Meeting Abstracts —MA2015-01

227th ECS Meeting

May 24, 2015 - May 28, 2015 —Chicago, IL

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Direct Synthesis of Non-Stoichiometric Nanocrystalline Metal Oxides and Their Composites: Improving the Reversibility and Current Capability of Lithium-Ion Batteries

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The Effect of Ferroelectric BaTiO$_3$ Particles on Interfacial Resistance Between the Li-Ni-Mn-(Cr) Oxide (LNM) Spinel Cathode and Lipon

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429 Flower-like Nickel Sulfide As Efficient Electrocatalyst for Lithium Air Batteries

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430 Ambient Air Operation in Non-Aqueous Li-Air Batteries: Influence of Water on Electrochemical Li Cycling

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431 Analysis of the Aqueous/Solid Interface in a Mixed Aprotic/Aqueous Lithium-Air Battery

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441 Mechanically Robust Sandwich-Structured C@Si@C Nanotube-Based Li-Ion Battery Anodes
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Reversible Lithium Storage in Carbon Encapsulated Hollow Silicon Nanospheres

Maziar Ashuri, Qianran He, Kan Zhang, Satyanarayana Emani, Monica Sawicki, Jack S Shamie, Leon Shaw

A Silicon-Graphene Electrode with Multilayered Structure for High Performance Lithium-Ion Batteries

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Graphene Folding in Si Rich Carbon Nanofibers for Highly Stable, High Capacity Li-Ion Battery Anodes

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A Novel Surface Modified Nano-Silicon As Promising Anode Material Lithium-Ion Batteries

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Jiagang Xu, Qinglin Zhang, Yang-Tse Cheng

High-Energy Micro-Grain Silicon Anodes for Lithium-Ion Technology

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455 Effects of Doping on Lithium Rich NMC Cathode Prepared Via Spray Pyrolysis

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458 In Situ Transmission Electron Microscopy Studies Investigating Intercalation of Multivalent Ions into V$_2$O$_5$ Nanowire Cathode

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459 (Invited) Electrochemical Characterization of Lithium-Ion Cells Based on Li$_{1.2}$Ni$_{0.15}$Mn$_{0.55}$Co$_{0.1}$O$_2$ and Li$_4$Ti$_5$O$_{12}$

Daniel P Abraham, Yan Li, Martin Bettge, Javier Bareno

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Anisotropic Mechanical Deformation of Lithium-Ion Electrode Networks Using
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Soh Indicator of EV Lithium-Ion Cell Based on Incremental Capacity

Akram Eddahech, Arnaud Delaille

Damage Evolution in Lithium-Ion Battery Electrodes

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Applicability of the Lumped Capacitance Model to Predict Heat Generation in a
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Memory-Effect in Li-Ion Battery Electrodes Unraveled
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Mustafa Fazil Serincan, Mahdi Tabatabaei Malazi

High Capacity and High Density SiO Anode for High-Energy Lithium-Ion Batteries
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In Situ Fabrication of 3-Dimensional Li$_4$Ti$_5$O$_{12}$/Reduced Graphene Oxide Microspheres with High Tap Density for High-Rate Lithium Ion Batteries
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Towards a Better Reversibility of the Electrochemical Li-Si Reaction through the Use of Partially Oxidized Silicon Particles and Alternative Electrolyte Salt/Additives
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Hui Zhan, Hai Zhong, Yanbo Yang, Yunhong Zhou

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485 Heterostructure of SnO\textsubscript{2}/TiO\textsubscript{2} Nanotubes with Precise Wall Thickness Control As Anodes for Lithium Ion Battery

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488 Novel Method for Synthesis of High Nickel Cobalt Aluminum Hydroxide By Engineered Two Step Co-Precipitation Method

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Martin Bettge, Yan Li, Daniel P Abraham

Synthesis and Effect of Heat Treatment on LiCo$_{0.3}$Ni$_{0.3}$Mn$_{0.3}$Ti$_{0.1}$O$_2$

Kelimah Elong, Norlida Kamarulzaman, Roshidah Rusdi, Mohd Hilmi Jaafar

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Denis Yau Wai Yu, Hui Zhou, Yingshun Li, Jiaolong Zhang, Wenpei Kang

High-Performance LiNi$_{0.2}$Mn$_{1.8}$O$_4$ Spinel Cathode Material for Lithium Ion Batteries Obtained By Microwave-Assisted Synthesis

Kumar Raju, Viswanathan Elumalai, Krishnan Damodaran, Kenneth I. Ozoemena

Enabling Aqueous Processing of Cathode Materials for Li-Ion Batteries

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Optimization of LiMnPO$_4$ Using Solid State Processes

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Yang Wang, Radenka Maric

12V-Class Bipolar LiMn$_{1-y}$Fe$_y$PO$_4$/Li$_4$Ti$_5$O$_{12}$ Battery with an Oxide-Based Solid-State Electrolyte Layer

Kazuomi Yoshima, Yasuhiro Harada, Norio Takami

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Improvement of Power Characteristics of All-Solid-State Thin-Film Rechargeable Lithium Batteries

Akiyoshi Suzuki, Shunsuke Sasaki, Isao Kimura, Takehito Jimbo

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Christopher J. Pelliccione, Elena V. Timofeeva, John P. Katsoudas, Dileep Singh, Carlo U Segre

Flexible Lithium Ion Rechargeable Battery with Large Scale Interdigitated Electrodes

Kee-Bum Kim, Avelino Dos Santos Da Costa, Tae-Hyung Kang, Woong-Ryeol Yu, Nam-In Kim, Kyu Hwan Oh, In-Suk Choi

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Improvement of Transport Properties in Li-Conducting Ceramic Oxides

Ainara Aguadero, Frederic Aguesse, Carlos Bernuy-López, William Wang Manalastas, Juan Miguel López del Amo, John A. Kilner

The Transition from Planar to Curved and Flexible Batteries

David McNulty, D. Noel Buckley, Colm O'Dwyer
Effect of Liquid Phase Sintering of Composite Electrode Containing 0.44LiBO$_2$·0.56LiF Solid Electrolyte for All-Solid-State Batteries

Seokhee Lee, Sungpil Woo, Youngsoo Yoon, Dong-Joo Kim

Excellent Stability of a Li-Ion-Conducting Solid Electrolyte upon Reversible Li$^+$/H$^+$ Exchange in Aqueous Solutions

Miaofang Chi, Cheng Ma, Jeffrey Sakamoto, Karren L. More, Chengdu Liang

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Takuya Nishimura, Katsunori Kojima

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525 A Self-Promotion Effect during ORR Process in Lithium Oxygen Battery

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Ryan D Bayliss, Jordi Cabana

Phase Field Modeling of the Li$_2$O$_2$ Growth in a Porous Cathode in Li-Air Batteries with Organic Electrolytes

Linyun Liang, Marius Stan, Mihai Anitescu

The Carbon-Free Ag Electrode for Non-Aqueous Li-O$_2$ Batteries

Jin-Bum Park, Xiangyi Luo, Seon-Hwa Lee, Jun Lu, Chang Dae Shin, Chong seung Yoon, Khalil Amine, Yang-Kook Sun

Ceramic Composite Separators Coated with Moisturized ZrO$_2$ Nanoparticles for Improving the Electrochemical Performance and Thermal Stability of Li-Ion Batteries

Ji-Sang Yu, Hyuk Kwon Kwon, Won Yeol Lee, Ki Jae Kim, Min-Sik Park

A Dual-Phase Cathode and a Si/SiO$_x$ Anode for Li-Sulfur Batteries

Sang-Kyu Lee, Seung-Min Oh, Eunjun Park, Bruno Scrosati, Min-Sik Park, Young-Jun Kim, Ilias Belharouak, Hansu Kim, Yang-Kook Sun

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537 Omc for Poorly Conductive Products in Rechargeable Sodium-Air Batteries


538 The Porous Carbon Matrix for High Rate Performance Lithium-Sulfur Battery

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539 Advanced Na[Ni_{0.25}Fe_{0.5}Mn_{0.25}]O_2/C Cathode / EMS Electrolyte / Fe_3O_4 Anode for Sodium-Ion Batteries

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540 Enhanced Electrochemical Properties of Carbon Coated TiO_2 anode for Sodium-Ion Battery

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541 Low Temperature Electrochemical Properties of Li[Ni_{x-y}Co_{y}Mn_{1-x-y}]O_2 Cathode Materials for Lithium Batteries

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542 Metal Foam Electrodes Incorporated with Molten Active Materials for Thermal Batteries

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Fast Assembly of Si-CNFs Anodes for High-Performance Lithium-Ion Batteries

Meng Yao, Xingbo Liu, Hui Zhang

Geometric Characteristics of Three-Phase Porous Microstructures for All Solid-State Lithium Ion Batteries

Cheolwoong Lim, Rani V Penumaka, Sho Murakami, Zhibin Song, Vincent De Andrade, Francesco De Carlo, Youngsik Kim, Likun Zhu

Interfacial Study of the Role of SiO2 on Si Anodes Using Electrochemical Quartz Crystal Microbalance

Aude A. Hubaud, David J. Schroeder, Zhenzhen Yang, Fulya Dogan, John T. Vaughey

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Rani V Penumaka, Sho Murakami, Youngsik Kim, Likun Zhu

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Zhao Liu, Hongqian Wang, Deepak P. Singh, Marnix Wagemaker, Katherine T Faber, Scott A Barnett

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Min Wu, Yongzhu Fu

A Case Study: Li/S Battery Characterization in Argonne National Laboratories Post-Test Facility and Center for Nanoscale Materials
Nancy Dietz Rago, Lin Chen, Yuzi Liu, Leon Shaw, Ira Bloom

551 A Flexible Thin Film Technique for Rapid Evaluation of Complex Cathode Materials

Clement Jacob, Jie Jian, Stanislav Verkhoturov, Renald Guillemette, Haiyan Wang

552 Effect of the Interface Between Current Collector and LiNi_{0.5}Mn_{0.3}Co_{0.2}O_2 Composite Cathodes on the Electrode Performance

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553 Surface Coating of 5V Spinel LiNi_{0.5}Mn_{1.5}O_4 Cathodes By Carbon Materials for Li-Ion Batteries Applications

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554 High Capacity Thick Cathode with a Porous Aluminum Current Collector for Various Rechargeable Lithium Batteries

Hidetoshi Abe, Masaaki Kubota, Miyu Nemoto, Yuichi Tanaka, Hirokazu Munakata, Kiyoshi Kanamura

555 Electron Beam Irradiated Li_4Ti_5O_12 Electrode for High Rate Lithium Ion Batteries

Yiseul Park, Jung Soo Park, Seong-Ho Baek, Jae Hyun Kim

556 Spherical/Porous Co_x-Mn_y-O_4 Spinel Compound for High Performance Lithium Rechargeable Battery Electrodes

Sungho Choi, Young Jun Yun, Jin-Seong Park, Ha-Kyun Jung

557 Deciphering the Thermal Evolution in 0.5Li_2MnO_3- 0.5LiNi_{0.33}Co_{0.33}Mn_{0.33}O_2 Cathode Material for Lithium-Ion Batteries By in Situ X-Ray Diffraction Technique

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Preparation Conditions of Porous Carbon Monolith Support Materials for Air Electrodes and Their Application to Lithium Air Secondary Batteries

Masaya Nohara, Yuhki Yui, Shuhei Sakamoto, Masahiko Hayashi, Jiro Nakamura

Separator-Free Hybrid Electrolytes Composed of Inorganic, Polymer and Liquid Electrolyte for Lithium-Ion Batteries with Enhanced Safety

Seul-Ki Kim, Yun-Chae Jung, Man-Seok Han, Woo-Cheol Shin, Makoto Ue, Dong-Won Kim

Oxygen Reduction and Evolution Examined Using Quartz Crystal Microbalance and Electrochemical Methods in Non-Aqueous Li-O₂ Batteries

Jonas Lindberg, Björn Wickman, Göran Lindbergh, Mårten Behm

New Metal Phosphide with Topotatic Reaction As an Anode Material for Lithium Ion Rechargeable Battery

Sang-Min Lee, Sungju Sim, Jeom-Soo Kim, Gumjae Park

Synthesis of Spinel-Structured Core-Shell Nanocrystals for Lithium Ion Batteries

Bob Jin Kwon, Chunjoong Kim, Jordi Cabana

Nanostructured (Mg,M)₂SiO₄ As Cathode Material in Mg Ion Batteries

Sidse Meli Hanetho, Paul Inge Dahl, Anita Fossdal, Kaushik Jayasayee, Julian Richard Tolchard, Tommy Mokkelbost, Xinzhi Chen, Lu Wang, Fríða Vullum-Bruer

Electrochemical Analysis of Parallel Connected Lithium-Ion Batteries

Chih-Sheng Huang, Yang-Shan Lin, Wan-Lin Hsieh, Kuo-Ching Chen

Enhancement of Irreversible Capacity By Pre-Formed Lithium Silicates and Lithium Oxide in SiO Anode for Lithium Ion Battery

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Al$_2$O$_3$/C-Composite Coated LiV$_2$O$_8$ As a Cathode Material for Lithium Ion Battery

Byung Hyuk Kim, Woo Young Yoon

Synergistic Effect of Dual-Doping of Graphene Nanosheets on the Electrochemical Performance of Lithium-Air Cells

Aravindaraj G Kannan, Jae-Hong Kim, Dong-Won Kim

Interfacial Control for Enhanced Cycling Performance of Li-Ion Battery with Silicon-Based Anode and High-Voltage Layered Oxide Cathode

Dan Thien Nguyen, Kyoung-Mo Nam, Seung-Wan Song

Conducting Polymer-Coated Carbon Nanotubes As High Rate Anode Material for Rechargeable Aqueous Electrolyte Battery

Hana Lim, Min Hyung Lee, Ho-Nyun Lee, Hyun-Jong Kim

Relaxation Rietveld Stage Analysis of Li Inserted Graphite after Charge/Discharge Cycles

Takashi Kitamura, Shigeomi Takai, Takeshi Yao

Understanding How Libob Improves the Thermal Stability of Electrolytes in Lithium Ion Batteries

Adrian Pena Hueso, Monica Lee Usrey, Robert J Hamers, Robert West

Improved Lithium Sulfur Battery Performance through Attaching Nanosilica on the Backside of Nickel Foam

Sung Ho Cho, Woo Young Yoon

In Situ synthesis of Three-Dimensional Self-Assembled SnO$_2$ - Reduced Graphene Oxide Architecture for Lithium Ion Batteries

Hyun-Kyung Kim, Kwang-Bum Kim, Kwang Chul Roh, Jun Hui Jeong, Ha-Kyung Roh
Design of Electrochemical Interface Between Cathode/Solid Electrolyte By Using Liquid Type Li$^+$ Conducting Materials

Jungo Wakasugi, Hirokazu Munakata, Kiyoshi Kanamura

Investigation of Carbon-Coating Effect on the Electrochemical Properties of LiCoPO$_4$ By Single Particle Measurement

Yuto Yamada, Yusaku Noda, Shohei Miyamoto, Hirokazu Munakata, Koji Ohira, Shuhei Yoshida, Daisuke Shibata, Kiyoshi Kanamura

Surface Modification of Manganese-Rich Cathode Materials in Lithium Ion Batteries

Jieun Lee, Jeongyeon Lee, Taejin Hwang, Hana Noh, Wonchang Choi

Preparation and Electrochemical Characterization of Composite Cathodes Prepared By Aerosol Deposition for 5V Class All-Solid-State Lithium Rechargeable Batteries

Masaki Wadaguchi, Yosuke Ishii, William Clark West, Masakazu Kaneko, Munekazu Motoyama, Yasutoshi Iriyama

Surface Modification of Silicon-Based Alloy Materials for Lithium-Ion Battery Applications

Hwi Soo Yang, Sang-Hyung Kim, Seon-Kyong Kim, Cheol-Ho Park, Dong-Won Kim

Study of Inexpensive Li$_2$Fe$_{1-X}$Mn$_x$SiO$_4$ Cathode Materials Synthesised Using Abundant Materials By Conventional Methods

Tommy Mokkelbost, Anita Fossdal, Kaushik Jayasayee, Sidsel Meli Hanetho, Fríde Vullum-Bruer, Nils P. Wagner

Facile Synthesis of MoO$_3$ Nanobelts with Carbon Dispersed Structure and Its Application As Anode of Lithium Ion Batteries

Qing Xia, Hailei Zhao, Zihong Du, Chunhui Gao, Zhipeng Zeng, Zijia Zhang, Tianhou Zhang
Synthesis, Tailoring and Characterization of V$_2$O$_5$-Cathodes for High Performance Li$^+$-, Na$^+$- and Mg$^{2+}$-Ion Batteries

Lukas Seidl, Jiwei Ma, Sladjana Martens, Ehab Mostafa, Oliver Schneider, Ulrich Stimming, Huinan Si, Xinping Qiu

Evaluation of Flexible Li$_4$Ti$_5$O$_{12}$ Anode Electrodes Using Water-Based Binder for Li-Ion Batteries

Huiran Lu, Mårten Behm, Ann Cornell, Simon Leijonmarck, Göran Lindbergh

Monoclinic TiO$_2$ As Active Anode Material for Li-Ion Batteries

Ondrej Cech, Ladislav Chladil, Tomáš Kazda, Vít Kašpárek, Pavel Cudek, Petr Vanýsek

Semi-Empirical Study on Lithium Diffusion into Electrode Materials for Lithium Batteries

So-Yeon Kwon, Heon-Cheol Shin

Atomistic Simulation Studies of the Electrochemical Activity in Nanocrystalline Li$_2$MnO$_3$

Phuti Esrom Ngoepe, Thi X T Sayle, Dean C Sayle

Electrical Circuit-Based Modeling of a Non-Aqueous Lithium-Oxygen Battery for High Accuracy State-of-Charge Estimation

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A Comparative Study of the Dwt and Wpt for Electrochemical Information Extraction of a LiCoO2 Cell

Jonghoon Kim

Nitrogen-Doped Carbon Coated Lithium Titanate (LTO) By Simple Reflux Method for High Power Energy Storage Devices
Du Hoang Long, Min-Ki Jeong, In-Hwan Oh, Hun-Gi Jung

589 Revealing the Li Conduction Pathway Using Dopants at the Li Sites in Stuffed Garnets

Rowena Helen Brugge, Ainara Aguadero

590 Enhanced Thermal Stability of Si/Graphene Composite Anode in the Presence of Fluoroethylene Carbonate Additive

Seonbaek Ha, Qingliu Wu, Jai Prakash, Wenquan Lu

591 Electrochemical Performance of Dual Doped Li$_4$Ti$_5$O$_{10}$ for Use at Anodes of Lithium Ion Batteries

Deniz Cetin, Keping Hua, Srikanth Gopalan

592 Lithium Metal Polymer Battery: Towards Optimized Cathodes and Crosslinked Polymer Electrolytes

Jiseon Jeong, Lee Hoongil, Jaecheol Choi, Myung-Hyun Ryou, Yong Min Lee

593 SnO$_x$/Carbon Core Shell Structure: An Efficient Anode for Rechargeable Sodium Ion Batteries

Ramchandra S. Kalubarme, Ga-Eun Park, Chan-Jin Park

594 3D Nanoarchitecture of Ge/C Core-Shell for Ultra-High Rate Anode for Lithium Ion Batteries

Duc Tung Ngo, Jae-Young Lee, Chan-Jin Park

595 A Study into the Significant Improvement in Performance of Silicon Nanowire Electrodes through the Use of Electrolyte Additives

Tadhg Kennedy, Kevin M Ryan
596 Binder-Free Ceramic Coated Separators Prepared By Polydopamine Treatment and RF-Sputtering

Taejoo Lee, Yunju Lee, Daeyong Yeon, Myung-Hyun Ryou, Yong Min Lee

597 Improvement of Interfacial Properties of Sulfide Based All-Solid-State Lithium Secondary Batteries with Li-Si Alloy Anode

Joo Sung Jin, Hye Won Park, Hyung-Tae Lim

598 New Flame-Retardant Composite Separators Based on Metal Hydroxides for Lithium-Ion Batteries

Yeon Daeyong, Yunju Lee, Insung Cho, Seonghyun Song, Myung-Hyun Ryou, Yong Min Lee

599 Facile Process and Electrochemical Characterizations of Carbon Nanotube-LiFePO₄ Composite As a Cathode for High Rate Lithium Ion Batteries

Xiangcheng Sun, Yuefei Zhang, Bo Cui

600 Design and Optimization of 3DSi Electrode for Li-Ion Battery Applications

Khalid Abdullitife Ababtain, Leela mohana reddy Arava, Babu Ganguli

601 Comparative Study on Active Material in Solid and Liquid Form for Li-S Battery

Abdulrazzag Sawas, Babu Ganguli, Leela mohana reddy Arava, Jaron Bentley

602 Amorphous Metal Fluorides Coatings By Atomic Layer Deposition for Stable Li-Ion Batteries

Anil U. Mane, Joong Sun Park, Jason R. Croy, Jeffrey W Elam

603 Optimized Discrimination Based on the Data Mining Combined with the Discrete Wavelet Transform for LiFePO₄ Cells Consistency

Jonghoon Kim
Lithium-Ion Battery Thermal Behavior and Safety in Simulated Scenarios

Carlos F. Lopez, Judith A Jeevarajan, Partha P. Mukherjee

Simulation Model of a Prismatic Lithium-Ion-Battery for Temperature Propagation in the Cell after a Short Term Thermal Stress

Pamina Bohn, Gerd Liebig, Stanislav Vasic, Lidiya Komsyiska, Gunther Wittstock

Electrochemical Modeling and Performance of a Lithium- and Manganese-Rich Layered Transition-Metal Oxide Positive Electrode

Dennis W. Dees, Daniel P Abraham, Wenquan Lu, Kevin G. Gallagher, Martin Bettge, Andrew N. Jansen

Mechanistic Understanding of Li Transport in Rechargeable Batteries

Reza Shahbzian-Yassar

Computational Analysis of Scalable Three-Dimensional Electrode and Device Architectures

Sreekanth Pannala, Srikanth Allu, Jagjit Nanda, Bruce Dunn, Martin Z. Bazant

High-Energy Li-Ion Batteries: Full Cell and Electrode Monitoring for Evaluating Cycling and Impedance Performance of Layered Oxide//Si-Graphite Cells

Matilda Klett, James Gilbert, Stephen E Trask, Bryant J Polzin, Andrew N. Jansen, Dennis W. Dees, Daniel P Abraham

Molecular Dynamics Studies of Diffusion Dynamics during Lithiation of Si Electrode: Increasing Si Vacancies Can Improve the Lithiation Rate

Kwang Jin Kim, Yue Qi

Study on the Charging Behaviors of Lithium-Ion Batteries By the Simulation of Li Distribution in the Electrode Particles
Naixing Yang, Xiongwen Zhang, Guojun Li, Dong Hua

Model Based Dynamic Optimization Strategies for Lithium-Ion Batteries

Dayaram Sonawane, Bharatkumar Suthar, Manan Pathak, Shriram Santhanagopalan, Venkat Subramanian

Lifetime Prediction Based on the Load Profile of Lithium Ion Batteries

Karin Kleiner, Peter Jakes

Density Functional Theory Study of Li Intercalation Voltage Near Cathode Interfaces

Shenzhen Xu, Ryan Jacobs, Chris Wolverton, Dane Morgan

Degradation of Cobalt Oxide Anode for Lithium Batteries at High Conducting Material Content

Woo-Sung Choi, Wonyoung Chang, Heon-Cheol Shin

MoO$_2$/Mo-C hybrid Nanowires As Anode Materials for High Performance Lithium Ion Batteries

Lichun Yang, Wei Sun, Zhiwei Zhong, Yukun Wang, Qingsheng Gao, Min Zhu

Metal Oxide Anode Materials for Lithium-Ion Batteries

William E Mustain, Ying Liu, Junkai He, Yongtao Meng, Steven Suib

Silicides and Novel Alloys with Open Tetrahedral Framework Structures Hosting Lithium Atoms

Thomas Friedrich Fässler

Gas Phase Synthesis of One-Dimensional Single Crystal Tin Oxide Nanostructured Lithium-Ion Battery Anodes
Free-Standing Sb@Rgo Nanocomposite Films for High-Performance Lithium-Ion Battery Anodes

Wei Zhang, Xianluo Hu, Yunhui Huang

Low Voltage Anodes for Lithium-Ion Batteries

Steve Clark, Anthony Robert Armstrong, Peter G Bruce

Silicon-Germanium Heterostructure Nanowires As High Capacity Lithium-Ion Battery Anodes - an Electrochemical and Structural Investigation

Tadhg Kennedy, Kevin M Ryan

Rational Design of Metal Oxide-Carbon Yolk-Shell Nanostructures for Lithium Ion Batteries

Shaojun Guo

From Quasi-2D TiO_2(B) and Graphene Nanosheets to 3D Hierarchical Nanostructured Electrodes for Li-Ion Batteries

Guofeng Ren, Zhaoyang Fan

Designed Synthesis of SnO_2 Nanosheet Arrays with Superior Performance for Lithium and Sodium Storage

Xiaogang Zhang, Ping Nie, Laifa Shen, Yaoyao Zhu, Shan Fang, Haifeng Luo, Jiangmin Jiang

LiVPO4F : A New Age High Voltage Cathode Material for Lithium Ion-Hybrid Electrochemical Capacitors

Rohit Satish, Aravindan Vanchiappan, Chui Ling Wong, Madhavi Srinivasan
627 Electrochemical Approach for the Synthesis of Carbon-Metal Fluoride Nanocomposites for Lithium Batteries

Anji Reddy Munnangi, Maximilian Fichtner

628 Bottom-up Synthesis of Copper Fluoride Nanocomposites and Their Application to Rechargeable Li Batteries

Jinyoung Chun, Youngsik Kim, Jinwoo Lee

629 First Principles Investigation of Stable LiMn$_2$O$_4$ Surfaces for Lithium-Ion Batteries

Soo Kim, Muratahan Aykol, Chris Wolverton

630 Long-Term High-Efficient CuS and Cu$_2$S Cathodes for Lithium-Ion Batteries

Xiangbo Meng, Yang Ren, Chengjun Sun, Jeffrey W Elam

631 Understanding the Electrochemical Behavior of Vanadium Dixoxyfluoride

Flaviano García-Alvarado, Alois Kuhn, Juan Carlos Pérez-Flores, Emilio Morán, Raquel Villamor, Jose Manuel Gallardo-Amores, David Avila-Brande

632 Initial Investigations on the Use of Coated Nano-Sized Phthalocyanines for Very High Energy Density Rechargeable Lithium-Based Batteries

Joseph Phillip Fellner, Betty Quinton, Max Tsao

633 The Effects of Size and Shape on the Electrochemical Conversion in FeF$_2$ Nanoparticles: A Molecular Dynamics Study

Ying Ma

634 In-Situ Synchrotron XANES Study of Iron Oxyfluoride As Cathode Material in Lithium Ion Batteries

Fan Yang, Yadong Liu, Chengjun Sun, Zhe-Fei Li, Qi Liu, Yang Ren, Jian Xie
Iron(III) Oxalate Tetrahydrate: A New Positive Electrode for Li Batteries

Hania Ahouari, Jean Marie Tarascon, Nadir Recham, Gwenealle Rousse, Juan Rodriguez-Carvaja, Moulay-Tahar Sougrati, Matthieu Courty, Matthieu Saubanere

A Novel Li-Battery Cathode Material: Synthesis and Characterization of Li(Mn$_{1-x}$Co$_x$)BO$_3$

Barbara Le Roux, Carole Bourbon, Jean François Colin, Oleg Lebedev, Valérie Pralong

Probing Life Limiting Parasitic Reactions: A Conceptual Model for Long Term Impedance Rise

Esther S Takeuchi, Amy C Marschilok, Kenneth J Takeuchi

Exploring the Kinetics and Thermodynamics of Voltage Fade


Pore Collapse and Regrowth in Lithiated Si Anodes Determined By in-Operando Neutron Reflectometry

Joseph A. Dura, Steven C DeCaluwe, Bal-Mukund Dhar, Liwei Huang, Kaikun Yang, Jon Owejan, Yiping Zhao, A, Alec Talin, Howard Wang

Evaluation of Commercial High Energy Lithium-Ion Cells for Aerospace Applications

Frederick C. Krause, Adam Lawrence, Marshall C. Smart, Stephen F. Dawson, Antonio Ulloa-Severino, Bugga V. Ratnakumar

Investigating the Discharge Mechanism of Electrodes Using in-Situ Energy Dispersive X-Ray Diffraction

Kevin Charles Kirshenbaum, Amy C Marschilok, Kenneth J Takeuchi, Esther S Takeuchi

Advanced Electron Microscopy of Layered-Oxide Cathode Materials
Patrick J Phillips, Chunjoong Kim, Javier Bareno, Tanghon Yi, Jordi Cabana, Daniel P Abraham, Robert F Klie

643 Quantitative Evaluation of Charge-Discharge Cycle Test and Storage Test in Commercially Available Lithium-Ion Batteries

Hiroyuki Yoshida, Yo Kobayashi, Yuichi Mita, Hajime Miyashiro

644 Optical Impedance Spectroscopy - a Technique for Characterizing the Lithium Intercalation Process in a Porous Graphite Electrode

Daniel Manka, Stefan Schindler, Philipp Berg, Ellen Ivers-Tiffée

645 Conversion Reaction Mechanism in Complex Systems: A Triple X-Ray Absorption Spectroscopy Study of Tisnsb, a Very Efficient Negative Electrode Material for Li-Ion Batteries

Ali Darwiche, Moulay-Tahar Sougrati, Maria Alfredsson, Eric M. Kelder, Laure Monconduit, Lorenzo Stievano

646 In Situ High Resolution Synchrotron X-Ray Powder Diffraction Studies of Lithium Batteries

Mahrez Amri, Andy Fitch, Poul Norby

647 Mapping of Ageing Mechanisms in Cylindrical LiFePO₄/Graphite Batteries Cycled Under Deep Discharge Steps


648 Structure and Surface Chemistry Optimization of Graphite Electrodes for High-Voltage Dual-Intercalation Batteries

Boris Dyatkin, Jeffrey A. Read

649 In Situ Neutron Depth Profiling of Lithium Transport within Aluminum and Tin
Danny X. Liu, Lei Raymond Cao, Anne C. Co

Gallium Arsenide As an Alloying Anode for Lithium Ion Batteries

Kevin Alan Hays, Nathan A Banek, Michael J Wagner

Effect of Pyrolysis Temperature on Electrochemical Performance of SU-8 Photoresist Derived Carbon Films As Lithium Ion Battery Anode Material

Manohar Kakunuri, Chandra Shekhar Sharma

In-Operando Electron Paramagnetic Resonance Spectroscopy - Formation of Mossy Lithium on Lithium Anodes and Lithium Plating on Graphite Anodes during Charge/Discharge Cycling

Johannes Wandt, Hubert A Gasteiger, Cyril Marino, Peter Jakes, Rüdiger-Albrecht Eichel, Josef Granwehr

Investigation of Graphite/Tin Phosphide Composites As the Potential Anode in Li-Ion Batteries

Zhe-Fei Li, Jian Xie

Preparation of Graphite from Fish Scales

Yaqin Huang, Mengyao Gao, Weikun Wang

A High-Throughput Search for Functional Cathode Coatings for Lithium-Ion Batteries By First-Principles Thermodynamics

Muratahan Aykol, Soo Kim, Scott J. Kirklin, Dane Morgan, Chris Wolverton

About the Thermodynamics of Li₂CoO₂ in the Metal-Insulator Two-Phase Region Derived from DFT Calculations

Siaufung Oliver Dang, Isaac Manny Markus, Mark Asta, Lorenz Singheiser
First Principles Study on Phase Stability in Li-Rich Layered Li$_2$MnO$_3$-LiMO$_2$ (M=Mn, Ni, Co)

Zhi Lu, Dane Morgan, Chris Wolverton

Electrochemical Impedance Spectroscopy Study of Failure of Commercial LiFePO$_4$ Cells Under Overcharge Conditions

Yadong Liu, Zhe-Fei Li, Qi Liu, Jian Xie

A03-Stationary and Large-Scale Electrical Energy Storage Systems 5

Energy Technology/Battery/Industrial Electrochemistry and Electrochemical Engineering

All Vanadium Redox Flow Battery Development for Stationary Energy Storage Applications

Vincent Sprenkle, David Reed, Ed Thomsen, Wei Wang, Bin Li, Zimin Nie, Brian J Koeppel, Kurt P Recknagle, Vilayanur Viswanathan, Alasdair Crawford

Pathways to Low Cost Electrochemical Energy Storage: A Comparison of Aqueous and Nonaqueous Flow Batteries

Robert M. Darling, Kevin G. Gallagher, Fikile Brushett, Seungbum Ha, Jeffrey Kowalski

Correlating Nafion Membrane Microstructure with Vanadium Redox Flow Battery Performance

Wei Wang, Murugesan Vijayakumar, Qingtao Luo, Ralph Lloyd, Zimin Nie, Xiaoliang Wei, Bin Li, Vincent Sprenkle, J-David Londono, Murat Unlu

Electrochemical Characterization of Porous Carbon Electrodes in Vanadium Redox Flow Batteries

Zhijiang Tang, Alan Pezeshki, Frank Delnick, Thomas A. Zawodzinski

Simulation and Mechanism Analysis of Electrochemistry of the Vanadium Redox Couples By a Rotating Disk Electrode
Jianxin Pan, Xue Li, Yubin Zhao, Xiaofeng Xie, Vijay K Ramani

664 Studies on Aqueous Redox Flow Batteries Based on Water-Soluble Quinone Redox Couples

Bo Yang, Lena Hoober-Burkhardt, Sankarganesh Krishnamoorthy, G. K. Surya Prakash, S. R. Narayan

665 Acetylacetonate Complexes for Non-Aqueous Vanadium(III) Acetylacetonate Redox Flow Batterie Applications


666 Tridentate Metal Coordination Complexes As Active Species for Non-Aqueous Redox Flow Batteries

Sydney Laramie, Rachel Brooner, Melanie Sanford, Levi T Thompson

667 One Dimensional Mathematical Modelling of the All-Vanadium and Vanadium/Oxygen Redox Flow Batteries

Barun Kumar Chakrabarti, Ching Liang Chen, Hak Koon Yeoh, Nigel P. Brandon

668 Modeling and Analysis of All-Vanadium Redox Static Cells

Seong Beom Lee, Thiagarajan Soundappan, Bharatkumar Suthar, Dayaram Sonawane, Venkat R. Subramanian

669 Second Generation Aqueous Electrolyte Electrochemical Cells for Scaled Stationary Energy Storage

Jay Whitacre

670 Effect of Sulfide Additives on the Cycling Behavior of Iron Electrodes in Alkaline Batteries

Aswin K Manohar, Chenguang Yang, G. K. Surya Prakash, S. R. Narayanan
671 Rechargeable Oxide Batteries: Kinetic Study of Iron-Based Storage Materials in Low $pO_2-(H_2O-Vapour)$-Atmosphere

Waldemar Braun, Florian Thaler

672 Investigation on the Microfluidics in PEM Water Electrolyzers

Jingke Mo, Stuart M. Steen, William Barnhill, Feng-Yuan Zhang

673 Performance of Rechargeable Sintered Iron Electrodes for Large-Scale Energy Storage

Chenguang Yang, Aswin K Manohar, G. K. Surya Prakash, S. R. Narayanan

674 Modeling Two-Phase Transport on the PEM Water Electrolyzer

Bo Han, Stuart M. Steen, Jingke Mo, Feng-Yuan Zhang

675 Probabilistic Analysis for the Safety of Battery Based Energy Storage Systems

Benjamin Gully, Arun S Agarwal, Davion Hill, Narasi Sridhar

676 Model-Based Regional Comparison of Autonomy and Battery Utilization of Energy Storage Integration with Solar Power

Matthew T Lawder, Venkat R. Subramanian

677 Manufacturing Cost Analysis for Grid Storage: Lithium-Polysulfide Flow Battery

Seungbum Ha, Kevin G. Gallagher

678 Numerical Solutions By Method of Lines Approach for Fluid Flow in a Modified Rotating Disk Electrode Apparatus

Mayandi Ramanathan, Derek Rife, Venkat R. Subramanian

679 Building a Better Redox Flow Battery - Innovative Diagnostics to Visualise Reactant Transport
Javier Rubio-Garcia, Anthony R. J. Kucernak

680 Towards Long Cycle Life of Soluble Lead-Acid Redox Flow Batteries

Hsun-Yi Chen, Chih-Wei Chang

681 Alkaline Hydrogen-Iodine Fuel Cell

Dhrubajit Konwar, Trung Van Nguyen

682 Development of High Surface Area Carbon Electrodes for the Bromine Reactions in $H_2-Br_2$ fuel Cells

Venkata Yarlagadda, Trung Van Nguyen, Guangyu Lin, Pau Ying Chong

683 Evaluation of the Performance of an Iron-Chloride Redox Flow Battery for Large Scale Energy Storage

Aswin K Manohar, Kyu Min Kim, Edward J. Plichta, Mary A. Hendrickson, Sabrina Rawlings, G. K. Surya Prakash, S. R. Narayanan

684 Optimization of High-Energy-Density Aqueous Zinc-Polyiodide Redox Flow Battery

Bin Li, Zimin Nie, Vijayakumar Murugesan, Ed Thomsen, David Reed, Jun Liu, Wei Wang, Vincent Sprenkle

685 Towards Sustainable Energy Storage Via Incorporation of Organic Molecules on Carbon Spheres

Muhammad Boota, Kelsey B. Hatzell, Emin Caglan Kumbur, Yury Gogotsi

686 Development of Advanced Hydrogen-Bromine Fuel Cells for Energy Storage


687 Dissecting the Quinone-Bromide Flow Battery
Qing Chen, Michael R. Gerhardt, Louise Eisenach, Michael P. Marshak, Roy G. Gordon, Michael J. Aziz

688 Low Cost Aqueous Redox Flow Batteries Employing Sustainable Organic Anolytes

Tianbiao Liu, Wei Wang, Xiaoliang Wei, Zimin Nie, Murugesan Vijayakumar, Vincent Sprenkle

689 Development of High Capacity Catholyte Material for Non-Aqueous Redox Flow Batteries

Jinhua Huang, Liang Su, Magali Ferrandon, Fikile Brushett, Anthony K. Burrell, Lu Zhang

690 Durability and Performance of the Br2-H2 Redox Flow Cell


691 Organic Sodium Based Flow Batteries Utilizing Transition Metal and Metal Free Complexes

Jack S Shamie, Leon Shaw, Caihong Liu, Vincent Sprenkle

692 Low Temperature Preparation and Electrochemical Properties of LiFeSi$_2$O$_6$

Shiliang Zhou, Graham King, David Scanlon, Moulay-Tahar Sougrati, Brent Melot

693 Redox Flow Lithium-Ion Batteries for Large-Scale Energy Storage

Qizhao Huang, Chuankun Jia, Feng Pan, Qing Wang

694 High Capacity, High Voltage Hybrid Sodium-Based Flow Batteries with Aqueous Catholyte

Caihong Liu, Leon Shaw, Jack S Shamie, Vincent Sprenkle

695 Colossal Pseudocapacitance in a High Functionality - High Surface Area Carbon Anode Doubles the Energy of an Asymmetric Supercapacitor
David Mitlin

696 **Novel Copper-Containing Layered Oxide Cathode for Room-Temperature Stationary Sodium-Ion Batteries**

Yong-Sheng Hu, Linqin Mu, Shuyin Xu, Yunming Li, Liquan Chen

697 **On the Capacity and Cycle Stability of Na₃MnCO₃PO₄ - a High Capacity, Multi-Electron Transfer Redox Cathode Material for Sodium Ion Batteries**

Chuanlong Wang, Monica Sawicki, Satya Emani, Caihong Liu, Leon Shaw

698 **Two-Point State-of-Charge Determination in Lithium-Ion Battery Packs**

Matthieu Dubarry, Arnaud Devie, Bor Yann Liaw

699 **High Ionic Conductivity of Flexible Polymer-Based Electrolyte with Low Porosity**

Weiyun Zhao, Madhavi Srinivasan

700 **Using Pseudo-Two-Dimensional (P2D) Reformulation Model with a Particle Filter to Estimate State of Charge, State of Health, and Remaining Useful Life in Li-Ion Battery Management System (BMS)**

Larry Morris, Mark H. Weatherspoon, Ruben Nelson, Jamal Frederon Stephens, Pedro L. Moss

701 **Limits of Li-Ion Batteries for Public Transportation**

Timothy John Patey

702 **Properties of Nickel-Iron Batteries with High-Performance Iron Electrodes**

Chenguang Yang, Aswin K Manohar, G. K. Surya Prakash, S. R. Narayanan

703 **Understanding and Controlling of Solution Chemistry of Lithium Polysulfide to Enable High Energy Li-S Redox Flow Battery**
Huilin Pan, Xiaoliang Wei, Wesley A Henderson, Junzheng Chen, Yuyan Shao, Jie Xiao, Jun Liu

704 Properties of Redox Couples for Use in Organic Redox Flow Batteries

Lena Hoober-Burkhardt, Bo Yang, Sankarganesh Krishnamoorthy, G. K. Surya Prakash, S. R. Narayanan

705 Ionic Liquid Electrolytes for Redox Flow Batteries

Andinet Ejigu Aynalem, Darren Walsh

706 The Deep Sea Water and Heat Energy of Thermoelectric Generation Study

Meng Chu Chen

B01-Carbon Nanostructures for Energy Conversion

Nanocarbons/Battery/Energy Technology/Physical and Analytical Electrochemistry

707 (Nanocarbons Division Richard E. Smalley Research Award) Nanocarbons for Optoelectronic Applications

Dirk M. Guldi

708 (Invited) New Solar and Chemical Energy Conversion Mechanisms Enabled By Nanocarbon Systems

Michael S Strano

709 (Invited) Graphene Molecules: Synthesis, Electronic Properties and Applications

Zhiqiang Ji, Stephen K. Doorn, Milan Sykora

710 (Invited) DAN Assisted Formation of Charge Transfer Complex from Highly Charged Fullerenes and Conjugated Polymer
Hsing-Lin Wang, Mircea Cotlet, Kuo Chengju, YoungIl Park, Zhongwei Liu, Hsinhan Tsai

711 (Invited) Tunable Thermoelectric Power Factor in Semiconducting Single-Walled Carbon Nanotube Networks

Andrew Ferguson, Azure D. Avery, Kevin S. Mistry, Sarah Guillot, Ben Zhou, Jeffrey L. Blackburn, Barry L. Zink, Yong-Hyun Kim

712 (Invited) Single-Walled Carbon Nanotubes and Graphene As Highly Efficient Hole Collecting and Transport Layer for Solar Cells

Shigeo Maruyama, Kehang Cui, Takaaki Chiba, Il Jeon, Xiao Chen, Rong Xiang, Shohei Chiashi, Yutaka Matsuo

713 (Invited) High Performance Nano-Carbon/Silicon Solar Cells Via Strategic Doping Processes

André D. Taylor

714 (Invited) CdTe Photovoltaic Devices Grown Directly on Transparent Carbon Single Wall Nanotube Back Contacts

Rajendra R. Khanal, Adam B. Phillips, Zhaoning Song, Yao Xie, Hasitha P. Mahabaduge, Michael J. Heben

715 (Invited) Improving Charge Transport in TiO$_2$ nanoparticle Based Hybrid Photoanodes through Spatial Control of Graphene Nanoribbon Assembly

Vincent Tung, Jaskiranjeet Sodhi, Yen-Chang Chen, Hidetaka Ishihara

716 Origin of Open Circuit Voltage in Solar Cells Based on Polymer Wrapped Carbon Nanotubes and Fullerenes

Arun Tej Mallajosyula, Gautam Gupta, Stephen K. Doorn, Aditya Mohite

717 Li@SWCNT and Cup-Stacked Carbon Nanotubes for Dye-Sensitised Solar Cells
Elaine Yoshiko Matsubara, Jose Mauricio Rosolen, Bruna Andressa Bregadiolli, Mirko Congiu, Carlos Frederico de Oliveira Graeff

718 (Invited) Graphene and 2d Crystals for Energy Devices

Vittorio Pellegrini, Francesco Bonaccorso

719 (Invited) Carbonaceous Hybrid Fibers for Solid-State Micro-Supercapacitors with High Volumetric Energy Density

Yuan Chen

720 Synthesis of Spherical Graphite Particles Possessing a Definable Size and Their Application in Dual-Graphite Cells

Andreas Heckmann, Paul Meister, Pengfei Gao, Martin Winter, Tobias Placke

721 Effect of Gate Electrode in Electrochemical Cells

Tazima Chowdhury, Haim Grebel

722 MWCNTS/Nickel Oxide Nanocomposite Supercapacitor Made from Two Electrode Coin Type Cells

Abolanle Saheed Adekunle, B. B. Mamba, B. O. Agboola, O. S. Oluwatobi, Kenneth I. Ozoemena, Eno E Ebenso

723 Increasing Energy Storage in Activated Carbon Based Ultra-Capacitors through Plasma Treatment

Marcelis L. Muriel, Rajaram Narayanan, Prabhakar R Bandaru

724 Novel 3D Nanocarbon Electrodes for High-Rate Li-Ion Batteries

Huan Wang, Jingyi Xie, Marissa Follette, Placidus B Amama

725 Carbon Support Modification for Improving Platinum Performance in PEMFC
Jue Hu, Chengxu Zhang, Yuedong Meng

726 Energy Transfer Interactions Between Single-Chirality Swents and Photoactive Molecules

Jia Xu, A. Nicholas G. Parra-Vasquez, Navaneetha K Subbaiyan, Stephen K. Doorn, Gabriel Montano, Kirk J Ziegler, Juan G. Duque

727 Preparation of Carbon-Conducting Polymer Composites Using Graphene Oxide Obtained from Carbon Waste By Electrochemical Exfoliation: Application on Supercapacitors

Gustavo Marciniuk, Alan Ben-Hur Bischof, Rodolfo Thiago Ferreira, Fábio Santana dos Santos, Sérgio Ricardo de Lazaro, Karen Wohnrath, Jarem R. Garcia

728 Fabrication of Multiwalled Carbon Nanotube-Wrapped Ultrathin SnS$_2$ Nanoplates and Their Superior Li-Ion Intercalation Performance

Dongsheng Guan

729 (Invited) Roll-to-Roll Synthesis of Vertically Aligned Carbon Nanotubes with Embedded Redox Polymers

Mark E. Roberts, Margarita Rosa Arcila-Velez, Jingyi Zhu, Ramakrishna Podila, Mehmet Karakaya, Apparao M. Rao

730 Nanoporous-Carbon As an Intercalation Host Material to Enable Multivalent Ion Electrochemical Energy Storage

Michael P. Siegal, W. Graham Yelton, Haiqing Schwarz

731 Three-Dimensional Bi-Continuous Graphene Monolith from Hollow Ni Templates Via Polymer Templates

Yu Zhu

732 Graphene Nanocomposites Templated from Cage-Containing Metal-Organic Frameworks for Oxygen Reduction in Li-O2 Batteries
Gang Wu

733 Influence of Carbon Surface Defects on Double Layer Charge Storage and Ion Dynamics in Electrochemical Capacitors

Boris Dyatkin, Eugene Mamontov, Yury Gogotsi

734 Biomass Based Carbon Nanospheres As Electrode Materials in Lithium Ion Batteries

Arenst Andreas Arie, Joong-Kee Lee

735 (Invited) Mechanistic Studies of the Oxygen Reduction Reaction Electrocatalyzed By N-Doped Graphitic Carbon Materials

Liang-shi Li, Qiqi Li, Benjamin Noffke, Krishnan Raghavachari

736 Facile Synthesis and Electrocatalytic Activity of Sulfur Doped Carbon for Oxygen Reduction

Ruizhi Yang, Yan Sun, Zhenrong Yang, Jiao Wu

737 Facile Synthesis of High-Porous Noble-Metal-Free Catalyst for Highly Efficient Oxygen Reduction Reaction

Dongmok Whang, Mansu Kim

738 Highly Active Nitrogen-Doped Carbon Metal Oxide Hybrid Composites for Oxygen Reduction Reaction

Maryam Bayati, Keith Scott

739 Metal-Catalyst-Free Fuel Cells with Carbon As Catalysts

Wenzhen Li, Ji Qi, Neeva Benipal, Hui Wang, David J Chadderdon, Yibo Jiang, Wei Wei, Xiaotong Han, Yang Qiu, Yun Hang Hu

740 Graphene for Energy: Which Promising Applications and How?
Etienne Quesnel

741 *(Invited) Structured Carbon Nanostructures Derived from Graphene Oxide for Catalysis*

Gautam Gupta

742 **Combinatorial Search of Hydrogen Catalysts Based on Transition Metal Embedded Graphitic Carbons**

Woon Ih Choi, Brandon Wood, Eric Schwegler, Tadashi Ogitsu

743 **Enhancement of Platinum Mass Activity at Polymer-Wrapped Carbon Nanotube-Based Fuel Cell Electrocatalysts**

Naotoshi Nakashima, Inas Hafez, Mohamed Reda Berber, Tsuyohiko Fujigaya

744 **Fe and N Functionalized-Ordered Mesoporous Carbon with Different Morphologies: Role of Fe on Surface Properties and Electrocatalytic Activity**

Dea-Soo Yang, Min Young Song, Eunjin Bae, Jong-Sung Yu

745 **New Transition Metal-CN ORR Electrocatalysts with a ' Core-Shell ' Structure**

Vito Di Noto, Enrico Negro, Keti Vezzu, Graeme Nawn, Federico Bertasi, Alexey Serov, Kateryna Artyushkova, Plamen Atanassov

746 **Microwave-Assisted Solvothermal Synthesis of Pd-MnO2 Hybrid at Onion-like Carbons: Electrocatalytic Oxidation of Alcohols in Alkaline Media**

Paul M. Ejikeme, Katlego Makgopa, Kumar Raju, Kenneth I. Ozoemena

747 **Gold Decorated Graphene for Energy Conversion in Electrocatalytic Oxidation of Alcohols**

Lakshman K Ventrapragada, Ramakrishna Podilla, Apparao M Rao, Stephen Creager
Engineering Carbon Nanotubes As Oxygen Reduction Catalysts for Solid Acid Fuel Cells

Vanessa Evoen, Hadi Tavassol, Sossina M Haile

The Role of Chemistry and Morphology of Carbon in Oxygen Reduction Reaction, Structure-to-Property Studies

Kateryna Artyushkova, Alexey Serov, Michael J Workman, Plamen Atanassov

B02-Carbon Nanostructures in Medicine and Biology

Nanocarbons/Organic and Biological Electrochemistry/Physical and Analytical Electrochemistry/Sensor

Non-Destructive Detection of Metabolites in Live Cells Using Single Walled Carbon Nanotubes

Thomas Vito Galassi, Prakrit Vaibhav Jena, Daniel Roxbury, Januka Budhathoki-Uprety, Christopher Horoszko, Daniel A Heller

Nanomaterial-Based Sensitive Detection for Live Cell Dynamics of Compartmentalized Metabolic Processes

Christopher Peter Horoszko, Januka Budhathoki-Uprety, Daniel A Heller

(Invited) Developing Short-Wave Infrared Fluorescent Immunoprobes Based on Single-Walled Carbon Nanotubes

Kathleen M. Beckingham, Michael Vu, Ching-Wei Lin, Robert C. Bast, R. Bruce Weisman

(Invited) Corona Phase Molecular Recognition (CoPhMoRe) to Enable New Nanosensor Interfaces

Michael S Strano

(Invited) Biological Applications of Nanoparticles for Reactive Oxygen Species (ROS) Scavenging and Sensing
Ardemis Anoush Boghossian, Fatih Sen, Brenna Gibbons, Selda Sen, Sean Faltermeier, Juan Pablo Giraldo, Cathy Zhang, Jingqing Zhang, Daniel Heller, Michael S Strano

Spectral Microscopy Resolves Carbon Nanotube Chromatic Diversity in Living Systems

Daniel Roxbury, Prakrit Vaibhav Jena, Ryan Williams, Daniel Heller

Applications of Single Nanotube Imaging Spectroscopy in Live Cells

Prakrit Vaibhav Jena, Daniel Roxbury, Thomas Vito Galassi, Christopher Horoszko, Januka Budhathoki-Uprety, Daniel Heller

An Easy Stereo-Specific and Regio-Selective Reaction for the Synthesis of Ester-[70]-Fullerene Derivatives

Edison Castro, Luis Echegoyen

Controllable Synthesis of Heteroatom-Doped Carbon Nanotubes Under Atmospheric Pressure and Their Electrocatalytic Ability to L-Cystein

Yu-Chen Chang, I-Ting Chen, Guan-Lin Chen, Kuo-Chuan Ho, Wei-Hung Chiang

(Invited) Glycofullerenes for Biological Applications

Nazario Martin

Stochastic Sensors Based on Diamond Paste for Screening of Biological Fluids for Neurotransmitters

Raluca-Ioana Stefan-van Staden, Iuliana Moldoveanu, Jacobus Frederick VAN Staden

Porphyrin-Fullerene Based Donor-Acceptor Conjugates for Photocontrol of Cell Membrane Potentials

Yuta Takano, Tomohiro Numata, Kazuto Fujishima, Tatsuya Murakami, Mineko Kengaku, Yasuo Mori, Hiroshi Imahori
Boron-Doped Reduced Graphene Oxide (B-RGO) and Its Application to L-Cysteine Sensing

I-Ting Chen, Hsin-Che Lu, Ting-Hsiang Chang, Li-De Huang, Kuo-Chuan Ho

Playing with Fullerene, Carbon Nanotubes, Nanodiamonds and Other Carbon Nanostructures

Tatiana DaRos, Valentina Armuzza, Jose Miguel Gonzalez Dominguez, Agnieszka Gajewska, Marco Carini

Bioconjugated Iron-Filled Carbon Nanotubes As Cancer Theranostics Agents

Florent Pineux

Controlled Layer-By-Layer Polymer/DNA Coating of Carbon Nanotubes for Gene Delivery Applications

Fatemeh Sadat Majedi, Hamid Keshvari, Mohammad Mahdi Hasani-Sadrabadi, Philippe Renaud, Lobat Tayebi

Biomedical Applications of Diamond Nanoparticles

Vadym N Mochalin, Yury Gogotsi

C60-Derivatives: Applications in Electric-Field Cancer Therapy (EFCT)

Stuart Corr, Leoncio Vergara, Yuri Mackeyev, Jason Chak-Shing Ho, Lon J. Wilson, Steven A Curley

B03-Carbon Nanotubes - From Fundamentals to Devices

Nanocarbons/Dielectric Science and Technology/Physical and Analytical Electrochemistry

(Invited) Vlsi Carbon Nanotube Thin-Film Circuits

Mark C. Hersam
(Invited) Scan-Probe Microwave Reflectance of Horizontally Aligned Arrays of Single-Walled Carbon Nanotubes: Nanoscale Imaging of SWNT Electrical Properties in the Quantum Regime

William L. Wilson, Eric Seabron, Scott Maclaren, Xu Xie, Slava V. Rotkin, John A. Rogers

(Invited) Single Carbon-Nanotube Photonics and Optoelectronics

Yuichiro K. Kato

(Invited) Charge Separation and Recombination at Semiconducting Single-Walled Carbon Nanotube Interfaces

Jeffrey L. Blackburn, Anne-Marie Dowgiallo, Kevin Mistry, Rachelle Ihly, Andrew Ferguson, Nikos Kopidakis

(Invited) Optoelectronic Properties and Electromechanical Resonance Behavior in Individual Suspended Carbon Nanotube Pn-Junctions and Devices

Stephen B. Cronin

Inkjet Printed Single Walled Carbon Nanotubes As Active Semiconductors in Thin-Film Transistors and Circuits

Ananth Dodabalapur, Bongjun Kim, Seonpil Jang, Micheal Geier, Mark C. Hersam

Toward Carbon Nanotube Based Thermal Interface Materials

Michael P. Siegal, Caitlin Rochford, W. Graham Yelton, Thomas E. Beechem, Stephen W. Howell, Douglas L. Medlin

Multi-Walled Carbon Nanotube Electrode Optimization for Thermocells

Nick Holubowitch, Cameron Lippert, James Landon, Kunlei Liu

Thermal Properties of Chemically Modified Carbon Nanotubes Dispersed in Polymer Matrices
Adam W Januszko, Jerzy Peszke, Agnieszka Pawlicka, Tomasz Czujko

777(Invited) Scalable Assembly and Alignment of Highly Electronic-Type Purified Semiconducting Carbon Nanotubes for High Performance Field Effect Transistors

Michael S. Arnold, Gerald J Brady, Yongho Joo, Meng-Yin Wu, Matthew J Shea, Padma Gopalan

778(Invited) Etching of Surfactant from Solution-Processed, Type-Separated Carbon Nanotubes and Impact on Device Behavior

François Léonard

779Gate Electrodes within Electrochemical Cells

Tazima Chowdhury, Haim Grebel

780Covalent Chemistry on Carbon Nanotubes: From Electronic Fundamentals to Sensor Applications

Delphine Bouilly, Richard Martel, Colin Nuckolls

781(Invited) Carbon Nanotubes: From the Origin of Helicity to Application

Avetik R Harutyunyan

782(Invited) Post-Growth Manipulation of Horizontally Aligned Single-Walled Carbon Nanotubes

Shigeo Maruyama, Taiki Inoue, Keigo Otsuka, Shohei Chiashi

783Thermodynamics of Quasi-Epitaxial Assembly of Fmn Around Various (n,m)-SWNTs

Fotios Papadimitrakopoulos, Roholah Sharifi, Milinda Samaraweera, Jose Gascon

784Preparation of Buckypaper By Surface Modified Multi-Walled Carbon Nanotubes for Oxygen Reduction Reaction in PEMFC
Licheng Ye, Junsheng Zheng, Ping Li, Yuan Gao

Effects of Growth Substrates on Growth Mode of Carbon Nanofibers

Meijuan Tian, Qian Zhang, Cuixia Zhang, Lifeng Dong

(Invited) Carbon Nanotube Separation By Aqueous Two-Phase Extraction: A Progress Report

Ming Zheng

Spectroscopic Investigations into the Aqueous Two-Phase Partitioning of Carbon Nanotubes

Jason K. Streit, Hui Gui, Geyou Ao, Jeffrey A. Fagan, Angela R. Hight Walker, Chongwu Zhou, Ming Zheng

(Invited) Aggregation State of Carbon Nanotubes in Solution

Toshiya Okazaki

Swnt-Sorting with a Removable Solubilizer Based on Dynamic Supramolecular Coordination Chemistry

Naotoshi Nakashima, Fumiyuki Toshimitsu

(Invited) New Methods to Probe the Surfactant Structure Surrounding Swcnts

Kirk J Ziegler, Jia Xu, Justin Clar, Jean-Claude J Bonzongo

High-Fidelity Single-Column Selective Separation of Swcnts

Yang Zhao, Justin Clar, Jia Xu, Tianyu Yuan, Jean-Claude J Bonzongo, Kirk J Ziegler

(Invited) Flexible and Conductive Mxene/Carbon Nanotube Composite Paper for Energy Storage
Mengqiang Zhao, Chang E. Ren, Zheng Ling, Maria R. Lukatskaya, Olha Mashtalir, Michel W. Barsoum, Yury Gogotsi

In Situ Electrochemical Porosimetry of Vertically-Aligned Carbon Nanotube Carpets through Impedance Spectroscopy

Heena K Mutha, H. Jeremy Cho, Noa Lachman, Matthew E Suss, Carl V. Thompson, Brian L. Wardle, Evelyn N Wang

Tayloring of Reduction Potential of Carbon Nanotubes Hybrid Compound By Substrate Interaction Probed By Metal Deposition

Nadia Guerra Macedo, Elaine Yoshiko Matsubara, Jose Mauricio Rosolen

Ultracompressible, High Rate Supercapacitors from Graphene-Coated Carbon Nanotube Aerogels

Evan Wilson, Mohammad F. Islam

(Invited) Interfacial Functionalization of Carbon Nanotubes: From Effective Charge Propagation and Storage to Enhancement of Electrocatalytic and Bioelectrocatalytic Properties

Pawel J Kulesza

Modifying Carbon Nanotubes with Electroactive Systems

Nazario Martin

(Invited) Electronic Scattering in One-Dimensional Carbon Nanotubes

Philip G. Collins

(Invited) Tube^2: Optical and Electrical Properties of Tube-in-a-Tube

YuHuang Wang
800 (Invited) Progress Towards a Novel Technology for Non-Contact Strain Measurements Based on SWCNT Fluorescence Spectroscopy

Sergei M. Bachilo, Peng Sun, Jackie Zhao, Satish Nagarajaiah, R. Bruce Weisman

801 (Invited) Variance Spectroscopy: A New Bridge Between Ensemble and Single-Particle Studies

Jason K. Streit, Stephen Sanchez, Sergei M. Bachilo, R. Bruce Weisman

802 (Invited) Non-Resonant Absorption in Carbon Nanotubes

Fabien Vialla, Ermin Malic, Benjamin Langlois, Yannick Chassagneux, Jean-Sébastien Lauret, Christophe Voisin

803 (Invited) Photoluminescence Carrier Dynamics and Photon Statistics of Covalent Dopant-Induced Trap States in Single Wall Carbon Nanotubes

Stephen K. Doorn, Xuedan Ma, Nicolai F. Hartmann, Sibel E. Yalcin, Han Htoon

804 (Invited) Low Temperature Photoluminescence of Individual SWNTs Emitting at Telecommunication Wavelengths

Vincenzo Ardizzone, Yannick Chassagneux, Fabien Vialla, Géraud Delport, Isabelle Robert-Philip, Christophe Voisin, Jean-Sébastien Lauret

805 Dynamic and Steady State Optical Studies of Individual Covalent Dopant Sites in Single-Wall Carbon Nanotubes

Nicolai F. Hartmann, Sibel E. Yalcin, Erik H. Haroz, Xuedan Ma, Han Htoon, Stephen K. Doorn

806 Asymmetry in Raman Resonant Excitation Profiles of Single-Wall Carbon Nanotubes: The Role of Kohn Anomaly, Optical Transition Order, and State-Mixing

Erik H. Haroz, Hagen Telg, Juan G. Duque, Jeffrey A. Fagan, Ming Zheng, Jeffrey L. Blackburn, Eduardo B. Barros, Stephen K. Doorn
807 Observation of Efficient Upconversion Photoluminescence of Single-Walled Carbon Nanotubes

Yuhei Miyauchi, Kazunari Matsuda

808 Selective Synthesis of Large-Diameter, High-Quality and Metallic Single-Walled Carbon Nanotubes Via Thiophene-Assisted Method

Jinghua Li, Jie Liu

809 A Study on Correlation Between Elastic Deformation and Thermal Performance of Flexible Carbon Heater

Young Kyu Hong, Byung-Ryang Kim, Chan Ho Hong, Hyeon Ki Park, Jin-Koog Shin

810 Advances in the Gel Chromatography Separation Processes with the Use of Duel-Surfactant and Surfactant-Salt Techniques

Ryan Charles Capasse, Bilal Zeghum, John-David R Rocha

811 (Invited) Photophysics of Localized Excitons in Carbon Nanotubes

Alexander Högele

812 (Invited) Single-Walled Carbon Nanotube Spectroscopy in Complex Environments

Daniel A Heller

813 (Invited) Inter-Nanotube Exciton Energy Transfer Modulation in Polymer-Encapsulated Single-Walled Carbon Nanotubes

Januka Budhathoki-Uprety, Prakrit Vaibhav Jena, Daniel Roxbury, Daniel Heller

814 (Invited) Optics of Nanotubes, DNA and Rare Earth Ions: Towards Composite Material for Biosensing

Slava V. Rotkin
Sensitization of Rare Earth Ions with Carbon Nanotube Plasmonic Antennas

Benjamin Joseph Sofka, Slava V. Rotkin

B04-Endofullerenes and Carbon Nanocapsules

Nanocarbons

Novel Carbon Nanohybrids As Highly Efficient Magnetic Resonance Imaging Contrast Agents

Baoyun Sun, Rongli Cui, Huan Huang, Xihong Guo

New Endohedral Fullerenes Containing Uranium

Luis Echegoyen, David Buck

Evaluation of Nanocarbon Material Dispersions

Toshiya Okazaki

Non-IPR Chlorofullerenes

Josep M. Poblet, Núria Alegret, Khalid Azmani, Laura Abella, Antonio Rodríguez-Forteza

Endohedral Fullerenes Bis-Adducts: Regio-Chemistry Control Directed By the Cluster inside

Maira R. Cerón, Marta Izquierdo, Luis Echegoyen

Crystal Structure Analysis of Salts and Derivatives of Cationic Lithium Endohedral Fullerene

Shinobu Aoyagi, Hiroshi Ueno, Hiroki Kawakami, Koji Nakagawa, Hiroshi Okada, Naohiko Ikuma, Ken Kokubo, Yutaka Matsuo, Takumi Oshima

Electrochemical Activation of the Least Reactive Endohedral Fullerene: Sc₃N@I₃-C₈₀
Danisha Marie Rivera-Nazario, Marta Izquierdo, Salvatore Filippone, Nazario Martin, Luis Echegoyen

823 An Expanded Family of Dysprosium-Scandium Mixed-Metal Nitride Clusterfullerenes

Shangfeng Yang

824 Metallofullerenes with Single Carbon Atom in the Endohedral Cluster

Katrin Junghans, Alexey A. Popov

825 Unprecedented Chemical Reactivities and Potential Utilities of Paramagnetic Endohedral Metallofullerenes

Yuta Takano, Takeshi Akasaka

826 Structural Studies of Endohedral Fullerenes

Alan L. Balch, Marilyn M. Olmstead, Kamran Ghiassi, Guan-Wu Wang

827 Synthesis of an Extensive Family of Sc$_2$O@C$_{2n}$ (n=35-47) and Chemical Insight into the Small-Size Species

Lai Feng, Ning Chen

828 Spin-Preserving N@C$_{60}$ Cyclopropane Addition: Revisiting N@C$_{60}$ Reactivity and Stability

Kyriakos Porfyrakis

829 A Novel Organic Electrical Memory Device Based on Metallofullerene-Grafted Polymer

Rongli Cui, Baoyun Sun, Huan Huang, Xihong Guo

830 Electric-Arc Synthesis of New and Uncommon Endohedral Metallofullerenes
Brittany L Kime, Steven Stevenson

831 Isoxazoline-Ring Fused Derivatives of Scn@C80 and C60: The Internal Effect on the Exohedral Configuration

Lipiao Bao, Marilyn M. Olmstead, Alan L. Balch, Xing Lu

B05- Fullerenes - Chemical Functionalization, Electron Transfer, and Theory: In Honor of Professor Shunichi Fukuzumi

Nanocarbons/Physical and Analytical Electrochemistry

832 Laser-Induced Hydrogen Evolution Using Metal-Free Single-Walled Carbon Nanotubes

Kei Ohkubo, Naoki Kohno, Yusuke Yamada, Shunichi Fukuzumi

833 Oligothiophene-Graphene Ensembles

Nikos Tagmatarchis

834 Carbon Nanodots - Towards a Comprehensive Understanding of Their Photoluminescence

Dirk M. Guldi

835 Modulating Electron Transfer Dynamics Via Graphene Interactions in Donor-Acceptor Systems

Francis D'Souza, Gary N. Lim, Chandra KC

836 Chiral Fullerenes from Asymmetric Catalysis

Nazario Martin

837 Chemically Functionalized Nanocarbons for Artificial Photosynthesis and Solar Energy Conversion
Hiroshi Imahori

838Cycloaddition of Nitrile Imines to Graphene. a Theoretical and Experimental Approach

Myriam Barrejon, Antonio Rodriguez, María J. Gomez-Escalonilla, Jose Ramon Carrillo, Maria Pilar Prieto, Fernando Langa

839Photoinduced Electron Transfer in Hydrogen-Bonded Supramolecular Assemblies Using a Diprotonated Saddle-Distorted Porphyrin

Takahiko Kojima

840Using Higher Fullerenes to Channel Halogen-Halogen Interactions

Kamran Ghiassi, Joseph Wescott, Susanne Y. Chen, Steven Stevenson, Alan L. Balch, Marilyn M. Olmstead

841Unveiling the Nature of Supramolecular Crown Ether-C₆₀ Interactions

Luis Moreira, Joaquin Calbo, Rafael M. Krick Calderon, Jose Santos, Beatriz M. Illescas, Juan Aragó, Jean-François Nierengarten, Dirk M. Guldi, Enrique Ortí, Nazario Martin

842Anchoring Semiconductor and Metal Nanoparticle on Graphene Oxide for Simultaneous Sensing and Degradation of Contaminants

Prashant V Kamat, Rabeka Alam

843Carboxylate Fullerene Derivatives in Redox-Reversible Bimetallic Assemblies

Catalina Suarez, Danisha Marie Rivera-Nazario, Luis Echegoyen

844Preparation and Photophysical Properties of Molecular Architectures Composed of Polycyclic Aromatic Hydrocarbon and Porphyrin Derivatives

Taku Hasobe

845Photo-Physical Properties and Applications of Multi-Porphyrinic Polypeptides
Nathalie Solladie

846 Polaron Structure and Transport in Fullerene Materials: Insights from First-Principles Calculations

Kenley M Pelzer, Maria K. Y. Chan, Stephen K. Gray, Seth Darling

847 Synthesis and Characterization of Bis-Triruthenium Cluster Derivatives of an All Equatorial [60]Fullerene Tetramalonate

Chia-Hsiang Chen, Amineh Aghabali, Marilyn M. Olmstead, Alan L. Balch, Luis Echegoyen

848 Fulleranes and Caps By Sequential HF Elimination from F-PAHs

Artur Böttcher, Jürgen Weippert, Seyithan Ulas, Patrick Weis, Jean-Francois Greisch, Konstantin Amsharow, Manfred Kappes

1010 Carbon Nanostructures and Perylenediimides

Angela Sastre-Santos, Luis Martin-Gomis, Giorgos Rotas, Nikolaos Karousis, Ioannis D. Petsalakis, Sara Pla, Fernando Fernández-Lázaro, Kei Ohkubo, Nikos Tagmatarchis, Shunichi Fukuzumi

B06-Graphene and Beyond: 2D Materials

Nanocarbons/Dielectric Science and Technology/Physical and Analytical Electrochemistry

849 Mxenes: A New Family of Two-Dimensional Materials and Its Application As Electrodes for Li and Na-Ion Batteries

Michael Naguib, Yury Gogotsi, Michel W. Barsoum

850 Electric Field Tunable Band Gap in Bi-Axially Strained Graphene/Hexagonal Boron Nitride Super-Lattice

Khalid Ibne Masood, Md. Hasibul Alam, Quazi D. M. Khosru
851 **Non-Equilibrium Thermodynamics Approach for QED Heat Conductance Between Graphene and SiC Substrate**

Dan You, Slava V. Rotkin

852 *(Invited) Anti-Ambipolar, Gate-Tunable p-n Heterojunctions*  

Mark C. Hersam

853 **Graphene Ring Nanoelectrodes (GRiNs): Application As an Electroanalytical Sensor**

Miriam Ferrer-Huerta, Colin Boxall, James William Dickinson, Fabrice Andrieux, Neville J Freeman

854 *(Invited) Nanoelectronics Based on Silicene*  

Li Tao, Eugenio Cinquanta, Carlo Grazianetti, Alessandro Molle, Deji Akinwande

855 *(Invited) Synthesis, Properties and Applications of Group IV Graphane Analogues*  

Shishi Jiang, Maxx Arguilla, Nicholas Cultrara, Joshua E. Goldberger

856 *(Invited) Graphene Plasmons: Properties and Applications*  

Phaedon Avouris

857 *(Invited) Promise of 2D Materials Beyond Graphene*  

Das Saptarshi

858 **Quantum Mechanical Modeling and Simulation of Monolayer WSe$_2$ Channel Field Effect Transistor**

Saeed Uz Zaman Khan, Quazi D. M. Khosru

859 **Degradation and Electronic Confinement in Exfoliated Black Phosphorus**

**860 (Invited) Understanding Electronic and Optoelectronic Properties of MoS2 and Its Junctions with Graphene**

Michael S Strano

**861 1/F Noise in MoS2 Field Effect Transistors with Channel Length Variation**

Suprem Ranjan Das, Jiseok Kwon, Jonathan Claussen, Shan Hu, David B Janes

**862 MoS2 Devices Using Pencil Circuits**

Vedhikha Tiruparkadal Parthasarathy, Vikas Berry

**863 Group IV Graphane Analogues As Electronic Materials**

Nicholas Cultrara, Joshua E. Goldberger

**864 Carrier Doping of Few-Layer MoS2 with Ionic Polymers and MoS2 Quantum Dots with Atmospheric Water**

Donovan Briggs, Phong Nguyen, Cody Fager, Sreeprasad Sreenivasan, Vikas Berry

**865 III-V Tri-Gate Quantum-Well Mosfet for 10nm Technology and Beyond**

Kanak Datta, Abir Shadman, Sudipta Romen Biswas, Ehsanur Rahman, Quazi D. M. Khosru

**866 Selection, Characterization, and Application of High Affinity Microcystin-Targeting Aptamers in a Graphene-Based Biosensing Platform**

Shimaa Eissa, Andy Ng, Mohamed Siaj, Mohammed Zourob

**867 Facile and Controllable Synthesis of Heteroatom-Doped Carbon Nanotubes Under Atmospheric Pressure**
Yu-Chen Chang, Guan-Lin Chen, Wei-Hung Chiang

868 Pi-Extended 2D-Networks of Heteroaromatic Compounds - Towards Two-Dimensional Nanostructured Materials

Aoife A. Ryan, Nina C. Berner, Attilo A. Cafolla, Georg S. Duesberg, Mathias O. Senge

869 (Invited) Spectroscopic Metrics for Determining Size and Thickness of Liquid Exfoliated Nanosheets in Dispersion

Claudia Backes, Jonathan Coleman

870 In-Situ Electrochemical Functionalization of Reduced Graphene Oxide: Positive Lead Acid Electrode Case

Oluwaseun John Dada, Kan Kan Yeung, Matthew Ming-Fai Yuen

871 Novel Functionalized Graphene Oxide-Polymer Nanocomposite Anion Exchange Membranes

Omar Movil-Cabrera, Michael Garlock, John A Staser

872 Evaluating the Electrocatalytic Stability of N-Doped Graphene Nanosheets Used As a Counter Electrode for [Co(bpy)3]3+/2+ Based Porphyrin-Sensitized Solar Cells

Peng Zhai

873 Modulation of the Electrostatic and Quantum Capacitance of Few Layered Graphene through Plasma Processing

Rajaram Narayanan, Hidenori Yamada, Mehmet Karakaya, Ramakrishna Podila, Apparao M Rao, Prabhakar R Bandaru

874 Photo-Induced Effects in Graphene Channels When Interfaced with Quantum Dot Array

Xin Miao, Trivedi Samarth, Haim Grebel
Fabrication and Properties of Graphene/Polymer Transparent Conductive Composite Film

Beili Pang, Liyan Yu, Hongzhou Dong, Lifeng Dong

Covalently-Functionalized Graphene for Supercapacitor Application

Zhe-Fei Li, Jian Xie

(Invited) Self-Assembly on Graphene and 2D Materials

Steven De Feyter

Synthesis of Metal Nanoparticle Graphene Nanocomposites Using Atmospheric Pressure Microplasma Assisted Electrochemistry

Huin Ning Huang, Wei Hung Chiang

Graphene Nanoplatelets Embedded in HfO₂ for Mos Memory

Nazek El-Atab, Berk Berkan Turgut, Ali Okyay, Ammar Nayfeh

Controllable Synthesis of Metal Nanoparticle/Graphene Nanoribbon Composites

Shan-Yu Wang, Wei-Hung Chiang

The Characterization of CVD-Grown Graphene Modified with Nitrophenyl Groups Using the Diazonium Reduction Method

Elo Kibena, Marek Mooste, Jekaterina Kozlova, Margus Marandi, Leonard Matisen, Ahti Niilisk, Väino Sammelselg, Kaido Tammeveski

(Invited) Synthesis of Graphene and Oxo-Functionalized Graphene Derivatives

Siegfried Eigler

Covalent Functionalization of Graphene
Andreas Hirsch

Decorating of Graphene-Supported Palladium Nanoparticles with Nanostructured Tungsten Oxide Towards More Efficient Electrocatalytic Oxidation of Formic Acid

Weronika Ozimek, Iwona Agnieszka Rutkowska, Pawel J Kulesza

(Minvited) Microfluidic Wet Chemical Functionalization of Graphene

Michele Maggini, Simone Silvestrini, Enzo Menna, Hyacintha Lobo, Tommaso Carofiglio, Christian De Filippo, Nicola Vicentini

Mxene-Based Membranes As Novel Materials for Ion Separation

Chang E. Ren, Mohamed Alhabeb, Kelsey B. Hatzell, Zheng Ling, Khaled Mahmoud, Yury Gogotsi


Hiroki Ago

(Minvited) Microwave Chemistry Enabled Controlled Fabrication of Graphene with Tailored Structures for Designed Applications

Huin He

Chemically-Derived Graphene and Boron Nitride Heterostructures for Optoelectronic Applications

Sanjay Behura, Rou san Debbarma, Phong Nguyen, Theruvakkattil Sreenivasan Sreeprasad, Vikas Berry

Controllable Modification of Optical Properties of Graphene Oxide

Anton V Naumov, Charudatta Galande, Pulickel M Ajayan, R. Bruce Weisman
Formulation and Micro-Extrusion of High Graphene or Activated Carbon Loaded Slurries

Ling Li, Shaik Mohamed Imran, Leon Shaw

Electrical Properties of Controlled, Longitudinal Wrinkles on Graphene Produced Via Bacterial-Scaffold Shrinkage

Shikai Deng, Theruvakkattil Sreenivasan Sreeprasad, Vikas Berry

Eta6 chemical Modification of Epitaxial Graphene: An Avenue for Non Destructive Surface Functionalization and Atomic Layer Deposition

Songwei Che, Theruvakkattil Sreenivasan Sreeprasad, Phong Nguyen, Vikas Berry

The Nature of Graphene Surfaces As Determined from the Wettability Studies of Basal and Edge Planes

Dhiman Bhattacharyya, Tolga Depci, Shoeleh Assemi, Jan D Miller

Bottom-up Synthesis of Sub-10 Nm Semiconducting Graphene Nanoribbons with Smooth Armchair Edges on Ge(001)


Direct Formation of Monolayer Graphene on SI-Based Dielectrics

Phong Nguyen, Vikas Berry, Mike Seacrist

Aerogels: Graphene and Beyond

Marcus A. Worsley

Inkjet Printed Graphene Electrodes for High-Performance Supercapacitors

Hye-Ryeon Yu, Yu-Song Choi, Hae-Won Cheong
Biomimetic Selective Ion Transport through Graphene Oxide Membranes Functionalized with Ion Recognizable Peptides

Jeasun Nham, Sunho Kim, Yo Sub Jeong, Sung Hoon Ha, Chang Sun Lee, Yun Jung Lee

Electrochemical Behaviors of Pt-Decorated 3D Network Architectures Based on Graphene Oxide and Melamine for Fuel Cells

Seok Kim, Chang Yoon Song, Yongju Jung

Conducting Polymer Coated Exfoliated Graphene Sheet Electrodes for Lithium Rechargeable Cells

Seok Kim, Hee-Yoon Lee, Yongju Jung

Preparation and Photoelectrochemical Properties of Multilayered WS$_2$ Coated Titanium Dioxide Nanocomposites

Rongteng Lu, Kang Du, Guohua Liu, Changping Yang, Kaiying Wang

The Effect of Surface Energy on Atomic Layer Deposited Al$_2$O$_3$ Dielectric on MoS$_2$ crystals

Seonyoung Park, Hyuna Lee, Yura Choi, Woong Choi

Enhancing the Interfacial Bonding Strength of Carbon/Epoxy Composites Using Silane-Functionalized Graphene Oxides

Soo Young Kim, Chang Yeong Lee, Ji-Hun Bae, Tae-Yoon Kim, Seung-Hwan Chang

B07-Inorganic/Organic Nanohybrids for Energy Conversion

Nanocarbons/Battery/Energy Technology/Physical and Analytical Electrochemistry

(Invited) Photoexcited-State Dynamics in Organic Solar Cells Utilizing Diketopyrrolopyrrole-Based Copolymer Investigated By Transient Optical Spectroscopy

Hiroyuki Matsuzaki, Akihiro Furube, Ryuzi Katoh, Samarendra Pratap Singh, Prashant
Sonar, Evan Laurence Williams, Chellappan Vijila, Gomathy Sandhya Subramanian, Sergey Gorelik, Jonathan Hobley

906(Invited) Push-Pullp-Extendedporphyrins for Solar Energy Conversion

Hong Wang, Raja Gabadage Jinadasa, Alex Matus, Shouzhong Zou, Lei Kerr

907Factors Controlling the Reduction Rate of Dye Cation in Dye-Sensitized Solar Cells

Shogo Mori, Junichi Ogawa, Nagatoshi Koumura, Mutsumi Kimura

908(Invited) Impact of Indiumand Gallium Doping on the Photovoltaic Performance of CdSe Quantum Dot Hybrid Solar Cells

Viktor Chikan, Shenqiang Ren, Alec Kirkeminde, Randall Scott, Maogang Gong, Jennifer Totleben, Christopher Tuinenga, Christopher Lewis, Hongfu Luo, Daniel Higgins

909(Invited) Optimization of the Thin-Film Making Process for Highly Efficient and Stable Polymer Solar Cells with Zinc Oxide Nanoparticles

Akinobu Hayakawa, Takashi Sagawa

910(Invited) Morphological Control and Kinetics Characterization for Perovskite Solar Cells

Eric Wei-Guang Diau

911(Invited) Uniform Nanostructures for Highly Efficient and Reproducible Perovskite Solar Cells

Liyuan Han, Yongzhen WU, Xudong Yang, Han Chen, Ashraful Islam

912(Invited) Porphyrin and Rylene Based Dyes for Dye-Sensitized Solar Cells

Jishan Wu

913(Invited) Metallated and Metal-Free Molecular Materials for Light/Electrical Energy Conversion
Wai-Yeung Wong

914 (Invited) Singlet Exciton Fission in Molecular Solids

Michael R Wasielewski, Samuel W. Eaton, Eric A Margulies

915 (Invited) Photocurrent Enhancement of Quantum Dot Solar Cells By Plasmonic Metal Nanoparticles

Tetsu Tatsuma, Tokuhisa Kawawaki

916 (Invited) Scalable Fabrication of Moisture Resistant Perovskite Solar Cells

Mahendra Kumar Sunkara

917 (Invited) Solid-State Z-Scheme Photocatalysts for Overall Water-Splitting Under Visible Light

Hiroshi Irie

918 (Invited) Energy and Electron Transfer in Plasmonic Metal-Semiconductor Composite Photocatalysts

Nianqiang (Nick) Wu

919 (Invited) Visible to Near-IR Nanoplasmonics in Inorganic Nanoparticles

Toshiharu Teranishi

920 (Invited) Photocatalytic Conversion of CO2 By H2O As an Electron Donor over Ag/ZnGa2O4/Ga2O3

Kentaro Teramura, Zheng Wang, Saburo Hosokawa, Tsume Hiro Tanaka

921 Photosensitizing Properties of Thiolated Gold Clusters. Exploring Beyond Plasmonics
Yong Siou Chen, Prashant V Kamat

922 (Invited) A Visible Light-Active Titania Photocatalyst with Rhodium As a Built-in Redox Mediator

Bunsho Ohtani, Joanna Kunciewicz

923 (Invited) Photophysics of Hybrid Semiconductor Nanostructure in Photocatalytic Hydrogen Generation Applications

Masaru Kuno

924 (Invited) Tunable Electronic Energy Structure of ZnSe-AgInSe2 Solid Solution Nanoparticles for Solar Energy Conversion

Tsukasa Torimoto, Yusuke Douke, Hiroko Shibakawa, Susumu Kuwabata, Tatsuya Kameyama

925 (Invited) Deprotonation of a Multi-Nuclear Copper Complex for High Oxygen Reduction Reaction Activity Investigated By in Situ X-Ray Absorption Fine Structure Spectroscopy

Masaru Kato, Ken’ichi Kimijima, Mari Shibata, Hideo Notsu, Kazuya Ogino, Kiyoshi Inokuma, Narumi Ohta, Nobuhsa Oyaizu, Hiromitsu Uehara, Tadashi Ohba, Yohei Uemura, Satoru Takakusagi, Kiyotaka Asakura, Ichizo Yagi

926 (Invited) Improvement of Electron Transfer Rate at Metal/Organic Interfaces Using Pd Atomic Layers

Katsuyoshi Ikeda

927 (Invited) A Novel Diffusion Mechanism of Metal Ions at Ionic Liquid/Electrode Interface Studied By in-Situ Electrochemical XPS

Akihito Imanishi

928 Examining Proton Coupled Electron Transfer, Oxygen Reduction, and Anion Diffusion Using a Hybrid Bilayer Membrane
Andrew A. Gewirth, Edmund C. M. Tse, Christopher J. Barile

929 (Invited) In-Situ Raman Observation of Reaction Intermediates at Plasmon-Induced Water Oxidation Processes

Kentaro Suzuki, Satoshi Yasuda, Kei Murakoshi

930 (Invited) Plasmon-Induced Artificial Photosynthesis

Hiroaki Misawa

931 (Invited) A Unique Architecture Based on 1D Semiconductor/ Reduced Graphene Oxide/ Chalcogenide with Multifunctional Properties

Vaidyanathan Subramanian

932 (Invited) Fabrication of Micro- and Nanostructures for High Efficiency Energy Conversion By Using Anodic Porous Alumina

Hideki Masuda, Toshiaki Kondo, Takashi Yanagishita

933 (Invited) Electrochemical CO$_2$ Reduction By Violarite (FeNi$_2$S$_4$) As a Prebiotic Core of Carbon Monoxide Dehydrogenase

Ryuhei Nakamura

934 (Photo) Electrochemically Prepared Organic/Inorganic Hybrid Assemblies for Energy Conversion and Storage

Csaba Janáky, Krishnan Rajeshwar, Gergely F. Samu

935 Plasmon Enhanced Photovoltaic Performance in Graphene Oxide-TiO2 Composite Based Dye-Sensitized Solar Cells

Radhe Agarwal, Satyaprakash Sahoo, Ram S. Katiyar

936 Synthesis and Characterization of CdSe Quantum Dots for Photovoltaic Application
Mallika Dasari, Punit Kohli

937 Indium Tin Oxide and Silicon Nanocrystal Nanocomposite Grown By Aerosol Assisted Chemical Vapour Deposition

S O'Brien, K Linehan, H Doyle, A Kingsley, C Ashfield, B Frank, L Xie, K Leifer, P Thony, S Perraud, M E Pemble, I. M Povey

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938 Nucleotidic and Peptidic Multi-Porphyrinic Devices: When the Desired Conformation Is Determined By Chiral Flexible Linkers

Nathalie Solladie

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Janarthanan Jayawickramarajah, Hong Zhang, Gyan H Aryal, Mengyuan Zhu

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Victor Borovkov

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S. Holger Eichhorn

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Bernie J. Anding, Taiwo O. Dairo, L. Keith Woo

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Gerard Simonneaux, Paul Le Maux, Daniel Carrie, Soizic Chevance

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Venkataramanarao Govindan Anand, Tullimilli Yadagiri Gopalakrishna

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Fernando Fernández-Lázaro, Enrique Font-Sanchis, Desiré Molina, Angela Sastre-Santos

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Kentaro Tanaka

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Kazuyuki Ishii
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Nikolai V. Tkachenko, Kirsi Virkki, Maedeh Arvani, Kati Stranius, Alexander Efimov, Donald Lupo

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Giovanni Bottari, Beatriz Ballesteros, Javier Fernandez Collado, Tomas Torres

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Ayumi Watarai, Aya Ishikawa, Kenta Ono, Mikio Yasutake, Kazuchika Ohta

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Dirk M. Guldi

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1013 Porphyrins As Excellent Sensitizers for Dye-Sensitized Solar Cells

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1014 Efficient Combination of Porphyrins and Thiophene Derivatives for Photovoltaics

Fernando Langa, Pilar de la Cruz, Susana Arrechea, Ana Aljarilla

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New Push-Pull, Multicomponent Phthalocyanine-Based Photosensitizers for DSSCs

Gema de la Torre, Tomas Torres, Ettore Fazio, Ana López-Pérez

Molecular Engineering of Zinc Phthalocyanine Sensitizers for Efficient Dye-Sensitized Solar Cell

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Synergistic Interaction of Phthalocyanines and Semiconductor Quantum Dots for Advanced Co-Sensitized Solar Cells

Angela Sastre-Santos, Vicente M. Blas-Ferrando, Javier Ortiz, Rafael S. Sánchez, Maria Victoria González-Pedro, Fernando Fernández-Lázaro, Iván Mora-Seró

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Facile Synthesis of Meso-Aminoporphyrins and Their Oxidative Oligomerization

Ken-ichi Yamashita, Takeuchi Shouichi, Asano Motoko, Ken-ichi Sugiura, Kazuyuki Kataoka
Indium Porphyrin Frameworks: An Efficient Photocatalytic Platform for Organic Synthesis

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A New Binding Mode in the Dynamic Coordination Chemistry of Porphyrins

Bernard Boitrel, Stéphane Le Gac, Victoria Ndoyom

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Nanoscale Assembly & Chemical Modification of Carbon Nanotubes & Graphene

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Stijn F. L. Mertens, Kang Cui, Oleksandr Ivasenko, Kunal Mali, Michael Walter, Xinliang Feng, Klaus Müllen, Steven De Feyter

ORR Catalyst Based on Polypyrrole Nanowires with Electrochemically Immobilized Macrocycle

José-María Sansiñena, Jerzy Chlistunoff
Structure and Electrical Properties of the Selected Crown Ether-Derivatized Bis(2,2'-bithienyl)Methanes in Langmuir-Blodgett Films

Karolina Gawecka, Krzysztof R. Noworyta, Raghu Chitta, Francis D'Souza

Post-Assembly Transformations of Porphyrin-Containing Metal-Organic Framework (MOF) Films Fabricated Via Automated Layer-By-Layer Coordination

Monica C. So, M. Hassan Beyzavi, Rohan Sawhney, Osama Shekhah, Mohamed Eddaoudi, Salih S. Al-Juaid, Joseph T. Hupp, Omar K. Farha

Osmotic Pressure Effects Reveal a Specific Dehydration-Induced Hydrophobic Electron Transfer Structure Comprising Cytochrome C and Cytochrome C Oxidase

Koichiro Ishimori

Silicon Nanocrystals Coated By Porphyrins As Light-Harvesting Antennae

Paola Ceroni, Mirko Locritani, Andrea Fermi, Giacomo Bergamini, Yixuan Yu, Brian A. Korgel

Porphyrins and Other Chromophores with Antioxidant Substituents

Jonathan P. Hill, Shangbin Jin, Jan Labuta, Shinsuke Ishihara, Katsuhiko Ariga

New Scaffolds for the Delivery of Protease Sensitive Photosensitizer Prodrugs

Jordan Bouilloux, Nawal Sekkat, Andrej Babic, Norbert Lange

Heme Ruffling in Cytochrome c As a Mechanism to Control Electron Transfer

Paul M Champion

The Molecular Approach for Artificial Photosynthesis

Ally Aukauloo, Marie Sircoglou, Christian Herrero, Winfried Leibl, Annamaria Quaranta, Stephanie Cherdo, Sanae ElGhachtouli
Creating Artificial Photosynthetic Reaction Centres: Amphiphilic Porphyrin Protein Maquette Complexes

David L Officer, Pawel Wagner, Klaudia Wagner, Nicholas Roach, Rhys Mitchell, Christopher Hobbs, Anastasia Elliott, Holly van der Salm, Keith Gordon, Goutham Kodali, Bohdana Discher, Christopher Moser, P. Leslie Dutton

Structural Basis for Heme Transport By Hmut in Corynebacterium Glutamicum

Shigetoshi Aono

Origin of Reactivity Differences Between Heme and Nonheme Iron(III)-Hydroperoxo Complexes

Sam de Visser

Role of the Heme Axial Ligand on the Reactivity of High-Valent Oxo-Iron Porphyrin Intermediate

Hiroshi Fujii

Supramolecular Assembly of Helical Porphyrin Nanostructures on Single Stranded DNA Via Directional Hydrogen Bonds

Milan Balaz

The Dehaloperoxidase Paradox: How Nature Juggles Oxygen Transport, Peroxidase, and Peroxygenase Activities at a Single Heme Active Site

Reza Arman Ghiladi

The Heme in Bacterioferritin Is Crucial to Bacterial Iron Homeostasis

Mario Rivera, Huili Yao, Yan Wang, Sott Lovell

Can Heme Modes be Influenced By Protons?

Volker Schünemann
Porphyran-Functionalized Porous Silicon Nanoparticles for Photodynamic Therapy

Emilie Secret, Marie Maynadier, Audrey Gallud, Arnaud Chaix, Elise Bouffard, Magali Gary-Bobo, Nathalie Marcotte, Olivier Mongin, Khaled El Cheikh, Vincent Hugues, Melanie Auffan, Céline Frochot, Alain Morère, Philippe Maillard, Mireille Blanchard-Desce, M. J. Sailor, Marcel Garcia, Jean-Olivier Durand, Frédérique Cunin

Developments of Porphyrin Derivatives As Photosensitizers for Photodynamic Therapy

Hiroaki Horiuchi

Structure and Function Relationships of Heme-Based Gas Sensors and Heme-Redox Sensors

Toru Shimizu

From Hemoabzymes to Hemozymes: The Long but Fascinating Story of the Elaboration of New Biocatalysts for Selective Oxidation Reactions

Jean-Pierre Mahy, Frédéric Avenier, Wadih Ghattas, Jean-Didier Maréchal, Rémy Ricoux

Iron Porphyrin Carbenes As Intermediates in the Degradation of Toxic Compounds and Catalysis: Structures, Spectroscopic Properties, and Bonding

Rahul Khade, Wenchao Fan, Yan Ling, Liu Yang, Yong Zhang

Kinetic Studies of Reactions of Hydroxyporphyrins on Silicate Surface

Tadashi Mizutani

Optoelectronic Properties of Metal-Free Binary Porphyrin Nanostructures

Ursula Mazur, Bryan Borders, K W Hipps

Structure and Physicochemical Properties of Dibenzoporphyrene
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Corrosion

**1056** Effect of Tantalum Addition on Inclusion Formation and Pitting Corrosion Resistance of Super Duplex Stainless Steels

Makoto Kawamori, Junichiro Kinugasa, Yosuke Yonenaga, Yuko Fukuta, Masaki Shimamoto, Tomoko Sugimura, Toshiki Sato, Natsuki Nishizawa, Mamoru Nagao

**1057** Lab-Scale Studies on the Activation Energy Regarding the Surface Alteration of Super-Heater Materials in Contact with KCl at Elevated Temperatures

Jingxin Sui, Juho Lehmusto, Mikael Bergelin, Mikko Hupa

**1058** Refractory Metal Coatings on High Creep Strength Steel for Oxyfuel Coal Combustion

Ian Ivar Suni, Daniel Falola, Pooja Muralidas, Tomasz Wiltowski

**1059** Corrosion Studies on Graphite Encapsulated FeCo Nanoparticles Modified Black Chrome (MBC) Spectrally Selective Coatings

Belal Usmani, Vivek Vijay, Rahul Chhibber, Ambesh Dixit

**1060** Power Spectral Density Analysis of the Corrosion Potential Fluctuation of Stainless Steel 316L in Early Stages of Exposure to Caribbean Sea Water

Carlos Espinosa, Lucien Petrova Veleva, Juan Luis Lopez

**1061** Corrosion of Agr Fuel Pin Steel Under Conditions Relevant to Permanent Disposal

Christopher Anwyl, Colin Boxall, Richard Wilbraham

**1062** The Electrochemical Corrosion Behavior of High Strength Carbon Steel in H$_2$S-Containing Alkaline Brines
Ruishu Feng, Justin Beck, Ian Wolfe, Rosemary Cianni, Margaret Ziomek-Moroz, Serguei N. Lvov

Corrosion Behavior of 13Cr Casing in Cement Synthetic Pore Solution

Arupananda Sengupta, Justin Beck, Haining Zhao, Rich S. Schatz, Margaret Ziomek-Moroz, Serguei N. Lvov

Rebar Corrosion Due to Chlorides in the Presence of Different Cations

Krishneel Kumar Sharma, Ravin N Deo, Kabir A Mamun, Ajal Kumar

Localized Corrosion of Carbon Steel in Simulated Concrete Pore Solution: Influence of Chloride Ion and Temperature

Samin Sharifi-Asl, Bruno Kursten, Digby D Macdonald

Electrochemical, Spectroscopic and Quantum Chemical Calculation Studies on Some Quinoxaline Derivatives As Corrosion Inhibitors for Mild Steel in Hydrochloric Acid Medium

Lukman Olawale Olasunkanmi, Abolanle Saheed Adekunle, Mwadham M Kabanda, Eno E Ebenso

On the Mechanism of Corrosion in Presence of Organic Acids

Aria Kahyarian, Srdjan Nesic

Electrochemical Measurement and Modeling of Corrosion Inhibition of Ternary Mixtures of Homologous Surfactants

Yakun Zhu, Michael L Free

Atomistic Insights into the Interaction of Copper Oxide Surfaces with Chloride Ions in Aqueous Media

Badri Narayanan, Sanket Deshmukh, Shriram Ramanathan, Subramanian K. R. S. Sankaranarayanan
1070 Evaluation of Dezincification Corrosion of Brass By Electrochemical Impedance

Yoshinao Hoshi, Kozue Tabei, Isao Shitanda, Masayuki Itagaki

1071 Real-Time Nanogravimetric Monitoring of Corrosion in Radioactive Environments

Ioannis Tzagkaroulakis, Colin Boxall

1072 Corrosion Behaviour of Agr Simfuels

Nadya Rauff-Nisthar, Colin Boxall, David Hambley, Zoltan Hiezl, Cristiano Padovani, Richard Wilbraham

1073 Study of Cu Bimetallic Corrosion and Its Inhibition Strategy for Cu Interconnect Application Using Micro-Pattern Corrosion Screening

Oliver Chyan, Arindom Goswami, Simon Koskey, Kyle Yu

1074 Copper Nanoparticles Effect on the Corrosion Behavior of Different Types of Nickel-Based Super Alloys

Aboubakr Moustafa Abdullah, Adel M. A. Mohamed, Mostafa H Sliem

1075 Phthalocyanine Based Advanced Corrosion Resistant Coatings By LbL Technique

Yonca Yakut, Fevzi Çakmak Çebeci

1076 Phthalocyanine Based Anti-Corrosive Materials

Argun T Gokceoren, Yasin Arsalanoglu, Ekrem Kaplan

1077 Modification of Bbituminous Coatings to Prevent Stress Corrosion Cracking of Carbon Steel

Vasiliy Eduardovich Ignatenko, Marina Alekseevna Maleeva, Maxim Andreevich Petrunin, Alexey Viktorovich Shapagin, Anna Anatolevna Sherbina
1078 The Measurement of Transient pH Values Near the Surface during the Pitting Corrosion of AISI 1020 Steel
Alexsandro Mendes Zimer, Marina Medina da Silva, Lucia Helena Mascaro, Ernesto Chaves Pereira

1079 Electrochemical Impedance Spectroscopy Investigations of Stainless Steels in Presence of Corrosion Inhibitors
Josimar Ribeiro, Roberta Rossi Moreira, Thiago Freitas Soares

1080 Microscopic Surface Studies of Modified Nickel-Based Superalloy 718 after Corrosion Fatigue in Simulated Sour Environment
Margaret Ziomek-Moroz, Jeffrey A. Hawk, Keith Collins, Kyle Rozman, Ramgopal Thodla, Feng Gui

1081 Semiconductive Properties of Passive Films on Carbon Steel Rebar in Highly Alkaline Environments
Jon Williamson, Burkan Isgor

1082 Effect of Perchlorate Ions Concentration on Passive State of Iron
Natalia Nafikova, Svetlana Kaluzhina, Maria Petrova

1083 Corrosion Monitoring of Reinforcing Steel in Concrete By Electrochemical Impedance Spectroscopy
Yoshinao Hoshi, Masanori Soukura, Isao Shitanda, Masayuki Itagaki, Yoshitaka Kato

1084 Inhibition Effect of Some Benzotriazole Derivatives on Carbon Steel in 1M H²SO₄ Medium
Florina Branzoi, Catalina Pacuretu, Roxana Branzoi

1085 Effect of Zinc Diffusion Distribution on Corrosion Behavior of Brazed Tube/Fin Assemblies of Aluminum Automotive Condensers
Juan C. Guia-Tello, Maximo A. Pech-Canul, Martin I. Pech-Canul, Jorge A. Gorocica-Diaz, René Arana-Guillén, José Puch-Bleis

1086 The Evaluation of Corrosion in Construction Materials

Andres Marquez

1087 Assessing Concurrent Uniform Corrosion of Aluminum Alloys As a Function of Temperature, pH, Time, and Chloride Ion Concentration

I-Wen Huang

1088 The Relation Between the Microstructure and Corrosion Behavior of Aluminum Alloy AA2024-T3

Han Bang Yi

1089 Comparison of the Corrosion Behavior of Modern and Traditional High Strength Aluminum Alloys

Sara Nicole Grieshop, Alan Curran, R. Buchheit

1090 Electrochemical Investigation of the Corrosion Behavior and Galvanic Compatibility Between Microchannel Tubes and Fins of an Aluminum Automotive Condenser

Maximo A. Pech-Canul, Marbella Echeverría, Martin I. Pech-Canul, Julio C. Aguilar-Cordero, Jorge A. Gorocica-Diaz, René Arana-Guillén, José Puch-Bleis

1091 Correlation Between Amount of Bound Water and Stability of Anodic Oxide Film on Aluminum

Takumi Haruna, Takao Ikeda, Akio Nishimoto

1092 Corrosion Inhibition of TCP-Coated AA2024-T3 during Exposure to so2 Atmospheric Testing

Greg M Swain, Liangliang Li, Brandon Whitman
The Role of Chromium (III) in the Corrosion Inhibition of AA2024-T3 By Trivalent Chromium Process Coatings
Greg M Swain, Brandon Whitman

Aluminum Corrosion Mitigation in Alkaline Electrolytes By Hybrid Inorganic/Organic Inhibitor System for Power Sources Applications
Danny Gelman, Itay Lasman, Sergey Elfimchev, David Starosvetsky, Yair Ein-Eli

Multifunction Nanostructured Coatings
Mario G. S. Ferreira, Joao Tedim, Mikhail L. Zheludkevich

The Role of Self-Corrosion during the Dissolution of Galvanically Coupled Magnesium
John Harb, Dila Banjade

Microstructure and Electrochemical Characterizations of Permanganate Conversion Coating on AZ31 Magnesium Alloy
Shun-Yi Jian, Chao-Sung Lin

Control the Corrosion of Magnesium for Implant Application By Hydrothermally Deposited Biodegradable Calcium Phosphate Coating
Sara Kaabi Falahieh Asl, Sandor Nemeth, Ming Jen Tan

A Citrate-Based Coating System for AZ31 Magnesium Alloys
Yu-Ren Chu, Chao-Sung Lin

Corrosion Effects of Electrolytic Biocomposites Coated Magnesium on Endothelial Cell Viability
Shiow Kang Yen, Ruei Cheng Lin, Ming Jia Wang
Protein Interactions with Corroding Metal Surfaces

Sannakaisa Virtanen

Growth of TiO$_2$ Nanotube Layers on Ti Substrates with Different Microstructures

Min Su Kim, Shota Yamamoto, Hiroaki Tsuchiya, Shinji Fujimoto

Effects of High-Energy Electro-Pulsing Treatment on Microstructure and Corrosion Behavior of Ti-6Al-4V Alloy

Xiaoxin Ye, Guoyi Tang

C02-High Temperature Corrosion and Materials Chemistry 11

High Temperature Materials/Corrosion

Scaling Kinetics and Scale Microstructure of Chromia Scales Formed on Ni25Cr Model Alloy during Oxidation in H$_2$O-Containing High and Low pO$_2$ Test Gas at 1000°C

Michael Hänsel, Vladimir Shemet, Ivan Kijatkin, Dirk Simon, Bronislava Gorr, Hans-Jürgen Christ

Silicon Effects on the Corrosion of Ferritic and Austenitic Chromia Forming Alloys in Wet and Dry CO$_2$

Thuan Dinh Nguyen, Jianqiang Zhang, David John Young

(Invited) Cr Volatility, Protective Coatings and SOFC Interconnect Testing

Jan Froitzheim, Patrik Alnegren, Hannes Falk-Windisch, Jan Gustav Grolig, Rakshith Sachitanand, Mohammad Sattari, Jan-Erik Svensson

(Invited) Oxidation Mechanisms of Alloys for Advanced Ultra-Super Critical Steam Applications

Gordon R Holcomb
The Role of Grain Boundaries during the Initial Oxidation Stages in Cu-Added Austenitic Stainless Steel at 700 °C Studied at the Atomic Scale

Ju-Heon Kim, Byung Kyu Kim, Dong-Ik Kim, Pyuck-Pa Choi, Dierk Raabe, Kyung-Woo Yi

Effect of Sulphur on Fe-20Cr-(Mn, Si) Alloy Corrosion in CO₂-H₂O Gases at 650°C

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

(Invited) Design Against Hydrogen and Corrosion By Combining Multiscale Modeling and Surface-Sensitive Experiments

Bilge Yildiz

The Time and Temperature Dependence of AISI 316L Corrosion in Chlorosilane Environments

Joshua L Aller, Kevin Ellingwood, Paul E. Gannon

The Effect of Pre-Oxidation on High-Temperature Corrosion Resistance of Superheater Steels

Juho Lehmusto, Patrik Yrjas, Mikko Hupa

Dimensionless Analysis for Predicting High Temperature Alloys Corrosion in Molten Salt Systems for Concentrated Solar Power Systems


Different Vanadium Compounds Ash Corrosion of Boilers Using Heavy Fuel Oil

Xabier Montero, Mathias C Galetz

Accelerated Corrosion of Candidate Materials for High Temperature Power Plants
David Rodriguez, Dev Chidambaram

1116 High-Temperature Corrosion Characteristics of Nano-Structured Coatings in Secondary System of Nuclear Power Plants

Seung Hyun Kim, Jeong Won Kim, Ji Hyun Kim

1117 Formation of NiAl$_2$O$_4$ Layer on High Temperature Oxidation of Ni/Al$_2$O$_3$ Nanocomposites

Makoto Nanko, Daisuke Maruoka

1118 Effect of Boron Addition on Oxide Scale Formation of Ni-Base Superalloys

Wojciech Nowak, Aleksandra Jałowicka, David John Young, Dmitry Naumenko, Willem J. Quadakkers

1119 Measurements of Gas Shielding Factors for Cu, Fe, Ni

Torsten Markus, Florian Thaler, Michal Schulz, Holger Fritze, Christian Stenzel

1120 The Vaporization Coefficient of Silica

Nolan Ingersoll, Gustavo Costa, Nathan S. Jacobson

1121 Characterization and Simulation of Residual Stress Generation during the Oxidation of Silicon Carbide

Ramanathan Krishnamurthy, Pavel Mogilevsky, Craig Przybyla, Triplicane Parthasarathy, Randall Hay

1122 Boria Fluxing of SiC in Ceramic Matrix Composite Aeropropulsion Applications

Bohuslava McFarland, Elizabeth Opila

1123 High Temperature Oxidation of Mo-Si-B Alloys and Coatings
John Perepezko, Travis Sossaman, Patrick Ritt

1124 Hot Corrosion of SiC/BN/SiC Composites

Elizabeth J. Opila, Joseph Hagan

1125 Composition Effects on TBC/Silicate Melt (CMAS) Interaction Dynamics

David L Poerschke, Talia L Barth, Carlos G Levi

1126 Reaction Mechanism of CaO-MgO-Al$_2$O$_3$-SiO$_2$ (CMAS) Corrosion in Pyrochlore Thermal Barrier Coatings

Honglong Wang, Zhizhi Sheng, Victor Agubra, Xingxing Zhang, Emily Tarwater, Jeff W. Fergus

1127 (Invited) Thermochemistry of Redox Active Oxides and Its Relevance to Solar Fuel Generation

Sossina M Haile

1128 Isothermal Pressure-Swing Cycling of Strontium Doped Lanthanum Manganite Oxides for Fuel Production

Michael Joseph Ignatowich, Tim Davenport, Chih-kai Yang, Sheila Handler, Yoshihiro Yamazaki, Stephen Wilke, Sossina M Haile

1129 Point Defect Equilibria and Diffusion in Siderite (FeCO$_3$) Passive Film Studied Using Density Functional Theory

Mostafa Youssef, Bilge Yildiz

1130 (Invited) Stability and Defect Chemistry of High-Temperature Piezoelectric Single Crystals

Holger Fritze
A Thermodynamic Study of Evaporation of the CaO-MgO-AI₂O₃-FeO-SiO₂ System Melts

Sergey I. Shornikov


Changyong Park, Jongjin Kim, Chibum Bahn, Hawoong Hong, Taeho Kim, Seung-Hyun Kim, Binyang Hou, Seungbum Hong, Ji-Hyun Kim

E01-Metallization of Flexible Electronics

Electrodeposition/Electronics and Photonics

(Invited) A Wet Process of Copper Wiring on Surface Modified Polyimide Film By Aminosilanes

Tetsuya Osaka, Tokihiko Yokoshima, Hiroki Kagawa, Takuma Hachisu, Atsushi Sugiyama

Polymer Supported and Freestanding Transparent Electrodes Produced By Ink-Jet Printing and Electrodeposition

Andrea Vittorio Oriani, Marco Alberto Spreafico, Paula Cojocaru, Alessio Marrani, Francesco Triulzi, Marco Apostolo, Luca Magagnin

Gold/ Polypyrrole Multilayer Electrode for Biochip Applications

Rakefet Ofek Almog, Yelena Sverdlov, Sefi Vernick, Yosi Shacham-Diamand

(Invited) One-Dimensional Ammonium Nickel Phosphate Nanorods for the Fabrication of High-Performance and Flexible Symmetric Pseudocapacitors

Kenneth I. Ozoemena, Kumar Raju

Direct Copper Electroplating on Polyimide Film By Using Ni As Barrier and Conductive Interlayer
Po-Fan Chan, Shang-En Huang, Wei-Ping Dow
1138 Rapid Prototyping of Multi-Scale Electrodes on Polymer Surfaces

Christine Gabardo, Leyla Soleymani
1139 SAM Assisted Nickel-Boron Electroless Metallization of PDMS

Alireza Molazemhosseini, Simona Ieffa, Pasquale Vena, Luca Magagnin
1140 Fabrication of Mechanically-Robust Cu Films on Flexible Substrates Using Electron Beam Irradiation

In-Suk Choi, Young-Chang Joo, So-Yeon Lee, Ji-Hoon Lee
1141 Electroless Plating of Pla and Petg for 3D Printed Flexible Substrates

Roberto Bernasconi, Gabriele Natale, Marinella Levi, Luca Magagnin
1142 Nano Necklace Formed By Electroless Deposition of Metal on Polymer Nanofiber for Flexible Transparent Conducting Films

Seimei Shiratori, Issei Takenaka, Kyuhong Kyung, Roberto Bernasconi, Luca Magagnin

Changyol Yang, Sungkuk Yu, Bongyoung Yoo
1144 (Invited) Solution-Processing Routes to Conductive Ultrathin Films of Ruthenium Dioxide...on Any Substrate

Debra R. Rolison, Irina R. Pala, Martin D. Donakowski, Christopher N. Chervin, Jeffrey W. Long, Rhonda Stroud, Todd Brintlinger, Xiao Liu

E02-Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth
Electrodeposition/Battery/Physical and Analytical Electrochemistry

1145 Additive Effects on Surface Dynamics and Growth at the Metal-Electrolyte Interface

Olaf M. Magnussen

1146 In Situ Vibrational Spectroscopy of Electrode Interfaces

Steven Baldelli

1147 In Situ Stress Measurements Using Cantilever Curvature: The Influence of Additives on Growth Stress

Gery R. Stafford, Matthew R. Fayette, Mark D Vaudin

1148 In Situ Scanning Tunneling Microscopy Imaging Self-Assembled Monolayers of Mercaptoacetic Acid and Cupric Ion on Au(111) Electrode

Shuehlin Yau

1149 3-Mercapto-1-Propanesulfonate for Cu Electrodeposition Studied By in Situ Shell-Isolated Nanoparticle-Enhanced Raman Spectroscopy (SHINERS)

Kevin Gary Schmitt, Ralf Schmidt, Frank von Horsten, Grigory Vazhenin, Andrew A. Gewirth

1150 Superconformal Film Growth: Insights Provided By Seiras

Thomas P. Moffat, Guokun Liu, Shouzhong Zou, Liang-Yueh Ou Yang, Daniel Josell, Chang Hwa Lee, Lee Richter

1151 Texture Evolution during Zinc Electrodeposition

Christine Orme, Jayme Keist, Paul K Wright, Jim W Evans

1152 Direct Observation of Li Dendrite Growth through Operando electrochemical (S)TEM
B. Layla Mehdi, Eduard Nasybulin, Jiangfeng Qian, Chiwoo Park, David Welch, Hardeep Mehta, Wesley A Henderson, Wu Xu, Chongmin Wang, Jun Liu, James E Evans, Ji-Guang Zhang, Karl T Mueller, Nigel D Browning

In-Situ Scanning Electron Microscope Observations of Lithium Nucleation and Growth at Solid/Solid Interfaces for All-Solid-State-Lithium Battery

Munekazu Motoyama, Makoto Ejiri, Yasutoshi Iriyama

Three Dimensional Modeling of Dendrite Growth in Rechargeable Lithium Metal Batteries

Asghar Aryanfar, Daniel J Brooks, Tao Cheng, Boris V Merinov, William A Goddard, Agustin J Colussi, Michael R Hoffmann

High Rate and Stable Cycling of Lithium Metal Anode

Jiangfeng Qian, Wesley A Henderson, Wu Xu, Priyanka Bhattacharya, Mark H Engelhard, Oleg Borodin, Ji-Guang Zhang

Additives for Suppressing Zinc Dendrites in Rechargeable Zinc Metal Batteries

Stephen J Banik, Rohan Akolkar

Electrodeposited Zinc Planarized By Bismuth at 3ppm Concentration: A Mechanistic Study


Effect of Additive on the Formation of Cusn Alloy Nano-Trees Formed with DC Electroplating

Shoso Shingubara, Tomohiro Shimizu, Naoto Kaneko, Yoshihiro Tada

Gravitational Level Effects on Coupling Phenomena Between Morphological Variations of Electrodeposited Film of ZnO and Mass Transfer Rates
Hiroshi Osaki, Takao Wakatsuki, Takayuki Homma, Yasuhiro Fukunaka

1160 Microvia and through-Hole Filling By Electroplating for Electronic Circuit Fabrication

Wei-Ping Dow

1161 Theory of Co-Adsorption and Its Application to Copper Superfilling

Romy Liske, Robert Krause, Benjamin Uhlig, Lukas Gerlich, Sascha Bott, Marcus Wislicenus, Axel Preusse

1162 Stochastic Modeling of Organic Additives in Cu Electroplating

Liu Yang, Aleksandar Radisic, Johan Deconinck, Philippe M. Vereecken

1163 Smart Polymers for Future Damascene Applications: Combining Bottom-up and Levelling Capabilities

Hai Nguyen, Florian Stricker, David Lechner, Julien Furrer, Valentine Grimaudo, Pavel Moreno-García, Andreas Riedo, Maike Neuland, Marek Tulej, Peter Wurz, Peter Broekmann

1164 Microvia Filling in an Acidic Copper Planting Bath with Insoluble Anodes

CHU-CHI LIU, Wei-Ping Dow

1165 Evaluating the Performance of 2-Mercapto-5-Benzimidazolesulfonic Acid in Controllable Electro-Healing Cracks in Nickel

X.G. Zheng, Y.N. Shi, K. Lu

1166 Utilizing Inhibitor Molecules in Low Temperature CVD to Control Thin Film Conformality, Nucleation, and Surface Morphology

John Robert Abelson
1167 Using Graphene As a Conducting Layer and Barrier Layer for High Aspect Ratio through Silicon Via Filling

Wei-Yang Zeng, Shih-Cheng Chang, Wei-Ping Dow

1168 The Practical Method for Monitoring Additives in Copper Electroplating Baths Using the Chronopotentiometry Technique

Masahiro Kosugi, Toshikazu Okubo

1169 Surfactant-Templated Nanoporous Metal Films and Powders


1170 Impact of Thiourea Addition on Morphological and Structural Characteristics of Electrodeposited ZnO Thin Films Using Nitrate Aqueous Solutions

Serena Gallanti, Elisabeth Chassaing, Daniel Lincot, Negar Naghavi

1171 Template-Morphology Dependent Deposition of Ferromagnetic Metals

Klemens Rumpf, Petra Granitzer, Peter Poelt, Herwig Michor

1172 In Situ Ftirs Study of Glycine Effects on Cobalt Electrodeposition on Gold Electrodes

Renan A. J. Critelli, Paulo C. Isolani, Paulo T. A. Sumodjo

1173 Control of the Magnetism of Iron Oxide Nanoparticles By Growth Parameters within Nanostructured Silicon

Petra Granitzer, Klemens Rumpf, Peter Poelt, Michael Reissner

1174 Improving Dispersion Plating of Nickel in Chloroaluminate Ionic Liquids

Jonathan Joseph Coleman, Christopher Alan Apblett, Plamen Atanassov
1175 Orientation Control of Zeolite Films Using in Situ Electrochemical Method in Ionic Liquids

Rui Cai, Tongwen Yu, Wenling Chu, Yanchun Liu, Weishen Yang

1176 Effect of Plating Additives on Microstructure and Properties of Electrodeposited Ni-Fe Alloy Thin Film

Mao-Chun Hung, Wei-Ping Dow

1177 Study on Thermal Stability of Ag-Coated Cu Powders Fabricated By Electrochemical Methods

Nali Seo, Kai Zhuo, Yu-Seon Park, Jeong-Hwan Park, Yung-Seok Roh, Chan-Hwa Chung

1178 Using Azo As a Conductive and Adhesive Liner for through Glass Vias Filling By Cu Electroplating

Un-An Li, Chia-Wen Cheng, Po-Fan Chan, Wei-Ping Dow

1179 Preparation of Surfaces of Germanium and Kovar Substrates By Electroplating for Soldering

Yasin Çetin, Ishak Karakaya, Gökhan Demirci, Metehan Erdogan, Mustafa Serdal Aras

1180 Platinum Monolayer Perfection with the Assistance of Citric Acid in Galvanic Displacement Reaction

Minhua Shao, Stanko R Brankovic

1181 Modeling of Growth and Morphology in Synthesis of Nanoparticles and Nanostructures

Vladimir Privman, Vyacheslav Gorshkov

1182 Mechanistic Investigation into the Effect of Different DNA Sequences on the Shape and Morphology of Nanoparticles
Nitya Sai Reddy Satyavolu, Li Huey Tan, Yi Lu

1183 Modulating Strain and Charge Transfers in Low Dimensional Catalysts through Interface Design and Templated Growth

Faisal M Alamgir, Adam Vitale

1184 Citrate Effect on Reaction Kinetics of Pt Deposition on Pd(hkl) Via Surface Limited Redox Replacement of Cu UPD Monolayer

Stanko Brankovic, Qiuyi Yuan, Minhua Shao

1185 H₂-Evolution Assistd Pt-Thin Film Deposition on Non-Noble Metal Surfaces

Jan Nicolas Schwämmlein, Hany El-Sayed, Hubert A Gasteiger

1186 Impact of the Synthetic Route on the De-Alloying of Electrodeposited Cu₃au Alloys

Jiaxin Xia, Stephen John Ambrozik, Cameron Crane, Jingyi Chen, Nikolay Dimitrov

1187 Progress in Pulse Plating Atomic Layer Deposition (PP-ALD)

John Lewellen Stickney, Justing Czerniawski, Nhi Bui, Xiaoyue Zhang, Sheng Shen

1188 Self-Terminated Electrodeposition Reactions

Thomas Moffat, Yihua Liu, Sang Hyun Ahn, Rongyue Wang, Dincer Gokcen, Carlos Hangarter, Ugo Bertocci

1189 Prospectof the Pt/C Catalyst for Fuel Cells Prepared By a Nano Particles Formation Pulse Arc Plasma Source

Yoshiaki Agawa, Satoshi Satoshi, Hiroyuki Tanaka, Shigemitsu Torisu, Akihiro Tsujimoto, Narishi Gonohe

1190 Effect of Oxygen on Working Life of Additives and Improved Design of Anode Bag in Copper Electroplating
Chien-Hsing Hsu, Jia-Feng Hsu, Wei-Li Yuan

1191 Screen-Printed Silver Source-Drain Electrodes for a Solution-Processed Zinc-Tin-Oxide Thin-Film Transistor

Young-Jin Kwack, Woon-Seop Choi

1192 Electrohydrodynamic (EHD) Jet Technique for Indium-Zinc-Oxide (IZO) Thin-Film Transistors

Young-Jin Kwack, Woon-Seop Choi, Hunho Kim

1193 Effect of Tin Oxide Additive on the Suppression of Dendrite Growth of Zinc Electrodeposits

Hong-Ik Kim, Heon-Cheol Shin

1194 Coatings Based on Conducting Polymers and Functionalized Carbon Nanotubes with Anionic Surfactants Obtained By Electropolymerization

Florina Branzoi, Viorel Branzoi, Zoia Pahom

1195 Ultrathin Pd Films on PBI-HFA Membranes for Selective Hydrogen Separation

Sun Hee Choi, Da Hye Kim, Chang Won Yoon, Hyung Chul Ham, Hyoung-Juhn Kim, Suk Woo Nam, Tae Hoon Lim, Jonghee Han

F02-Electrochemical Engineering General Session

Industrial Electrochemistry and Electrochemical Engineering

1196 A Comparison of Electrochemical ORR Activity of Boron in Graphene Oxide; Incorporated As a Charge-Adsorbate and/or Substitutional p-Type Dopant

Ehsan Pourazadi, Andrew I. Minett, Andrew T. Harris

1197 Study of Graphene FOAM Characteristics: Adsorption and Electrochemical Regeneration
Farbod Sharif, Edward Roberts

1198 Investigation of Zinc Whisker Growth from Electrodeposits Produced Using an Alkaline Non-Cyanide Electroplating Bath

Liang Wu

1199 Electrodeposition of PbO$_2$ on Reticulated Vitreous Carbon for Organic Electrooxidation

Luis Augusto Martins Ruotolo, Rosimeire Martins Farinos

1200 Structural Properties of Electrolytic Nickel Deposits Produced By Direct, Pulse and Pulse Reverse Currents in the Organic-Free Watts Electrolytes

Burcu Arslan, Ishak Karakaya, Metehan Erdogan, Mustafa Serdal Aras, Gökhan Demirci

1201 Water Treatment By Adsorption with Electrochemical Regeneration

Edward Roberts, Nigel Brown, Syed Nadir Hussain, Hussain Mohammad, Alastair Martin

1202 Electrocoagulation for the Treatment of Oil Sands Tailings Water

Paul Panikulam, Edward Roberts, Maen Husein

1203 Electrochemical Oxidation of Lignin to Value-Added Chemicals

Christian Arroyo-Torres, Omar Movil-Cabrera, John A Staser

1204 Integrated Electrocatalytic Processing of Levulinicacid and Formic Acid to Produce Biofuelintermediate Valeric Acid

Yang Qiu, Le Xin, David J Chadderdon, Wenzhen Li

1205 (Industrial Electrochemistry & Electrochemical Engineering Division New Electrochemical Technology (NET) Award) Development of Large Scale Commercial PEM Electrolysis

1206 **Industrial Electrochemistry & Electrochemical Engineering Division H. H. Dow Memorial Student Achievement Award** An Investigation of the Growth Mechanism of Coal Derived Graphene Films

Santosh H. Vijapur, Dan Wang, David C. Ingram, Gerardine G Botte

1207 Manufacturing of Low Catalyst Loading PEM Electrolyzer Meas Using Reactive Spray Deposition Technology

Haoran Yu, Nemanja Danilovic, Shuai Zhao, Yang Wang, Chris Capuano, William E Mustain, Katherine E Ayers, Radenka Maric

1208 Plasma Electrochemistry: How to Control the Size and Size Distribution of Au Nanoparticles

Seung Whan Lee

1209 Thorium-234 Electrodeposition Using Ionic and Aqueous Uranyl Solutions

Adonis Marcelo Saliba-Silva, Marcelo Linardi, Lucas Dos Santos Rocha, Michelangelo Durazzo

1210 Assessing the Effects of Specific and Electro-Induced Sorption in an Asymmetric Capacitive Deionization Device Operating in Continuous Cycles

Julio Jose Lado, Rodolfo Ernesto Pérez-Roa, Jesse Wouters, Cade Federspill, M. Isabel Tejedor-Tejedor, Marc Arlen Anderson

1211 Understanding Capacitive Deionization Performance By Comparing Its Electrical Response with an Electrochemical Supercapacitor

Enrique Garcia - Quismondo, Cleis Santos, Jesús Palma, Marc Arlen Anderson

1212 Effect of the Potential of Zero Charge Location on the Electrosorption Performance of a Capacitive Deionization Cell
Xin Gao, Ayokunle Omosebi, James Landon, Kunlei Liu

1213 Improving Electrosorption Performance in Membrane Assisted Capacitive Deionization Cells Using Asymmetric Electrodes Configuration

Ayokunle Omosebi, Xin Gao, James Landon, Kunlei Liu

1214 Impact of Improvements in Energy Efficiency in Capacitive Deionization Systems

James Landon, Xin Gao, Ayokunle Omosebi, Kunlei Liu

1215 Electrochemical Nuclear Waste Management Using Ionic Liquids: Controlled Electrodeposition of Fission Platinoids

Elizabeth J Biddinger, Sujan Shrestha

1216 Ruthenium Volatilisation in Nuclear Waste Systems - Studying the Baseline Thermodynamics of Ru(III)

Sukhraaj Kaur Johal, Colin Boxall, Colin Gregson, Carl Steele

1217 Electrochemical Separation and Purification of Astatine for Radiopharmaceutical Application

Selvarani Ganesan, Matthew J O'Hara

1218 Structural and Optical Characterization of Electrodeposited Black Chrome-Graphite Encapsulated FeCo Nanoparticles Composite Solar Selective Coatings

S Harinipriya, Belal Usmani

1219 Electrophoretic Mobility and Deposition in High Pressure High Temperature Boiler Environments

Balaji Raman, Derek M. Hall, Stephen J Shulder, Serguei N. Lvov

1220 Effect of Temperature on Characteristics of Pt/C Gas-Diffusion Electrode Used in Electrodeposition of Manganese Dioxide for Saving Energy
Huimin Meng, Jing Tang

1221 Microstructure and Electrochemical Properties of Agglomerated Alpha Nickel Hydroxide

Li-Hsing Kao, Kan-Sen Chou

1222 Co-Generation of Fuels and Chemical in Mining Processes

Alan West, Scott Banta

1223 Recovery of Erbium Metal Via Electrowinning in Room Temperature Ionic Liquids

Leo J. Small, David R. Wheeler, Timothy N. Lambert, Ryan F. Hess

1224 Novel Titanium Electrowinning Process Using Specialized Segmented Diaphragms

Chang-Jung Hsueh, Mirko Antloga, Craig Virnelson, Uziel Landau, Mark DeGuire, Rohan Akolkar

1225 Graphite Anodes for Electroreduction of Uranium Oxide

Perry Motsegood, James Willit, Mark A. Williamson

1226 Recovery of Rare Earth Metals By Electrodeposition from Ionic Liquids

Keith J. Stevenson, Daniel Redman

1227 Effect of Bath Composition on the Composition and Morphology of Electrodeposited Ag-Cu Alloys

Ishak Karakaya, Fulya Ulu, Gökhan Demirci, Metehan Erdogan

1228 Cu Electro-Redox on the Surface of Single-Walled Carbon Nanotube Network

Zhiyuan Ou, Jinhui Li
1229 Investigation of Dy Permeation through Dy Alloy Diaphragm Using Molten Salt Electrolysis

Hirokazu Konishi, Tetsuo Oishi, Toshiyuki Nohira, Hideki Ono, Eiichi Takeuchi

1230 In-Situ Nanoscale Investigation of Calcium Sulfate Nanoparticles Immersed in Deionized Water

Kun He, Anmin Nie, Constantine Megaridis, Tolou Tolou Shokuhfar, Yu-Peng Lu, Reza Shahbزian-Yassar

1231 Importance of Polymer Backbone Stability of Anion Exchange Polymer Electrolytes

Yu Seung Kim, Kwan-Soo Lee, Yoong-Kee Choe, Cy Fujimoto

1232 Mechanically Stable Poly(aryl ether) Anion Exchange Membranes for Alkaline Applications

Lihui Wang, Christopher George Arges, Min-suk Jung, Vijay K Ramani

1233 Degradation of Anion Exchange Membranes (AEM) and Solubilized AEM Binders in Solid-State Alkaline Water Electrolyzers

Javier Parrondo, Min-suk Jung, Zhongyang Wang, Chris Capuano, Katherine E Ayers, Vijay K Ramani

1234 New High Conductivity Membranes for Alkaline Electrolyzers

Qingmei Chen, Zengcai Liu, Robert Kutz, Hongzhou Yang, Richard I Masel, Krzysztof A. Lewinski, Marina Kaplun, Tyler Scott Matthews

1235 Conductivity and Mechanical and Thermal Stability of Polyelectrolyte-Functionalized Anion Exchange Membranes

Allen Rodriguez-Silva, Omar Movil-Cabrera, John A Staser

1236 Non-Noble Metal Catalysts As Oxygen Depolarized Cathodes in Chlor Alkali Electrolyzers
Shraboni Ghoshal, Jingkun Li, Sanjeev Mukerjee

1237 Effects of Ni$^{2+/3+}$ Redox Peak Potential on Oxygen Evolution Activity of Mixed-Transition-Metal-Oxides in Alkaline Electrolyte

Michael Bates, Sanjeev Mukerjee, Qingying Jia

1238 Development of the Anion Exchange Membrane Water Electrolysis

Tobias Hoefner, Maximilian Schalenbach, Marcelo Carmo, Wiebke Maier, Detlef Stolten

1239 Optimized Performance of a Scale-up Ammonia Electrolyzer for Combined Wastewater Remediation and Hydrogen Production

Ali Estejob, Gerardine G Botte

1240 Production of Hydrogen and Chemicals from the Electroreforming of Renewable Alcohols

Hamish Andrew Miller, Francesco Vizza, Manuela Bevilacqua, Alessandro Lavacchi, Marco Bellini, Yanxin Chen, Lianqin Wang

1241 Influence of Activated Carbon Film Thickness on the Electrode Performance in Capacitive Deionization

Rafael Linzmeyer Zornitta, Julio Jose Lado, Luis Augusto Martins Ruotolo

1242 The P2D Model of a Lithium Cell with Vacancy Effect in Solid-State Diffusion

Chyun-Yaw Lin, Shi-Chern Yen

F04-High Rate Metal Dissolution Processes 2

Industrial Electrochemistry and Electrochemical Engineering/Corrosion/Electrodeposition

1243 The Importance of Surface OXIDE FILMS in Metal Dissolution Processes - a 20-Year Update
Barry R. MacDougall

1244 Microfabrication By High Rate Anodic Dissolution: Fundamentals and Applications

Madhav Datta

1245 Through-Mask Electroetching for Industrial Manufacturing

Heather McCrabb, Timothy D Hall, Stephen Snyder, E. J Taylor

1246 Achieving Surface Finish Requirements on DMLS Parts with Precision Electrochemical Machining

Donald G Risko

1247 Electro-Polishing of Additive Manufactured Porous Titanium for Medical Implants

Lucas Abia Hof, Burnett Johnston, Md. Masiar Rahman, Sajad Arabnejad Khanoki, Damiano Pasini, Rolf Wüthrich

1248 Electrochemical Polishing of Nitinol and Other Medical Alloys in Aqueous Electrolytes Using Pulse/Pulse Reverse Electric Fields

Holly Garich, Timothy D Hall, Savidra Lucatero, Stephen Snyder, Maria E. Inman, E. J Taylor, Lawrence Edward Kay

1249 Status of Vertical Electroplishing at Cornell University

Fumio Furuta

1250 Electropolishing of Nb for Superconducting Radio-Frequency (SRF) Cavities

Hui Tian, Charlie E Reece

1251 Environmentally Benign Electrofinishing Process for Selective Material Removal and Reduced Surface Roughness of Materials (like Nb, Ti, Ta, SS and Mo) in Low Viscosity Water Based Electrolytes
Timothy D Hall, Holly Garich, Stephen Snyder, Savidra Lucatero, Heather McCrabb, E. J Taylor, Maria E. Inman

1252 20 Years of Corrosion Sensing and Microvisualization of Corrosion Processes

William H Smyrl

1253 Electrochemical Micromachining of Bulk Metallic Glasses

Annett Gebert, Sylvia Horn, Ralph Sueptitz, Petre Flaviu Gostin, Mihai Stoica, Jürgen Eckert, Margitta Uhlemann

1254 Recycling Electrochemical Machining for Metal Recovery and Elimination of Waste

Brian Skinn, E. J Taylor, Timothy D Hall, Savidra Lucatero, Stephen Snyder, Heather McCrabb, Holly Garich, Maria E. Inman

1255 Enhanced Surface Finishing of Tungsten Carbide By Using Organic Additives

Michael Schneider, Nora Schubert, Lenka Simunkova, Alexander Michaelis

1256 Aluminum Dissolution in the Aluminum Chloride 1-Ethyl-3-Methylimidazolium Chloride (AlCl$_3$-EtMeImCl) Ionic Liquid

Chen Wang, Charles L. Hussey

1257 Surface Structuring of Ti-Al-V and Al-Mg Alloys By Chemical Etching for Advanced Adhesion of Polymers

Melike Baytekin-Gerngross, Mark-Daniel Gerngross, Jürgen Carstensen, Rainer Adelung

G01-Organic Semiconductor Materials, Devices, and Processing 5

Electronics and Photonics/Dielectric Science and Technology

1258 (Invited) Structure Measurements for Organic Photovoltaics Manufacturing

Dean M DeLongchamp
1259 (Invited) Role of the Metal-Organic Interfaces in the Dark Current-Voltage Characteristics of Organic Solar Cells

J. a. Jiménez Tejada, P. López Varo, O. Marinov, M. Jamal Deen

1260 (Invited) Operating Mechanisms of Organic Bulk-Heterojunction Solar Cells

Germa Garcia-Belmonte

1261 (Invited) Development of Tailor Made Donor-Acceptor Pairs for Fullerene-Free Organic Solar Cells

Gregory Charles Welch

1262 (Invited) Ultrafast Infrared Spectroscopy of Charge Generation in Organic Photovoltaic Materials

John B. Asbury

1263 (Invited) Polymer Nanopatterned Layers for Organic Solar Cell Applications

Victor Samuel Balderrama, Josep Ferre-Borrull, Josep Pallares, Lluis F Marsal

1264 (Invited) Nanomaterials and Device Architecture Engineering for Enhanced Efficiency in Bulk Heterojunction Solar Cells

Ricardo Izquierdo

1265 (Invited) Spray Coating of Organic Semiconductors and Carbon Nanotube Electrodes for Solar Cells

Barry P. Rand, Jeffrey Tait

1266 (Invited) Design of Polymeric Semiconductors for Transistor Applications

Martin Heeney

1267 (Invited) Routes to Stabilization of Linearly-Fused Aromatics
John Anthony, Thilanga Liyanage

1268(Invited) Unexpected Molecular Interfaces: SAMs on Cobalt

Sujitra Pookpanratana, Curt A. Richter, Christina A. Hacker

1269(Invited) Thin Films of Eumelanin Pigment: Charge Carrier Transport, Ion Storage, and Interaction with Metal Electrodes

Prajwal Kumar, Eduardo Di Mauro, Julia Wuensche, Clara Santato

1270(Invited) Importance of Interface Engineering in Organic Spintronics


1271(Invited) Spectroscopic Investigations of Stable Nitroxyl Radical-Containing Polymers

Andrew Ferguson, Barbara Katherine Hughes, Wade A. Braunecker, David Bobela, Thomas Gennett

1272(Invited) Development of Printed Flexible Organic Solar Panels, Field Effect Transistors, and Logic Circuits on PET Substrates

Salima Alem, Ta-Ya Chu, Jianping Lu, Terho Kololuoma, Ye Tao

1273(Invited) Development of High Mobility Polymer Semiconductors for p-Channel, n-Channel, and Ambipolar Thin Film Transistors

Yuning Li

1274(Invited) Surface-Mediated Molecular Assembly of Organic Semiconductors for High-Performance Organic Electronics

Kilwon Cho
1275 (Invited) Design and Fabrication of Organic Thin Film Transistors Using Solution-Processable Liquid Crystalline Phthalocyanine Derivatives

Asim Kumar Ray

1276 (Invited) Thin-Film Transistors Based on Donor-Acceptor Polymers

Ananth Dodabalapur, Seohee Kim, Taejun Ha, Prashant Sonar

1277 (Invited) Ionic Liquid-Gated PCBM Transistors: Pushing the Limit of the Doping in Organic Transistors

Jonathan Sayago, Mitesh Patel, Fabio Cicoira, Francesca Soavi, Clara Santato

1278 (Invited) Design and Development of an Organic Operational Amplifier for Use in Low-Cost Smart Sensor Systems

Munira Raja

1279 (Invited) Considerations for Materials, Processes, and Characterization of Flexible Electronics

William S. Wong

1280 (Invited) Conducting Polymer Transistors Making Use of Activated Carbon Gate Electrodes

Hao Tang, Prajwal Kumar, Shiming Zhang, Clara Santato, Francesca Soavi, Fabio Cicoira

1281 Bioinspired Molecular Electrets for Organic Electronics and Energy Applications

Valentine Ivanov Vullev, Jillian M. Larsen, Eli M. Espinoza

1282 PvdF Based Gel Polymer Electrolyte for Applications in Flexible Devices

Andrea Vittorio Oriani, Paula Cojocaru, Marco Alberto Spreatifico, Marco Apostolo, Francesco Triulzi, Luca Magagnin
1283(Invited) Innovations in Organic Printed Optoelectronics

Bernard Kippelen

1284(Invited) Plasmonic Composites of Semiconducting Polymers for Optoelectronic Applications

Jiri Pfleger, Bartosz Paruzel, Klara Halasova

1285Solution-Processed Light-Emitting Dielectric Films and Their Applications in Multifunctional Devices

Jing Li, Guifang Dong, Lian Duan, Liduo Wang


Ragavachari Dhamodharan, Elumalai Ramachandran

1287(Invited) The Effect of Molecular Dynamics on Charge Transport in Organic Semiconductors

Oana D Jurchescu

1288(Invited) Disentangling the Effects of Gated-Contacts on Transconductance in Organic FETs

Emily Bittle, James I. Basham, Thomas N. Jackson, Oana D Jurchescu, David J. Gundlach

1289(Invited) Charge-Based Modelling of the Channel Current in Organic Field Effect Transistors Considering Injection Effects

Franziska Hain, Christian Lammers, Fabian Hosenfeld, H. Klauk, Ute Zschieschang, B. Iniguez, Alexander Kloes

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1290 **The Comprehension of the Interfacial Chemistry during Etching Process onto SC: A Way to Understand the Mechanism**

**Tommy Vayron, A Causier, Muriel Bouttemy, Isabelle Gérard, Damien Aureau, Jacky Vigneron, Arnaud Etcheberry**

1291 **Impact of Surface Texturization on Overall Performance of Mono-Crystalline Silicon Solar Cells**

**Shrihari Sankarasubramanian, Gaurav Kumar Saud, M Shashikala, Prakash Suratkar, S Saravanan**

1292 **Prediction of Photovoltaic Cu(In,Ga)Se$_2$ p-n Device Performance by forward Bias Electrochemical Analysis of Only the p-Type Cu(In,Ga)Se$_2$ Films**

**Diego Colombara, Tobias Bertram, Valérie Depredurand, Thierry Fouquet, Jérôme Bour, Cédric Broussillou, Pierre-Philippe Grand, Phillip J. Dale**

1293 **Chemical Nature and Control of High-k Dielectric/III-V Interfaces**

**Wilfredo J Cabrera, Mathew D. Halls, Yves J Chabal**

1294 **(Invited) Chemical Stability and Electronic Behavior of Atomic Layer Deposited Metal Oxide Thin Films**

**Nicholas C Strandwitz, Bo Bao, Gabriela Calinao Correa**

1295 **(Invited) Stabilizing Semiconductor-Solution Interfaces Via Chemically Stable but Electronically Defective Coatings**

**Shu Hu, Matthew Shaner, Michael Frankston Lichterman, Matthias Hermann Richter, Erik Verlage, Thomas Mayer, Bruce Brunswig, Paul Daniel Dapkus, Nathan S. Lewis**

1296 **Photoelectrochemical Studies and Capacitance Measurements during the Nitride Passivation of InP in Liquid Ammonia (-55°C)**
Christian Njel, Idriss Bakas, Damien Aureau, Anne-Marie Gonçalves, Arnaud Etcheberry

An Attractive Wet Route for Nitriding III-Vs

Christian Njel, Damien Aureau, Anne-Marie Gonçalves, Arnaud Etcheberry

Photoelectrochemical Properties of InGaN Thin Film Grown By Plasma Assisted Molecular Beam Epitaxy

Yu-Min Shen, Abhijit Ganguly, Li-Chyong Chen, Kuei-Hsien Chen

Use of the Doping Dependence of Collection Efficiencies for Dye Sensitized Photocurrents to Demonstrate Physical Models for Charge Transfer at Single Crystal Oxide Semiconductor Surfaces

Mark T Spitler, Bruce A Parkinson, Kevin Watkins

Fabrication and Characterization of Silicon Microwire Anodes by Electrochemical Etching Techniques

Sandra Nöhren, Enrique Quiroga-González, Jürgen Carstensen, Helmut Föll

Pseudocapacitive Charge Storage at Nanoscale Silicon Electrodes

William McSweeney, Hugh Geaney, Colm Glynn, David McNulty, Colm O'Dwyer

Electroless Ni Layer: Influence of Growth Steps and Annealing Temperature on NiSi Formation

Elise Delbos, Hanane El Belghiti, Damien Aureau, Jackie Vigneron, Muriel Bouttemy, Arnaud Etcheberry

Synthesis of Metal Oxides/Graphene Nanocomposites for Applications in Lithium-Ion Battery

Jiaqi Nan, Hongzhou Dong, Guicun Li, Liyan Yu, Yong Qin, Lifeng Dong
1304 (Invited) Investigation of the Si/TiO$_2$/Electrolyte Interface Using Operando Tender X-ray Photoelectron Spectroscopy

Michael Frankston Lichterman, Matthias Hermann Richter, Shu Hu, Ethan J Crumlin, S Axnanda, Marco Favaro, Walter Drisdell, Z Hussain, Thomas Mayer, Bruce Brunschwig, Nathan S. Lewis, Hans Joachim Lewerenz, Z Liu

1305 (Invited) Integrated Semiconductor/Catalyst Assemblies for Sustained Photoanodic Water Oxidation

Jinhui Yang, Jason K. Cooper, Francesca M. Toma, Ian D. Sharp

1306 (Invited) Measurement of the Energy-Band Relations of Stabilized Si Photoanodes Using Operando Ambient Pressure X-ray Photoelectron Spectroscopy

Matthias Hermann Richter, Michael Frankston Lichterman, Shu Hu, Ethan J Crumlin, Thomas Mayer, S Axnanda, Marco Favaro, Walter Drisdell, Z Hussain, Bruce Brunschwig, Nathan S. Lewis, Z Liu, Hans Joachim Lewerenz

1307 (Invited) P-Type Transparent Conducting Oxide Protection Layers for Sustainable Photoelectrochemical Water Oxidation

Le Chen, Jinhui Yang, Lyman Lee, Shannon Klaus, Rachel Woods-Robinson, Yanwei Lum, Jason K. Cooper, Ian D. Sharp, Alexis T. Bell, Joel W. Ager

1308 Atomic Layer Deposition of i-Sb$_2$S$_3$/p-NiO Thin Layers into Anodic Alumina Membranes for Photoelectrochemical Water Splitting

Maissa Barr, Loic Assaud, Yanlin Wu, Julien Bachmann, Lionel Santinacci

1309 Enabling Overall Water Splitting By Iron Oxide and Silicon

Dunwei Wang

1310 A P-GaInP$_2$ Photoelectrode for Water Reduction Stabilized with TiO$_2$ and MoS$_2$ Catalyst

Jing Gu, James L Young, Nathan Neale, John A Turner
1311 (Invited) Electrochemical Reaction Induced Amorphization to Complex Oxide Surface and Its Impact to Catalyst Activity for Oxygen Evolution Reaction

Hongfei Jia, Li Qin Zhou, Chen Ling


Yong Yan

1313 (Invited) Investigations into the Formation of Germanene Using Electrochemical Atomic Layer Deposition (E-ALD)

Maria Ledina, Xuehai Liang, Youn-Geun Kim, Jin Jung, Brian Perdue, Chu Tsang, Manuel Soriaga, John Lewellen Stickney

1314 (Invited) Direct Electrodeposition of Crystalline III-V Semiconductor Films

Stephen Maldonado

1315 ZnO Electrodeposition on Boron-Doped Diamond: Effects of Zinc Precursor Concentration

Pierrick Gautier, Anne Vallée, Arnaud Etcheberry, Nathalie Simon

1316 Investigation of Photoelectrochemical Deposition of Zn(S,O) Via Nitrate Ions Reduction in the Presence of Thiourea

Serena Gallanti, Elisabeth Chassaing, Muriel Bouttemy, Arnaud Etcheberry, Daniel Lincot, Negar Naghavi

1317 Transient Photocurrent in Organic Photocells Assisted By Electric Double Layers in Electrolytes

Masato Odaka, Michio M Matsushita, Kunio Awaga

1318 A Study on the Seed Step-Coverage Enhancement Process (SSEP) of through Silicon Via (TSV) Using Electrophoretic Deposition (EPD) of Pd/PVP Colloids
Dongryul Lee, Yujin Lee, Hyungkoun Cho, Min Hyung Lee

1319 Mechanistic Transition of Electron Transfer Kinetics from Quantum Electron Tunneling to Trap-Facilitated Hopping through TiO2 Films Grown By Atomic Layer Deposition on SnO2 Electrodes

Jason Ryan Avila, Michael Jacob Katz, Omar K. Farha, Joseph T. Hupp

1320 Cleaning Solution Effect on Electrical and Reliability Properties of Dense and Porous Low Dielectric Constant Materials

Yi-Lung Cheng, Chi-Jia Huang

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Electronics and Photonics

1321 (Plenary) Physical Insights on the Design of UTB Devices, Including FinFETs

Jerry G. Fossum

1322 (Plenary) Substrate Innovation for Extending Moore and More than Moore Law

Christophe Maleville

1323 (Invited) High Performance III-V-on-Insulator MOSFETs on Si Realized by Direct Wafer Bonding Applicable to Large Wafer Size

Shinichi Takagi, Sang-Hyeon Kim, Yuki Ikku, Masafumi Yokoyama, Ryosho Nakane, Jian Li, Yung-Chung Kao, Mitsuru Takenaka

1324 (Invited) 14nm FDSOI Technology for High-Speed and Energy-Efficient CMOS

Olivier Weber, Emmanuel Josse, Michel Haond

1325 (Invited) Ultralow-Voltage Design and Technology of Silicon-on Thin-Buried-Oxide (SOTB) CMOS for High Energy Efficient Electronics in IoT Era
Yoshiki Yamamoto, Hideki Makiyama, Tomohiro Yamashita, Hidekazu Oda, Shiro Kamohara, Nobuyuki Sugii, Yasuo Yamaguchi, Tomoko Mizutani, Masaharu Kobayashi, Toshiro Hiramoto

1326 (Invited) Advanced Semiconductor Devices for Future CMOS Technologies

Cor Claeys, Danielle Chiappe, Nadine Collaert, Jerome Mitard, Juliana Radu, Rita Rooyackers, Eddy Simoen, Anne Vandooren, Anabela Veloso, Niamh Waldron, Liesbeth Witters, Aaron Thean

1327 N-Junctionless Transistor Prototype: Manufacturing Using a Focused Ion Beam System

Lucas Petersen Barbosa Lima, Marcos Vinicius Puydinger dos Santos, Marco Aurélio Keiler, Harold F. W. Dekkers, Stefan De Gendt, José Alexandre Diniz

1328 Using the Wave Layout Style to Boost the Digital ICs Electrical Performance in the Radioactive Environment

Rafael Navarenho de Souza, Marcilei Guazzeli da Silveira, Salvador Pinillos Gimenez

1329 Germanium Junctionless MOSFET with Steep Subthreshold Swing

Manish Gupta, Abhinav Kranti

1330 A Novel U-Shaped Finfet with Vertical Channels

Yunfei Liu, Haizhou Yin, Rui Li, Hui-long Zhu, Chao Zhao, Pengfei Wang, Shaoning Mei, Tian-chun Ye

1331 (Invited) Si-Based Micro-Nanomechanics for Ultimate Sensing

Takahito Ono, Masaya Toda, Yong-Jun Seo, Naoki Inomata

1332 (Invited) A Sub-1G MEMS Sensor

Daisuke Yamane, Toshifumi Konishi, Hiroshi Toshiyoshi, Kazuya Masu, Katsuyuki Machida
Research on Nano and Giga Electronics – Breakthroughs Along the Path

Yue Kuo

Comparative Simulation Study of InAs/Si and All-III-V Hetero Tunnel FETs

Andreas Schenk, Saurabh Sant, Kirsten Moselund, Heike Riel

Compact Model for Nano-Wire Tunnel Field-Effect Transistor

Shingo Sato, Yasuhisa Omura, Abhijit Mallik

Study of Hysteresis in Vertical Ge-Source Heterojunction Tunnel-FETs at Low Temperature

Felipe Souza Neves, Paula Ghedini Der Agopian, Joao Antonio Martino, Anne Vandooren, Rita Rooyackers, Eddy Simoen, Aaron Thean, Cor Claeys

Vertical Nanowire TFET Diameter Influence on Intrinsic Voltage Gain for Different Inversion Conditions

Victor De Bodt Sivieri, Caio Cesar Mendes Bordallo, Paula Ghedini Der Agopian, Joao Antonio Martino, Rita Rooyackers, Anne Vandooren, Eddy Simoen, Aaron Thean, Cor Claeys

Analytically Modeling the Asymmetric Double Gate Tunnel FET

Hongfei Lv, Shingo Sato, Yasuhisa Omura, Abhijit Mallik

Special Memory Mechanisms in SOI Devices

Sorin Cristoloveanu, Maryline Bawedin, Carlos Navarro, Sung-Jae Chang, Jing Wan, François Andrieu, Cyrille Le Royer, Noel Rodriguez, Francisco Gamiz, Alexander Zaslavsky, Yong-Tae Kim

Challenges to Nano-Scale Device World
1341 (Invited) Spin-Based Silicon and CMOS-Compatible Devices

Viktor Sverdlov, Siegfried Selberherr

1342 Variation of Spin Lifetime with Spin Injection Orientation in Strained Thin Silicon Films

Joydeep Ghosh, Dmitry Osintsev, Viktor Sverdlov, Siegfried Selberherr

1343 A Steep Subthreshold Swing Technique for Gate-All-Around SOI MOSFETs

Chun-Yu Chen, Jyi-Tsong Lin, Meng-Hsueh Chiang, Wei-Chou Hsu

1344 Direct Characterization of Impact Ionization Current in Silicon-on-Insulator Body-Contacted MOSFETs

Carlos Marquez, Noel Rodriguez, Jose Manuel Montes, Rafael Ruiz, Francisco Gamiz, Carlos Sampedro, Akiko Ohata

1345 Study of Total Quantum Efficiency of Lateral SOI PIN Photodiodes with Back-Gate Bias, Intrinsic Length and Temperature Variation

Carla Novo, João Baptista, Marcilei Guazzeli da Silveira, Renato Giacomini, Aryan Afzalian, Denis Flandre

1346 Threshold Voltage Modeling for Dynamic Threshold UTBB SOI in Different Operation Modes

Vitor Tatsuo Itocazu, Katia Regina Akemi Sasaki, Matheus Barros Manini, Victor Sonnenberg, Joao Antonio Martino, Eddy Simoen, Cor Claeys

1347 (Invited) Planar Nanoelectronic Devices and Biosensors Using Two-Dimensional Nanomaterials

Feras Al-Dirini, Mahmood A Mohammed, Md Sharafat Hossain, Faruque M Hossain, Ampalavanapillai Nirmalathas, Efstratios Skafidas
1348 Stress Considerations in Thin Films for CMOS-Integrated Gas Sensors

Lado Filipovic, Siegfried Selberherr

1349 Geometrical Magnetoresistance in Multi-Gate FDSOI Structures

Carlos Navarro, Sung-Jae Chang, Maryline Bawedin, François Andrieu, Bruno Sagnes, Sorin Cristoloveanu

1350 Improved Charge-Trapping Performance of Hf-Doped SrTiO$_3$ for Nonvolatile Memory Applications

X.D. Huang, P.T. Lai

1351 Crystallinity Improvement of Ferroelectric BiFeO$_3$ Thin Film by Oxygen Radical Treatment

Fuminobu Imaizumi, Tetsuya Goto, Akinobu Teramoto, Shigetoshi Sugawa, Tadahiro Ohmi

1352 Influence of Substrate on Hafnium Silicate Metal-Insulator-Metal Capacitors Grown by Atomic Layer Deposition

B J Hutchinson, V S Teodorescu, R Negrea, B Sheehan, P Carolan, S O'Brien, M Modreanu, M E Pemble, I. M Povey

1353 Ultra-Low Temperature Flattening Technique of Silicon Surface Using Xe/H$_2$ Plasma

Tomoyuki Suwa, Akinobu Teramoto, Tetsuya Goto, Masaki Hirayama, Shigetoshi Sugawa, Tadahiro Ohmi

1354 Low Temperature Atomically Flattening of Si Surface of Shallow Trench Isolation Pattern

Tetsuya Goto, Rihito Kuroda, Tomoyuki Suwa, Akinobu Teramoto, Naoya Akagawa, Daiki Kimoto, Shigetoshi Sugawa, Tadahiro Ohmi, Yutaka Kamata, Yuki Kumagai, Katsuhiko Shibusawa
1355 **FDSOI Suitability for Asynchronous Circuits at Sub-\( V_T \)**

Esteve Amat, Jean-Frédéric Christmann, Olivier Billoint, Ivan Miro, Edith Beigne

1356 **Proton Radiation Effects on the Analog Performance of Bulk n- and p-FinFETs**

Marcelo Bertoldo, Alberto Vinicius de Oliveira, Paula Ghedini Der Agopian, Eddy Simoen, Cor Claeys, Joao Antonio Martino

1357 **Comparison of Current Mirrors Designed with TFET or FinFET Devices for Different Dimensions and Temperatures**

Marcio Dalla Valle Martino, Joao Antonio Martino, Paula Ghedini Der Agopian, Anne Vandooren, Rita Rooyackers, Eddy Simoen, Aaron Thean, Cor Claeys

1358 **Impact of Gate Stack Dielectric on Intrinsic Voltage Gain and Low Frequency Noise in Ge pMOSFETs**

Alberto Vinicius de Oliveira, Paula Ghedini Der Agopian, Joao Antonio Martino, Wen Fang, Hiroaki Arimura, Jerome Mitard, Hans Mertens, Eddy Simoen, Anda Mocuta, Nadine Collaert, Aaron Thean, Cor Claeys

**H03-Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 5**

Electronics and Photonics/Dielectric Science and Technology

1359 *(Invited) Heterogeneous Nano- to Wide-Scale Co-Integration of Beyond-Si and Si CMOS Devices to Enhance Future Electronics*


1360 *(Invited) Strained-SiGe Channel FinFETs for High-Performance CMOS: Opportunities and Challenges*

Pouya Hashemi, Karthik Balakrishnan, John A. Ott, Effendi Leobandung, Renee T. Mo, Dae-Gyu Park
High Mobility Materials on Insulator for Advanced Technology Nodes

Walter Schwarzenbach, Christophe Figuet, Daniel Delprat, Christelle Veytizou, Isabelle Huyet, Catherine Tempesta, Ludovic Ecarnot, Julie Widiez, Virginie Loup, Jean-Michel Hartmann, Pascal Besson, Chrystel Deguet, Frédéric Mazen, Bich-Yen Nguyen, Christophe Maleville

Evaluation of Anisotropic Biaxial Stress in Si$_{1-x}$Ge$_x$/Ge Mesa-Structure by Oil-Immersion Raman Spectroscopy

Shotaro Yamamoto, Kazuma Takeuchi, Ryo Yokogawa, Motohiro Tomita, Daisuke Kosemura, Koji Usuda, Atsushi Ogura

A New Method to Induce Tensile Stress in Silicon on Insulator Substrate: From Material Analysis to Device Demonstration

Sylvain Maitrejean, Nicolas Loubet, Emmanuel Augendre, Pierre Francois Morin, Shay Reboh, Nicolas Bernier, Romain Wacquez, Benoit Lherron, Aurore Bonneville, Qing Liu, Jean-Michel Hartmann, Hong He, Aomar Halimaoui, Juntao Li, Sonia Pilorget, Joel Kanyandekwe, Laurent Grenouillet, Fadoua Chafik, Yves Morand, Cyrille Le Royer, Oliver Faynot, Muhsin Celik, Bruce Doris, Barbara de Salvo

Mechanical Analyses of Extended and Localized UTBB Stressors Formed with Ge Enrichment Techniques

Pierre Francois Morin, Laurent Grenouillet, Nicolas Loubet, Alexandre Pofelski, Darsen Lu, Qing Liu, Emmanuel Augendre, Sylvain Maitrejean, Vincent Fiori, Barbara de Salvo, Bruce Doris, Walter Kleemeier

Fabricating Si Nanowires with Precisely Controlled Diameter and Spacing

Luping Li, Ying Fang, Cheng Xu, Yang Zhao, Kirk J Ziegler

(Invited) Si Nanowire Tunnel FETs for Energy Efficient Nanoelectronics

Qing-Tai Zhao, Simon Richter, Lars Knoll, Gia Vinh Luong, Sebastian Blaeser, Christian Schulte-Braucks, Anna Schäfer, Stefan Trenlenkamp, Dan Buca, Siegfried Mantl

Oxide-Based Synaptic Transistors for Neuromorphic Systems
Qing Wan

1368 Atomic Resolution Study of VO$_2$ Metal-Insulator Transition As Field-Effect Transistors

Hasti Asayesh-Ardakani, Anmin Nie, Peter Marley, Yihan Zhu, Ganapathy Sambandamurthy, Sarbajit Banerjee, Robert F Klie, Gregory Odegard, Reza Shahbzian-Yassar

1369 The Impact of the Ge Concentration in the Source for Vertical Tunnel-FETs

Joao Antonio Martino, Paula Ghedini Der Agopian, Felipe Souza Neves, Anne Vandooren, Rita Rooyackers, Eddy Simoen, Aaron Thean, Cor Claeys

1370 (Invited) Monolithic Integration of III-V As- and P-Based Devices on Si through Direct MBE Growth and Using Lattice Engineered Substrates

Dmitri Lubyshev, Joel Fastenau, Amy Liu, Ying Wu

1371 (Invited) Monolithic Integration of III-V Semiconductors by Selective Area Growth on Si(001) Substrate: Epitaxy Challenges & Applications

Clement Merckling, Sijia Jiang, Ziyang Liu, Niamh Waldron, G Boccardi, R Rooyackers, Zhechao Wang, Bin Tian, Marianna Pantouvaki, Nadine Collaert, Joris Van Campenhout, Marc Heyns, Dries Van Thourhout, Wilfried Vandervorst, Aaron Thean

1372 (Invited) Dopant Activation and Deactivation in InGaAs during Sub-Millisecond Thermal Annealing

Victoria Sorg, Suki Naifang Zhang, Megan Hill, Paulette Clancy, Michael O. Thompson

1373 (Invited) Technology Options to Reduce Contact Resistance in Nanoscale III-V MOSFETs

Rinus T.P. Lee, Wei Yip Loh, Robert Tieckelmann, Tommaso Orzali, Craig Huffman, Alexey Vert, Gensheng Huang, Maxim Kelman, Zia Karim, Chris Hobbs, Richard J.W. Hill, S.S. Papa Rao
1374 (*Invited*) Record-Performance In(Ga)As MOSFETS Targeting ITRS High-Performance and Low-Power Logic

Mark J Rodwell, Cheng-Ying Huang, Sanghoon Lee, Varistha Chobpattana, Brian Thibeault, William Mitchell, Susanne Stemmer, Arthur Gossard

1375 Ion Implantation Applications for Advanced Device Scaling

Naushad Variam

1376 Heated Ion Implantation Technology for High Performance Metal-Gate/High-k CMOS SOI Finfets

Wataru Mizubayashi, Hiroshi Onoda, Yoshiki Nakashima, Yuki Ishikawa, Takashi Matsukawa, Kazuhiro Endo, Yongxun Liu, Shinichi Ouchi, Junichi Tsukada, Hiromi Yamauchi, Shinji Migita, Yukinori Morita, Hiroyuki Ota, Meishoku Masahara

1377 (*Invited*) Plasma Etching Technology Challenges for Future CMOS Fabrication Based on Microwave ECR Plasma

Masaru Izawa, Motohiro Tanaka, Naoki Yasui, Michikazu Morimoto

1378 Effect of Hydrogen on Silicon Nitrides Formation by Microwave Excited Plasma Enhanced Chemical Vapor Deposition

Akinobu Teramoto, Yukihisa Nakao, Tomoyuki Suwa, Keiichi Hashimoto, Tsukasa Motoya, Masaki Hirayama, Shigetoshi Sugawa, Tadahiro Ohmi

1379 (*Invited*) Plasma Processes for Emerging Silicon-Based MEMS, NEMS and Packaging Applications

Mark E McNie

1380 Enhanced Equipment and New Processes As Enabler for Power Technologies on 300mm Substrates

Manfred Engelhardt, Johannes Baumgartl, Guenter Denifl, Georg Ehrentraut, Matthias Kuenle, Michael Stadtmueller, Sebastian Werner, Danilo Crippa, Martin Kraft
Influence of Annealing Condition on TSV Pumping and Microstructure Evolution

Xiangmeng Jing, Ui-Hyoung Lee, Cheng Xu, Zhongcai Niu, Chongshen Song, Wenqi Zhang, Jong-yong Bae, Jaihyung Won

(Invited) Temperature Influence on Current Leakage and Hysteresis of Nc-CdSe Embedded Zr-Doped HfO$_2$ High-k Dielectric Nonvolatile Memory

Shumao Zhang, Yue Kuo

Nano-Scale CuO-Based Cbram-Cells Implementation with TiN Liner

Ki-Hyun Kwon, Kyoung-Cheol Kwon, Myung-JIn Song, Han-Vit Jeoung, Dong-Won Kim, Hye-Jee KiM, Jea-Gun Park

Nonvolatile Memory-Operation Mechanism for Ag-Doped PEO-Based Cbram-Cells

Myung-JIn Song, Kyoung-Cheol Kwon, Ki-Hyun Kwon, Dong-Won Kim, Jea-Gun Park

Ge Nanostructures Embedded in ZrO$_2$ Dielectric Films for Nonvolatile Memory Applications


(Invited) Phosphor-Free III-Nitride Nanowire White Light Emitting Diodes: Challenges and Prospects

Hieu Pham Trung Nguyen, Yaset Evo

Effect of Design and Rare-Earth Doping of the Structural, Optical, Electrical and Light Emitting Properties of Si-Based Superlattices Developed for Photonic Application

L. Khomenkova, R. Pratibha Nalini, Christophe Labbe, Marzia Carrada, Xavier Portier, Fabrice Gourbilleau

Solid State Incandescent Light Emitting Device Made of WO$_3$ Embedded Zr-Doped HfO$_2$ High-k Stack on Si
Shumao Zhang, Yue Kuo

1389 (Invited) Fabrication of High-Quality TiO$_2$ Nanotubes on Conductive Glasses

Shibin Li, Xiaohui Yang, Xiongbang Wei, Yaoyu Xuan, Zhi David Chen, Yadong Jiang

1390 On the Origin of the Gate Oxide Failure Evaluated by Raman Spectroscopy

Ryo Yokogawa, Motohiro Tomita, Toshikazu Mizukoshi, Takehiro Hirano, Kenichiro Kusano, Katsuhiro Sasaki, Atsushi Ogura

1391 Oxide Structure-Dependent Interfacial Layer Defects of HfAlO/SiO$_2$/Si Stack Analyzed by Conductance Method

Yi Ming Ding, Durga Misra

1392 Room Temperature Photoluminescence Characterization of Interface Quality of SiN/SiO$_2$/Si Prepared under Various Deposition Techniques and Conditions

Woo Sik Yoo, Byoung Gyu Kim, Seung Woo Jin, Toshikazu Ishigaki, Kitaek Kang

1393 Light Emitting Properties of Si-Rich-Si$_3$N$_4$ Films Grown By PECVD Method

Tetyana V. Torchynska, Jose Luis Casas Espinola, Georgiy Polupan, Erasto Vergara Hernandez, Larysa Khomenkova, A Slaoui

1394 Process Optimization of CoSi$_2$ Formation on P-Doped Poly-Si by Hot Wall-Based Rapid Thermal Annealing

Jin Yul Lee, Hun Joo Kim, Eun Jeong Kim, Han Sang Song, Seung Jin Yeom, Toshikazu Ishigaki, Kitaek Kang, Woo Sik Yoo

1395 Pulse Width Modulation for Reducing Pulsed MOS Capacitor Measurement Time

Mohamad Safarnezhad Hendijani, Sayedehgolnaz Zahedi

1396 Non-Volatile Resistive Memory Switching in Pulsed Laser Deposited Rare-Earth Gallate-GdGaO$_3$ Thin Films
Yogesh Sharma, Shojan P. Pavunny, James F. Scott, Ram S. Katiyar

1397 Novel Buffered Magnetic Logic Gate Grid

Thomas Windbacher, Alexander Makarov, Viktor Sverdlov, Siegfried Selberherr

1398 Characterization of Ge Epitaxial Growth on $\text{Si}_{1-X}\text{Ge}_X$ Buffer Layer

Hyunchul Jang, Byongju Kim, Sangmo Koo, Dae Hong Ko

1399 Effect of Process Temperature of $\text{Al}_2\text{O}_3$ Atomic Layer Deposition Using Accurate Process Gasses Supply System

Hisaya Sugita, Yasumasa Koda, Tomoyuki Suwa, Rihito Kuroda, Tetsuya Goto, Hidekazu Ishii, Satoru Yamashita, Akinobu Teramoto, Shigetoshi Sugawa, Tadahiro Ohmi

1400 Improved Structural and Electric Characteristics of $\text{Al}/\text{ALD-HfO}_2/\text{Ge MOS Capacitor}$ by Germanium Dioxide and Germanium Oxynitride as Interfacial Layer

Rakesh Prasher, Devi Dass, Rakesh Vaid

H04 State-of-the-Art Program on Compound Semiconductors 57 (SOTAPOCS 57)

Electronics and Photonics

1401 (Electronics and Photonics Division Award) Dielectrics for III-V Materials

Dean Cammy R. Abernathy

1402 (Invited) Preparation of GaSb Surface for Low Interfacial Trap Density MOS Capacitors

Chen-Yu Chen, Wei-Jen Hsueh, Chao-Min Chang, Hsien-Ming Hsu, Jen-Inn Chyi

1403 Invited: Ohmic Contacts to Semiconductor Compounds: From III-V Semiconductors to Layered Transition Metal Dichalcogenides
Suzanne E. Mohney

1404 Surface Metal Cleaning of GaN Surface Based on Redox Potential of Cleaning Solution

Kenji Nagao, Kenichi Nakamura, Akinobu Teramoto, Yasuyuki Shirai, Fuminobu Imaizumi, Tomoyuki Suwa, Shigetoshi Sugawa, Tadahiro Ohmi

1405 Annealing Effects on the Electrical Activation of Si Dopants in InGaAs

Aaron Gregg Lind, Henry Lee Aldridge, Cory Carl Bomberger, Chris Hatem, Joshua M. O. Zide, Kevin Scott Jones

1406 Electrochemical Transfer Doping: A Novel Phenomenon Seen in Diamond, Gallium Nitride, and Carbon Nanotubes

Vidhya Chakrapani

1407 Invited: Approaches to the Formation and Integration of Large Lattice Mismatched Materials: Metamorphic and Non-Conventional 'buffer' Layers

Thomas F Kuech, Susan E Babcock, Luke J Mawst, Adam Wood, Tae Won Kim, Ayushi Rajeev, Kevin Schulte, Yingxin Guan

1408 (Invited) Growth of Non-Polar Cubic GaN on Common Si

Mark Durniak, Adam Bross, David Elsaesser, Anabil Chaudhuri, S C Lee, Steven R.J. Brueck, Christian Wetzel

1409 Ag-Fe₂O₃ Heterostructured Nanoparticles as Photocatalysts under Visible Light Irradiation

Shiben Liu, Yingjie Chen, Lifeng Dong

1410 The Effect of Interfacial Contamination on Antiphase Domain Boundary Formation in GaAs on Si(100)
Caleb Shuan Chia Barrett, Aaron Gregg Lind, Xinyu Bao, Zhiyuan Ye, Keun-Yong Ban, Patrick Martin, Errol Sanchez, Kevin Scott Jones

1411 Invited: Point Defects in Chalcogenide Compound Semiconductors

Angus Rockett

1412 Continuum Modelling of Silicon Diffusion and Activation in $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}$

Henry Lee Aldridge, Aaron Gregg Lind, Mark E Law, Chris Hatem, Kevin Scott Jones

1413 Atomic Level Simulation of Ridge Reconstruction and Passivation in GaAs Nanopillars

Ted H. Yu, Christian Ratsch

1414 (Invited) Fabrication and Applications of High-Efficiency, Lightweight, Multi-Junction Solar Cells by Epitaxial Liftoff

Victor Christopher Elarde, Haruki Miyamoto, Ray Chan, Chris Stender, Chris Youtsey, Jessica G J Adams, Andree Wibowo, Rao Tatavarti, Mark Osowski, Noren Pan

1415 Invited: Advances in III-V/Active-Silicon Multijunction Photovoltaics: Progress Toward a Si-Plus Architecture

Tyler J Grassman, Daniel J Chmielewski, Chris Ratcliff, Santino D Carnevale, John A Carlin, Steven A Ringel

1416 (Invited) Advanced Photon Management in Printed High-Efficiency Multijunction Solar Cells

Xing Sheng, John A. Rogers


1418 Invited: Colloidal Semiconductor Nanocrystals for Sensing and Optoelectronic Applications

Richard D Schaller

1419 (Invited) InAs/InAs$_{1-X}$Sb$_X$ Type-II Superlattices for High-Performance Long-Wavelength Infrared Medical Thermography

Manijeh Razeghi, Abbas Haddadi, Guanxi Chen, Romain Chevallier, Ahn Minh Hoang

1420 Template-directed Synthesis of Ag$_2$S-Fe$_2$O$_3$ Heterostructures

Yingjie Chen, Shiben Liu, Mei Zhao, Liyan Yu, Hongzhou Dong, Lifeng Dong

1421 (Invited) The Effect of Thermally Induced Piezoelectricity on GaN HEMT Device Characteristics

Jonah Sengupta, Patrick McCluskey, Sumeer Khanna

1422 Invited: III-Nitride Semiconductor Nanowire Resonant Tunneling Diodes

Wu Lu, Ye Shao

1423 (Invited) The Stability of High Voltage AlGaN/GaN HEMTs

Chih-Fang Huang, Ting-Fu Chang, Yun-Hsiang Wang, Yung C. Liang

1424 (Invited) Plasmonic Terahertz Detectors

Michael Shur

1425 Early Detection of Lung Cancer Using High Electron Mobility Transistors

Indu Sarangadharan, Chia Ho Chu, Chen-Pin Hsu, Yu-Lin Wang

1426 A Semiconductor Gas System of Healthcare for Liver Disease Detection Using Ultrathin InN-Based Sensor
Kun-Wei Arthur Kao, Chin-Jen Cheng, Shangjr Gwo, J. Andrew Yeh

1427 Dilute Hydrogen Sulfide Sensing Characteristics of a Pt/GaN Schottky Diode

Jian-Feng Xiao, Chen-Pin Hsu, Yu-Lin Wang

1428 Detection of HIV-1 RT Protein Using AlGaN/GaN High Electron Mobility Transistors

Chia-Ho Chu, Chen-Pin Hsu, Yu-Lin Wang

1429 The Photoluminescence Properties of CuInS$_2$ and AgInS$_2$ Nanocrystals Synthesized in Aqueous Solutions

L. Borkovska, A Romanyuk, V. Strelchuk, Yu. Polishchuk, V. Kladko, O. Stroyuk, A. Raevskaya, T. Kryshtab

1430 Investigation of Trapezoidal Well for Improving the Light Efficiency in Algainp-Based LEDs

Hwa Sub Oh

1431 Metallization Reliability and Defectivity in Compound Semiconductors

Steve Kilgore

**H05-Wide Bandgap Semiconductor Materials and Devices 16**

Electronics and Photonics/Dielectric Science and Technology/Luminescence and Display Materials/Sensor

1432 (Invited) Radiation Effects in AlGaN/GaN and InAlN/GaN High Electron Mobility Transistors

Stephen J. Pearton, Ya-Hsi Hwang, Fan Ren

1433 (Invited) Failure Mechanisms in AlGaN/GaN HEMTs Irradiated with 2MeV Protons

1434 (Invited) Simulation of Radiation Effects in AlGaN/GaN HEMTs

Erin Patrick, Mohua Choudhury, Fan Ren, Stephen J. Pearton, Mark E Law

1435 (Invited) Neutron Irradiation Effect on GaN-Based Materials

Ming-lan Zhang, R X Yang, X L Wang, S F Liu

1436 (Invited) Thermal Limitations in Wide Bandgap (WBG) Semiconductor Power Switching Devices

Krishna Shenai

1437 (Invited) Low Loss Power Conversion with Gallium Nitride Based Devices

Srabanti Chowdhury

1438 (Invited) GaN High Power Devices and Their Applications

Jae-Kyoung Mun, Woojin Chang, Dong Min Kang

1439 Investigating the Effects of Annealing on Off-State Step-Stressed AlGaN/GaN High Electron Mobility Transistors

Byung-Jae Kim, Shihyun Ahn, Ya-Hsi Hwang, Fan Ren, Stephen J. Pearton

1440 Synchrotron White-Beam X-Ray Topography Analysis of the Defect Structure of HVPE-GaN Substrates

Lutz Kirste, Andreas N. Danilewsky, Tomasz Sochacki, Klaus Köhler, Marcin Zajac, Robert Kucharski, Michal Boćkowski, Patrick J. McNally

1441 Impact of Microstructure and Defects on Surface Reactivity during Wide Bandgap Semiconductor Epitaxy
Angel Yanguas-Gil, Peter Zapol

1442 How Predictive Are Reactor-Scale Simulations of Wbg Semiconductor Epitaxy? a Sensibility Analysis of SiC and Nitride Epitaxy Models

Angel Yanguas-Gil, Krishna Shenai

1443 (Invited) Developing Periodically Oriented Gallium Nitride for Frequency Conversion


1444 Epitaxial Growth of High Quality GaN Films on Lattice Matched Metallic Layers

Amir M Dabiran, Francisco Machuca, Indranil De, Robert Weiss

1445 Oil-Immersion Raman Spectroscopy for c-Plane GaN on Si and Al₂O₃ Substrates

Ryosuke Imai, Daisuke Kosemura, Atsushi Ogura

1446 (Invited) InGaN/GaN Multiple Quantum Well Solar Cells for Energy and Hydrogen Generation

Hongxing Jiang, Jingyu Lin

1447 (Invited) High Efficiency Solar-to-Hydrogen Conversion on InGaN Nanowire Arrays

Zetian Mi, Bandar AlOtaibi, Shizhao Fan

1448 (Invited) Nitride Photocatalyst to Produce Clean Hydrogen from Water without Extra Bias

Kazuhiro Ohkawa

1449 (Invited) Unraveling the Efficiency Limits of GaN-Based Emitters and the Surprising Connection to Electron Devices
James Speck

1450 (Invited) Group-III Nitrides to the Extreme --- from LEDs and Solar Cells to the Transistor

Adam Bross, Liang Zhao, David Elsaesser, Zhongda Li, Mark Durniak, Theeradetch Detchprohm, Tat-Sing Paul Chow, Christian Wetzel

1451 (Invited) Applications of Electrochemistry for Novel Wide Bandgap GaN Devices

S. H. Park, C. Zhang, G. Yuan, D. Chen, Jung Han

1452 (Invited) High Efficiency Green-Yellow Emission from InGaN/GaN Quantum Well Structures Grown on Overgrown Semi-Polar (11-22) GaN on Regularly Arrayed Micro-Rod Templates

Y Gong, K Xing, B Xu, X Yu, Z Li, J Bai, Tao Wang

1453 Hydrothermally Grown Nonpolar a-Plane ZnO and Its Applications

Jimin Kim, Kwang Hyeon Baik, Soohwan Jang

1454 (Invited) Fully Porous GaN p-n Junctions Fabricated by Chemical Vapor Deposition: A Green Technology towards More Efficient LEDs

Joan J. Carvajal, Josue Mena, Oleksandr Bilousov, Oscar Martínez, Juan Jiménez, V.Z. Zubiałevich, Peter J. Parbrook, Hugh Geaney, Colm O'Dwyer, Francesc Diaz, Magdalena Aguiló

1455 (Invited) Power Loss Reduction in Perforated-Channel HFET Switches

Michael Shur, Mikhail Gaevski, Remis Gaska, Grigory Simin, Hugh Yung Wong, Nelson Braga, Rimvydas Mickevicius

1456 A Novel Backside Gate Structure to Improve Device Performance

Ya-Hsi Hwang, Weidi Zhu, Chen Dong, Shihyun Ahn, Fan Ren, Ivan Kravchenko, David Smith, Stephen J. Pearton
1457 (Invited) High-Power AlGaN/GaN Heterostructure Field-Effect Transistors on 200mm Si Substrates


1458 Large Gate Swing and High Threshold Voltage Enhancement-Mode AlGaN/GaN HEMTs Using Low Energy Fluorine Ion Implantation in GaN Layer

Chia-Hsun Wu, Ping-Cheng Han, Edward Yi Chang

1459 In-Situ Characterization of Defect Dynamics in 4H-SiC Power Diodes under High-Voltage Stressing

Krishna Shenai, Balaji Raghothamachar, Michael Dudley, Aris Christou

1460 (Invited) Investigations and Improvements of AlInN/GaN HEMTs Grown on Si

Jen-Inn Chyi, Yue-Ming Hsin, Geng-Yen Lee, Hsien-Chin Chiu

1461 A Novel Approach to Improve Heat Dissipation of AlGaN/GaN High Electron Mobility Transistors with a Backside Cu Via

Ya-Hsi Hwang, Tsung-Sheng Kang, Fan Ren, Stephen J. Pearton

1462 Optically Transparent Flexible IGZO TFTs Fabricated with a Selective Wet-Etch Process

Alireza Tari, Czang-Ho Lee, William S. Wong

1463 Impact of Carbon-Doped n-Si-O Channel for Future TFT

Kazunori Kurishima, Toshihide Nabatame, Nobuhiko Mitoma, Takio Kizu, Kazuhito Tsukagoshi, Tomomi Sawada, Akihiko Ohi, Ippei Yamamoto, Tomoji Ohishi, Toyohiro Chikyow, Atsushi Ogura

1464 Effect of Island Configuration and Neutral Axis Location for Mechanical Bending Strain on a-IGZO Thin Film Transistors
Chang Bum Park, Jung Jun Kim, HyungIl Na, Tae Hyoung Moon, Soon Sung Yoo, Myoung Su Yang

Effect of Rising Edge in Dynamic Stress with Various Duty Ratio in Amorphous Ingazno Thin Film Transistor

Yeol-hyeong Lee, Su-jeong Seok, Byeong-Koo Kim, Sung-Ho Kim, Tae-Kuen Lee, Ohyun Kim

Effects of Annealing Pressure and Ambient on Thermally Robust RuO$_2$ Schottky Contacts on InAlN/AlN/GaN-on-Si(111) Heterostructure

Lwin Min Kyaw, Yi Liu, Mei Ying Lai, Thirumaleshwara N. Bhat, Hui Ru Tan, Poh Chong Lim, Sudhiranjan Tripathy, Eng Fong Chor

Simulation Comparison of Self-Heating Effects in Junctionless Nanowire Transistors and FinFET Devices

Genaro Mariniello, Marcelo Pavanello

Weak Quantum Confinement and Polaritons in ZnO and ZnO Cu Nanocrystals Prepared by Electrochemical Method

Tetyana V. Torchynska, Brahim El Filali, Aaron Israel Diaz Cano, Lyudmula V. Shcherbyna

ALD NiO Thin Films As a Hole Transport-Electron Blocking Layer Material for Photo-Detector and Solar Cell Devices

Wook Jun Nam, Zachary Gray, John Stayancho, Victor Plotnikov, Dohyoung Kwon, Shawn Waggoner, Deodatta V Shenai-Khatkhate, Michael Pickering, Terumi Okano, Alvin Compaan, Stephen J Fonash

Effects of Chemical Doping and Defect Density on Electrical and Optical Properties of Graphene As a Transparent and Conductive Electrode

Sooyeoun Oh, Gwangseok Yang, Younghun Jung, JiHyun Kim
1471 Development of Wide Bandgap Multifunctional NiO Nanostructures and Thin Films for Sensing Applications

Monika Tomar, Manisha Tyagi, Anjali Sharma, Vinay Gupta

1472 Analysis of Patterned Defects on Graphene Using Micro-Raman Spectroscopy and Liquid Crystals

Gwangseok Yang, Sooyeoun Oh, JiHyun Kim

1473 A New Capacitance-Voltage Model for Hydrogen-Terminated Diamond Mosfet

XI Zhou, Sacharia Albin

1474 Blue Emission Stimulation in Mixture of ZnO and Carbon Nanocrystals at Mechanical Processing

Tetyana V. Torchynska, Brenda Perez Millan, Erick Velazquez Lozada, Mukola Kakazey, Marina Vlasova

1475 Photocurrent Enhancement of TiO$_2$ Nanotubes Decorated with PbS Quantum Dots

Kang Du, Guohua Liu, Xuyuan Chen, Kaiving Wang

1476 Effect of Cu- and Y-Codoping on Structural and Luminescent Properties of Zirconia Based Nanopowders


1477 Effect of Rare-Earth Doping on Structural and Luminescent Properties of Screen-Printed ZnO Films

L. Khomenkova, V.I. Kushnirenko, N.M. Osipyonok, A.F. Singaevsky, G.S. Pekar, K. Avramenko, V.V. Strelchuk, L.V. Borkovska

1478 Electrodeposited Sb- Doped ZnO Nanorod Arrays and Electrical Characterization Based on Single Nanorod Field Effect Transistors
Jin-Kun Liang, Hai-Lin Su, Chun-Liang Kuo, Yu-Cheng Wu, Jung-Chun Andrew Huang

Improvement of Optical and Electrical Properties of Indium Tin Oxide Layer of GaN-Based Light-Emitting Diode By Surface Plasmon in Silver Nanoparticles

Chu-Young Cho, Sang-Hyun Hong, Kyung-Ho Park, Won-Kyu Park, Seong-Ju Park

101-Crosscutting Metrics and Benchmarking of Transformational Low-Carbon Energy-Conversion Technologies

Energy Technology

1480 (Invited) Critical Metrics and Fundamental Challenges for Hydrogen and Fuel Cell Technologies

Katie Randolph, David Peterson, Erika Sutherland, Neha Rustagi, Sarah Studer, Ned T Stetson, Eric Lars Miller

1481 (Invited) The Joint Center for Energy Storage Research (JCESR): A New Paradigm for Energy Storage Research

George Crabtree

1482 (Invited) Life-Cycle Net Energy Assessment of Large-Scale Hydrogen Production Via Photoelectrochemical Water Splitting

Jeffery Buyers Greenblatt, Roger Sathre, Ian D. Sharp, Joel W. Ager, Frances A Houle

1483 (Invited) Techno-Economic Analysis of Batteries and Key Considerations for Performance Comparisons

Kevin G. Gallagher

1484 (Invited) Benchmarking Transformational Energy Technologies

Brian David James, Whitney G. Colella, Jennie M. Moton

1485 (Invited) Analytic Methods for Benchmarking Hydrogen and Fuel Cell Technologies
Marc Melaina, Genevieve Saur, Todd Ramsden, Joshua Eichman

1486 (Invited) Benchmarking and Protocol Development for Data Comparison Between Laboratories

Guido Bender, Shyam S Kocha

1487 (Invited) Standardizing Experimental Methods and Metrics in the Field of Photoelectrochemical (PEC) Water Splitting

Zhebo Chen, Huyen N Dinh, Eric Lars Miller

1488 (Invited) Key Barriers to Commercial Deployment of Next Generation Proton Exchange Membrane Electrolyzers

Katherine E Ayers

1489 (Invited) Alkaline Water Electrolysis Vs. PEM Water Electrolysis - Exploring Their Full Performance

Marcelo Carmo, David L Fritz, Wiebke Maier, Detlef Stolten

1490 (Invited) Fermentative Hydrogen Production from Biomass in the Cellulose-Degrading Bacterium Clostridium Thermocellum

Lauren Magnusson, Katherine Chou, Pin-Ching Maness

1491 (Invited) Benchmarking a Metal Oxide-Based Thermochemical Cycle for Solar Hydrogen Production

Anthony H. McDaniel, Ivan Ermanoski

1492 (Invited) Needed Research Focus for Achieving Cost-Effective and Reliable Solar-Thermal Water Splitting

Christopher Muhich, Brian Ehrhart, Ibraheam Alshankiti, Barbara Ward, Charles Musgrave, Alan Weimer
(Invited) Re-Energizing Waste CO$_2$ to Fuels with the Sun: Efficiency, Scale, Resource Utilization, and Economics

Ellen B Stechel, James E Miller

(Invited) Renewable Hydrogen Evolution on Nickel Phosphide Electrocatalysts: A Comparative Study of Efficiency and Tolerance to Corrosion

G. Charles Dismukes, Anders Laursen, Bin Liu, Kelly Patraju, Martha Greenblatt

Design and Cost Considerations of Solar-Fuel Devices

Miguel A. Modestino, Claudia A. Rodriguez, Demetri Psaltis, Christophe Moser

The Effect of Blockages in a PEM Electrolyzers Flow-Field on Performance and Temperature Distribution

David L Fritz, Marcelo Carmo, Martin Müller, Detlef Stolten

I02-Electrochemical Synthesis of Fuels 3

High Temperature Materials/Energy Technology/Industrial Electrochemistry and Electrochemical Engineering/Physical and Analytical Electrochemistry

(Invited) Performance and Durability of Solid Oxide Cells for Energy Storage

Scott A Barnett

Steam-Carbon Fuel Cell for Clean Fuel and Energy Production

Stephen Michael Stewart, Brandon Loong, David U. Johnson, Turgut M Gur, Reginald E. Mitchell

(Invited) Electrochemical Upgrading of Bio-Oil

S Elangovan, Dennis Larsen, Joseph J Hartvigsen, James M Mosby, Jacob Staley, Jessica Elwell, Mukund Karanjikar
The Synthesis of Hydrocarbons for Fuel and Lubricants via Ceramic Membrane Reactor

James M Mosby, Patrick McGuire, Daniel Taggart, Jacob Staley, S Elangovan

Electrodes for Protonic-Ceramic Membranes Used in Natural Gas-to-Chemicals Processing

Sandrine Ricote, Anthony Manerbino, Neal P Sullivan, Grover Coors

Co-Synthesis of Hydrogen and Carbon Fuels from Water and Carbon Dioxide

Fang-Fang Li, Shuzhi Liu, Baochen Cui, Jason Lau, Jessica Stuart, Stuart Licht

(Invited) Stabilized Bismuth Oxide As a Component in the Air Electrodes of Reversible Solid Oxide Electrochemical Cells

Sossina M Haile

(Invited) Reversible Solid Oxide Fuel Cell Development at Versa Power Systems

Anthony Wood, Hongpeng He, Tahir Joia, Casey Cloudless Brown

(Invited) Measurement of Electronic Conductivity in 8YSZ Using an Embedded Electrode

Lei Zhang, Liangzhu Zhu, Anil V. Virkar

(Invited) Efficient Electrochemical Biogas Reforming with Enhanced Carbon Deposition Resistance of Ni/YSZ Electrode Coated with Chromium Oxide in a Solid Oxide Electrolyzer

Wentao Qi, Kui Xie, Shigang Chen, Yucheng Wu

(Invited) Enhanced Steam Electrolysis at Exsolution Titanates

Dragos Neagu, George Tsekouras, Tae-Ho Shin, John Irvine
The Effect of Mixed-Conductivity on Electrolysis Cells Involving BaCe$_x$Zr$_{0.9-x}$Y$_{0.1}$O$_{3-d}$ ($x = 0, 0.1$ and $0.2$) Protonic Ceramic Membrane

Sean M Babiniec, Michael Dippon, Sandrine Ricote, Neal P Sullivan

Steam Electrolysis By Proton-Conducting Solid Oxide Electrolysis Cells (SOECs)

Lei Bi, Enrico Traversa

Hydrogen Permeation through Dense BaCe$_{0.8}$Y$_{0.2}$O$_{3-\delta}$ - Ce$_{0.8}$Y$_{0.2}$O$_{2-\delta}$ Composite-Ceramic Membranes

Wade A Rosensteel, Sandrine Ricote, Neal P Sullivan

Fabrication of a Novel BaCe$_{0.8}$Y$_{0.2}$O$_{3-\delta}$ - Cu Ceramic-Metallic Composite Membrane for Hydrogen Separation

Wade A Rosensteel, Neal P Sullivan

(Invited) Challenges and Limitations of Materials for Membrane-Based Water Electrolysis at Megawatt Scale

Katherine E Ayers, Nemanja Danilovic, Everett Anderson

Polybenzimidazole Membranes for Hydrogen Production in the Hybrid Sulfur Electrolyzer

Taylor Reed Garrick, Alexander Gulledge, John A Staser, Brian Benicewicz, John W. Weidner

A Novel Anion Exchange Membrane Enabling Generation of Syngas from Water and Carbon Dioxide at Industrially Important Rates

Zengcai Liu, Richard I Masel, Qingmei Chen, Robert Kutz, Hongzhou Yang, Krzysztof A. Lewinski, Tyler Scott Matthews, Marina Kaplun

Phase Dependent Selectivity of Electrochemical CO$_2$ Conversion to Fuels on TiO$_2$ nanoparticles
Christopher J. Wright, Pranav P. Sharma, Fu-Sheng Ke, Andrew A. Peterson, Xiao-Dong Zhou

1516 (Invited) Optimizing Electrocatalyst Selectivity for CO₂ Reduction over H₂ Evolution

Andrew A. Peterson

1517 (Invited) Electrosynthesis of Fuels Directly from CO₂

Anne C. Co, Joshua Billy, Katherine Muhlenkamp

1518 (Invited) Defect-Rich CO₂ Reduction Catalysts

Xiaofeng Feng, Matthew Kanan

1519 (Invited) Two-Dimensional Materials for Electrochemical Synthesis of Fuels

Jingjie Wu, Mingjie Liu, Ken Hackenberg, Yuanyue Liu, Ram Manohar Yadav, Pranav P. Sharma, Xiao-Dong Zhou, Brandon Wood, Boris I. Yakobson, Jun Lou, Pulickel M Ajayan

1520 (Invited) Electrochemical CO₂ Reduction to Formic Acid on Crystalline SnO₂ Nanosphere Catalyst

Yishu Fu, Yuyu Liu, Yanan Li, Jinli Qiao, Xiao-Dong Zhou

1521 Electrochemical Reduction of CO₂ Using Bi-Layer Cu₂O Electrodes

Joel Bugayong, Gregory L Griffin

1522 Electrochemical Methanation of Carbon Dioxide with Highly Dispersed Copper Nanocatalysts

Karthish Manthiram, Brandon J. Beberwyck, A. Paul Alivisatos

1523 CO₂ Electrocatalytic Reduction at Gold and Copper Electrodes: Role of Particle Size and Surface Chemistry
Evan Michael Andrews, John Flake, Yuxin Fang

Enhancing the Electrochemical Surface Area of Tin Based Porous Electrodes for Carbon Dioxide Reduction to Formate

Arun S Agarwal, Dushyant Gautam, Edward Rode, Jacek B Jasinski, Tu Quang Nguyen, Mahendra Kumar Sunkara, Narasi Sridhar

Effect of Acid-Leaching on the Electrochemical Performance of Carbon-Supported Copper Phthalocyanine Tetrasulfonic Acid Tetrasodium Salt (CuTSPc/C) Catalys

Jinli Qiao, Xin Qing

Kinetics and Electrocatalytic Activity of Co(Aminopyrine)-Derived Nitrogen-Doped Porous Nanocomposite for Oxygen Reduction Reaction in Alkaline Electrolyte

Sheng Tang, Taishan Zhu, Yishu Fu, Jinli Qiao, Xiao-Dong Zhou

Nitrogen-Doped Hierarchical Mesoporous/Macroporous Carbon (H-C) Prepared from the Combined Silica Templates with Different Size for Oxygen Reduction

Mingjie Wu, Jingjing Shi, Qiang Wang, Jinli Qiao, Yuyu Liu

The Performance of Doped Mesoporous Carbon Electrodes as Electrochemical Capacitors in Optimized Alkaline Electrolyte

Wenzhao Chen, Jiadong Li, Nengneng Xu, Qiang Wang, Yuyu Liu, Jinli Qiao

The Electrochemical Conversion of Carbon Dioxide to Fuels on a Nanoporous Copper/M Catalyst

Joshua Billy, Anne C. Co

Electrode Kinetics of the Ni Porous Electrode for Hydrogen Production in the Molten Carbonate Electrolysis Cell (MCEC)

Lan Hu, Göran Lindbergh, Carina Lagergren
Cross-linked Anion Exchange Membranes Composed of Imidazolium Salt for Alkaline Fuel Cell

Feifei Song, Shuli Chen, Ying Gao, Yuyu Liu, Jinli Qiao

Effect of Acid Leaching on the Catalytic Activity of Co-Salen/C Non-Precious Metal Catalysts for Oxygen Reduction Reaction

Jinli Qiao, Pan Xu

H₂/O₂ Alkaline Membrane Fuel Cell Performances Using Carbon-Supported Metal Phthalocyanine (MPc/C₉M = Co, Cu, Zn, Ni) as Cathode Catalysts

Taishan Zhu, Xin Qing, Pan Xu, Yanxi Song, Jinli Qiao

Synthesis and Conductive Property of Alkaline Anion-Exchange Membranes Based on Poly(vinyl alcohol)/Bis(2-chloroethyl) Ether-1,3-bis[3-(dimethylamino)propyl] Urea Copolymer Composite

Shuli Chen, Yanxi Song, Feifei Song, Xiaoxiang Zhao, Jinli Qiao, Xiao-Dong Zhou

Electrode Investigation for the Solid-Oxide Electrolysis of Dry CO₂ for O₂ Production

Katarzyna Sabolsky, Edward M Sabolsky, John Christian, Jeremy Harp, John Zondlo

Manganese Doped Lanthanum-Strontium Chromite Fuel Electrode for Solid Oxide Fuel Cell and Oxygen Transport Membrane Systems

Sapna Gupta, Prabhakar Singh

Electro-Catalytic and Fuel Cell Studies in an Internal Reforming Iso-Octane Fed SOFC Using Cu/CeO₂ Composites As Anodic Electrodes

Abdullah Abdulaziz Al-Musa, Mohammed Al-Saleh, Ayman Al-Zahrani, Nikolaos Kaklidis, George Marnellos

Application of Coordinatively Supported and Activated Metal Nanocenters As Electrocatalytic Systems for Reduction of Carbon Dioxide
Anna Wadas, Iwona Agnieszka Rutkowska, Pawel J Kulesza

I03-Materials for Low-Temperature Electrochemical Systems 2

Energy Technology/Industrial Electrochemistry and Electrochemical Engineering

1539(Energy Technology Division Research Award) PEM Fuel Cell Electrode Layer Degradation

Rod L Borup, Randachary Mukundan, Joseph D. Fairweather, Dusan Spernjak, David A. Langlois, Karren L. More, Gael Maranzana, Adrien Lamibrac, Jérôme Dillet, Sophie Didierjean, Olivier Lottin, Laure Guétaz, Rajesh Ahluwalia, Srikanth Arisetty, Karen Rau

1540(Industrial Electrochemistry & Electrochemical Engineering Division Student Achievement Award) Anhydrous High-Proton Conductor Based on Ionic Nanopeapods

Mohammad Mahdi Hasani-Sadrabadi, Erfan Dashtimoghadam, Ghasem Bahlakeh, Karl I Jacob

1541Heterogeneities of Ageing in a PEMFC Stack: Links Between Membrane Pinholes, Carbon Corrosion and End-of-Life

Laetitia Dubau, Luis Castanheira, Marian Chatenet, Frederic Maillard, Jérôme Dillet, Gael Maranzana, Sofyane Abbou, Olivier Lottin, Gilles De Moor, Assma El Kaddouri, Corine Bas, Lionel Flandin, Elisabeth Rossinot, Nicolas Caqué

1542Durability Evaluation of PEFC Catalyst Layers through in-Situ SEM/STEM Techniques

Akari Hayashi, Masahiko Kitamura, Zhiyun Noda, Kazunari Sasaki

1543Fabrication and Characterization of Well-Tunable and Titanium Thin-Film Liquid/Gas Diffusion Layers

Stuart M. Steen, Jingke Mo, Scott Retterer, Alexander Terekhov, Feng-Yuan Zhang

1544Liquid-Water Distribution in Compressed Gas-Diffusion Layers Using X-Ray Computed Tomography
Iryna V Zenyuk, Dilworth Y. Parkinson, Adam Z Weber

1545 Analytical Modeling and Experimental Study of Thermal Conductivity of Catalyst Layer of Polymer Electrolyte Membrane (PEM) Fuel Cells

Mohammad Ahadi, Mehdi Andisheh-Tadbir, Mickey Tam, Jürgen Stumper, Majid Bahrami

1546 Performance of a High Temperature Polymer Electrolyte Membrane Fuel Cell with Low Catalyst Loading Produced by Reactive Spray Deposition Technology

Siwon Kim, Timothy D. Myles, Radenka Maric

1547 Effect of Ionomer Content and Relative Humidity on IT-PEMFC Performances at 120 °C

Min Kyung Cho, Hee-Young Park, In Young Cha, So Young Lee, Sung Jong Yoo, Hyoung-Juhn Kim, Jonghee Han, Suk Woo Nam, Yung-Eun Sung, Jong Hyun Jang

1548 Impact of Cationic Impurities on Low-Pt Loading PEFC Cathodes

Selvarani Ganesan, Md. Aman Uddin, Jaehyung Park, Ugur Pasaogullari, Leonard J. Bonville, Trent Molter

1549 A Cationic Contamination in PEFC Cathode: A Cause and Effect Study

Md. Aman Uddin, Jaehyung Park, Selvarani Ganesan, Ugur Pasaogullari, Leonard J. Bonville, Trent Molter

1550 (Invited) Advanced Materials for Electrochemical Systems

Dongguo Li, Yijin Kang, Dusan Strmcnik, Nenad M Markovic, Vojislav Stamenkovic

1551 Insights into the Oxygen Reduction Reaction Activity of Pt/C and PtCu/C Catalysts

Eric J Coleman, Anne C. Co

1552 High Activity of Ru@CoSe₂/C Electrocatalyst Toward Oxygen Reduction Reaction
Hengyi Li, Xuan Cheng, Ying Zhang

1553 Enhancing Activity and Pt Utilization in Pt-CsH₂PO₄ Composite Electrodes for Solid Acid Fuel Cells

V. Sara Thoi, Sossina M Haile

1554 (Invited) Engineering the Microstructure and Atomic Arrangement of Pt-Based ORR Catalyst for High Activity and Durability

Jun Yang, Chunchuan Xu, Kerrie Gath, Patrick Pietrisz, Richard Soltis, Benjamin Pence, Mark Jagnar, Kai Sun, Guangnan Meng, Evan Sohm, Qingying Jia, Sanjeev Mukerjee

1555 Dealloyed Pt-Ni Polymer Electrolyte Fuel Cell Cathodes: Effects of Catalyst-Ionomer Ink Composition on Structure and Performance

Deborah J Myers, Nancy Kariuki, Joshua Hammons, Rajesh Ahluwalia, Xiaohua Wang, Jui-Kun Peng, Dharshini Fongalland

1556 Glad-SAD Pt-Ni Alloy/Ni Nanorods As Highly Active Oxygen Reduction Reaction Electrocatalysts

Nancy Kariuki, Fatma Yurtsever, Mahbuba Begum, Mesut Yurukcu, Mehmet Cansizoglu, Tansel Karabacak, Deborah J Myers

1557 Stability Enhancement of the Interaction Between Pt Nanoparticles and Carbon Supports through Carbon Surface Functionalization

Le Xin, Fan Yang, Zhe-Fei Li, Chengjun Sun, Lia Stanciu, Jian Xie

1558 High-Performance Pt Catalysts Supported on Polybenzimidazole-Grafted XC72 for PEMFCs

Zhe-Fei Li, Le Xin, Fan Yang, Jian Xie

1559 Influence of Temperature on the Oxygen Electroreduction Activity at Nanoporous Carbon Support
Rutha Jäger, Eneli Härk, Vahur Steinberg, Enn Lust

1560 *(Invited)* Graphene-Based Anode Material Design and Preparation Process for Lithium Ion Battery

Zi-Feng Ma, Tao Yuan, Jingjing Ma, Yu-Shi He, Xiao-Zhen Liao

1561 PEM Water Electrolysis - Durability Under Heavily Reduced Anode Catalyst Loading

Christoph Rakousky, Marcelo Carmo, Wiebke Maier, Detlef Stolten

1562 Sensitivity Analysis of a PEM Electrolyser Cathode with Respect to the Platinum and Nafion Loading

Paul Paciok, Christoph Rakousky, Marcelo Carmo, Wiebke Maier, Detlef Stolten

1563 Thin Oxide Film Reduction Via the Polyol Method: An Electrochemical Study of a Polyol Reduction Process

Hany El-Sayed, Vignesh Sureshwaran, Lukas Schuster, Hubert A Gasteiger

1564 Noble Metal Aerogel Design for Bio-/Fuel Cell Applications

Dan Wen, Chengzhou Zhu, Alexander Eychmüller

1565 Synthesis and Electrochemical Properties of IrO₂ Nanosheets

Wataru Shimizu, Takanobu Ishida, Syu Miyasaka, Yusuke Ayato, Wataru Sugimoto

1566 Novel Ni-Based Bifunctional Oxygen Catalysts for Metal Air Batteries and Alkaline Fuel Cells

Asa Logan Roy, Gabriel A. Goenaga, Nelly Margareth Cantillo, Shane Foister, Thomas A. Zawodzinski

1567 Supportless, Porous, Bismuth-Decorated Palladium Nanotubes with Enhanced Activity and Durability for Formic Acid Oxidation
Robert W. Atkinson, Alexander B. Papandrew, Thomas A. Zawodzinski

1568\textit{H}_2\textit{O}_2\textit{ Electroreduction at Platinum-Rare Earth (RE = Ce, Sm, Dy, Ho) Cathodes of Direct Borohydride Fuel Cells}

Diogo M.F. Santos, David Cardoso, Biljana Sljukic, Cesar A.C. Sequeira, Daniele Macciò, Adriana Saccone

1569\textit{Understanding on Electrochemical Structure of Low Temperature Proton Exchange Membrane Fuel Cells}

Shuang Ma Andersen

1570\textit{CO Adsorption/Desorption Studies on Thin Platinum Films By Electrical Resistance Measurements}

Liangzhu Zhu, Lei Zhang, Siddharth Kapoor, Anil V. Virkar

1571\textit{(Invited) Fuel Cell Catalyst Development and Prospects of Refining Business in Tkk}

Koichi Matsutani

1572\textit{Dynamic Structures of the Active Sites in Iron-Based Catalysts during ORR}

Qingying Jia, Kara Strickland, Sanjeev Mukerjee, Hasnain Hafiz, Barbiellini-Amidei Bernardo, Urszula Tylus, Nagappan Ramaswamy

1573\textit{Combined Nitrogen Precursor Approach to Develop Cobalt-Based Non-Precious Catalysts for Polymer Electrolyte Fuel Cell Cathodes}

Drew Christopher Higgins, Hoon T Chung, Urszula Tylus, Zhongwei Chen, Piotr Zelenay

1574\textit{Dual-Function Air Cathode for Metal-Air Batteries: Integrating Oxygen Reduction Catalysis with Pulse-Power Capability}

Debra R. Rolison, Jeffrey W. Long, Christopher N. Chervin, Nathan W. Kucko, Eric S. Nelson
Preparations of Highly Stable RuxCo/CNTs Electrocatalysts for Oxygen Reduction Reaction

Dong Gao, Hengyi Li, Xuan Cheng

Different Carbide Derived Nanoporous Carbon Supports and Electrocatalysis of Oxygen

Eneli Härk, Margarita Russina, Nikolay Kardjilov, Ingo Manke, André Hilger, Rutha Jäger, Indrek Tallo, Thomas Thomberg, Heisi Kurig, Enn Lust

Synthesis and Characterization of Cu, Fe, Co Based Non-Precious Metal Catalysts for ORR in Alkaline Fuel Cells

Gabriel A. Goenaga, Asa Logan Roy, Nelly M. Cantillo, Shane Foister, Thomas A. Zawodzinski

Oxygen Reduction on Hafnium/Hafnium Carbide Nanoparticles

Olga A Baturina, Albert Epshteyn, Andrew Purdy

Pyrolysis Pressure Dependence of MNC Catalysts for Oxygen Reduction

Cenk Gumeci, Nathaniel Leonard, Barr Halevi, Scott Calabrese Barton

Inhibiting Effects of Nafion on ORR Catalyzed By Precious and Non-Precious Electrocatalysts Supported on Carbon

Jerzy Chlistunoff, José-Maria Sansiñena

Surface Confinement of Oxygen in Carbon Supported Oxygen Reduction Catalysts

Jerzy Chlistunoff, José-María Sansiñena

Nafion-SiO₂ Hybrids Combined with Pt-Sn/C Anodes for DEFC Operating at High Temperature
Mauro A. Dresch, Fabio C. Fonseca, Elisabete I. Santiago, Denis R.M. Godoi, Hebe M. Villullas

1583 Electrochemical Reduction of Carbon Dioxide on Single-Crystal Copper Membrane

Naoki Yoshihara, Mai Arita, Masaru Noda

1584 Selective Oxidation of Glycerol Using Au, Pd Mono and Bimetallic Nanoparticles Supported on Carbon Nanotube As Anode Catalysts in Anion Exchange Membrane Fuel Cells

Ji Qi, David J Chadderdon, Neeva Benipal, Yang Qiu, Xiaotong Han, Yibo Jiang, Wenzhen Li

1585 Catalyst Layer Architectures with Supportless Pt Hollow Spheres for Polymer Electrolyte Fuel Cells (PEFCs)

Didem Cilingir Dogan, Seong Hun Cho, Gu-Gon Park, Tae-Hyun Yang, Sung-Dae Yim

1586 Platinum-Dysprosium Alloys for Oxygen Reduction in Alkaline Media

Biljana Sljukic, Diogo M.F. Santos, Marta Martins, Cesar A.C. Sequeira, Daniele Macciò, Adriana Saccone

1587 Facile Synthesis and Performances of a CoSe₂/C Catalyst for the Oxygen Reduction Reaction

Dong jiang Zhao, Song yan Ma

1588 First Principles Investigation on the Phase Change Induced By Delithiation of Li₂Fe₀.₅Mn₀.₅SiO₄

Tiancheng Yi, Yunsong Li, Xuan Cheng, Ying Zhang

1589 Novel Gas Diffusion Layer for PEMFC Based on in-Situ Synthesized Carbon Nanofibers/Carbon Paper Composites

Junsheng Zheng, Yuan Gao, Jian-Xin Ma
Preparation and Performance Study of an Unsupported Pt Catalyst for Proton Exchange Membrane Fuel Cell

Licheng Ye, Junsheng Zheng, Tian Tian, Yuan Gao, Ping Li

Study of Water Retention Elevation on TiO2 /Nafion Membrane By Using Dynamic AFM

Osung Kwon, ByungRak Son, Joogon Kim, Sam Park, Dong Ha Lee

Effects on Wetting Agents in Cationic Contamination and Mitigation in PEFCs

Jaehyung Park, Md. Aman Uddin, Selvarani Ganesan, Ugur Pasaogullari, Leonard J. Bonville

(Invited) Separator Requirements for Nonaqueous Flow Batteries

Robert M. Darling

Gas Permeation Study in Thin and Ultra-Thin Ionomer Films

Meron Tesfaye, Bryan D McCloskey, Adam Z Weber

Development and Characterization of Membrane and Catalyst Materials for the CuCl(aq)/HC(aq) Electrolytic Cell

Derek M. Hall, Roghayeh Lotfi, Soohyun Kim, Serguei N. Lvov

Next Generation Anion Exchange Membranes Based on Perfluorinated Polymer Backbones

Zachary Page-Belknap, Mei-Chen Kuo, Bryan S Pivovar, Andrew M Herring

Novel Hyperbranched Polymer-Based Anion-Exchange Membranes

Omar Movil-Cabrera, Logan Frank, John A Staser
1598 Uni-Directional Orientation of Ionic Domains in Block Copolymer Electrolytes for Anisotropic Ion Transport

Christopher George Arges, Paul F. Nealey

1599 Multiple Advance Diagnostics to Probe the Effect of Balance of Plant Materials on Fuel Cell Performance

Charles B Staub, Jason M Christ, Guido Bender, Clay S. Macomber, Heli Wang, Huyen N Dinh

1600 Novel Gas Diffusion Layers with Separate Gas and Water Pathways for Pemfcs

Qianran He, Jie Li, Ling Li, Leon Shaw

1601 Hybrid Inorganic/Organic Membranes for Medium Temperature PEM Fuel Cells

Miguel E. Córdova-Chávez, Eric M. Kelder, Stephen J. Picken

105-Solid-Gas Electrochemical Interfaces (SGEI 1)

High Temperature Materials/Energy Technology/Physical and Analytical Electrochemistry

1602 (Invited) Dissimilar Interfaces As a Driver to Oxygen Reduction on Perovskite Oxide Surfaces

Bilge Yildiz

1603 Polarization Induced Changes in LSM Thin Film Electrode Composition Observed by In Operando Raman Spectroscopy and TOF-SIMS

Melissa D. McIntyre, Marie Lund Traulsen, Kion Norrman, Simone Sanna, Robert A Walker

1604 Surface Segregation in Solid Oxide Electrode Materials Occurring at Intermediate Temperatures

John Druce, Helena Téllez, Tatsumi Ishihara, John A. Kilner
Surface Segregation and Inter-Diffusion of Cations and Impurities in Microelectrodes for Solid Oxide Fuel Cells and Electrolyzers

Helena Téllez, John Druce, Yanuo Shi, Markus Kubicek, Neil J. Simrick, Jennifer L. M. Rupp, Tatsumi Ishihara, John A. Kilner

Nature and Functionality of Oxygen/Cathode/Electrolyte-Interfaces in SOFCs

Julian Szász, Florian Wankmüller, Virginia Wilde, Heike Störmer, Dagmar Gerthsen, Norbert H. Menzler, Ellen Ivers-Tiffée

Surface Composition of Layered Ruddlesden-Popper $\text{La}_{n+1}\text{Ni}_n\text{O}_{3n+1}$ ($n = 1, 2$ and $3$) Epitaxial Films

Kuan-Ting Wu, Helena Téllez, John Druce, Mónica Burriel, Tatsumi Ishihara, John A. Kilner, Stephen J. Skinner

(OInvited) Oxygen Reduction Reaction at Cathodes on Proton Conducting Oxide Electrolytes: Contribution from Three Phase Boundary Compared to Bulk Path

Rotraut Merkle, Daniel Poetzsch, Joachim Maier

(OInvited) Properties of the Electrode-Ammonium Polyphosphate-Composite Interface at Temperatures up to 250°C

Berthold Benedikt Lothar Reeb, Ulrich Stimming

Effect of $\text{Gd}_{0.2}\text{Ce}_{0.8}\text{O}_2$ Sintering Temperature on Formation of a SrZrO$_3$ Blocking Layer between $\text{Y}_{0.16}\text{Zr}_{0.84}\text{O}_2$, $\text{Gd}_{0.2}\text{Ce}_{0.8}\text{O}_2$ and $\text{La}_{0.58}\text{Sr}_{0.40}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_3$

Virginia Wilde, Heike Störmer, Julian Szász, Florian Wankmüller, Ellen Ivers-Tiffée, Dagmar Gerthsen

(OInvited) Microreactors for Characterization and Benchmarking of Photocatalysts

Peter C. K. Vesborg, Fabio Dionigi, Daniel Bøndergaard, Thomas Pedersen, Kazunari Domen, Kazuhiko Maeda, Søren Dahl, Ole Hansen, Ib Chorkendorff

Need for In Operando Characterization of Electrochemical Interface Features
Marie Lund Traulsen, Christodoulos Chatzichristodoulou, Karin Vels Hansen, Luise Theil Kuhn, Peter Holtappels, Mogens Bjerg Mogensen

1613 (Invited) Rate-Determining Step for Oxygen Reduction Reaction on Oxide Cathode in SOFC and Its Interpretation Based on Band Energy Diagram

Ayano Takeshita, Satoshi Okada, Shinya Sugiura, Shogo Miyoshi, Yasushi Shibuta, Shu Yamaguchi, Fuyuki Shimojo

1614 (Invited) Molecular Understanding of Oxygen Exchange in Solid Oxide Fuel Cell Cathodes

Dane Morgan, Milind Gadre, Anh Ngo, Yueh-Lin Lee, Yang Shao-Horn, Stuart B. Adler

1615 Interfaces and Durability for Different LSCF/CGO/YSZ Systems for IT-SOFC

Cécile Rossignol, Guillaume Constantin, Pascal Briois, Alain Billard, Elisabeth Djurado, Laurent Dessemond

1616 (Invited) Structure and Stability of Pt-Y Alloy Particles for Oxygen Reduction Studied by Electron Microscopy

Davide Deiana, Jakob Birkedal Wagner, Thomas Willum Hansen

1617 (Invited) Theoretical Approach for Understanding Oxygen Reduction at the Cathode Surface of Solid Oxide Fuel Cell

Michihisa Koyama, Takayoshi Ishimoto

1618 Potential Distributions and the Corresponding Driving Forces for Transport in Cathodes of Solid Oxide Fuel Cells

Xingbo Liu, Wenyuan Li

1619 (Invited) Determination of Effective Reaction Area in a Mixed-Conducting SOFC Cathode

Koji Amezawa, Yoshinobu Fujimaki, Takashi Nakamura, Katherine Develos-Bagarinoa,
Katsuhiro Yamaji, Kiyofumi Nitta, Yasuko Terada, Fumitada Iguchi, Keiji Yashiro, Hiroo Yugami, Tatsuya Kawada

1620 (Invited) High Temperature CO\textsubscript{2} Electrolysis on La(Sr)Fe(Mn)O\textsubscript{3} Oxide Cathode by Using LaGaO\textsubscript{3} Based Electrolyte

Tatsumi Ishihara, Kuan-Ting Wu, Shijing Wang

1621 Phase Field Simulation Coupling Microstructural Evolution and Crack Propagation during Performance Degradation of Solid Oxide Fuel Cells

Taufiq Abdullah, Lin Liu

1622 Sulfur Tolerance of La\textsubscript{0.3}M\textsubscript{0.7}Fe\textsubscript{0.7}Cr\textsubscript{0.3}O\textsubscript{3-δ} (M= Sr, Ca) Solid Oxide Fuel Cell Anodes

Paul Kwesi Addo, Beatriz Molero-Sanchez, Aligul Buyukaksoy, Scott Paulson, Viola Birss

1623 Modeling Water Reduction on 10 Mole% Gadolinia-Doped Ceria (GDC10) Porous Electrodes

Honorio Valdes-Espinosa, Eric M. Stuve, Stuart B. Adler

1624 Anodes Derived from Fluorite-Type and Perovskite-Type Metal Oxides for SOFCs

Venkataraman Thangadurai, Kalpana Singh, Hala Talaat Handal, Behzad Mirfakhraei

1625 Impregnation Based Electrodes for Solid Oxide Fuel and Electrolysis Cells, the State-of-the-Art and Perspectives

Samir Boulfrad, Eman Husni Da'as, Lei Bi, Enrico Traversa

1626 Impedance Spectroscopy Analysis of Ni/YSZ Interfaces Prepared by Liquid Precursor Deposition

Aligul Buyukaksoy, Viola Birss
1627 (Invited) How Surface Ionic & Electronic Point Defects Control Oxygen Exchange Reactions

William C Chueh

1628 (Invited) The Role of Solid-Gas Electrochemical Interfaces for Mixed Ionic Electronic Conducting Oxygen Transport Membranes

Stefan Baumann, Patrick Niehoff, Falk Schulze-Küppers, Madhumidha Ramasamy, Wilhelm A. Meulenberg, Olivier Guillon

1629 Investigation of Infiltration via Multi-Physics Simulation Tool with Realistic Microstructure Properties

Tao Yang, Ismail Bektas Celik, Hayri Sezer, Shiwoo Lee, Kirk Gerdes

1630 (Invited) Capabilities of Analytical Transmission Electron Microscopy for the Analysis of Structural, Chemical and Electronic Properties Exemplified by the Study of Y-Doped (Ba, Sr)(Co, Fe)O\textsubscript{3-δ}

Matthias Meffert, Heike Störmer, Dagmar Gerthsen

1631 Modification of Oxygen/(Ba\textsubscript{0.5}Sr\textsubscript{0.5})(Co\textsubscript{0.8}Fe\textsubscript{0.2})O\textsubscript{3-δ} Interfaces Derived by Metal-Organic Deposition

Koichi Asano, Christian Niedrig, Wolfgang Menesklou, Stefan F. Wagner, Ellen Ivers-Tiffée

1632 Optimizing Surface Segregation and Defect Structure of a Perovskite through Strain for Improving Oxygen Reduction and Evolution Catalysis

Celeste Anna Maria van den Bosch, George Frederick Harrington, Stephen J. Skinner, Ainara Aguadero

1633 (Invited) Enhancement of Surface Oxygen Exchange Kinetics for Pr\textsubscript{0.1}Ce\textsubscript{0.9}O\textsubscript{2-δ} with Deposition of La or Sm Oxide

Liang Zhao, Nicola H. Perry, Kazunari Sasaki, Sean R. Bishop
Surface Modification of \( \text{LaNi}_{0.6}\text{Fe}_{0.4}\text{O}_{3-\delta} \) Film Electrode by \( \text{Ce}_{0.9}\text{Gd}_{0.1}\text{O}_{1.95} \) Porous Layer

Riyan Achmad Budiman, Takamichi Miyazaki, Shin-ichi Hashimoto, Keiji Yashiro, Koji Amezawa, Tatsuya Kawada

Study of Electrode Performance for Nanosized \( \text{La}_{0.4}\text{Sr}_{0.6}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\Delta} \) IT-SOFC Cathode

Liliana Veronica Mogni, Kyle Yakal-Kremski, Corina Mercedes Chanquía, Zhan Gao, Hongqian Wang, Alberto Caneiro, Scott A Barnett

Pt/Metal Oxide Micro-Nanostructures for Chemical-Electrical Signal Transduction

Nathan J Ray, Eduard G Karpov

Oxygen Nonstoichiometry and Electrochemical Properties of \( \text{LaNiO}_{3-\delta} \)

Riyan Achmad Budiman, Shin-ichi Hashimoto, Takashi Nakamura, Keiji Yashiro, Koji Amezawa, Tatsuya Kawada

Stabilization of Ni-YSZ Nanocomposite Anodes by Deposition of a Thin YSZ Overlayer

Aligul Buyukaksoy, Viola Birss

Mass Transport inside PEFC during Power Generation Studied By Visualization of Oxygen Partial Pressure and Current Density

Kazuhiro Takanoashi, Makoto Uchida, Takeo Suga, Yuzo Nagumo, Junji Inukai, Hirovuki Nishide, Masahiro Watanabe

GDC-Infiltrated \( \text{La}_{0.3}\text{Ca}_{0.7}\text{Fe}_{0.7}\text{Cr}_{0.3}\text{O}_{3-\delta} \) Symmetrical Oxygen Electrodes for Reversible SOFCs

Beatriz Molero-Sánchez, Paul Kwesi Addo, Aligul Buyukaksoy, Viola Birss

Energy Conversion Processes in Catalytic Electrolyte-Free Metal-Oxide Nanostructures
Mohammad A Hashemian, Eduard G Karpov

1642 Elimination of Surface Adsorbates on Gadolinium Doped Ceria for Electrochemical Strain Microscopy

Jie Xu, Jiangyu Li, Stuart B. Adler

1643 Electrochemical Performance of 100cm2 Class Direct Carbon-Molten Carbonate Fuel Cell (DC-MCFC)

Sun Hee Choi, Dong-nyeok Park, Hyung Chul Ham, Sung-Pil Yoon, Jonghee Han, Suk Woo Nam

1644 Anode-Supported Solid Oxide Fuel Cells Fabricated By Single-Step Reduced-Temperature Co-Firing

Hongqian Wang, Zhan Gao, Adam E Jakus, Ramille N Shah, Scott A Barnett

1645 Activation of Platinum-Based Centers through Modification with Metal Oxo Species toward Electrocatalytic Oxidation of Dimethyl Ether and Methanol

Iwona Agnieszka Rutkowska, Jakub P. Sek, Ewelina Marks, Piotr Zelenay, Pawel J Kulesza

I06-State-of-the-Art Tutorial on Diagnostics in Low-Temperature Fuel Cells

Energy Technology/Industrial Electrochemistry and Electrochemical Engineering/Physical and Analytical Electrochemistry

1646 (Invited) Recent Topics on x-Ray Analysis of Fuel-Cell Catalysts

Hideto Imai


Karen L. More
1648 *(Invited)* Ionomer Membrane and Thin-Film Diagnostics

Ahmet Kusoglu, Adam Z Weber

1649 *(Invited)* Water and Proton Dynamics in Perfluorinated Surfactants and Membranes by QENS

Sandrine Lyonnard, S. Berrod, A. Guillermo, Gerard Gebel, B. Améduri, B. Frick, J. Ollivier

1650 *(Invited)* Imaging and Quantitative Chemical Mapping of PEM-FC Catalyst Layers By Scanning Transmission X-Ray Microscopy

Adam P Hitchcock

1651 *(Invited)* Diagnostics of Microstructure and Properties of Polymer Electrolyte Fuel Cell Catalyst Layer

Atsushi Ohma, Tetsuya Mashio, Hiroshi Iden, Kazuyuki Sato, Yoshitaka Ono, Kei Sakai, Ken Akizuki, Yoshihisa Furuya, Kazuhiko Shinohara

1652 *(Invited)* Limiting Current As a Tool to Study Oxygen Transport in PEM Fuel Cells

Daniel R. Baker, David A. Caulk

1653 *(Invited)* Diagnostics of Fuel-Cell Performance Utilizing Simple Graphical Methods Based on Theoretical Limiting Cases

Mike L. Perry


Daniel S Hussey, David L Jacobson

1655 *(Invited)* Measuring and Modeling Transport Processes in Porous Electrodes

Jeff T. Gostick
1656(Invited) Modeling of and Novel Approaches to Water Management in Polymer Electrolyte Fuel Cells

Chao-Yang Wang


Gael Maranzana, Jérôme Dillet, Sofyane Abbou, Thomas Gaumont, Adrien Lamibrac, Sophie Didierjean, Jean-Christophe Perrin, Feina Xu, Olivier Lottin

1658(Invited) Diagnostic Methods Utilized in Accelerated Stress Testing of Polymer Electrolyte Membrane Fuel Cells

Rangachary Mukundan, Rod L Borup


Anthony R. J. Kucernak

1660(Invited) Combinatorial Study of Fundamental Electrocatalyst Performance - the Scanning Flow Cell Coupled to Online Analytics

Serhiy Cherevko, Anna K. Schuppert, Jan-Philip Grote, Simon Geiger, Aleksandar R. Zeradjanin, Gareth Keeley, Karl J.J. Mayrhofer

1661Analysis of the Correlation Between Local Temperature and Observed Degradations during Durability PEMFC Tests for Automotive Application

Fredy Nandjou, Jean-Philippe Poirot-Crouvezier, Marion Chandesris, Jean-François Blachot, Céline Bonnaud, Yann Bultel

1662Improvement of the Process Model for the Ohmic Loss of the Proton Exchange Membrane Fuel Cell

Seyed Mohammad Rezaei Niya, Ryan K. Phillips, Mina Hoorfar
1663 Start up/Shut Down Cycles in a Segmented Polymer-Electrolyte-Membrane Fuel Cell

Maximilian Schwager, Shankar Raman Dhanushkodi, Walter Mérida

1664 Spatially Resolved Electrochemical Impedance Measurement in a PEM Fuel Cell Using an Array of Reference Electrodes

Edward Brightman, Chao Lyu, Gareth Hinds

1665 Cost Effective Fabrication and Characterization of in-Membrane Micro-Fuel Cell

Seyed Reza Mahmoodi, Ronald S. Besser

1666 Mass Transfer Overpotentials in Dispersed Pt/C and De-Alloyed PtNi/C Polymer Electrolyte Fuel Cell Cathodes

Xiaohua Wang, Jui-Kun Peng, Rajesh Ahluwalia, Deborah J Myers, Zhiwei Yang

1667 Investigating Local Temperature and Related Parameters in Large Area PEMFCs through a Pseudo-3D Physic-Based Model

Yann Bultel, Fredy Nandjou, Jean-Philippe Poirot-Crouvezier, Marion Chandesris

K01-Mechanistic Organic Electrochemistry

Organic and Biological Electrochemistry

1668 Alkene Difunctionalization Via b-Haloalkoxysulphonium Ions

Ryutaro Hayashi, Yosuke Ashikari, Toshiki Nokami, Akihiro Shimizu, Jun-ichi Yoshida

1669 Cationic Polymerization Initiated By Electrochemically Generated Dendritic Cations

Jun-ichi Yoshida, Masahiro Takumi, Aiichiro Nagaki

1670 Visible Light Responsive B$_{12}$-TiO$_2$ Hybrid Catalyst Composed of Interfacial Complexation
Hisashi Shimakoshi, Shunsuke Yonemura, Yoshio Hisaeda

1671 Electrosynthesis of Heterocyclic Compounds By Radical Cyclization in Environmentally Friendly Media

J.P. Mendes, J.M. S.S. Esperança, A. P. Esteves, M. M. Silva, M.J. Medeiros

1672 Mechanistic Studies of the Cathodic Cleavage of Diphenylacetaldehyde Derivatives

Albert Joseph Fry, Elaine Tsui, Evan Baum, Boris Sheludko

1673 Electrochemical Reduction of Triclocarban at a Silver Cathode

Erin Theresa Martin, Dennis G Peters

1674 Anodic Olefin Coupling Reactions: Controlling the Reaction Pathways of Radical Cation Intermediates and Efforts Toward Artemisolide

Robert J Perkins, Kevin D Moeller

1675 Electrochemical Investigation of Benzil/Aluminum Ion Interactions

Graham T. Cheek

1676 Sustainable Electrochemistry: From Lignin Processing to Paired Electrolysis Reactions

Bichlien H. Nguyen, Robert J Perkins, Jake A. Smith, Kevin D Moeller

1677 Nitrogen Containing O- and P-Quinones As Cathode Materials for Lithium Batteries

Akihiro Shimizu, Yutaka Tsujii, Hiroki Kuramoto, Toshiki Nokami, Yuu Inatomi, Nobuhiko Hojo, Jun-ichi Yoshida

1678 Electrochemical and Spectrophotometric Study of the Hydration of Orthophthalaldehyde and Its Reaction with Amines and Aminoacids
Kristýna Kantnerová, Joel Donkeng, Jiří Ludvík

1679 Electrocatlytic Aziridination of Alkenes in an Undivided Cell Mediated By Iodide

Chengchu Zeng, Jie Chen

1680 Electrochemical Reduction of 2,2′,6,6′-Tetrabromobisphenol A at Silver Cathodes in Dimethylformamide

Benjamin Gerroll, Dennis G Peters

1681 The Selective Coupling and Quantification of Peptides on a Polymer-Coated Microelectrode Array

Matthew D. Graaf, Kevin D Moeller

1682 Insights into the Distance Dependence of the Electron Transfer Rate through the Monolayer Protecting Au25 Nanoclusters

Flavio Maran, Sabrina Antonello, Tiziano Dainese, Marco De Nardi, Alfonso Venzo

1683 Effects of Electrolyte, Current Density and Electricity Consumption on the Anodic Oxidation of Cyclic Amides

James Y. Becker, Tatiana Golub

1684 Electrochemical Cyclization of Brominated Allyl Ethers with the Aid of a Chiral Catalyst

Erick Pasciak, Jonathan Rittichier, M. J. Medeiros, Michael VanNieuwenzhe, Dennis G Peters

1685 Electrochemical Character and Application of Halide Mediators Using CF3CH2OH As Solvent

Chiu Marco Lam, Chengchu Zeng, R. Daniel Little
1686 Electrochemically-Induced Radical Cation Diels-Alder Reactions Assisted By "Redox Tag Strategy"

Yusuke Yamaguchi, Yohei Okada, Kazuhiro Chiba

1687 Electrochemistry Vs. Photochemistry: A Mechanistic Comparison of the Nucleophilic Trapping of Radical Cations from Electron-Rich Olefin

Matthew D. Graaf, Kevin D Moeller

1688 Electrochemical Reduction of Oligo-nitrocalix[4]Arenes - Molecules with Multiple Redox Centers, Different Conformations and Variable Shape

Jiří Ludvík, Alan Li, Pavel Lhoták

1689 Electrochemical Reduction of Flavones

M. J. Medeiros, Erick Pasciak, Muhammad Mubarak, Dennis G Peters

1690 Electrochemical Explorations of 9,10-Anthraquinone/Hafnium(IV) Ion Interactions in Nonaqueous Solvents

Graham T. Cheek

1691 The Effect of Electron Transfer on a Strongly H-Bonded Ureidopyrimidinone Dimer

Diane K. Smith, Laurie A. Clare

1692 Electronic Structure Effects on Electron Transfer Controlled Hydrogen Bonding in Substituted Dinitrobenzene Electrogogenerated Anions As Receptors for 1,3-Diethylurea

Eduardo Martinez-Gonzalez, Carlos Frontana

1693 Electrochemical Behavior of Nitrobenzene in Aqueous CTAB

Inam-ul Haque
L01-Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session

Physical and Analytical Electrochemistry

1694 (Invited) Electrochemical Detection of Collisions of Single Soft Nanoparticles-Emulsions and Viruses

Allen J. Bard, Byung-Kwon Kim, Aliaksei Boika, Jeffrey E. Dick

1695 (Invited) Catalytically Accelerated Hydrogen Gas Detection at Electrodeposited Pd@Pt Nanowires

R. Penner


Richard P Van Duyne

1697 (Invited) The Use of Redox Nano-Titrations for Elucidating Reactive Heterogeneity on Electrodes for Energy Conversion and Charge Storage

Burton H Simpson, Jingshu Hui, Timothy Lichtenstein, Xuan Zhou, Joaquin Rodriguez-López

1698 (Invited) Bioelectrocatalytic Oxidation of Sucrose with an Enzyme Cascade Assembled on a DNA Scaffold

Shelley D. Minteer

1699 (Invited) Designer Electrochemical Biosensors: Developing Guidelines Driven By Bioanalytical Applications

Ryan Jeffrey White

1700 (Invited) Fluorescence-Enabled Electrochemistry of Single Molecules and Nanoparticles
Bo Zhang, Stephen Oja, Jin Lu

1701*(Invited) Ultrasensitive Electroanalytical Detection and Study of Single Nanoparticle Catalysts

Keith J Stevenson

1702*(Invited) Dendrite-Free Rechargeable Zinc-Based Batteries: Solving a Chronic Impediment through Architectural Design in 3D

Debra R. Rolison, Joseph F. Parker, Irina R. Pala, Christopher N. Chervin, Eric S. Nelson, Jeffrey W. Long


Héctor D. Abruña

1704*(Allen J. Bard Award) The Electrochemical Nucleation and Physical Behavior of Hydrogen Nanobubbles

Henry S White, Qianjin Chen, Sean R. German, Hilke Wiedenroth, Long Luo, Stephen W. Feldberg

1705Voltammetric and Impedance Investigation of Vanadium Oxidation States in Sulfuric Acid

Petr Vanýsek, Vítězslav Novák, Ladislav Chladil

1706Effect of CO Poisoning of PEM Fuel Cell Anode on Impedance Spectra-Simulations

Fathima Fasmin, Srinivasan Ramanathan

1707Interpreting Impedance Spectra in Time-Constant Domain; Application to the Passive Film on Titanium

Qing Ni, Steven J. Thorpe, Donald W. Kirk
Artefacts in Electrochemical Impedance Measurements Due to Stray Capacitances

Marco Balabajew, Bernhard Roling

Contact Lens Biofuel Cell Tested in Conditions Similar to Human Eyes

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

Electrochemical Kinetic Study on Various Immobilized Yeasts for Glucose Biofuel Cell Applications

Yang Bae Jeon, Fusheng Tang, Jin Wook Lee

Quantifying Single Human Cancer Cell Redox State By Scanning Electrochemical Microscopy

Sabine Kuss, Dao Trinh, Janine Mauzeroll

Redox Triggered Vesicles a Promising Approach for Drug Delivery

Tomer Noyhouzer, Chloé L'Homme, Sabine Kuss, Heinz-Bernhard Kraatz, Sylvain Canesi, Janine Mauzeroll

Electrochemical Modification of Carbon Surfaces with Functional Polymers

Anando Devadoss, Cuihua Xue, Han-Kuan Tsai

Electrochemical Sensors for Continuous Monitoring of Bacterial Infections

Edgar D. Goluch, Thaddaeus A. Webster, Hunter J. Sismaet

Electrolytic and Electroless Fabrication of Al-Sc Alloys in KF-Naf-AlF₃ Electrolytes

Olga Tkacheva, Andrey Suzdal'tsev, Andrey Nikolaev, Yuriu Zaikov, Yuriu Shtefanyuk, Vitaliy Pingin, Dmitriy Vinogradov
1716(Europe Section Alessandro Volta Medal) Electrochemical SERS on Nanostructured Surfaces and its Application to DNA Detection and Discrimination

Philip N. Bartlett

1717Electrochemical Reduction of CO$_2$ to CO with High Selectivity Using an All Solid-State Electrolyzer Cell

Tyler Scott Matthews, Marina Kaplun, Zengcai Liu, Qingmei Chen, Robert Kutz, Sean M. Luopa, Krzysztof A. Lewinski, Richard I Masel

1718Optimization and Characterization of the Solar Thermal Electrochemical Conversion of Calcium Carbonate into Calcium Oxide for STEP Cement

Jason Lau, Omar El-Ghazawi, Jiawen Ren, Fang-Fang Li, Stuart Licht

1719Order and Epitaxy during Electrochemical Layer By Layer Growth of Semiconductor Thin Films

Francesco Carlà, Roberto Felici, Andrea Magrini

1720Computational and Spectroscopic Study for Reaction Mechanism of Boric Acid Extraction in Micro-Channel Device

Masahiro Kunimoto, Risa Tamura, Takahiro Oyanagi, Nobufumi Matsuo, Yasuhiro Fukunaka, Hiromi Nakai, Takayuki Homma

1721Analysis of Electrochemical Reactions on Irregular Pores Structures Relevant to Batteries and Fuel Cells Electrodes

Njideka Helen Okoye, Yung-way Liu, Pedro E Arce

1722Mixed Ionic / Electronic Conductivity of Electrolyte-Modified Carbon/Zirconia Composites

Jamie A Shetzline, Stephen Creager

1723Localized Investigations of the Electrochemical Properties of Lithium Battery Materials Using Micro-Pipets
Michael Edward Snowden, Janine Mauzeroll, Steen Brian Schougaard

1724 Monitoring Mechanical Modulation of Reactivity in Electrocatalysis

Qibo Deng, Joerg Weissmueller

1725 Determining Microwire Morphology and Current Transient Trends from Single Microwire Electrodeposition

Tim Zhang, Eli Fahrenkrug, Stephen Maldonado

1726 Evaluation of Corrosion Mechanisms at the Bone-Metal Interface of Hip Implants

Maria J Runa, Mathew T Mathew, Luis A Rocha

1727 Plamonic-Based Electrochemical Imaging of the Crystal Facets of Single Metallic Nanoparticles

Yixian Wang, Xiaonan Shan, Nongjian Tao

1728 Understanding of Rate-Limiting Behavior and of Diffusion in Commercial LiCoO2 Electrodes Via Electrochemical Impedance Spectroscopy

Kazi Rakib Ahmed, Mihri Ozkan, Cengiz Ozkan

1729 Photoelectrocatalysis Applied in Water Disinfection Contaminated By C. Parapsilosis using Nanoporous Electrodes of W/WO3 Prepared By Electrochemical Anodization

Bárbara Araújo Souza, Thais Tasso Guaraldo, Maria Valnice Boldrin Zanoni

1730 Synchronization of Current Oscillations in Dual-Anode Dissolution System in the Presence of a Common Cathode Electrode

Michael Joseph Hankins, Mahesh Wickramasinghe, Istvan Z Kiss

1731 Determination of Inorganic Arsenic As(III) in Water By Anodic Stripping Linear Sweep Voltammetry Using Gold Ultra-Microelectrode Array
Quyet Nguyen Duong, Nghiem Van Le, Thuong Dinh Le, Hoang Thai Nguyen, Hien Duy Tong, Thoa Thi Phuong Nguyen

1732 Visible Light-Induced Photoelectrocalytic Degradation of 4-Nitrophenol on BiVO₄/Carbon Nanotube Electrode

Francisco Wirley Paulino Ribeiro, Lucia Helena Mascaro, Suellen Aparecida Alves

1733 Physical and Electrochemical Properties of Room-Temperature Ionic Liquids Containing Allyl-Based Phosphonium Cations and Bis(fluorosulfonyl)Amide Anion

Katsuhiko Tsunashima, Yuki Sakai, Masahiko Matsumiya

1734 Synchronization Patterns of Oscillatory Nickel Dissolution in Microfluidic Flow Cell with Branched Channel

Yifan Liu, Jasmine Coleman, Istvan Z Kiss

1735 Rotational Waves in an Oscillatory Electrochemical System

Michael L Sebek, Istvan Z Kiss

1736 Voltammetric and Chronopotentiometric Study of Nonstationary Process on Oxygen-Evolving Anodes in KF-Naf-AlF₃-Al₂O₃

Andrey Suzdaltsev, Andrey Khramov, Oksana Limanovskaya, Yuriy Zaikov, Valentin Nekrasov

1737 Non-Precious Metal Catalysts for the Oxygen Reduction Reaction

Jason A. Varnell, Edmund C. M. Tse, Andrew A. Gewirth

1738 Accumulation of Naturally-Occurring Radionuclide Polonium-210 By Phytoplankton in Urban Sea Bays

Daniel Peydus, Galyna Evdokymovna Lazorenko, Vladimir Sergeevich Mychanov
The Electrochemical Properties of Diamond and Tetrahedral Amorphous Carbon Electrodes in Room Temperature Ionic Liquids

Greg M Swain, Romana Jarosova, Catherine Munson

Electrochemical Properties of Bi(111)|1-Ethyl-3-Methylimidazolium Tetracyanoborate and 1-Ethyl-3-Methylimidazolium Iodide Interface

Carolin Siimenson, Liis Siinor, Enn Lust

In Situ STM Studies of Electrochemically Polished Cd(0001) Electrode in 1-Ethyl-3-Methylimidazolium Tetrafluoroborate

Piret Pikma, Simona Selberg, Liis Siinor, Carolin Siimenson, Enn Lust

Electrochemical Characterization of the Bi(111) | 1-Butyl-3-Methylimidazolium Iodide Interface

Liis Siinor, Laura Läll, Enn Lust

Local Generation of Reactive Oxygen Species at New Polymer-Modified Electrodes

Gunther Wittstock, Saustin Dongmo, Julia Witt, Carsten Dosche

Composites of Polypyrrole with Micelles Nanospheres

Piotr Gryczan, Krzysztof Maksymiuk, Anna Kisiel, Agata Michalska

The Impact of the Alkali Cation on the Oscillatory Electro-Oxidation of Ethylene Glycol on Platinum

Elton Sitta, Raphael Nagao, Istvan Z Kiss, Hamilton Varela

Low-Cost, Fused Filament Fabrication-Prepared, 3D-Printed Microfluidic Devices with Modularly Integrated Electrodes for Electroanalytical Measurements

Gregory William Bishop, Jennifer E Satterwhite, Snehasis Bhakta, James F Rusling
1747 In-Situ x-Ray Diffraction Study of Pt(111) Oxidation during Oxygen Reduction Reaction (ORR)

Jakub Drnec, Martin Ruge, Finn Reikowski, Bjorn Rahn, Francesco Carlà, Roberto Felici, Jochim Stettner, Olaf M. Magnussen, David A. Harrington

1748 Electrochemical Activity of Titanium Dioxide Toward Oxygen Reduction and Evolution Reactions

Hadi Tavassol, Sossina M Haile

1749 Comparison of Processes for the Degradation of Trans-Cinnamic Acid: Anodic Oxidation, Electro-Fenton and Photoelectro-Fenton

Nelly Esther Flores, Enric Brillas, Ignasi Sirés

1750 Photoelectrochemical Degradation of 17-Î² Estradiol Using a Photoanode Prepared with RuO₂ Nanoparticles Supported over Graphene

Fernando Cruz Moraes, Bruno Rossi, Ernesto Chaves Pereira

1751 Manipulation of Nanoscale Pattern Formation in Photoelectrochemically Deposited Chalcogenide Films Using Multiple Beam Illumination

Azhar Carim, Nicholas Batara, Anjali Premkumar, Harry A Atwater, Nathan S. Lewis

1752 Enhancement of Water Oxidation at Tungsten Oxide Photoanodes Doped with Borotungstate-Polyanion Modified-Hematite

Krzysztof Miecznikowski, Alejandra Ramirez-Caro, Sebastian Fiechter, Pawel J Kulesza

1753 Cobalt Phosphate Group Modified Hematite Nanorod Array As Photoanode for Efficient Solar Water Splitting

Li Fu, Hongmei Yu, Changkun Zhang, Zhigang Shao, Baolian Yi

1754 Physical-Chemical Properties of the Naf-AlF₃-Sc₂O₃-Al₂O₃ Molten System
Olga Tkacheva, Alexander Kataev, Alexander Redkin, Yurii Zaikov

Benchmarking of Heterogeneous CO₂ Reduction Reaction Electrocatalysts

Ivonne M. Ferrer, Charles C L McCrory, Jonas C Peters, Thomas F Jaramillo

Exceptionally Fast Hydrogen Absorption and Desorption through Platinum Overlayers

Piotr Polczynski, Rafal Robert Jurczakowski

The Electrified Oil/Water Interface in the Presence of Divalent Ions

Diana Diaz-Romero, Monica Olvera de la Cruz, Guillermo Ivan Guerrero-Garcia

NaCl Augmented Phase Transformation in Interfacial Water Under Quasistatic-Loading Conditions

Shah Haidar Khan, Peter Manfred Hoffmann

Investigation of Quantum Confinement in Lead Sulfide Quantum Dots, through Cyclic Voltammetry

Santosh K Haram, Yogini D Gujarathi

L03-Computational Electrochemistry

Physical and Analytical Electrochemistry/Energy Technology

Calculating the Proton Transport and Dielectric Properties of Phosphates and Related Materials

Mark E. Tuckerman

New Method to Determine Eley-Rideal Barriers for 2e⁻ and 4e⁻ Oxygen Reduction Reactions in Fuel Cells

Ted H. Yu, Ho-cheng Tsai, Sundararaman Ravishankar, William A Goddard
1762 Molecular Dynamics Study for Lithium Ion Diffusion in Layered Li$_x$CoO$_2$ $(x=0.5$–$1.0)$

Shinnosuke Hattori, Toshiyuki Kunikiyo, Yuichi Tokita

1763 Multiscale Modeling of the Electrode/Electrolyte Interface Using Charge Optimized Many Body (ECOMB3) Potentials

Sneha A. Akhade, Andrew Antony, Tao Liang, Michael J. Janik, Janna K. Maranas, Susan B. Sinnott

1764 Mathematical Modeling of Multi-Physics Electrochemical Devices

Troy W. Farrell

1765 Simulations of Phase Transformation Dynamics in LiFePO$_4$ Particles in Battery Electrode

Hui-Chia Yu, Bernardo Orvananos, Oncu Akyildiz, Katsuyo Thornton

1766 Modeling of Structural Changes in Cathodes of Lithium Ion Batteries Depending on State of Charge

Björn Kleinsteinberg, Dirk Uwe Sauer

1767 Multi-Scale Theory in the Molecular Simulation of Electrolyte Solutions

Lawrence R Pratt, W. Zhang, X. You

1768 Molecular Simulations of Proton and Hydroxide Transport in Fuel Cell Membranes

Ying-Lung Steve Tse, John Savage, Chen Chen, Chris Knight, Gregory Voth

1769 Molecular Simulation and Performance Prediction of High-Temperature Molten-Salt Batteries

Hao-Yu Li, Chung-Fu Chen, Yi-Chia Cheng, Che-Wun Hong
1770 The Effects of Sulfuric Acid and Vanadium Cations on the Morphology of Hydrated Nafion: MD Simulations

Shengting Cui, Stephen J. Paddison, Thomas A. Zawodzinski

1771 Molecular Dynamics Simulations of Lithiation of Si Nanowires Covered By SiO₂ and Al₂O₃ Shells

Sung-Yup Kim, Alireza Ostadhossein, Adri van Duin, Yue Qi

1772 First-Principles Based Modeling of Structures and Processes at Electrochemical Electrode-Electrolyte Interfaces

Axel Gross

1773 Determining the Phase Stability and Oxygen Nonstoichiometry of Lanthanum Strontium Ferrite Structures By Combining Density Functional Theory and Thermodynamics

Tridip Das, Jason D. Nicholas, Yue Qi

1774 Structural Relaxation and Cation (Li⁺, H⁺, Na⁺) Diffusion in Crystalline Polymer Electrolytes: Ab Initio Molecular Dynamics Simulations

Jun He, Stephen J. Paddison

1775 Defect Chemistry of CeO₂ Surfaces from First Principles and Space Charge Theory

Tor Svendsen Bjoerheim, Eugene Kotomin, Joachim Maier

1776 Confinement in Soft Materials for Novel Energy Applications

Stefano Mossa

1777 Pore-Scale Reconstruction and Multiphase Simulation of PEMFC Catalyst Layers

Jinfen Kang, Seung Hyun Kim, Koji Moriyama
A Study of Mixing in a Magnetohydrodynamic Microfluidic Cell By Numerical Simulation

Fangping Yuan, KM Isaac

Continuum Models for High Molarity Electrolyte Solutions

Keith Promislow, Nir Gavish

Theoretical Modeling of Defect Segregation and Space-Charge Formation in Proton-Conducting Barium Zirconate

Edit Helgee, Anders Lindman, Göran Wahnström

Improved Accuracy of Density Functional Theory Calculations for CO₂ Reduction and Metal-Air Batteries

Rune Christensen, Heine Anton Hansen, Tejs Vegge

Formic Acid Electrochemical Oxidation on Au₂₅ and Pt@Au₂₄ Nanocatalysts: A DFT Approach

Andre Clayborne, Wei Chen

Predicting Transport Properties at Electrode/SEI/Electrolyte Interfaces in Li Ion Batteries

Yue Qi

NO Electrochemical Reduction on Pt Electrocatalysts: A DFT Approach

Hee-Joon Chun, Andre Clayborne, Rees Rankin, Jeff Greeley

First-Principles Modeling Approach Towards Quinone-Derivatives for Li Ion Battery: Effect of Molecular Architecture on Electrochemical Properties

Seung Soon Jang
Ab Initio Thermodynamic Modeling of Electrified Metal-Oxide Interfaces: Consistent Treatment of Electronic and Ionic Chemical Potentials

Zhenhua Zeng, Martin Hangaard Hansen, Jeff Greeley, Jan Rossmeisl, Mårten E Björketun

Modelling of Transport Processes inside Rechargeable Oxide Battery

Viktoria Erfurt, Waldemar Braun, Lorenz Singheiser, Cornelius M. Berger

Mathematical Modeling of Mass and Charge Transfer in Anion-Exchange Membrane Direct Glycerol Fuel Cells Under Steady State and Dynamic Operations

Xiaotong Han, David J Chadderdon, Ji Qi, Wenzhen Li

Modeling Standing Waves in a Thin Layer Sonoelectrochemical System

Jeffrey K Landgren, Jacob Lyon, Emily M Null, Chester G Duda, Gerhard Strohmer, Johna Leddy


Sergio Castañeda Ramírez, Juan Carmona, Alejandro Esteban Pérez Mendoza, Rafael Esteban Ribadeneira Paz

Multiscale Modeling of a Proton Exchange Membrane Fuel Cell: Atomistic Fuel Cell Model

Sergio Castañeda Ramírez, Alejandro Esteban Pérez Mendoza, Juan Carmona, Rafael Esteban Ribadeneira Paz

Design of Novel Electrochemical Materials from Data-Driven First-Principles Calculations

Kristin Aslaug Persson

Accelerating the Discovery of Multivalent Cathode Materials Via High-Throughput First-Principles Calculations
Miao Liu, Anubhav Jain, Kristin Aslaug Persson

1794 Multiscale Modeling of a Proton Exchange Membrane Fuel Cell: Macroscopic Fuel Cell Model and Experimental Validation

Sergio Castañeda Ramírez, Juan Carmona, Alejandro Esteban Pérez Mendoza, Rafael Esteban Ribadeneira Paz

1795 Modeling Oxide Formation and Reduction on Platinum

Michael Eikerling

1796 Self-Assembly, Transport, and Thermodynamics in Nafion Membranes: Insight from Dissipative Particle Dynamics Simulation

Aleksey Vishnyakov, Ming-Tsung Lee, Alexander V. Neimark

1797 Meso-Scale Study of Hydrated Nafion with Diffused Vanadium Cations and Sulfuric Acid

Fatemeh Sepehr, Stephen J. Paddison

1798 Predictive Particle-Based Simulation of the Fabrication of Li-Ion Battery Electrodes

M. Mehdi Forouzan, Chao-Wei Chien, Danilo Bustamante, William Lange, Brian A Mazzeo, Dean Wheeler

1799 Diagnostic Criteria for Identifying Electrode Reaction Mechanisms By Cyclic Square Wave Voltammetry

Lawrence A Bottomley, Megan A Mann

1800 First Principles Calculations of Transition Metal Containment in Li-Ion Cathode Materials with Surface Coatings

David Henry Snydacker, Scott J. Kirklin, Chris Wolverton

1801 Theoretical Study to Improve O → OH Reactions in the Fuel Cell ORR
Ted H. Yu, Randy Torres, William A Goddard

1802 The Mechanism of Electrochemical Oxygen Reduction: A Combined DFT and in-Situ ATR-IR Study on Model Semiconductor Surfaces Ge(100) and ZnO

P. Ulrich Biedermann, Simantini Nayak, Andreas Erbe

L04-Electrocatalysis 7

Physical and Analytical Electrochemistry/Energy Technology

1803 Bulk Bi and Bi Decorated Pt Thin Film Electrodes: From Formic Acid Oxidation to CO₂ Reduction

Erwan Bertin, Sébastien Garbarino, Claudie Roy, Daniel Guay

1804 Facile Galvanic Replacement Synthesis of Pd-Cu Nanotubes with Improved Electrocatalytic Activity Toward Methanol Oxidation

Jingjun Liu, Chenguang Liu, Feng Wang

1805 Effects of Alkali Metal and Organic Cations on the Hydrogen Oxidation Reaction in Alkaline Electrolytes

Ian T. McCrum, Praveen Meduri, Michael A Hickner, Michael J. Janik

1806 Mechanistic Study of Palladium Based Electrocatalysts for Direct Borohydride Oxidation

Christoph Grimmer, Maximilian Grandi, Robert Zacharias, Theo Friedrich, Dieter Woisetschläger, Nicole Mayer, Michael Koncar, Roland Kalb, Viktor Hacker

1807 Methanol Oxidation on Pd-Ru/C Nanocatalysts: Role of Electronic Properties and FTIR Studies

Bruno E Amantéa, Denis R.M. Godoi, Hebe M. Villulas

1808 Pd-M Bimetallic Electrocatalysts for Selective Oxidation of Multi-Functional Biorenewable Molecule 5-Hydroxymethylfurfural (HMF)
David J Chadderdon, Le Xin, Ji Qi, Yang Qiu, Wenzhen Li

1809 **Electrocatalytic Oxidation of Ethanol and Formic Acid on Bimetallic Nanoalloys and Core-Shell Nanoparticles**

Adam Lewera, Maciej T. Gorzkowski, Justyna Piwowar, Andrzej Jablonski, Barbara Gralec, Rafał Robert Jurczakowski

1810 **Electrooxidation of Ethanol and Formic Acid on Core-Shell Nanoparticles with Different Platinum Shell Thickness**

Maciej T. Gorzkowski, Piotr Polczynski, Rafał Robert Jurczakowski, Adam Lewera

1811 **Using Vapor-Grown Ru$_x$Pt$_y$ and Ru$_x$Pd$_y$ Nanoparticles to Investigate the Hydrogen Oxidation Reaction Mechanisms in Alkaline Electrolyte**

Samuel St. John, Robert W. Atkinson, Raymond R Unocic, Alexander B. Papandrew, Thomas A. Zawodzinski

1812 **Study of the Supported Catalysts Core-Shell Type of Gold and Palladium: Analysis of the Reaction Products and Mechanism for the Electrooxidation of Ethanol in Alkaline Medium**

José Gabriel Ruiz Montoya, Violeta Herminia Chávarri Marín, Pilar Ocón Esteban, Juan Carlos Morales Gomero

1813 **(Keynote) Oxygen Reduction Activity of MOF-Derived N-C Catalysts: Effect of Iron Traces or True Activity of N-Groups?**

Vanessa Armel, Deborah Jones, Frederic Jaouen

1814 **Enhancement of the Oxygen Reduction on Nitride Stabilized Pt-M (M = Fe, Co and Ni) Core-Shell Nanoparticle Electrocatalysts**

Kurian A Kuttiyiel, Kotaro Sasaki, Gu-Gon Park, YongMan Choi, Sun-Mi Hwang, Tae-Hyun Yang, Dong Su, Ping Liu, Radoslav Adzic

1815 **Nitrogen-Doped Large-Sized Graphene Tubes As an Active Support for a Hybrid Pt Electrocatalyst Towards Oxygen-Reduction**
Gang Wu

1816 Oxygen Reduction Reaction Kinetics at Elevated Temperatures and Pressures

Edmund C. M. Tse, Andrew A. Gewirth

1817 Highly Active LiNi$_{1-x}$M$_x$O$_2$ (M = Mn, Co, Fe) Electrocatalysts for Oxygen Evolution Reaction in Alkaline Conditions

Veronica Augustyn, Travis Turner, Arumugam Manthiram

1818 Understanding the Superior ORR Activity of the Fe-N2+2 to That of the Fe-N4 Site

Qingying Jia, Kara Strickland, Hasnain Hafiz, Barbiellini-Amidei Bernardo, Sanjeev Mukerjee, Nagappan Ramaswamy, Urszula Tylus

1819 Ordered Mesoporous Porphyrinic Carbons for Oxygen Reduction Reaction: Pt-like Activity in Acidic Media and Active Site

Sang Hoon Joo

1820 What Is the Optimum Strain for Pt Alloys for Oxygen Electroreduction?


1821 Methanol Tolerant Oxygen Reduction Activity of Nitrogen-Iron Doped Carbon in a Hollow Core Mesoporous Shell Structure

Kwong-Yu Chan, Ming Zhou

1822 Improving Activity and Stability of ORR Electrocatalysts with Pt-Rich Hollow Nanostructures

Laetitia Dubau, Tristan Asset, Raphaël Chattot, Frederic Maillard

1823 Study of Non-PGM ORR Catalyst Degradation Using Synchrotron Techniques
Urszula Tylus, Hoon T Chung, Drew C Higgins, Deborah J Myers, Dennis Nordlund, Carlo U Segre, Piotr Zelenay

Enhanced Oxygen Reduction Activity of N-Doped Multiwalled Carbon Nanotubes in Alkaline Media

Kaido Tammeveski, Merlin Vikkisk, Ivar Kruusenberg, Urmas Joost, Eugene Shulga, Ilmar Kink

Model Non-Precious Metal Catalysts for Oxygen Reduction Reaction: A Bottom-up Approach

Ulises Martinez, Todd L Williamson, Kateryna Artyushkova, Mark A Hoffbauer, Geraldine M Purdy, Joseph H Dumont, Andrew M Dattelbaum, Aditya Mohite, Gautam Gupta, Piotr Zelenay

An Approach for Highly Porous Non-Precious Metal Catalyst Synthesis for Polymer Electrolyte Fuel Cell Cathodes

Hoon T Chung, Drew Christopher Higgins, Donghun Kim, Gang Wu, Urszula Tylus, Karren L. More, David A Cullen, Piotr Zelenay

Graphene Oxide Based Non Precious Metal Catalysts for Oxygen Reduction Reaction in Alkaline Media

Joseph H Dumont, Ulises Martinez, Aditya Mohite, Geraldine M Purdy, Andrew M Dattelbaum, Plamen Atanassov, Piotr Zelenay, Gautam Gupta

The Effect of Anions on the Oxygen Reduction Reaction Activity and Selectivity on a Au Electrode: A Double Disk Electrode Flow Cell ATR-FTIR Spectroscopy Study

Zenonas Jusys, Rolf Jürgen Behm

Boron Nitride - Gold As a Novel Electrocatalyst for Oxygen Reduction Reaction

Kohei Uosaki, Ganesan Elumalai, Hidenori Noguchi, Takuya Masuda, Andrey Lyalin, Tetsuya Taketsugu

Magnetoelectrocatalysis of the Oxygen Reduction Reaction (ORR)
Krysti L. Knoche, Johna Leddy

1831 Morphology Controlled Synthesis of Durable TiO$_2$ Support for Nano-Pt Catalyst for Oxygen Reduction Reaction

Md. Aman Uddin, Selvarani Ganesan, Stephen Stagon, Ugur Pasaogullari

1832 (Physical and Analytical Electrochemistry Division David C. Grahame Award) Kinetics of the Hydrogen Oxidation in Alkaline and Acid Electrolytes

Hubert A Gasteiger, Julien Durst, Juan Herranz, Armin Siebel, Frédéric Hasché, Philipp Jan Rheinländer, Christoph Simon

1833 (Invited) A Kinetics Analysis of Methanol Oxidation Under Electrolysis/Fuel Cell Working Conditions

Claude Lamy, Benoît Guenot, Marc Cretin, Gérald Pourcelly

1834 (Invited) Towards a Better Understanding of the Activity of ZrO$_2$ As Non-PGM ORR Catalysts in Acidic Media

Michele Piana, Thomas Mittermeier, Pankaj Madkikar, Xiaodong Wang, Hubert A Gasteiger

1835 (Invited) A Central Aspect of Electrocatalysis: Generation of Active Sites By Potential-Driven Surface Processes (Part 2)

Shimshon Gottesfeld

1836 (Invited) Water As Promoter and Catalyst in Dioxygen Electrochemistry at Aqueous and Organic Electrified Interfaces

Nenad M Markovic

1837 (Invited) Towards the Development of Active, Stable and Abundant Catalysts for Oxygen Evolution in Acid
Ifan Erfyl Lester Stephens, Elisa Antares Paoli, Rasmus Frydendal, Jan Rossmeisl, Ib Chorkendorff

1838 (Invited) Electrocatalysis on Tailored Electrochemical Interfaces

Yijin Kang, Dongguo Li, Dusan Strmenik, Nenad M Markovic, Vojislav R Stamenkovic

1839 (Invited) In Situ Small-Angle X-Ray Scattering for the Analysis of Electrochemical Degradation of Metal Oxide Supported Pt Nanoparticles

Tobias Binninger, Marios Garganourakis, Jun Han, Alexandra Patru, Emiliana Fabbri, Olha Sereda, Ruediger Kötz, Andreas Menzel, Thomas J Schmidt

1840 (Invited) Epitaxial Oxide Surfaces: New Insights in Oxygen Electrocatalysis

Kelsey A. Stoerzinger, Yang Shao-Horn

1841 (Invited) Perspectives for Design of Active and Stable Oxygen Evolution Electrocatalysts

Aleksandar R. Zeradjanin, Angel A. Topalov, Serhiy Cherevko, Karl J.J. Mayrhofer

1842 (Invited) Platinum Electrochemical Dissolution and Its Consequences for Platinum Electrocatalysis

Serhiy Cherevko, Simon Geiger, Gareth Keeley, Angel A. Topalov, Aleksandar R. Zeradjanin, Karl J.J. Mayrhofer

1843 (Invited) Electrocatalysis of Ammonia Oxidation Reaction on Pt(100) in Alkaline Solutions

Ioannis Katsounaros, Jakub S Jirkovsky, Pietro Papa Lopes, Dusan Strmenik, Yijin Kang, Vojislav R Stamenkovic, Andrew A. Gewirth, Marc T. M. Koper, Nenad M Markovic

1844 (Invited) Interplay Between Strain, Electronic Structure, and Oxygen Evolution Electrocatalysis in Iridates

Yuefeng Nie, Runbang Tang, Kyle M. Shen, Darrell G. Schlom, Jin Suntivich
1845 *(Invited)* Investigation of Hydrogen Oxidation and Evolution Reaction Activity on Iridium Metal in Alkaline Electrolyte

Yelena Gorlin, Juan Herranz, Julien Durst, Philipp Jan Rheinländer, Hubert A Gasteiger

1846 *(Keynote)* Effects of Catalytic Site Size on Activity of Model Electrodes Prepared By Mass-Selected Cluster Deposition


1847 Mesoporous NiCo$_2$O$_4$ Nanosheets Grown on Stainless Steel Meshes As Binder Free Electrodes for Urea Electrolysis

Dan Wang, Gerardine G Botte

1848 On the Effects of Halides on the Hydrogen Peroxide Reduction Reaction in Aqueous Electrolytes

Adriel J.J. Jebaraj, Nicholas Georgescu, Daniel Scherson

1849 Electrocatalysis at Nanoelectrode Ensembles of Ultramicroelectrode Dimensions

Cynthia G Zoski

1850 *(invited)* Spectroscopic Techniques for the Identification of Fe and Co Coordination Chemistries in Fe(Co)-N-C Catalysts : Pristine Versus Degraded Catalysts

Frederic Jaouen, Vincent Goellner, Moulay-Tahar Sougrati, Andrea Zitolo, Emiliano Fonda

1851 Metal Organic Frameworks: A Platform for Electrocatalytic Fuel Generation

Idan Hod, Omar K. Farha, Joseph T. Hupp

1852 Electrochemical Stress Development during CO and NO Oxidation on Pt

Yeyoung Ha, Yair Cohen, Andrew A. Gewirth
1853 Electrochemical Studies of Anion Transport As a Function of Nafion Layer Thickness

Indira Sriram, Kavita M Jeerage

1854 An Ambient-Pressure Plasma-Based Method for the Synthesis of Metal Nanoclusters in Aqueous Electrolytes

Souvik Ghosh, Nicholas Stefan Georgescu, Daniel Scherson, Mohan Sankaran

1855 Determination of Phosphoric Acid Coverage on Pt/C for High Temperature-Polymer Electrolyte Membrane Fuel Cell (HT-PEMFC) Using in-Situ X-Ray Absorption Spectroscopy

Hee-Young Park, In Young Cha, Young-Hoon Chung, Min Kyung Cho, Sung Jong Yoo, Hyoung-Juhn Kim, Dirk Henkensmeier, Jin Young Kim, Suk Woo Nam, Jong Hyun Jang

1856 Electrocatalysis of Fuel Cell Relevant Reactions in Protonic Ionic Liquids

Andinet Ejigu Aynalem, Darren Walsh

1857 Strain and Ligand Effects of Transition Metals in Pt Alloys on Oxygen Reduction Reaction

Minhua Shao

1858 Probing the Working Mechanism of Electrocatalyst-Assisted Nonaqueous Lithium-Oxygen Evolution Reaction

Yu Wang, Zhuojian Liang, Yi-Chun Lu

1859 Identifying Activity Descriptors for CO\textsubscript{2} Electro-Reduction to Methanol on Rutile (110) Surfaces

Arghya Bhowmik, Heine Anton Hansen, Tejs Vegge

1860 Reduction Induced Surface Amorphization Enhances Oxygen Evolution Reaction Activity in Co\textsubscript{3}O\textsubscript{4}
Xue Leng, Qingcong Zeng, Kuang-Hsu Wu, Ian Gentle, Dawei Wang

Voltage Assisted Photocatalytic Flow through Cell for Inactivation of Biological Pathogens Using Titania Nanotube Arrays

Krista Carlson, Jeff Huber, Mano Misra, Swomitra K. Mohanty

Electrochemical Analysis and Density Functional Theory (DFT) Simulation to Investigate the Phosphoric Acid Adsorption on Pt_{3}m (M = Fe, Co, Ni) Nanoparticles

Hee-Young Park, Dong-Hee Lim, In Young Cha, Young-Hoon Chung, Sung Jong Yoo, Hyoung-Juhn Kim, Dirk Henkensmeier, Jin Young Kim, Suk Woo Nam, Jong Hyun Jang

Recent Progress in New Nanocatalysts for Oxygen Reduction Reaction

Shaojun Guo

A-Zeolite Enhanced Electrocatalytic Activity of Pt/C for Electrooxidation of Methanol in Alkaline Medium

Guangli Zhang, Wanru Feng, Ping He, Susu Zhang

Intrinsic Relationship Between Enhanced Oxygen Reduction Reaction Activity and Nanoscale Work Function of Doped Carbons

Jae Yeong Cheon, Jong Hoon Kim, Jae Hyung Kim, Jeong Young Park, Sang Hoon Joo

Simultaneous Detection of Dopamine and Oxygen Species Using Coated Electrodes

Laila Mohammed ALshandoudi

High Electrocatalytic Activity of the Pt-Based Catalyst Supported on Carbon Prepared Using a Plasma Torch and Natural Gas

Josimar Ribeiro, Tereza Cristina Santos Evangelista, Giordano Toscano Paganoto

Kinetic Study of La_{0.75}Sr_{0.25}Cr_{0.5}Mn_{0.5}O_{3-δ} Nanoelectrodes for Symmetrical-SOFC
Corina Mercedes Chanquía, Alejandra Montenegro-Hernández, Liliana Veronica Mogni, Alberto Caneiro

1870 Fabrication of Multi-Metallic Frameworks with Specific Surface Areas Tailored for Catalysis of Surface Based Reactions

Daniel Keith Joseph Oppedisano, Lathe A Jones, Suresh Kumar Bhargava

1871 Electrodeposited Pt/Rare Earth Metals As Catalysts for the Oxygen Reduction Reaction

Ehab Mostafa, Ludwig Asen, Wenbo Ju, Oliver Schneider, Ulrich Stimming

1872 Electrodeposition of Novel Catalyst Materials for the Cathode Side of Means

Ludwig Asen, Wenbo Ju, Ehab Mostafa, Sladjana Martens, Ueli Heiz, Ulrich Stimming, Oliver Schneider

1873 Electrochemistry of Glycerol Oxidation at Low Index Crystal Planes of Platinum

Regiani Maria Leopoldina Martins Sandrini, Janaina Souza-Garcia, Camilo Andrea Angelucci

1874 Patterned Electrodeposition of Cobalt Selenide Nanostructure Arrays As a Highly Efficient Bifunctional Catalyst for Oxygen Reduction Reaction (ORR) and Oxygen Evolution Reaction (OER)

Jahangir Masud, Abdurazag Swesi, Manashi Nath

1875 Confinement of Platinum Catalysts in Carbon Nanocontainers to Control the Durability in the Oxygen Reduction Reaction

Abdullah Kurtoglu, Darren Walsh, Andrei N Khlobystov, Maria del Carmen Gimenez-Lopez

L05-Electrochemistry at Primarily Undergraduate Institutions

Physical and Analytical Electrochemistry/Energy Technology/Industrial Electrochemistry and Electrochemical Engineering/Organic and Biological Electrochemistry/Sensor
1876(Invited) Fundamentals for Effective Research in Materials Science at a Primarily Undergraduate Institution

Samuel E Lofland

1877(Invited) Making Electrochemical Research Accessible to an Undergraduate Audience

Robert J LeSuer

1878(Invited) Nanofab Lab . . . in a Box!™ for Teaching and Outreach

Michael Zach

1879Self-Assembled Monolayer Experiments in Undergraduate Laboratories

Alice H Suroviec

1880Laboratory Experiments and Undergraduate Research Projects Incorporating Electroanalytical Techniques at Benedictine University

Niina Johanna Ronkainen

1881Electrochemical and UV-Visible Spectroscopic Studies of Self-Organized Gold Nanoparticle–Cytochrome C Superstructures


1882Electrochemical Energy Conversion: How Can I Successfully Integrate It into My Teaching and Research?

Michael D. Gross

1883Quantitative Study of Antioxidants and Their Reactivity in Various Tea

Manori Perera, Nathan Hocker, Lydia Rudd, Jennifer Prochotsky, Atul Eppurath
1884 (Invited) Using Nanotechnology for Biosensor Applications

Frances Williams, Archana Komirisetty, Doyle Baker, Aswini K Pradhan


Kalathur S.V. Santhanam

1886 Structure and Dynamics at Ionic Liquid/Electrode Interfaces

Daniel Parr, Christina Zibart, Bryce Egan, Kasim Malik, Tyler Shadley, Luke M. Haverhals

1887 Ionic Liquid Facilitated Generation of Functional Biopolymer Composite Materials

Eric T Fox, Eva Kathryn Brown, Tyler Price, Michael Brusoski, David P. Durkin, Paul C Trulove, Luke M. Haverhals, Hugh C De Long

1888 Development of Transition Metal Complexes As Electrocatalysts for Small Molecules

Shawn Swavey

1889 Structural and Photoluminescent Characterization of Na₃FMo₁₋ₓWₓO₄ (0 ≤ x ≤ 1)

Eirin Courtney Sullivan

1890 Electrocatalytic CO₂ Reduction with Homogeneous Transition Metals: Early Metals

Kyle A Grice, Cesar Saucedo, Mark Sovereign

1891 Electrochemical Deposition of Copper on Graphene with High Heat Transfer Coefficient

Arvind Jaikumar, Kalathur S.V. Santhanam, Satish G Kandlikar, I.B.P Raya, P. Raghupathi
Stimuli-Responsive Hydrogel Films Based on Crosslinked Chitosan

Yongchao Zhang

Screening of Novel Anti-Corrosion Coatings By Scanning Electrochemical Microscopy (SECM)

R. L. Calhoun, Fred Lancaster, William Dorriety, Richard Hanrahan

Probing the Film Formation Mechanisms at the Slurry/Substrate Interface Relevant to the Chemical Mechanical Planarization Process

Lisa M. Janes, Jason J Keleher

L06-Electrochromic and Chromogenic Materials

Plasmonic Metal Oxide Nanocrystals and Their Near Infrared Electrochromism

Delia J. Milliron, Evan Runnerstrom, Anna Llordes, Yang Wang, Clayton Dahlman

Ultrathin and Nanostructured Organic Layers with on/Off Switching Properties Based on Covalently Grafted Olidothiophenes

Jean Christophe Lacroix

Electroactive Polymers Prepared By Vapour Phase Polymerisation

Robert Brooke, Xavier Crispin, Peter J Murphy, Drew Evans

Polymer Electrolytes for Electrochromic Devices

M. M. Silva, R. Leones, R. Alves, Rui F. P. Pereira, V. de Zea Bermudez

Transparent Solid Polymer Electrolyte Thin Film Via Layer-By-Layer Deposition for Electrochromic Devices
Mengqi Cui, Pooi See Lee

1900 Electrochromic Devices Incorporating Conducting Polymer or Novel Viologens

Melepurath Deepa, Rambabu Sydam

1901 Thermochromic Smart Windows for Energy Saving and Comfort in Buildings and Vehicles

Ping Jin

1902 Electrochromic Properties of Non-Stoichiometric Ni_{1-x}O Thin Films

Mathias Da Rocha, Laura Manceriu, Aline Rougier

1903 Progress in Electrochromics and Thermochromics: New Data on Oxide Films of W, Ni and V, and on Devices Based on These

Claes-Goran Granqvist

1904 Self-Powered Electrochromic Smart Window Driven By Transparent Triboelectric Nanogenerators Via Harvesting Wind and Rain Energies

Min-Hsin Yeh, Long Lin, Po-Kang Yang, Zhong Lin Wang

1905 Molecules on Semiconductors: From Chromogenic Interactions to Information Processing Devices

Konrad Szacilowski, Przemyslaw Kwolek, Justyna Mech, Kacper Pilarczyk, Marek Oszajca

1906 Printed Flexible Solid State Electrochromic Devices Based on NiO/WO₃ Complementary Electrodes

Guofa Cai, Peter Darmawan, Mengqi Cui, Pooi See Lee

1907 An Electrostatically Strong Polyviologen-Reduced Graphene Composite Film for Highly Stable Electrochromic Systems
Bhushan Gadgil, Pia Damlin, Carita Kvarnström

1908 *Structure and Electroactivity of Tungsten Oxides in Acid Medium: Enhancement of Charge Propagation Rates through Nanostructuring and Formation of Mixed-Metal Oxide Systems*

Iwona Agnieszka Rutkowska, Anna Wadas, Pawel J Kulesza

1909 *Syntheses and Applications of Inorganic Electrochromic Materials and Devices*

Jinmin Wang

1910 *Electrostatic Layer-By-Layer and Electrophoretic Deposition As Alternative Methods for Electrochromic Nanoparticles Immobilization*

Susana I. Cordoba de Torresi, Marcio Vidotti

1911 *An Electrochromic Device Based on Prussian Blue, Polymer Matrix Immobilized Viologen, and Ferrocene*

Hsin-Che Lu, Sheng-Yuan Kao, Ting-Hsiang Chang, Chung-Wei Kung, Kuo-Chuan Ho

1912 *Solution Phase Electrochromic Materials and Devices*

Harlan Byker

1913 *Conducting Polymers-Based Electrochromic Materials with Tunable Properties*

Cheng Zhang

1914 *Tuning the Neutral State Color of Blue, Cyan and Green PI-Conjugated Copolymers By Jointly Playing the Acceptor Strength and the Steric Hindrance*

Sébastien Fagour, Damien Thirion, Antoine Vacher, Xavier Sallennave, Gjergji Sini, Jean-François Decarreau, Pierre-Henri Aubert, Frédéric Vidal, Claude Chevrot

1915 *The Preparation and Electrochromic Properties of the Polyurethanes Containing Triphenylamine Moiety*
Haijun Niu

1916 Simple Strategies Towards Lowering the Activation Potential of Electrochromic Devices. Case Study on TiO$_2$-Viologen Based Displays

Laura Manceriu, Abdelaadim Danine, Mathias Da Rocha, Aline Rougier

1917 Enhanced Electrochromic Switching and Electrochemical Stability of Conducting Polymer on the Ionic Liquid Functionalized ITO Electrode

Mi Ouyang, Yuan Yang

1918 High-Throughput Screening for Color in Electrochromic Devices

Gregory Sotzing

1919 Solar-Powered Ambipolar Electrochromic Polyimidothioethers Via Perovskite Photovoltaics

Hung-Ju Yen, Hsinhan Tsai, Wanyi Nie, Guey-Sheng Liou, Hsing-Lin Wang

1920 Multi-Color Electrochromic Devices Based on Phenyl and Heptyl Viologens Immobilized By an UV-Cured Polymer Electrolyte

Ting-Hsiang Chang, Sheng-Yuan Kao, Chung-Wei Kung, Minhan Lee, Hsin-Che Lu, Kuo-Chuan Ho

1921 Electrochromic Devices Using Prussian Blue Electrochromic Layer and HPC-Based Electrolyte

Lucas Marinho Nóbrega de Assis, Leandra Pereira dos Santos, Rodrigo César Sabadini, Agnieszka Pawlicka

1922 AA-CVD and ALD of Vanadium Pentoxide Thin Films for Electrochromic Applications

II Kazadojev, S O'Brien, D Louloudakis, N Katsarakis, E Koudoumas, D Vernardou, M E Pemble, I. M Povey
1923 Fibroin Films Doped with Lithium Ions for Application in Electrochromic Devices

M. M. Silva, Rui F. P. Pereira, V. de Zea Bermudez

1924 Flexible, Low-Cost, Commercialized Smart Windows

Jiangfeng Fan

1925 Sunlight Responsive Thermochromics - Dynamic Windows Made Simple

Harlan Byker

1926 Novel Self-Powered Electrochromic Materials and Devices

Chunye Xu

1927 Surface Treatments for Electrochromic Glazing: Toward Reduced Costs and Optimal Performances through Ultrasonic Spray Pyrolysis

Anthony Maho, Jessica Denayer, Geoffroy Bister, Philippe Aubry, Pierre Colson, Catherine Henrist, Rudi Cloots

1928 Color e-Paper Technology with Electrochemistry

Norihisa Kobayashi

1929 Enhanced Electrochromic Performance Based on Conducting Polymer/ZnO Nanocomposites

Xiaojing Lv, Cheng Zhang

1930 Effective Immobilization of Nanostructured Materials Aiming Performant Electrochromic Electrodes

Susana I. Cordoba de Torresi, Jose R. Martins Neto, Tatiana Augusto

1931 An All-in-One Electrochromic Device Containing Thermally Cured Dual Functional Viologen
L08-Spectroelectrochemistry 3

Physical and Analytical Electrochemistry

1932 In Situ X-Ray Absorption Spectroscopy for Batteries: Discovery of New Mechanisms and Materials

Carlo U Segre, John P. Katsoudas, Elena V. Timofeeva, Vijay K Ramani, Dileep Singh, Christopher J. Pelliccione, Yujia Ding, Shankar Arval, Nathaniel M. Beaver, Yue Li, Sujat Sen

1933 High Resolution 3D Spectro-Microscopy of Iron Fluoride Nanowires As Conversion Cathodes for High Capacity Li Ion Batteries

Maryam Farmand, Young-Sang Yu, David Shapiro

1934 Spatially Resolved Spectro-Electrochemistry Using Soft X-Ray Scanning Transmission X-Ray Microscopy

Adam P Hitchcock, Scott M. Rosendahl, Narayan Appathurai

1935 In Situ Coherent Surface x-Ray Scattering Study of the Au (111) Surface Dynamics in Electrolytes: The Effect of Surface Reconstruction and Chloride Adsorption

Yihua Liu, Andi Barbour, Vladimir Komanicky, Hoydoo You

1936 Vanadium Nitride Thin Films and Nanoclusters: Growth and Electrochemical/XPS Characterization

Oleksandr Bondarchuk, Eider Goikolea, Teofilo Rojo, Roman Mysyk

1937 Spectroelectrochemical Study of the Role of Pyridinium in Carbon Dioxide Reduction

Anthony J Lucio, Scott K Shaw

1938 Nanoscale IR Near-Field Imaging of the SEI Layer on an HOPG Electrode
Maurice Ayache, Dongyoun Jang, Robert Kostecki

1939 Formic Acid Electrooxidation on Au Electrode Studied By Potential Step and a Fast Scan ATR-FTIR Spectroscopy

Zenonas Jusys, Rolf Jürgen Behm

1940 In Situ Optical Studies of Carbon Accumulation with Different Molecular Weight Alkanes on SOFC Ni Anodes

Melissa D. McIntyre, Robert A Walker

1941 Challenging a Deeply Buried Electrode By Vibrational Sum Frequency Spectroscopy. Towards the Understanding the CO₂ Electroreduction on Ionic Liquid-Metal

Natalia Garcia-Rey, Dana D Dlott

1942 In Situ UV-Vis Differential Reflectance Spectroscopy Study of Polycrystalline Platinum Oxidation in Aqueous Solutions

Jing Xu, Daniel Scherson

1943 Separation of Enantiomers of Alanine from Racemic Mixture By Polycrystalline Metal Surfaces- a Spectroelectrochemical Approach

Deepak Kumar, Samanwita Pal, Meenu Chhabbra, S Harinipriya

L09-Oxygen or Hydrogen Evolution Catalysts for Water Electrolysis

Industrial Electrochemistry and Electrochemical Engineering/Energy Technology/Physical and Analytical Electrochemistry

1944 (Invited) Toward a Distributed Renewable Electrochemical Energy and Mobility System: Non-Precious Metal Hydrogen and Oxygen Evolution Catalysts in Base

Yushan Yan
1945 (Invited) Electrochemistry at Metal-Oxide Interfaces: At the Crossroads of Activity and Stability

Nenad M Markovic

1946 (Invited) Enabling Oxygen Electrocatalysis for Sustainable Energy

Yang Shao-Horn

1947 (Invited) Activity Trends and Design Principles for Multi-Transition-Metal (Oxy)Hydroxide Oxygen Evolution Catalysts

Shannon Wachter Boettcher

1948 (Invited) High Power Water Electrolysis As a New Paradigm for Operation of PEM Electrolyzer

Krzysztof A. Lewinski, Sean M. Luopa

1949 (Invited) High-Performance and Long-Lifetime Oxygen Evolution Catalysts for Proton Exchange Membrane Water Electrolysis

Brian Rasimick, Shaun M Alia, Bryan S Pivovar, Hui Xu

1950 Catalyst Design of Delafossite Oxides for Water Electrolysis Anode Using Theoretical Calculations

Kenji Toyoda, Reiko Hinogami, Nobuhiro Miyata, Masato Aizawa

1951 Electrocatalytic Oxygen Evolution over Nano Scaled Amorphous Niâˆ’Fe Particles in Alkaline Electrolyte

Yang Qiu, Le Xin, Wenzhen Li

1952 Understanding the Influence of Structure on Activity and Stability in the Catalysis of the Oxygen Evolution Reaction (OER) Using Crystalline Oxides As a Platform
Graeme Gardner, Paul Smith, Christopher Kaplan, Jafar F. Al-Sharab, Yong Bok Go, Martha Greenblatt, Gerard Charles Dismukes

1953 Structural Dynamism in Manganese Oxides in the Potential Regime for Water Oxidation: A SERS Study

Chinmoy Ranjan

1954 Perovskite Oxides Electrodes for Alkaline Oxygen Evolution Reaction

Biljana Sljukic, Marta Martins, Diogo M.F. Santos, Luis Amaral, Nuno Sousa, Cesar A.C. Sequeira, Filipe M Figueiredo

1955 (La,Sr)CoO$_3$-Rgo Hybrid Oxygen Reduction Reaction/Oxygen Evolution Reaction Bifunctional Catalyst

Hoon T Chung, Wei Gao, Drew Christopher Higgins, Ulises Martinez, Rangachary Mukundan, Urszula Tylus, Joseph H Dumont, Geraldine M Purdy, Andrew M Dattelbaum, Piotr Zelenay

1956 Screening of Oxygen Reduction and Evolution Electrocatalysts By Scanning Electrochemical Microscopy

Sin-Xian Huang, Wei-Fen Xiong, Yu-Ching Weng

1957 Oxygen Reduction and Oxygen Evolution Electrocatalysts Prepared By Sacrificial Support Method (SSM)

Alexey Serov, Nalin Andersen, Ivana Matanovic, Aaron Roy, Plamen Atanassov

1958 Nickel Oxide Nanoclusters for Electrocatalytic Water Oxidation

Dong Wook Kim, Jason Ryan Avila, sung-Il Baik, M. Hassan Beyzavi, Jonathan Emery, David Seidman, Alex Martinson, Omar K. Farha, Joseph T. Hupp

1959 Electrochemical Deposition of Pt Nanoclusters on WC for Hydrogen Evolution Reaction in Acid
Yihua Liu, Yannick C. Kimmel, Daniel Esposito, Jingguang Chen, Thomas Moffat, Hoydoo You

1960 Nanoengineering of MoS$_2$ Electrocatalysts for Efficient Hydrogen Evolution Reactions

Qingsheng Gao, Ning Liu

1961 Enhanced Electrocatalytic Activity of Sm$_2$O$_3$-doped Ni-Co Coating Electrode for Hydrogen Evolution Reaction

Shuangshuang Ding, Ping He, Wanru Feng, Guangli Zhang, Susu Zhang

1962 Self-Terminated Electrodeposition of Monolayer Electrocatalysts

Sang Hyun Ahn, Yihua Liu, Rongyue Wang, Ugo Bertocci, Thomas Moffat

1963 New Catalysts for the Hydrogen and Oxygen Evolution Reactions

Zeev Gross, Atif Mahammed

1964 Catalytic Activity of Doped Praseodymium and Samarium Based Perovskites in Hydrogen and Oxygen Evolution Reactions

Praveen Kolla, Matthew Schrandt, Alevtina Smirnova

1965 First-Principles Study of Structure Property Relationships of Monolayer (Hydroxy)Oxide-Metal Bifunctional Electrocatalysts

Zhenhua Zeng, Joseph Kubal, Jeff Greeley

1966 Water Splitting Using Gallium Nitride Based Working Electrodes for Hydrogen Generation without Applying Bias

Yen Yu Chen, Jinn Kong Sheu, Wei Chi Lai, Ming Lun Lee

1967 Photoelectrochemical Phenomena at Nano-V$_2$O$_5$ Films Impregnated with Bi$^{3+}$
Lucia Helena Mascaro, Murilo Fernando Gromboni, Frank Marken, Elisabeth Downeey

1968 Selective Oxygen Reduction to Hydrogen Peroxide Using Earth-Abundant Metal Pyrites As High-Performance Electrocatalysts

Diwen Ying, Qi Ding, Song Jin

1969 Monolayer-Precision Synthesis of Molybdenum Sulfide Nanoparticles and Their Nanoscale Size Effects in Hydrogen Evolution Reaction

Bora Seo, Gwan Yeong Jung, Young Jin Sa, Jae Yeong Cheon, Sang Kyu Kwak, Sang Hoon Joo

1970 Effect of Graphene/MoS$_2$ interface on Hydrogen Evolution Reaction

Adriano Cesar Rabelo, Edney G. S. Firmiano, Edson Roberto Leite

1971 Carbon Nanotubes/Heteroatom-Doped Carbon Core-Sheath Nanostructures As Highly Active Bifunctional Oxygen Reduction and Oxygen Evolution Electrocatalysts

Young Jin Sa, Chiyong Park, Hu Young Jeong, Seok-Hee Park, Gu-Gon Park, Sang Hoon Joo

1972 Metal-Metal Bonding Dynamics of Anode Materials for Oxygen Evolution Reaction (OER) in Basic Electrolyte Studied By Using in Situ Surface Stress Measurements

Thao Thi Huong Hoang, Yair Cohen, Andrew A. Gewirth

L10-Photocatalysts, Photoelectrochemical Cells and Solar Fuels 5

Energy Technology/Physical and Analytical Electrochemistry/Sensor

1973 Modeling of Bio-Electrochemical and Mechanical Interactions in a Photosynthetic Cell

Tanneru Hemanth Kumar, M.P Resmi Suresh, Aravind Vyas Ramanan, Shahparnia Mehdi, Packirisamy Muthukumaran, Pragesan Pillay, Sheldon S Williamson, Raghunathan Rengaswamy
1974 Interrogating Micro-Scale Spatial Variation in the Performance and Properties of Photoelectrodes with in Situ Scanning Probe Techniques

Daniel Esposito, Natalie Yumiko Labrador, Youngmin Lee, Veronika Szalai, A. Alec Talin, Thomas P. Moffat

1975 A Spatially Resolved Study of the Role of Surface Motifs in the Photoelectrochemical Conversion on Prospective 2-D Layered Chalcogenide Photoelectrodes for Solar-Fuel Generation

Jimmy John, Jesus M Velazquez, Daniel Esposito, Adam Pieterick, Ragip Pala, Rebecca Saive, Shane Ardo, Bruce Brunschwig, Nathan S. Lewis

1976 Energy-Resolved Measurement of Electron Traps in Metal-Oxide Particulate Photocatalysts By Newly Developed Reversed Double-Beam Photoacoustic Spectroscopy

Bunsho Ohtani, Akio Nitta, Mai Takase

1977 A Theoretical Comparison of Optically Concentrating, Solar Water-Splitting Devices

John Stevens, Adam Z Weber

1978 Low-Cost High-Throughput Photoelectrochemical Hydrogen Production

David Eric Schwartz, Todd G Deutsch

1979 Benchmarking Components for Photoelectrochemical Water-Splitting Devices

Shawn M Chatman, Charles C L McCrory, Jonas C Peters, Thomas F Jaramillo

1980 In Situ Reactive Imaging of Photoassisted Water Splitting Reaction Intermediates on n-Doped Strontium Titanate Using Surface Interrogation Scanning Electrochemical Microscopy

Burton H Simpson, Xuan Zhou, Joaquín Rodríguez-López
1981 IrO$_2$ Surface and Nanostructure Stability from First Principles and Variable Charge Force Field Calculations

Fatih G. Sen, Alper Kinaci, Badri Narayanan, Michael J. Davis, Stephen K. Gray, Subramanian K. R. S. Sankaranarayanan, Maria K. Y. Chan

1982 Concerning the Role of Sacrificial Reagents in Photocatalytic Water Splitting Systems: A Critical Assessment

Detlef Werner Bahnemann, Jenny Schneider

1983 Thin Film Photovoltaics with Organic Metal Halide Perovskites

Prashant V Kamat

1984 A New Family of Catalysts for Production of Solar Fuels

Joseph T. Hupp

1985 (Energy Technology Division Graduate Student Award) Plasmonic Light Absorption Enhancement Mechanisms in Semiconductors Above and below the Band Edge

Scott Kevin Cushing, Jiangtian Li, Alan D. Bristow, Nianqiang Wu

1986 Novel Photoelectrodes and Noble Metal Free Catalysts for Light Driven Water Electrolysis

Sebastian Fiechter

1987 An All Solution-Processed Lead Halide Perovskite-BiVO$_4$ Tandem Architecture Delivering STH of 2.5%

Yong-Siou Chen, Joseph S Manser, Prashant V Kamat

1988 Enabling Solar Fuels Technology By High Throughput Discovery of Earth Abundant Oxygen Evolution Reaction Catalysts
Toward High-Efficiency Scalable GaAs and GaAs$_x$P$_{1-x}$ Photoelectrodes Grown Via Vapor Transport from a Solid Source

Shannon Wachter Boettcher

High-Efficiency Tandem Absorbers for Economical Solar Hydrogen Production

Todd G Deutsch, James L. Young, Henning Döscher, Heli Wang, John A Turner

Electronic Properties of III-V Semiconductor Photocathode-Water Interfaces: Predictions from First-Principles Calculations

Tuan Anh Pham, Brandon C. Wood, Tadashi Ogitsu

Materials for Efficient Photoelectrochemical Water Splitting: The PEC Working Group

Heli Wang, Thomas F Jaramillo, Eric Lars Miller

Design of Photoelectrochemical Materials Via Non-Native Nanostructures and Their Click Assembly into Photoreactors

Raj Pala, Dilip Behera, Sulay Saha, Arun Upadhyay, Sri Sivakumar

Organophotocatalyst Films and Their Multilayerization That Efficiently Utilize Natural Sunlight

Keiji Nagai, Toshiyuki Abe, Tomokazu Iyoda

Microfluidic Photocatalytic Device Utilizing Anodized Titania Nanotube Arrays: Application and Simulation Validation

York R. Smith, Harikrishnan Jayamohan, Lauryn Hansen, Swomitra K. Mohanty, Bruce K. Gale, Mano Misra

Masanobu Higashi, Takashi Shirakawa, Ryu Abe

1997 Prospects for Future Photoelectrolysis Devices: New Oxide Semiconductors and Electrode Structures

Bruce A Parkinson

1998 Metal-TiO\textsubscript{2} Composite Nanofibers for Plasmon-Driven Photocatalytic Hydrogen Generation

Can Xue

1999 Enhanced Water Splitting at Thin Film WO\textsubscript{3} Photoanodes Modified with the Electro-Catalysts

Renata Solarska, Krzysztof Bienkowski, Jan Augustynski, Pawel J Kulesza

2000 High Performance and Durable (Zn\textsubscript{1-x}Co\textsubscript{x})O:N Nanowires As Photoanode for Efficient Hydrogen Production Via Photoelectrochemical Water Splitting

Prasad Prakash Patel, Prashanth Jampani, Oleg I Velikokhatnyi, Prashant N Kumta

2001 Role of Surface Amorphization in CuO-Cu\textsubscript{2}o Core-Shell Nanowire Array for Photoelectrochemical Water Splitting

Fei Wu, Sriya Banerjee, Yoon Myung, Parag Banerjee

2002 Optimization of Photoelectrochemical Performance of Long TiO\textsubscript{2} Nanotubes By Li-Doping Induced Defect Passivation

Lok-kun Tsui, Giovanni Zangari

2003 Effective Charge Extraction in the Heterogeneous Interfaces with TiO\textsubscript{2} Nanoparticles/Nanotubes and Conducting Polymers
Taiho Park
2004 BiVO$_4$ Photoelectrodes for Use in Solar Water Splitting

Kyoung-Shin Choi
2005 Solar Hydrogen Production Under Low Applied Bias Using Oxide Semiconductor Photocatalysts and Photoanodes

Kazuhiro Sayama, Kojiro Fuku, Yugo Miseki
2006 Bismuth-Based Multimetal Oxides: Evaluation of Their Photoelectrochemical and Photocatalytic Properties

Vaidyanathan Subramanian
2007 Catalyst Modified Ternary Oxide Photoanodes for Photoelectrochemical Water Splitting

Satyananda Kishore Pilli, Thomas E. Furtak, Dev Chidambaram, Todd G Deutsch, John A Turner, Andrew M Herring
2008 Theoretical and Experimental Study of Cobalt Spinel Oxides for Solar Driven Hydrogen Production

Yanfa Yan
2009 Enhanced Low Bias Performance in Textured BiVO$_4$ Photoanodes through Halide and Phosphate Treatments

Vineet Vijayakrishnan Nair, Craig L Perkins, Matt Law
2010 Engineering of Oxide Materials for Improved Photoelectrochemical Water Oxidation

Yan-Gu Lin, Yu-Kuei Hsu
2011 Photoelectrochemical Ion Pumping with Dye-Functionalized Polymer Membranes
Christopher D. Sanborn, Shane Ardo

Christopher Muhich, Brian Ehrhart, Ibraheam Alshankiti, Barbara Ward, Charles Musgrave, Alan Weimer
2013 Experimental Demonstrations of Spontaneous, Solar-Driven Photoelectrochemical Water Splitting

Joel W. Ager, Matthew Shaner, Karl Walczak, Ian D. Sharp, Shane Ardo
2014 Using Soft X-Rays and Electrons to Determine the Chemical and Electronic Structure of Semiconductors for Solar Water Splitting

Clemens Heske
2015 Gold-Based Nanomaterials for Catalytic CO₂ Conversion Applications

Christopher Matranga
2016 Using Protection Layers for a 2-Photon Water Splitting Device

Brian Seger, Bastian Timo Mei, Rasmus Frydendal, Anastatia Permyakova, Dowon Bae, Thomas Pedersen, Ivano Castelli, Paolo Malacrida, Peter C. K. Vesborg, Ifan E. L. Stephens, Øle Hansen, Karsten Jacobsen, Ib Chorkendorff
2017 Au Nanoparticle-Enhanced Photocatalysis: Beyond Plasmonic Effect

Jiangtian Li, Scott Kevin Cushing, Nianqiang Wu
2018 Photoelectrochemical Reduction of Carbon Dioxide to Methanol at Hybrid System Composed of Titanium(IV) and Copper(I) Oxides

Ewelina Szaniawska, Krzysztof Bienkowski, Renata Solarska, Iwona Agnieszka Rutkowska, Pawel J Kulesza
2019 **Stable Solar-Driven Water Oxidation to O$_2$(g) By Multifunctional Electrocatalysts Coated Small Band Gap Semiconductors**

Ke Sun, Nathan S. Lewis

2020 **Artificial Photosynthesis Using Iron Foam Photoanodes Coated with Catalytic Graphene-Manganese Porphyrin Self-Assembled Structures**

Amir Kaplan, Eli Korin, Armand Bettlehiem

2021 **High Performance Silicon Photocathodes for Hydrogen Production Via Solar Water Splitting**

Jesse D Benck, Thomas R Hellstern, Reuben J Britto, Jakob Kibsgaard, Sang Chul Lee, Kara D Fong, Robert Sinclair, Thomas F Jaramillo

2022 **Corrosion and Passivation of p-GaInP$_2$ Photocathodes at Light-Dark Boundaries**

James L Young, Henning Döscher, Todd G Deutsch, John A Turner

2023 **Electrophoretic Deposition of NiCo$_2$S$_4$ Thin Film As a Catalytic Material for Dye-Sensitized Solar Cells**

Shu-Wei Chou, Jeng-Yu Lin

2024 **Photoelectrochemical Performance of Composition Tuned BiOCl Nanosheet Arrays**

Yoon Myung, Sriya Banerjee, Fei Wu, Parag Banerjee

2025 **Unexpected Hydrogen Production of α-Fe$_2$O$_3$ Nanorings**

Heberton Wender, Rentao Gonçalves

2026 **Effect of Annealing Temperature on the Photocatalytic Activity of Zn$_x$Cd$_{1-x}$S Photocatalysts**

Hao Chang, Yu-Ching Weng
Modeling/Simulation and Prototyping Development of Solar-Hydrogen Generators

Chengxiang Xiang, Yikai Chen, Karl Walczak, Meenesh Singh, Adam Z Weber, Jian Jin, Nathan S. Lewis

Novel Photoelectrodes and Noble Metal-Free Catalysts for Light-Driven Water Electrolysis

Sebastian Fiechter

A Novel Photoelectrochemical Secondary Battery Featuring Phthalocyanine Photocathode Toward the Application to Ubiquitous Sensors

Takashi Shimizu, Takashi Kondo, Akira Ando, Toshiyuki Abe, Keiji Nagai

Low Cost Fabrication of High Efficiency Polymer Solar CELLS

Ifedayo Joseph Ogundana, Simon Y. Foo, Zhibin Yu

Pt- and TCO-Free Flexible Counter Electrodes for Dye-Sensitized Solar Cells

Jeng-Yu Lin, Wei-Yan Wang, Shu-Wei Chou

Efficient Photocatalytic Hydrogen Production By Ta_2O_5 Nanotube Powders Sputtered Decorated with Ni Nanoparticles

Rentao Gonçalves, Heberton Wender

Efficient Photoelectrochemical Hydrogen Evolution of Amorphous Group VI Metal Chalcogenides on Si Micropyramids

Qi Ding, Xingwang Zhang, Jianyuan Zhai, Melinda J. Shearer, Miguel Caban, Fei Meng, Jr-Hau He, Robert J. Hamers, Song Jin

Facile Synthesis of Ultrafine Nanoparticles of Iron Based Oxides and Their Application in Solar Cells

Bashir Ahmmad, Shogo Hayasaka, Kensaku Kanomata, M. a. Basith, Shigeru Kubota, Fumihiko Hirose

Tahmina Akter, Geoffrey B. Saupe

Understanding Nucleation and Growth Behavior of Electrodeposited Platinum Particles for Optimization of Metal-Insulator-Semiconductor Photoelectrodes

Natalie Yumiko Labrador, Wendy-Angela Saringi Agata, Daniel Esposito

Photochemical Deposition of Co-Ac Catalyst on ZnO for Solar Water Oxidation

Ahamed Irshad, N Munichandraiah

Controlling Active Surface Area of TiO$_2$ Nanotube Imprinted Ti Foils for Efficient Dye-Sensitized Solar Cells

Lu-Yin Lin, Min-Hsin Yeh, Wei-Chieh Chen, Kuo-Chuan Ho, Vittal Ramamurthy

Double-Wall TiO$_2$ Nanotubes for Dye-Sensitized Solar Cells: A Study of Growth Mechanism

Lu-Yin Lin, Wei-Chieh Chen, Min-Hsin Yeh, Vittal Ramamurthy, Kuo-Chuan Ho

Novel Hybrid 1-D Structure of PEDOT/TiO$_2$ Nanotubes As the Pt-Free Catalyst of Counter Electrodes in Dye-Sensitized Solar Cells

Wei-Chieh Chen, Min-Hsin Yeh, Jia-De Peng, Lu-Yin Lin, Kuo-Chuan Ho

Photovoltaic Effect in Ferroelectric Pt/(Bi$_{0.9}$La$_{0.1}$)(Fe$_{0.97}$Ta$_{0.03}$)O$_3$/Graphene Hetrostructures

Rajesh K. Katiyar, Yogesh Sharma, Danilo G. Barrionuevo Diestra, Frank Mendoza, Shojan P. Pavunny, Gerardo Morell, Brad R. Weiner, Ram S. Katiyar

Synthesis of Light-Absorbing ZnSnP$_2$ Semiconductor Nanowires

Sudarat Lee, Junsu Gu, Eli Fahrenkrug, Stephen Maldonado
L11-Structure and Relaxations in Soft Ion- Conducting Materials

Energy Technology/Battery/Physical and Analytical Electrochemistry

2043 The Structural Aspects of PFSA Ionomers As Determined By STEM and Simulations

Stephen J. Paddison

2044 Decoupling Ion and Proton Transport from Structural Relaxation in Polymers and Ionic Liquids

Alexei Sokolov

2045 High Transference Number Composite Lithium Electrolytes: From "Soggy Sand" Electrolytes to Infiltrated Mesoporous Silica

Jelena Popovic, Joachim Maier

2046 Interplay Between Vibrational Modes and Relaxations in Electrolytes for Secondary Magnesium Batteries Based on Haloaluminate Ionic Liquids

Fatemeh Sepehr, Federico Bertasi, Stephen J. Paddison, Vito Di Noto

2047 The Relationship Between Segmental Motions, Hydration and Overall Mass Transport in Pfsas

Thomas A. Zawodzinski, Ramez A. Elgammal, Yujia Bai

2048 Understanding Transport Phenomena in Perfluorosulfonic-Acid Membranes

Adam Z Weber, Jeff T. Gostick, Ahmet Kusoglu, Andrew Crothers

2049 Interfacial Structure of Nafion

Joseph A. Dura, Steven C DeCaluwe, Paul Kienzle

2050 Hybrid Polymer Electrolytes Based on Linear Siloxane Networks and Crosslinked Polyether Domains: Interplay Between Composition and Properties
Nicola Boaretto, Christine Brinkmann, Keti Vezzù, Vito Di Noto, Henning Lorrman

2051 Ion-Conduction within the Fibrous Framework of an Electrospun PEO Gel Electrolyte

Robert B Moore

2052 First-Principles Molecular Dynamics Studies of Proton Transport in Hydrogen-Bonded Media

Mark E. Tuckerman

2053 Charge Transport and Structural Dynamics in Polymerized Ionic Liquids

Joshua R Sangoro, Stephen J. Paddison

2054 Understanding Polymer Ion Clustering and Its Implications for Fast Ion Transport in Polymer Electrolyte Membranes

Andrew M Herring, Vito Di Noto

2055 Structure and Transport Properties of Ionomer Thin Films in Membrane-Electrode Assemblies

James A Elliott

2056 Ionic Conduction and Dielectric Relaxation in Poly(ethylene carbonate)-Li Salt Electrolytes

Yoichi Tominaga

2057 Toward a Single-Ion Nanocomposite Electrolyte for Lithium Batteries

Hui Zhao, Gregory Baker, Gao Liu

2058 Ionic Conductivity of Fe(II)-, Co(II)- and Ni(II)-Based Metallo-Supramolecular Polymers with a One- or Three-Dimensional Structure
Rakesh Kumar Pandey, Md. Delwar Hossain, Satoshi Moriyama, Takashi Sato, Masayoshi Higuchi

2059 Study of Morphological Variation on SiO2/Nafion Composite Membrane Under Different Hydration Condition

Osung Kwon, ByungRak Son, Joogon Kim, Dong Ha Lee

M01-Nano/Biosensors and Actuators

Sensor/Physical and Analytical Electrochemistry

2060 Detection of Mercury with a Surface-Enhanced Raman Scattering Biosensor

Peng Zheng, Nick Wu

2061 Nanoparticle Imprinted Polymers As Sensing Layers for Size-Selective Recognition of Silver Nanoparticles

Julia Witt, Daniel Mandler, Gunther Wittstock

2062 Aptamer-Based Electrochemical Biosensors for Marine Toxins

Shimaa Eissa, Mohamed Siaj, Mohammed Zourob

2063 Label-Free Electrochemical Aptasensor for the Sensitive Detection of Cyanotoxin Anatoxin-a

Reda Elshafey, Mohamed Siaj, Mohammed Zourob

2064 Fabrication of Electrochemical Biosensor for Cholesterol Using CNT-Gold Nanohybrid Buckypaper

Jhunu Chatterjee, Hunter Biggs

2065 What Determines the Detection Limit during Impedance Biosensing?

Ian Ivar Suni
2066 **Enzyme-Based Nitric Oxide (NO) Releasing Surfaces: Nitric Oxide Synthase As a Source of Catalytic NO Release in Polymeric Films and in Electrospun Fibers**

Mekki Bayachou, Bhagya Guneseokera, Sarah Wojciechowski

2067 **Development of Electrochemical and Optical Based Biosensors**

Vinay Gupta, Gurpreet Kaur, Ayushi Paliwal, Manvi Tak, Anjali Sharma, Monika Tomar

2068 **Layer-By-Layer Assembled Enzyme Cascade for Catalyzing Oxidation of Sucrose for Biofuel Cells**

Yuanyuan Zhang, Mary Arugula, Shannon Williams, Aleksandr Simonian

2069 **Electrochemical Detection of Four Prominent Tuberculosis Biomarkers Using Functionalized Titania Nanotubular Array Sensing Platform**

Dhiman Bhattacharyya, York R. Smith, Swomitra K. Mohanty, Mano Misra

2070 **Application of Polymer-Modified Electrode As Biosensor**


2071 **Development of Prognostic Criteria of Kidney Transplantation Complications Based on Open-Circuit Potential Monitoring Using Probit Analysis**

Anatoly K. Evseev, Aleksandr N. Elkov, Michael M Goldin, Alexey V. Pinchuk, Mojtaba Mirzaeian, Mark M Goldin

2072 **Pt-Decorated Fluorine-Doped Tin Oxide Nanowire Arrays As Highly Sensitive H₂O₂ sensor Electrodes**

Shih-Yuan Lu, Kuan-Ting Lee, Yu-Chun Lo, Yung-Yung Liang, Nobuhiro Matsushita, Toshiyuki Ikoma

2073 **Development of Multi-Parametric/Multimodal Spectroscopy Apparatus for Characterization of Functional Interfaces**
Lang Zhou, Mary Arugula, Aleksandr Simonian, Christopher J Easley, Curtis Shannon

2074 Facile Hydrothermal Synthesis of $\text{In}_2\text{O}_3$ Nanoboxes for Electrochemical Sensing of Paraben

Jahangir Ahmad Rather, Ahsanulhaq Qureshi

2075 Glassy Carbon Electrode As a Promising Sensor for Healthcare and Environmental Monitoring

Sanghamitra Chatterjee, Aicheng Chen

2076 Mixed Self-Assembled Monolayers of Mercaptoundecanoic Acid and Thiolactic Acid for the Construction of an Enzymatic Biosensor for Hydroquinone Determination

Christiana Andrade Pessoa, Cleverson Siqueira Santos, Rosana Mossanha

2077 Nano-Asterisks of Vanadium Dioxide As Electrodes for TNT Detection

David Cliffel, Matthew Casey, Aaron Daniel

2078 Improving the the Actuation of Polymeric Artificial Muscles Using Magnetically Aligned Polyelectrolytes

Mohammad Mahdi Hasani-Sadrabadi, Karl I Jacob

2079 Simultaneous Detection of Hydrogen Peroxide Production and Oxygen Consumption By Electrochemical Method in THP-1 Cells during Respiratory Burst

Shigenobu Kasai, Makoto Suzuki, Hiroyuki Kikuchi, Ankush Prasad, Kumi Y. Inoue, Mika Tada, Masaki Kobayashi, Tomokazu Matsue

2080 Carbon Paste Biosensors Modified with Titanium Dioxide Nanoparticles for the Determination of Acids, Antioxidants and Glucose in Grapes

Cristina Garcia-Cabezón, Raquel Muñoz, Celia García-Hernández, Cristina Medina-Plaza, Yolanda Blanco-Val, Jose Antonio de Saja, Fernando Martin-Pedrosa, Maria Luz Rodriguez-Mendez
Preparation of PdCu Decorated Screen Printed Carbon Electrodes for Non-Enzymatic Hydrogen Peroxide Sensors

Aytekin Uzunoglu, Austin D Scherbarth, Lia Stanciu

Surface Plasmon Resonance (SPR) of Reusable DNA LOOP Formation Dynamics

Fuling Yang, Mary Arugula, Subramaniam Somasundaram, Christopher J Easley, Curtis Shannon, Aleksandr Simonian

Biosensors for Detecting Genetically Modified Organisms in Food and Feed

Alina Chanysheva, Mary Arugula, Kiril Vaglenov, Aleksandr Simonian

Using of Humic Acid and Platinum Nanoparticle As Surface Modifier for the Construction of a Electrochemical Sensor Using in Detection of Ethinylestradiol

Karen Wohnrath, Monalisa dos Santos, Vagner dos Santos, Sergio Toshio Fujiwara, Elizabeth Weinhardt Scheffer, Jarem Raul Garcia

Development of Electrochemical Aptamer-Based Biosensors for the Detection of Hormonal Contaminants in Water

Gaston Contreras Jiménez, Shimaa Eissa, Andy NG, Mohammed Zourob, Mohamed Siaj

M02-Nano-Micro Sensors and Systems in Healthcare and Environmental Monitoring

Sensor/Organic and Biological Electrochemistry

Plenary Paper Amperometric Systems for e-Diagnostics

Anthony Peter Francis Turner

Keynote Paper-Based Lateral Flow Strips Toward Point-of-Care Detection of Biomolecules

Nick Wu, Peng Zheng, Xuefei Gao
2088 A Fully Inkjet-Printed Carbon Nanotube Electrochemical Sensor on Paper

Tallis H. da Costa, Ryan P. Tortorich, Edward Song, Jin-Woo Choi

2089 Rapid Detection of Fluoride in Potable Water

Ravi Chavali, Naga Siva Gunda, Selvaraj Naicker, Sushanta Mitra

2090 Electrically Conducting PDMS Nanocomposite Using in-Situ Reduction of Gold Nanostructures and Mechanical Stimulation of Carbon Nanotubes

Jayan Ozhikandathil, Ajit Khosla, Muthukumaran Packirisamy

2091 Self-Propelled Nanorockets for Water Monitoring and Pollutants Purification

Tianlong Li, Longqiu Li, Lin Wang, Guangyu Zhang

2092 Visual Nanosensor for the Detection of Heavy Metals in Water

Corie Horwood, David Cramb, Viola Birss

2093 (Keynote) Single Gold Nanowire Electrodes for Electrochemical Based Biosensing Applications

Alan O' Riordan, Sean Barry, Niamh Creedon, Armelle Montrose, Benjamin O'Sullivan

2094 All Silicon Gas Chromatographic Column for Fast Separation of VOCs Released By Armillaria Fungus

Milad Navaei, Peter Hesketh, Jie Xu, Alireza Mahdavifar, Jean Marie Dimandja, Gary McMurray

2095 Multimode Microsensors Based on Carbon Matrices for the Screening of Whole Blood for IL-6

Raluca-Ioana Stefan-van Staden, Livia A Gugoasa
2096 In Vivo Glucose Measurement Using Fine Needle Type Amperometric Glucose Sensor

Mikito Yasuzawa, Kazuaki Edagawa

2097 (Plenary) High Efficiency Coupling of Chemical Sensing to Chemical Treatment in Low-Dimensional Nanofluidic Structures

Wei Xu, Dane A. Grismer, Lawrence P. Zaino, Chaoxiong Ma, Erick Foster, Paul W. Bohn

2098 (Keynote) Dielectrophoresis: Exploring the â€“2nd Frontierâ€™ of Its Application in the Biomedical Sciences

Ronald Pethig

2099 New Advances and Opportunities of Magnetohydrodynamic Microfluidics

Christena K. Nash, Adair Claycomb, Foysal Khan, Benjamin J. Jones, Joshua Hutcheson, Timothy J. Muldoon, Ingrid Fritsch

2100 Fabrication of Polysaccharide-Based Nanoparticles As Drug Delivery Nanocarriers

Suh Cem Pang, Suk Fun Chin, Ain Nadirah, Soon Hiang Tay, Siti Nur Akmar Mohd Yazid

2101 Artificially Tailored Plasmonic Nanostructures for High-Performance Biosensing Devices

Aswini K Pradhan

2102 Flexible Micro-Sensor Array for the Non-Invasive Monitoring of 3D Pressure Fields

Thi Hong Nhung Dinh, Pierre-Yves Joubert, Emile Martincic, Elisabeth Dufour-Gergam

2103 Rapid Prototyping of Electrochemical DNA Detection Sensors

Stephen Woo, Christine Gabardo, Leyla Soleymani
2104 A Miniature Sensor Integrating Multiple Detection Technologies for Evaluating Water Pollution

Sujittra Poorahong, Florent Lefèvre, Marie-Claude Perron, Philippe Juneau, Ricardo Izquierdo

2105 (Plenary) Wearable Wireless Textile Based Nanosensor System for Early Detection of Concussion and Cardiac Arrest of Football Players

Vijay K Varadan

2106 (Keynote) Near-Zero-Power Electrochemical Sensors for Wearable Wireless Health, Safety, Surveillance and Environmental Electronics

Joseph R Stetter, Michael T Carter, Edward F Stetter

2107 A Novel Viscometer Based on Self-Propelled Nanomotor

Longqiu Li, Tianlong Li, Jiyuan Wang, Guangyu Zhang

2108 (Keynote) Oxygen Sensing Microfluidic Structures for Biomedical and Environmental Science Research

Jay W Grate, Ryan Kelly, Norm Anheier, Jonathan Suter, Tom Schmidt, Andreas Vasdekis

2109 Estimation of Crystalline Structure and Gas Transport Properties of Crystalline Fluorinated Copolymer

Go Matsuba, Tatsuki Nyuui, Shuichi Sato, Kazukiyo Nagai

2110 Magnetoelastic Biosensors for Real-Time, Wireless Pathogen Detection on Surfaces

Yating Chai, Shin Horikawa, JiaJia Hu, Bryan A Chin

2111 Antibody-Free Electrochemical Detection of Cortisol Using Molecularly Imprinted Polymer
Pandiaraj Manickam, Syed Khalid Pasha, Shekhar Bhansali

2112 (Invited) A Brief Overview of Smart Microsystem Technology and Its Application to Fire Detection, Air Quality Monitoring, Health Care, and Emissions Monitoring

Gary W Hunter

2113 (Invited) Nanobiosensors for Healthcare and Environmental Monitoring

Zoraida Pascual Aguilar

2114 (Invited) Microneedle Array Features in Precise Moulding of Biocompatible Polymers

Hiroshi Ito, Kentaro Taki, Tetsuo Takayama, Kazuyasu Uchiumi, Haruki Yahagi

2115 Integrated Micro-Heater Solid State Based NO₂ Gas Sensors with Enhanced Response

Anjali Sharma, Avneet Singh, Reema Gupta, Lokesh Rana, Monika Tomar, Vinay Gupta

2116 (Invited) Design and Characterization of a New Low Cost Thick Film Copper Metallization Transfer Process Onto PDMS Enabling Stretchable Electronics

Daniel Hilbich, Gary Yu, Bonnie L. Gray, Lesley Shannon

2117 Non-Invasive Sensor for Quantitative Determination of Lactate in Sweat

Rubi Figueroa-Teran, Sofia Babanova, Nia Petseva, Yevgenia Ulyanova, Sameer Singhal, Plamen Atanassov

2118 Development of Biofilm-Based Electrocatalytic Materials for Biosensing and Bioenergetics

Pawel J Kulesza

2119 Point-of-Care Sensor with Interdigitated Array Electrodes for Lead Determination
Wenjing Kang, Xing Pei, Adam Bange, Erin Haynes, William R. Heineman, Ian Papautsky

2120 Improved Anodic Stripping Voltammetric Determination of Arsenic Using Nanoporous Gold Microelectrode

Junhua Jiang

2121 Peroxynitrite Sensing: From Graphene-Based Platforms to Modified Boron-Doped Diamond Electrodes

Mekki Bayachou, Haitham Kalil

2122 Pattern Recognition of HER-2 in Whole Blood Samples Using Stochastic Sensors

Iuliana Moldoveanu, Raluca-Ioana Stefan-van Staden

2123 (Invited) A Chemiresistive Glucose Sensor Based on Polyaniline Nanowire Network

Edward Song, Jin-Woo Choi

2124 Nanostructured Sensors for Determination of 3-(3,4-Dichlorophenyl)-1,1-Dimethylurea Based in Molecularly Imprinted Polymers (MIPs) Deposited in Screen Printed Carbon Nanotubes

Juan Carlos Morales Gomero, Rey Fernández Cori, Bryan Carlos Huayhuas Chipana, Pilar Taboada Sotomayor

2125 A New Kind of SERS Active Substrate Using a Film of Densely Packed Gold Nanoparticles

Gugu Rutherford, Monique Farrell, Bo Xiao, Christian G Carvajal, Kevin Santiago, Aswini K Pradhan

2126 (Invited) Silicon Nanowire and Graphene Field-Effect Transistors for Sensing Applications
Alexey Tarasov, Mathias Wipf, Ralph L. Stoop, Kristine Bedner, Wangyang Fu, Michel Calame, Christian Schönenberger

2127 Graphene Based Materials for Arsenic Sensing and Removal from Contaminated Water

Alessandra Assirelli, Simona Ieffa, Roberto Bernasconi, Luca Nobili, Luca Magagnin

2128 Electrochemical Characterisation of a Real-Time pH Sensor

Karen M. Herdman, Fiachra B. Bolger, Niall J. Finnerty, Carmel B. Breslin

2129 Electrochemical Detection of Volatile Organic Biomarkers Using Next Generation Titania Nanotube Arrays

York R. Smith, Dhiman Bhattacharyya, Swomitra K. Mohanty, Mano Misra

2130 Effect of Changed Structure As Well As Composition on the Behaviour of Sn(Se,Te) Compound Semiconductor Thin Films and Schottky Diodes for Solar Cell Applications

Naresh Padha, Narinder Kumar, Anjali Devi, Ramesh Sachdeva, Chetan Panchal

2131 Effect of the Replacement of Some Indium Atoms with Aluminum Atoms on the Behaviour of p-CuInSe₂ Thin Films and Schottky Diodes

Naresh Padha, Usha Parihar, Chetan Panchal

2132 The Effect of Distribution of Uvlight on Elastic Modulus of UV Cured Film in Roll-to-Roll Nanoimprint Process

Shunsuke Kondo, Kentaro Taki, Hiroshi Ito

2133 Thiol-Sensitive Electrochemical Sensors for Advance Detection of Neurotoxins in Water and Biomass

Anna Pilip, Arcadij Eremenko, Iliya Kurochkin, Iana Russkikh, Taisiya Prokopkina
2134**Paper-Based Reagent Storage Approach for Point-of-Care Electrochemical Sensing**

Xiao Wang, Wenjing Kang, Ian Papautsky

2135**Titanium Dioxide and Tin Oxide Composite for $\text{SO}_2$ Gas Sensors**

Suresh Mulmi, Venkataraman Thangadurai

2136**Highly Sensitive Impedance Sensor for Detection of Acephateme Using Nanostructured Assembly**

Jingming Gong

2137**(Keynote) Progress in the Development of Metal Oxide Gas Sensors to Reduce Carbon Footprint**

Venkataraman Thangadurai, Suresh Mulmi

2138**(Invited) Refractory Ceramic Sensors for Process and Health Monitoring of Slagging Gasifiers**

Edward M Sabolsky, Rajalekshmi Chockalingam, Katarzyna Sabolsky, Gunes A. Yakaboylu, Brian Armour, Aaron Teter, Marc Palmisiano, Timothy Close

2139**(Invited) Quantitative Decoding of Complex Gas Mixtures for Environmental Monitoring Using Mixed-Potential Sensors**


2140**Effects of Pt-Based Electrode Compositions on CO Sensing Properties of NASICON-Based Solid Electrolyte Gas Sensors**

Yasuhiro Shimizu, Hirotaka Takeda, Taro Ueda, Kai Kamada, Takeo Hyodo

2141**Combinatorial Structures of Graphene Oxide and SnO$_2$ for Sensing various VOCs**
Hyejin Park, Yoonsung Chung, Eunji Lee, Soohyun Ahn, Seokhee Lee, Hosang Ahn, Dong-Joo KIM

2142 Redox Cycling Behavior of Catecholamines and Their Mixtures at Different Diffusion Distances: Steps Toward Quantitative Speciation

Mengjia Hu, Ingrid Fritsch

2143 Photochemical Decoration of Metal/Metal-Oxide Nanoparticles on SnO$_2$ Nanorods for Improved Hybrid Gas Sensors and Photodetectors for Environmental Applications

Christian G Carvajal, Killani Kadri, Gugu Rutherford, Aswini K Pradhan

2144 Atomic Layer Deposition of SnO$_2$ for Selective Room Temperature Low Ppb Level O$_3$ Sensing

Steven Christopher Mills, Bongmook Lee, Veena Misra

2145 Application of AlGaN/GaN Heterostructures for Ultra-Low Power, Low Noise Nitrogen Dioxide Detection

Michael Lim, Bongmook Lee, Veena Misra


Suiqiong Li, Amol Shirke, Lloyd Ploense, Michael T Carter, Melvin W Findlay, Mark Papageorge, Joseph R Stetter

M04-Sensors, Actuators, and Microsystems General Session (Chemical and Biological Sensors)

Sensor

2147 Non-Invasive Biosensor for Measurement of Blood Urea Level in Human Subjects Using Reverse Iontophoresis

Eswaramoorthy K Varadharaj, Nagaraju Jampana
Dielectric Impedance Spectroscopy in Flexible Polymer Microchip: Towards the Non Contact Biosensors

Mohammed Kechadi, Bernard Tribollet, Jean Gamby

Early Diagnosis of Small Fiber Neuropathies By Electrochemical Means: Optimization of Sensing Materials

Amandine Calmet, Hanna Ayoub, Virgine Lair, Sophie Griveau, Philippe Brunswick, Armelle Ringuedé, Fethi Bedioui, Michel Cassir

Comparison of Magnetoelastic Sensors to Other Acoustic Wave Sensors

Howard Clyde Wikle, JiaJia Hu, Shin Horikawa, Yating Chai, Bryan A Chin

Detection of Salmonella on Bird Feces Contaminated Leafy Green Vegetables Using Phage-Based Magnetoelastic Biosensors

Jing Dai, Yating Chai, JiaJia Hu, Shin Horikawa, Bryan A Chin

Improved Pathogen Detection Using Magnetoelastic Biosensors Operating Under Multi-Harmonic Resonance Modes

Songtao Du, Shin Horikawa, Yating Chai, Howard Clyde Wikle, Bryan A Chin

Magnetoelastic Biosentinels for the Detection of Pathogenic Bacteria in Stagnant Liquids

Shin Horikawa, Yating Chai, Songtao Du, Howard Clyde Wikle, Bryan A Chin

Studies on Carbon Mediated Paste Screen Printed Sensors for Blood Glucose Sensing Application

Eswaramoorthy K Varadharaj, Nagaraju Jampana

Electrochemical Detection of Antibiotics in Environmental Matrices Using Functionalized Boron-Doped Diamond Electrodes
Application of PVC Membrane Sensor in Pharmaceutical and Environmental Analysis. One Example: Potentiometric Determination of Moxifloxacin in Some Pharmaceutical Formulation Using PVC Membrane Sensors

Gamal Abdel-Hafiz Mostafa

Electrochemical and Electrocatalytic Properties of Platinum Electrode Modified With Gold-CNT Nanocomposite


(Invited) Ionic Fluids Containing Both Strongly and Weakly Interacting Ions of the Same Charge Have Unique Ionic and Thus Chemical Environments As a Function of Ion Concentration

Robin Don Rogers, Hui Wang

(Invited) Ionic Liquids and Gas Sensor Applications

Xiangqun Zeng

Comparison of Electroreduction of Sulfur Dioxide in Ionic Liquid at Gold and Platinum Electrodes

Min Guo, Xiangqun Zeng

(Invited) Ionic Liquids in Gas Sensors: Recent Progress and Future Prospects

Michael T Carter, Joseph R Stetter, Melvin W Findlay, Vinay Patel

An Experimental Study of Adhesion Properties of PB Films for Sensing of H2O2 in a PEM-Fuel Cell Environment

Hamed Akbari Khorami, Nadine Jacobs, Peter Wagner, Alexander Dyck, Peter Wild, Ned Djilali
Control of the Microstructure and the Magnetic and Magnetostrictive Properties of Electrodeposited Fe-Co-B Thin Films for Sensor Applications

Zhizhi Sheng, Kewei Zhang, Z.-Y. Cheng

Temperature-Controlled Electrochemical Microsensors and Microsensor Arrays

Nicholas M. Contento, Steve Semancik

The Effect of Carbon Nanotubes Solid Contact Dispersing Agent on the Parameters of Resulting Potentiometric Sensors

Agata Michalska, Ewa Jaworska, Krzysztof Maksymiuk

Transparent Nanowire Electrodes As a Tool for Electrochemical Detection

Florent Lefèvre, Sujittra Poorahong, Marie-Claude Perron, Philippe Juneau, Ricardo Izquierdo

Gas Composition Monitoring in Cryogenic Fluid Transfer Lines

Gary W Hunter, Jeff Williams, Darby B. Makel, Robert G. Johnson, Azlin M. Biaggi-Liabiosa, Chung-Chiun Liu

Electrochemical Characterization of Electrode Materials for Mixed-Potential Sensors

Jonathan M. Reynolds, Shanice C. Brown, Eric L. Brosha, Rangachary Mukundan, Fernando H Garzon, Cortney R Kreller

Amperometric Oxygen Sensor Based on Bimetallic Pd-V/C/Nafion Electrode

Hui-Lun Wu, Yu-Ching Weng

Si Doped Metastable Epsilon-WO₃ Nano-Particle Film for Human Breath Acetone Sensing

Rishabh Jain, Radenka Marie
Gas Sensing Behaviors of Hierarchically Structured Nickel Oxide Film By Electrophoretic Deposition

Yoonsung Chung, Hyejin Park, Soohyun Ahn, Eunji Lee, Seokhee Lee, Dong-Joo Kim

A Pre-Concentrator for Explosive Vapor Detection

Zachary Caron, Daniel Mallin, Mitchell Champlin, Otto Gregory

Epitaxially Grown Pt\textsubscript{x}Ir\textsubscript{100-x} Alloys with Enhanced Properties for Ammonia Electro-Oxidation

Nicolas Sacré, Jules Galipaud, Sébastien Garbarino, Lionel Roué, Daniel Guay

Gas Sensing on Oxidized Bronze

Sriya Banerjee, Yoon Myung, Parag Banerjee

Screen-Printed Electrodes Modified with Multi-Walled Carbon Nanotubes for Cisplatin Detection

Elsa María Materón, Ademar Wong, Stanlei Ivair Klein, Maria del Pilar T Sotomayor

Polypyrrole-Coated Carbon Nanotubes for Low Temperature Gas Sensor

Anna Kim, Hana Lim, Ho-Nyun Lee, Park Jae-Young, Bongyoung Yoo, Hyun-Jong Kim

Spray-Coated All-Solid-State Potentiometric Sensors

Ewa Jaworska, Morten Schmidt, Giuseppe Scarpa, Krzysztof Maksymiuk, Agata Michalska

Carbon Nanofibers As Transducer Layers in Potentiometric Sensors

Ewa Jaworska, Joanna Madejak, Anna Kisiel, Krzysztof Maksymiuk, Agata Michalska

A New Bifunctional Electrochemical Sensor for Hydrogen Peroxide and Nitrite Based on Bimetallic Porphyrin MOF
Bo Zhou, Li-Mei Shi

2180 Citrus Limon Peel As a Component of Modified Carbon Paste Electrode for Voltammetric Determination of Cd(II)

Deepak Singh Rajawat, Soami Piara Satsangee

2181 Tailoring Morphology of ZnO Nanostructures on Fabrics By Electrochemical Deposition for Gas Sensors

Eunji Lee, Hyejin Park, Yoonsung Chung, Seokhee Lee, Dong-Joo Kim

Z01-General Student Poster Session

All Divisions

1865 Doping Poly(Acrylonitrile-co-Butadiene-co-Styrene) with Titanium Dioxide Nanoparticles to Create Novel Chemical Sensors

Matthew R Skorski, Douglas M Fox, Abigail E Miller

2182 One-Step Synthesis of Novel Mesoporous Three-Dimensional GeO₂ and Its Lithium Storage Properties

Haiping Jia, Martin Winter, Tobias Placke

2183 Enhanced Electrochemical Oxygen Reduction Reaction on Pt-Based Ordered Intermetallic Nanoparticle/Metal Oxide/Carbon Black

Takao Gunji, Toyokazu Tanabe, Shingo Kaneko, Futoshi Matsumoto

2184 The Use of Scallop Shell Powder As a Method of Extracting Alkaline-Earth Metals

Fumihiro Mihara, Ken Takeuchi, Sanae Tamura, Yasushi Idemoto, Yasuo Kogo

2185 Spherical and Size-Controlled Graphite Particles and Their Physical and Electrochemical Characterization As Active Material in Dual-Graphite Energy Storage Systems
Andreas Heckmann, Paul Meister, Pengfei Gao, Martin Winter, Tobias Placke

2186 A Graphene-Zinc Nanorods Nano-Composite Film Sensor for Sensitive Determination of Tizanidine in Solubilized System

Rajeev Jain, Ankita Sinha

2187 The Relationship Between Carbon Nanotube Surface Status and Electrocatalytic Performance Toward Oxygen Reduction Reaction of Cobalt Phthalocyanine /Carbon Nanotube

Zhengping Zhang, Feng Wang, Jing Ji, Jingjun Liu, Zhilin Li

2188 Influence of pH on Morphology and Electro-Activity of Ternary Pt-Co-P/MWCNT Electro-Catalysts Towards Methanol Electro-Oxidation

Junting Sun, Feng Wang, Meiling Dou, Jingjun Liu

2189 A Novel Graphene/Chitosan/ZrO$_2$ Nanocomposite Sensor for Electrochemical Investigation of a Non-Steroidal Anti-Inflammatory Drug Tolfenamic Acid

Ratnanjali Srivastava, Soami Piara Satsangee

2190 Hybrid Bilayer Membrane As a Versatile Electrochemical Platform to Modulate Transport Kinetics of Small Molecules Across a Lipid Monolayer

Christopher J. Barile, Edmund C. M. Tse, Nicholas A. Kirchschlager, Ying Li, Steven C. Zimmerman, Ali Hosseini, Andrew A. Gewirth

2191 Sensitive and Selective Determination of Dopamine at a Nanocomposite Modified Sensor

Harsha Devnani, Sana Ansari, Soami Piara Satsangee

2192 Investigation of Lithium-Ion Diffusion and Irreversible Processes in Dual-Ion Cell

Marco Balabajew, Tobias Kranz, Bernhard Roling
Instrumentation for Electrochemical Time of Flight Experiments

Jonathan C Moldenhauer, David W Paul

Device Simulation of Hydrogen-Terminated Diamond Mosfet and Extraction of Small-Signal Parameters

XI Zhou, Sacharia Albin

A Novel Real-Time, Mediator-Free, Non-Enzymatic Electrochemical Biosensor for Glutamate Detection

Yu-Ping Yang, Anita Manfredi, Sylvia Daunert

First Principles Molecular Dynamics of Ionic Transport in High-Temperature Molten-Salt Electrolytes

Yi-Chia Cheng, Hao-Yu Li, Chung-Fu Chen, Che-Wun Hong

Effects of Oxygen Concentration on Glucose Sensor Response

Nandita Halder, David W Paul

Effects of Biofouling on Oxygen Sensing Poly-o-Phenylenediamine-Coated Electrodes

Marlena Patrick, David W Paul

Anion Transport Across Electrode-Supported Lipid Membranes

Edmund C. M. Tse, Christopher J. Barile, John P. Gewargis, Ying Li, Steven C. Zimmerman, Andrew A. Gewirth

Photocatalytic Nanocomposite Polymers for Enhanced Water Purification Applications

Jeromy J Rech, Kathleen Hallenbeck, Jacob Murray, Michelle Fernandez, Courtney Dial, James Rago, Jason J Keleher
2201 Electrochemical Analysis of Film Forming Mechanisms Relevant to Data Storage Chemical Mechanical Planarization

Lisa M. Janes, Jason J Keleher

2202 Synthesis of Zinc Oxide Quantum Dots for Flexible Solar Cell Applications

Zachary X.W. Widel, Samantha J. Brain, Julianne Truffa, Jason J Keleher

2203 Effects of Electrode Compressibility in Vanadium Redox Flow Batteries

Su Mi Park, Hyun-Jong Kim, Haekyoung Kim

2204 Silicon/Graphene Nanosheets Composite Prepared By Plasma Assisted Milling As High Capacity Anode Materials for Li-Ion Batteries

Wei Sun, Renzong Hu, Lichun Yang, Hui Liu, Meiqin Zeng, Jiangwen Liu, Min Zhu

2205 Room Temperature Processed Electrochromic Smart Windows with Flexible Film

Sohee Lee, Haekyoung Kim

2206 Fabrication of Thermally Stable Ultra-High Density Particle-in-Cavity Nanostructure with Tunable Size and Density

Cheng Xu, Justin C. Wong, Yang Zhao, Luping Li, Kirk J Ziegler

2207 Low-Cost MEMS Packaging Using Polymer-Based Air-Gaps

Oluwadamilola Phillips, Paul A Kohl

2208 Highly Active Non-PGM Catalysts Prepared from Metal-Organic Frameworks

Heather Marie Barkholtz, Zachary Brian Kaiser, Di-Jia Liu

2209 Carbon Nanotubes Grown on Metal Microelectrodes for Dopamine Detection
Cheng Yang, Barbara Jill Venton

2210 Enhancement of Bifunctional Activity of Modified Carbon Nanotube Supported Cobalt Oxide Catalysts

Jun-Young Park, Inseop So, Nam-In Kim

2211 A Poly(ethylene carbonate)/Lithium Bis(fluorosulfonyl)imide/Titanium Oxide Composite Electrolyte Containing a Pyrrolidinium-based Ionic Liquid

Kento Kimura, Yoichi Tominaga

2212 Effects of B-Site Doping on Double Perovskite Structure Materials for Oxygen Evolution Reactions

Jun-Young Park, Sung-Hwa Cho, Nam-In Kim

2213 Highly Durable Cathode Materials with High Performance for Protonic Ceramic Fuel Cells

Ka-Young Park, Jun-Young Park

2214 Electrochemical Synthesis of Ammonia Using Molybdenum-Based Catalyst

Hamed Bateni, Gerardine G Botte

2215 Thermally Stable, Coke-Resistant Ni Nanoparticle Catalysts Prepared By Atomic/Molecular Layer Deposition for Dry Reforming of Methane

Zeyu Shang, Xinhua Liang

2216 Lithium-Ion Battery Cathodes Coated with Ultra-Thin Conductive Films for Long Cycle Life

Rajankumar L. Patel, Xinhua Liang

2217 Theoretical Approach to the CH₄ Decomposition on BaTiO₃(001)
David Samuel Rivera Rocabado, Takayoshi Ishimoto, Michihisa Koyama

2218 Electrochemical Synthesis of Ammonia in Alkaline Media

Natalie Tzap, Luis A Diaz, Madhivanan Muthuvel, Gerardine G Botte

2219 Characterization of the Double Layer By Time Resolved Surface Enhanced FTIR Spectroscopy

Daniel Parr, Christina Zibart, Bryce Egan, Kasim Malik, Tyler Shadley, Luke M. Haverhals

2220 Investigation of Mass Transport in Mesoporous Semiconducting Thin Film Electrodes

Carl Meunier, Ethan Roberts, Edward E. Remsen, Luke M. Haverhals

2221 Direct Electron Transfer and Oxygen Reduction Reaction on Hemoglobin with Indium Tin Oxide Synthesized with Different Metal Compositions

Yusuke Ayato, Wataru Sugimoto

2222 Synthesis of Ruthenium Complexes for Semiconductor Device Using Atomic Layer Deposition

Eun Ae Jung, Jeong Hwan Han, Bo Keun Park, Chang Gyoun Kim, Seung Uk Son, Taek-Mo Chung

2223 Engineered Si Sandwich Electrode: Si Nanoparticles/Graphite Sheet Hybrid on Ni Foam for Next-Generation High-Performance Lithium-Ion Batteries

Chuihui Gao, Hailei Zhao, Pengpeng Lv

2224 Determination of Diffusion Coefficients through a Polymer Membrane Using a Rotating Disc Electrode

Marissa Kayle Reynolds, David W Paul
2225 Microfluidics with Alternating Current-Redox Magnetohydrodynamics at Modified Electrodes for Cell Identification

Adair Claycomb, Joshua Hutcheson, Foysal Khan, Timothy J. Muldoon, Ingrid Fritsch

2226 Modeling the Effects of Morphology in Lithium-Ion Battery Electrodes

Pranav Shetty, Tandeep Singh Chadha, Pratim Biswas, Amartya Mukhopadhyay, Venkatasailanathan Ramadesigan

2227 Studies Toward Lab-on-a-Chip Separations and Detection Using Redox Magnetohydrodynamic Microfluidics

Foysal Khan, Dustin Baucom, Colin D. Heyes, Ingrid Fritsch

2228 Transport and Dynamics of Ionic Species in Block Copolymer Electrolytes Obtained from NMR

Tan Vu Huynh, Robert Messinger, Renaud Bouchet, Trang N. T. Phan, Sebastien Maria, Michaël Deschamps

2229 Trimetallic Platinum-Ruthenium-Copper Nanotubes for Methanol Oxidation

Leanne Mathurin, Shutang Chen, Jingyi Chen

2230 Cyclic Voltammetry Studies of H-Bond Complex of a p-Phenylenediamine-Based Urea with 1,8-Naphthyridine As the Proton-Coupled Electron Transfer Guest with Platinum and Glassy Carbon As Working Electrodes

Bryan T. Tamashiro, Diane K. Smith

2231 Polybenzimidazole Membranes for Hydrogen Production in the Hys Electrolyzer

Taylor Reed Garrick, Alexander Gulledge, John A Staser, Brian Benicewicz, John W. Weidner

2232 Conducting Polymers Covalently Linked to Enzymes and Mediators and Electropolymerized on Microelectrode Arrays
Benjamin J. Jones, Corinne Songer, Pilar Bare, Ingrid Fritsch

2233 Pit Initiation in Aluminum and Aluminum Alloys

Ainsley Pinkowitz, Sarah Straub, David Duquette, Robert Hull

2234 Activity of Nafion

Nadeesha Rathuwadu, Johna Leddy

2235 Cation Intercalation and High Volumetric Capacitance of Two-Dimensional Titanium Carbide

Maria R. Lukatskaya, Michael Ghidiu, Olha Mashtalir, Chang E. Ren, Meng-Qiang Zhao, Yohan Dall'Agnese, Michel W. Barsoum, Yury Gogotsi

2236 Cyclic Voltammetric Studies of Nitroimidazoles in Aqueous Solution with Additions of Cysteine

Ghazwan M Darzi, Diane K. Smith

2237 Graphene Based High Performance Energy Storage Devices

Tianyuan Liu, Reza Kavian, Seung Woo Lee

2238 Electrode for Voltammetric Evaluation of Insoluble Particles

Matthew Douglas Lovander, Edward Gillan, Johna Leddy

2239 Charge-Storage Mechanisms in Nanostructured Carbides and Nitrides for Energy Storage

Abdoulaye Djire, Olabode T Ajenifujah, Alice Sleightholme, Paul Rasmussen, Lilin He, Jason Siegel, Levi T Thompson

2240 The Effect of a Protective Overcoat on Mixed-Potential Sensor Response
Shanice C. Brown, Dusan Spernjak, Rangachary Mukundan, Jonathan M. Reynolds, Eric L. Brosha, Cortney R. Kreller

2241 Acetylacetonate Complexes for Non-Aqueous Redox Flow Battery Applications


2242 Improving Seebeck Coefficient of Thermogalvanic Cells Using Polyelectrolytes

Andrey Gunawan, Pilarisetty Tarakeshwar, Daniel A. Buttry, Vladimiro Mujica, Patrick E. Phelan

2243 Lithium Ion Battery Energy Storage System for Grid Applications

Eugene Newton Moss, Ruben Nelson, Mark H. Weatherspoon, Pedro L. Moss

2244 Study of the Kinetics of Redox Active Polymers in Non-Aqueous Media Under High Mass-Transfer Conditions Using Scanning Electrochemical Microscopy

Timothy Lichtenstein, Joaquin Rodriguez-Lopez

2245 Effect of Contaminants on the Performance of a Proton Exchange Membrane Fuel Cell

Bahareh Tavakoli, John W. Weidner

2246 Comparisons in Voltammetry of Phenylenediamine Based Ureas on Platinum and Glassy Carbon Working Electrodes

Mario Cedano, Diane K. Smith

2247 Electrospun Carbon Nanofiber Supports for Bioelectrodes

Duyên Van Thuy Do, Cenk Gumeci, Scott Calabrese Barton

2248 The Roles of the Particle Size of Ge-Based Electrodes on the Electrochemical Performance of Lithium-Ion Batteries
Kuber Mishra, John Isenhower, Xiao-Dong Zhou

2249 Effects of Preparation on the Silicon Nanowires Grown By Electroless Etching

Victor H. Velez, Robert George Mertens, Kalpathy B Sundaram

Z02-Nanotechnology General Session

All Divisions/Interdisciplinary Science and Technology Subcommittee

2250 Electric Current Rectifying Device That Is Completely in Liquid State: A Theoretical Proposal

Guillermo Ivan Guerrero-Garcia, Kalyan Raidongia, Jiaxing Huang, Monica Olvera de la Cruz

2251 Electroforming Free Non-Volatile Resistive Memory Switching in Pulsed Laser Deposited Rare-Earth Oxides Thin Films

Yogesh Sharma, Shojan P. Pavunny, Ram S. Katiyar

2252 Tin Oxides with Nano and Micron-Sized Pores for Functional Electrochemical Devices

Eun-Ji Kim, Heon-Cheol Shin

2253 Nano-Second Pulse Programming of Resistive RAM Devices and Its Benefits

Luca Montesi, Mark Buckwell, Adnan Mehonic, Steven Hudziak, Tony Kenyon

2254 Laterally Assembled Ga2Te3/In2Te3 Hetero-Nanostructures for Thermoelectric Applications

Yu-Ting Hung, Taung-Han Chen, Hsiu-Cheng Chang, Chun-Hua Chen

2255 Core-Shell Structured Supported Size-Selective Catalysts with High Catalytic Activity
Zeyu Shang, Xinhua Liang

2256*Pgs Synthesis with the Sulfated Titania Catalyst for the Esterification*

Sung Nien Hsu, Kan-Sen Chou

2257*High-Performance SOFC Electrodes Synthesized By Novel One-Step Chemical Routes*

Antonio Eduardo Martinelli, Daniel Araujo Macedo, Moises Romolos Cesário, Carlos Alberto Paskocimas, Duncan Paul Fagg, Rubens Maribondo Nascimento

2258*Electrodeposition of Highly Ordered CdTe Nanorod/Nanotube Arrays for Solar Energy Conversion*

Wipula Priya Rasika Liyanage, Jacob Scott Wilson, Edward Kinzel, Manashi Nath

2259*Enhanced Light Scattering with Energy Downshifting Using 16 Nm Indium Nitride Nanoparticles for Improved Thin-Film a-Si N-I-P Solar Cells*

Farsad Imtiaz Chowdhury, Kazi Islam, Sabri Alkis, Bülend Ortaç, Mustafa Alevli, Nikolaus Dietz, Ali Okyay, Ammar Nayfeh

2260*Enhancing the Rate Capability of Hybrid Supercapacitors Based on Redox Active Electrolytes through High-Surface Area Reduced Graphene Oxide*

Silvia Roldán, Oleksandr Bondarchuk, Javier Carretero-González, Teofilo Rojo, Roman Mysyk

2261*Charge Trapping Memory with 2.85-Nm Si-Nanoparticles Embedded in HfO₂*

Nazek El-Atab, Berk Berkan Turgut, Ali Okyay, Ammar Nayfeh

2262*Fabrication of Large Scale Molecular Junctions of Ag Nanowires By Mev Proton Beam Irradiation*

Shehla Honey, Ishaq Ahmad, Saira Riaz, Shahzad Naseem, Malik Maaza
2263 Direct Electrodeposition of Crystalline Si Nanowires at Low Temperatures

Luyao Ma, Sudarat Lee, Stephen Maldonado

2264 Direct Electrochemical Synthesis of Epitaxial Germanium Nano- and Micro-Wire Arrays at Room Temperature in Water

Eli Fahrenkrug, Junsi Gu, Stephen Maldonado

2265 Atomic Layer Deposition and Anodic Oxidation: A Good Tool Combination to Build Nanostructured Electrodes for Energy Applications

Lionel Santinacci, Loic Assaud, Maissa Barr, Elena A. Baranova, Nicolas Brazeau, Nareerat Plylahan, Thierry Djenizian, Julien Bachmann, Margrit Hanbucken

2266 Effect of Nano-Silver Ink Composition and Drying Behavior on Its Adhesion on Glass Substrate

I-Hsien Lai, Kan-Sen Chou

2267 A Novel Empirical Force Field to Capture Size-Dependent Dimensionality Effects in Au Nanoclusters

Badri Narayanan, Alper Kinaci, Fatih G. Sen, Michael J. Davis, Stephen K. Gray, Maria K. Y. Chan, Subramanian K. R. S. Sankaranarayanan

2268 Nanoscale Investigation of Anodization Process of Titanium

Kun He, Yu-Peng Lu, Tolou Tolou Shokuhfar, Reza Shahbzian-Yassar

2269 On the Electrochemical Dealloying of Binary Al-Cu and Ternary Al-Cu-Sn Alloys

Tingting Song, Ming Yan, Zhiming Shi, Andrej Atrens, Ma Qian

2270 In-Situ TEM Observation of ZnO Nanostructure Growth in Liquid

Ting-Huan Hsieh, Jui-Yuan Chan, Chun-Wei Huang, Wei-Che Li, Chia-Fu Chang, Wen-Wei Wu
Synthesis and Size Control of CuIn Alloy Nanoparticles in Aqueous Solution and Its Application for CuInSe₂ Solar Cell

Hideyuki Takahashi, Hironari Fujiki, Shun Yokoyama, Kazuyuki Tohji

Solid-State Reaction Assisted Synthesis of Co-Doped MnO₂ Nano-Composite Materials for Supercapacitor

Wanru Feng, Guangli Zhang, Ping He, Wen Lei, Jianwu Wen, Fu Wang

Atomic Layer Deposition on Fabrics for Flame Resistance

S O'Brien, L Cosgrave, V Lodge, I. M Povey

RT Atomic Layer Deposition of Al₂O₃ By Using Remote Plasma Excited Water Vapor

Kensaku Kanomata, P.Pungboon Pansila, Hisashi Ohba, Bashir Ahmmad, Shigeru Kubota, Kazuhiro Hirahara, Fumihiko Hirose

ZrO₂/GRP Nanocomposite Based Sensor for the Electrochemical Investigation of an Anti-HIV Phytoconstituent Andrographolide

Sachin Saxena, Soami Piara Satsangee

The Catalytic Activity of Pd Supported on TiO₂ Nanotubes on the Formic Acid Oxydation in Alkaline Media

Jorge Aldana-González, Maria Guadalupe Montes de Oca-Yemha, Juan Carlos Olvera, Mario Alberto Romero-Romo, Jorge Uruchurtu, Manuel Palomar-Pardavé

FDTD Analysis for Devices with Glass Substrates and Its Application to Antireflection Coating on Organic Solar Cells

Shigeru Kubota, Kensaku Kanomata, Bashir Ahmmad, Jun Mizuno, Fumihiko Hirose

X-Ray Photoelectron Spectroscopy and Raman Scattering Studies of ALD Alumina Coated ZnTe Nanowires
Kallol Pradhan, Satyaprakash Sahoo, J H Peng, H Yu, S K Dey, Ram S. Katiyar

2279 Effects of 3-Aminopropyl Triethoxysilane (APTES) on Stability, Optical Properties and Morphology of Gold Nanoparticles

Monique Farrell, Gugu Rutherford, Aswini K Pradhan

2280 Plastic and Flexible Micro-Electrochemical Supercapacitor Based on Cluster-Assembled Carbon

Francesca Soavi, Catia Arbizzani, Luca Giacomo Bettini, Paolo Milani, Paolo Piseri

2281 Additive Manufacturing (AM) through Imprinting Gold Nanoparticles on Glass Substrates By Spark Assisted Chemical Engraving (SACE)

Lucas Abia Hof, Carlos Escobedo, Jana D. Abou Ziki, Rolf Wüthrich

Z03-Solid State Topics General Session

Dielectric Science and Technology/Electronics and Photonics/Energy Technology/Luminescence and Display Materials/Nanocarbons/Organic and Biological Electrochemistry/Sensor

2282 Modification of Sacrificial Polymers for Low-Cost MEMS Packaging

Oluwadamilola Phillips, Paul A Kohl

2283 Exploration of Chemical Bonding Transformation Mapping to Assist Low-k Dielectric Nanostructure Fabrication

Oliver Chyan, Sirish Rimal, Tamal Mukherjee, Arindom Goswami, Nick Ross

2284 (Dielectric Science & Technology Division Thomas D. Callinan Award) Boron Carbon Nitride Thin Films for Low-k Dielectric Interconnect and Optical Applications

Kalpathy B Sundaram, Adithya Prakash, Sean W. King
Understanding Field-Dependent Leakage Current Mechanisms in Amorphous Hydrogenated Boron Carbide As a Function of Electronic, Dielectric, and Disorder Parameters

Michelle M. Paquette, Bradley J. Nordell, Christopher L. Keck, Gyanendra Bhattarai, Thuong D. Nguyen, Sudhaunshu Purohit, A. N. Caruso, William A. Lanford, Sean W. King

The Electrodeposition of Crystalline Gallium Antimonide Using Electrochemical Liquid-Liquid Solid Deposition (ec-LLS)

Joshua James DeMuth, Stephen Maldonado

Understanding the Effect of MgO Interfacial Layer on ZnO/High-K/Fto Transparent Thin Film Transistor for Large-Area Transparent Electronics Applications

Rashmi Jha, Prem Thapaliya

Low Work Function LaB$_6$ thin Films Prepared By Nitrogen Doped LaB$_6$ target Sputtering

Hidekazu Ishii, Kentaro Takahashi, Tetsuya Goto, Shigetoshi Sugawa, Tadahiro Ohmi

Growth of Nickel Silicide/Platinum Silicide Axial Nanowire Heterostructure through Solid-State Reaction

Yen-Ting Wu, Chun-Wei Huang, Jui-Yuan Chan, Yu-Ting Huang, Chung-Hua Chiu, Yu-Shun Hsieh, Chia-Fu Chang, Wen-Wei Wu

Solid State Reaction to Form Metal Oxide Heterostructure Nanowire

Yi-Hsuan Chen, Chun-Wei Huang, Jui-Yuan Chan, Yu-Ting Huang, Wen-Wei Wu

Ageing Effects on Sputtered YSZ Thin Films and Gold Electrodes for Electrochemical Sensor Applications

Kiruba Mangalam Subramaniam, L L Rajeswara Rao, Nagaraju Jampana

Solid Polymer Electrolytes Based on Chitosan and Europium Triflate

2293 Chitosan Solid Polymer Electrolytes Doped with Cyano-Based Ionic Liquids

R. Leones, Franciani Sentanin, J.M. S.S. Esperança, Agnieszka Pawlicka, M. M. Silva

2294 Effect of Thickness on Electrical and Reliability Characteristics for Dense and Porous Low Dielectric Constant Materials

Yi-Lung Cheng, Kai-Chieh Kao, Chang-Sian Wu

Z04-Nature-Inspired Electrochemical Systems

Energy Technology/Organic and Biological Electrochemistry/Industrial Electrochemistry and Electrochemical Engineering/Physical and Analytical Electrochemistry/Sensor/Interdisciplinary Science and Technology Subcommittee

2295 From Chemical Fuel Cells to Biological Fuel Cells: Challenges and Directions

Carlo Santoro, Sofia Babanova, Plamen Atanassov

2296 From the Bottom up and Back: Nature-Inspired Electrochemical Platforms for Bioenergy and Bioremediation

Gemma Reguera

2297 The Complete Oxidation of Glycerol to CO₂: A Hybrid Enzymatic and Organic Electrocatalytic Cascade

Shelley D. Minteer, David P Hickey, Matthew McCammant, Fabien Giroud, Matthew S Sigman

2298 Charge-Transfer and Photocatalytic Hydrogen Production By Hydrogenase Photobiohybrids

Paul W King, Katherine A Brown, David W Mulder, Michael W Ratzloff, Cara Lubner

2299 Exploration of Ammonia Production in Blue Green Algae By Bioelectrocatalytic Methods
Jacob Lyon, Timothy Paschkewitz, Johna Leddy

2300Metabolic Engineering to Create New Class of Nature-Inspired Corrosion Inhibitors

Mahmoud Kamal Ahmadi, Blaine Pfeifer

2301In Situ Oxygen Gradient Generation, Control and Model inside a Microfluidic Habitat

William E Mustain, Ying Liu, Andrea Kadilak, Leslie Shor

2302Development of a Novel Platform for Spectroelectrochemical Investigation of Geobacter Cytochromes Involved in Uranium Reduction

Bhushan Awate, Robert Mark Worden, Gemma Reguera

2303Bio-Electrochemical Systems in the Subalpine Lake Idro (Italy)

Pierangela Cristiani

2304Bioinspired Metal Organic Nanostructures for Electrocatalysis

Doris Grumelli, Benjamin Wurster, Diana Hötger, Rico Gutzler, Klaus Kern

2305Bio-Inspired Design of Electrocatalysts for Oxidation of Small Organic Compounds

Sofia Babanova, Ivana Matanovic, Albert Thomas Perry, Alexey Serov, Kateryna Artyushkova, Plamen Atanassov

2306Proton Channels on Molecular Electrocatalysts for Hydrogenase Mimics

Wendy Shaw, Arnab Dutta, John Roberts

2307Quinone Electrochemistry: From the Electron Transport Chain to Electron Mediators and Orientational Moieties

Shelley D. Minteer, Fabien Giroud, Ross D Milton, Boxuan Tan
2308 Pd-Based Metal Aerogels with Promoted Bioelectrocatalytic Behavior

Dan Wen, Wei Liu, Alexander Eychmüller

2309 Selective Electrochemical Sensing of Human Albumin By Semi-Covalent Imprinting

Maciej Cieplak, Katarzyna Szwabinska, Chandra KC, Pawel Borowicz, Krzysztof R. Noworyta, Francis D'Souza, Wlodzimierz Kutner