ke-Fang Yuan, Yan Wang, Jun-Qing Zhou, Qi-Yang He, Haiyang Zhang

1194 Synthesis and Evaluation of Naphthalene Anhydride Fluorescence Dichroic Liquid Crystal Dye

Xiaolian Li

E01-Electrodeposition of Micro and Nano Materials for Batteries and Sensors

1195 (Invited) Reactions or No Reaction: Lithium Deposition on the Surface of Solid State Electrolyte

Jie Xiao, Bingbin Wu, Shanyu Wang, Joshua Andrew Lochala, David Desrochers, Jihui Yang

1196 Electrochemical Fabrication of Freestanding Thin-Film Electrodes for Batteries and Catalysis

Yang Yang

1197 Electrodeposited Transition Metal Oxides As Separate Electrodes for Rechargeable Zinc-Air Batteries

Ming Xiong, Matthew Labbe, Na Li, Douglas G Ivey

1198 New Approaches to Dynamic Windows Based on Metal Electrodeposition and Dissolution

Christopher J. Barile, Shakirul M. Islam, Jose S. Juarez-Rolon, Christine Fini, Troy Hull, Riley Kessinger, Kevin Preciado, Geoffrey Kirk A. Alcaraz

- 1199 (Invited) Advanced Aqueous Electrolytes for Li-ion Batteries
Chunsheng Wang, Kang Xu
- 1200 Electroless Encapsulation of C-Cloth with Sn and Sn-Cu Alloy for Li-Ion Battery Anode
Venroy George Watson, Egwu Eric Kalu, Yaw D. Yeboah, Mark H. Weatherspoon, Jim P Zheng
- 1201 Electrophoretic Deposition of Electrode Membrane for Solid Oxide Fuel Cells
Yoshiteru Itagaki, Hidenori Yahiro
- 1202 Electrodeposition of Pure Phase Sn₂S₃ As Anode Material for Lithium- and Sodium- Ion Batteries
Jeffrey Ma, Amy L. Prieto
- 1203 Dielectric Polymers Prepared By Electropolymerizing of Nitrile-Based Anions
Tavo Romann, Erik Anderson, Enn Lust
- 1204 Structure Stability of Electrodeposited Au-Cu Alloy Micro-Cantilever Evaluated By Long-Term Vibration Test for Applications As Movable Components in MEMS Devices
Kyotaro Nitta, Koichiro Tachibana, Haochun Tang, Chun-Yi Chen, Tso-Fu Mark Chang, Daisuke Yamane, Toshifumi Konishi, Katsuyuki Machida, Kazuya Masu, Masato Sone
- 1205 (Invited) Electrochemical Manufacturing and Characterisation of Nanostructured Electrodes for Lithium Based Batteries
David Rehlund, Charlotte Ihrfors, Leif Nyholm
- 1206 Encapsulation of Aluminium and Titanium-Aluminium Nanorods into Oxide Matrix By Powerful Pulsed Discharge Method
Mario G. S. Ferreira, Mikhail Zheludkevich, Aleksey Lisenkov
- 1207 Influence of Growth Mechanism and Potential Cycling on the Active Surface Area of Electrodeposited Highly Porous Pt Nanoparticles
Annick Hubin, Jon Ustarroz, Bart Geboes, Sara Bals, Tom Breugelmans
- 1208 Electrodeposition to Form Nanoporous Gold at Microdisc Electrode Arrays for Electrochemical Sensing Applications
James F. Rohan, Lorraine C Nagle, Fiona Barry
- 1209 (Invited) Electrochemical Synthesis of Nanostructured Materials Using Ionic Liquids for Metal-Ion Batteries
Abhishek Lahiri, Frank Endres
- 1210 Interconnected Nickel Nanowires – the Missing Link between Metallic High Surface Area Catalysts and High Porosity Foams
Stanislaw Piotr Zankowski, Philippe M. Vereecken
- 1211 Controlled Superlattice Assembly – a Step Towards Superlattice Devices
Yixuan Yu, Dian Yu, Christine A. Orme
- 1212 Electrochemical Liquid Liquid Solid Growth of Group IV Nanowires and Microwires for Recharge Battery Anode Applications
Stephen Maldonado
- 1213 Electrodeposition of Adherent MnO₂ Films with Optimized Current Collector Interface for 3D Li-Ion Electrodes
Philippe M. Vereecken, Marina Y. Timmermans, Felix Mattelaer, Nouha Labyedh, Stanislaw Piotr Zankowski, Christophe Detavernier
- 1214 (Invited) Thin Film Processing for Innovative Solid State Lithium Batteries
Sami Oukassi, Hélène Porthault, Steve Martin, Messaoud Bedjaoui, Raphaël Salot
- 1215 ALD Al₂O₃ Coating of Self-Organized TiO₂ Nanotubes As High Performance Anodes for Lithium Ion Batteries

Thierry Djenizian, Jan M. Macak, Hanna Sopha, Girish Salián

- 1216 (Invited) Atomic Layer Deposition for Interface Engineering of (Thin-Film) Lithium-Ion Battery
Felix Mattelaer, Marina Y. Timmermans, Philippe M. Vereecken, Jolien Dendooven, Christophe Detavernier
- 1217 (Invited) Electrochemically Synthesized High Density Chemical Sensor Arrays
Nosang Vincent Myung
- 1218 Novel Electrochemical Sensor Concept for the Detection of Lead Contamination in Drinking Water
Xinyu Liu, Kailash Venkatraman, Rohan Akolkar
- 1219 Completely Aqueous Route for Metallization of Structural Polymeric Materials in Micro-Electro-Mechanical Systems
Xuan Tuan Le, Jean-Sébastien Poirier, Sébastien Michel
- 1220 (Invited) Synthesis and Electromagnetic Properties of Square-Symmetry π -Conjugated Phthalocyanato Metal-Organic Frameworks
Ivo Stassen, Mircea Dincă

E02-Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth

- 1221 (Keynote) Surfactant and Halide Control in Gold Nanorod Synthesis
Catherine Murphy
- 1222 (Invited) The Role of Pyridine Derivatives in the Formation of Anisotropic Gold Nanoparticles
Ian James Burgess
- 1223 Gold Deposition Using Accelerating Adsorbates: From Superfill and Smoothing to Nanowire Growth
Daniel Josell, Thomas P. Moffat
- 1224 (Invited) Electrochemical Growth Mediated By Nanocluster Aggregation
Jon Ustarroz
- 1225 (Invited) Tracking Hydrodynamic Signatures of Metal Nucleation Events Via Lateral Molecular Force Microscopy
David Fermin, Daniela Plana, Robert Harniman, Mervyn Miles
- 1226 (Invited) Pb UPD ML As Universal Surfactant for Electrochemical Thin Film Growth
Stanko Brankovic, Dongjun Wu, Yezdi Dordi, Aniruddha Joi
- 1227 (Keynote) Surface Capping and the Shape Evolution of Colloidal Metal Nanocrystals
Yunan Xia
- 1228 Determining the Facet-Selective Electrochemistry That Drives Anisotropic Growth of Cu Nanowires
Benjamin J. Wiley, Myung Jun Kim, Samuel Alvarez
- 1229 (Invited) On-Colloid Lithography: Surface Chemistry Guided Metal Deposition in Hotspots
Jill E. Millstone
- 1230 Atomic Layer Deposition Using Self-Terminated Electrodeposition Reactions
Thomas P. Moffat, Yihua Liu, Sang Hyun Ahn, Nicole L. Ritzert, Rongyue Wang, Eleanor Gillette, Dincer Gokcen, Carlos Hangarter, Haiyan Tan, Leonid Bendersky, Hoydoo You, Ugo Bertocci
- 1231 Morphology Matters: Additive-Assisted Metal Foam Deposition for the Electrochemical CO₂ Conversion
Abhijit Dutta, Motiar Rahaman, Carina Morstein, Nicolas Schlegel, Peter Broekmann
- 1232 (Invited) Operando Video Microscopy of Lithium Metal Anodes: From Dendrite Nucleation to Cell Failure
Neil P. Dasgupta
- 1233 (Invited) Manipulation of Structure and Morphology of Solid-Electrolyte Interphase Layer for High-Performance Li Metal Batteries
Donghai Wang

- 1234 (Invited) Guided Growth and Smooth Deposition of Lithium Metal Film through Electrolyte Strategy
Wu Xu, Fei Ding, Yaohui Zhang, Jiangfeng Qian, Xiaodi Ren, Xing Li, Ji-Guang Zhang
- 1235 (Invited) Ultrathin Polymer Electrode Coatings to Stabilize Electrochemical Interfaces in Lithium-Ion Batteries
Rachel E. Carter, Joseph F. Parker, Megan B. Sassin, Jeffrey W. Long, Corey T Love
- 1236 (Invited) One Step Synthesis of Li-Alkyl Carbonates and Their Applications As Coatings on Li Anode
Haodong Liu, Hongyao Zhou, Xing Xing, Qizhang Yan, Byoung-Sun Lee, Hee-Dae Lim, Matthew Gonzalez, Ping Liu
- 1237 (Invited) Electrodeposition in Li in Non-Aqueous Solution
Yasuhiro Fukunaka, Takayuki Homma, Tetsuo Nishida, Kei Nishikawa
- 1238 Stabilization of Electrodeposit in Soluble Lead Flow Batteries with Acetate Additive
Hsun-Yi Chen, Hao-Lun Tang, Chun-Yen Lee, Yan-Ting Lin
- 1239 (Invited) Observing the Overgrowth of a Second Metal on Silver Cubic Seeds in Solution By Surface-Enhanced Raman Scattering
Dong Qin, Yun Zhang, Yiren Wu
- 1240 Shape Control of Electrochemically Deposited Metal Films and Nanostructures through Additive Effects
Gary W. Leach, Sasan V. Grayli, Yunyu J. Han
- 1241 Molecular-Level Analysis of Surface Species for Electrochemical Deposition Processes Using Density Functional Theory Calculations and Surface Enhanced Raman Microscopy with Plasmonic Sensors
Takayuki Homma, Masahiro Kunimoto, Morten Bertz, Masahiro Yanagisawa
- 1242 Morphological Control in Solution-Deposited Silver Nanoplatelet Films
Alexander Vaskevich, Falk Muench, Ifat Kaplan-Ashiri, Israel Rubinstein
- 1243 (Invited) Superconformal Filling of through Glass Holes for Application in Glass Interposers
Nikolay Dimitrov
- 1244 Annealing-Free Copper Foil Due to Ultra-Large Grain Sizes after Electroplating
Wei-Ping Dow, Po-Fan Chan
- 1245 Copper Plated through-Holes for 3D Electro-Thermal Systems
Stefanie Taushanoff, Val M Dubin, Andrea Wallace, H. Alan Mantooth
- 1246 A Deeper Look at Bottom-up Copper Deposition in High Aspect Ratio through Silicon Vias
Daniel Josell, Manoj Silva, Jonah Kildon, Thomas P. Moffat
- 1247 Physico-Chemical Properties of Lead Dioxide Based Composites
Olesia Shmychkova, Valentina Knysh, Tatiana Luk'yanenko, Alexander Velichenko
- 1248 Cupric Oxide Thin Films for Optoelectronic Application
Sanjay Kumar, Sudhir Saralch, Dinesh Pathak
- 1249 Electrolytic Deposition of Cisplatin on Magnesium for Biomedical Applications
Min Chen Tsai, Yu-Liang Lai, Shin- Ru Hsu, Shiow Kang Yen
- 1250 Fabrication of Cu-Ag Film By Electrodeposition in Ammonia-Based Electrolyte
Youngkeun Jeon, Myung Jun Kim, Seunghoe Choe, Hoe Chul Kim, Jae Jeong Kim
- 1251 (Invited) Additives in Cu Plating for Microelectronics Applications
Aleksandar Radisic, Frances M Ross, Karel P Haesevoets, Herbert Struyf, Philippe M. Vereecken
- 1252 (Invited) Chain Length Variation to Probe Mechanism of Accelerator Additives in Copper Electrodeposition
Andrew A Gewirth, Ralf Schmidt, Kevin Gary Schmitt, Ryan Rooney
- 1253 Superconformal Cu Electrodeposition: Seiras and STM Study of the Polyether-SPS-Cl System
Guokun Liu, Shouzhong Zou, Liang Yueh Ou Yang, Daniel Josell, Lee Richter, Thomas P. Moffat
- 1254 Copper Electroplating with Polyethylene Glycol and Chloride: Modeling, Experimental Analysis and Parameter Determination
Hongliu Yang, Robert Krause, Christin Scheunert, Romy Liske, Benjamin Uhlig, Axel Preusse, Arezoo Dianat,

Manfred Bobeth, Gianauelio Cuniberti

- 1255 Observation of Additive Behavior in Copper Electroplating Using Microfluidic Device
Mineyoshi Tomie, Takanori Akita, Ryo Ikuta, Masanori Hayase
- 1256 Exploiting the Spatial Homogeneity of Adlayer Breakdown on Microelectrodes to Develop a Kinetic Model for S-NDR Copper Electrodeposition
Trevor M Braun, Thomas P. Moffat
- 1257 Surface Morphology of Copper Pulse Deposition in a Controlled Environment Using Microfluidic Device
Ryoma Kawazoe, Akira Yamauchi, Masanori Hayase
- 1258 Electrodeposition of Nickel Nanostructures from Deep Eutectic Solvent / Water Mixtures
El Amine Mernissi Cherigui, Kadir Sentosun, Sara Bals, Herman Terry, Jon Ustarroz
- 1259 Spatial Chemical Analysis of Electrodeposited Metal Films By Femtosecond Laser Ablation Ionization Mass Spectrometry
Pavel Moreno-García, Valentine Grimaudo, Andreas Riedo, Alena Cedeño López, Reto Wiesendanger, Marek Tulej, Cynthia Gruber, Emanuel Lörtscher, Peter Wurz, Peter Broekmann
- 1260 Electrolyte and Electrode Design for Dynamic Windows Based on Reversible Metal Electrodeposition
Michael Strand, Tyler Hernandez, Dan Slotcavage, Christopher J. Barile, Michael D. McGehee
- 1261 The Effect of Pulsed Current and Organic Additives on the Hydrogen Incorporation in Electroformed Copper Used in High Vacuum Applications
Lucia Lain Amador, Jason Rolet, Marie-Laure Doche, Pau Massuti Ballester, Marie-Pierre Gigandet, Virginie Moutarlier, Mauro Taborelli, Leonel M.A. Ferreira, Paolo Chiggiato, Jean-Yves Hihn
- 1262 (Invited) Adsorbate and Impurity Effects during Co Deposition and Planarization for MOL Contact and Beol Metallization
James Kelly, Vimal Kamineni, Xuan Lin, Yong Liang, Hari Amanapu, Brown Peethala, Mark Raymond, Bala Haran
- 1263 Influence of Pulse Current Sequences and Organic Additives on pH Measured By Local Methods
Jason Rolet, Bruno Vuillemin, Marie-Pierre Gigandet, Christine Gleyzes, Jean-Yves Hihn
- 1264 CuNi Alloy Electrodeposition for Microbumps Using Benzotriazole
Karel P Haesevoets, Aleksandar Radisic, Philippe M. Vereecken
- 1265 Influence of Applied Potential, Water Content and Forced Convection on the Electrodeposition of Ni Films on Steel from Choline Chloride Based Deep Eutectic Solvents
Monika Łukaczyńska, Krista Van den Bergh, Joost De Strycker, Herman Terry, Jon Ustarroz
- 1266 Effects of Microstructure of Nickel Electrodeposits on the Growth of Tin-Nickel Intermetallic Compound and Joint Reliability
MiSeok Park, TaeSeon Ryu, SunSoo Lee, KangSoo Kim, HyukSang Kwon
- 1267 Tailoring the Surface Morphology and Microstructure of Electrodeposited Copper Foil with Organic Additives
Chun-Cheng Lin, Chi-Chang Hu
- 1268 Multivalent Metal Ions As Efficient Reducing Agents for Electroless Metal Deposition Processes
Eugenijus Norkus, Loreta Tamasauskaitė-Tamasiunaite

F01-Industrial Electrochemistry and Electrochemical Engineering General Session

- 1269 High-Throughput Electrosynthesis with Flow-through Electrodes Made from Cu Nanowires
Benjamin J. Wiley, Myung Jun Kim, Feichen Yang
- 1270 Cell and Electrode Development for the Hydrogen Peroxide Production Via Partial Oxygen Reduction Reaction
Carsten Cremers, Jan O Meier, Karsten Pinkwart, Jens Tübke
- 1271 Electrolytic Processing of Kraft Black Liquor- Mass Transfer Investigation

- Jean-Noël Cloutier, Jean Paris, Oumarou Savadogo, Michel Perrier, Raynald Labrecque, Pascal Champagne*
- 1272 Alternative Solution Additives for the Sustainable Electrolytic Production of Sodium Chlorate
Balazs Endrodi, Staffan Sandin, Aleksandra Stojanovic, Nina Simic, Mats Wildlock, Ann Cornell
- 1273 Dissolution Induced Self-Selective Zn- and Ru-Doped TiO₂ Structure for Electrochemical Generation of KClO₃
Raj Ganesh Pala, Koshal Kishor, Sulay Saha
- 1274 Design of an Electrocatalytic Flow Reactor for the Electrosynthetic Aldol Reaction of Acetone
Tom Breugelmans, Danny Pauwels, Jonas Hereijgers
- 1275 Influence of Ni on the Activity of Co-Mo Electrocatalyst for Ethanol Oxidation
Egwu Eric Kalu, Wasu Chaitree
- 1276 Electrochemical Activity of Non-Noble Metal Alloy as Catalyst Towards Oxidation of Glycerol in Acidic Media: A Case for the Conceptual Glycerol/Ferric Redox Flow Battery
Egwu Eric Kalu, James Akraasi, Yaw D. Yeboah
- 1277 The Design and Construction of Integrated Si-Based Proton Exchange Membrane Fuel Cells (PEMFCs) with Improved Performances
Jing Li
- 1278 Synthesis of Active Bimetallic Catalysts for Direct Methanol Fuel Cells
Bahareh Alsadat Tavakoli Mehrabadi, Rembert D. White, John R. Regalbuto, John W. Weidner, John R. Monnier
- 1279 Electrochemistry of Iodide in LiCl-KCl Molten Salts and Anionic Chemla Effect: An Overview
Nikunja Shrestha, Brandon Day, Vivek Utgikar, Krishnan S. Raja, Guy Fredrickson, Steven Frank
- 1280 Carbon Deposition Diagnostics for Reliability and State-of-Health Assessment of SOFC
Alexandra Ploner, Anke Hagen, Anne Hauch
- 1281 Impact of Size, Shape and Location of Reference Electrodes on Measuring Anode Potential
Sun Ung Kim, Vikram Pande, Venkatasubramanian Viswanathan, Jake Christensen
- 1282 Prediction of Ce(III) Electrodeposition at Various Electrochemical Conditions in Molten LiCl-KCl Eutectic
Young Taek Jee, Jong-Il Yun
- 1283 Development of Advanced Electrokinetic Process for Brackish Water Desalination
Shu-Yuan Pan, Seth Snyder, Yupo Lin, Po-Chih Tseng, Pen-Chi Chiang
- 1284 Selective Ion Removal from Water Using Flow-through Electrode Capacitive Deionization (ftecDI)
Patrick G. Campbell, Steven A Hawks, Maira R. Cerón, Tuan Anh Pham, Patrick Shea, Brandon C. Wood, Michael Stadermann
- 1285 Disinfection of Seawater and Its Neutralization Using Seawater Battery
Jeong-Sun Park, Jehee Park, Soo Min Hwang, Youngsik Kim
- 1286 Next Generation Water Recovery for a Sustainable Closed Loop Living
Dan Wang, Santosh H. Vijapur, Timothy D Hall, E. J. Taylor, Stephen Snyder, Carlos R Cabrera
- 1287 Performance of Treatment of Oil-Sands Produced Water By Electrocoagulation
Tianpei Shu, Behzad Fuladpanjeh-Hojaghan, Nael Yasri, Michael Nightingale, Milana Trifkovic, Edward P.L. Roberts
- 1288 Progress in the Development of Prototypes for Phosphatic Clay Electrokinetic Dewatering
Arthur Dizon, Mark E Orazem
- 1289 In-Situ De-Aeration Towards Performance Stability of Capacitive Deionization Cells
Landon Caudill, A. Omosebi, X. Gao, James Landon, K. Liu
- 1290 Long-Term Evaluation of Modified Activated Carbon Electrodes for Capacitive Deionization
Adrian Serrano Mora, David P. Wilkinson, Madjid Mohseni
- 1291 Electrochemical Reduction of Greenhouse Gas with Couette-Taylor Flow (CTF) Mixer

Seungyeon Baek, Hyeonsu Kim, Kwang Hwan Kim, Insoo Choi, Oh Sung Kwon, Oh Joong Kwon, Jae Jeong Kim

1292 Effect of Impurities in Precious Metal Recovery By Electrodeposition-Redox Replacement Method from Industrial Side-Streams and Process Streams

Kirsi Yliniemi, Petteri Halli, Ivan Korolev, Zulin Wang, Pyry Hannula, Mari Lundström

1293 Selective Metalization of Non-Conductive Materials By Macropatterning of Catalytic Particles and the Application of a Gradient Magnetic Field

Sofya Danilova, John Edward Graves, Eva Pellicer, Jordi Sort, Andrew J Coble

1294 Measurements and Simulations of Lithium Isotopes Concentration Fluxes during Electrolytic Lithium -7 Enrichment

Prashant Sarswat, Michael L Free, Zongliang Zhang

1295 Electrochemical Removal of Copper from Regenerated Pickling Solutions of Steel Plants

Esra Karakaya, Mustafa Serdal Aras, Metehan Erdogan, Sedef Karagul, Merve Ersoy, Ishak Karakaya

1296 Alkaline Plating and Striping of Metal-Amine Complexes for Amine Regeneration in Gas Scrubbing Processes

Miao Wang, Subrahmaniam Bharadwaj Hariharan, Michael Edward Massen-Hane, Ryan Shaw, T. Alan Hatton

1297 Pressure Influence on Acoustic Cavitation Phenomenon in Ionic Liquids: Electrochemical Study

Bouid Naidji, Loic Hallez, Abdeslam Et Taouil, Michel Rebetz, Jean-Yves Hihn

1298 Ordered Three Dimensional Electrodes for Enhanced Mass Transfer

Jonas Hereijgers, Jonas Lölsberg, Matthias Wessling, Tom Breugelmanns

1299 Anode Materials for Sulfide Oxidation in Alkaline Wastewater: An Activity and Stability Performance Comparison

Eleftheria Ntagia, Erika Fiset, Ligia da Silva Lima, Xu Zhang, Adriaan W. Jeremiase, Korneel Rabaey

1300 Electrosynthesis of Near-Neutral Ferrate Species for Drinking Water Treatment Using a Recirculating Batch Reactor

Arman Bonakdarpour, Macarena Cataldo, Madjid Mohseni, David P. Wilkinson

1301 A Comparative Study on Electrochemical Treatment of Wastewater By Using BDD Electrodes with Different Sizes of Crystals

Bin Yang, Zhongjian Li

1302 Electrochemical Decontamination Process an Effective Alternative to Treat Textile Effluents

Sajjad Hussain, Abdur Rehman Gohar, Abbas Ali Khan, Muhammad Bilal, Qazi Ahmad

1303 Enhanced Performance of Compact Electrolytic Cells through Optimization of Cell Structures and Components to Produce Chemicals from Brine for Use in Sequestration of Carbon Dioxide

Heung Yong Ha, Jaewon Kim, Su-Ryeon Park, Ki Bong Lee

1304 Quantifying the Trade-Offs between Energy Consumption and Salt Removal in Membrane-Free Cation Intercalation Desalination

Sizhe Liu, Kyle Christopher Smith

1305 Optimization of Mechanical Properties of Nickel-Cobalt Coatings from Sulphamate Baths

Esra Karakaya, Mertcan Başkan, Metehan Erdogan, Ishak Karakaya

1306 Carbonization Temperature As a Key Factor for Ultrahigh Performance Activated Carbon from Polyaniline for Capacitive Deionization

Rafael Linzmeyer Zornitta, Francisco Guilherme E. Nogueira, Luis Augusto Martins Ruotolo

1307 Profiled Anode Supported Solid Oxide Fuel Cells for Low Cost Stacks for Stationary Applications

Ryszard Kluczowski, Adam Swieca, Michal Kawalec, Jakub Kupecki, Mariusz Krauz, Yevgeniy Naumovich, Marcin Blesznowski, Agnieszka Zurawska, Marek Skrzyplikiewicz, Konrad Motylinski

1308 Blackwater Disinfection Using Potentiodynamic Methods and Surface-Modified Electrochemical Packed Bed Electrode Materials

James O. Thostenson, Rayane Mourouvin, Carlos Hangarter, Edgard Ngaboyamahina, Brian T. Hawkins, Katelyn L.

Sellgren, Carolyn Rossman, Charles B. Parker, Marc A. Deshusses, Brian R. Stoner, Jeffrey T. Glass

- 1309 Electrochemical Behavior of Chalcopyrite Electrode and Morphological Characterization in Acid Salt Solution
Riberto Nunes Peres, Cecilio Sadao Fugivara, Patricia Hatsue Suegama, Denise Bevilaqua, Assis Vicente Benedetti
- 1310 From the Lab to Scaling-up: Case Studies of Electrodeposition Processes in the Photovoltaic Industry
Pierre Philippe Grand, Salvador Jaime, Cedric Broussillou, Aurelien Duchatelet, Cécile Molto, Anne-Marie Gonçalves, Etienne Drahi, Lubomyr Romankiw, Hariklia (Lili) Deligianni, Daniel Lincot
- 1311 Electrochemical Behaviour of Iron in Molten Oxides
William David Judge, Gisele Azimi
- 1312 In Situ TEM Observation of Dynamic Switching Behaviors in Vrram
Min-Ci Wu, Jui-Yuan Chen, Wen-Wei Wu
- 1313 Electrochemical Formation of Dy Alloys in a Molten CaCl₂-LiCl System
Hirokazu Konishi, Hang Hua, Hideki Ono, Tetsuo Oishi, Kouji Yasuda, Toshiyuki Nohira
- 1314 Observing Electrochemical Switching Behaviors in Crossbar Core-Shell Ni/NiO Nanowires Memristor
Yi-Hsin Ting, Jui-Yuan Chen, Chun-Wei Huang, Ting-Kai Huang, Cheng-Yu Hsieh, Wen-Wei Wu
- 1315 An Electrochemical Quartz Crystal Microbalance Investigation of Manganese Oxide Deposition and Dissolution in Sulfuric Acid Relevant for Zinc Electrowinning
Siri Marie Skaftun, Svein Sunde, Geir Martin Haarberg, Frode Seland
- 1316 Reversible Electrochemical Mirror Devices Using Room Temperature Ionic Liquid Electrolyte
Holly Garich, Timothy D Hall, Maria Inman, E. J. Taylor, Thomas Peng, James Davis, Richard O'Brien, D. Morgan Tench
- 1317 Reduction of Tortuosity in Porous Electrodes through Macropore Patterning
Erik Richard Reale, Kyle Christopher Smith
- 1318 Tunability of the Photogenerated Charge Carrier Density on Semiconductors By in-Situ Electrochemical Treatments
Xu Liu, Jesús Díaz Real, Walter Mérida
- 1319 Mechanism of Initial Film Formation during Cathodic Electrodeposition of Coatings
Fardin Padash, John N. Harb
- 1320 Microfabrication and Functionalization of an Aluminum Gas-Phase Micro-Reactor via Through-Mask Electrochemical Micromachining
Tobias Baldhoff, Volker Nock, Aaron Timothy Marshall
- 1321 Electrochemical Surface Finishing of Additively Manufactured Parts
Timothy D Hall, Holly Garich, Stephen Snyder, E. J. Taylor
- 1322 Multiphysics Modeling of Surface Finishing Performance in Pulsed-Waveform Electrochemical Machining
Brian Skinn, Timothy D Hall, Stephen Snyder, E. J. Taylor

F02-Multiscale Modeling, Simulation and Design – From Conventional Methods to the Latest in Data Science

- 1323 (Invited) Stochastics in Energy Storage: Interface to Microstructure
Partha P. Mukherjee, Aashutosh N Mistry, Kandler Smith
- 1324 A Machine Learning Based Computational Protocol for Rapid Screening of Carbon Based Materials for Lithium Ion Battery Applications
Seung Soon Jang, Parveen Sood
- 1325 Is There Room for Theory in Data Science? Encoding Physics into Machine Learning Algorithms
Neal Dawson-Elli, Venkat R. Subramanian
- 1326 Efficient Simulation of Novel Electrode Architectures
Akshay Subramaniam, Taejin Jang, Yanbo Qi, Ping Liu, Venkat R. Subramanian

- 1327 A Reduced Order Method for Three-Dimensional Lithium-Ion Battery Simulation
Genong Li, Shaoping Li, Chuanbo Yang
- 1328 The Analytical Transport Network Model for Diffusive-Reactive Flow in 3-D Microstructural Networks: A Computationally Economical Model for Potential Use in Multi-Scale Modeling Efforts
Alex P. Cocco, Arata Nakajo, Kyle N. Grew, Wilson K. S. Chiu
- 1329 Quantum-Continuum Simulations of High Power Density Oxide Electrodes for Pseudocapacitive Energy Storage
Nathan D. Keilbart, Yasuaki Okada, Shinichi Higai, Ismaila Dabo
- 1330 Alloying Effects on Superionic Conductivity in Lithium Indium Halides for All-Solid-State Batteries
Nicole Adelstein, Alysia Zevgolis, Brandon C. Wood, Zerina Mehmedović, Alex Thomas Hall, Thomaz Coelho Alves
- 1331 Direct Estimation of Parameters from Charge-Discharge Curves of Lithium-Ion Batteries Using Pseudo-2 Dimensional (P2D) Models
Suryanarayana Kolluri, Neal Dawson-Elli, Caitlin D. Parke, Manan Pathak, Zenan Wu, Shriram Santhanagopalan, Venkat R. Subramanian
- 1332 Model - Based Design and Control of Lead-Acid Batteries: Is There Any More Juice Left in a System That Is 158 Years Old?
Akshay Subramaniam, Diptarka Majumdar, Venkat R. Subramanian
- 1333 (Invited) Modeling Glassy Electrolytes for All-Solid-State Sodium Ion Batteries
Aniruddha Dive, Clarence C King, Steve W Martin, Scott P Beckman, Soumik Banerjee
- 1334 Monte Carlo Model of Ion Conduction in Non-Arrhenius Glasses
Clarence C King, Scott P Beckman
- 1335 Thermodynamic and Kinetic Database for Hydration, Protonic Diffusion and Stability in Doped-BaHfO₃ As High-Temperature Proton Conducting Electrolyte
Lei Zhang, Meilin Liu
- 1336 Nanoconfinement for Multi-Step Reaction Cascade System
Kanchan Suklal Chavan, Scott Calabrese Barton
- 1337 Electrochemical Properties of Anatase-Type TiO₂ Nanoparticles with Different Morphology
Gergely Juhasz
- 1338 Quantum-Continuum Modeling of Pd-Au(111) Surface Alloys Under Electrochemical Conditions
Stephen Eric Weitzner, Ismaila Dabo
- 1339 Charge Transport and Stability of a Semiconductor-Solution Interface Under Electrical Bias from First Principles
Quinn Campbell, Ismaila Dabo
- 1340 Orthogonal Collocation on Finite Elements for Flow Simulation
Taejin Jang, Chintan Pathak, Venkatasailanathan Ramadesigan, Venkat R. Subramanian
- 1341 (Invited) Studies of Li Insertion in Magnetite at Multiple Length Scales
Alan C West, Christianna N Lininger, Nicholas W Brady
- 1342 (Invited) Multiscale Analysis of the Polysulfide Shuttle Effects at the Li Metal Anode and Cathode Morphology Evolution in Li-S Batteries
Perla B Balbuena, Partha P Mukherjee, Vilas G. Pol
- 1343 Optimal Graded Electrode Design of Lithium-Ion Batteries with Simultaneous Optimization Approach
Yanbo Qi, Taejin Jang, Venkatasailanathan Ramadesigan, Daniel T. Schwartz, Venkat R. Subramanian
- 1344 (Invited) How to Deal with Electrode Heterogeneity in Cell-Level Battery Modeling
Dean R. Wheeler
- 1345 (Invited) Modeling Battery Performance Due to Volume Change in Porous Electrodes

Taylor R Garrick, John W. Weidner

- 1346 Microstructural Principles for Porous Li-Ion Battery Electrode Designs
Abhas Deva, R. Edwin Garcia
- 1347 Modeling of Lithium Sulfur Battery with Microscopically Consistent Parameterization
Jui-Hui Chung, Hsun-Yi Chen
- 1348 Modeling Lithium Growth in Symmetric Cells
Jerry Chen, Akshay Subramaniam, Seong Beom Lee, Natalie R Geise, Robert M. Kasse, Michael F Toney, Venkat R. Subramanian
- 1349 (Invited) Analytical Methods for Understanding Multiscale Thermal Transport in Li-Ion Batteries Towards Improved Safety and Performance
Ankur Jain
- 1350 Review of Capacity Fade Models for Lithium-Ion Batteries - Numerical Implications of SEI Layer Growth
Mengdi Fan, Seong Beom Lee, Manan Pathak, Yanbo Qi, Jerry Chen, Venkat R. Subramanian
- 1351 On the Limitations of the Doyle-Fuller-Newman Model across Operating Temperatures in Predicting Lithium-Ion Battery Dynamics
Harikesh Arunachalam, Ilenia Battiato, Simona Onori
- 1352 Phase Field Modeling of Electrochemical Phenomena
Nega Alemayehu Zerihun
- 1353 A Pulse Voltammetry Analysis Toolkit for Battery and Fuel Cell Materials
Paul W. C. Northrop, James Vernon Cole
- 1354 Real-Time Impedance Simulation of Lithium-Ion Batteries with Pseudo-Two Dimensional Electrochemical Models
Manan Pathak, Matthew D. Murbach, Chintan Pathak, Taejin Jang, Yanbo Qi, Daniel T. Schwartz, Venkat R. Subramanian
- 1355 Measurement of Non-Linear Impedances and Zero Free Parameter Modeling Approach for Predicting Battery Voltages
Can Berk Uzundal, Mohammed Zabara, Burak Ulgut
- 1356 Estimation of Transport and Kinetic Parameters of Vanadium Redox Batteries Using Static Cells and Electrochemical Models
Seong Beom Lee, Harry D. Pratt III, Travis M. Anderson, Kishalay Mitra, Babu R. Chalamala, Venkat R. Subramanian
- 1357 Estimation of Transport and Kinetic Parameters of a Solid-State Lithium Battery
Caitlin D. Parke, Suryanarayana Kolluri, Venkat R. Subramanian
- 1358 (Invited) Experimentally and Theoretically Determining Reaction Pathways for the Alkaline Hydrogen Electrode and Their Implications on Catalyst Design
Maureen Han-Mei Tang, Joshua David Snyder, Saad Intikhab
- 1359 Physical-Statistical Modeling and Analyses of Catalyst Degradation in PEM Fuel Cells
Heather Ann Baroody, Drew Stolar, Michael Hermann Eikerling
- 1360 Nonlinear Impedance Spectra Analysis of CO Poisoning on PEM Fuel Cell Performance
Rajesh Pachimatla, Ramanathan Srinivasan
- 1361 A Multiscale Method for Multiphase Pore-Scale Simulation of the Polymer Electrolyte Fuel Cell Catalyst Layer
Weibo Zheng, Seung Hyun Kim
- 1362 (Invited) Multiscale Modeling of Transport Phenomena in Ion-Conducting Membranes and Aqueous CO₂ Reduction Cells
Adam Z. Weber, Andrew Robert Crothers, Meenesh Singh, Clayton J. Radke, Alexis T. Bell

1363 (Invited) Bridging Long Temporal Scales: Durability Analysis of Electrochemical Systems

Thomas F Fuller

1364 Water Phenomena in PEFCs As the Origin of the Pt Loading Effect: A Comprehensive Modelling Study

Tasleem Ahmad Muzaffar, Michael Hermann Eikerling

1365 Two Phase Flow Modeling and Characterization of Oxygen Bubbles in PEM Water Electrolysis Cells

Amin Nouri-Khorasani, Jason Tai Hong Kwan, Arman Bonakdarpour, David P. Wilkinson

1366 Thermodynamics of Bubble Nucleation

Kurian J. Vachaparambil, Kristian Etienne Einarsrud

G01-Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 8

1367 (Invited) Negative Capacitance Transistors

Sayeef Salahuddin

1368 (Invited) Extending Advanced CMOS Scaling with SiGe Channel Materials

Rick J Carter, Ryan Sporer, Dina H Triyoso, Amy Child, George Robert Mulfinger, Jeremy A Wahl, Timothy J Mcardle, George J Kluth, Jody Fronheiser, Judson Robert Holt, Kasun Punchihewa, Laks Vanamurthy, Scott Beasor, Uzma Rana, D K Sohn

1369 (Invited) Laser Annealing in CMOS Manufacturing

Oleg Gluschenkov, Hemanth Jagannathan

1370 Stress and Strain Evolution in Stacked Gate-All-Around Transistors for Sub-7nm Node Studied By Advanced Transmission Electron Microscopy Techniques and Finite Element Method Modelling

Shay Reboh, Rémi Coquand, Nicolas Loubet, Nicolas Bernier, Robin Chao, Guillaume Audoit, Jean-Luc Rouviere, Sylvain Barraud, Emmanuel Augendre, Juntao Li, Raja Muthinti, John Gaudiello, Narciso Gambacorti, Tenko Yamashita, Olivier Faynot

1371 Pinch Off Plasma Chemical Vapor Deposition Process and Material Technology for Nano-Device Air Gap/Spacer Formation

Son van Nguyen, Thomas J Haigh, Kangguo Cheng, C. Penny, Chanro Park, Sanjay C Mehta, Tenko Yamashita, Liying Jiang, Don Canaperi

1372 Characteristic Change of GeO₂ / Ge Interface By Hf-Post Metallization Annealing

Haruka Fujiwara, Yoshitaka Iwazaki, Tomo Ueno

1373 Low Temperature Growth of Germanium on Silicon Using RF-PECVD for Electronic and Optoelectronic Application

Ghada Dushaq, Ammar Nayfeh, Mahmoud Rasras

1374 Improved C-V Hysteresis and Two-States Characteristics in MIS (p) Structure with Elongated Thin Metal Gate

Chia-De Lin, Jenn-Gwo Hwu

1375 Drop-in Electrodeposition Processes for Void-Free, High Aspect Ratio Structures of Five Metals

Daniel Josell, Thomas P. Moffat

1376 Cu/Cu Barrier Interconnect with Low Resistivity for the Application to the Next-Generation and High-Resolution Display Fabricated Using Microwave-Assisted Sputter

Wooseok Jeong, Jae-chul Do, Jeong Rak Lee, Wan Woo Park, Jeongchul Shin, Sang-Hee Ko Park

1377 Electrochemical Characterization of Ruthenium Using Potassium Bromate As Oxidizer for Titania Based CMP Slurry

Kavita Yadav, Manivannan R, Noyel Victoria S

1378 (Invited) A Nonvolatile SRAM Based on Ferroelectric HfO₂ capacitor for IoT Power Management

Masaharu Kobayashi, Nozomu Ueyama, Toshiro Hiramoto

- 1379 (Invited) Beyond CMOS: Memristor and Its Application for Next Generation Storage and Computing
Chenchen Liu, Fuqiang Liu, Hai (Helen) Li
- 1380 (Invited) Enabling on-Device Learning with Deep Spiking Neural Networks for Video Classification
Nicholas Soures, Abdullah Zyarah, Dhireesha Kudithipudi
- 1381 (Invited) Complementary III-V Heterojunction Tunnel FETs Monolithically Integrated on Silicon
Clarissa Convertino, Heinz Schmid, Lukas Czornomaz, Heike Riel, Saurabh Sant, Andreas Schenk, Kirsten Moselund
- 1382 (Invited) Superconducting Qubits and Superconducting Digital Electronic Circuits on 300mm Wafers
Satyavolu S. Papa Rao, Christopher Hobbs, Stephen Olson, Neda Forouzani, Hyuncher Chong, Harlan Stamper, Brian Martinick, Dominic Ashworth, Vidya Kaushik, Kathleen A Dunn, Karsten Beckmann, Jakub Nalaskowski, Stephen Bennett, Martin Rodgers, Thomas Murray, Steven Novak, Brett Baker-O'Neal, Christopher Borst, Kevin Osborn, Michael Liehr
- 1383 (Invited) Development of Plasma Atomic Layer Etching in Close-To-Conventional Etch Tools
Mike Cooke, Andy Goodyear
- 1384 Ultra-High Sensitivity Surface Photovoltage Measurement of Heavy Metal Contamination in Silicon Wafers with Fast Metal Identification
Marshall Wilson, Alexandre Savtchouk, John D'Amico, Bret Schroyer, Dmitriy Marinskiy, Piotr Edelman, Carlos Almeida, Troy Zajac, Andrew David Findlay, Jacek Lagowski
- 1385 Increasing the Operation Voltage of Integrated Solid-State Diodes through Nanostructured Porous Silicon Technology
Lucanos M Strambini, Marco Marchesi, Marco Sambì, Fabrizio Toia, Simone Dario Mariani, Marco Morelli, Giuseppe Barillaro
- 1386 Quasi-Zero-Voltage Controlled Etching of Macropores in n-Type Silicon
Lucanos M Strambini, Chiara Cozzi, Giuseppe Barillaro
- 1387 Model Based Corona Charge - Kelvin Probe Characterization of Patterned Structures
Dmitriy Marinskiy, Jacek Lagowski
- 1388 Effect of Hydrogen on Reliability with Various Deposition Temperatures of Al₂O₃ Gate Insulator in In-Ga-Zn-O Thin Film Transistors
Kyoungwoo Park, Guk-Jin Jeon, Seung Hee Lee, Sang-Hee Ko Park
- 1389 Effect of Surface Preparation on the Residual Oxide Thickness and Material Loss of In-Ga-As Epi Layer
Jihoon Na, Sangwoo Lim
- 1390 Investigating the Elimination of Oxygen Vacancy and Nitrogen Gap in Hafnium Oxide Films Induced By Different Nitridation Process
Ying-Hsin Lu, Min-Chen Chen, Ting-Chang Chang, Yu-Shan Lin, Xi-Wen Liu
- 1391 Enhanced Non-Linearity Factor in Ferroelectric Tunnel Junction Based on HfO₂ Heterojunction
Joonbong Lee, Ho Jin Lee, Taekjib Choi
- 1392 Selfrectifying Memristor Device Based on Polarization Switching and Space Charge Distribution Via External Electric Field
Ho Jin Lee, Joonbong Lee, Taekjib Choi
- 1393 Improvement of Line Width Roughness and Line Edge Roughness for Ultrascaled FinFET Technologies
Xin Jiang, Haiyang Zhang
- 1394 The Physical Characterization of Single-Crystalline Chromium Silicide Nanowires Grown By Chemical Vapor Deposition
Han-Fu Hsu, Ping-Chen Tsai, Kuo-Chang Lu
- 1395 Reliability Characteristics of Low Dielectric Constant Materials Under Mechanical-Electrical Stress
Yi-Lung Cheng, Yao-Liang Huang, Chih-Yen Lee
- 1396 Effect of Copper Diffusion in Low Dielectric Constant Dielectrics Under Thermal Stress on Electrical and

Reliability Characteristics

Chih-Yen Lee, Wei-Yuan Chang, Yi-Lung Cheng

1397 Plasma-Based Copper Etch Process and Reliability

Baizhen Gao, Yong Gao, Yue Kuo, Tao Yuan

1398 Adjustable Silicon Corner Rounding Radius by Wet Technique

Pei-Ting Tou, Hsin-Yi Liao, Hui-Chin Huang, Kai-Yao Shih, Ming-Chen Lu

1399 Novel Method for Metal-Insulator-Metal (MIM) Plasma Etching Residue Removal

Hsin-An Chen, Pei-Ting Tou, Hui-Chin Huang, Kai-Yao Shih, Ming-Chen Lu

H01-Wide Bandgap Semiconductor Materials and Devices 19

1400 (Electronics and Photonics Division Award Address) Technological Issues and Design Rules of Electrodes for High-Efficiency GaN-Based Light-Emitting Diodes

Tae-Yeon Seong

1401 (Invited) Enhanced Light Output Power from Eu-Doped GaN Narrow-Band Red Light-Emitting Diodes By Actively Controlling Photon Fields

Yasufumi Fujiwara, Tomohiro Inaba, Keishi Shiomi, Jun Tatebayashi

1402 Influence of Size and Current Density on the Optoelectrical Properties of Green III-Nitride Micro-Light-Emitting Diodes

Dae-Hyun Kim, Tae-Yeon Seong

1403 (Invited) GaN Sensors and Electronics for Missions to Hot Planets

Mina Rais-Zadeh

1404 (Invited) Gallium Nitride Device Technology for Commercial RF Applications

Bruce Green

1405 (Invited) Passivation of High K/GaN Interfaces for GaN Tunnel FETs

Andrew Kummel, Wenjun Li, Amanda Kerr, Evgueni Chagarov, Siyuan Gu, Tobin Kaufman-Osborn, Shailesh Madiseti, Jason Wu, Peter Asbeck, Serge Oktyabrsky, Patrick Fay

1406 (Invited) Current-Induced Degradation in Bulk GaN Vertical Schottky Diodes

Matthew Porter, Robert J. Kaplar, Greg W. Pickrell, Andrew A. Allerman, Petra Specht, Todd Weatherford

1407 (Invited) Homoepitaxial GaN Growth on Free-Standing Substrates

Jennifer K Hite, Travis J Anderson, Michael A Mastro, Lunet E Luna, James C Gallagher, Charles R. Eddy

1408 (Invited) Two-Dimensional Wide Bandgap Materials for Electronic Applications

Gwan-Hyoung Lee

1409 Electrical Properties of Silicon Doped GaN Activated By Ion Implantation

James C Gallagher, Travis J Anderson, Lunet E Luna, Andrew D Koehler, Karl D. Hobart, Francis J Kub

1410 Characterization of Homoepitaxial GaN Films on Commercial GaN Substrates

Lunet E Luna, Travis J Anderson, Jennifer K Hite, Karl D. Hobart, Francis J Kub

1411 A Defect Density Profile Extraction Method for GaN Epi-Wafers

Hiroaki Kataoka, Takuya Hoshii, Iriya Muneta, Hitoshi Wakabayashi, Kazuo Tsutsui, Hiroshi Iwai, Kuniyuki Kakushima, Taiki Yamamoto

1412 XPS Study of the Chemical Surface Engineering on Ultra-Thin InAlN Layers: Evaluation of Thermal Stability to Oxygen Exposure

Yoan Bourlier, Muriel Bouttemy, Olivier Patard, Piero Gamarra, Stéphane Piotrowicz, Jackie Vigneron, Raphaël Aubry, Sylvain Delage, Arnaud Etcheberry

1413 (Invited) High Al-Content AlGa_N for Power Electronics: A Fabrication Perspective

Erica A. Douglas, Brianna Klein, Andrew A. Allerman, Andrew M. Armstrong, Robert J. Kaplar, Albert G. Baca, Jason C. Neely

- 1414 (Invited) Latest Progress on B-III-N Alloy Research and Working Principle of TMA Preflow on AlN MOVPE
Xiaohang Li
- 1415 (Invited) Process Monitoring of 100 GaN-on-Diamond Wafers
Daniel Francis, Frank Lowe
- 1416 (Invited) GaN-on-Diamond RF Transistors: The Next Generation Electronics
Martin Kuball, James W Pomeroy, Mike Uren
- 1417 (Keynote) Gallium Oxide Electronics: Beyond SiC and GaN
Masataka Higashiwaki
- 1418 (Invited) High Performance β -Ga₂O₃ Nano-Membrane Field-Effect Transistors on Sapphire Substrate with Reduced Self-Heating Effect
Hong Zhou, Kerry Maize, Jinhyun Noh, Ali Shakouri, Peide D Ye
- 1419 (Invited) Exploration of Process Techniques for Ga₂O₃ Based Electronics
Fan Ren, Stephen J. Pearton, Jiancheng Yang, Patrick Carey, Shihyun Ahn, Rohit Khanna, Kristen Bevin, Dwarakanath Geerpuram, Akito Kuramata
- 1420 (Invited) Thick, Low-Doped Homoepitaxial Ga₂O₃ for Power Electronics Applications
Marko J Tadjer, Andrew D Koehler, Nadeemullah A Mahadik, Evan Glaser, Jaime A. Freitas, Boris Feigelson, Virginia D. Wheeler, Karl D. Hobart, Francis J Kub, Akito Kuramata
- 1421 Inductively Coupled Plasma Etching and Electrically Active Damage of Bulk, Single-Crystal Ga₂O₃
Jiancheng Yang, Shihyun Ahn, Fan Ren, Stephen J. Pearton, Rohit Khanna, Kristen Bevin, Dwarakanath Geerpuram, Li-Chun Tung, Jingyu Lin, Hongxing Jiang, Akito Kuramata
- 1422 Interface State Density of Atomic Layer Deposited Al₂O₃ on Beta-Ga₂O₃
Chen Yi Su, Takuya Hoshii, Iriya Muneta, Hitoshi Wakabayashi, Kazuo Tsutsui, Hiroshi Iwai, Kuniyuki Kakushima
- 1423 Electron and Proton Irradiation Damage in β -Ga₂O₃ Vertical Rectifiers
Jiancheng Yang, Zhiting Chen, Fan Ren, Stephen J. Pearton, Gwangseok Yang, JiHyun Kim, Jonathan Lee, Elena Flitsiyana, Leonid Chernyak, Akito Kuramata
- 1424 Quasi-Two-Dimensional β -Ga₂O₃ based Hetero-Structure Transistors
Janghyuk Kim, Suhyun Kim, JiHyun Kim
- 1425 Strain Engineering and Two-Dimensional Electron Gas in Polar ϵ -Ga₂O₃
Sung Beom Cho, Rohan Mishra
- 1426 Thermal Stability of Quasi-Two-Dimensional β -Ga₂O₃ and Its Device Application
Suhyun Kim, Janghyuk Kim, JiHyun Kim
- 1427 Wide Color Gamut Deep-Blue OLED Architecture for Display Application
Deepak Kumar Dubey, Rajendra Kumar Konidena, Rohit Asok Kumar Yadav, Sujith Sudheendran Swayamprabha, K. R. Justin Thomas, Jwo Huei Jou
- 1428 Solid and Liquid State Fluorescent Sensor Using CdTe Quantum Dots for Mercury Detection
Yogesh Choudhary, Gomathi Nageswaran
- 1429 Performance Enhancement of GaN-Based Light-Emitting Diodes with Magnesium Nitride Inter-Layers
Sang-Mook KIM
- 1430 Ultraviolet Sensor Performance of Nanostructured LaCoO₃ Prepared By Solution-Polymerization Method
Carlos R Michel, Miguel Angel Lopez-Alvarez, Alma H Martinez, Carlos Alberto Rodriguez Garcia
- 1431 AlGaIn/GaN High Electron Mobility Transistors with a p-GaN Backgate Structure
Wei-Tse Lin, Wei-Chun Lin, Yi Nan Zhong, Yue-Ming Hsin
- 1432 AlGaIn/GaN High Electron Mobility Transistors with a p-Type GaN Cap Layer
Hsin-Chang Tsai, Shao-Chi Fan Chiang, Yi Nan Zhong, Yue-Ming Hsin

- 1433 Solid-State Diffusional Behaviors of Functional Metal Oxides at Atomic Scale
Jui-Yuan Chen, Chun-Wei Huang, Wen-Wei Wu
- 1434 Photoconduction Properties of Crystalline Selenium Based Photodetectors with a Lateral Metal-Insulator-Semiconductor-Insulator-Metal Device Structure
Yu-Wei Huang, Cheng-Yi Chang, Fu-Ming Pan
- 1435 Influences of Crystallization of Amorphous Se on Photovoltaic Characteristics of Crystalline Se Based Schottky Junction Solar Cells
Yi-Jie Lin, Cheng-Yi Chang, Fu-Ming Pan
- 1436 The Effect of Threading Dislocation on Current-Voltage Characteristics of 3.3kV 4H-SiC Schottky Barrier Diode
Moonkyong Na, Juyeon Keum, Jeong Hyun Moon, In Ho Kang, Wook Bahng
- 1437 Effect of Phosphor Layer Size on the Optical and Thermal Properties of Chip Scale Packaged Light-Emitting Diodes
Gyu Hyeong Bak, Sun Woo Oh, Hyun Ho Sung, Won Jung Kim, Sukbum Yoon, Hwanhee Jeong, June-O Song, Tae-Yeon Seong
- 1438 (Invited) SiC Lateral Mosfet Implemented on Semi-Insulating Substrate
Hyoung Woo Kim, Ogyun Seok, Jeong Hyun Moon, Wook Bahng
- 1439 Electrical and Material Properties Analysis of 5kV 4H-SiC Schottky Barrier Diodes
Juyeon Keum, Moonkyong Na, In Ho Kang, Wook Bahng, Bonheun Koo
- 1440 Reliability of SiC Schottky Diodes with Mo₂C Electrode
Daiki Saito, Iriya Muneta, Takuya Hoshii, Hitoshi Wakabayashi, Kazuo Tsutsui, Hiroshi Iwai, Kuniyuki Kakushima
- 1441 Effect of Wafer Orientation on Near-Interface Oxide Traps in 4H-SiC Metal-Oxide-Semiconductor Capacitors
Isanka Udayani Jayawardhena, Asanka Jayawardena, Tamara Isaacs-smith, Sarit Dhar
- 1442 (Invited) Electrochemistry of Transition Metal Oxide Based Mountable Electrochromic Devices
Biswapriya Deb, Gayathri PT Ganesh, Sajitha Surendran
- 1443 (Invited) Surface Transfer Doping: A Novel Alternative to Classical Doping in Semiconductor Electronics
Vidhya Chakrapani
- 1444 Light Element Doping Induced Phase Change of Strongly Correlated Semiconductor SmNiO₃
Derek Schwanz, Zhen Zhang, Shriram Ramanathan
- 1445 In Situ Studies of Zinc Oxide Nucleation and Growth
Dian Yu, Yixuan Yu, Suneel Kodambaka, Christine A. Orme
- 1446 Rapid Synthesis of Semipolar ZnO Nanorod Arrays on M-Sapphire by Microwave-Assisted Chemical Bath Deposition
Chia-Jung Tsai, Hien Do, Ching Chang, Kuan-An Chiu, Chen-Chih Hsiang, Li Chang
- 1447 Mapping Strain/Pressure with ZnO Nanowire Arrays By Piezotronic and Piezo-Phototronic Effect
Caofeng Pan, Rongrong Bao
- 1448 Atomic Observation of Solid-State Reaction in Fe/ZnO Bilayer
Chih-Yang Huang, Kuo-Lun Tai, Ming-Yen Lu, Wen-Wei Wu
- 1449 Quantitative Analysis of Depletion Regime Charges in a Pristine a-Igzo TFT
Md Delwar Hossain Chowdhury, Catherine Ramsdale, Richard Price, Anna Jeziorska-Chapman, Andrew J. Flewitt
- 1450 Impact of Hf and Al Co-Incorporation into the Atomic-Layer-Deposited ZnO Active Channel for the Thin-Film Transistor Applications
So-Yeong Na, Sung-Min Yoon
- 1451 Light-Bias Duel Modulation on Spin-Coated Zinc-Tin Oxide (ZTO) Thin Film Transistor

Jen-Sue Chen

1452 Effect of Substrates on Structural Properties of Pure Anatase Phase Titanium Dioxide Thin Films Prepared By Mist Chemical Vapor Deposition

Qiang Zhang, Chaoyang LI

1453 Anomalous Electron Accumulation at $\text{Al}_2\text{O}_3/\text{In}_2\text{O}_3$ Interface Via Short-Range Ordered Two-Dimensional Electron Gas

Sang Yeon Lee, Hyungtak Seo

1454 Designing Coupled Quantum Dot with ZnS-CdSe Hybrid Structure for Enhancing Exciton Lifetime

Raj Ganesh Pala

H02-Advanced CMOS-Compatible Semiconductor Devices 18

1455 (Invited) Substrate and Device Engineering for Iot and Automotive

Manuel Sellier

1456 (Invited) Logic Devices for Today and Tomorrow

Witold P Maszara

1457 (Invited) Ultra-Low Power III-V-Based Mosfets and Tunneling FETs

Shinichi Takagi, Dae-Hwan Ahn, Takahiro Gotow, Mitsuru Takenaka

1458 Impact of X-Ray Radiation on SOI Mosfet: Insulator Film Degradation and Hot-Carrier Reliability

Yasuhisa Omura

1459 On/Off Current Ratio Enhancement By Reducing Electrode Separation in Gate-Controlled MIS Tunnel Transistor

Chian-Hsiu Chan, Jenn-Gwo Hwu

1460 Improvement of g_m/I_D Method for Detection of Self-Heating Effects

Carlos Augusto Bergfeld Mori, Paula Ghedini Der Agopian, Joao Antonio Martino

1461 (Invited) Process Variability for Devices at and Beyond the 7 Nm Node

Juergen Klaus Lorenz

1462 (Invited) 3D Monolithic Integration

Laurent Brunet, Perrine Batude, Claire Fenouillet-Beranger, François Andrieu, Maud Vinet

1463 Study of Lanthanum Diffusion in HfO_2 -Based High-k Gate Stack

Meng Zhu, Balaji Kannan, Yibin Zhang, Manasa Medikonda, Yifan Liang, Jinghong Li, Aritra Dasgupta, Luigi Pantisano, Merve Ozbek, Shahab Siddiqui, Jinping Liu

1464 Low-Temperature RF Plasma Treatment Effect on Junctionless Pd- Al_2O_3 -Ingaas Misfet Operation

Alexei Nazarov, Yuri V. Gomeniuk, Y Y. Gomeniuk, Pavel N Okholin, Tamara M. Nazarova, Vladimir Djara, Karim Cherkaoui, Paul K. Hurley

1465 Study of the Influence of the Dielectric Composition of $\text{Al/Ti/ZrO}_2:\text{Al}_2\text{O}_3/\text{TiN/Si/Al}$ Structures on the Resistive Switching Behavior for Memory Applications

Helena Castán, Salvador Dueñas, Óscar G. Ossorio, Kaupo Kukli, Marianna Kemell, Mikko Ritala, Markku Leskelä

1466 Using a Non-Conventional Layout Style to Improve Pass Device Performance in CL-LDO Voltage Regulators

Renan Freitas Martucci, Salvador Pinillos Gimenez

1467 Experimental Study for Mosfet with Ellipsoidal Layout

William Souza Cruz, Salvador Pinillos Gimenez

1468 Parasitic Conduction on Ω -Gate Nanowires SOI nMOSFETs

Vanessa Cristina Pereira Silva, Joao Antonio Martino, Paula Ghedini Der Agopian

1469 (Invited) System-on-Chip Sensor Integration in Advanced CMOS Technology

Lado Filipovic, Ayoub Lahlalia, Siegfried Selberherr

- 1470 (Invited) Pixel-Parallel 3-D Integrated CMOS Image Sensors for Next-Generation Video Systems
Masahide Goto, Yuki Honda, Toshihisa Watabe, Kei Hagiwara, Masakazu Nanba, Yoshinori Iguchi, Takuya Saraya, Masaharu Kobayashi, Eiji Higurashi, Hiroshi Toshiyoshi, Toshiro Hiramoto
- 1471 (Invited) Electrochemical Biosensors Based on CMOS LSI Chips
Shigeyasu Uno
- 1472 (Invited) Point-of-Care Based System Development for Urolithiasis Recurrence Prevention
Wen-Yaw Chung, Salhi Heythem, Angelito Silverio, Vincent Tsai, Cheanyeh Cheng, Guan-Wei Wu, Syuan-kai Chang, Lin-Chen Yen, Chia Ming Yang, I-Wen Lo, Shu-Yu Chang
- 1473 Impact of Biosensor Permittivity on a Double-Gate nTFET Ambipolar Current
Christian Nemeth Macambira, Paula Ghedini Der Agopian, Joao Antonio Martino
- 1474 Towards InGaAs MS-DRAM Memory Cells
Carlos Navarro, Santiago Navarro, Carlos Marquez, Carlos Sampedro, Luca Donetti, Siegfried Karg, Heike Riel, Francisco Gamiz
- 1475 Memory Maps: Reading Rram Devices without DC Power Consumption
Salvador Dueñas, Helena Castán, Óscar G. Ossorio, Kaupo Kukli, Mats Mikkor, Kristjan Kalam, Tonis Arroval, Aile Tamm
- 1476 Impact of the Heat Conductivity of the Inert Electrode on Reram Memory Cell Performance and Endurance
Mohammad Al-Mamun, Sean W. King, Marius K Orłowski
- 1477 Ultra-Fast Switching of a Free Magnetic Layer with out-of-Plane Magnetization in Spin-Orbit Torque Mram Cells
Alexander Makarov, Viktor Sverdlov, Siegfried Selberherr
- 1478 (Invited) FDSOI: The Technology Alternative to the Mainstream
Thorsten Kammler
- 1479 (Invited) Current Status and Trends in RF Silicon-on-Insulator Material and Device
Jean-Pierre Raskin
- 1480 Optimization of Source/Drain Schottky Barrier Height for be SOI Mosfet
Leonardo Shimizu Yojo, Ricardo Cardoso Rangel, Katia Regina Akemi Sasaki, Joao Antonio Martino
- 1481 Simulation Analysis of the FIN Height Influence on the Electrical Parameters of Junctionless Nanowire Transistors
Thales Augusto Ribeiro, Antonio Cerdeira, Marcelo Antonio Pavanello

H03-Solid-state Electronics and Photonics in Biology and Medicine 5

- 1482 (Invited) Validation of the Ion-Responsive Urine Sensor for Prostate Cancer Detection
Kwan Hyi Lee
- 1483 Ultra-High Sensitivity for Lead Ion Detection Beyond the Ideal Nernst Response with AlGaIn/GaN High Electron Mobility Transistors (HEMTs)
Ching-Yen Hsieh, Yi-Ting Chen, Revathi Sukesan, Yu-Lin Wang
- 1484 Three-Dimensional Polymeric Biointerface for Ultra-Sensitive and Selective Detection of Low-Molecular-Weight Biomarker Using Semiconductor-Based Biosensor
Shoichi Nishitani, Toshiya Sakata
- 1485 EDL Gated FET Biosensor Array for the Investigation of Ion Channels and Bioelectric Signals of Circulating Tumor Cells
Anil Kumar Pulikkathodi, Indu Sarangadharan, Yi-Hong Chen, Gwo-Bin Lee, Yu-Lin Wang
- 1486 (Invited) Toward Wireless Biosensing Using Transparent Graphene Electronics
Pai-Yen Chen, Mark Ming-Cheng Cheng

- 1487 Whole Blood CVD Diagnostics Using Portable FET Biosensor System
Indu Sarangadharan, Shin-Li Wang, Revathi Sukesan, Pei-Chi Chen, Tze-Yu Dai, Anil Kumar Pulikkathodi, Chen-Pin Hsu, Yu-Lin Wang
- 1488 Towards Electronic Detection of DNA Conformational Transition
Sunil R Patil, Navneet Singh, Pradeep Pant, Niraj Sinha, M. P. Anantram
- 1489 A Reconfigurable Field-Effect Sensor By Single-Layer Graphene for Opto-Electro-Chemical Sensing Applications
Wei-En Hsu, Ting-An Ku, Chao-Yu Lee, Chih-I Wu, Chih-Ting Lin
- 1490 Biosensor with a 4-Channel Disposable Sensing Module Facilitating a Direct Sensitive Detection of Colon Cancer Biomarkers in Serum
Sungwook Park, Minhong Jeun, Kwan Hyi Lee
- 1491 Leveraging Nano-Confinement Properties of Room Temperature Ionic Liquids for Sensitive Detection of Biomolecules in Complex Biological Buffers
Badrinath Jagannath, Sriram Muthukumar, Shalini Prasad
- 1492 (Invited) Implantable Flexible Nanogenerators for Biomechanical Energy Harvesting
Xudong Wang
- 1493 (Invited) Piezoelectric Peptide-Based Energy Harvesters
Rusen Yang
- 1494 (Invited) Printed Flexible Sensor-Integrated Wearable Healthcare Patch
Kuniharu Takei
- 1495 (Invited) Flexible Triboelectric Nanogenerator and Highly Sensitive Pressure Sensor
Fengru Fan
- 1496 (Invited) a Strategic Approach for Co-Production of Ethylene and Hydrogen Via Electrochemical Non-Oxidative Deprotonation of Ethane
Dong Ding, Yunya Zhang, Wei Wu, Ting He
- 1497 (Invited) Rational Design of Nanomaterials for Electrochemical Energy Conversion and Storage
Shuhui Sun
- 1498 (Invited) Use of Discrete Liquid-Solid Contact Electrification As Ways of Self-Powered Sensing
Dong Sung Kim
- 1500 (Invited) Flexible Thermoelectric Nanogenerator Based on MoS₂ Nanomaterials and Its Application for Self-Powered Temperature Sensor
Yannan Xie
- 1501 Development of Self-Powered Mercury Ion Sensor Based on Thermoelectric Effect
Yu-Jhen Lin, Yu-Hsiang Tsao, Zong-Hong Lin
- 1502 Fabrication of Energy-Boosted Triboelectric Nanogenerator Via Electric Field Assisted Thermal Nanoimprinting Process
Do Wan Kim, Dongwhi Choi, Donghyeon Yoo, Dong Sung Kim
- 1503 Development of Portable Self-Powered Disinfection Systems Based on Triboelectric and Thermoelectric Effects
Che Min Chiu, Zong-Hong Lin
- 1504 Development of Thermal Nanoimprinting Process for the Fabrication of Tailored-Triboelectric Nanogenerator
Donghyeon Yoo, Dongwhi Choi, Dong Sung Kim
- 1505 (Invited) High-Performance Carbon Nanotube Based Flexible Electronics for Integrated Smart Sensor System
Youfan Hu
- 1506 (Invited) New Thermoelectric Device Architecture Aiming for Low \$/W and Wearable Application

Woochul Kim

- 1507 (Invited) Alternating Current Electroluminescence for Stimuli-Interactive Sensing Display
Cheolmin Park
- 1508 (Invited) Flexible and Transparent Thermally Conductive Materials for Heat Dissipation of Electronics
Nitin Mehra, Tuo Ji, Jiahua Zhu
- 1509 (Invited) All-Solid Hybrid Energy Fabric for Wearable Electronics
Xing Fan
- 1510 (Invited) Large-Area Solution-Nanomanufactured Air-Stable 2D Material for High-Performance Electronics and Smart Sensors
Wenzhuo Wu
- 1511 (Invited) Transparent Conducting Oxide-Free Flexible Thin Film Electronic Devices and Hybrid Systems
Wenxi Guo, Zijie Xu, Qian Liu, Teng Li, Fayin Zhang, Shuyao Xie
- 1512 Ionic-Strength Dependence of Electron Mobility of Back-Gate Bilayer MoS₂ FETs in Aqueous Electrolyte Solutions
Ming-Pei Lu, Ya-Ting Chung, Ming-Yen Lu
- 1513 Preparation and Biological Applications of Naphthalimide Benzothiazole As DNA-Targeted Anticancer Agents
Xiaolian Li, Xuehui Chen
- 1514 Multiplexed CVD Biomarker Detection in Human Serum Using Aptamer Immobilized High Electron Mobility Transistor
Tse-Yu Tai, Anirban Sinha, Gwo-Bin Lee, Yu-Lin Wang
- 1515 Heavy Metal Ion Detection from Whole Blood Using Ion Selective FET Sensor
Shin-Li Wang, Revathi Sukesan, Ching-Yen Hsieh, Yu-Lin Wang
- 1516 (Keynote) Nanotechnology Approaches to Biological Heterogeneity
Paul S. Weiss
- 1517 (Invited) Multifunctional Nano-Array Integrated Monolithic Devices: Toward Rational Engineered Nanomaterials Design and Scalable Nanomanufacturing
Pu-Xian Gao
- 1518 Plasmonic Nanopore Fabrication for Single Molecule Bio Sensor By Using Electron Beam Irradation
Seong Soo Choi, Myoung Jin Park, Chul Hee Han, Sae-Joong Oh, Hyun-Tae Kim, Soo Bong Choi, Yong-Sang Kim
- 1519 (Invited) Wireless Photoelectrochemical Control of Neuronal Activity with Coaxial Silicon Nanowires
Bozhi Tian
- 1520 (Invited) Transparent Bioelectronics for Electrical and Optical Measurements of Embryonic Stem Cell Derived Cardiomyocytes
Tzahi Cohen-Karni, Sahil Rastogi, Daniel Shiwarski, Jacqueline Bliley, Adam Feinberg
- 1521 (Invited) Plasmonic Patch Nanoantennas for Reproducible and High-Sensitivity Chemical Detection with Surface-Enhanced Raman Spectroscopy
Feng Wang, Bhuwan P Joshi, Ayan Chakrabarty, Hailiang Zhang, Qi-Huo Wei
- 1522 (Invited) Versatile Plasmonic Films for Sensing and Photocatalytic Applications
Yang Yang
- 1523 Photonic Properties of Structurally-Engineered Nanoporous Anodic Alumina and Application to Biosensing
Josep Ferré-Borrull, Elisabet Xifré-Pérez, Laura Karen Acosta, Josep Pallares, Lluís F Marsal
- 1524 (Invited) Local Probing of Thermally Induced Phenomena in Inorganic/Biological Materials Based on Nonlinear Cantilever Dynamics
Yunseok Kim

- 1525 (Invited) Charge Carriers, Defects and Interfaces in Two-Dimensional Materials and Devices
Yuanyue Liu
- 1526 (Invited) Hyperbolic Metamaterials and Their Imaging, Lasing, Sensing Applications
Junsuk Rho
- 1527 (Invited) Indium Gallium Phosphide Photodiode with 50% Increased External Quantum Efficiency and Higher Signal to Noise Ratio for Blood Pressure Measurement
Yung-Hua Kao, Chang-Po Chao, Amarendra Kumar, Yi-Chieh Lin, Chia-Liang Hsu
- 1528 (Invited) Photodetection from Mid-IR to UV Using Semiconductor Heterostructures
Tom Wu
- 1529 (Invited) Mid-IR Metamaterial Absorber Platform for Gas and Chemical Sensing Applications
Chengkuo Lee, Dihan Hasan
- 1530 Detection of Low-Level Acetone Using Semiconductor Gas Sensors Based on CuO/Fe₂O₃ Hetero-Junctions
Kamila Kollbek, Aleksandra Szkudlarek, Artur Rydosz, Barbara Lyson-Sypien, Mateusz Marzec, Marek Przybylski
- 1531 Sensitivity Enhancement Techniques for Black Phosphorus-Based Gas Sensors
Geonyeop Lee, Suhyun Kim, Sunwoo Jung, Soohwan Jang, JiHyun Kim

H04-Wearable and Flexible Electronic and Photonic Technologies

- 1532 (Invited) 3D Printing Functional Materials & Devices
Michael C. McAlpine
- 1533 (Invited) Triboelectric Nanogenerator for Self-Powered Flexible Electronics and Internet of Things
Zhong Lin Wang, Aurelia Chi Wang
- 1534 (Invited) Wearable Microfluidic and Electronic Frameworks for Biomedical Applications
Bonnie L. Gray, Daehan Chung
- 1535 (Invited) Imperceptible Graphene Based Electronic Tattoo Sensors
Shideh Kabiri Ameri, Nanshu Lu, Deji Akinwande
- 1536 (Invited) Design of Silicon Structures for Optically-Controlled Biointerfaces
Bozhi Tian
- 1537 (Invited) Micatronics: A New Platform for Flexible X-Tronics
Ying-Hao Chu
- 1538 (Invited) Flexible Organic Sensors for Biomechanical Measurements
Moran Amit, Yichen Zhai, Zhenghui Wu, Tse Nga Ng
- 1539 (Invited) A Nature-Inspired Porous Electrode for Flexible, Stretchable Supercapacitors and Lithium-Ion Batteries
Mengyao Gao, Yan-Cheng Lin, Chien-Chung Shih, Wen-Ya Lee, Chu-Chen Chueh, Wen-Chang Chen
- 1540 (Invited) Organic Haptics: Soft Materials for Artificial Touch
Darren Lipomi
- 1541 (Invited) Soft/Hard Interface for Energy Materials and Skin-like Electronics Toward Healthcare Monitoring
Jung Woo Lee
- 1542 (Invited) Fully-Wireless Health-Monitoring System with Near-Field Communication
Jeonghyun Kim
- 1543 (Invited) Inkjet-Printed Stretchable Electronic Devices, Circuits, Sensors, and Displays
Chuan Wang, Le Cai, Suoming Zhang, Yiheng Zhang, Jinshui Miao
- 1544 (Invited) Energy Harvesting and Storage in 1D Devices
Huisheng Peng
- 1545 (Invited) Enzymatic Bioelectrodes for a Contact Lens Lactate Biofuel Cell: Design and Analysis

Russell C. Reid, Shelley D. Minter, Bruce K. Gale

- 1546 (Invited) Smart Textile for Energy Harvesting and Self-Powered Sensing Applications
Zong-Hong Lin
- 1547 (Invited) Flexible, Foldable and Multi-Functional Paper-Based Electronics
Chun-Ho Lin, Jr-Hau He
- 1548 A Wearable All-Solid Photovoltaic Textile
Nannan Zhang
- 1549 SrTiO₃/ZnO Heterostructure for Transparent and Flexible Photoelectrochemical Water Splitting
Pei-Chun Wang, Yung Jung Hsu, Ying-Hao Chu
- 1550 (Invited) Soft Electronic Devices for Noninvasive Health Monitoring: From the Skin to the Deep Tissues
Sheng Xu
- 1551 Design of Nanostructured Materials for Flexible Photothermal Energy Generation Functionalities
Ghim Wei Ho
- 1552 (Invited) Printable Two-Dimensional Nanomaterial Inks for Flexible Electronics and Photonics
Mark C. Hersam
- 1553 (Invited) Wafer-Scale Synthesis of Monolayer WS₂ By Enhanced Chemical Vapor Deposition for High-Performance Flexible Photodetectors
Johnny C. Ho
- 1554 Inertia Based in-Vivo Triboelectric Nanogenerator for Self-Powering Implantable Electronic Devices
HanJun Ryu, Sang-Woo Kim
- 1555 (Invited) Two-Dimensional Materials for Wearable Electronics
Wei Gao
- 1556 (Invited) Wearable and Flexible Bio-Electronics Enabled By 'crack'-Driven Transfer Printing Methods
Chi Hwan Lee, Min Ku Kim, Dae Seung Wie, Hyungjun Kim
- 1557 Enhanced Output Performance of P(VDF-TrFE) Based Energy Harvesters with Controlled Dipole Moment of Solvents
Jihye Kim, Sang-Woo Kim
- 1558 Stretchable Intrinsically Conductive Polymers for Wearable Thermotherapy and Electromagnetic Interface Shielding
Jianyong Ouyang
- 1559 Highly Ion-Conducting, Reversibly Stretchable, and Ultra-Durable Double-Networked Ionogels for Flexible Supercapacitor
Harpalsinh H. Rana, Jeong Hee Park, Ho Seok Park
- 1560 Electrochemical UV Sensor Using Carbon Quantum Dot/Graphene Semiconductor
Yuxuan Wang, Morgan Myers, John A. Staser
- 1561 2D All-Solid-State Fabric Supercapacitor Fabricated Via an All Solution Process for Use in Smart Textiles
Yunseok Jang, Jeongdai Jo, Kwang-Young Kim
- 1562 Solution-Processed High-k Dielectric Films for Wearable Neuroelectronics
Byoung-soo Yu, Tae-Jun Ha
- 1563 (Invited) Toward High Frequency and High Power Flexible Electronics
Zhenqiang Ma, Huilong Zhang, Tzu-Hsuan Chang, Jinghao Li, Kanglin Xiong, Hongyi Mi, Solomon Mikael, Jisoo Kim, Yei Hwan Jung, Jeongpil Park, Juhwan Lee, Jung Han, Zhiyong Cai, Shaoqin Gong
- 1564 (Invited) Electrical Energy Generation Via Reversible Chemical Doping on Carbon Nanotube Fibers – a Wearable All-Carbon Voltage Generator
Albert Tianxiang Liu, Yuichiro Kunai, Pingwei Liu, Amir Kaplan, Anton Cottrill, Michael S Strano

- 1565 (Invited) Self Healing Interconnects for Reliable Flexible Electronics
Sanjiv Sambandan, Amit Kumar, Vaddi Yaswant, Virendra Parab
- 1566 (Invited) Free-Standing Two-Dimensional Nanomaterials from Functional Oxides
Xudong Wang
- 1567 Ghost Floating Gate Effect By Tunneling-Triboelectrification in Graphene Channel
Tae Yun Kim, Seongsu Kim, Christian Falconi, Sang-Woo Kim
- 1568 (Invited) Flexible Tactile Sensors for Wearable Healthcare Monitoring Devices
Hyunhyub Ko
- 1569 (Invited) Fully Formed Reverse Fabrication Techniques for Flexible Electronics
Ki Jun Yu
- 1570 Performance Improvement of Flexible Charge-Trap Memory Transistors Using Conducting Polymer Electrodes and Sacrificial Layer on Plastic Poly(ethylene naphthalate) Substrates
Ji-Hee Yang, Da-Jeong Yun, Seong-Min Kim, Myung-Han Yoon, Sung-Min Yoon
- 1571 Earth Abundant Transition-Metal Based High Entropy Alloys (HEAs) Nanorod Arrays Prepared By Glancing Angle Deposition System (GLAD) Toward High Performance Electrocatalysts for Water Oxidation Reaction
Shu-Chi Wu, Ko-Kai Tseng, Yuanfei Ai, Kuangye Wang, Arumugam Manikandan, Yu-Ze Chen, Hsuan-Chu Chen, Jien-Wei Yeh, Yu-Lun Chueh
- 1572 (Invited) Bio-Inspired Helical Coil Network for Soft, Wireless Electronics
Juwon Song, Han Hee Jung, Han Na Jung, Kyung-In Jang
- 1573 (Invited) Mechanical Design Strategies in Wearable/Flexible Electronics
Matt Pharr
- 1574 (Invited) Plant Wearable for Enhanced Agricultural Productivity
Joanna M Nassar, Sherjeel M Khan, Maha Nour, Amani Almuslem, Muhammad M. Hussain
- 1575 (Invited) A Stretchable Leaf Sensor for Plant Monitoring
Yicong Zhao, Zhenci Sun, Xian Huang
- 1576 A Highly Sensitive Flexible Pressure Sensor Based on Polystyrene@Graphene Core-Shell Nanoballs
Yuanfei Ai, Ting Heng Hsu, Ding Chou Wu, Ling Lee, Jyun-Hong Chen, Yu-Ze Chen, Shu-Chi Wu, Kuangye Wang, Cuo Wu, Zhiming Wang, Yu-Lun Chueh
- 1577 (Invited) Rational Design of Nanostructures and Materials for Flexible and High Performance Electronics and Optoelectronics
Zhiyong Fan
- 1578 Inkjet Printing of Graphene for Wearable and Flexible Electrochemical Sensors
Twinkle Pandhi, David Estrada, Jessica E. Koehne
- 1579 Tuning Self-Healing Property of Stiff Supramolecular Polymer for Flexible Electronics
Jiaxu Qin, Francis Lin, Yujia Wang, Dion Hubble, Yun Li, Jihui Yang, Alex Jen

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- 1580 Introduction to Performance Issues with Low Pt-Loaded Fuel-Cell Electrodes
Adam Z. Weber
- 1581 Identifying the Major Source of Oxygen Transport Resistance By Modeling Studies
Takahisa Suzuki, Haruhiko Yamada, Kenji Kudo, Ryosuke Jinnouchi, Yu Morimoto
- 1582 Transport in Low Pt-Loading Cathodes: The Impact of Electrode and Catalyst Support Morphology
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- 1583 Toward Ionomers for Low Pt Performance
David Novitski, Steven Holdcroft

- 1584 Ionomer Thin Films for PEM Fuel Cells
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- 1585 Materials and Design Selection to Improve High Current Density in PEMFC
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- 1586 Performance, Interactions, and Degradation of Polymer Electrolyte Fuel Cell Cathode Catalysts, Supports, and Ionomers
Deborah J Myers
- 1587 Platinum-Based PEMFC Electrodes – Can Electrodes with Low Pt Loading be Durable?
Raphaël Chattot, Tristan Asset, Fabrice Micoud, Christine Nayoze-Coyne, Laetitia Dubau, Frederic Maillard, Marian Chatenet
- 1588 Contamination of Low Platinum Catalyst Loading Cathodes for Proton Exchange Membrane Fuel Cells
Yunfeng Zhai, Jing Qi, Keith Bethune, Jean St-Pierre
- 1589 Fabrication of High Power, Low-Pt Catalyst Coated Membranes
Yannick Garsany, Karen Swider-Lyons
- 1590 Water Balance in Polymer Electrolyte Fuel Cells with Ultra-Low Pt Loading: From Modeling to Design
Michael Hermann Eikerling, Tasleem Ahmad Muzaffar
- 1591 (Invited) PEM Fuel Cell Catalyst Layer Architectures
Rod L. Borup, Rangachary Mukundan, Karren L. More, Shyam S. Kocha, Adam Z. Weber, Deborah J Myers, Rajesh Ahluwalia
- 1592 Design and Optimization of PEMFC Electrode for Direct Roll-to-Roll Coating Process
Jung Ho Kim
- 1593 The Influence of the Platinum Loading and the Ionomer to Carbon Ratio on the Durability of the PEMFC
Vinicius Andrea, Elisabete I. Santiago, Fabio C. Fonseca, Marcelo Linardi

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- 1594 (Invited) Electrochemical Fuels Production Using High Temperature Alkaline Electrolytes
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- 1595 (Invited) Electrochemical Generation of Fuels: Matching Research and Application for Advanced Water Splitting and Other Technologies
Katherine E Ayers, Wayne L. Gellett, Christopher B Capuano
- 1596 Co-Production of Ethylene and Hydrogen Via Non-Oxidative Dehydrogenation of Ethane Below 400°C
Wei Wu, Yuanya Zhang, Ting He, Dong Ding
- 1597 Power to Chemicals with High Temperature Solid Oxide Cells: Concepts, Challenges & Prospects
Rémi Costa, Feng Han, Michael Lang, Noriko Sata, Guenter Schiller
- 1598 Redox Stable Cathodes for CO₂-Steam Co-Electrolysis Process in Solid Oxide Electrolyzers for Syn-Gas Generation
Aniruddha Pramod Kulkarni, Gurpreet Kaur, Daniel Fini, Sarbjit Giddey, Tomy Hos, Moti Herskowitz
- 1599 Solid Oxide Electrolysis for Hydrogen Production: From Oxygen Ion to Proton Conducting Cells
Boxun Hu, Ashish N Aphale, Su Jeong Heo, Junsung Hong, Olga A Marina, Jeffry W Stevenson, Prabhakar Singh
- 1600 Thermodynamic, Environmental, and Economic Analysis of Electrosynthesis of Hydrogen Fuel with State-of-the-Art Solid Oxide Electrolyzers
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- 1601 PBI-Blended Membrane Evaluated in High Temperature SO₂ Electrolyser
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- 1602 Electrochemical Synthesis of H₂O₂ Via Water Electrolysis

Samira Siahrostami, Xinjian Shi, Hadi Abroshan, Xiaolin Zheng, Jens Nørskov

1603 (Invited) New Insight into Acetic Acid Electrochemical Oxidation for the Synthesis of Chemicals and Fuels on Platinum Electrodes in Mild Alkaline Media

Xiong Peng, Travis Omasta, William E Mustain

1604 Controlled Selectivity of CO₂ Reduction on Metal Electrodes By Pulsing the Electrochemical Potential

Kevin Wayne Kimura, Jin Suntivich, Tobias Hanrath

1605 Designing Carbon-Based Materials for Effective Electrochemical Reduction of CO₂

Samira Siahrostami, Kun Jiang, Charlotte S Kirk, Mohammadreza Karamad, Karen Chan, Haotian Wang, Jens Nørskov

1606 Modeling and Test-Bed Development of Vapor Feed Electrochemical CO₂ Reduction Devices

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1607 Design of Rutile Oxide Electrocatalysts for Selective Reduction of CO₂ into Liquid Fuels

Arghya Bhowmik, Heine A. Hansen, Tejs Vegge

1608 The Role of Central Metal Atom and Ligand in Transition Metal Based Metal Organic Frameworks for Selective Electrochemical Reduction of CO₂ to Value-Added Chemicals

Praveen Kolla, Ian Kendrick, Todd Miller, Sanjeev Mukerjee

1609 Local Atomic Modulation of Metal Sites Drives Efficient Electrochemical Reduction of CO₂

Xueli Zheng, Edward H. Sargent, Yi Cui

1610 Beyond Flatland: Exploring 3D Cu Catalysts for CO₂ Reduction

Vedasri Vedharathinam, Zhen Qi, Michael Stadermann, Juergen Biener, Monika M. Biener

1611 Electrochemical Reduction of Carbon Dioxide at Alloy Systems: Cu-In and Cu-Bi

Giovanni Zangari

1612 In-Situ XRD during Electrochemical CO Reduction on Cu

Erlend Bertheussen, Søren B. Scott, Thomas Hogg, Christopher Hahn, Drew Christopher Higgins, John Lin, Alan Taylor Landers, Thomas F Jaramillo, Ib Chorkendorff, Brian Seger

1613 (Invited) B-Doped Pd Catalyst to Boost Formate Production in Electrochemical CO₂ Reduction

Bei Jiang, Xia-Guang Zhang, Kun Jiang, De-Yin Wu, Wen-Bin Cai

1614 (Invited) Mechanistic Insights into Highly Active Metal Phthalocyanine Catalysts for Electrochemical Carbon Dioxide Reduction

Karthish Manthiram

1615 Quasi-2D Pd/Pt Nanoclams for CO₂ Reduction in Tandem with Microbial Communities

Andrew Barnabas Wong, Frauke Kracke, Antaeres Dawn Antoniuk-Pablant, Christopher Hahn, Alfred M Spormann, Thomas F Jaramillo

1616 Effects of Cations and Anions in Aqueous Solution on the Electroreduction of Carbon Dioxide

Qi Zhang, Wutao Xu, Yuyu Liu, Jiujun Zhang

1617 Metal Sulfides As Catalysts for the Electrochemical Reduction of Carbon Dioxide

Wutao Xu, Qi Zhang, Yuyu Liu, Jiujun Zhang

1618 Co₃O₄@CNT@PQ7 As the New Air Electrode Material to Enhance the Performance in Zinc-Air Battery Applications

Qi Nie, Cong Liu, Yue Zhou, Luwei Peng, Jinli Qiao

1619 N/S-Me (Fe, Ni) Doped Porous Carbon Derived from Metal-Organic Frameworks As Efficient Electrocatalysts for Oxygen Reduction Reactions

Fang Dong, Qiaowei Tang, Junyu Liu, Cong Liu, Jinli Qiao

1620 Electrochemical Reduction of CO₂ to Formate on Sn@Cu By Electrodeposition with Hydrogen Bubble

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Xiaofan Hou, Junyu Liu, Qi Zhang, Yue Zhou, Jinli Qiao

1621 High-Efficiency Photocatalysts for CO₂ Conversion Based on MoS₂/CdS/TiO₂ Nanotubes Heterostructures

Kang Du, Guohua Liu, Xuyuan Chen, Kaiying Wang

1622 Copper Oxide-Based Photocathodes and Electrocatalysts for the (Photo)Electrochemical Reduction of Protons and Carbon Dioxide

Matthew T. Mayer, Marcel Schreier, Jingshan Luo, Michael Graetzel

1623 Electrochemical Conversion of CO₂ with Nanoporous Poly(styrene)-Polyvinylpyridine

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1624 Applying Battery Tuning Method on Metal Oxide for Highly Selective CO₂ Reduction

Kun Jiang, Haotian Wang

1625 Enhanced CO₂ Electrochemical Conversion at Bi-Modified Pb Foams

Daniel Guay, Mengyang Fan, Sebastien Garbarino, Gianluigi A. Botton, Ana C Tavares

1626 Electrochemical Reduction of CO₂ at Multi-Metallic Nano-Interfaces

Shahid Rasul, Andrien Pugniant, Eileen Yu

1627 Electrodeposition of Ag Catalysts for Electrochemical CO₂ Reduction

YuSeok Ham, Myung Jun Kim, Taeho Lim, Soo-Kil Kim, Jae Jeong Kim

1628 Engineered Electrolyte-Electrocatalyst Nanocomposites for Enhanced CO₂ Electroreduction

Ramez A. Elgammal, Thomas A Zawodzinski

1629 Electrochemical Reduction of CO₂ Facilitated By Vitamin-Based Catalysts

Maja Budanović, Richard David Webster, Dejan Urbancok, Yan Hui Jasmine Er

1630 Catalysts for CO₂ Electroreduction to Hydrocarbons and Oxygenates

Uzoma Nwabara, Sumit Verma, Andrew A Gewirth, Paul J.A. Kenis

1631 Effective Strategies for Reducing Carbon Monoxide into Liquid Fuels By Copper Catalysts

Lei Wang, Stephanie Anne Nitopi, Marat Orazov, Carlos Morales-Guio, Christopher Hahn, Thomas F Jaramillo

1632 Implications of Transport and pH Effects on Electrocatalytic CO₂ Reduction

Stefan Ringe, Karen Chan, Jens Nørskov

1633 In-Situ Studies of Carbon Removal from Ni-YSZ Anodes Using Mixtures of O₂ and H₂

Stanislav Tsoi, William A Maza, John D Kirtley, Daniel A Steinhurst, Robert A Walker, Jeffrey C. Owrutsky

1634 Understanding Electrocatalytic Hydrogenation of Phenol and Benzaldehyde on Platinum Group Metals for Fuel Production

Nirala Singh, Udishnu Sanyal, Griffin Ruehl, John Fulton, Donald Camaioni, Oliver Y Gutiérrez Tinoco, Charles Campbell, Johannes A Lercher

1635 Designing Smart Materials for Efficient Electrosynthesis of Fuels and Environmental Remediation: The Story of Transition Metal Chalcogenides

Manashi Nath, Jahangir Masud, Abdurazag T Swesi, Manashi Nath, Umanga De Silva, Wipula Priya Rasika Liyanage, Siddesh Umaphathi, Bahar Golrokh Amin

1636 (Invited) CoFe₂O₄@CNTs As High-Performance Air-Cathode Bifunctional Catalysts for Rechargeable Zinc-Air Batteries

Nengneng Xu, Luwei Peng, Jinli Qiao, Xiao-Dong Zhou

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1637 (Invited) High Power Water Electrolysis as a New Paradigm for Operation of PEM Electrolyzer – The Story Continues

Krzysztof A. Lewinski, Sean M. Luopa, Fuxia Sun, Christopher Jentsch, Dennis Franciscus van der Vliet

- 1638 A Regular Dimpled Surface Morphology for the Oxygen Evolution Reaction
Audrey K. Taylor, Irene Andreu, Byron D. Gates
- 1639 (Invited) Membranes with Recombination Catalyst for Hydrogen Crossover Reduction: Water Electrolysis
Dmitri Bessarabov
- 1640 Ultra-Low Platinum Group Metal (PGM) Containing $(\text{Mn}_{1-x}\text{Ir}_x)\text{O}_2$:10F - Highly Active and Durable Oxygen Evolution Electrocatalyst for PEM Water Electrolysis
Shrinath Dattatray Ghadge, Prasad Prakash Patel, Oleg I Velikokhatnyi, Moni Kanchan Datta, Prashant N Kumta
- 1641 (Invited) Pyrochlore-Type, Acid-Stable Electrocatalysts for Oxygen Evolution Reaction
Hong Yang
- 1642 Morphology Tuning of Ir Oxide Nanoparticles for Water Oxidation in PEM Water Electrolyzer
Jinkyu Lim, Hyunjoo Lee
- 1643 IrOx/Nafion Catalyst for Oxygen Evolution: Effect of Surface Oxide on Activity and Stability
Haoran Yu, Justin Roller, Leonard J. Bonville, Radenka Maric
- 1644 Oxygen Evolution Reaction Investigation on Pt(111) and Ir(111) Using Dynamic Electrochemical Impedance Spectroscopy in Acidic Medium
Marion Scohy, Laetitia Dubau, Frederic Maillard, Eric Sibert, Svein Sunde
- 1645 (Invited) Techno-Economic Perspectives of Catalysts Development for Low Temperature Water Electrolysis
Hui Xu, Shuai Zhao, Cortney K Mittelsteadt
- 1646 (Invited) Hydrogen Is an AWSM Energy Materials Network!
Huyen N. Dinh, Katie Randolph, Adam Z. Weber, Anthony H. McDaniel, Richard Boardman, Tadashi Ogitsu, Hector Colon-Mercado, David Peterson, James W Vickers, Eric L. Miller
- 1647 (Invited) Low Temperature Electrolysis for Hydrogen and Oxygen Generation - a Tutorial on Catalyst and Electrode Development for Proton and Anion Exchange Membrane-Based Systems
Katherine E Ayers
- 1648 (Invited) An Overview of H₂@Scale and Water Splitting Protocol Development
Jamelyn Holladay, Bryan S Pivovar, Katherine E Ayers, Olga A Marina, Ellen B Stechel, Chengxiang("CX") Xiang
- 1649 The Bifunctional Electrocatalyst SiO₂-SO₃H Supported Pt for Unitized Regenerative Fuel Cells
Ho-Young Jung, Ji-Hyun Jung, Min-Hwa Lim
- 1650 Oxidative Chemical Vapor Deposition of 3D Graphene Oxide on Nickel Foam for Hydrogen Evolution Reaction in Acidic Electrolyte
Sangchai Sarawutanukul, Nutthaphon Phattharasupakun, Juthaporn Wuthiprom, Montree Sawangphruk
- 1651 The Effect of Membrane and Catalyst for Cell Polarization of PEM Water Electrolysis
Hee-Jung Ban, Min-Young Kim, Yoong-Ahm Kim, Ho-Sung Kim
- 1652 Coral-like Fe_n(OH)_x@Ni Derived from Corrosion of Nickel As an Integrate Electrode for Efficient Overall Water Splitting
Rui Xiang, Zi Dong Wei
- 1653 Dual-Ligand Synergistic Modulated NiCo-Sulfhydroxides with High Activity and Stability As Oxygen Evolution Electrocatalysts
Lishan Peng, Jingjun Shen, Taicheng Lin, Zidong Wei
- 1654 Layer-Dependent Photoelectrochemical Performance of Multi-Layer Graphene Catalysts on Silicon Photocathode
Uk Sim, Joonhee Moon, Joohee Lee, Cheolho Jeon, Seungwu Han, Byung Hee Hong, Ki Tae Nam
- 1655 Stainless Steel Based Water Oxidation Catalyst Electrode for Solar-Chemical Production
Minoh Lee, Yun Jeong Hwang, Byoung Koun Min

- 1656 Ordered Pt Nanopattern Catalysts through Self-Assembled Block Copolymer Template
Yuan Gan, Changfeng Yan, Zhida Wang
- 1657 IrO₂ Decorated Self-Doped TiO₂ Nanotube Arrays: A Binder-Free and More Stable Electrode for Oxygen Evolution Reaction in Acid Condition
Yan Shi, Zhuoxin Lu, Zhida Wang, Lili Guo, Hongyi Tan, Changqing Guo, Changfeng Yan
- 1658 Highly Efficient Vitamin-B12 Pyrolyzed N-Co-C Electrocatalyst for Hydrogen Evolution Reaction
Palani Sabhpathy, Wei-Fu Chen, Indrajit Shown, Tsu-Chin Chou, Kuei-Hsien Chen, Li-Chyong Chen
- 1659 Effect of Alloying on Electrodeposited Ni Electrocatalyst for Oxygen Evolution Reaction
Jae Jeong Kim, Byung Keun Kim, Soo-Kil Kim, Sung Ki Cho
- 1660 Activity and Stability Relationship for Anion Doped CoS_xSe_{2-x} Dichalcogenides for the Hydrogen Evolution Reaction
Yawei Li, Swarnendu Chatterjee, Joshua David Snyder
- 1661 Cr- and Ti-Based Spinel As Materials for Anodic Catalyst Support in PEM Electrolysis Cells: Assessing Corrosion Stability and Support Role in Catalyst Activity of Corrosion Stable Ceramics
Filippo Fenini, Kent Kammer Hansen, Cristian Savaniu, John T. S. Irvine, Mogens Bjerg Mogensen
- 1662 Hierarchical Carbon-Silicon Nanowire Heterostructures for Hydrogen Evolution Reaction
Joonhee Moon, Uk Sim
- 1663 (Invited) How Can We Maintain the Excellent Performance of the PEM Electrolyzer without the Use of Platinum Group Metals?
Jens Oluf Jensen
- 1664 Synthesis and Evaluation of Iridium Oxide Nanoparticle Catalysts Supported on Nitrogen-Doped Reduced Graphene Oxides
Masanori Hara, Rajashekar Badam, Guan Zhong Wang, Hsin-Hui Huang, Masamichi Yoshimura
- 1665 Model-Supported Analysis of Degradation Phenomena of a PEM Water Electrolysis Cell Under Dynamic Operation
Steffen Henrik Frensch, Samuel Simon Araya, Anders Christian Olesen, Søren Knudsen Kær
- 1666 A Novel and Economical Rde-Based Approach for Investigating the Oxidation Evolution Reaction Activity of IrO₂-Based Catalyst Coated Membranes
Jason Tai Hong Kwan, Matthias Kroschel, Amin Nouri-Khorasani, Arman Bonakdarpour, Peter Strasser, David P. Wilkinson
- 1667 Highly Active and Durable Ir Catalyst for Oxygen Evolution Reaction for Proton Exchange Membrane Electrolysis
Hui Xu, Litao Yan, Shuai Zhao, Karren L. More, Robert Stone
- 1668 Degradation of IrO_x Nanoparticles Supported Onto Sb-Doped SnO₂ Aerogel Monitored By Dynamic Electrochemical Impedance Spectroscopy and Identical-Location TEM
Fabien Claudel, Laetitia Dubau, Svein Sunde, Guillaume Ozouf, Christian Beauger, Laurent Piccolo, Frederic Maillard
- 1669 Cobalt Platinum Bronze for an Active and Durable Oer Electrocatalyst of PEM Electrolysis without Ir or Ru
Yuji Kamitaka, Yu Morimoto
- 1670 (Invited) Experimental and Theoretical Approaches to High Performance, Robust HER and Oxygen Evolution Reaction (OER) Electrocatalysts for Proton Exchange Membrane Based Water Electrolysis
Prashant N Kumta
- 1671 Turnip-Inspired BiVO₄/CuSCN Heterojunction Photoanode for Highly Efficient Photoelectrochemical Water Splitting
Truong-Giang Vo, Jian-Ming Chiu, Yian Tai, Chia-Ying Chiang
- 1672 (Invited) Electrocatalyst Development for Solid-State Alkaline Water Electrolyzers: Laboratory through Scale-

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Javier Parrondo, Cheng He, Guanxiong Wang, Christopher B Capuano, Alexey Serov, Geoff McCool, Barr Zulevi, Katherine E Ayers, Vijay K Ramani

1673 Tracking Feni Nanoparticle Surface Inclusions after Electrochemical Aging for the Oxygen Evolution Reaction
Audrey K. Taylor, Mikayla E. Louie, Irene Andreu, Michael T.Y. Paul, Byron D. Gates

1674 Nanostructured Nickel Selenides for High Efficiency Water Oxidation Electrocatalysis
Umanga De Silva, Diya Allada, Jahangir Masud, Manashi Nath

1675 Exceptional Electrocatalytic Oxygen Evolution Via Tunable Charge Transfer Interactions in Perovskites and Perovskite Derivatives
Robin Forslund, William G. Hardin, Keith P. Johnston, Keith J Stevenson

1676 (Invited) Operando X-Ray Absorption Investigations into the Oxygen Evolution Activity, Stability, and pH Dependency of $\text{Ni}_x\text{Fe}_{1-x}\text{O}_y$ Nanoparticles
Daniel F. Abbott, Emiliana Fabbri, Mario Borlaf, Francesco Bozza, Thomas Graule, Thomas J. Schmidt

1677 Understanding and Tailoring the Performance of Transition Metal Oxides for the Oxygen Evolution Reaction
Vladimir Tripkovic, Heine A. Hansen, Tejs Vegge

1678 Investigating Redox States and Reaction Dynamics of Ni-Based Nano-Catalysts for Alkaline Water Splitting
Zhen Qiu, Tomas Edvinsson

1679 Non-Precious Electrocatalysts for Anion Exchange Membrane Water Electrolysis Cell
Sung Mook Choi, Woo-Sung Choi, Min Ho Seo, Myeong Je Jang, Yoo Sei Park, Kyu Hwan Lee

1680 (Invited) Identifying the Forefront of Electrocatalytic Oxygen Evolution Reaction: Electronic Double Layer
Guangfu Li, Abel Chuang

1681 Role of Surface Area on the Performance of Iron Nickel Nanoparticles for the Oxygen Evolution Reaction (OER)
Prashant Acharya, James Burrow, Lauren F Greenlee

1682 Amorphous Cobalt Phyllosilicate with Layered Crystalline Motifs As Water Oxidation Catalyst
Kisuk Kang, Ju Seong Kim, Inchul Park, eun-Suk Jeong, Kyoungsuk Jin, won Mo Seong, Gabin Yoon, Hyunah Kim, Byoungsoon Kim

1683 (Invited) Engineering Advanced Transition-Metal Based Electrocatalysts for Oxygen Evolution Reaction
Junhua Song, Shaofang Fu, Qiurong Shi, Chengzhou Zhu, Dan Du, Yuehe Lin

1684 Mixed Oxides/Phosphides As Efficient Electrocatalysts for Oxygen Evolution Reaction
Lei Zhang, Chun Chang, Shih-Yuan Lu

1685 Mesoporous Metal Electrocatalysts for the Oxygen Evolution Reaction
Akari Hayashi, Marika Muto, Kazunari Sasaki

1686 The Enhancement Effect of Borate Doping on the Oxygen Evolution Activity of α -Nickel Hydroxide
Zhao Zhang, Tianran Zhang, Jim Yang Lee

1687 Carbon-Free Perovskite Oxide Oxygen Evolution Reaction Catalysts for AEM Electrolyzer
Hoon T Chung, Albert Sung Soo Lee, Yu Seung Kim, Cy Fujimoto, Lin-Wang Wang, Glenn Teeter, Guido Bender, Piotr Zelenay

1688 Ion Intercalation Induced Amorphization of High Surface Area Cobalt (II, III) Oxide (Co_3O_4) for Enhanced Water Oxidation Activity
Prashant Kumar Gupta, Sulay Saha, Koshal Kishor, Ashutosh Sharma, Raj Ganesh Pala

1689 (Invited) Active and Stable Metal Supported Thin Film Metal (Hydroxy-) Oxides for Oxygen Reduction/Evolution Reactions
Seoin Back, Samira Siahrostami, Jens Nørskov

1690 Effect of Co Addition in Amorphous Ni-Based Alloys for the Alkaline Oxygen Evolution Reaction
Kevin M Cole, Donald W. Kirk, Steven J. Thorpe

- 1691 Efficient Surface-Modified Steel Electrodes for Oxygen Evolution in Alkaline Media
Debanjan Mitra, Ahamed Irshad, Sundar Rajan Aravamuthan, S. R. Narayanan
- 1692 Electrochemical Preparation of Copper-Cobalt Oxide Nanosheets Array on Nickel Foam As the Catalyst for Oxygen Evolution Reaction
Woo-Sung Choi, Myeong Je Jang, Yoo Sei Park, Kyu Hwan Lee, Sung Mook Choi
- 1693 High-Temperature Molten Alkaline Water Electrolysis
Kailash Patil, Andrew Sweet, Winfield Greene, Hui Xu
- 1694 (Invited) Individual Nanowire/Sheet Devices for Electrocatalysis
Mengyu Yan, Jihui Yang, Liqiang Mai
- 1695 Morphology Control of Carbon-Free Spinel NiCo₂O₄ Catalysts for Enhanced Bifunctional Oxygen Reduction and Evolution in Alkaline Media
Surya Devaguptapu, Shuai Zhao, Shiva Gupta, Hui Xu, Gang Wu
- 1696 Activity and Stability Trend of Transition Metal Hydr(oxy)Oxide for Oxygen Evolution Reaction
Dong Young Chung, Pedro F. B. D. Martins, Pietro Papa Lopes, Dusan Strmcnik, Vojislav Stamenkovic, Nenad M Markovic
- 1697 Facile Deposition of Transition Metal Phosphides into Mesoporous Carbon: Iron's Role in Oxygen Evolution Catalysis
Daniel Philip Leonard, William F. Stickle, Xiulei Ji
- 1698 A Bifunctional Electrocatalyst for Full Water Splitting: CoNi@BSCF Encapsulated in N-Doped Carbon
Yuqi Lyu, Francesco Ciucci
- 1699 (Invited) Enhancing HER and OER Electrocatalysis
Pietro Papa Lopes, Dusan Strmcnik, Dongguo Li, Nenad M Markovic, Vojislav Stamenkovic
- 1700 Hydrogen Bubble Templating of Fractal Ni Foams for Water Oxidation in Alkaline Media
Sebastien Garbarino, Valérie Charbonneau, Nadège Nzone Fomena, Julie Gaudet, David R Bruce, Daniel Guay
- 1701 Improving Hydrogen Evolution Reaction Activity of Palladium By Ruthenium
Lulu Zhang, Chenkai Feng, Minhua Shao
- 1702 Tuning Ni Surfaces for Enhanced Oxygen Evolution Reaction in Alkaline pH
Ian Kendrick, Michael Bates, Qingying Jia, Huong Doan, Wentao Liang, Sanjeev Mukerjee
- 1703 (Invited) Current Understandings of the Slow Kinetics of the Hydrogen Evolution Reaction in Alkaline Media
Sanjeev Mukerjee, Jingkun Li, Qingying Jia
- 1704 Nickel Electrocatalyst Promoted By Lace Oxide on Carbon Support for Hydrogen Evolution Reaction in Alkali Media
Myeong Je Jang, Yoo Sei Park, Woo Sung Choi, Sung Mook Choi, Kyu Hwan Lee
- 1705 (Invited) Electrocatalytic Hydrogen Evolution in Neutral Solution
Yuyan Shao
- 1706 MoTe₂ Rendered into an Efficient and Stable Electrocatalyst for the Hydrogen Evolution Reaction By Polymorphic Control
Jessica Crawford McGlynn, Irene Cascallana-Matias, James Fraser, Isolda Roger, James McAllister, Haralampos Miras, Mark Symes, Alexey Ganin
- 1707 Effect of Co-Generated MoO₃ on the Electrocatalytic Hydrogen Evolution Performance of O₂ Plasma Modified MoS₂
Chengxu Zhang, Lin Jiang, Jue Hu, Michael K.H. Leung, Yingjie Zhang
- 1708 Investigating the Doping Effect of Single Transition Metal Atoms on Basal Planes of MoS₂ Monolayer Nanosheets for Electrochemical Hydrogen Evolution Reaction
Hui Ming Lau, Xiao Wei Lu, Jiří Kulhavy, Simson Wu, Lu Lin Lu, Tai Sing Wu, Ryuichi Kato, John S. Foord, Yun

Liang Soo, Suenaga Kazu, Shik Chi Edman Tsang

1709 MoS₂ Decorated on Different Metal Oxide Nanotubular Structures with a High Density of Reactive Sites for HER Reactions

Xuemei Zhou, Bowen Jin, Min Yang, Patrik Schmuki

1710 Understanding the Improved Kinetics of the Hydrogen Evolution/Oxidation Reactions of the Platinum-Oxophilic Metal Systems in Alkaline Media

Qingying Jia, Jingkun Li, Sanjeev Mukerjee

1711 Bioinspired Mo₂C-Based Catalyst with the Optimized P and S Heteroatom Incorporation for Efficient Hydrogen Production in Alkaline Media

Taeyong Ahn, Uk Sim

1712 Electrocatalytic Activity of Amorphous Ni-Nb-Y Alloys for the HER in Alkaline Water Electrolysis

Samy Ghobrial, Steven J. Thorpe, Donald W. Kirk

1713 Ruthenium Cobalt Phosphide Hybrid Clusters with Exceptional Hydrogen Evolution Performance in Both Acidic and Alkaline Electrolytes

Lifeng Liu, Junyuan Xu

1714 (Invited) Water Adsorption on Transition Metal Oxide Pure IrO₂, RuO₂ and Alloy Ru_xIr_{1-x}O₂(110) Surfaces Investigated By Density Functional Theory

Luiz Oliveira, Alejandro A. Franco, David Loffreda

1715 Understanding the Hydrogen and Oxygen Evolution Reactions through Microkinetic Models

Aaron Timothy Marshall, Alfred Herritsch

1716 Understanding and Designing Oxygen Reduction/Evolution Reaction (ORR/OER) Catalysts By Combining Experimental and Ab-Initio Studies

Min Ho Seo, Moon Gyu Park, Dong Un Lee, Xiaolei Wang, Sung Mook Choi, Byungchan Han, Zhongwei Chen

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1717 High-Throughput Activity and Performance Screening Methods for PGM-Free Catalysts

Jaehyung Park, Nancy Kariuki, Deborah J Myers, Benjamin Thomas Hohman, Sheldon Lee, Hoon T Chung, Ulises Martinez, Piotr Zelenay

1718 High Electrocatalytic Activity of PdCu/C Toward Oxygen Reduction Reaction

Qing Gong, Shuiping Gong, Xuan Cheng, Jiwu Zheng, Weifeng Yang, Tengfei Zhang, Liuying Huang

1719 Fuel Cell Performance and Durability of Intermetallic Oxygen Reduction Catalysts

Yung-Tin Pan, Yu Seung Kim, Junrui Li, Shouheng Sun, Jacob S Spendelow

1720 Controllable Synthesis of Low-Platinum Oxygen Reduction Catalysts By Modified Atomic Layer Deposition Process

Drew Christopher Higgins, John Xu, Yongmin Kim, Marat Orazov, Daniel Lee, Zhaoxuan Wang, Thoams Schladt, Tanja Graf, Thomas F Jaramillo, Fritz Prinz

1721 Nanometric Fe-substituted ZrO₂ on Carbon Black: a Novel PGM-Free ORR Catalyst for PEMFCs

Michele Piana, Pankaj Madkikar, Davide Menga, Gregor S. Harzer, Thomas Mittermeier, Armin Siebel, Friedrich E. Wagner, Michael Merz, Stefan Schuppler, Peter Nagel, Hubert A. Gasteiger

1722 Size-Tunable Atomic Iron Catalysts Derived from Metal-Organic Framework for Oxygen Reduction in Acid Media

Hanguang Zhang, Gang Wu

1723 Oxygen Reduction Reaction on Nitrogen and Cobalt Modified Silicon Carbide Derived Carbon in Acidic Media

Patrick Teppor, Rutha Jäger, Eneli Härk, Urmas Joost, Indrek Tallo, Päärm Paiste, Kalle Kirsimäe, Enn Lust

1724 Investigation of the Active Site for the Oxygen Reduction Reaction on the Oxide Surface Using By in-Situ

XAFS Method

Takahiro Saida, Shoko Hirano, Etsuko Niwa, Fumiaki Sato, Takahiro Maruyama

- 1725 Interface Engineering with Ionic Liquid Composite Materials for Efficient and Durable Electrocatalysis
Yawei Li, Joshua David Snyder
- 1726 Rapid Heating Rate Reveal Particular Catalytic Properties of the Pt/rGO Synthesised By Microwave Assisted EG Reduction
Xuelin Zhang, Xilian Wang, Jiamu Cao, Jing Zhou, Xiaowei Liu, Yufeng Zhang
- 1727 Investigation of Pd and Pd-CeO₂ Based Carbon-Supported Electrocatalysts for the Electrooxidation of Borohydride in Direct Borohydride Fuel Cell
Clémence Lafforgue, Marian Chatenet, Robert W. Atkinson, Karen Swider-Lyons, Hamish Miller, Dario R. Dekel
- 1728 Ternary Pt-Rh-SnO₂ Catalyst Synthesized from Vapor Phase for Ethanol Oxidation
Haoran Yu, Abhinav Poozhikunnath, Mimir B Vukmirovic, Justin Roller, Leonard J. Bonville, Radoslav R. Adzic, Radenka Maric
- 1729 Composition Controllable Synthesis of Highly Opened PtCu Nanodendrites with Efficient Electrocatalytic Activity and Stability for Methanol Oxidation Induced By High-Index Surface and Electronic Interaction
Linfang Lu
- 1730 One-Pot Synthesis of Pt@TiO₂ Electrocatalysts for Methanol Oxidation
Tobias Unmüssig, Martin Rohloff, Anna Fischer
- 1731 Preparation and Characterization of Palladium Supported on Reduced Graphene Oxide for the Electrooxidation of Formate in the Alkaline Medium
Vicente Galvan, Dean Glass, G. K. Surya Prakash
- 1732 Self-Supported Hierarchical Porous Metallic Aerogels Synthesized Via Spontaneous Methods As High Performance Electrocatalysts
Wei Liu
- 1733 Electrochemical Stability of Pt Nanoparticles Supported on a Wide Library of Carbon Supports, Either Used Bare, or Modified By Fluorination or Tin Oxide Deposits
Tristan Asset, Yasser Ahmad, Fabien Labbé, Nicolas Batisse, Marc Dubois, Katia Guerin, Sandrine Berthon-Fabry, Rudolf Metkemeijer, Laetitia Dubau, Frederic Maillard, Marian Chatenet
- 1734 Development of Electrocatalysts for Anion Exchange Membrane Fuel Cells
Alexey Serov, Geoff McCool, Samuel McKinney, Alia Lubers, Madeleine Odgaard, Debbie Schlueter, Barr Zulevi
- 1735 Graphene Oxide Emulsions As a Catalyst Support for Metal Catalysts and Catalyst Layer Preparation: Cutting Corners with Hummer's Method
Dean Glass, Vicente Galvan, G. K. Surya Prakash
- 1736 Understanding the Role of the PdCu Nanoalloys for the Enhanced Hydrogen Oxidation Reaction
Le Xin, Yang Qiu, Wenzhen Li, Yawei Li, Michael J. Janik, Fangmin Guo, Qi Liu, Yang Ren
- 1737 Development of Ni-Based Bimetallic Electrocatalysts for Hydrogen Oxidation Reaction in Alkaline Fuel Cells
Maidhily Manikandan, Gurbinder Singh, Alejandro Oyarce Barnett, Frode Seland, Svein Sunde
- 1738 Why Pt-Ru Catalyst Works Better for Alkaline Hydrogen Oxidation Reaction?
Sandip Maurya, Hoon T Chung, Cy Fujimoto, Ivana Matanovic, Yu Seung Kim
- 1739 (Invited) Electrode and Electrolyte Design for Low-Temperature Supercapacitors
Xuehang Wang, Yury Gogotsi
- 1740 Engineering Novel Fiber Structures As Wearable Supercapacitors
Wei Gao
- 1741 (Invited) Tune Materials Structure and Chemistry for the Use of Micron Sized Silicon for Lithium-Ion Batteries
Xiao-Dong Zhou, Kuber Mishra

- 1742 High Mass-Transport, Low Pt Loading Fuel Cell Electrodes
Kieran F. Fahy, Madeleine Laitz, Anthony R. J. Kucernak
- 1743 Investigating the Effects of Catalyst Loading and MEA Conditioning on Commercial Pt/C and State-of-the-Art Pt-Alloy/C Performance in a PEMFC
Sadia Kabir, Guido Bender, Walter E. Klein, Shyam S. Kocha, Kenneth Charles Neyerlin
- 1744 Impact of OER Catalyst Activity and Stability on PEMFC Fuel Starvation Caused Cell Reversal Tolerance
Foroughazam Afsahi, Ping He, Kyoung Bai, Rajesh Bashyam, Shanna Knights
- 1745 Impact of Gas Stoichiometry on the Result of Accelerated Stress Tests
Julia Mainka, Said Ait Hammou Taleb, Jérôme Dillet, Olivier Lottin
- 1746 Changes in Proton and Electron Transfer Resistance in Cathode Catalyst Layer of PEM Fuel Cell By Carbon Corrosion
Seonghun Cho, Gu-Gon Park, Won-Yong Lee, Sung-Dae Yim
- 1747 (Energy Technology Division Research Award Address) Hydroxide Exchange Membrane Fuel Cells for Affordable Zero-Emission Cars
Yushan Yan
- 1748 High Performance Anion-Exchange Membranes and Ionomers for Use in Alkaline Membrane Fuel Cells
Lianqin Wang, Julia Ponce Gonzalez, Rachida Bance-Soualhi, Daniel Whelligan, John Varcoe
- 1749 A Practical Anion Exchange Membrane with Tunable Properties for High Performance and Chemical and Mechanical Stability
Andrew M Herring, Mei-Chen Kuo, Samuel Galito, E. Bryan Coughlin
- 1750 Evaluation of Poly(phenylene oxide)-Based Anion Exchange Membranes in Fuel Cells
Annika Elisabet Carlson, Hai-Son Dang, Göran Lindbergh, Carina Lagergren, Patric Jannasch, Rakel Wreland Lindström
- 1751 Poly(aryl piperidinium) Based Hydroxide Exchange Membranes and Ionomers
Junhua Wang, Yun Zhao, Brian P. Setzler, Lan Wang, Keda Hu, Santiago Rojas-Carbonell, Bingjun Xu, Yushan Yan
- 1752 Modeling Water Management and Carbon Dioxide Contamination Effects in Anion-Exchange Membrane Fuel Cells
Michael R. Gerhardt, Lalit M. Pant, Adam Z. Weber
- 1753 Dimethyl Substituted Polyaromatic Alkaline Ionomers for Better Alkaline Hydrogen Oxidation
Eun Joo Park, Sandip Maurya, Chulsung Bae, Yu Seung Kim
- 1754 AEMFC Catalyst Layer Engineering to Maximize Water Management and Performance While Reducing PGM Catalyst Loading
Travis J Omasta, Xiong Peng, William E Mustain
- 1755 Determining Electro-Osmotic Drag of Water in Anion Exchange Membrane Fuel Cells
Asa Logan Roy, Jing Peng, Thomas A. Zawodzinski
- 1756 Predicting Electrospun Anion Exchange Membrane Conductivity in the Presence of Carbon Dioxide
Jacob A. Wrubel, Aldo A. Peracchio, Brice N. Cassenti, Kyle N. Grew, Wilson K. S. Chiu
- 1757 (Invited) Self-Humidifying Ultrathin Proton Conductive Membranes for Low Temperature Hydrogen Fuel Cells
Ping Gao
- 1758 New Ion-Exchange Membranes Derived from Polyketone
Vito Di Noto, Graeme Nawn, Ketì Vezzù, Federico Bertasi, Enrico Negro, Gianni Cavinato, Giuseppe Pace
- 1759 High Performance of a Novel Polymer Electrolyte Fuel Cell with Proton and Hydroxyl Ion Conducting Membranes Under Non-Humidified Condition
Ji Eon Chae, Youngseung Na, Jieun Choi, So Young Lee, Jong Hee Han, Hyoung-Juhn Kim

- 1760 Solvation of Perfluorsulfonate Ion Exchange Membrane in Non-Aqueous Solvents
Kun Lou, Jing Peng, Zhijiang Tang, Thomas A Zawodzinski
- 1761 Reinforced Polymer Electrolyte Membrane Development for Membrane Electrode Assembly of PEMFC
Na Young Kim, Dong-Hoon Lee, Eun-Su Lee, Seung Jib Yum, JungHwa Park, Moo-Seok Lee
- 1762 Ion Transport in Microphase Separating Polymer Thin Films
Yu Kambe, Christopher George Arges, Ban Dong, David A. Czaplewski, Shrayesh N. Patel, Paul F. Nealey
- 1763 Monolayer Graphene Based Membrane to Replace Nafion in PEM Fuel Cells
Madhumita Sahoo, Maria Perez-page, Vasu Kalangi, Rahul Raveendran Nair, Stuart Holmes
- 1764 Enhance the Performance of PEM Fuel Cell By Incorporating Graphene Based Materials Produced By Electrochemical Exfoliation of Graphite
Stuart Holmes, Maria Perez Page, Madhumita Sahoo, Vasu Kalangi, Rahul Raveendran Nair
- 1765 Durable MEA with Functionalized Catalysts for PEMFC and Its Development Status for Automotive Application
Jun Young Kim, Jin Hwa Lee, Kah Young Song, Nak-Won Kong
- 1766 Pt Supported on Nb-Doped-TiO₂ As a Highly Selective and Durable Electrocatalyst for PEFC Applications
Cheng He, Shrihari Sankarasubramanian, Vijay K Ramani
- 1767 The Impact of Subsurface and Thin Pt Layer in Nafion Membrane on H₂/O₂ PEM Fuel Cell Performance
Lius Daniel, Arman Bonakdarpour, David P. Wilkinson
- 1768 (Invited) Direct Observations of Liquid Water Formation at Nano- and Micro-Scale in Platinum Group Metal-Free Electrodes By Operando X-Ray Computed Tomography
Iryna V. Zenyuk
- 1769 Structure, Properties, and Degradation of Ultrathin Ionomer Films in Fuel Cell Catalytic Layers
Renate Hiesgen, Tobias Morawietz, Michael Handl, Caudio Oldani, Kunal Karan, Kaspar Andreas Friedrich
- 1770 Estimation of Cation Contamination Level in Polymer Electrolyte Membrane Fuel Cells By Electrochemical Impedance Spectroscopy
Masao Shibata, Naoki Kitano, Akihiro Shinohara, Takahiko Asaoka, Norimitsu Takeuchi, Touru Morita, Hideyuki Kumei
- 1771 Novel Methodology for Ex-Situ Characterization of Catalysts in Reversal Tolerant PEM-FCs
Colin Edward Moore, Jennie Eastcott, Max Cimenti, Natalia Kremliakova, Elod L. Gyenge
- 1772 Neutron Tomographic Investigation of the Effect of Hydrophobicity Gradients within MPL and MEA on the Spatial Distribution and Transport of Liquid Water in Pemfcs
Dena Kartouzian, Arezou Mohseninia, Henning Markötter, Joachim Scholta, Ingo Manke
- 1773 Soldering a Gas Diffusion Layer Onto Stainless Steel Bipolar Plates Using Tin and Tin Alloys
Katie McCay, Ole Edvard Kongstein, Alejandro Oyarce Barnett, Frode Seland
- 1774 Synthesis and Properties of s-PBI/2OH-PBI Random Copolymer for High Temperature PEM Fuel Cells
Ju Sung Lee, Min Jae Lee, So Young Lee, Jong Hyun Jang, Hyoung-Juhn Kim
- 1775 Miniature Fuel Cell with Monolithically Fabricated Si Electrodes - Application of a Polymer Electrolyte Membrane with Adapted Shape
Yuta Kushida, Asuka Sawada, Koichi Kono, Yuhei Oshiba, Takeo Yamaguchi, Masanori Hayase
- 1776 Water Activity Dependence of Oxygen Evolution Reaction Catalysts and Carbon Corrosion of Reversal Tolerant Fuel Cell Anodes during Hydrogen Starvation Conditions
Taigyu Joo, Leiming Hu, Bo Ki Hong, Jong-Gil Oh, Shawn Litster
- 1777 3M Ionomer Adsorption on Polymer Electrolyte Membrane Fuel Cell Electrodes
Nelly M. Cantillo, Jing Peng, Brian Sneed, Gabriel A. Goenaga, Karren L. More, Thomas A. Zawodzinski
- 1778 Durability of Platinum-Based Carbon-Supported Electrocatalysts in Liquid Versus Solid Polymer Alkaline

Electrolytes

Clémence Lafforgue, Laetitia Dubau, Frederic Maillard, Dario R. Dekel, Marian Chatenet

- 1779 Porous Hollow PtNi/C Electrocatalysts: Carbon Support Considerations to Meet Stability Requirements
Tristan Asset, Nathalie Job, Yan Busby, Alexandre Crisci, Vincent Martin, Vaios Stergiopoulos, Céline Bonnaud, Alexey Serov, Plamen Atanassov, Raphaël Chattot, Laetitia Dubau, Frederic Maillard
- 1780 Electronic Structure and Growth of Electrochemically Formed Iridium Oxide Films
Liudmila Igorevna Ilyukhina, Richard G Haverkamp, Svein Sunde
- 1781 Impact of Heat Treatment on the Electrochemical Properties of Octahedral Pt-Ni Nanoparticles
Fei Xiao, Minhua Shao
- 1782 Oxygen Electro-Adsorption Measurements on IrO₂(110) and RuO₂(110): Evidence for Scaling Relations and Design Insights for Oxygen-Evolution Catalysts
Ding-Yuan Kuo, Hanjong Paik, Jocienne N. Nelson, Jan Kloppenburg, Geoffroy Hautier, Kyle M. Shen, Darrell G. Schlom, Jin Suntivich
- 1783 Unveiling the Degradation Pathway of Highly Defective Hollow PtNi/C in Operando Conditions
Laetitia Dubau, Tristan Asset, Jaysen Nelayah, Raphaël Chattot, Pierre Bordet, Jakub Drnec, Frederic Maillard
- 1784 Metal Phosphides As Electrocatalyst and Supports for PEM Fuel Cells
Andres Parra Puerto, Kieran F. Fahy, Angela E Goode, Mary P Ryan, Anthony R. J. Kucernak, Kai Ling NG
- 1785 The Synthesis of Cerium Oxide Antioxidant Supported on Silica Nanotube for Polymer Electrolyte Membrane Fuel Cell
Song I Oh, So Young Lee, Jae Jun Ko, Jong Hee Han, Hyoung-Juhn Kim
- 1786 Bipolar Polymer Electrolyte Interfaces As Separators for High Performance Direct Borohydride Fuel Cells
Zhongyang Wang, Javier Parrondo, Cheng He, Shrihari Sankarasubramanian, Vijay K Ramani
- 1787 Employment of Fiber-Shaped Cobalt Modified with Gold Nanoparticles As Anode in Direct Borohydride and Hydrazine Fuel Cells
Aldona Balciunaite, Ausrine Zabielaite, Loreta Tamasauskaite-Tamasiunaite, Eugenijus Norkus
- 1788 Optimum Membrane for Formic Acid Electro Oxidation
Romeo Gonzalez Rodriguez, Maria Perez-page, Remy Sellin, Stuart Holmes
- 1789 Low Cost PCB Fuel Cells Based for Small Electronic Applications
Andres Parra Puerto, Liisa Hakola, Anthony R. J. Kucernak
- 1790 Holey Graphene Aerogel to Support Pt Nanoparticles for Direct Methanol Fuel Cell
Xuelin Zhang, Weijian Yuan, Yufeng Zhang, Xiaowei Liu
- 1791 Enhanced Nano-Catalyst Infiltration of Anode-Supported SOFCs through Surface Modification of Electrodes By Catechol Surfactants
Ozcan Ozmen, Shiwoo Lee, John W. Zondlo, Gregory A Hackett, Harry Abernathy, Edward M. Sabolsky
- 1792 Interfacial Characteristics of Graphene Containing Novel Microporous Layers for PEM FCs
Magrieta Jeanette Leeuwener, David P. Wilkinson, Elod L. Gyenge
- 1793 Diffusion Layers with Localized Hydrophilic Domains: Influence of Electron Energy on Spatial Resolution
Antoni Forner-Cuenca, Victoria Manzi-Orezzoli, Lorenz Gubler, Thomas J. Schmidt, Pierre Boillat
- 1794 In Situ X-Ray Scattering Characterization of PEMFC Catalyst Ink Microstructure during Ink Processing
Jaehyung Park, Nancy Kariuki, Deborah J Myers, Scott A Mauger, Kenneth Charles Neyerlin, Michael Ulsh
- 1795 Characterization of Nafion®XL Properties after Ex-Situ and In-Situ Degradations
Mylene Robert, Assma El kaddouri, Jean-Christophe Perrin, Sébastien Leclerc, Jérôme Dillet, Kevin Mozet, Olivier Lottin
- 1796 In Situ Monitoring of Co Cation Migration in an Operating MEA via Synchrotron Micro-X-Ray Fluorescence
Yun Cai, Joseph M. Ziegelbauer, Andrew M. Baker, Wenbin Gu, Anusorn Kongkanand, Rangachary Mukundan, Rod L. Borup

- 1797 In-Situ Electrochemical X-Ray Diffraction of Pt Oxidation and Reduction in Hydrogen Fuel Cells
Isaac Martens, Jakub Drnec, Maria Valeria Blanco, Janne Pusa, Veijo Honkimäki, David P. Wilkinson, Dan Bizzotto
- 1798 MOF-Based Nano-Cuboids Electrocatalyst for OER-HER Reactions
Wook Ahn, Moon Gyu Park, Dong Un Lee
- 1799 Preparation and Characterization of Monovalent Cation Selective Membranes Prepared by a Layer-By-Layer Pore-Filled Technique
Young-Woo Choi, Naeun Kang, Nam-Jo Jeong, Chan-Soo Kim
- 1800 Reinforced Nanocomposite Polymer Electrolyte Membrane and Its Characterization Fabricated by an Innovatively Simple Process for PEMFC
Young-Woo Choi, Seol Jang, Young-Gi Yoon
- 1801 In-Situ Electrochemical Characterization of Proton Exchange Membranes for Water Electrolysis
Amelia Hohenadel, Hsu-Feng Lee, Thulile Khoza, Alejandro Oyarce Barnett, Steven Holdcroft
- 1802 Annealing Effect of Nafion-Propyl-1,2,3-Triazole Membrane By Autoclave Solution Processing
Je-Deok KIM, Lee-Jin Ghil, Akihiro Ohira
- 1803 Nickel Nanoparticles Decorating Graphite Flake Surface Using Planetary Ball Milling: Physical Characterization and Methanol Electrooxidation Investigation
Yunier Garcia-Basabe, Rafael Otoniel Ribeiro Rodrigues da Cunha, Jose Ricardo Cezar Salgado, Dunieskys Gonzalez Larrude, Kelly Daiane Sossmeier
- 1804 The Enhancement of Hydrogen Oxidation Activity and the Optimization of Alloy Composition in PdRu Nanoparticle Catalysts
Kyungjung Kwon, Seon-ah Jin, Jinwon Cho, Hyung Chul Ham, Chanho Pak
- 1805 Proton-Conductive Block Copolyphenylchinoxalines Ionomers for Fuel Cells and Electrolysis
Silvia Janietz, Hartmut Krüger, Tatjana Egorov-Brening
- 1806 Bimetallic Nano Electrocatalyst for HER in Alkaline Polymer Electrolysis
Alaa Y Faid, Maidhily Manikandan, Frode Seland, Alejandro Oyarce Barnett, Svein Sunde
- 1807 Zirconia Doped Ceria Cathodic Interlayer By Atomic Layer Deposition for Low Temperature Solid Oxide Fuel Cell
Byung Chan Yang, Dohyun Go, Seongkook Oh, Jeong Woo Shin, Jihwan An
- 1808 Stable and Active Polymer Electrolyte Membrane Electrolyzers Utilizing Transition Metal Phosphide Hydrogen Evolution Catalysts
Laurie Ann King, McKenzie Hubert, Christopher B Capuano, Judith Manco, Nemanja Danilovic, Thomas Hellstern, Thomas F Jaramillo
- 1809 Temperature Dependence on Oxygen Reduction Reaction for Carbon-Supported Pd-Core/Pt-Shell Electrocatalysts
Tomoki Uchiyama, Liu Chen, Kentaro Yamamoto, Hajime Tanida, Naoki Takao, Hideto Imai, Kouji Yokoyama, Seiho Sugawara, Kazuhiko Shinohara, Yoshiharu Uchimoto
- 1810 Temperature Dependence of the Oxygen Reduction Reaction Activity and Local Structural Analysis of Pt/C Catalyst
Noriyuki Nagata, Yuki Horie, Tomoki Uchiyama, Kentaro Yamamoto, Hajime Tanida, Naoki Takao, Hideto Imai, Kouji Yokoyama, Seiho Sugawara, Kazuhiko Shinohara, Yoshiharu Uchimoto
- 1811 Preparation Condition Optimization and Characterization of Pt-Ni/C Octahedral Nanocrystal Catalyst for ORR
Jue Wang, Bing Li, Daijun Yang, Hong Lv, Cunman Zhang
- 1812 Rational Design of Ir-M Nanoalloy for PEMFC Cathode Application: Combined Computational and Experimental Study
Jinwon Cho, Injoon Jang, Hyun-Seo Park, Sun Hee Choi, Jong Hyun Jang, Hyoung-Juhn Kim, Sung Pil Yoon, Sung

Jong Yoo, Hyung Chul Ham

- 1813 Dispersing Effect of Poly (vinyl pyrrolidone) Addition on Platinum/Tin Phosphate/Carbon Black Bifunctional Catalysts for Direct Methanol Fuel Cell
Chun Yuan Huang, Yu Ching Cheng, Shiow Kang Yen
- 1814 On the Effect of Clamping Pressure and Method on the Current Mapping of Proton Exchange Membrane Water Electrolysis
Saher Al Shakhshir, Fan Zhou, Søren Knudsen Kær
- 1815 Current and Temperature Distribution Measurement in a Polymer Electrolyte Membrane Water Electrolyzer Cell
Fan Zhou, Saher Al Shakhshir, Søren Knudsen Kær
- 1816 Advanced Characterization and Quantification of Fuel Cell Electrodes Using Electron and X-Ray Microscopy Techniques
Jasna Jankovic, Darija Susac, Andreas Michael Vincent Putz, Alexander Kneer, Shawn Zhang
- 1817 Full Characterization of an Operating Fuel Cell Using High Energy X-Rays
Isaac Martens, Janne Pusa, Maria Valeria Blanco, Antonis Vamvakeros, Simon Jacques, Helena Isern, Veijo Honkimäki, Jakub Drnec
- 1818 Neutron Radiographic Investigations on the Effect of Hydrophobicity Gradients within MPL and MEA on Liquid Water Distribution and Transport in PEMFCs
Arezou Mohseninia, Dena Kartouzian, Henning Markötter, Utku U. Ince, Joachim Scholta, Ingo Manke
- 1819 Use of Embedded Electrodes to Resolve Anode and Cathode Electrode Impedance in Proton Exchange Membrane Fuel Cells
Alex Laurence Szendrei, Taylor Sparks, Anil V. Virkar

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- 1820 Cleaning Industrial Waste Water with Simultaneous Power Generation Utilizing an Abiotic Fuel Cell
Javier Rubio-Garcia, Daniel Malko, Anthony R. J. Kucernak, Martin Kaiser, Andres Parra-Puerto
- 1821 Ultra-High Efficient, Autonomous, Solar-Powered Chlorine Generators
Enrico Chinello, Miguel Antonio Modestino, Laurent Coulot, Mathieu Ackermann, Florian Gerlich, Demetri Psaltis, Christophe Moser
- 1822 Progress Towards Electrochemical Methods for Pyrolysis-Oil Hydrogenation
Jamelyn Holladay, Juan A Lopez Ruiz, Jonathan Egbert, Oliver Y Gutiérrez Tinoco, Udishnu Sanyal
- 1823 Efficient and Scalable Photo-Electrochemical Device for Solar Fuel Generation Working Under Concentrated Irradiation
Saurabh Tembhurne, Fredy Nandjou, Sophia Haussener
- 1824 Functionalized Silica Facilitated Proton Coupled Electron Transfer in Electrochemical CO₂ Reduction on Pd
Yuxin Fang, John Flake
- 1825 In Situ Study of Catalyst Reconstruction during Electrochemical CO₂ Reduction
Zhenxing Feng, Maoyu Wang, Zhe Wang, Yueshen Wu, Hailiang Wang
- 1826 The Effect of Initial Chemical State of Copper Nanoparticles Towards C₂ Products for Electrochemical CO₂ Reduction
Hyejin Jung, Byoung Koun Min, Yun Jeong Hwang
- 1827 High Index Non-Noble Metal Electrocatalysts for Electrochemical CO₂ Reduction to C₁ Products
Da Hye Won, Seong Ihl Woo, Hyungjun Kim, Yun Jeong Hwang, Byoung Koun Min
- 1828 Rutile-Anatase Core-Shell TiO₂ Nanostructured Array for Photoelectrochemical Water Oxidation and CO₂ Photoconversion
Jih-Sheng Yang, Hao-Chun Chang, Jih-Jen Wu

- 1829 Tuning the Composition of Bimetallic Electrodeposited Sn-Pb Catalysts for Enhanced Activity and Durability in CO₂ Electroreduction to Formate
Colin Edward Moore, Elod L. Gyenge
- 1830 Tin Alloy Nanoparticles for Selective Electrocatalytic Reduction of Carbon Dioxide to Formate
Mariana R. Camilo, Fabio H. B. Lima
- 1831 Ionic Liquid Functionalized Cathode Catalyst Support for Carbon Dioxide Conversion Using Proton Exchange Membrane Fuel Cell
Prof S Ramaprabhu, Ghosh Sreetama, Garapati Meenakshi Seshadhri
- 1832 Electrocatalysis for CO₂ Reduction: Controlling Selectivity to Oxygenates and Multicarbon Products
Christopher Hahn, Thomas F Jaramillo
- 1833 (Invited) Coupling Solar Energy into Catalytic CO₂ Conversion
Yujie Xiong
- 1834 (Invited) A Wired Photosynthesis of Formate from Aqueous CO₂ Using Earth Abundant Catalysts
Hyunwoong Park
- 1835 (Invited) Ligand-Directed CO₂ Conversion at Bimetallic Au/Cu Nanocatalysts
Douglas R. Kauffman, Dominic R Alfonso
- 1836 (Invited) Efficient Photocatalytic CO Production from CO₂ and H₂O By the Aid of Artificial Photosynthesis
Kentaro Teramura
- 1837 (Invited) Electrocatalytic Carbon Dioxide Conversion on Cu Catalyst
Youngkook Kwon, Mintaek Im, Jung-Ae Lim, DaJeong Kim, Dongyeon Kim, Hyunchul Jung, Soo Min Kim, Beom-Sik Kim
- 1838 (Invited) Enhanced Photoelectrochemical and Photocatalytic Activities of CdS Nanowires By Surface Modification with Transition Metal Chalcogenides
Jin Z Zhang, Hongmei Wang, Chunhe Li, Sara Bonabi Naghadeh
- 1839 (Invited) Understanding Photoelectrode/Catalyst Interface for Solar Water Splitting
Dunwei Wang
- 1840 (Invited) Improve Electrodes' Electrochemical Performance for HER and OER By Hydrogenation Treatment
Xiaobo Chen
- 1841 (Invited) Development and Integration of Heterojunctions for Enhanced Solar Energy Conversion
Renata Anna Solarzka, Krzysztof Bienkowski, Monika Arasimowicz
- 1842 (Keynote) Photocatalytic Aspects of CsPbBr₃ Perovskite Nanocrystals
Prashant V Kamat, Rebecca Scheidt, Geetha Balakrishna, Steven Kobosko, Vikashkumar Ravi
- 1843 (Keynote) Integrating Catalytic and Transport Functions within Multiscale Architectures
Debra R. Rolison
- 1844 (Invited) Solid-State Chemistry Meets Photoelectrochemistry: New Families of Ternary Oxides and Chalcogenides
Krishnan Rajeshwar
- 1845 (Invited) Driving Metal Oxide Water Oxidation Catalyst By Visible Light Absorber Separated By an Ultrathin Proton Conducting Silica Membrane with Embedded Molecular Wires
Heinz Frei
- 1846 (Invited) Towards Unassisted Water-Splitting Systems: Development of Catalysts, Semiconductors, and Interfaces
Thomas F Jaramillo
- 1847 (Invited) A New Strategy to Enhance Long-Term Photostability of BiVO₄ Photoanodes for Solar Water

Splitting

Dong Ki Lee, Kyoung-Shin Choi

- 1848 (Invited) Electrocatalytic Ammonia Oxidation
Faezeh Habib-Zadeh, Suzanne Miller, Thomas Hamann, Milton Smith
- 1849 (Invited) Bridge Design for Photoactive Molecules at Interfaces
Elena Galoppini
- 1850 (Invited) Artificial Photosynthesis on III-Nitride Nanowire Arrays
Zetian Mi
- 1851 (Invited) Designing Efficient Photoelectrochemical Solar Energy Conversion Devices and Their Integration with Redox Flow Battery Devices
Song Jin
- 1852 (Invited) Visible Light-Driven Water Oxidation with Porphyrin Sensitizers and Water Oxidation Catalysts
Hiroshi Imahori
- 1853 (Invited) Understanding Charge Separation in Semiconductor for Efficient Photoelectrochemical Water Splitting
Yun Jeong Hwang, Sang Youn Chae, Byoung Koun Min
- 1854 (Invited) On the Role of Electrocatalysts in the Process of Light-Driven Water Splitting
Sebastian Fiechter, Fanxing Xi, Farabi Bozheyev, Fatwa Firdaus Abdi, Klaus Ellmer, Peter Bogdanoff, Moritz Kölbach
- 1855 (Invited) Integrating Ab-Initio Simulations and Experimental Characterization Methods: Towards Accelerated Chalcopyrite Materials Development for Hydrogen Production
Tadashi Ogitsu, Joel Varley, Alexander D DeAngelis, Kimberly Horsley, Nicolas Gaillard
- 1856 (Invited) Multi-Scale and Multi-Physics Modeling for Advancing Photoelectrochemical and Photocatalytic Material and Device Research
Sophia Haussener
- 1857 (Invited) Latest Advances in Design, Performance, & Stability of Solar Seawater Splitting Materials
Lionel Vayssieres
- 1858 (Invited) The Role of Gold Cluster Size and Coverage on Hydrogen Production over TiO₂(110) Single Crystal. An STM and Time Resolved Spectroscopy Study
Habib Katsiev, George Harrison, Partha Maity, Geoff Thornton, Hicham Idriss
- 1859 (Invited) Distinguishing Roles of Gold Nanoparticles in Photocatalysis
Nianqiang Wu
- 1860 (Invited) Thermodynamic Aspects of Devices for Solar Energy and Chemical Conversions
Frank E. Osterloh
- 1861 (Invited) Photocatalysis on TiO₂: Insights from Simulations
Annabella Selloni
- 1862 (Invited) Surface Chemistry and Intercalation As Strategies to Tune Reactivity in Colloidal Electrocatalysts
Brandi Cossairt, Danielle Henckel, David Ung
- 1863 Intrinsic Photoexcited Charge Trapping from Small Polaron Formation in α -Fe₂O₃
Scott Kevin Cushing, Lucas M. Carneiro, Hung-Tzu Chang, Michael Zuerch, Stephen R. Leone
- 1864 Decoupling Hydrogen Production and Water Oxidation in a Hybrid Solar-Driven Vanadium Redox Cell Supported By a Bipolar Membrane with Earth-Abundant Catalysts
Chengxiang("CX") Xiang
- 1865 (Invited) Hot-Electron Generation and Energy Transfer in Plasmonic Nanostructures with Hot Spots: Quantum and Classical Mechanisms

Alexander O. Govorov

- 1866 (Invited) Designing Hybrid Nanostructures for Enhancing Photon Harvest in Photocatalysis
Dongling Ma
- 1867 (Invited) Efficient Hot Electron Transfer By Plasmon Induced Interfacial Charge Transfer Transitions
Tianquan Lian
- 1868 (Invited) Maximizing Efficiencies of Photocatalytic Water Splitting By Engineering Interfaces in Multi-Component Photocatalysts
Suljo Linic
- 1869 (Invited) Artificial Photosynthesis Using Plasmonic Photoanode
Tomoya Oshikiri, Ryohei Takakura, Xu Shi, Kosei Ueno, Hiroaki Misawa
- 1870 (Invited) Controlled Synthesis of Hollow Bimetallic Nanoparticles As Photo and Electrochemical Catalysts
Jing Zhao
- 1871 (Invited) Nanoscale Design and Modification of Plasmonic Aerogels for Photocatalytic Hydrogen Generation
Jeremy Pietron, Paul A. DeSario, Catherine L. Pitman, Todd Brintlinger, Adam Dunkelberger, Olga A Baturina, Rhonda Stroud, Jeffrey C. Owrutsky, Debra R. Rolison
- 1872 (Invited) Ag-TiO₂/TiO_x Nanocomposites for Enhanced Photocatalysis
Brendan DeLacy, Danielle Kuhn, Zach Zander
- 1873 Plasmonic Heterostructure for Full Solar Spectrum Harvesting
Yang Yang
- 1874 (Invited) High Surface Area, Amorphous Titania with Reactive Ti³⁺ through a Photo-Assisted Synthesis Method for Photocatalytic H₂ Generation
Candace K. Chan, Dennis Zywitzki, Harun Tüysüz
- 1875 (Invited) Multifunctional Membrane Coated Electrocatalysts
Natalie Yumiko Labrador, Daniel V Esposito
- 1876 (Invited) Photoelectrochemical Properties of Bare or Modified TiO₂ Films
Corrado Garlisi, Lutfiye Ozer, Matteo Chiesa, Giovanni Palmisano
- 1877 (Invited) Charge Transfer Behaviour of Modified Titania Nanotube Arrays Transplanted on Transparent Conducting Oxides
Hye Won Jeong, Hyunwoong Park
- 1878 (Invited) Development of Molecular Photocathodes Based on Metal Complex Photocatalyst and Their Application for Photoelectrochemical CO₂ Reduction in Aqueous Electrolyte
Hiromu Kumagai, Osamu Ishitani
- 1879 (Invited) Singularity in Chemistry: Digitally Controlled Kinetics of Titania-Photocatalyzed Oxygen Evolution
Bunsho Ohtani, Shugo Takeuchi, Mai Takase, Mai Takashima
- 1880 (Invited) Rationally Designed Semiconductor/Nanocarbon Photoelectrodes for Solar Fuel Generation
Egon Kecsenvity, Balazs Endrodi, Csaba Janáky
- 1881 (Invited) Electrodeposition of Cu_xCO_{3-x}O₄ As Highly Efficient Oxygen Evolution Catalyst
Narayan Chandra Deb Nath, Hyunwoong Park, Jae-Joon Lee
- 1882 (Invited) Constructing Efficient Photocatalysts Based on the Bonding Difference
Gang Liu
- 1883 (Invited) Inverted Metamorphic Multijunction III-Vs for Photo-Electrochemical Hydrogen Production Systems: Challenges in Absorber Stabilization and Device Scale-up
James L. Young, Walter E. Klein, Myles Steiner, Todd G Deutsch
- 1884 (Invited) Wide Bandgap Copper Chalcopyrite Candidates for Renewable Hydrogen Generation
Nicolas Gaillard, Alexander D DeAngelis, Kimberly Horsley

- 1885 (Invited) Novel Band-Gap Engineered III-V Alloys for Unassisted Water Photoelectrolysis
Mahendra Kumar Sunkara, Sonia Calero
- 1886 (Invited) Preparation of Dumbbell-Shaped Nanocrystals Composed of ZnS-AgInS₂ Solid Solution and Their Photocatalytic H₂ Evolution Activity
Tsukasa Torimoto, Seiya Koyama, Tatsuya Kameyama, Susumu Kuwabata
- 1887 (Invited) Photophysics of Cesium Lead Halide Perovskite Quantum Dots Designed for Efficient Solar Energy Conversion
Istvan Robel
- 1888 (Invited) CdTe Based Photocathodes and Photoanodes for Photoelectrochemical Water Splitting Under Sunlight
Tsutomu Minegishi, Jin Su, Kazunari Domen
- 1889 (Invited) Bismuth-Based Ternary Oxide Thin Film for Solar Water Oxidation
Yun Hau Ng
- 1890 (Invited) Understanding Redox Shuttle Photocatalysis in Z-Scheme Solar Water Splitting Reactors
Samuel Keene, William Gaieck, Anni Zhang, Houman Yaghoubi, Jingyuan Liu, Rohini Bala Chandran, Chengxiang("CX") Xiang, Adam Z. Weber, Shane Ardo
- 1891 (Invited) Particulate Photocatalyst Systems for Sunlight-Driven Water Splitting
Takashi Hisatomi, Kazunari Domen
- 1892 (Invited) Surface Engineering of Metal Oxide Photoanodes for Photoelectrochemical Solar Water Splitting
Jong Hyeok Park
- 1893 Nano-Bio Assemblies Based on Natural and Artificial Proton Pump for Photocatalytic Hydrogen Production
Elena Rozhkova
- 1894 Bismuth Vanadate/Zinc Oxide Heterojunction Electrodes for High Solar Water-Splitting Efficiency at Low Bias Potential
Kiwon Kim, Jun Hyuk Moon
- 1895 Exploring Electrocatalytic N₂ under Varying Electrolyte Conditions
Adam C. Nielander, Joshua M McEnaney, Thomas F Jaramillo
- 1896 Solar Water Splitting Based on Organic Metal Halide Perovskite Solar Cells with Metal Protection and Catalyst
Seongsik Nam, Oh Ilhwan
- 1897 Improving Photo-Electrochemical Water Oxidation Response of WO₃ By Mo Doping
Shankara S Kalamur, Hyungtak Seo
- 1898 Integrating Ab-Initio Simulations and Experimental Characterization Methods for Understanding Chemistry at Complex Photoelectrochemical Interfaces
Tuan Anh Pham, Xueqiang Zhang, Brandon C. Wood, Sylwia Ptasinska, Tadashi Ogitsu
- 1899 Noble-Metal-Free Photocatalytic Hydrogen Evolution Activity: Defect Engineering in TiO₂ Nanotubes
Xuemei Zhou, Patrik Schmuki
- 1900 Tuning Morphology and Defect Density in Self-Assembled Thin-Films of Solvent-Exfoliated WSe₂ for Photoelectrochemical Hydrogen Production
Xiaoyun Yu, Kevin Sivula
- 1901 Solar-to-Hydrogen Efficiency: Shining Light on Photoelectrochemical Device Performance
James L. Young, Henning Döscher, John F Geisz, John A Turner, Todd G Deutsch
- 1902 Photo-Assisted High Efficiency Low-Cost Hydrogen Generation
Wei Wang, Dongping Lu, Yuyan Shao, Qian Huang, Litao Yan

- 1903 Titanium Nitride As a Conducting Interfacial Layer between Hydrogen Evolution Catalysts and Silicon Photocathodes for Stable Solar-to-Hydrogen Water Splitting Devices
Shinjae Hwang, Anders B. Laursen, Spencer H Porter, Yang Hongbin, Mengjun Li, Viacheslav Manichev, Karin U. D. Calvinho, Voshadhi Amarasinghe, Martha Greenblatt, Eric Garfunkel, Gerard Charles Dismukes
- 1904 Nanoelectrode Atomic Force Microscopy Probes Enable the in-Operando Measurement of Surface Electrochemical Potentials during Oxygen Evolution Catalysis
Michael R. Nellist, Forrest A.L. Laskowski, Jingjing Qiu, Shannon W. Boettcher
- 1905 Electrospinning to Prepare Nanostructured Photocatalysts and Photoelectrodes
Marcus Einert, André Bloesser, Roland Marschall
- 1906 Development of Best Practices and Standard Protocols in Benchmarking Photoelectrochemical (PEC) Hydrogen Production
Chengxiang("CX") Xiang
- 1907 Electrochemical Synthesis of Nanoporous Hematite (α -Fe₂O₃) and Their Applications Towards Photocatalytic Water Oxidation
Maksudul Hasan, Emina Hadzifejzovi, James F. Rohan, John S. Foord
- 1908 Study of the Water Splitting Performance of Hematite Thin Films Prepared By DC and Reactive RF Sputtering
Rochan Sinha, Reinoud Lavrijsen, M. C. M. van de Sanden, Anja Bieberle-Hütter
- 1909 Hydrogen Evolution at Conjugated Polymer Nanoparticle Electrodes
Patrick Fortin, Steven Holdcroft
- 1910 Defect-Pairs of Titanium and Carbon in Iron Oxide Film for Efficient Visible Light Driven Water Splitting
Il Yong Choi, Donghun Kim, Tae Hwa Jeon, Byeong-Gyu Chae, Kug-Seung Lee, Chan-Gyung Park, Wonyong Choi, Sang Soo Han, Jong Kyu Kim
- 1911 Three-Dimensional Tin Oxide Nanohelix Structures with Thin Iron Oxide Layer for Efficient Visible Light Driven Water Splitting
Il Yong Choi, Tae Hwa Jeon, Byeong-Gyu Chae, Dong Yeong Kim, Chan-Gyung Park, Wonyong Choi, Jong Kyu Kim
- 1912 Large Band Gap Photoabsorbers for Tandem Water Splitting Devices
Andrea Crovetto, Korina Kuhar, Peter C. K. Vesborg, Ole Hansen, Monish Pandey, Karsten Jacobsen, Kristian Thygesen, Ib Chorkendorff, Brian Seger
- 1913 Development of a New Fabrication Route for High Quality Visible-Light-Driven Photocatalysts; Atmosphere Controlled Flux Growth for Oxynitride and Nitride Crystals
Sayaka Suzuki, Minori Yanai, Mugi Komatsu, Haruka Saito, Takashi Hisatomi, Shuji Oishi, Kazunari Domen, Katsuya Teshima
- 1914 Conjugated Polymer Nanosheets for Photocatalytic Overall Water Splitting
Hangxun Xu
- 1915 Effects of Enhanced Hole Mobility on Electrochemically Synthesized p-Type CuAlO₂ Films for Photoelectrochemical Hydrogen Production from Water
Seung Yo Choi, Hyunwoong Park
- 1916 Photoelectrochemical Activity of CdS/CdSe-Deposited TiO₂ photoanodes Due to Electrolytes with and without Sacrificial Reagents
Rasin Ahmed, Yin Xu, Giovanni Zangari
- 1917 Electrodeposited Thin Conformal TiO₂ Coating Enabling Stable Operation of BiVO₄ Photoanodes in Basic Media
Dongho Lee, Kyoung-Shin Choi
- 1918 Highly Aligned Oxide Nanotubes: Engineering Reactive Centers for Photocatalysis
Patrik Schmuki, Xuemei Zhou, Ning Liu, Marco Altomare

- 1919 Transition-Metal Single Atom Catalysts for Highly Efficient Artificial Photosynthesis
Haotian Wang
- 1920 In-Situ Growth of Polymeric Carbon Nitride Films for Efficient Photoelectrochemical Water Splitting
Can Xue
- 1921 Full Solar Spectrum Photocatalytic H₂ Production Base on Polynary Composite
Junying Zhang
- 1922 Photoelectrochemical Properties of Surface-Modified ZnSe:Cu(In,Ga)Se₂ Photocathodes for Efficient and Durable Overall Water Splitting
Hiroyuki Kaneko, Tsutomu Minegishi, Kazunari Domen
- 1923 Operational Characteristics and Failure Modes of Protected Si Anodes for Sunlight-Driven Water Oxidation
Kimberly Papadantonakis, Ke Sun, Nathan S Lewis
- 1924 Stable Silicon-Based Sandwich Photoelectrode for Efficient Solar Hydrogen Evolution
Chaoqun Cheng, Kang Du, Zengxing Zhang, Gang Li, Kaiying Wang
- 1925 PbI₂ Thin-Films for Photoelectrochemical Hydrogen Evolution
David Fermin, Devendra Tiwari
- 1926 Photolytic Water Splitting By Surface-Conditioned n-Gallium Phosphide(100) Photoanodes
Waqas Saddique, Gerhard Lilienkamp, Winfried Daum
- 1927 Electrochemical Pulsing Deposition of CTZS (Optical and Structural properties) Solar Energy Applications
Mahfouz Ali Saeed
- 1928 Stable All Solid State Z-Scheme Based TiO₂/M/Cd_xZn_{1-x}S Photo-Catalysts for Efficient Hydrogen Generation
Tayirjan Taylor Isimjan
- 1929 Wide-Bandgap Cuga(S,Se)₂ As Top Cell Photocathodes for Tandem Water Splitting Devices
Alexander D DeAngelis, Kimberly Horsley, Nicolas Gaillard

I06-Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3

- 1930 (Invited) Chemo-Mechanical Coupling Phenomena in Solid Oxide Fuel Cells
Tatsuya Kawada
- 1931 Probing Vacancy Behavior in Complex Oxide Heterostructured Films
Jiaxin Zhu, Jung-Woo Lee, Hyungwoo Lee, Lin Xie, Xiaoqing Pan, Roger A De Souza, Chang-Beom Eom, Stephen S. Nonnenmann
- 1932 Colossal Ionic Conductivity:Method of Measuring the Elastic Dipole of Charged States& a Reduced Model for the Screening of Heterolayer Structures
Michael F Francis
- 1933 Analysis of Electrochemomechanical Coupling in Non-Stoichiometric Oxide Thin Films
Shilpa N Raja, Jessica G. Swallow, Sean R. Bishop, Yen-Ting Chi, Ting Chen, Nicola H. Perry, Harry L. Tuller, Krystyn J. Van Vliet
- 1934 Tailoring Chemical Expansion in Zirconate-Cerate Proton Conductors
Ting Chen, Kwati Leonard, Kazunari Sasaki, Hiroshige Matsumoto, Nicola H. Perry
- 1935 (Invited) In-Situ Study of the Activated Lattice Oxygen Redox Reactions in Metal Oxides during Oxygen Evolution Catalysis
Binghong Han, Yang Shao-Horn
- 1936 Role of Strain in Surface Segregation of La_{1-x}Sr_xCo_{0.2}Fe_{0.8}O₃
Yang Yu, Karl F Ludwig, Srikanth Gopalan, Uday Bhanu Pal, Soumendra Nath Basu
- 1937 Verification of Strain-Induced Fast Ionic Conduction in Thin-Film Electrolyte Via Experimental and

Computational Study

Junsung Ahn, Ho Il Ji, Hyoungchul Kim, Ji-Won Son, Ho Won Jang, Jong-Ho Lee

- 1938 Scanning Thermo-Ionic Microscopy: Probing Nanoscale Mechano-Chemical Via Thermal Stress-Induced Oscillation
Ehsan Nasr Esfahani, Brian S Gerwe, Stuart B. Adler, Jiangyu Li
- 1939 Detecting Dynamic Manipulation of the Space Charge Region in Doped Ceria with Scanning Thermo-Ionic Microscopy
Brian S Gerwe, Ehsan Nasr Esfahani, Jiangyu Li, Stuart B. Adler
- 1940 (Invited) Computing the Anisotropic Chemical Strain in Non-Stoichiometric Oxides for Solid Oxide Fuel Cell and Li-Ion Battery Applications
Yue Qi, Christine James, Tridip Das, Jason D. Nicholas, Leah Nation, Brian W. Sheldon
- 1941 Density Functional Theory Modeling of Cation Diffusion in Bulk Lanthanum Manganite and Tetragonal Zirconia for Solid Oxide Fuel Cell Applications
Yueh-Lin Lee, Yuhua Duan, Dane Morgan, Dan Sorescu, Harry Abernathy, Gregory A Hackett
- 1942 Using Mechano-Electro-Chemical Coupling to Measure the Thin Film Elastic Constants, Thermo-Chemical Expansion Coefficients, and Oxygen Surface Exchange Coefficients of Praseodymium Doped Ceria
Presentation Format: Oral Preferred
Yuxi Ma, Jason D. Nicholas
- 1943 Effect of Dispersion of Platinum Nanoparticles in Strontium Zirconate and Strontium Cerate Proton Conductors
Yasuhiro Takamura, Kwati Leonard, Hiroshige Matsumoto
- 1944 The Interplay of Strain and Defect Association on the Conductivity Rare Earth Substituted CeO₂
George Frederick Harrington, Nicola H. Perry, Kazunari Sasaki, Bilge Yildiz, Harry L. Tuller
- 1945 (Invited) Electrochemomechanical Coupling in Functional Oxides for Energy Conversion and Storage Devices
Krystyn J. Van Vliet
- 1946 The Coupling between Mechanics and Intercalation Chemistry in Layered Battery Materials
Maxwell Radin, Julija Vinkeviciute, Jonas Kaufman, John C. Thomas, Anton Van der Ven
- 1947 Mechanical and Structural Degradation of LiNi_xMn_yCo₂O₂ Cathode in Li-Ion Batteries
Kejie Zhao
- 1948 (Invited) Phase Transformation and Chemomechanical Breakdown of Alkali Metal Ion Cathode Materials
Feng Lin
- 1949 (Invited) In Situ Measurement of Mechanical Properties of Solid Electrolyte Interphase (SEI) Layers
Insun Yoon, Sunhyung Jurng, Daniel P Abraham, Brett Lucht, Pradeep R. Guduru
- 1950 Operando Nanoindentation: A Perfect Platform to Measure the Mechanical Properties of Electrodes during Electrochemical Reactions
Kejie Zhao
- 1951 (Invited) In Situ Dealloying of Bulk Mg₂Sn in Mg-Ion Half Cell As an Effective Route to Nanostructured Sn for High Performance Mg-Ion Battery Anodes
Hooman Yaghoobnejad, Jintao Fu, Hemant Kumar, Samuel S. Welborn, Vivek B. Shenoy, Eric Detsi
- 1952 (Invited) Strain Engineering for Li and Oxygen Ionic Transport for Solid State Batteries in Energy Storage, Fuel Cells and Memristive Neuromorphic Computing Devices
Jennifer L.M. Rupp
- 1953 Mechanical Properties and Microstructure Evolution of Silicon Composite Electrodes
Yikai Wang, Qinglin Zhang, Dawei Li, Jiashi Hu, Jiagang Xu, Dingying Dang, Xingcheng Xiao, Yang-Tse Cheng
- 1954 Thermal-Mechanical-Electrochemical Coupling Simulation for Electric Vehicle Batteries

Xiaobai Li, Sergei Chumakov, Jake Christensen, Xiaoxuan Zhang, Christian Linder

- 1955 In-Situ Electrochemical Stiffness in Li-ionbatteries
Andrew A Gewirth, Kimberly E. Lundberg
- 1956 In Situ Measurement of Strain and Stress Evolution in Lithium Iron Phosphate Electrodes during Electrochemical Cycling
Ömer Özgür Çapraz, Kimberly E. Lundberg, Scott R. White, Andrew A Gewirth, Nancy R. Sottos
- 1957 (Invited) Influence of Mechanical Stress on Lithium Chemical Potential in Lithium Ion Battery Electrodes
Koji Amezawa, Keita Funayama, Yuta Kimura, Fakkao Mahunnop, Takashi Nakamura, Naoaki Kuwata, Junichi Kawamura, Tatsuya Kawada
- 1958 Effect of Electrochemically Induced Fracture and Fatigue on Capacity and Kinetics of $\text{Li}_x\text{Mn}_2\text{O}_4$
Frank P McGrogan, Sean R. Bishop, Shilpa Raja, Yet-Ming Chiang, Krystyn J. Van Vliet
- 1959 Phase-Field Modeling of Solid Electrolyte Interphase (SEI) Cracking in Lithium Batteries
Pengjian Guan, Lin Liu
- 1960 Modeling Phase Transition in Battery Electrodes Using the Coupled Cahn-Hilliard – Phase Field Crystal Methods
Ananya Renuka Balakrishna, Yet-Ming Chiang, W. Craig Carter
- 1961 Noble Design for Highly Active and Stable PEM Electrocatalyst Using Synergistic Interaction between Pt, TiO_2 and Carbons
Yunseong Ji, Yukwon Jeon, Yongil Cho, Chan Min Lee, Ho Jung Hwang, Oksung Jeon, Oh Chan Kwon, Jeong Pil Kim, Yong Gun Shul
- 1962 4D Structural Characterization of Mechanical Degradation in Reinforced Fuel Cell Membranes Using in Situ Visualization
Dilip Ramani, Yadvinder Singh, Robin T White, Tylynn Haddow, Francesco P Orfino, Monica Dutta, Erik Kjeang
- 1963 Rapid Redox Cycle Stability of Doped CaMnO_3 Particles for High-Temperature Thermochemical Energy Storage
Luca Imponenti, Kevin J Albrecht, Gregory S Jackson
- 1964 Considering Realistic Microstructure Heterogeneity: Variational Multiscale Modeling of Li-Ion Batteries
Lin Liu, Changhong Liu
- 1965 Numerical Computation of Central Crack Growth of Active Particle with Multi Influence Factors
Yuwei Zhang, Zhansheng Guo
- 1966 In Situ Exsolved Core-Shell Nanoparticles on Perovskite Parent: A Novel High-Performance Anode for Solid Oxide Fuel Cells
Nianjun Hou, Yicheng Zhao, Yongdan Li
- 1967 Phase-Field Simulation of Stress Evolution in Sodium Ion Battery Electrode Particles
Tao Zhang, Marc Kamlah
- 1968 Modeling the Mechano-Chemical Coupling in a Compressed PEMFC MEA with Metallic Bipolar Plates
Heng Zhang, Liusheng Xiao, Pang-Chieh Sui, Ned Djilali
- 1969 Analysis of O_2 Diffusion Resistance without Cathode Humidification in a PEMFC
Jaewoo Cho, Sehkyu Park
- 1970 Making Fuel Cells Work- Challenges
Natarajan Rajalakshmi
- 1971 A Redox Fuel Cell Capable of Converting Ethanol to Electricity at a High Power Output
Liang An
- 1972 The Potential of Hybrid Micro/Nanoporous Surface for Biomedical Titanium Implant Applications: Surface Characteristic, Biomechanical Behavior and Hemocompatibility

Tzu-Sen Yang, Hsin-Hua Chou, Keng-Liang Ou, Ping-Jen Hou

1973 Nanoporous MnO₂ Nanoflakes Modified Carbon Cloth Material for Efficient Removal of Heavy Metal Ions in Water by Capacitive Deionization

Ying Wang, Daniel J Blackwood

1974 Hydrothermally Synthesized Anode Material with High Activity and Stability for Direct Methanol Solid Oxide Fuel Cells

Xueli Yao, Yicheng Zhao, Yongdan Li

1975 Effects of Surface Modification on the Electrochemical Oxidation Reactivity of Activated Carbon in Direct Carbon Fuel Cells

Lijun Fan, Yicheng Zhao, Yongdan Li

1976 Effects of Manganese Oxides on the Activity and Stability of Ni-Ce_{0.8}Sm_{0.2}O_{1.9} Anode for Solid Oxide Fuel Cells with Methanol As the Fuel

Tian Gan, Yicheng Zhao, Yongdan Li

1977 A Study on Performance According to Differential Pressure of 1kW PEMFC Stack for Fuel Cell Vehicles

Myong-Hwan Kim, Youngmo Goo, Seung Eul Yoo

1978 Aramid Nanofiber/Graphene/Carbon Nanotube Composite Electrodes for Structural Energy and Power

Anish Patel, John Harris, Jodie Lutkenhaus

1979 (Invited) Residual Stress Evolution during Thin Film Growth: Kinetic Modeling and Monte Carlo Simulations

Eric Chason

1980 In-Situ Measurements of Stress during Electrodeposition of Copper Nanofilms: Surface and Grain-Boundary Migration of Atoms and the Effect of Chloride Ions

Joe A. Murphy, Catherine Lenihan, Maria Rybalchenko, Nathan Quill, Robert P. Lynch, D. Noel Buckley

1981 The Effect of Different Additives in the in-Situ Stress of Thin Co Films

Vinicius Primo Graciano, Gery R. Stafford, Ugo Bertocci

1982 Chemomechanical Effects in Electrocatalysis

Hadi Tavassol, Andrew Siwabessy, Jiam Vuong, Charles Bloed, Alexis Enriquez, Shahab Derakhshan

1983 (Invited) Mechano-Chemical Coupling at Interfaces in Novel Hybrid Materials

Jörg Weissmüller

1984 Strain-Reactivity Coupling Coefficients on Gold Thin Film in Electrocatalysis

Xinyan Wu, Matthias Graf, Joerg Weissmueller

1985 Using Dynamic Stress Analysis to Quantify Adsorbate-Induced Surface Stress

Gery R. Stafford, Ugo Bertocci

1986 Sodiated Carbon Fibres for Use in Future Multifunctional Structures

Ross Hamden, Kevin Peuvot, Dan Zenkert, Göran Lindbergh

1987 (Invited) Mechanical Response of Thin Nafion Films to Hydration

Bradley R. Frieberg, Christopher M. Stafford, Joshua R. Graybill, Zachary C Tronstad, Gery R. Stafford

1988 Modeling Mechanical Behaviors of a Polymer Electrolyte Membrane in Fuel Cell Dynamic Operations

Mohammad Morshed Moshiur Hasan, Alireza Goshtasbi, Jixin Chen, Michael H Santare, Tulga Ersal

1989 Electrochemical Actuation of Hybrid Materials Made from Nanoporous Metals and Electrically Conductive Polymers

Benedikt Roschning, Jörg Weissmüller

1990 Mechanical Basis of Nafion's High-Frequency Inductive Impedance

Priyamvada Goyal, Charles W Monroe

1991 Controlling Ionomer Relaxation to Improve Fuel Cell Durability

Yu Seung Kim, David A. Langlois, Albert Sung Soo Lee, Geraldine M Purdy, Rex Hjelm, Sung-Dae Yim, Chao Lei,

Hui Xu

1992 Modeling of Coupled Mechanical and Chemical Degradation of the Ionomer Membrane in Polymer Electrolyte Fuel Cells

Mohamed El Hammach, Ka Hung Wong, Yadvinder Singh, Narinder Singh Khattrra, Erik Kjeang

I07-Energy Conversion Systems Based on Nitrogen

1993 (Invited) ARPA-E Refuel Program: Electrochemical Synthesis and Utilization of Sustainable Fuels

Grigori L. Soloveichik

1994 (Invited) Electrochemical Ammonia Synthesis - Facts or Dreams?

Ib Chorkendorff

1995 (Invited) Nitrogenase Electrochemistry for Ammonia Production

Rong Cai, Ross Milton, Sofiene Abdellaoui, Antonio L. De Lacey, Marcos Pita, Selmihan Sahin, Shelley Minteer

1996 Challenges and Opportunities Involving Electrochemical Processes for the Sustainable Production of Ammonia

Thomas F Jaramillo

1997 (Invited) Direct Ammonia Fuel Cell Enabled By Precious-Metal-Free Cathode

Yun Zhao, Brian P. Setzler, Junhua Wang, Yushan Yan

1998 (Invited) Atmospheric Ammonia Synthesis – Mechanism, Materials and Processes

Bin Liu

1999 (Invited) Ammonia Synthesis Under Mild Condition

Jianping Guo, Ping Chen

2000 DFT Analysis of N₂ Electroreduction Kinetics at the Electrode-Electrolyte Interface

Michael John Janik, Gholamreza Rostamikia, Yawei Li, Sharad Maheshwari

2001 (Invited) A Surface Enhanced Infrared Absorption Spectroscopy Study on the Nitrogen Electrochemical Reduction Reaction on Gold Surfaces

Yao Yao, Shangqian Zhu, Haijiang Wang, Hui Li, Minhua Shao

2002 Bimetallic Nanoparticle Catalyst Synthesis and Design: Progress Toward Electrochemical Nitrogen Reduction

David Suttmitter, Shelby L Foster, Sergio I. P. Bakovic, Charles Loney, Sharad Maheshwari, Michael J. Janik, Julie Renner, Lauren F Greenlee

2003 Advancing Ammonia Synthesis through Plasma-Assisted Catalysis

Patrick Barboun, Prateek Mehta, Francisco Herrera, David B. Go, William Schneider, Jason C. Hicks

2004 A New Class of Carbon Catalysts for Nitrogen Reduction during NH₃ Electrosynthesis

Shreya Mukherjee, Shiva Gupta, Gang Wu

2005 Transition Metal Complexes for Catalytic N₂ Reduction and NH₃ Oxidation: Strategies for Making and Breaking N≡N and N-H Bonds

Michael Thomas Mock, Papri Bhattacharya, Alexander J Kendall, Demyan E Prokopchuk, Morris Bullock, Eric S. Wiedner

2006 (Invited) Distributed NH₃ Synthesis Via Electrochemical Reduction of N₂ on Transition Metal Nitrides in a PEM Electrolyzer

Bingjun Xu, Yushan Yan, Jared Nash, Xuan Yang, Jacob Anibal

2007 (Invited) Electrochemical Synthesis of Ammonia Using Ion Conducting Membranes

Fernando H Garzon, Shanti Kiran Nayak, Angelica D Benavidez, Cortney R. Kreller, Kannan Pasupathikovil Ramaiyan, Sandip Maurya, Yu Seung Kim, Rangachary Mukundan, Matthew Robins, Shekar Balagopal

2008 (Invited) Electrochemical Ammonia Synthesis Using Intermediate Temperature Proton Conducting Membranes

Cortney R. Kreller, Kannan Pasupathikovil Ramaiyan, Sandip Maurya, Nia Parker, Rangachary Mukundan, Yu Seung Kim, Fernando H Garzon

- 2009 (Invited) Partially Reduced Metal Oxide Supported Ni-Fe Electrocatalyst for N₂ Reduction to NH₃ at Ambient Conditions
Le Xin, Yang Qiu, Shuang Gu, Wenzhen Li
- 2010 Electrochemical Ammonia Synthesis in Organic Electrolytes
Jay Schwalbe, Aayush R. Singh, Adam C. Nielander, Joshua M McEnaney, Thomas F Jaramillo, Jens Nørskov, Matteo Cargnello
- 2011 (Invited) Advanced Components Development for Electrochemical Ammonia Synthesis
Hui Xu, Shuai Zhao, Mary J. Biddy, Yushan Yan, Gang Wu
- 2012 Evaluation of Varying Electrocatalysts for the Intermediate Temperature Electrochemical Synthesis of Ammonia
Kannan Pasupathikovil Ramaiyan, Sandip Maurya, Angelica D Benavidez, Shanti Kiran Nayak, Yu Seung Kim, Fernando H Garzon, Rangachary Mukundan, Cortney R. Kreller
- 2013 Enhanced Electrochemical Ammonia Production Via Peptide-Bound Metals and Effects on the Hydrogen Evolution Reaction
Charles Loney, David Suttmilller, Prashant Acharya, Sharad Maheshwari, Luke Wiles, Katherine E Ayers, Wayne L. Gellert, Michael John Janik, Lauren F Greenlee, Julie N. Renner
- 2014 Catalyst-Free, Electrolytic Synthesis of Ammonia from Nitrogen and Water By Plasma-Produced Solvated Electrons
Ryan Hawtof, Souvik Ghosh, Cheyan Xu, Julie N. Renner, R. Mohan Sankaran
- 2015 (Invited) The Role of Electrochemistry in Renewable Ammonia Production
Katherine E Ayers, Wayne L. Gellert, Luke Wiles
- 2016 (Invited) Exceptional Electrocatalytic Oxidations of Small Molecules on Perovskites and Perovskite Derivatives for Advanced Energy Generation and Storage
Robin Forsslund, Keith J Stevenson
- 2017 Synthesis of Pt-M (M=Ir, Pd) Bimetallic Nanocrystals with Controlled Shape and Composition As a High-Performance Electrocatalyst for Ammonia Electrolysis
Jinho Park, John Hankinson, Seung Woo Lee, Milad Navaei
- 2018 Ammonia Oxidation Reaction Mechanism on Pt-Ir Alloys: A Surface Enhanced Infrared Absorption Spectroscopy Study
Kumar Siddharth, Minhua Shao
- 2019 Noble-Metal-Free Catalysts for Hydrogen Production from Electrolysis of Ammonia
Geletu Qing, Thomas Hamann
- 2020 Ammonia Synthesis from Water and Nitrogen By Electricity Using Ru Catalysts, Hydrogen-Permeable Membranes, and Phosphate Electrolytes at 250°C
Kanako Imamura, Jun Kubota

K01-13th Manual M. Baizer Memorial Symposium on Organic Electrochemistry

- 2021 (Organic and Biological Electrochemistry Division Manuel M. Baizer Award Address) Molecular Electrochemistry of Fragile and Soft Molecular Systems
Flavio Maran
- 2022 Design and Synthesis of Photo-Clickable Au Nanoparticles and Polymers and Their Redox-Active Conjugate Materials
Mark Workentin, Wilson Luo, Pierangelo Gobbo, Rajeshwar Vasdev, Joseph Gilroy
- 2023 Microelectrode Arrays: Moving Toward the Synthesis of More Complex Surfaces
Kevin D Moeller, Nai-Hua Yeh, Bichlien Nguyen
- 2024 Detection of the Bacterial Warfare Toxin, Pyocyanin, Using Transparent Carbon Ultramicroelectrode Arrays
Keith J Stevenson, Olja Simoska, Jason Shear

- 2025 Controlled Synthesis of Organic Frameworks of Pillar[6]Arene By Electrochemical Oxidation
Shinsuke Inagi, Chiaki Tsuneishi, Hiroki Nishiyama, Ikuyoshi Tomita, Tomoki Ogoshi
- 2026 The Influence of Water on the Double-Layer Capacitance of an Ionic Liquid
Jochen Friedl, Ulrich Stimming
- 2027 Polymer Brush Made By Ionic Liquids and the Inhibition Effects for Biofilm Formation
Hideyuki Kanematsu, Atsuya Oizumi, Takaya Sato, Toshio Kamijo, Saika Honma, Dana M. Barry, Nobumitsu Hirai, Akiko Ogawa, Takeshi Kogo, Daisuke Kuroda, Katsuhiko Tsunashima
- 2028 Post-Functionalization of P3HT Via Anodic Oxidation with High Current Efficiency
Tomoyuki Kurioka, Hiroki Nishiyama, Ikuyoshi Tomita, Shinsuke Inagi
- 2029 Reactions Using Organo-Dications As Redox-Switchable Catalysts in Batch and Flow Systems
Seiji Suga, Yuusuke Kurihara, Takayuki Hirata, Hiroki Tanaka, Koichi Mitsudo
- 2030 Differences in Reactivity of Primary Amines, Diamines and Amino Acids with Orthophthalaldehyde – Spectroelectrochemistry and Structure of Products
Jiří Ludvík, Joel Donkeng, Kristýna Kantnerová
- 2031 Electrochemical Behavior of 2-Halo-N-Phenylacetamides at a Carbon Cathode
Ana G. Couto Petro, Dennis G Peters
- 2032 Electrochemical Versus Photochemical: Mechanism of Radical Cation Cyclizations
Luisalberto Gonzalez, Matthew D. Graaf, Kevin D Moeller
- 2033 The Role of Hydrogen Bonding in Proton-Coupled Electron Transfer. It Does Not Have to be Concerted
Pcet: The Case of Phenylenediamines and Pyridines in Acetonitrile
Diane K. Smith, Laurie A. Clare, Tammy Dung Pham, Lily Rafou, Ayla Buenaventura, Colin Arthurs
- 2034 Redox-Dependent H-Bonding with Electroactive Ureas: The Effect of One Electron Vs. Two Electron Redox Couples
Kyle Logan, Joanna Donatelli, Megan Jackson, Laurie A. Clare, Diane K. Smith
- 2035 Differential Pulse Voltammetry of Nitrobenzene
Inam ul Haque
- 2036 Electrochemistry of (Thia)Calix[4]Arenes Bearing Various Redox Probes
Alan Liška, Krunal M. Modi, Jiří Ludvík
- 2037 Electrochemical Preparation of Aryl Morn Ethers
Goswinus H. M. de Kruijff, Siegfried R. Waldvogel
- 2038 Electrosynthesis of Bio-Based Dicarboxylic Acids
Anna Lisa Rauert, Siegfried R. Waldvogel
- 2039 Sustainable and Highly Robust Anodic C,C-Cross-Coupling Reaction of Phenols
Barbara Riehl, Siegfried R. Waldvogel
- 2040 Metal- and Reagent-Free Anodic Dehydrogenative Coupling Reactions
Siegfried R. Waldvogel
- 2041 No-Carrier-Added Electrochemical Radio-Fluorination of Thioethers
Mehrdad Balandeh, Nathanael Allison, Christopher Waldmann, Adrian Gomez, Saman Sadeghi
- 2042 Anodic Thiocyanation of Alkenes in Formic Acid
James Y. Becker, Anna Gitkis
- 2043 Electrochemical Synthesis of Azanucleosides
Kazuhiro Okamoto, Seika Ishii, Takao Shoji, Kazuhiro Chiba
- 2044 Application of the Cation Pool Method for Fluorination and No-Carrier-Added Radio-Fluorination
Mehrdad Balandeh, Alejandra Rios, Nathanael Allison, Daniela Shirazi, Saman Sadeghi
- 2045 Electrosynthesis of 2,1-Benzisoxazole from o-Nitrobenzaldehyde

Seyyedamirhossein Hosseini, Dennis G Peters

2046 Highly Stereoselective Electrocatalytic Semihydrogenation of Alkynes to Z-Alkenes Using a Proton Exchange Membrane Reactor

Mahito Atobe, Juri Minoshima, Atsushi Fukazawa, Yasushi Hashimoto, Yoshihiro Kobori, Yasushi Sato

2047 Electrocatalytic Hydrogenation of Toluene in a PEM Reactor As a Study of a Model Reaction for Hydrogen Storage

Atsushi Fukazawa, Ken Takano, Yoshimasa Matsumura, Kensaku Nagasawa, Shigenori Mitsushima, Mahito Atobe

2048 Electrochemical Functionalization of Methylarenes Initiated By Hydrogen Atom Transfer and Comparison to Electron-Transfer-Initiated Functionalization

Mohammad Rafiee, Shannon S. Stahl

2049 Umpolung Diels-Alder Reactions By Electrocatalysis

Yohei Okada, Atsushi Ozaki, Yusuke Yamaguchi, Kazuhiro Chiba

2050 Paired Electrolysis for Amide Formation Catalyzed By Vitamin B₁₂ Model Complex Under Aerobic Condition

Hisashi Shimakoshi, Luo Zhongli, Yoshio Hisaeda

K03-Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology

2051 Microelectrode Glucose Detection at the Human Mucosa

James D. Burgess, Li Li, Thomas Kelley, Minchul Shin

2052 Mechanistic Studies of Protein-Based, Metal Nanoparticle Biosynthesis

Florika C. Macazo, Shelley D. Minteer

2053 Photo-Bioelectrochemistry of Cyanobacteria Lacking Respiratory Terminal Oxidases

Bavithira Suganthan, Narendran Sekar, Ramaraja P. Ramasamy

2054 Controlled Interactions between Engineered Proteins and Acidic Polymer Electrolytes

Zihang Su, Skylar T. Weston, Julie N. Renner

2055 SPM Imaging of DNA, Redox Proteins and Bacteria Spores Under in-Situ Conditions

Baohua Zhang, Jingying Gu, Ulrich Stimming

2056 Eradication of *Candida Albicans* Biofilm By Electrochemical Scaffold Producing Hypochlorous Acid

Hannah M. Zmuda, Mia Mae Kiamco, Abdelrhman Mohamed, Robin Patel, Haluk Beyenal

2057 Modeling Hypochlorous Acid Generation on Carbon Fabric Surface

Ahmed Ben Sahil, Haluk Beyenal

2058 Improved Photosynthetic Currents from RuO₂ Nanosheet Deposited Electrodes

Hyeonaug Hong, Jang Mee Lee, Seong-Ju Hwang, WonHyoung Ryu

2059 Optically Guided Directional Electrodeposition of Semiconductors Mimicking Natural Phototropism

Madeline Claire Meier, Azhar I Carim, Kathryn R Hamann, Jonathan R Thompson, Harry A Atwater, Nathan S Lewis

2060 Bioinspired Electrochemical Mesoporous Membrane Platform Enabling Continuous Protein Separation

Daniel E Shea, Bruce J Hinds

2061 Electron Transfer Processes Enabling Genotoxicity Sensor Arrays

James F Rusling

2062 Metal-Initiated/Catalyzed Diels-Alder Reaction between Electron Rich Dienes and Dienophiles

Syed Raziullah Hussaini, Kazuhiro Chiba, Yohei Okada, Yasushi Imada, Zhiguo Wang, Atsushi Ozaki, Arpan Pal, Yusuke Yamaguchi, Mathew Paramel

2063 Characterizing Bioconjugation and Electron Transfer at Coated Nanoparticles By Nano-Impact Electrochemistry

Kevin Kirk, Silvana Andreescu

- 2064 Pd-Catalyzed C–H Functionalization Via Electrochemical Oxidation
Tian-Sheng Mei
- 2065 Electron Transfer Reactions at Liquid-Liquid Interfaces
Hubert H Girault, Gregoire Gschwend, Pekka Peljo, Astrid Olaya
- 2066 Photoredox-Mediated Ring-Opening Metathesis Polymerization: Methods, Scope, and Scalability
Laura M M Pascual, Pengtao Lu, Victoria K Kensy, Daniel C Lee, John Goldstone, Andrew J Boydston
- 2067 Photooxygenation of Hydrocarbons with Molecular Oxygen By Electron Transfer
Kei Ohkubo
- 2068 Electron Transfer in Supramolecular Chemistry: Redox-Controlled Dimerization in Electroactive Ureidopyridinones
Diane K. Smith, Mario Cedano, Ghazwan M Darzi, Laurie A. Clare, Katrina Vuong, Monica Torres
- 2069 Translational Electrochemistry
Phil Baran
- 2070 Principles and Control of Electron Transfer through Conductive Proteins: The Role of Metal Doping and Charged Amino Acids
Nikolai Lebedev, Igor Griva, Anders Blom, Leonard M Tender
- 2071 Metal- and Oxidant-Free Formal Vinylic C-H/Aromatic C-H Cross Coupling Based on the Stabilized Cation Pool Method
Jun-ichi Yoshida, Ryutaro Hayashi, Akihiro Shimizu
- 2072 Miniature Biological Fuel Cells for Sensing Applications
Mirella Di Lorenzo
- 2073 Electron Transfer Driven Measurement and Quantification of Biological Analytes in Practical Matrices
Sadagopan Krishnan
- 2074 Design of Photoredox Systems for Catalytic Fluoroalkylation of Alkenes
Takashi Koike
- 2075 Sensitizing the Photocatalytic Ability of Dawson-Wells Polyoxometalates in Solution and Thin Films
Tia E Keyes
- 2076 Oxidative Activation Mechanism for Glycerol Carbonate Electrosynthesis
Hui Huang Hoe, Donald W. Kirk
- 2077 Using the Complementarity of Electrochemistry and Photoelectron Transfer to Probe and Develop the Chemistry of Radical Cations
Kevin D Moeller, Luisalberto Gonzalez, Ruozhu Feng, Matthew D. Graaf
- 2078 Experimental Determination of Number of Electrons in Erythrocytes Electroreduction
Irina V. Goroncharovskaya, Anatoly K. Evseev, Mark M. Goldin, Sergey S. Petrikov
- 2079 The Monitoring of Open Circuit Potential of Platinum Electrode in Blood Plasma in Resuscitative Patients
Irina V. Goroncharovskaya, Aslan K. Shabanov, Anatoly K. Evseev, Kristina V. Ivanova, Mark M. Goldin, Sergey S. Petrikov
- 2080 Redox Catalysis for Biomass Degradation
Corey Stephenson, Gabriel Magallanes, Cheng Yang, Markus Kaerkaes, Irene Bosque
- 2081 Electrocatalysis by Soluble Pyrococcusfuriosus [NiFe]-Hydrogenase and its Hydrogenase Subcomplex: Tuning the Catalytic Bias
Anne Katherine Jones, Zahra Katherine Nazemi
- 2082 Difunctionalization of Cyclopropylanilines and Cyclobutylanilines
Nan Zheng, Jiang Wang, Elvis Boateng

- 2083 TiO₂ Photocatalysis in the Aromatic “Redox Tag”-Guided Intermolecular Formal [2 + 2] Cycloadditions
Yohei Okada, Naoya Maeta, Kaiti Nakayama, Hidehiro Kamiya
- 2084 Enhancing Analytical Potential of Electrochemiluminescence By the Silica Nanoparticle Approach
Giovanni Valenti, Massimo Marcaccio, Enrico Rampazzo, Sagar Kesarkar, Luca Prodi, Francesco Paolucci
- 2085 Cycloaddition Reaction Assisted By Photoinduced Electron Transfer in a Lithium Perchlorate-Nitromethane System
Shingo Nagahara, Hiroki Wakamatsu, Yohei Okada, Kazuhiro Chiba
- 2086 Electrochemical Oxidation/Modification of Lignin Mediated By Aminoxyl Radicals
Mohammad Rafiee, Shannon S. Stahl
- 2087 Electrochemical Studies of L-Histidine
Dexter C. Clark, Graham T. Cheek
- 2088 TEMPO-Based Organocatalyst Design
David P Hickey, Matthew S Sigman, Shelley D. Minteer
- 2089 Electrocatalytic Difunctionalization of Alkenes
Song Lin
- 2090 Electrochemical Analysis of Circulating Nucleic Acids for Liquid Biopsy
Shana Kelley, Jagotamoy Das
- 2091 Field-Driven Odor Mitigation in Sanitation Facilities
Mariana Madelen Vasquez, Edgard Ngaboyamahina, Claire A De March, Matthew Do, Hiroaki Matsunami, Jeffrey T. Glass
- 2092 Thermally Activated Redox Conduction in *Shewanella Oneidensis* MR-1 Biofilms
Shuai Xu, Mohamed El-Naggar
- 2093 Mechanistic Studies on Photoredox-Mediated Organocatalyzed Ring-Opening Metathesis Polymerization
Andrew J Boydston
- 2094 Electroorganic Oxidation of Pyridones
Dylan Daniel Rodene, Narendar R Gade, Joann Jee, Thomas D Roper, Ram B. Gupta
- 2095 Electrochemical Activation of the Tetrazine Ligation for Surface Modification
Neal Devaraj

L01-Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session

- 2096 Mechanism of Ligand-Assisted Electrodeposition of La₂O₃ on Gold Electrochemical Quartz Crystal Microbalance Electrodes
Adan Medina, Cornelius F. Ivory, Nathalie A Wall, Sue Clark, Haluk Beyenal
- 2097 Mesoporous Mn₂O₃ Nanoparticles Via Hydrothermal Process for Supercapacitor Applications
Zhen-Yu Li, Jinho Song, M. Shaheer Akhtar, O-Bong Yang
- 2098 Electrodeposition and Photocharacterization of In₂Se₃ Thin Films Using PP-ALD for Use As a Potential Photoanode
Peter Sisk, Justin Czerniawski, John Lewellen Stickney
- 2099 Photoelectrochemical Analysis of Tin Selenide (SnSe_x) Thin Films Formed Using Electrochemical Atomic Layer Deposition (E-ALD)
Pauline Howell, John Lewellen Stickney
- 2100 CdS As Holes Provider for Visible Light-Induced Urea Photo-Oxidation
Rong Zhao, James Radich
- 2101 Doping Engineering in Type-II Homo Junction to Enhance the Photoelectrochemical Performance of Thin-Film

- BiVO₄ Photoanode
Ji Hyun Baek, Jae Myeong Lee, Hyun Suk Jung
- 2102 Crystal Quality and Photoelectrochemical Response of Bismuth Containing Cu₂ZnSnS₄ (CZTS) Absorber Layers for Photovoltaic Applications
Begum Unveroglu, Giovanni Zangari
- 2103 Speciation and Electronic Structure of La_{1-x}Sr_xCoO_{3-Δ} during Oxygen Evolution
Kelsey A. Stoerzinger, Xiao Renshaw Wang, Jonathan Hwang, Reshma R Rao, Wesley T Hong, Yang Shao-Horn
- 2104 Effect of Ti Doping on the Photoelectrochemical Water Splitting Efficiency of WO₃ Photoanode
Shankara S Kalanur, Hyungtak Seo
- 2105 Colloidal Ternary Ni_{1-x}Co_xSe Alloy Nanocrystals with tunable compositions: Synthesis, Characterization and Electrocatalytic properties for the Oxygen Evolution Reaction
Liberato Manna, Mengjiao Wang, Dipak Shinde, Luca De Trizio
- 2106 Determination of Effective Surface Area and Reaction Rate Constant By Cyclic Voltammetry Considering Ohmic Resistance and CPE Effects
Patcharawat Charoen-amornkitt, Takahiro Suzuki, Shohji Tsushima
- 2107 Simulations and Experiments of the Kinetics of the Electrochemical Double Layer in Ionic Liquids
Can Berk Uzundal, Pinar Aydogan-Gokturk, Sefik Suzer, Burak Ulgut
- 2108 Quantum-Chemical Investigation of Molecular Structure and Thermodynamic Properties of Spiropyran Molecules
Dmitrii N. Govorov, Lev S. Kudin, Anatoliy M. Dunaev
- 2109 Water Structure and Dynamics at Hematite Electrodes
Martin Edwin McBriarty, Joanne E. Stubbs, Guido Falk von Rudorff, Jochen Blumberger, Eric J. Bylaska, Peter J. Eng, Kevin M. Rosso
- 2110 Understanding the Stability and Surface Restructuring of Platinum in an Electrochemical Environment
Ian T. McCrum, Michael A Hickner, Michael J. Janik, Marc T. M. Koper
- 2111 Mechanistic Insights into Furfural Reduction on Transition Metals Electrodes from First-Principles Methods
Nannan Shan, Marry K. Hanchett, Bin Liu
- 2112 Novel Electrochemical Cell Favorable for the Kinetic Studies of Highly Active Enzymes
Mariam Fadel
- 2113 Extracting Kinetic Information from Bipolar Electrochemistry
Robbyn K. Anand, Kira L. Rahn, Krysti L. Knoche, Janis S. Borchers, Olga L. Riusech
- 2114 The Micro-Optical Ring Electrode: A Sensor for Multiple Actinide Ions Monitoring
Gary Linnett
- 2115 Non – Linear Electrochemical Impedance Spectroscopic Analysis of Instabilities in Electrochemical Systems
Rajesh Pachimatla, Ramanathan Srinivasan
- 2116 THz SERS Observation of Benzenethiol Monolayers on Electrode Surfaces
Katsuyoshi Ikeda
- 2117 A Modular Flow-through Platform for Spectroelectrochemical Analysis
Tomer Noyhouzer, Michael Edward Snowden, Ushula M Tefashe, Janine Mauzeroll
- 2118 Surface Oxidation of Pt(111) Studied By Surface X-Ray Diffraction and Grazing-Incidence Small-Angle X-Ray Scattering
Martin Ruge, Björn Rahn, Finn Reikowski, Francesco Carlà, Roberto Felici, Jochim Stettner, Jakub Drnec, Olaf M. Magnussen, David A. Harrington
- 2119 Surface-Enhanced Raman Spectroelectrochemistry with Screen-Printed Electrodes for Quantitative Analysis
Pablo Fanjul Bolado, Daniel Martín Yerga, Alejandro Junquera Pérez, María Begoña González García, David

Hernández Santos

- 2120 Study on the Structure of the Electrical Double Layer Formed in Ionic Liquids Using Neutron Reflectivity
Kazuhisa Tamura, Kazuhiro Akutsu
- 2121 FTIR Spectroelectrochemistry: Optimization of Experimental Setup
Sergey Shilov, Mathias Kessler
- 2122 Benchtop, High-Resolution XAFS and Xes Spectrometers As Tools for Electrochemical Research
Evan Jahrman, William Holden, Gerald T. Seidler, Timothy T Fister
- 2123 Probing Photoelectrochemical Performance and Corrosion at the Nanoscale with Electrochemical Scanning Probe Techniques
Burton H. Simpson, Michael Mazza, Weilai Yu, Nathan S Lewis
- 2124 Dynamic Nanostructuring as a Tool to Fabricate High Performance Copper Based Hydrogen Evolution Electrocatalyst
Liberato Manna, Dipak Shinde, Luca De Trizio
- 2125 Single Nanosheet Photoelectrochemistry
Justin Sambur
- 2126 Luminescence Studies of Single Molecule Electron Transfer Events
Donghoon Han, Kaiyu Fu, Garrison Crouch, Seung-Ryong Kwon, Paul W. Bohn
- 2127 Dark Field Scattering Spectroelectrochemistry of Single Au Nanoparticles at Transparent Planar and Micro-Sized Electrodes
Shanlin Pan, YanXiao Ma, Alton L. Highsmith
- 2128 Chemical Imaging of Single-Particle Photoelectrocatalysis for Energy Conversion
Xianwen Mao, Mahdi Hesari, Ningmu Zou, Peng Chen
- 2129 Shedding Light on Single Nanoparticle Electrochemistry: Combined Optical and Electroanalytical Methods for Correlating Structure and Reactivity
Caleb M. Hill, Partha Saha, Joshua Walmsley
- 2130 Inside the Reaction Layer: Investigation of Electrochemical Reactions By Coupling Electrochemistry and Confocal Fluorescence Microscopy
Thomas Doneux, Anne de Poulpiquet, Imelda Bonifas Arredondo, Pauline Lefrançois, Venkata Suresh Reddy Vajrala, Bertrand Goudeau, Patrick Garrigue, Neso Sojic, Stéphane Arbault, Laurent Bouffier
- 2131 Fluorescent Readouts of Spectroscopically-Silent Reactions on Single Metal Nanoparticle Electrodes
Katherine Willets
- 2132 Detection of Reactive Oxygen Species in AEM Fuel Cells Using in Situ Fluorescence Spectroscopy
Yunzhu Zhang, Javier Parrondo, Shrihari Sankarasubramanian, Vijay Ramani
- 2133 Optimizing Surface Modifications for Quantum Dot Labelled DNA SAMs Using Electrochemistry Coupled Fluorescence Imaging
Rochita Sundar, Dan Bizzotto
- 2134 Rotating Ring-Disk Electrode Study of the Electrochemical Dehalogenation of Iodinated Contrast Media
Gregory V Korshin, Mingquan Yan, Chenyang Zhang
- 2135 Understanding the Surface Corrosion Chemistry Towards Sustainable Semiconductor Photoelectrochemistry
Weilai Yu, Ivan Moreno-Hernandez, Kimberly Papadantonakis, Bruce S Brunshwig, Nathan S Lewis
- 2136 Low-Voltage Reversibly Switchable Wettability through Electrochemical Manipulation of Oxidation State
Chun Haow Kung, Beniamin Zahiri, Pradeep Kumar Sow, Walter Mérida
- 2137 Investigation of the Nano-Heterojunction Electrochemistry Effect By Using in-Situ Spectrum and Electrical Measurement System
Zhong-Jie Hong, Yong-Jia Wang, Li Wei Huang, Po-Hao Lai, Chia-Ching Wang, Ching-Hsiang Chen, Ping-Hung Yeh

- 2138 Development of Anodic Stripping Voltammetry in Alkaline Electrolyte and Application for Screening Anion Diffusion Selectivity in Battery Separators
Timothy N. Lambert, Jonathon Duay, Joed E. Ortiz-Santiago, Ruby Aidun
- 2139 Characterization of the Electrochemical Detection of N^G-Hydroxy-L-Arginine
Mariah Lynn Arral, Jeffrey Mark Halpern
- 2140 Experimental Validation of the Transmission Line Model Via Impedance Spectroscopy of an Ordered Array on Porous Carbon Electrode
Trishank Sharma, Jesús Adrián Díaz-Real, Beniamin Zahiri, Walter Mérida
- 2141 Developing Wrinkled Surface to Achieve Low-Cost Photoelectrochemical Biosensor and Study the Interplay between LSPR of Nanoparticles and Semiconductive Quantum Dots
Sudip Kumar Saha, Leyla Soleymani
- 2142 Optical Direction of Morphological Complexity of Periodic Semiconductor Nanoarchitectures Deposited Via Templateless Photoelectrodeposition
Azhar I Carim, Nicolas A. Batara, Jonathan R Thompson, Harry A Atwater, Nathan S Lewis
- 2143 Methane Pulse and in-Situ Raman Study of Impregnated Ni/CGO As Anodes of SOFC
Mengzheng Ouyang, Paul Boldrin, Robert C. Maher, Nigel P. Brandon
- 2144 Identification and Characterization of Metal-Oxide Powders with Energy-Resolved Density of Electron Traps Measured By Reversed Double-Beam Photoacoustic Spectroscopy
Bunsho Ohtani, Akio Nitta, Mai Takase, Mai Takashima
- 2145 Reducing the Charge Voltage of a Hybrid Na-Air Battery Using a TiO₂ Nanorods-Based Photoelectrode
Soo Min Hwang, Jinhyup Han, Youngsik Kim
- 2146 Photorechargeable Lithium-Ion Battery Electrode Based on Nanocrystals of Anatase TiO₂ Combining Energy Conversion and Storage
Gaspard Bouteau, Iryna Sagaidak, Christian Andriamiadamanana, Albert Nguyen Van Nhien, Frédéric Sauvage
- 2147 Pyridine Functionalized Pt/C: Ligand-Mediated Bifunctional Catalyst for the Enhanced Oxygen Reduction and Methanol Oxidation Tolerance in Fuel Cells
Linfang Lu
- 2148 Differential Electrochemical Mass Spectrometry Coupled with Linear and Non-Linear Electrochemical Impedance Spectroscopy of Gadolinia-Doped Ceria: Deconvolution of CO₂ and H₂O Co-Electrolysis
Jonathan Michael Witt, Eric M. Stuve, Stuart B. Adler
- 2149 Pulsed Electrodeposition of Gas Diffusion Electrocatalysts for CO₂ Reduction to Value-Added Products
Rajeswaran Radhakrishnan, Brian Skinn, Sujat Sen, McLain Leonard, Timothy D Hall, Stephen Snyder, Fikile R. Brushett, E. J. Taylor
- 2150 Spectroscopic Evidence of Size-Dependent Buffering of Interfacial pH By Cation Hydrolysis during CO₂Electroreduction
Onagie Ayemoba, Angel Cuesta
- 2151 The Evaluation of the Perturbations Induced By Ionic Bombardment on Surfaces: A Challenge for Interfacial Electrochemistry
Damien Aureau, Muriel Bouttemy, Mathieu Frégnaux, Jacky Vigneron, Arnaud Etcheberry, Anne-Marie Gonçalves
- 2152 Electrowetting of Liquid Drops Revisited By XPS
Pinar Aydogan-Gokturk, Burak Ulgut, Sefik Suzer
- 2153 Understanding the Electrochemical Behavior of Di-Sodium Carboxymethyl Trithiocarbonate (Orfom[®] D8) Depressant on Copper Metal and Chalcopyrite Surfaces
Simon Timbillah, Courtney Young, Avimanyu Das
- 2154 Photoelectrochemical Methanol Oxidation on TiN Nanoparticles Supported on TiO₂

Olga A Baturina, Albert Epshteyn, Blake Simpkins

- 2155 The Nature of Hydrated Protons on Platinum Surface
Younsoon Kim, Chanwoo Noh, YounJoon Jung, Heon Kang
- 2156 Palladium-Based Alloy Nanoparticles for Direct Liquid Fuel Cells
Jun-Yong Kim, Young-Jin Ko, Wook-Seong Lee, Tae-Yeon Seong
- 2157 Semi-Integral Electroanalysis of the Electrochemistry of Tris(2,2'-bipyridine) Complexes
Diogo Moulin Cabral, Douglas R MacFarlane
- 2158 Design of Combined Scanning Ion Conductance and Atomic Force Microscope for Investigation of Lithium Iron Phosphate
Tyler Enright, Yoichi Miyahara, Aaron Mascaro, Connor Aiken, Peter Grutter
- 2159 Adsorption and Selective Electrochemical Analysis of Epinephrine Using Clay-Modified Glassy Carbon Electrode
Augustine Ofori Agyeman
- 2160 Identification of Specific Electrical Phenomena Driven By a Water Droplet Motion on Electrolyte-Insulator-Semiconductor Structure
Youn Sang Kim

L02-Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

- 2161 (Keynote) Past, Present and Future of Electrochemistry
Pietro Papa Lopes, Dusan Strmcnik, Vojislav Stamenkovic, Nenad M Markovic
- 2162 (Invited) Finite Size Effects – a Guiding Principle in Monolayer Catalyst Design and Synthesis
Stanko Brankovic
- 2163 (Invited) Use of ALD by SLRR for the Growth of Layered Bi-Metallic Structures and Alloy Thin Films with Specific Functionality
Nikolay Dimitrov
- 2164 (Keynote) Theoretical Inspirations from Radoslav Adzic's Electrocatalysis Work
Manos Mavrikakis, Ahmed O. Elnabawy, Luke T. Roling, Jeff A. Herron
- 2165 (Invite) Cobalt Platinum Bronze As a Versatile Electrocatalyst
Yuji Kamitaka, Yu Morimoto
- 2166 (Invite) Prospective Investigations of Tungsten and Molybdenum Carbide-Containing Materials As Catalysts for Electrochemical Energy Conversion Processes: Proton, Oxygen, and CO/CO₂ Reduction Reaction
José Luiz Bott-Neto, Andrii Koverga, Ana Maria Gomez-Marin, Ludovic Dorkis, Elizabeth Florez Yopez, Edson Antonio Ticianelli
- 2167 (Invite) Insights in Measuring Particle Size of Multiatomic Nanoparticles By XAS
Nebojsa Marinkovic, Kotaro Sasaki, Radoslav R. Adzic
- 2168 Interfacial Electrochemistry of Chemically Modified Electrode Materials, Relevant for Energy Conversion and Storage Systems
Dusan Strmcnik, Bostjan Genorio, Nemanja Danilovic, Milena Zorko, Pedro F. B. D. Martins, Pietro Papa Lopes, Vojislav Stamenkovic, Nenad M Markovic
- 2169 (Invite) Non-Noble Metal Cored Pt-Skin Catalyst and Its Highly Enhanced Stability in Oxygen Reduction Reaction By Controlling the Nitriding Level for the Core
Eunjik Lee, Kyung-Hee Kim, Sung-Dae Yim, Seok-Hee Park, Gu-Gon Park
- 2170 (Invited) Development and Application of Core-Shell Cathode Catalysts in PEM Fuel Cell
Lijun Yang, Dustin Banham, Matthew Markiewicz, Shanna Knights, Siyu Ye
- 2171 (Invited) Enhanced Oxygen Reduction Reaction Activity on Pt-Monolayer-Shell PdIr/Ni-Core Catalyst
Liang Song, Mimir B Vukmirovic, Radoslav R. Adzic

- 2172 (Invited) Electrochemical Methods for Surface Composition Determination of Alloy and Core/Shell Nanoparticles
Ehab N El Sawy, Annie Hoang, Jachym Slaby, Viola Birss
- 2173 (Invited) MEA Studies of Transition Metal Nitride Core-Pt Shell Materials for Fuel Cell Applications
Yun Cai, Kotaro Sasaki, Anusorn Kongkanand, Radoslav R. Adzic
- 2174 Highly Dispersed Carbon Supported Pd_nMo Core with Pt Monolayer Shell Electrocatalysts for Oxygen Reduction Reaction
Celest Okoli, Kurian A Kuttiyiel, Kotaro Sasaki, Dong Su, Devinder Mahajan, Radoslav R. Adzic
- 2175 (Keynote) Correlating Fundamental Properties of Materials to Fuel Cell Catalysts
Pietro Papa Lopes, Dusan Strmcnik, Nenad M Markovic, Vojislav Stamenkovic
- 2176 (Invited) Retrospective on Oxygen Reduction Electrocatalyst R&D Supported By the U.S. Department of Energy
Nancy L. Garland
- 2177 (Invited) Pathways Towards Enabling Platinum for Oxygen Reduction Reaction
Sanjeev Mukerjee, Qingying Jia
- 2178 (Invited) Platinum Nanotubes and Platinum Thin Layers on Nanowires As Electrocatalysts
Yushan Yan
- 2179 (Invited) Instability of Pt-Based Catalysts for Fuel Cell Applications
Yang Shao-Horn
- 2180 (Invited) Low-Pt Catalyst Concepts for the Electrochemical Oxygen Reduction Reaction
Peter Strasser
- 2181 (Invited) Design of Electrocatalysts with Ad-Atoms, Single Crystals and Supported Nano-Particles for the Applications to Fuel Cells
Masahiro Watanabe
- 2182 (Invited) Oxygen Reactions at Poly and Single Crystalline Electrodes in a Sodium-Ion Containing Aprotic Solvent
Laurence J Hardwick, Richard Nichols, Gary Attard, Thomas Galloway, Neil Berry, Vivek Padmanabhan, Jian-Feng Li, Jin-Chao Dong
- 2183 (Invited) Controlled Synthesis of the Ultra-Low-Platinum Electrocatalysts for High-Performance Polymer Electrolyte Membrane Fuel Cell (PEMFC) Cathode
Junliang Zhang, Liuxuan Luo, Renxiu Tian, Chao Wang, Xiaojing Cheng, Guanghua Wei, Shuiyun Shen
- 2184 Oxygen Reduction on Gold Nanocrystal Surfaces in Alkaline Electrolyte: Effects of Surface Proton Transfer
Yu Zhang, Fang Lu, Shizhong Liu, Deyu Lu, Dong Su, Mingzhao Liu, Yugang Zhang, Ping Liu, Jia X. Wang, Radoslav R. Adzic, Oleg Gang
- 2185 (Keynote) The Progress and Challenges in Oxygen Reduction Electrocatalysis without Precious Metals
Piotr Zelenay
- 2186 (Invited) Controlling the ORR with Proton Kinetics and Non-Precious Metal Catalysts
Andrew A Gewirth
- 2187 (Invited) Climbing over the Volcano Correlation for O₂ Reduction By the Effect of a Pyridine Axial Ligand Bound to Co Phthalocyanine Compared to Vitamin B12. 4 Versus 2 Electron Reduction of O₂
Jose H Zagal, Federico Tasca, Karinna Neira, Jorge Riquelme, Patricio Hermosilla, Diego Venegas, Walter Orellana
- 2188 (Invited) Hollow Doped Carbon Nanopolyhedra with Exclusive Fe-N_x Active Sites As Advanced Cathode Catalyst Achieving Ultra High Polymer Electrolyte Membrane Fuel Cells Performance
Shijun Liao
- 2189 (Invited) Combination of Insulating Boron Nitride and Inert Gold Substrate As an Efficient Electrocatalysts for Oxygen Reduction Reaction and Hydrogen Evolution Reaction - Theoretical and Experimental Investigations

Kohei Uosaki, Hung Cuong Dinh, Hidenori Noguchi, Ganesan Elumalai, Andrey Lyalin, Tetsuya Taketsugu

- 2190 (Invited) Effect of the Carbon Matrix Surface Area and Thermal Treatment on the Activity and Durability of Fe-N-C Oxygen Reduction Catalysts
Fabio H. B. Lima, Nelson A. Galote
- 2191 (Invited) Active Carbon Supports for Pt Cathode Catalysts in PEM Fuel Cells
Mengjie Chen, Xiaoxia Wang, Gang Wu
- 2192 (Invited) Development of Highly Active and Durable Hybrid Compressive Platinum Lattice Cathode Catalyst for Polymer Electrolyte Membrane (PEM) Fuel Cells at USC
Branko N Popov, Taekeun Kim, Won Suk Jung
- 2193 (Invited) Metal Oxide Nanocoating As Electrocatalyst Support, and More
Yangchuan Xing
- 2194 (Invited) Fabrication and Operation Under the Same Conditions: Oxygen Reduction on Cathodically Deposited Manganese Oxide
Leonid V. Pugolovkin, Eduard E. Levin, Elena R. Savinova, Galina A. Tsirlina
- 2195 (Keynote) Modification of the Electrocatalyst Surface Composition By the Electrode Potential and the Substantial Resulting Effects on the Cell Characteristic
Shimshon Gottesfeld
- 2196 (Invited) Surface Sites Probing and Electrocatalytic Property of Atomic Sub-Monolayer and Multilayer on Tetrahedral Nanocrystals
Na Tian, Yan-Fen Lin, Shi-Gang Sun
- 2197 (Invited) Facets of Nanocrystal: A Knob to Tune Electrocatalytic Activity
Jinho Park, Zhenxing Feng, Yang Shao-Horn, Seung Woo Lee
- 2198 (Invited) Tracking Ionic Transport and Electrochemical Reactions in Low-Dimensional Nanomaterials for Energy Storage
Yimei Zhu
- 2199 (Invited) The Interplay of Oxygen Electrochemistry, Electrocatalysis, and Anionic Redox Processes in the Development of Electrochemical Energy Storage Technology for Vehicular Applications
Peter William Faguy
- 2200 (Invited) Impacts of Anions on Oxygen Reduction Reaction Kinetics on Platinum and Palladium Surfaces
Minhua Shao, Shangqian Zhu
- 2201 The Impact of Adsorbates on Metal Deposition through the Curvature Enhanced Accelerator Coverage Mechanism
Daniel Josell, Thomas P. Moffat
- 2202 Adsorption of Methane at Platinum Electrodes Under Potentiodynamic Control at Ambient Conditions, and Characterization of Adsorbed Intermediates Via ATR-FTIR Spectroscopy
Michael James Boyd, Thomas F Jaramillo
- 2203 From Salt to Germanene: A Cookbook for Electrochemical Formation of 2D Materials (Inspired by R. Adžić)
Jakub Drnec, John Lewellen Stickney, David A. Harrington
- 2204 Hybrid Carbon Nanostructures As Efficient Electrocatalysts
Sehmus Ozden, Ulises Martinez, Aditya D. Mohite
- 2205 (Invited) Analysis of the Oxygen Evolution Reaction on M-IrO₂ (M=Ni, Co) Surfaces
Perla B Balbuena, Luis E Camacho-Forero, Fernando Godinez-Salomon, Christopher Rhodes
- 2206 (Invited) Structure and Reactivity of Hybrid Functional Materials in Electrocatalysis
Pawel J Kulesza
- 2207 (Invited) Oxygen Reduction on Polycrystalline Gold in Alkaline Electrolytes: Experimental and Theoretical

Aspects

Jonathan R Strobl, Nicholas Stefan Georgescu, Boguslaw Pozniak, Imre Treufeld, Daniel Scherson

- 2208 (Invited) Solar Fuel Production for a Sustainable Energy: Water Splitting to Hydrogen and CO₂ to Fuel
Deryn Chu, Jiangtian Li
- 2209 (Invited) Nickel-Based Anode Electrocatalysts for Alkaline Exchange Membrane Fuel Cells
Plamen Atanassov, Alexey Serov
- 2210 (Invited) Recent Progress in the Understanding of the Electrocatalysis of the CO-Tolerant Hydrogen Oxidation Reaction in Polymer Electrolyte Fuel Cells
Donald A. Tryk, Guoyu Shi, Hiroshi Yano, Junji Inukai, Hiroyuki Uchida, Akihiro Iiyama, Masashi Matsumoto, Hajime Tanida, Masazumi Arao, Hideto Imai
- 2211 Transition-Metal Oxide Electrocatalysts with Well-Defined Surface and Sub-Surface Layers
Ding-Yuan Kuo, Hanjong Paik, Darrell G. Schlom, Jin Suntivich
- 2212 An Investigation of the Adverse Effect of TiO₂ on Pt-Catalyst for the Oxygen Reduction Reaction
Todd Miller, Sanjeev Mukerjee, Qingying Jia
- 2213 Nitrogen Doping on Carbon Paper Electrodes
Ashutosh Kumar Singh, Nael Yasri, Kunal Karan, Edward P.L. Roberts
- 2214 (Energy Technology Division Supramaniam Srinivasan Young Investigator Award Address) Enhanced Oxygen Electrocatalysis By Means of Electronic and Geometric Effects
María Escudero-Escribano
- 2215 Electrocatalytic Property of Pt Atomic Layers on Pd Nanocrystals for Ethanol Oxidation
Yan-Fen Lin, Na Tian, Shi-Gang Sun
- 2216 Pd/Fe₃O₄ Nanocatalysts for Highly Effective and Simultaneous Removal of Humic Acids and Cr(VI) By Electro-Fenton with H₂O₂ in-Situ Electro-Generated on the Catalyst Surface
Binbin Huang, Qian Guo, Chao Lei
- 2217 The Structural Effect of Pd-H Catalysts on Synthesizing Temperature for Direct Alkaline Formate Fuel Cell
Sujik Hong, Hongsun Hwang, Jae Kwang Lee, Jaeyoung Lee
- 2218 (Invited) Difficulties in Synthesis of Effective Ternary Catalysts for Ethanol Oxidation
Andrzej Kowal, Grzegorz Gruzel, Magdalena Parlinska-Wojtan
- 2219 (Invited) Kinetic Characterization of Ir, Pt, and IrPt-Alloy Nanocatalysts for Ammonia Oxidation Reaction
Jia X. Wang, Liang Song, Zhixiu Liang, Yu Zhang, Radoslav R. Adzic
- 2220 (Invited) Playing Around with Shape and Composition of Nanoparticles As Catalysts for Ethanol Oxidation
Magdalena Parlinska-Wojtan, Grzegorz Gruzel, Elżbieta Drzymala, Joanna Depciuch, Andrzej Kowal
- 2221 (Invited) Developing Electrocatalysts for Ethanol Oxidation Reaction in Alkaline Media
Wen-Bin Cai
- 2222 (Invited) Advancements in Ethanol Oxidation Reaction Mechanisms with Alkaline Direct Ethanol Fuel Cells
Rongrong Chen, Junsong Guo
- 2223 (Invited) Pt/Rh/SnO₂ Catalysts for Selective Ethanol Oxidation Reaction to CO₂
Hiroshi Inoue, Masanobu Chiku, Eiji Higuchi
- 2224 Understanding Reaction Mechanisms Using Dynamic Electrochemical Impedance Spectroscopy: Methanol and Formic Acid Oxidation
Thomas Holm, Per Kristian Dahlström, Svein Sunde, Frode Seland, David A. Harrington
- 2225 Synthesis of Nanostructured Bimetallic Catalysts for Electrochemical Applications
Jingyi Chen
- 2226 Electrooxidation of Propylene to Acrolein
Brian Seger, Anna Winiwarter, Ifan Stephens, Ib Chorkendorff

- 2227 Pt Acts As a Catalyst to Activate RuO₂: The Active Sites of RuO₂ Co-Catalyst for the CO Oxidation
Wataru Sugimoto, Pierre-Yves Olu, Dai Mochizuki
- 2228 Oxygen-Tolerant Electrodes with Single-Atom Platinum Modified Covalent Triazine Frameworks for the Hydrogen Oxidation Reaction
Kazuhide Kamiya, Ryo Kamai, Kazuhito Hashimoto, Shuji Nakanishi
- 2229 (Invited) Electrocatalysis of Hydrogen Evolution on Single Crystal Gold Electrodes Decorated By Palladium and Rhodium Nanoislands
Svetlana Strbac
- 2230 Electrochemical CO₂ Reduction on Oxide-Derived Cu Surface with Various Oxide Thicknesses
Zhixiu Liang, Jie Fu, Miomir B Vukmirovic, Radoslav R. Adzic
- 2231 Electrochemical Reduction of Aqueous CO₂ to Synthesis Gas Using β Palladium Hydride
Wenchao Sheng, Shyam Kattel, Siyu Yao, Jingguang G Chen
- 2232 Engineering Stepped Edge Surface Structures of MoS₂ Sheet Stacks to Accelerate the Hydrogen Evolution Reaction
Jue Hu, Bolong Huang, Chengxu Zhang, Shihe Yang
- 2233 Metal Ion Cycling of Cu Foil for Selective C-C Coupling in Electrochemical CO₂ Reduction
Kun Jiang, Robert Sandberg, Karen Chan, Haotian Wang
- 2234 Understanding the Effects of pH and Alkali Metal Cations on H/OH Adsorption and the Hydrogen Oxidation/Evolution Reaction on Transition Metal Electrodes
Ian T. McCrum, Xiaoting Chen, Praveen Meduri, Michael A Hickner, Michael J. Janik, Marc T. M. Koper
- 2235 Tunable and Efficient Tin Modified Nitrogen-Doped Carbon Nanofibers for CO₂ Electroreduction
Yong Zhao, Jiaojiao Liang, Jianmin Ma, Caiyun Wang, Gordon Wallace
- 2236 Electrochemical Reduction of CO₂ to CO or Ethylene: Status of Electrocatalysis and Technoeconomic Insights
Paul J.A. Kenis
- 2237 Modulating Selectivity in CER and Oer through Doped RuO₂
Raj Ganesh Pala, Sulay Saha, Koshal Kishor

L03-Biological Fuel Cells 8

- 2238 (Keynote) Synthetic Protection Matrices for Integration of Redox Proteins in Fuel Cells and Photovoltaic Cells
Nicolas Plumeré
- 2239 Understanding the Mechanisms of Photosynthetic Electron Transport for Energy Conversion Applications
Ramaraja P. Ramasamy
- 2240 A Hybrid Multi-Catalyst Motif for Enhanced Electro-Oxidation of Glycerol
Florika C. Macazo, David P Hickey, Sofiene Abdellaoui, Matthew S Sigman, Shelley D. Minteer
- 2241 Multi-Modal Catalytic Cascades on Carbonaceous Scaffolds
Madelaine Seow Chavez, Jose Monclova, David P Hickey, Sofiene Abdellaoui, Ivana Gonzales, Shelley Minteer, Plamen Atanassov
- 2242 Novel Quantification of Cascade Kinetics of Electrostatic Channeling
Yuanchao Liu, Ivana Matanovic, Plamen Atanassov, Scott Calabrese Barton
- 2243 Multiplexed 3D Paper Platform for Electrochemical and Enzymatic Catalytic Conversions in a Complex Cascade System
Nalin I Andersen, Kateryna Artyushkova, Ivana Gonzales, Plamen Atanassov
- 2244 Surface Recognition and Electron Transfer in Electroactive Bacterial Biofilms: Principal Component Analysis
Nikolai Lebedev, Matthew Yates, Leonard M Tender

- 2245 Enhancement of Electrochemical Performance of Bilirubin Oxidase Modified Gas Diffusion Biocathode By Porphyrin Precursor
Mary Arugula, Erica Pinchon, Kapil Pant, Sameer Singhal
- 2246 Precipitated and Chemically-Crosslinked Enzymes over Polyaniline Nanofibers for High Performance Biosensors & Biofuel Cells
Tsai Garcia-Perez, Jae Hyun Kim, Ryang Eun Kim, Youngho Wee, Jungbae Kim, Su Ha
- 2247 Stainless Steel-Based Bioanodes for Applications in Bioelectrochemical Systems
Jean-Marie Fontmorin, Junxian Hou, Ian Head, Keith Scott, Eileen Yu
- 2248 (Keynote) Tuning the Properties of Biological Catalysts for Biofuel Cells Applications: From Site-Directed Mutagenesis to the Design of Macroscopic Redox Matrices
Christophe Léger, Vincent Fourmond, Sébastien Dementin
- 2249 On-Chip Enzymatic Microbiofuel Cell-Powered Integrated Circuits
Nicolas Mano
- 2250 Bioelectrode Engineering - Control of Catalytic Film Thickness for Enzymatic Fuel Cells
Huanguang Li, Darren Buesen, Rhodri Williams, Joerg Henig, Stefanie Stapp, Martin Winkler, Thomas Happe, Nicolas Plumeré
- 2251 Hybrid Non-Enzymatic and Enzymatic Cascade Bioanode for Glycerol/O₂ Biofuel Cell Applications
Mary Arugula, Erica Pinchon, Ulf Lindstrom, Patria Juzang, Kapil Pant, Shelley D. Minteer, Sameer Singhal
- 2252 (Keynote) Covalent and Non-Covalent Functionalization of Carbon Nanostructures for Designing Biological Fuel Cells
Sadagopan Krishnan
- 2253 Sputtering of Nickel-Palladium Bimetallic Anode Catalysts for Direct Urea/Urine Fuel Cell (DUFC) Application
Jaesik Yoon, Doohee Lee, Eunji Lee, Sung Pil Woo, Young Soo Yoon, Yi Wang, Dong-Joo Kim
- 2254 Enhancing the Redox Conductance of Biofilms in Microbial Fuel Cells
Cheng Li, Hong Liu
- 2255 3D-Printable Cathode Electrode for Monolithically Printed Microbial Fuel Cells (MFCs)
Pavlina Theodosiou, John Greenman, Ioannis Ieropoulos
- 2256 Electron Transfer Rates of Anodic Biofilms at Different Sizes
Secil Tutar, Abdelrhman Mohamed, Phuc Thi Ha, Haluk Beyenal
- 2257 Non-Platinum Group Catalysts to Improve Performance of a Membraneless Microbial Fuel Cell
Clifford S. Swanson, Yasser Ashraf Gandomi, Gabriel A. Goenaga, Samantha Medina, Thomas A. Zawodzinski, Douglas Aaron, Matthew M. Mench
- 2258 Field Testing of Floating Microbial Fuel Cells and Energy Harvesting Related Power Systems
Pierangela Cristiani, Paolo Bonelli, Alessandro Liberale, Matteo Tucci, Maddalena Papacchini, Stefano P. Trasatti
- 2259 Toward Practical Powering of Oceanographic Sensors By Benthic Microbial Fuel Cells
Jeffrey Book, Joel Golden, Ian Martens, Andrew Quaid, Leonard M Tender
- 2260 In Situ Development of Efficient Electrogenic Bacterial Community in Urine Fed Microbial Fuel Cell Cascades
Oluwatosin Obata, Xavier Alexis Walter, John Greenman, Ioannis Ieropoulos
- 2261 Design and Characterization of a Conductive Cellulose Nanocomposite Anode for Enhancement of Microbial Fuel Cell Efficiency
Jason J. Keleher, Thomas J. Beckmann, Joseph Edward Lambert, Katelyn Patricia Lanasky, Nicole Elizabeth Yuede
- 2262 Passive Feeding in Paper-Based Microbial Fuel Cells
Jonathan Winfield, Paolo Milani, John Greenman, Ioannis Ieropoulos
- 2263 Field Demonstration of Potentiostatically Enriched Microbial Fuel Cell Wastewater Treatment System
Abdelrhman Mohamed, Hannah M. Zmuda, Erik R. Coats, Haluk Beyenal

2264 Optimising Microbial Fuel Cell Treatment of Wastewater through Electrode Configuration
Ioannis Ieropoulos, Olivia Reddy, Jonathan Winfield, John Greenman

2265 Modeling of Continuous Microbial Fuel Cell (CMFC) for Control Applications
Ashish Yewale, Ravi N. Methekar, Shailesh G. Agrawal

2266 Field Trial of Self-Stratifying Membrane-Less Microbial Fuel Cells Stacks in an Autonomous and Self-Powered Urinal
Xavier Alexis Walter, Irene Merino-Jimenez, John Greenman, Ioannis Ieropoulos

L04-Charge Transfer: Electrons, Protons, and Other Ions 3

2267 (Invited) First-Principles Design of Mixed Proton-Electron Conductors for Solid-Oxide Fuel Cell Electrodes
Michele Pavone

2268 Mapping Charge Carrier Dynamics of Photoactive Material Surfaces in Space and Time
Omar Mohammed

2269 Size-Dependent Electrochemistry of Silicon and Gallium Phosphide Ultramicroelectrodes
Mitchell Lancaster, Saurabh Acharya, Stephen Maldonado

2270 Adiabatic and Nonadiabatic Charge Transport in Li-S Batteries
Haesun Park, Nitin Kumar, Marko Melander, Tejs Vegge, Juan Maria Garcia Lastra, Donald J Siegel

2271 (Invited) Multiscale Morphological and Electrical Characterization of Charge Transport and Charge Transfer Limitations to Power Performance of Positive Electrode for Li-Ion Batteries
Nicolas Besnard, Pierre Tran-Van, Aurelien Etienne, Eric Maire, Thierry Douillard, Olivier Dubrunfaut, Laurent Gautier, Sylvain Franger, Jean-Claude Badot, Bernard Lestriez

2272 Charge-Transfer Perturbations Due to Interfaces on Electronic and Ionic Conductions within Composite Electrodes for Li-Ion Batteries
Jean-Claude Badot, Olivier Dubrunfaut, Bernard Lestriez

2273 (Invited) Observation of the Marcus Inverted Region of Electron Transfer from Asymmetric Chemical Doping of Pristine (n,m) Single-Walled Carbon Nanotubes
Yuichiro Kumai, Albert Tianxiang Liu, Anton Cottrill, Volodymyr Koman, Pingwei Liu, Daichi Kozawa, Xun Gong, Michael S Strano

2274 Homogeneous and Heterogeneous Catalysis in the All-Vanadium Redox Flow Battery
Matthäa Verena Holland-Cunz, Jochen Friedl, Ulrich Stimming

2275 Charge Transport through Single Molecules Connected to Semiconductor Electrodes
Richard J. Nichols, Andrea Vezzoli, Walther Schwarzacher, Nicolo Ferri, Simon J. Higgins, Richard Brooke

2276 (Invited) Towards Comprehensive Control of Electrochemical Reactions through Electrolyte Design: A Lithium Oxygen Battery Case Study
Graham Leverick, Michal Tulodziecki, Yu Katayama, Ryoichi Tatara, Shuting Feng, Fanny Bardé, Yang Shao-Horn

2277 Transport & Charge Transfer Near Electrochemical Interfaces: A Quasi-Fermi Perspective
Kyle N. Grew

2278 (Invited) Computational Insights to the Charge Transfer Reaction at the Complex Li/SEI/Electrolyte Interface
Yue Qi, Yunsong Li

2279 Hybrid Energy Conversion and Storage (HECS) Cells of the Composite Materials between Visible-Light Active Co(OH)₂ and UV-Light Active Ni(OH)₂
Montree Sawangphruk, Ketsuda Kongsawatvoragul, Saran Kalasina

2280 Ion Migration in Organometal Trihalide Perovskite Solar Cells
Seokwon Lee, Oh Ilhwan

2281 Morphological and Electrochemical Optimization of Solid Oxide Fuel Cell (SOFC) Diffusion-Blocking Layer and Cathode Layer Fabricated By Reactive Spray Deposition Technology (RSDT)

Thomas Allen Ebaugh, Joseph Barton, Leonard J. Bonville, Radenka Maric

2282 Performance of Metal-Supported Proton-Conducting Solid Oxide Fuel Cells By Reactive Spray Deposition Technology

Ryan J. Ouimet, Timothy D. Myles, Leonard J. Bonville, Radenka Maric

2283 Transmembrane Electric Conductivity Modulation in PCBM Doped Free-Standing Lipid Bilayers By Visible Light Irradiation

Kensaku Kanomata, Takumi Haseyama, Takashi Deguchi, Daisuke Tadaki, Teng Ma, Ayumi Hirano-Iwata, Fumihiko Hirose

2284 (Invited) Mechanistic Details of Protonic Solar Cells Formed Via Covalent Modification of Passive Ion-Exchange Membranes with Photoacid Dye Molecules

William White, Christopher D. Sanborn, Eric Schwartz, Simon Luo, David M. Fabian, Lawrence A. Renna, Shane Ardo

2285 Effect of Inorganic Nano Fillers on Alkaline Polymer Electrolytes

Jak Li, Keryn Lian

2286 (Invited) Recent Progress in Understanding Battery Electrolyte Electrochemical Stability and Its Relationship with Electrolyte Structural Properties

Oleg Borodin, Jenel Vatamanu, Marco Olguin, Travis Pollard, Claire Eisner, Kenneth Leiter, Jaroslaw Knap

2287 Towards Identifying the Active Sites on Oriented Ruthenium Dioxide Surfaces in Catalyzing Oxygen Evolution

Reshma R Rao, Manuel J Kolb, Niels Halck, Jonathan Hwang, Anders Filsoe Pedersen, Apurva Mehta, Hoydoo You, Juan Corchado-Garcia, Heine A. Hansen, Zhenxing Feng, Hua Zhou, Jan Rossmeisl, Tejs Vegge, Ib Chorkendorff, Ifan Stephens, Yang Shao-Horn

2288 (Invited) Insights from Computational Modeling and Experiments on the Li-Ion Dynamics and Electrochemical Stability of Garnet-Based Solid Electrolytes

Randy Jalem

2289 Electrical Response of a New Lipophilic Ionic Liquid and the Effect of CO₂ on Its Conductivity Mechanism

Federico Bertasi, Ketì Vezzù, Gioele Pagot, Giuseppe Pace, Enrico Negro, Yaser Abu-Lebdeh, Michel Armand, Vito Di Noto

2290 Charge Transfer across the n-Gallium Phosphide(100) Photoanode/Electrolyte Interface during Photoelectrochemical Water Splitting

Waqas Saddique, Gerhard Lilienkamp, Winfried Daum

2291 (Invited) Proton Transport in Metal-Organic Frameworks

Francesco Paesani

2292 Charge Transfer Characteristics of Diaza-Anthraquinones in Different Solvents and Their Application As Organic Active Material in Redox Flow Batteries

Jonas D. Hofmann, Jürgen Janek, Daniel Schröder

2293 The Ionic and Water Transport Properties Studies of Univalent Ion Exchanged Perfluorosulfonate Membrane

Jing Peng, Gabriel A. Goenaga, Thomas A Zawodzinski

2294 (Invited) Ionic Charge Separation at the Electrode Interface

John Kattirtzi, David Limmer, Adam Phillip Willard

2295 Thin Film Ion Transport and Morphology of Poly(ethylene oxide) and Lithium Salt Mixtures

Ban Dong, Yu Kambe, Moshe Dolejsi, Paul F. Nealey, Shrayesh N. Patel

2296 (Invited) Lithium Ion Conductors – between Model Systems and Battery Materials

Paul Heitjans

L05-Oxygen Reduction Reactions

2297 (Invited) Single Metal Atom Embedded in Two Dimensional Supports for Active Oxygen Reduction Reaction

Seoin Back, Samira Siahrostami, Jens Nørskov

- 2298 (Invited) Tailored ORR Electrocatalysts
Nigel Becknell, Pietro Papa Lopes, Haifeng Lv, Eric Coleman, Dongguo Li, Rongyue Wang, Dusan Strmcnik, Nenad M Markovic, Vojislav Stamenkovic
- 2299 (Invited) Electrocatalytic Activity Towards ORR and Stability of Binary and Ternary Catalysts Based on Pt and Cu
Christophe Coutanceau, Styven Lankiang, Stève Baranton
- 2300 (Invited) Graphene: A Promising Catalyst Support for Oxygen Reduction Reaction in Polymer Electrolyte Membrane Fuel Cells
Begüm Yazar Kaplan, Esaam Jamil, Sajjad Ghobadi, Navid Haghmoradi, Sina Abdolhosseinzadeh, Muhammad Faisal Jamil, Emre Biçer, Elif Daş, Ayşe Bayrakçeken Yurtcan, Selmiye Alkan Gürsel
- 2301 (Invited) Recent Advances in Electrocatalysis of Oxygen Reduction Using Metallo-Corroles
Ariel Friedman, Naomi Levy, Lior Elbaz
- 2302 Reduced-Graphene-Oxide-Based Hybrid Supports for Platinum Catalysts Active at Low Loadings during Oxygen Reduction
Pawel J Kulesza, Beata Dembinska, Sylwia Zoladek, Iwona Agnieszka Rutkowska, Krzysztof Miecznikowski, Anna Jablonska, Leszek Stobinski, Jerzy Zak, Enrico Negro, Vito Di Noto
- 2303 Challenges and Perspectives in Applying First-Principles Calculations for the Design of PGM-Free Catalyst for Oxygen Reduction Reaction
Ivana Matanovic, Kateryna Artyushkova, Plamen Atanassov
- 2304 Deciphering the Oxygen Reduction Reaction on Platinum: A Theoretical Framework
Jun Huang, Jianbo Zhang, Michael Hermann Eikerling
- 2305 (Invited) Highly Active and Durable Pt-Based Catalysts for the Oxygen Reduction Reaction in PEFCs
Hiroyuki Uchida, Hiroshi Yano, Junji Inukai, Akihiro Iiyama
- 2306 The Use of Temperature-Programmed Desorption to Explain the Electrochemical Behaviour of PGM-Free PEFC Cathode Catalysts
Paul Boldrin, Daniel Malko, Nigel P. Brandon, Anthony R. J. Kucernak
- 2307 Electrocatalytic Oxygen Reduction Reaction Activity of Sodium Metal Phosphate Based Insertion Cathodes
Senthilkumar Baskar, Chinnasamy Murugesan, Ritambhara Gond, Krishnakanth Sada, Debasmita Dwivedi, Prabeer Barpanda
- 2308 Novel Fe-N/C Type Catalysts Based on Carbide Derived Carbon for Oxygen Reduction Reaction
Rutha Jäger, Piia Ereth Kasatkin, Patrick Teppor, Eneli Härk, Urmas Joost, Tavo Romann, Indrek Tallo, Rait Kanarbik, Päärn Paiste, Kalle Kirsimäe, Enn Lust
- 2309 Highly-Acidic Mixed-Metal-Oxides ($\text{WO}_3\text{-ZrO}_2$) As Active Supports for Dispersed Metal Centers: Enhancement of Electrocatalytic Reduction of Oxygen and Carbon Dioxide
Iwona Agnieszka Rutkowska, Sylwia Zoladek, Pawel J Kulesza
- 2310 (Invited) Structural and Mechanistic Basis for the Oxygen Reduction Activity of Pyrolyzed Fe-N-C Electrocatalysts
Sanjeev Mukerjee, Qingying Jia
- 2311 (Invited) Platinum Group Metal-Free Oxygen Reduction Electrocatalysts: Structure-to-Property Relationships and Design Directions
Plamen Atanassov, Kateryna Artyushkova, Ivana Matanovic
- 2312 (Invited) Preparation and Active Sites of Pyrolyzed Fe/N/C Non-Precious Metal Catalysts for Oxygen Reduction Reaction
Zhi-You Zhou, Yu-Cheng Wang, Xiao-Dong Yang, Chi Chen, Shi-Gang Sun
- 2313 (Invited) Kinetic Insight into the Degradation Mechanism of PGM-Free ORR Catalysts
Xi Yin, Ulises Martinez, Siddharth Komini Babu, Hoon T Chung, Geraldine M Purdy, Piotr Zelenay
- 2314 (Invited) Stability of Palladium Electrocatalysts in Alkaline Solutions

Sitong JIA, Minhua Shao

- 2315 Transition Metal and Nitrogen Co-Doped Carbide-Derived Carbon Catalysts for Oxygen Reduction Reaction in Alkaline Direct Methanol Fuel Cell
Sander Rato, Ivar Kruusenberg, Maike Käärrik, Mati Kook, Rando Saar, Petri Kanninen, Tanja Kallio, Jaan Leis, Kaido Tammeveski
- 2316 Studies of the Oxygen Reduction Reaction of Pt Single Crystals Alloys in Alkaline Media
Kim Degn Jensen, Logi Arnarson, Jan Rossmeisl, Ib Chorkendorff, María Escudero-Escribano, Ifan Stephens
- 2317 Catalyst Design for Oxygen Reduction Reaction Using Pyridinic Nitrogen-Doped Carbon Materials
Takahiro Kondo, Junji Nakamura
- 2318 (Invited) Influence of the Crystal Structure of Manganese Oxides on the ORR Kinetics: A Combined Experimental and Computational Study
Anna S. Ryabova, Antoine Bonnefont, Victoria A. Nikitina, Renat R. Nazmutdinov, Elena R. Savinova, Galina A. Tsirlina
- 2319 Operando Determination of Oxygen Reduction Reaction Kinetics on PGM-Free Electrocatalysts in a PEFC
Luigi Osmieri, Xiaohua Wang, Firat Cetinbas, Hoon T Chung, Xi Yin, Sadia Kabir, Deborah J Myers, Piotr Zelenay, Rajesh Ahluwalia, Kenneth Charles Neyerlin
- 2320 Long-Term Oxygen Reduction Reaction Activity of Surface Modified Cathode Materials for Solid Oxide Fuel Cells
Ye Lin, Shiwoo Lee, Harry Abernathy, Tao Yang, Gregory A Hackett
- 2321 Simultaneous Optical Transmission Relaxation and Impedance Spectroscopy Measurements of Thin Film Oxygen Surface Exchange Kinetics
Nicola H. Perry, Jae Jin Kim, Harry L. Tuller
- 2322 Mechanistic Insights into Oxygen Reduction Reactions in Non-Aqueous Metal-Air Batteries
Saurin Hiren Rawal, William C. McKee, Ye Xu
- 2323 Influence of Perfluorinated Additives on ORR and Performance of High Temperature PEM Fuel Cells
Abhinav Poozhikunnath, Haoran Yu, Leonard J. Bonville, Radenka Maric
- 2324 Ligand-Regulated ORR Activity of Au Nanoparticles in Alkaline Medium: The Importance of Surface Coverage of Ligands
Linfang Lu
- 2325 Development of Nanostructured-Carbon-Supported Gold Nanoparticles As Catalysts for Electroreduction of Oxygen and Carbon Dioxide
Sylvia Zoladek, Magdalena Blicharska, Iwona Agnieszka Rutkowska, Pawel J Kulesza
- 2326 In Situ Investigation of Au-Cu₂O Core-Shell Nanoparticles Formation By Liquid Cell TEM
Fu-Chun Chen, Ya-Hsuan Lin, Jui-Yuan Chen, Wen-Wei Wu
- 2327 3D-Nanorod Fenton-like CuO/TiO₂ Photocatalyst By Electrodeposition in AAO Template for Dye Degradation
Li-Heng Yang, Yi-Jung Wang, Yu-Lun Chueh, Lih-Juann Chen
- 2328 Understanding the Activation and Stabilization of Electrocatalytic Single Atom Catalysts
Gang Wan, Hangrong Chen, Tao Li, Hua Zhou, Jianlin Shi
- 2329 Perovskite Oxide Nanoparticles As High Performance Bifunctional Catalyst
Weichuan Xu, Litao Yan, Meng Zhou, Hongmei Luo
- 2330 (Invited) Understanding ORR Reaction on Nitrogen Doped Carbon Materials: Insight from Experiments and Calculations
Adolfo Ferre-Vilaplana, Valentín Briega-Martos, Juan Feliu, Enrique Herrero
- 2331 (Invited) Influencing the Catalytic Activity for Oxygen Reduction and Evolution in Aqueous and Non-Aqueous Electrolytes: Support and Cations

Philip Reinsberg, Lingxing Zan, Hatem M.A. Amin, Ehab Mostafa, Helmut Baltruschat

- 2332 (Invited) In Situ X-Ray Absorption Spectroscopy Characterization of Iron-Carbon-Nitrogen Oxygen Reduction Reaction Catalysts during Pyrolysis
Deborah J Myers, A. Jeremy Kropf, Dali Yang
- 2333 (Invited) Enzymatic Reduction of Oxygen for the Development of Biofuel Cells and Hybrid Fuel Cells
Serge Cosnier
- 2334 (Invited) Interplay between Physicochemical Features and Electrochemical Performance in the ORR of "Platinum-Free" Electrocatalysts Based on Hierarchical Graphene Supports
Vito Di Noto, Enrico Negro, Angeloclaudio Nale, Ketì Vezzù, Yannick Bang, Federico Bertasi, Gioele Pagot, Giuseppe Pace, Stefano Polizzi, Mirko Prato
- 2335 Rational Design of Metal-Organic Frameworks/Gels As Efficient Catalysts for Oxygen Reduction Reaction
Hao Wang
- 2336 Metal-Organic Framework-Derived Iron and Nitrogen Co-Doped Composites As Precious Catalysts for Oxygen Reduction Reaction
Kai-Chin Wang, Hsin-Chih Huang, Chen-Hao Wang
- 2337 Electro-Reduction of Nitrogen on Molybdenum Carbides: A Density Functional Theory Study
Ivana Matanovic, Fernando H Garzon
- 2338 Non-Destructive Chemical State Mapping Using Laboratory XANES and EXAFS
Jeff Gelb, Sylvia Lewis, Srivatsan Seshadri, Janos Kirz, Wenbing Yun
- 2339 (Invited) Magnetoelectrocatalysis of Oxygen Reduction Reaction (ORR) By Lanthanide Triflates in Acetonitrile
Krysti L. Knoche, Daniel Parr, Johna Leddy
- 2340 (Invited) Pt Thin Films on Nanofibres: ORR Electrocatalysts with High Performance and Stability
Sara Cavaliere, Giorgio Ercolano, Filippo Farina, Deborah J. Jones, Jacques Rozière
- 2341 Reduced-Graphene-Oxide with Transition Metal Hexacyanometallates As Active Support for Traces of Platinum Catalyst at Low Loading during Oxygen Electrorreduction
Barbara Zakrzewska, Krzysztof Miecznikowski, Beata Dembinska, Leszek Stobinski, Sylwia Zoladek, Iwona Agnieszka Rutkowska, Agnieszka Zlotorowicz, Jerzy Zak, Enrico Negro, Pawel J Kulesza, Vito Di Noto
- 2342 High-Performance PGM-Free and Fe-Free Catalysts for Oxygen Reduction in Acidic Media
Xiaoxia Wang, David A. Cullen, Yung-Tin Pan, Jacob S Spendelow, Karren L. More, Gang Wu
- 2343 Heterogeneous Iron-Containing Carbon Gels As Catalysts for Oxygen and Carbon Dioxide Electroreductions – Rotating Ring-Disk Voltammetric Studies
Beata Dembinska, Wojciech Kiciński, Pawel J Kulesza
- 2344 Catalytic Activity of Transition Metal Nitrides for Oxygen Reduction Reaction
Hadi Abroshan, Pallavi Bothra, Ambarish Kulkarni, Jens Nørskov, Samira Siahrostami
- 2345 Oxide-Stabilized Nanoporous Ni-Pt for Enhanced Durability in ORR Catalysis
Aliya Carter, Tyler D. Pounds, Bernard Gaskey, Jonah Erlebacher
- 2346 Active Non-Precious Metal Based Nitride Catalysts for the Oxygen Reduction Reaction
Laurie Ann King, Melissa Kreider, Samira Siahrostami, Seoin Back, Thomas F Jaramillo
- 2347 Towards Fully Synthetic Transition Metal-Nitrogen-Carbon Electrocatalysts for Oxygen Reduction Reaction
Rohan Rajeev Gokhale, Surendra Thapa, Kateryna Artyushkova, Ramesh Giri, Plamen Atanassov
- 2348 Nanoscale Engineering of Efficient Oxygen Reduction Electrocatalysts By Tailoring the Local Chemical Environment of Pt Surface Sites
Suljo Linic
- 2349 Melamine-Sponge-Derived Fe-N/C Electrocatalyst with Tunable Pore Structure and Nitrogen Chemical State for Exceptional Oxygen Reduction Reaction

Dongsheng Xia, Lin Gan

- 2350 Highly Efficient Nanostructured Hybrid Catalysts for Oxygen Reduction Reaction in Polymer Electrolyte Membrane Fuel Cells
Begüm Yarar Kaplan, Navid Haghmoradi, Emre Biçer, César Merino, Selmiye Alkan Gürsel
- 2351 Durability of Pt/C with Different Nitrogen for Contents for Oxygen Reduction Reaction in PEMFC
Kahyun Ham, Jae Kwang Lee, Jaeyoung Lee
- 2352 Introducing a New Functionality on Pt Alloy Nanocrystals for Boosted Electrochemical Activities in Oxygen Reduction Reaction
Ji Mun Yoo, Dong Young Chung, Chi-Yeong Ahn, Yung-Eun Sung
- 2353 Li-Birnessite Manganese Oxide Coated on Graphene Aerogel for High-Efficient Electrocatalyst Towards Oxygen Reduction Reaction
Soracha Kosasang, Montree Sawangphruk, Nattapol Ma
- 2354 Electrochemical Deoxygenation of Aqueous Solutions Using Symmetric Activated Carbon Electrodes in Flow-through Cells
Nicolas Holubowitch, James Landon, X. Gao, K. Liu, A. Omosebi
- 2355 Electrochemical and Spectroscopic Characterization of Non-Precious Metal Fe-N-C ORR Catalysts Synthesized By Direct Flame Spray Pyrolysis
Abhinav Poozhikunnath, Haoran Yu, Leonard J. Bonville, Radenka Maric
- 2356 Carbon Black Supported Highly Stable and Active Electrocatalysts for ORR in Polymer Electrolyte Membrane Fuel Cells
Muhammad Rauf, Yong-Liang Li, Jun-Le Qu, Pei-xin Zhang, Hong-wei Mi
- 2357 Electrochemical Peroxide Generation for in Situ Disinfection
Santosh H. Vijapur, Timothy D Hall, E. J. Taylor, Dan Wang, Stephen Snyder, Brian Skinn, Carlos R Cabrera
- 2358 Transition Metal-Based Catalysts on Stable and Corrosion-Resistant Supports for Oxygen Reduction Reaction
Sung Beom Cho, Cheng He, Javier Parrondo, Shrihari Sankarasubramanian, Vijay K Ramani, Rohan Mishra
- 2359 The Impact of in Situ Crystallization on Oxygen Surface Exchange Kinetics of Mixed Conducting Thin Film Oxygen Electrodes
Ting Chen, George Frederick Harrington, Kazunari Sasaki, Nicola H. Perry
- 2360 A Comparative Study of Ligand Modification to Pt Surface for Enhanced ORR Catalyst Activity and Durability
Masaya Kobayashi, Kan Huang, Michael Jones, Tomoyuki Nagai, Hongfei Jia
- 2361 Improved Long Term Performance Stability of Sr-Fe-O Infiltrated LSM/YSZ Solid Oxide Fuel Cells Under High Steam and High Temperature
Yueying Fan, Yun Chen, Harry Abernathy, Richard Pineault, Xueyan Song, Jian Liu, Kirk Gerdes, Shiwoo Lee, Thomas Kalapos, Tao Yang, Gregory A Hackett
- 2362 Observing Growth and Dissolution of Cuprous By Liquid Cell TEM
Ya-Hsuan Lin, Fu-Chun Chen, Jui-Yuan Chen, Wen-Wei Wu
- 2363 Combined Experimental and Numerical Analysis of Surface-Modified Solid Oxide Fuel Cell Cathodes
Tao Yang, Shiwoo Lee, Ye Lin, Wenyuan Li, Jian Liu, Xingbo Liu, Harry Abernathy, Gregory A Hackett

L06-Nanoporous Materials

- 2364 (Invited) Nanoporous Materials for Energy and Environmental Applications
Mingwei Chen
- 2365 Conversion Reaction Synthesis: A Versatile Route to Nanoporous Transition Metals
Christopher Coaty, Hongyao Zhou, Haodong Liu, Ping Liu

- 2366 Hierarchical Nanoporous Gold with Engineered Architectures Via Dealloying of 3D Printed Alloys
Zhen Qi, Cheng Zhu, Wen Chen, Eric B Duoss, Jianchao Ye, Marcus A. Worsley, Christopher M Spadaccini, Juergen Biener
- 2367 3D Noble Metal-Based Porous Materials Self-Assembled By Atomically Modified Building Blocks As Electrocatalysts Boosting Small Molecule Electro-Oxidation or Reduction
Qiurong Shi, Chengzhou Zhu, Dan Du, Yuehe Lin
- 2368 (Invited) Functional Metal-Organic Frameworks: From Design to Implementation
Omar K. Farha
- 2369 Metal-Organic Frameworks with Open Metal Sites for Sensing, Catalysis, and Energy Storage
Mark D. Allendorf, Vitalie Stavila, Albert Alec Talin, Andrew M. Ullman, Timothy C. Wang
- 2370 Functionalizable Nanoporous Two-Dimensional Covalent Organic Frameworks
Bruce A Parkinson
- 2371 (Invited) Microscopy and Spectroscopy on Thin-Films for (Electro-)Catalysis
Guisje Delen, Laurens Dirk Bernardus Mandemaker, Donglong Fu, Jochem H.J. Wijten, Bert Marc Weckhuysen
- 2372 (Invited) Nanoporous Membranes By Self-Assembly of “Hairy” Nanoparticles
Ilya Zharov
- 2373 Flexible Ceramic Membranes for Redox Flow Batteries
Gregory M Newbloom
- 2374 (Invited) Recent Advances in the Textural Characterization of Hierarchically Structured Nanoporous Materials
Matthias Thommes, Katie Cychoz
- 2375 Optimising Catalyst Design for Hydrogen Fuel Cells through Structure to Performance Correlations
Byron D. Gates, Michael T.Y. Paul, Jennie Eastcott, Audrey K. Taylor
- 2376 Atomic Layer Deposition Nanoelectrode Array As a Platform for Ion Transport Studies
Iryna V. Zenyuk, Dinesh C Sabarirajan
- 2377 (Invited) Light Metal Hydride Nanocomposites As Room Temperature Solid Electrolytes
Petra E. de Jongh, Peter Ngene, Didier Blanchard
- 2378 A Way to New Smart Materials – Hierarchical 3D Structures Produced Via Self-Organization of Nanowires
Galina Strukova
- 2379 A Cathodic Electro-Fenton Catalyst Derived from Ionic-Liquid: Peroxide Generation and Di-Valent Iron Regeneration
Young-Jin Ko, Hee-Gon Kim, Jae-Woo Choi, Wook-Seong Lee, Seok Won Hong
- 2380 General Synthesis of Three-Dimensionally Ordered Macro-/Mesoporous Materials and Their Electrocatalytic Applications
Lianbin Xu, Tingting Sun, Jianfeng Chen
- 2381 Polyelectrolyte Modification of Nanoporous Membranes for Selective Ion Transport in Electrodialysis
Stephen Percival, Leo J. Small, Susan Rempe, Erik D. Spörker
- 2382 Enhanced Capacitive Deionization of Graphene Nanoplatelet/Activated Carbon Composite Electrode
Kahyun Ham, Jae Kwang Lee, Jaeyoung Lee
- 2383 Electrical Double Layer Capacitance of Ultra-Microporous Carbon Synthesized Using Zeolite Template
Taekyoung Lee, Seung Hyeon Ko, Ryong Ryoo
- 2384 (Invited) Ordered, Nanoporous Carbon Scaffolds (NCS) for Use in Energy Conversion and Related Applications
Viola Birss, Xiaolan Li, Marwa Atwa, Robert Matthew Mayall, Chengying Ai, Ehab N El Sawy
- 2385 Hidden Features: Characterizing Carbon Electrodes in Low Ionic Strength Electrolytes for Capacitive Desalination Applications

Steven A Hawks, Adam Fisher, Jennifer M Knipe, Patrick G. Campbell, Michael Stadermann

- 2386 A Nano-Carbon Scaffold (NCS) Electrode for the Vanadium Redox Flow Battery
Jialang Li, Daouda Fofana, Xiaolan Li, Ehab El-Sawy, Viola Birss, Fatemeh Shakeri Hosseinabad, Sladjana Maslovara, Edward P.L. Roberts
- 2387 Investigation of Nanoporous Carbon Scaffold with Ordered Pore Structure As Microporous Layer for PEM Fuel Cells
Muhammad Naoshad Islam, Marwa Atwa, Xiaolan Li, Farisa Forouzandeh, Udit Shrivastava, Viola Birss, Kunal Karan
- 2388 (Invited) Nanoporous Materials for Fast and Reversible Electrochemical Energy Storage
Sarah H Tolbert
- 2389 Nanoporous Carbon As a Three-Dimensional Graphene Anode and Si Scaffold for Li-Ion Batteries
Katharine Lee Harrison, Matthaeus A. Wolak, Michael P. Siegal, Dorina F. Sava Gallis
- 2390 Biomass Activated Carbon for Solid Supercapacitors
Keryn Lian, Matthew Genovese, Haoran Wu, Alvin Virya, Jak Li
- 2391 Effect of Pretreatment on Carbon Materials
Ashutosh Kumar Singh, Nael Yasri, Kunal Karan, Edward P.L. Roberts
- 2392 Nanoporous Electrodes By Laser-Induced Carbonization and Patterning of Polymer Resins for Flexible Energy Storage
Dilara Yilman, Irene Lau, Gillian F Hawes, Michael A Pope
- 2393 (Invited) Nanoscale Chemistry and Electrochemistry with Porous Silicon Nanoparticles
M. J. Sailor
- 2394 Optical Properties of Nanoporous Silicon in the Presence of Magnetic Nanostructures
Petra Granitzer, Klemens Rumpf, Peter Poelt, Michael Reissner
- 2395 Simulation of Formation, Propagation and Interaction with Light of Nanoporous Structures in Indium Phosphide during Anodisation in Aqueous KOH
Michael G. M. Keyes, Robert P. Lynch, D. Noel Buckley, Nathan Quill, Clifford J. Nolan, Ian Clancy
- 2396 Bi-Metal Deposits within Nanostructured Silicon with Respect to Permanent Nanomagnets
Klemens Rumpf, Petra Granitzer, Roberto Gonzalez-Rodriguez, Jeffery Coffey, Peter Poelt, Herwig Michor
- 2397 Engineered Nanoporous Anodic Alumina Structures for the Development of Advanced Sensing and Drug Delivery Systems
Elisabet Xifré-Pérez, Josep Ferré-Borrull, Laura Karen Acosta, Laura Pol, Josep Pallares, Lluís F Marsal
- 2398 Formation and Functional Features of Self-Ordered TiO₂ Nanotube Arrays
Patrik Schmuki, Xuemei Zhou, Ning Liu, Marco Altomare
- 2399 Holistic Study of Doped Layered Titanate Nanofibers
Caleb Heath, Parker Cole, Thaneshwor Kaloni, Salvador Barraza-Lopez, Ryan Tian
- 2400 Morphological Control Effect of Hierarchical Heterostructure α -Fe₂O₃/TiO₂ Nanotube for Photoelectrochemical Water Splitting
Hyungkyu Han
- 2401 Anodic TiO₂ Nanotube Layers: Excellent Platform for Secondary Materials
Raul Zazpe, Hanna Sopha, Milos Krbal, Jan Prikryl, Jan M. Macak
- 2402 Influence of Oxygen and Chlorine on the Electrical Performance of ZnO Field-Effect Transistors
Heinz von Seggern, Paul Mundt

M01-Sensors, Actuators, and Microsystems General Session

- 2403 A New Low Temperature Electrochemical Hydrocarbon and NO_x Sensor

Praveen K. Sekhar, Shyam Aravamudhan, Ajit Khosla

- 2404 All-Solid-State Potentiometric Sensors for Potassium Ion Detection with Enhanced Stability By Interlayer Incorporation
Wendy Tran, Shide Qiu, Hyun-Joong Chung
- 2405 Equilibrium Swollen EPDM Studied Using Photon Correlation Spectroscopy
M. Hasnat Kabir, Ajit Khosla, Hidemitsu Furukawa
- 2406 A Portable System for Plant Volatile Detection
Yi Fang, Ramaraja P. Ramasamy
- 2407 Monitoring Steel Bar Corrosion in 3.5 Wt.% NaCl Solution Using a Fiber Optic Corrosion Sensor
Fujian Tang, Yizheng Chen
- 2408 Engineering Plasmonic Lattice Structures for Lab-on-Chip Sensing Platforms
Kyle Smith, Casey Norville, Jeremy Dawson
- 2409 3D Printing of Electrically Conductive Hybrid Organic-Inorganic Materials
Shreyas Shah, MD Nahin Islam Shiblee, Samiul Basher, Julkarnyne M. Habibur Rahman, Larry A Nagahara, Thomas Thundat, Praveen K. Sekhar, Masaru Kawakami, Hidemitsu Furukawa, Ajit Khosla
- 2410 Sensitivity Control of Dye-Doped Polymeric Fiber-Optic Strain Sensor Using Radiative Emission-Absorption Mechanism
Rei Furukawa, So Kamimura
- 2411 Pulsed Potential Amperometric Electrochemical Gas Sensors
Towner Scheffler
- 2412 Acoustic Sensors Coated with a Metal-Organic Framework for Room Temperature Monitoring of Carbon Dioxide and Methane
Jagannath Devkota, Ki-Joong Kim, Jeffrey Culp, Paul R Ohodnicki, David W Greve
- 2413 Development and Evaluation of in-Situ Instrumentation for Li-Ion Cells
Joe Fleming, Tazdin Amietszajew, Euan McTurk, David Greenwood, Rohit Bhagat
- 2414 Reliability of Acceleration Sensor Data Under Environmental Stresses for Remote Machine Monitoring
Ryohei Matsui, Tetsufumi Kawamura, Nobuyuki Sugii
- 2415 Persistent Drought Monitoring Using a Microfluidic-Printed Electro-Mechanical Sensor of Stomata in Planta
Volodymyr Koman, Tedrick Lew, Min Hao Wong, Seon-Yeong Kwak, Juan Pablo Giraldo, Michael S Strano
- 2416 A High Sensitivity and Compact Real Time Gas Concentration Sensor for Semiconductor and Electronic Device Manufacturing Process
Hidekazu Ishii, Masaaki Nagase, Nobukazu Ikeda, Yoshinobu Shiba, Yasuyuki Shirai, Rihito Kuroda, Shigetoshi Sugawa
- 2417 MEMS Micro-Sensor for Sensitive Low Power Methane Detection
Melvin W Findlay, Joseph R Stetter, Michael T Carter, Lloyd Ploense
- 2418 Wireless Zero-Power Air Quality Electrochemical Sensor Card for Iot Applications
Joseph R Stetter, David Peaslee, Vinay Patel, Bennett J. Meulendyk
- 2419 Metal Silicide-Refractory Oxide Ceramic Composites for High-Temperature and Harsh-Environment Sensing: Processing, Stability and Thermoelectric Properties
Gunes Alp Yakaboylu, Rajalekshmi Chockalingam Pillai, Katarzyna Sabolsky, Daniel J. Haynes, Edward M. Sabolsky
- 2420 Electrochemical Detection of Tricresyl Phosphates in Gas
Lang Zhou, Patrick J. Dean, Bryan A. Chin, Aleksandr L. Simonian
- 2421 Thin and Thick Film Ceramic-Based Passive Wireless Temperature Sensors for Harsh Environments
Kavin Sivaneri Varadharajan Idhiam, Kodey Jones, Gautam Naidu, Katarzyna Sabolsky, Edward M. Sabolsky, Michael Comparetto, Daryl S. Reynolds

- 2422 Optical Fiber-Based Corrosion Sensor for Health Monitoring of Oil and Gas Infrastructure
Ruishu Feng Wright, Ping Lu, Margaret Ziomek-Moroz, Paul R Ohodnicki
- 2423 Non-Destructive Testing: Insuring Safety, Reliability, and Reducing Cost of Li Batteries
Vlad I Redko, Elena M Shembel, Timothy V Pastushkin
- 2424 Highly Sensitive Acetylcholinesterase Biosensor Based on Shaped Controlled ZnO Nanostructure for Paraoxon Pesticide Detection
Ahmad Fallatah, Nicolas Kuperus, Mohammed Almoutan, Sonal Padalkar
- 2425 A Sandwiched Immunosensor for Highly Selective and Sensitive Detection of Alpha-Fetoprotein By Using CdTe@SiO₂/GO Electrochemiluminescence Probes
Deng Pan, Yanfei Shen
- 2426 Impact of Bio-Recognition Element Density and Other Factors Impacting Impedance Sensor Performance
Michael Brothers, Ariana Nicolini, Jorge Chavez, Jen Martin, Curt Grigsby, Lawrence Drummy, Rajesh Naik, Steve Kim
- 2427 A Versatile Redox Responsive Nanoferrogels Based Sensor for Metabolics Analytics
Samuel Mugo, Weihao Lu, Nicole Funk
- 2428 Electrochemical Determination of Tyrosine and Tryptophan Using Ultraviolet Irradiated Tungsten Trioxide Nanoparticles
Chinnathambi Sekar, Anithaa A C
- 2429 (Invited) Engineering the Bio-Interface at the Nanoscale for Diagnostics and Therapeutics Applications
Tohid Fatanat Didar
- 2430 Non-Enzyme Urea Sensing with Ag Covered ZnO with Different Morphologies on Carbon Papers
Jaesik Yoon, Doohee Lee, Eunji Lee, Sung Pil Woo, Young Soo Yoon, Yi Wang, Dong-Joo Kim
- 2431 Silicon Nanowire Based Sensors By Using Nickel-Oxide Membrane for Sarcosine Sensing
Anisha Roy, Siddheswar Maikap
- 2432 Competitive Sensing Mode for Electrochemical Detection of Proteins
Agnivo Gosai, Pranav Shrotriya
- 2433 Design and Development of Electrochemical Analyzer for Detection of Δ⁹-Tetrahydrocannabinol (THC)
Anahita Karimi, Badawi Dweik
- 2434 Palladium Deposited on Multi-Walled Carbon Nanotubes Composite Modified Glass Carbon Electrode As Electrochemical Acetaminophen Sensing Platform
Yuting Wu, Wu Lei, Qingli Hao, Caiwei Li
- 2435 Porphyrin-Based Nanomaterials: Enhanced Electrochemiluminescence and the Application of Bioassay
Dan Shan, Guang-Yao Zhang, Wen-Rong Cai, Wen-Li Xin
- 2436 (Vittorio de Nora Award Address) New Tools for Brain Research
Hariklia (Lili) Deligianni
- 2437 Electrochemical Assessment of Nitric Oxide Spatial Distribution at Single Organ Level in Live Zebrafish Embryos
Eduard Dumitrescu, Kenneth Wallace, Silvana Andreescu
- 2438 In Sickness and in Health
Shaneel Chandra, James Chapman, Daniel Cozzolino, Aoife Power, Jessica Roberts
- 2439 A Wearable Electrochemical Impedance Spectroscopy Device for Detection of Glucose in Sweat Using Zinc Oxide Based Flexible Biosensors
Devang Sankhala, Sriram Muthukumar, Shalini Prasad
- 2440 Non-Faradaic Affinity Based Biosensor for Enhanced Detection of Biomarkers in Sweat Using Room Temperature Ionic Liquids

Badrinath Jagannath, Sriram Muthukumar, Shalini Prasad

- 2441 Comparison of Ex-Situ and In-Situ Nano Plasmonic Platforms for Capture and Detection of Exosomes
R. Duraichelvan, B. Srinivas, S. Badilescu, A. Ghosh, M Packirisamy
- 2442 Stretchable Sensors for Body-Attachable Wearable Electronics
Nae-Eung Lee
- 2443 Wearable Tattoo-Based Iontophoretic Biosensing System for Noninvasive Metabolite Monitoring Application
Jayoung Kim, Joseph Wang
- 2444 A Cell-Imprinted Polymer Capacitive Biosensor for the Detection of Escherichia coli
Weihao Lu, Samuel Mugo
- 2445 Comparison of Pathogens Capture By Different Bio-Receptors Immobilized Biomolecular Filter in a Large Volume of Liquid
Songtao Du, I-Hsuan Chen, Yuzhe Liu, Jianguo Xi, Xu Lu, Shin Horikawa, Tung-Shi Huang, Sang-Jin Suh, Bryan A. Chin
- 2446 An Advanced Magnetoelastic (ME) Sensing of Salmonella By the Improvement of Pathogen Recovery Rate Using Tween20 Modified Swabs
Yuzhe Liu, Songtao Du, Shin Horikawa, I-Hsuan Chen, Jianguo Xi, Xu Lu, Tung-Shi Huang, Bryan A. Chin
- 2447 Vitamin B₆ Cofactor Conjugated hPEI-AgNCs for Fluorescent Sensing of Metal Ions and its Application in Cells Imaging
Shilpa Bothra, Suban K. Sahoo
- 2448 Wholistic Electrochemical Biosensor for the Combinatorial Detection of Alcohol and Glucose in Perspired Sweat
Ashlesha Bhide, Sriram Muthukumar, Shalini Prasad
- 2449 Sensitivity to Acetone By Epsilon-Phase Tungsten Trioxide Films Produced By Reactive Spray Deposition Technology
Ryan J. Ouimet, Thomas Allen Ebaugh, Leonard J. Bonville, Radenka Maric
- 2450 Friction Property of Gel Surface Modified By Laser Processing
Masato Wada, Toshiki Kameyama, Kazunari Yoshida, Ajit Khosla, Masaru Kawakami, Hidemitsu Furukawa
- 2451 Electric Field Induced Melting: Effect of Non-Specifically Absorbed DNA
Ryan M West, Wesley Hetrick
- 2452 3D Printed Shape Memory Hydrogels for Soft Robotics
MD Nahin Islam Shiblee, Kumkum Ahmed, Ajit Khosla, Hidemitsu Furukawa
- 2453 Temperature and Spallation Sensors Based on Oxide and Oxide/Silicide Composites for High-Temperature System Monitoring
Katarzyna Sabolsky, Gunes Alp Yakaboğlu, Kavin Sivaneri Varadharajan Idhaim, Benjamin Buzzo, Michael Comparetto, Daryl S. Reynolds, Kostas Sierros, Edward M. Sabolsky, Jeffrey Bogan, Margaret Raughley
- 2454 Nano Gold- Carbon Nanotube Modified Sensor for the Determination of Diabetes Risk Biomarkers, 8-Hydroxydeoxyguanosine and 8-Hydroxyguanine
Rajendra N Goyal
- 2455 Gas Sensing Characteristics of ZnO Thin Films Exposed to Ethanol
Chun-Yu Lin, Jeng-Han Wang, I-Kai Cheng, Fu Ming Pan
- 2456 Easy Monitoring of L-Lactic Acid in Wine Samples Using Disposable Electrochemical Enzymatic Sensors
Pablo Fanjul Bolado, Marta Maria Pereira Silva Neves, María Begoña González García, David Hernández Santos
- 2457 A Comparative Study on Gas Sensing Performance of Photo-Reduced GO with TiO₂ and ZnO
Eunji Lee, Doohee Lee, Jaesik Yoon, Young Soo Yoon, Bart Charles Prorok, Dong-Joo Kim
- 2458 NiO Nanostructured Catalysts By AC EPD for Non-Enzymatic Urea Sensors

Doohee Lee, Jaesik Yoon, Eunji Lee, Sung Pil Woo, Young Soo Yoon, Dong-Joo Kim

- 2459 Characterization of Defect-Rich Poly-SnO₂ Nanofiber Material for Electrical Transport Mechanism Application
Chun-Yen Lai, Li-Wei Huang, Po-Hao Lai, Yong-Jia Wang, Zhong-Jie Hong, Wen-Wei Wu, Ping-Hung Yeh
- 2460 Conductive Shape Memory Gels for Sensing Application
Kumkum Ahmed, MD Nahin Islam Shiblee, Ajit Khosla, Hidemitsu Furukawa
- 2461 Hybrid Flexible Plasmonic SERS Substrate with Improved Assemblage of Ag@SiO₂ Nanocubes on a Miniaturized Paper Platform
Menbere Leul Mekonnen, Ching-Hsiang Chen Chen, Wei-Nien Su, Bing-Joe Hwang
- 2462 Impact of Praseodymium Content on the Structural and Sensing Characteristics of Sol-Gel Synthesized PrTi_xO_y Sensing Films
Chih-Wei Wang, Chi-Lin Chan, Tung Ming Pan
- 2463 Sensing Selectivity Enhancement of Palladium Oxide Toward VOCs Using Characteristic Response Features below 250°C
I-Kai Cheng, Jeng-Han Wang, Chun-Yu Lin, Fu Ming Pan
- 2464 Photo Sensitivity Enhanced By the Modulation of Oxide Thickness in MIS(p) Structure
Hung-Yu Chen, Jenn-Gwo Hwu
- 2465 Pressure Sensor at Barometric Levels Using Ionized Gas
Matthew C Stewart, Xuehan Liu, John Dewey Jones, Albert Leung
- 2466 Increasing the Efficiency of Amino Acids Detection By Electrochemical Methods on Amorphous Carbon Nitride a-CN_x Electrodes
Mathilde Faure, Florence Billon, Isabelle Le Potier, Anne-Marie Haghiri-Gosnet, Bernard Tribollet, Claude Deslouis, Alain Pailleret, Jean Gamby
- 2467 (Invited) A Frequency Domain Optofluidics Dissolved Oxygen Sensor
Bo Xiong, Eric Mahoney, Joe F. Lo, Colleen Chau, Ravi Selvaganapathy, Qiyin Fang
- 2468 Defect Engineering: Polycrystalline TiO₂ Nanofibers with H₂ Plasma Treatment Tuning Grain to Grain Boundary Potential for Photochemical Antibacterial Agents
Pin-Chun Pan, Po-Hao Lai, Ping-Hung Yeh, Lih-Juann Chen
- 2469 Simultaneous Electrochemical Determination of Purine and Pyrimidine Bases Using Cu Doped CeO₂ Nanoparticles Modified Glassy Carbon Electrode
Nehru Lavanya, Chinnathambi Sekar, Giovanni Neri
- 2470 A Review of Electrochemical and Non-Electrochemical Approaches to Determining Oxide Concentration in Molten Fluoride Salts
Bonita Goh, Francesco Carotti, Raluca Olga Scarlat
- 2471 Using Impedance Spectroscopy to Detect the Selective Sorption of Iodine By MOF ZIF-8
Leo J. Small, Tina M Nenoff
- 2472 Magnetically Actuated Beating Cilia for Pre-Concentration of Bacteria
Peter Hesketh, Srinivas Hanasoge, Alexander Alexeev, Marilyn Erickson, Jie Xu

M02-Microfluidics, Sensors, and Devices 2

- 2473 (Keynote) Recent Progress in Nanomaterials and Smart-Phone Based Biosensors for Biomedical, Environmental, and Food Safety Applications
Dan Du, Yuehe Lin
- 2474 Bacteriophage-Assisted Magnetic Separation and Electrochemical Detection of Pathogenic Bacteria from Food Matrix
Alyssa Ghuman, Yan Zhou, Ramaraja P. Ramasamy

- 2475 Electrodeposition of Both Carbon Nanotube and Glucose Oxidase on Pt Electrode Using a Dispersed Electrolytic Solution
Mikito Yasuzawa, Masahiro Uchimaru, Huan-Ping Zhong, Masashi Kurashina, Chen-Hao Wang, Yusuke Fuchiwaki, Toshihiko Harada
- 2476 Suspended Graphene-Based Electrochemical Sensor for Ultra-Sensitive Detection of Electroactive Dopamine (neurotransmitter) Signals
Rakesh Kumar, Caroline Dang, Faisal Hadi, Omar Dawood, James Sexton, Mohmad Missous, Dean Jackson, R Young, Jessica E. Koehne, Stephen Boulton, Neil Dixon, Max Migliorato
- 2477 High Throughput Droplet Microfluidic Platform for Single-Cell Lipid Analysis of Human Breast Cancer Cell Lines
Renny Edwin Fernandez, Md Monirojjaman Monshi, Pulak Bhushan, Shekhar Bhansali
- 2478 (Keynote) New Microfluidic Platforms for Medical Screening and Diagnostics
Bonnie L. Gray
- 2479 Time-of-Flow Micromechanical Mass Spectrometry and Micromechanical Infrared Spectroscopy Using Microfluidic Cantilever
Thomas Thundat, Rosmi Abraham, Faheem Khan, Seokbeom Kim, Jungchul Lee
- 2480 Physical Properties of Carbon Fiber Doped Micropatternable Nanocomposite Polymer
MD Nahin Islam Shiblee, Shreyas Shah, Praveen K. Sekhar, Thomas Thundat, Larry A Nagahara, Masaru Kawakami, Hidemitsu Furukawa, Ajit Khosla
- 2481 (Invited) Microfluidic Chips with Electronic Cell Tracking for Digital Biomedical Assays
A. Fatih Sarioglu
- 2482 3D Printed Wearable Glucose Sensors
Yang Song, Sepehr Nesaei, Dan Du, Arda Gozen, Yuehe Lin
- 2483 3D Printing of Molds for Soft Lithography
Shreyas Shah, MD Nahin Islam Shiblee, Hidemitsu Furukawa, Masaru Kawakami, Larry A Nagahara, Thomas Thundat, Praveen K. Sekhar, Ajit Khosla
- 2484 (Invited) Dielectrophoretic Capture and Detection of Microbial Pathogens Using Nanoelectrode Arrays
Jun Li
- 2485 Selective Detection of a Protein Biomarker Utilizing a Large Area CVD-Grown Graphene-Based Field Effect Transistor
Sujoy Ghosh, Niazul Islam Khan, Edward Song
- 2486 In-Situ Electrical Characterization of Low Temperature Getter Thin Films Activation
Sylvain Lemetere, Clément Bessouet, Philippe Coste, Alain Bosseboeuf, Johan Moulin
- 2487 Structural and Electrical Characteristics of Oxygen Annealed ALD-ZrO₂/SiO₂ Gate Stack for Advanced CMOS Devices
Richa Gupta, Rakesh Vaid
- 2488 (Keynote) Integrated Microfluidic Bioanalytical Systems: Growing and Monitoring Microbial Cultures in Outer Space
Antonio Ricco
- 2489 Downstream Impedance in Microfluidic Channels
Thomas Holm, Mats Ingdahl, Jonathan R Strobl, Espen Vinge Fanavoll, Svein Sunde, Frode Seland, David A. Harrington
- 2490 Single-Step 3D Printing Monolithic Electrochemical Microfluidic Devices
Glen D O'Neil, Andhel Dolisca, Kevin Halloran, Quint Von Lengerke
- 2491 Magnetically Driven Pump for Solid-State Microfluidic Flow Control
Aaron R. Smith, Daniel Fologea, Peter Mullner

- 2492 (Invited) Nanoparticles Based Electrochemical Biosensors for the Detection of Tumor Cells and Associated Biomarkers
Jun-Jie Zhu
- 2493 Immobilization of the Alcohol Dehydrogenase Enzyme on TiO₂ Nanotubes for Application in Microfluidic Fuel Cell
Luis G. Arriaga, Jesús Díaz Real, Janet Ledesma-García, Juan de Dios Galindo de la Rosa, Alejandra Alvarez, Geraldine Gonzalez Solano
- 2494 Ionic Transport in Aptamer Functionalized Nanochannel Array
Sivaranjani Devarakonda, Pengfei Du, Baskar Ganapathysubramaniam, Pranav Shrotriya
- 2495 Viscoelastic Properties of Nanoconfined Water Film and the Role of Alkali Salts
Shah Haidar Khan, Peter Manfred Hoffmann
- 2496 A Microfluidic Platform for Electrochemical Detection and Mechanism Studies
Daniel E. Molina, Adan Medina, Haluk Beyenal, Cornelius F. Ivory
- 2497 (Invited) Fluorescence-Based Chemical Sensing and Imaging of Oxygen Concentrations for Microbial Processes in Microfluidic to Macroscale Habitats
Jay W Grate
- 2498 Detection of Traumatic Brain Injury Biomarker with a Paper-Based Optofluidic Strip
Xuefei Gao, Nianqiang Wu
- 2499 Fluid-Imbibition Coupled Interferometry Study of Surface Modifications in Nanoporous Anodic Alumina for Biosensing
Josep Ferré-Borrull, Chris Eckstein, Elisabet Xifré-Pérez, Josep Pallares, Lluís F Marsal
- 2500 Closed Bipolar Electrodes for Coupling Electroanalytical Events to Optical Readouts
Kaiyu Fu, Jiayun Hu, Arielle Lopez, Paul W. Bohn
- 2501 Smartphone Based Microanalytical Device for Immunoassay of 2,4-D Determination
Yijia Wang, Dan Du, Yuehe Lin
- 2502 Multiplexed Electrochemical Immunosensor for Label-Free Detection of Cardiac Markers Using Carbon Nanofiber Array Device
Rakesh Kumar, M. Meyyappan, Jessica E. Koehne
- 2503 Development of Portable Electrochemical Enzyme Immunoassay for Hormone-Level Determination Utilizing Pencil-Lead Electrodes
Hsiu-Yang Tseng, Zhendong Cao, Katrina Salvante, Pablo Nepomnaschy, Ash M. Parameswaran
- 2504 Voltammetry of Valrubicin Quanticles
Steven T Miller, Vuong N Trieu
- 2505 Printed Carbon Nanotube Biosensor for Cardiac Health Monitoring
Milton Santos Cordeiro, Jessica E. Koehne
- 2506 Electrochemical Detection of the Molecules of Life
Seamus David Thomson, Jessica E. Koehne
- 2507 Sub-Nanomolar Detection of Limonin Using Cnps Integrated Silk Fibroin As Transducer on Organic Electrochemical Transistor
Nileshi Saraf, Swetha Barkam, Madison Peppler, Sudipta Seal, Anna Metke
- 2508 TbY_xO_y Electrolyte-Insulator-Semiconductor Glucose Biosensor
Chi-Lin Chan, Yen-Hsiang Huang, Bih Show Lou, Tung Ming Pan
- 2509 Fabrication of MEMS Electronics Devices Based on Fire-like ZnO Nanosheets By Low-Temperature Hydrothermal Synthesis Technology
You-Ting Tsai, Shoou-Jinn Chang, Yu-Jen Hsiao, Yen-Lin Chu, I-Tseng Tang, Liang-Wen Ji

2510 Fabrication of 3D Nanocarbon Structure for Potential Sensor Applications
Richard Senegor, Zack Baron, Dayou Luo, Julia Shaffer, Andrew Michelmoro, Cary Y Yang

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2511 Limitations in Estimation of $E_{1/2}$ from Cyclic Voltammetric Data
Daniel Parr, Johna Leddy

2512 Relationship between the Degree of Dealloying of Ptpb Ordered Intermetallic Nanoparticle Deposited on TiO_2 / Cup-Stacked Carbon Nanotube and ORR Activity in Acidic Aqueous Media for Polymer Electrolyte Fuel Cells
Fuma Ando, Toyokazu Tanabe, Takeo Ohsaka, Futoshi Matsumoto

2513 Optimization of Calcination Temperature in Preparation of a High Capacity Li-Rich Solid-Solution $\text{Li}[\text{Li}_{0.2}\text{Ni}_{0.18}\text{Co}_{0.03}\text{Mn}_{0.58}]\text{O}_2$ Material and Its Cathode Performance in Lithium Ion Battery
Fumihiko Nomura, Toyokazu Tanabe, Takashi Tsuda, Takeo Ohsaka, Futoshi Matsumoto

2514 Relationship between Hole Design on Anode Electrode, the Reaction Temperature and the Rate of Li^+ Ion Pre-Doping Reaction to Porous Laminated Graphite Anodes
Takashi Tsuda, Nobuo Ando, Toyokazu Tanabe, Kaoru Itagaki, Naohiko Soma, Susumu Nakamura, Narumi Hayashi, Futoshi Matsumoto

2515 Characterization of N, F Co-Doped Mixed-Anion TiO_2 Thin Films Prepared By Reactive Pulsed Laser Deposition for Visible-Light Responsive Photocatalyst
Nozomi Kawakami, Tomoki Uchiyama, Kentaro Yamamoto, Kazuhiko Maeda, Yoshiharu Uchimoto

2516 High-Voltage Aqueous Supercapacitors Based on Natfsi
David Reber, Ruben-Simon Kühnel, Corsin Battaglia

2517 Oxidation-Reduction Potential Control for One Step Synthesis of Cu-Pt Core-Shell Nanoparticles
Tatsuichiro Nakamoto, Shuzo Tsuchida, Ryohei Seki, Yasuhiro Ueyama, Shun Yokoyama, Hideyuki Takahashi, Kazuyuki Tohji

2518 Optimization of Ratio and Amount of Ta Substitution in $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ with Incorporation of Ca for Lithium Sulfur Battery
Xiaolan Chen, Mingzhe Xue, Hong Lv, Bing Li, Cunman Zhang

2519 An Intermediate Temperature Molten Li-Air Battery with Improved Performance
Guruprakash K, A.S. Prakash

2520 3D Printed Electrodes for Membraneless Electrolyzers
Justin C Bui, Jonathan T Davis, Erin Shin Cousens, Daniel V Esposito

2521 Advanced Nuclear Magnetic Resonance Techniques for Characterizing Ionic Liquids for Lithium Ion Battery Applications; High Pressure NMR and Fast Field Cycling Relaxometry
Christopher Mallia, Kartik Pilar, Armando Rua, Sophia Suarez, Shen Lai, Jayakody Jayakody, Jasmine Hatcher, James F. Wishart, Steven Greenbaum

2522 Using SEAL and Harpoon to Search for Suitable Water-Splitting Electrodes
Theron J Wilkinson, Eva C Priewe, Kenneth L Menningen, Shannon C. Riha

2523 Cobalt-Based Oxygen Evolution Electrocatalysts Biotemplated on DOPA-Displaying Viruses
Jihun Rho, Taek Dong Chung

2524 Electrical and Structural Properties of $\text{ZrO}_2/\text{Y}_2\text{O}_3/\text{ZrO}_2$ Dielectric Film for DRAM Capacitor
Seong Tak Cho, Cheol Hyun An, Sang Hyeon Kim, Dong Gun Kim, Dae Seon Kwon, Soon Hyung Cha, C. S. Hwang

2525 Electrochemical Immunosensors Based on 2-Electrode System of 3D Interdigitated Electrodes Array
Dahye Lee, Taek Dong Chung

2526 Unraveling the "Switching" Mechanism of Liquid Crystals for Laser Mitigation to Advance Aviation Safety
David Santefort, Sean Alexander Smyth, James Hofmann, Chuck D Crowder, Jason J. Keleher

- 2527 Using Optical Trapping and Surface Energy to Investigate the Interactions between E. coli and Functionalized Substrates
Thomas J. Beckmann, Dany M Danhausen, Chuck D Crowder, Jason J. Keleher
- 2528 Design of a Biomimetic Hydrogel Nanocomposite Material for Responsive Wound Management
Heather R. Lange, Lauren K. Werth, William E. Chura, Jason J. Keleher
- 2529 Biomimetic Nanocomposite Electrodes for Enhanced Electron Transfer in Microbial Fuel Cells
Nicole Elizabeth Yuede, Hafsa J Khan, Frank N Vukaj, Jason J. Keleher
- 2530 Enhancement of Conductive Coated Polymer Networks Utilizing Guest-Host Inclusion Complexes for the Electrotreatment of Heavy Metal Ion Effluent
Katelyn Patricia Lanasky, Joseph Edward Lambert, Jason J. Keleher
- 2531 Selection of Electrolytes for Optimal Reverse Electroactuation Energy Harvesting
Pashupati R. Adhikari, Russell C. Reid
- 2532 Metal-Organic Framework Supported on Food Waste-Derived Carbon As an Efficient Bifunctional Catalyst for Oxygen Electrocatalysis
Hao Wang
- 2533 Lanthanum Nickelate Cathode Materials for Intermediate Temperature-Solid Oxide Fuel Cells
John In Lee, Ka-Young Park, Jun-Young Park
- 2534 Nitrogen Doped Short-Length Carbon Nanofiber Supported Cobalt Oxides for Oxygen Reduction Reaction and Evolution Reaction Catalysts
Sungwon Lee, Nam-In Kim, Jun-Young Park
- 2535 Bifunctional Non-Noble Transition Metal Oxide-Based Materials for Unitized Reversible Fuel Cells
Sung Ryul Choi, Rana Arslan Afzal, Jun-Young Park
- 2536 MXene-Based Flexible Supercapacitors for AC Line-Filtering with Ultrafast Frequency Response
Mingyu Jung, Girish Sambhaji Gund, Harpalsinh H. Rana, Manikantan Kota, Jeonghee Park, Yury Gogotsi, Ho Seok Park
- 2537 Synthesis and Characterization of Carbon Quantum Dots for Use in FRET Sensors
Abigail N. Linhart, Jason J. Keleher
- 2538 Optical Studies of Reactively Sputtered CuGaO₂ Thin Films
Ashwin Kumar Saikumar, Kalpathy B Sundaram
- 2539 Instability and Degradation Mechanism of Platinum-Group Metal (PGM)-Based Carbon Supported Electrocatalysts in Alkaline Medium
Clémence Lafforgue, Laetitia Dubau, Frederic Maillard, Marian Chatenet
- 2540 A Paper-Based Spectroelectrochemical Platform Integrated with Electrodes and Surface Enhanced Raman Scattering Zones
Nalin I Andersen, Kateryna Artyushkova, Ivana Gonzales, Plamen Atanassov
- 2541 Electrolyte Effects on Shewanella Oneidensis MR-1 Loading and Cyclic Voltammetric Behavior at an ITO Electrode
Aisha Awad Alshahrani
- 2542 Simulation of Correlated Motion of Li⁺ Vacancies in Lithium-Oxyhalide Anti-Perovskites
Zerina Mehmedović, Vanessa Yi Zhen Wei, Nicole Adelstein
- 2543 High Temperature Electrooxidation of Glycerol on Nickel
Tory Borsboom, Thomas Holm, Han Bao, Alberto Escobar, David A. Harrington
- 2544 Conductivity of Garnet-Type Lithium Lanthanum Zirconate Based Composite Electrolytes
Xingxing Zhang, Jeffrey Fergus
- 2545 Synthetic Design of a Supramolecular Complexing Agent for Advanced Cu Chemical Mechanical Planarization

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Neera Mistry, Madison Hill, Lucas Kilmer, Halima Shuchi, Daniel S. Kissel, Jason J. Keleher

- 2546 Effect of Fillers on Viscosity and Electrical Conductivity of Glass Composite Sealants
Sueng-Ho Baek, Sung Park, Jae Chun Lee
- 2547 Integration of Porous Piezoelectric Separator for a Self-Charging Supercapacitor
Mengping Li, Jee Youn Hwang, Maher El-kady, Brian McVerry, Richard B. Kaner
- 2548 All-Solid-State Lithium Cells Assembled with Solid Polymer Electrolytes Based on Poly(ϵ -caprolactone)
Yerin Seo, Yun-Chae Jung, Myungsoo Park, Dong-Won Kim
- 2549 Efficient Synthesis of Noble-Metal-Based Metallic Hydrogels/Aerogels and Their Electrochemical Applications
Qiurong Shi, Chengzhou Zhu, Dan Du, Yuehe Lin
- 2550 Control of Pore Depth in GaN Porous Structures Utilizing a Photoabsorption Process Under below-Bandgap Illumination
Masachika Toguchi, Satoru Matsumoto, Taketomo Sato
- 2551 Electrochemical Characteristics of the Na-Ion Hybrid Capacitors Assembled with Fibrous Composite Separator Containing Core-Shell Structured SiO_2 Nanoparticles
Hyesoo Ko, Myungsoo Park, Dong-Won Kim
- 2552 Zwitterionic Based Single-Ion Conducting Hydrogel Electrolyte for Flexible Supercapacitor
Jeong Hee Park, Harpalsinh H. Rana, Ho Seok Park
- 2553 Electrochemical Characterization of the Lithium-Ion Cells Assembled with Ester-Based Electrolyte at Low Temperature
Seung Hark Park, Sang-Hyung Kim, Soojin Kim, Dong-Won Kim
- 2554 Bayesian Statistical Framework for Deconvolving the Distribution of Relaxation Times from Electrochemical Impedance Spectroscopy Data
Mohammed B. Effat, Francesco Ciucci
- 2555 Effect of Lattice Structure of Bismuth Sesquioxide on the Electrochemical Energy Storage Characteristics
Bethany R Kersten, James Zillinger, Vivek Utgikar, Brandon Day, Krishnan S. Raja
- 2556 Development of Functionalized "UiO-66 MOF" Embedded Cellulose Nanocomposites for Photoelectrochemical Water Splitting
Jordan James Shanahan, Liana Bueno, Daniel S. Kissel, Jason J. Keleher
- 2557 A Dynamic Impedance Study of the Initial Stages of Nickel Oxidation
Mohammad Alikarami, Thomas Holm, David A. Harrington
- 2558 Investigation of Manufacturing Defects (Catalyst layers & pinholes) in PEMFC Electrode
A.Muneendra Prasad, Michael Fowler, Mark Pritzker
- 2559 Molecular Dynamics Simulation of Modified Nafion 117 Based Anion Exchange Membrane Fuel Cell: Transport and Nanophase-Segregated Structure Properties
Charles Caliendo, Seung Soon Jang, Jihoon Lee
- 2560 Structure and Electrical Properties of $\text{ZrO}_2/\text{Al}_2\text{O}_3/\text{TiO}_2$ Films Grown Via Atomic Layer Deposition on TiN Electrodes
Soon Hyung Cha, Cheol Hyun An, Sang Hyeon Kim, Dong Gun Kim, Dae Seon Kwon, Seong Tak Cho, C. S. Hwang
- 2561 Electrical Properties of Al-Doped SrTiO_3 Films Grown Via Atomic Layer Deposition on Ru Electrodes
Sang Hyeon Kim, Cheol Hyun An, Dae Seon Kwon, Soonhyung Cha, Seong Tak Cho, Cheol Seong Hwang
- 2562 Micropatterned Pyramidal Ionic Gels Capacitance Change Pressure Sensors
Ihn Hwang, Kang Lib Kim, Cheolmin Park
- 2563 Physical and Electrochemical Characterizations of $\text{Li}_2\text{MnSiO}_4$ Synthesized By Electrospinning with Heat

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- 2564 Iridium Core/Shell Catalysts for PEM Water Electrolyzer Anodes Synthesized Via Galvanic Exchange
Kristian Fredrik Klepp Thorbjørnsen, Gurvinder Singh, Maidhily Manikandan, Julian Richard Tolchard, Magnus Skinlo Thomassen, Svein Sunde
- 2565 Evaluation of Barrier Properties of Organic Coatings By Electrochemical Permeation and Electrochemical Methods
Jéssica Verger Nardeli, Cecilio Sadao Fugivara, Assis Vicente Benedetti
- 2566 Probing the Interactions between CeO₂ Nanoparticles and Cleaning Chemistry Relevant to Post STI CMP Cleaning
Tala B Zubi, Carolyn F Graverson, Brian M Sherry, Jason J. Keleher, Dan S Dickmann, Bob Her, Nathaniel D Urban
- 2567 Evaluating the Electrolyte Consumption and Cycling Performance of Practical Silicon-Graphite Electrodes
Stefan Oswald, Morten Wetjen, Daniel Pritzl, Hubert A. Gasteiger
- 2568 Comprehensive Analysis of a Tubular, Reversible Solid Oxide Fuel Cell By Using a 3-D Computational Fluid Dynamics Model
Jae Young Yoo, Juhyun Kang, Joongmyeon Bae
- 2569 Probing Oxide-Nitride Selectivity As a Function of CeO₂ Valence State Relevant to STI CMP
Brian M Sherry, Katherine M Wortman-Otto, Allie M Mikos, Jason J. Keleher, Dan S Dickmann, Bob Her, Nathaniel D Urban
- 2570 Probing Interactions at the Polymeric Filtration Media/ CMP Slurry Interface Using Dynamic Electrochemical Quartz Crystal Nanobalance (EQCN) and Atomic Force Microscopy (AFM)
Maria Salinas, Cynthia Saucedo, Jason J. Keleher, Yeny Hudiono, Shane Harton, Patrick Connor
- 2571 Spontaneous Formation of Pb/Ag Super Lattices
Fiki V Owghoso, Dongjun Wu, Stanko Brankovic
- 2572 Immobilizing Zincate Ions for Long-Cycle High-Energy-Density Aqueous Batteries
Jinchao Huang, Gautam Ganapati Yadav, Damon Turney, Joshua W Gallaway, Michael Nyce, Snehal Kolhekar, Sanjoy Banerjee
- 2573 Cellulose-Based Nanoporous Materials That Incorporate the Antimicrobial Metal-Organic Framework HKUST-1
Thomas A. Rickhoff, Daniel S. Kissel, Jason J. Keleher
- 2574 Understanding Amyloid-Beta Plaque Formation By Monitoring the Redox Activity of Copper at the Active Site
Saniya Qadir, Amber Lynn Tabaka, Daniel S. Kissel, Jason J. Keleher, Mallory A. Havens
- 2575 Proton Reduction Catalysis at a Modified Gallium Phosphide Photocathode Surface
Molly MacInnes, Saurabh Acharya, Nicolai Lehnert, Stephen Maldonado
- 2576 Preparation and Characterization of Cross-Linked Anion Exchange Composite Membrane for Alkaline Exchange Membrane Fuel Cell
Tae Yang Son, Song I Han, Sang Yong Nam
- 2577 Preparation and Electrokinetic Characterization of Composite Membranes with Various Ion Exchange Moieties
Kwang Serb Im, Tae Yang Son, Song I Han, Jun Seong Yun, Sang Yong Nam
- 2578 Graphene-PEDOT-Platinum Tertiary Composite Material Based Catalyst for Hydrogen Evolution Reaction
Haosen Wang, Runfang Hou, Mengping Li, Maher El-kady, Richard B. Kaner
- 2579 Correlation of Surface Free Energy and Hydrophobicity of Aluminum Alloy with and without Corrosion Resistant Organic Coatings
Jéssica Verger Nardeli, Assis Vicente Benedetti, Cecilio Sadao Fugivara

- 2580 Inhibiting Dendritic Growth Using Additives: Efficacy of Deposit-Incorporating Additives vs. Additives Accumulating on the Electrode
Katarina Guzman, Uziel Landau
- 2581 Stabilization of Tunnel Manganese Oxide Electrodes in Li-Ion and Na-Ion Batteries
Bryan Byles, Ekaterina Pomerantseva
- 2582 Enhanced Infrared Sensing Properties of Vanadium Pentoxide Nanofibers for Bolometer Application
Nirupam Paul, Sudharshan Vadnala, Asisa Kumar Panigrahi, Hemanth Kumar, Amit Agrawal, Shiv Govind Singh
- 2583 Evaluating the Roles of Proton Transfer and H-Bonding in the Electron Transfer Reactions of Organic Redox Couples in Non-Aqueous Solvents: Oxidation of Phenylenediamines in the Presence of Pyridine Bases in Acetonitrile
Tammy Dung Pham, Laurie A. Clare, Lily Rafou, Ayla Buenaventura, Colin Arthurs, Diane K. Smith
- 2584 Metal-Organic-Frameworks-Modified Separator for Lithium–Oxygen Batteries with Long Cycle Life
Xiahui Zhang, Younghwan Cha, Panpan Dong, Jung-In Lee, Min-Kyu Song
- 2585 Preparation of $\text{Li}_{1-x}\text{Ni}_{1+x}\text{O}_2$ Thin Films By Pulsed Laser Deposition and the Electrochemical Performance for Oxygen Evolution Reaction in Alkaline Media
Yabuta Yuki, Tomoki Uchiyama, Kentaro Yamamoto, Yoshiharu Uchimoto
- 2586 Synthesis of $\text{LiNi}_{1-x}\text{Co}_x\text{PO}_4/\text{C}$ Nanocomposites By Aerosol Process and Powder Technology and Their Cell Performance for Lithium Ion Battery
Ye Li, Izumi Taniguchi
- 2587 Effect of the Crystalline Structure and Size of Group 4 and 5 Oxides to Oxygen Reduction Reaction
Shoko Hirano, Etsuko Niwa, Takahiro Maruyama, Takahiro Saida
- 2588 LiFSI as Electrolyte Salt for Li-Ion Batteries Based on Micron Sized Silicon as Anode Material
Karina Asheim, Nils Peter Wagner, Hanne Flåten Andersen, Jan Petter Mæhlen, Ann Mari Svensson
- 2589 Effect of Anode Channel Depth on Cell Performance in Polymer Electrolyte Membrane Water Electrolyser
Jude Olaoluwa Majasan, Jason I. S. Cho, Ishanka Dedigama, Paul R. Shearing, Daniel J.L. Brett
- 2590 An All-Transparent Thin Film Flexible Supercapacitor Based on Oblique Angle Deposited NiO Nanowires Arrays
Jing Ma, Wen Liu, Shuyuan Zhang, Fuhua Yang, Xiaodong Wang
- 2591 Ionic and Electronic Transport in Nanocrystalline $\text{La}_{0.9}\text{Sr}_{0.1}\text{Ga}_{0.9}\text{Mg}_{0.1}\text{O}_{3-\Delta}$
Ting Chen, David Pham, George Frederick Harrington, Kazunari Sasaki, Erica L. Corral, Nicola H. Perry
- 2592 The Oxygen Reduction Reaction Activity of Pt/Carbon-Sphere Formed By Silica Bead Core and Graphene Oxide Wall
Kan Sakakibara, Takahiro Maruyama, Takahiro Saida
- 2593 Microstructured Polymer-Ionic Liquid Composite Film for Capacitive Pressure Sensors
Kang Lib Kim, Ihn Hwang, Cheolmin Park
- 2594 In-Situ Synthesis of $\text{Sn}/\text{SnO}_2@\text{C}$ Composites for Lithium and Sodium-Ion Batteries
Younghwan Cha, Panpan Dong, Xiahui Zhang, Min-Kyu Song
- 2595 Liquid-Feed Flame Spray Pyrolysis Derived Nanopowders As a Route to Electrically Conducting Calcium Aluminate ($12\text{CaO}\cdot 7\text{Al}_2\text{O}_3$) Thin Films
Eleni Temeche, Eongyu Yi, Richard Laine
- 2596 Design and Synthesis of Hierarchical SeS_2/C Nanocomposite Cathodes for High Performance Lithium Batteries with Ether-Based Electrolytes
Panpan Dong, Jung-In Lee, Younghwan Cha, Xiahui Zhang, Min-Kyu Song
- 2597 Water Velocity Distribution and Its Impact on the Performance of an Electrocoagulation Reactor for Drinking Water Treatment

Amin Nouri-Khorasani, Sean T Mcbeath, Madjid Mohseni, David P. Wilkinson

- 2598 Microstructural Effects on Disorder and Transport in Irradiated Pyrochlore Thin Films
Nia Parker, Cortney R. Kreller, James Anthony Valdez, Terry Holesinger, Yongqiang Wang, Ming Tang, Blas Uberuaga
- 2599 Synthesis and Characterizations of Modified Vanadium Glass Electrodes for Use in Lithium-Ion Batteries
Michael Kindle, Min-Kyu Song, John McCloy
- 2600 Multiscale Modeling Approach to Identify Glassy Electrolytes for Sodium Ion Batteries
Aniruddha Dive, Clarence C King, Scott P Beckman, Soumik Banerjee
- 2601 Annealing Effects on the Electrical and Optical Properties of $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ Thin Films
Giji Skaria, Kalpathy B Sundaram
- 2602 Field Induced Ordering of Nanoparticles
Ginger-Marie Wilkins, Sanjana Das, Biswajit Das
- 2603 Cubic Phase of α - CsPbI_3 Perovskite Nanocrystals for Photodiode Application
Kyu Min Sim, Jangwhan Cho, Seongwon Yoon, Seonghoon Yu, Min Su Jang, Mingyun Kang, Kyoungwan Kim, Dae Sung Chung
- 2604 Decorating Graphene Oxide with Ionic Liquid Nanodroplets: An Approach Leading to Energy Dense, High Voltage Supercapacitors
Zimin She, Debasis Ghosh, Michael A Pope
- 2605 Redox-Responsive Dimerization in a Ferrocene-Ureidopyrimidinone Supramolecular Assembly
Mario Cedano, Diane K. Smith
- 2606 Enhanced Electrochemical Activity of Polyaniline-Ferricyanide Films in Neutral Electrolyte
Ryan M West, Lucas Marinelli
- 2607 Conversion of a Weak Three H-Bond Dimer to a Strong Three H-Bond Dimer Using Electron Transfer Induced Proton Transfer
Hyejeong Choi, Diane K. Smith
- 2608 Durability Test of Anode-Supported Solid Oxide Fuel Cell Under Diverse Load Conditions
Youdong Kim, Muhammad Saqib, Jun-Young Park
- 2609 Detection of Electrooxidation Products in Microfluidic Devices Using Raman Spectroscopy
Tianyu Li, Thomas Holm, David A. Harrington
- 2610 Design of a Solid-State Electrochemical Methane Sensor Based on Laser-Induced Graphene for Deployment in the Natural Gas Distribution Network
Manan Dosi, Michael A Pope, Michael Fowler
- 2611 Kinetics of Initial Stages of Pt Oxidation from Electrochemistry and Surface X-Ray Diffraction
Natalie Stubb, Timo Fuchs, Martin Ruge, Olaf M. Magnussen, Jakub Drnec, David A. Harrington
- 2612 Core-Shell V_2O_5 /Conductive Polymers Hybrid Aerogels for High-Performance Supercapacitors
Wenchao Bi, Guohua Gao, Guangming Wu, Guozhong Cao
- 2613 A General Room Temperature Synthesis of Self-Assembled Urchin-like Nanostructured Vanadates for Lithium-Ion Batteries
Yang Hu, Jing Chen, Anqiang Pan, Shuquan Liang, Guozhong Cao

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- 2614 Synthesis of Heterostructures of In_4Se_3 /In Nanowires
An-Hsuan Hsu, Chiu-yen Wang
- 2615 Optical and Magnetic Properties of Ni-Doped CuSe Nanowires
Chiu-Yen Wang

- 2616 Ultra-Low Density Metallic Foams Synthesized By Cathodic Plasma Electrolysis
Ronan Botrel
- 2617 Layered and Scrolled Nanocomposites with Aligned Semi-Infinite Graphene Inclusions at the Platelet Limit
Pingwei Liu, Michael S Strano
- 2618 Light-Driven Small Molecule Oxidation on Pd-Au Bimetallic Film-Coupled Electrodes
Joshua P. McClure, Kyle N. Grew, Jonathan Boltersdorf, Gregory T. Forcherio, David R Baker, Cynthia A. Lundgren
- 2619 Synthesis and Analysis of TiS_3 Nanoribbons
Li-Yu Kuo, Chiu-yen Wang
- 2620 Antimony Tri-Sulfide (Sb_2S_3) Nanowires Synthesis and Characterization
An-Ni Tsai, Chiu-Yen Wang
- 2621 The Electronic Anisotropic of SnSe_2 Nanoflakes
Liang-Feng Tsai, Chiu-yen Wang
- 2622 Aluminum Indium Antimonide ($\text{Al}_x\text{In}_{1-x}\text{Sb}$) Ternary Nanowires Synthesis and Characterization
Zhi-Hao Wang, Chiu-yen Wang
- 2623 Two-Dimensional MoTe_2 PN Diode and CMOS Inverter By Atomic Layer Deposition-Induced Hydrogen Doping
June Yeong Lim, Yeonsu Jeong, Jongtae Ahn, Seongil Im
- 2624 2D MoSe_2 Field Effect Transistor with Small Threshold Voltage for Piezoelectric Touch Sensor Applications
Yeonsu Jeong, Ji Hoon Park, Jongtae Ahn, June Yeong Lim, Seongil Im
- 2625 Room-Temperature Atomic Layer Deposition of Aluminum Silicate for Molecule Sorption
Yoshiharu Mori, Takahiro Imai, Kensaku Kanomata, Masanori Miura, Bashir Ahmmad, Shigeru Kubota, Fumihiko Hirose
- 2626 Catalytic Nanoparticles Prepared By Atomic Layer Deposition
Xiaofeng Wang, Xinhua Liang
- 2627 Synthesis of $\gamma^2\text{-Fe}_{16}\text{N}$, a New Soft Magnetic Material for Inductors and Transformers
Tyler E Stevens, Charles Joseph Pearce, Stan Atcity, Todd Monson
- 2628 Plasmonic-Enhanced Remote Phosphor Layers for White LEDs
Oh Hyeon Kwon, Jin Woo Jang, Che Yoon Lee, Yong Soo Cho
- 2629 Probing Electrode-Electrolyte Interfaces Using Nano-Gap Surface-Enhanced Raman Spectroscopy and Imaging
Guang Yang, Iliia N. Ivanov, Rose E. Ruther, Robert L Sacci, Veronika Subjakova, Daniel T. Hallinan, Jagjit Nanda
- 2630 Synthesizing Core-Shell Heterostructures for SOFCs Using a Solution Precipitation Method
Benjamin Levitas, Yuexing Zhu, Srikanth Gopalan
- 2631 Advances in Solid Acid Fuel Cells
Ramez A. Elgammal, Alexander B. Papandrew, Mengkun Tian, Gabriel M. Veith, Beth Armstrong, Thomas A. Zawodzinski
- 2632 Ultra-High Vacuum Fabrication of Ordered Nanoparticles and Their Device Applications
Biswajit Das, Ginger-Marie Wilkins, Sanjana Das
- 2633 Maskless Photoelectrochemical Fabrication of Anisotropic Three-Dimensional Nanostructured Semiconductors
Kathryn R Hamann, Azhar I Carim, Jonathan R Thompson, Nicolas A. Batara, Harry A Atwater, Nathan S Lewis
- 2634 Aqueous Phase Synthesis Method of Fe Metal Nanoparticles and Its Application for Commercial Materials

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