

244th ECS Meeting

Meeting Abstracts 2023-02

Gothenburg, Sweden
8-12 October 2023

Volume 1 of 8

ISBN: 978-1-7138-9778-1

Printed from e-media with permission by:

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



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

Copyright© (2023) by The Electrochemical Society
All rights reserved.

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

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

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

Phone: 1.609.737.1902
Fax: 1.609.737.2743

ecs@electrochem.org

Additional copies of this publication are available from:

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

TABLE OF CONTENTS

VOLUME 1

A01-NEW APPROACHES AND ADVANCES IN ELECTROCHEMICAL ENERGY SYSTEMS

A01 - Digital Only Presentations

(Digital Presentation) Hybrid Membranes Engineered from Sustainable Sources Exhibit Improved Ionic Conductivity	1
<i>Suvash Ghimire, Kausik Mukhopadhyay</i>	

A01 - Supercapacitors 1

Sodium Mesoxalate as PRE-Sodiation Agent in Sodium-ION Capacitors	2
<i>María Canal Rodríguez, María Arnaiz, Bruno Correa, Jon Ajuria</i>	
Self-Powered and Flexible Integrated System Made By Dye Sensitized Solar Cell, Micro-Supercapacitor and Hydrogel-Based Stress Sensor	4
<i>Marco Reina, Giorgio Mogli, Roberto Speranza, Pietro Zaccagnini, Davide Arcoraci, Stefano Stassi, Andrea Lamberti</i>	
Optimization of Laser-Induced Graphene Electrodes for High Voltage Micro-Supercapacitors	6
<i>Pietro Zaccagnini, Marco Reina, Davide Arcoraci, Luisa Baudino, Mara Serrapede, Alessandro Pedico, Davide Molino, Simone Martellone, Stefano Bianco, Andrea Lamberti</i>	
Estimation of State-of-Charge and Energy Efficiency of Supercapacitors Using a 1-D Electrochemical Model	7
<i>Pankaj Saha, Abdul Ali, Venkatasailanathan Ramadesigan</i>	
Solid-State Redox-Active Pseudocapacitor with Improved Performance at High Temperature	9
<i>Sima Lashkari, Daniela De Morais Zanata, Nicolas Goujon, Ousmane Camara, David Mecerreyes, Irune Villaluenga</i>	
3D Printed Stamps for Transfer Printing of Flexible and Wearable Supercapacitors	11
<i>Khushal Gupta, Sudhansu Sekhar Nath, Poonam Sundriyal</i>	
Thin-Film Electrodes Based on Conjugated Polyelectrolytes for High-Performance Pseudocapacitance in Aqueous Media	12
<i>Benjamin Rui Peng Yip, Ricardo J. Vazquez, Samantha R. McCuskey, Glenn Quek, Yan Jiang, David Ohayon, Xuehang Wang, Guillermo C. Bazan</i>	
Multi-Parameter Optimization of Siloxene-PANI Composites for High-Performance and Flexible Energy Storage Application	13
<i>Nav Deepak, Arun Kumar, Shobha Shukla, Sumit Saxena</i>	
Temperature Study on Vanadium Oxide Nano-Spheres As an Efficient Electrodes for Supercapacitor	14
<i>Arun Kumar Kumar, Nav Deepak, Shobha Shukla, Sumit Saxena</i>	

A01 - Supercapacitors 2

In Situ Crosslinked Gel Polymer Electrolytes for Li-Ion Capacitors	15
<i>Simon Lindberg, María Arnaiz, María Canal Rodríguez, María Martínez-Ibañez, Jon Ajuria</i>	
Ni-MOF Based Flexible Solid-State Supercapacitors in Aqueous and Non-Aqueous Electrolytes	17
<i>Garima Chaturvedi, Rishabh Jaiswal, S A Ilangovan, S Sujatha, K S Ajeesh, Sankara Sarma V Tatiparti</i>	

Gel Polymer Electrolytes for Flexible LiXPO ₄ (X=Mn,Fe,Co)-Fractal-like Fe ₂ O ₃ Hybrid Supercapacitor Devices	19
<i>Rishabh Jaiswal, Garima Chaturvedi, S A Ilangoan, S Sujatha, K S Ajeesh, Sankara Sarma V Tatiparti</i>	
Redox Additive Electrolyte Study of Metal-Organic Framework Derived Nickel Phosphide/Carbon Composite for Supercapacitors.....	20
<i>Shashank Sundriyal, Prashant Dubey, Vishal Shrivastav, Wojciech Nogala, Aristeidis Bakandritsos</i>	
Engineered Conductive Proteins for Supercapacitors	21
<i>Marcial Fernandez Castro, Amaia Saenz De Buruaga, María Arnaiz, Silvia Martín, Maxence Fernandez, Daniel Carriazo, Aitor Villaverde, Aitziber López Cortajarena, María Carmen Morant-Miñana</i>	
Mns-MWCNT Composite, as a Superior Electrode Material for Asymmetric Flexible Quasi Solid-State Supercapacitors.....	23
<i>Mithun Sarkar, Sk Tarik Aziz, V R Siddhartha Sairam V R Kalahasti, Prakash C Ghosh</i>	
Solvent-Free Scalable Preparation of Nickel Manganese Sulfide-Based Hybrids for High-Performance Hybrid Supercapacitors	25
<i>Sunil Lonkar</i>	
Biomass Derived Flexible Free-Standing Electrodes for a High Performance Supercapacitor.....	26
<i>Ekta Vashishth</i>	

A01 - Invited Talks 1 - Electrochemical Energy Systems

(Invited) An Overview of the Behavior of the Li _x NiO ₂ Electrode at High Voltage.....	27
<i>Claude Delmas, Marie Guignard, Artem M. Abakumov, Francois Fauth</i>	
(Invited) Progress in Polymer Electrolytes for Li ^o Electrode	28
<i>Michel Armand, María Martínez-Ibañez, Eduardo Sanchez-Diez, Leire Meabe, Lorena Garcia, Itziar Aldalur, Alexander Santiago, Mikel Arrese-Igor, Devaraj Shanmukaraj, Heng Zhang</i>	
(Invited) All-Solid-State Na- and K-Ion Batteries with Dry Polymer Electrolytes	30
<i>Shinichi Komaba, Ryoichi Tatara, Mizuki Hamada, Hosei Suzuki</i>	
(Invited) Earth-Abundant Cathode Active Materials: Research and Development on Mn-Rich Oxides.....	32
<i>Jason R. Croy, Arturo Gutierrez, Jiajun Chen, Subhadip Mallick, Chun Yuen Kwok, Mahalingam Balasubramanian, Anh Vu, Eungje Lee, Boyu Shi, Deepti Tewari, Venkat Srinivasan, Jihyeon Gim, Michael M Thackeray</i>	
(Invited) Synthesis and Interfacial Control of Electrode Architectures	33
<i>Sheng Dai</i>	
(Invited) Electrolytes for Next-Generation Sodium Metal Batteries	34
<i>Venkataraman Thangadurai</i>	
(Invited) Slug-Flow Manufacturing of Uniform and Tunable Battery Cathode Materials	35
<i>Mariappan Parans Paranthaman, Arjun Patel, Sourav Mallick, Mingyao Mou, Xiaoguang Sun, Ram B. Gupta, Herman Lopez, Mo Jiang</i>	

A01 - Invited Talks 2 - Electrochemical Energy Systems

(Invited) A Sustainable and Reliable Electrolyte Toward Safe Zn-MnO ₂ Alkaline Rechargeable Batteries.....	37
<i>Deepa Madan, Sanjay-Singh Persad</i>	
(Invited) Effect of Carbonaceous Materials on the Performance of Supercapacitors.....	38
<i>Rahul Singh</i>	
(Invited) Direct Ink Writing of Supercapacitors for Flexible and Wearable Applications.....	39
<i>Sudhansu Sekhar Nath, Amruth Sai, Poonam Sundriyal</i>	

A01 - Poster Session

Sweetwood Lignin As a Promising Precursor Towards Multi-Functional Electrode Material	40
<i>Eugenijus Norkus, Daina Upskuviene, Aldona Balciunaite, Loreta Tamasauskaite-Tamasiunaite, Vitalija Jasulaitiene, Ance Plavniece, Galina Dobeles, Aleksandrs Volperts, Aivars Zhurins, Jannicke Kvellø, Luis Cesar Colmenares-Rausseo, Ivar Kruusenberg, Kätlin Kaare</i>	
Core/Shell Cu-TiO ₂ Nanoparticles As Efficient Anode Material for Li-Ion Capacitors.....	41
<i>Rabail Badar Abbasi, Agnieszka Magdziarz, Alexey Kopusov</i>	
Designing Bifunctional Oxygen Electrocatalysts Using Prussian Blue Analogue and Carbon Nanostructure Hybrids: Understanding the Role of Individual Components for Oxygen Reduction and Evolution Reactions.....	42
<i>Priya Jain, Pravin P Ingole</i>	
(Best Poster Award - 2nd Place) Energy Harvesting from CO ₂ Emission Exploiting an Ionic-Liquid Based Electrochemical Capacitor	43
<i>Simone Martellone, Davide Molino, Pietro Zaccagnini, Alessandro Pedico, Sergio Bocchini, Giuseppe Ferraro, Andrea Lamberti</i>	
Monolithic Self-Charging Storage Device with Stable 3 V Operation.....	45
<i>Juyeon Han, Seokgyu Ryu, Harim Seo, Eubin Jang, Wonwoo Choi, Jaeyoung Oh, Seungjin Park, Jihoon Choi, Jeeyoung Yoo</i>	
Operando Neutron Diffraction Analysis of Commercial Positive Electrodes of Lead Batteries	47
<i>Daniel Seth Hussey, Miguel Rodriguez-Gomez, Angel Larrea Arbaizar, Javier Campo, Alodia Orera, Fernando De La Fuente, Jesus Valenciano, Holger Fricke, Yan Chen, Dunji Yu, Ke An</i>	
High-Rate Electrochemical Energy Storage of MXene in Neutral Aqueous Electrolytes	49
<i>Chaofan Chen, Xuehang Wang</i>	
(Best Poster Award - 3rd Place) Development of Bipolar All-Solid-State Lithium-Ion Cell	51
<i>Yolande Murat, Jérémie Salomon, Yvan Reynier, Timo Brändel, Guinevere A. Giffin, Sophie Mailley, Benoit Chavillon, Gunay Yildirim</i>	
(Best Poster Award - 1st Place) Characterisation of the Li Metal Electrolyte Interface of PEO-Based SPEs with Borate Salts, Using in Situ Li Deposition PES Measurements Aided by AIMD Simulations.....	53
<i>Edvin Karl Walfrid Andersson, Liang-Ting Wu, Luca Bertoli, Yi-Chen Weng, Daniel Friesen, Kenza - Elbouazzaoui, Sofia Bloch, Ruslan Ovsyannikov, Erika Giangrisostomi, Daniel Brandell, Jonas Mindemark, Jyh-Chiang Jiang, Maria Hahlin</i>	
The Role of Energy Density for Grid-Scale Batteries	55
<i>David Reber, Sam R. Jarvis, Michael P. Marshak</i>	
Optimization of Material Distribution in Electrodes of Power Generating Devices: A Mixed Approach	56
<i>Mehrzad Alizadeh, Patcharawat Charoen-Amornkitt, Takahiro Suzuki, Shohji Tsushima</i>	
Volta: A Tool for Battery Screening Bridging the Gap between Virtual Electrode Materials and Practical Applications.....	57
<i>Antonio Carnevali, M. Palacin, Clare P. Grey, Alejandro A. Franco</i>	
Building a P2D Model for the NiMH Battery	59
<i>Jenny Börjesson Axén, Henrik Ekström, Erika Widenkvist Zetterström, Göran Lindbergh</i>	
Accelerating Battery Electrolyte Design Process Via Closed-Loop Optimization of Simulations and Experiments.....	61
<i>Jin Hyun Chang, Nis Fisker-Bødker, Smobin Vincent, Victor Martinez, Thi Dinh Ta, Tejs Vegge</i>	
Data-Driven Decision Making in Battery Technology – How to Compete in Global Battery Industry?.....	62
<i>André Hemmelder</i>	

Constructing a Robotic Platform for the Autonomous Design of High-Entropy Electrolytes.....	64
<i>Nis Fisker-Bødker, Smobin Vincent, Victor Martinez, Jin Hyun Chang, Tejs Vegge</i>	
Ammonia as an Energy Carrier for Renewable Energy Conversion and Storage.....	65
<i>Yun Liu, Zhefei Pan, Yun Liu</i>	
A Hybrid Direct Ammonia Fuel Cell.....	67
<i>Wenzhi Li, Yun Liu, Zhefei Pan, Yun Liu</i>	
Low-Voltage Hydrogen Production via Hydrogen Peroxide Oxidation Facilitated by Oxo Ligand Axially Coordinated to Cobalt in Phthalocyanine Moiety.....	68
<i>Jisu Lee, Hyun-Kon Song</i>	
Improvement of Current Efficiency of PEM Electrolyzer for Organic Chemical Hydride Energy Carrier Production with Water Electrolysis by Humidified Air Supply to Anode	70
<i>Shigenori Mitsushima, Yoshiyuki Kuroda, Kensaku Nagasawa</i>	
Modelling of the Water Mass Transport through the Membrane of Direct Toluene Electro- Hydrogenation Electrolyzers	73
<i>Antonio Atienza-Márquez, Fatima Isabella Reyna-Peña, Ryuhei Shiono, Takuto Araki, Kensaku Nagasawa, Shigenori Mitsushima</i>	
Utilizing Direct Membrane Deposition to Improve the Performance of Forward-Bias Bipolar Membrane CO ₂ Electrolysers	75
<i>Tartela Alkayyali, Ali Shayesteh, Harrison Mar, Fatemeh Arabyarmohammadi, Rui Kai Miao, Colin P. O'Brien, Edward H. Sargent, Nana Zhao, David Sinton</i>	
The Effect of Junction Composition of Polarization Behaviour of Bipolar Membranes.....	77
<i>Yi-Lin Kao, David Aili</i>	
Advanced Analytical System with Standardized Data Analysis for Electrochemical CO ₂ Reduction	78
<i>Alessandro Senocrate, Peter Kraus, Francesco Bernasconi, Corsin Battaglia</i>	

A01 - Invited Talk 3 - Electrochemical Energy Systems

(Invited) Strategies for Enhancing the Stability of the Electrode-Electrolyte Interphase in Sulfide- Based Solid-State Batteries	80
<i>Jung-Hyun Kim</i>	
(Invited) Development of Interfacial Materials for High-Performance Battery Materials	81
<i>Donghai Wang</i>	
(Invited) In-Operando ftr Study on the Redox Behavior of Sulfurized Polymers As Cathode Material for Li-S Batteries.....	82
<i>Rhyz Pereira, Ayda Rafie, Aaron Fafarman, Vibha Kalra</i>	
(Invited) Lithium Phosphorus Sulfide Chloride-Polymer Composite Via Solution-Precipitation Process for Improving Stability Toward Dendrite Formation of Li-Ion Solid Electrolyte	83
<i>Gao Liu</i>	
(Invited) Electrochemistry in a Lab of the Future	84
<i>Craig A. Bridges, Bishnu Prasad Thapaliya, Xiaoguang Sun, Anees Al-Najjar, Nageswara Rao, Andrzej Nycz, Alex Walters, Luke Meyer, Sheng Dai</i>	
(Invited) Lithium Plating as a Critical Ageing Mechanism in Lithium-Ion Batteries – Detection by Advanced Methods and Mitigation	85
<i>Thomas Waldmann, Christin Hogrefe, Marius Fluegel, Max Feinauer, Michael Kasper, Margret Wohlfahrt-Mehrens</i>	
(Invited) Designing Sustainable Battery Technologies.....	87
<i>Emma Kendrick</i>	

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

(Energy Technology Division Walter van Schalkwijk Award in Sustainable Energy Technology Address) Exploring New Electrode Designs with Nanofibers	89
<i>Peter N. Pintauro, Xiaozong Fan, Krysta Waldrop, John Slack, Ethan Self, John Waugh, Ryszard Wycisk, Kobby Saadi, David Zitoun</i>	

A01 - Invited Talks 4 - Electrochemical Energy Systems

(Invited) Lithium Battery Interfacial Engineering with Thin Conformal Polymer Coatings.....	91
<i>Wyatt Tenhaeff</i>	
(Invited) Developing High-Energy All-Solid-State Batteries with Long Cycle Life.....	92
<i>Shuhao Yang, Se Young Kim, Guoying Chen</i>	
(Invited) Science and Technology Endeavors in Lithium Ion Battery Recycling.....	93
<i>Ilias Belharouak, Yaocai Bai, Lu Yu, Rachid Essehli, Nitin Muralidharan</i>	
(Invited) Clay: A Ubiquitous Sustainable Material for Energy Applications.....	94
<i>Kausik Mukhopadhyay</i>	

A01 - Electrode Materials

Preventing Pt Catalysts in PEM Fuel Cells from CO Poisoning by Getting COPROX to Work.....	95
<i>Debra R. Rolison, Travis G. Novak, Paul A. Desario, Austin E. Herzog, Todd H. Brintlinger, Ryan H. Deblock, Jeffrey W. Long</i>	
Experimental Challenges in the Electrochemical Benchmarking of Multicomponent Alloys.....	96
<i>Viktor Colic, Ricardo Alonso Martinez Hincapie</i>	
Batteries Worth Their Salt: Targeting Next Generation Stationary Storage with Molten Salt Electrolytes	98
<i>Erik D. Spoeke, Adam M. Maraschky, Melissa L Meyerson, Stephen J. Percival, Amanda S. Peretti, Martha S. Gross, Leo J. Small</i>	
Effect of Annealing Temperature on the Electrochemical Behavior of Hydrothermal Assisted Bismuth Phosphate Nanostructures	99
<i>Aman Joshi, Sunaina Saini, Sonia Bansal, Bharat Sharma, Prakash Chand</i>	

A01 - Battery Characterization - New Approaches 1

Novel Operando Nuclear Magnetic Resonance Approach for Tracking the Electrode State of Charge in Li/Na-Ion Batteries	100
<i>Khashayar Bagheri, Michael Deschamps, Elodie Salager</i>	
In-Situ Liquid-State NMR Investigations of Lithium-Ion Battery Electrolyte Decomposition.....	102
<i>Wandi Wahyudi, Jonas Mindemark, Kristina Edström</i>	
Introducing a Novel Light Scattering Technique for Visualising Operando State-of-Charge Changes Within Individual Active Particles and Across the Electrode	103
<i>Alice Jane Merryweather, Christoph Schnedermann, Cathryn Elinor Langley</i>	
Temperature Dependent EXAFS to Address Functional Mechanisms in Battery Materials	104
<i>Laura Simonelli, Shehab Ali, Wojciech Olszewski, Carlo Marini, Naurang Saini</i>	
Deciphering the True FEC Reduction Mechanism and Its Implications to the Understanding of the SEI in Li-Ion Batteries.....	106
<i>Yuri Surace, Daniela Leanza, Marta Mirolo, Lukasz Kondracki, Carlos A. F. Vaz, Mario El Kazzi, Petr Novák, Sigita Trabesinger</i>	
Uncovering the Effects of Alloy Interfacial Layers in Anode Free Solid-State Batteries.....	108
<i>Stephanie Elizabeth Sandoval, Douglas Lars Nelson, John A Lewis, Matthew McDowell</i>	

Projection Micro Stereolithography of Skin Layered Microporous Polymer Membranes As a Separator for Li-Ion Batteries.....	109
<i>Meghann Ma, Jiandi Wan, Jianchao Ye</i>	
In-Situ Confocal Microscopy to Analyze Volume Expansion of Solid State Microbatteries.....	110
<i>Lara Casiez, Christophe Secouard, Jacopo Cele', Jean-Philippe Colonna, Sandra De Pedro, Alberto Aguerri, Sami Oukassi</i>	
Interfacial Electrochemical Polymerization of PEDOT@Polyoxometalates Thin Films As Electroactive Material for Energy Storage Devices.....	114
<i>Andrés Quintero Jaime, Angelika Holzinger, Kamil Cywinski, Michael S Freund, Micheal D. Scanlon</i>	
Development of a NMR Device Adapted to Operando Analysis of Electrochemical Commercial Cells.....	115
<i>Raphaël Praud, Vincent Sarou-Kanian, David Sicsic, Michael Deschamps, Elodie Salager</i>	
Comparing the Evolution of Lithium-Ion Cells across Energy, Power, Lifetime, and Temperature with the Enpolite Plot.....	116
<i>Philipp Dechent, Dominik Jöst, Elias Barbers</i>	

A01 - Battery Electrodes - New Insights

A Novel Approach for the Development of a Scalable, High Energy Density, and Long Life Lithium-Sulfur Battery Technology	118
<i>Weibing Xing, Md Wahidul Hasan, Amir Abdul Razzaq, Gulam Sumdani, Khang Huynh, Rajesh Shende, Tula R. Paudel</i>	
Electrochemical Performance of Lithium-Ion Pouch Cells Containing Aqueous Processed and Laser Structured Thick Film NMC 622 and Graphite Electrodes	121
<i>Penghui Zhu, Yannic Sterzl, Wilhelm Pflöging</i>	
3D Printing of Conversion Cathodes for Enhanced Custom-Form Lithium Batteries	122
<i>Jorge Antonio Cardenas, John Paul Bullivant, Bryan R Wygant, Laura C Merrill, Igor V. Kolesnichenko, Aliya S. Lapp, Timothy N. Lambert, Shaun R. Whetten, Eric Allcorn, Albert Alec Talin, Adam Cook, Katharine L Harrison</i>	
New Protective Layer for Long Time Stable Sodium Metal Anodes	123
<i>Alexander Thomas, Björn Pohle, Martin Hantusch, Daria Mikhailova</i>	
Anionic Redox in Alkali-Rich Chalcogenides for Energy-Dense, Lithium-Ion Batteries	125
<i>Jeffrey W. Long, Ryan H. Deblock, Gloria Bazargan, Brian Chaloux, Debra R. Rolison, Hunter O. Ford</i>	
Electrochemically Activated Multifunctional Carbon Fibre Composites	126
<i>Goran Lindbergh, Dan Zenkert</i>	
The Through-Flow Electrochemical Cell - a Breakthrough Technology.....	128
<i>Paul Sinclair</i>	
Proposal and Fundamental Investigation of Energy Storage and Hydrogen Supply System Using the Lithium	131
<i>Suguru Uemura, Shuntaro Ikegami, Yutaka Tabe</i>	
Towards High-Capacity Recovery Aprotic Li-O ₂ Batteries.....	135
<i>Israel Temprano, Wolfgang Brehm, Youngjin Ham, Zoe Lacour, Francesco Bonaccorso, Andrea C. Ferrari, Clare P. Grey</i>	
Novel Battery Concepts Based on Semi-Solid Electrodes: The Injectable Battery	137
<i>David Muñoz-Torrero Castaño, Mario Borlaf, Daniel Pérez-Antolín, Edgar Ventosa</i>	
Low Redox Potential InN Nanowires as High-Energy-Density Anode for Lithium-Ion Batteries.....	139
<i>Hong Yin, Danyang Han, Joao Cunha, Xiangxiang Yu, Hongming Sun, Wenyan Xu, Miao Zhou, Junlin Huang, Wei Wang, Zhaohui Hou</i>	
Semantic Technologies to Model Battery Data and Knowledge	141
<i>Eibar Flores, Hannah Hansen, Simon Clark</i>	

A01 - Battery - Na/Zn/Al/Ti

Clarifying the Limitations of Copper Hexacyanoferrate in Rechargeable Aqueous Zinc-Ion Batteries Via in Situ X-Ray Techniques	142
<i>Mikaela Gorlin, Dickson O. Ojwang, Ming-Tao Lee, Viktor Renman, Cheuk-Wai Tai, Mario Valvo</i>	
Electrochemistry of Al ³⁺ - Catechol System: Kinetics Vs. Thermodynamics (Al-Triple I).....	145
<i>Viktor Gueskine, Divyaratan Kumar, Mikhail Yu. Vagin, Xavier Crispin</i>	
Addressing the Voltage and Energy Fading of Al-Air Batteries to Enable Seasonal/Annual Energy Storage.....	146
<i>Cheng Xu, Xu Liu, Stefano Passerini</i>	
A High-Performance Phenazine-Based Cathode for Aqueous Organic Zinc-Ion Battery	148
<i>Priya Vallayil, Sethuraman Sankararaman, Kothandaraman Ramanujam</i>	
Modified Solid Electrolyte Interphases with Alkali Chloride Additives for Aluminum-Sulfur Batteries with Enhanced Cyclability	149
<i>Cheng Xu, Xu Liu, Stefano Passerini</i>	
Interlaced Micro-Fibrous Hard Carbon As Superior Anode for Na-Ion Battery: Insights into the Sodium Storage Mechanism and Solid Electrolyte Interface	151
<i>Bharat Verma, Anjan Sil</i>	
Inkjet Printed Ti ₃ C ₂ Electrodes for Anode-Free Zinc-Ion Battery	152
<i>Eugenio Gibertini, Vittorio Montanelli, Gianlorenzo Bussetti, Luca Magagnin</i>	
Water-in-Polymer Salt Electrolyte for Dendrite-Free Zn- Lignin Battery	153
<i>Divyaratan Kumar, Xavier Crispin, Ziyauddin Khan</i>	
Breaking the Passivity Wall of Metals: Exempli Gratia Non-Aqueous Ti-Air Battery.....	154
<i>Yasin Emre Durmus, Marcel Kaltenberg, Hans Kungl, Hermann Tempel, Yair Ein-Eli, Rüdiger-A. Eichel</i>	
Boosting the Initial Coulombic Efficiency of Sustainable Hard Carbon Derived from Polyethylene Terephthalate with Cyclopentyl Methyl Ether As a Co-Solvent for Wide-Temperature Sodium-Ion Batteries.....	155
<i>Nagmani ., Dhruvajyoti Das, Sreeraj Puravankara</i>	
Achieving High-Performance Aqueous Fiber-Shaped Zn-Ni _x Co _y Batteries through in-Situ Activation of Ni _{0.7} Co _{0.3} -MOFs	157
<i>Zhenyu Zhou, Jan Fransaer</i>	
Ni-Fe-S Supported on Mo-Based Mxene (Mo ₂ CT _x) As a High-Performance Bifunctional Electrocatalyst for Rechargeable Zinc-Air Batteries	158
<i>Wan-Ju Yu, Han-Yi Chen, Ruey-An Doong</i>	

A01 - Redox Flow Battery

Experimental and Numerical Study of Electrolyte Mixing in the Tanks of Vanadium Redox Flow Batteries: Insights from Conventional and 3D-Printed Tanks	159
<i>Pablo Angel Prieto-Diaz, Nicolò Zatta, Andrea Trovo, Matteo Rugna, Marcos Vera, Massimo Guarnieri</i>	
Improved Iron Flow Battery Designs for Low-Cost Grid Storage	161
<i>Buddhinie Srimali Jayathilake, Anna N. Ivanovskaya, Alexandra E. L. Overland, Swetha Chandrasekaran</i>	
An Emergent Integrated Technology: Solar-Assisted Redox Flow Batteries	162
<i>Débora Ruiz-Martínez, Filipe Moises, Paula Dias, Adélio Mendes, Rebeca Marcilla</i>	
A Digital Blueprint for 3D-Printing Lab Scale Aqueous and Organic Redox-Flow Batteries.....	164
<i>Sebastian Fricke, Luuk Kortekaas, Mariano Gruenebaum, Martin Winter, Isidora Cekic-Laskovic</i>	

Use of Mixed Methanesulfonic Acid/Sulfuric Acid as Positive Supporting Electrolyte and the Study of Ion Crossover in Zn-Ce Redox Flow Battery.....	165
<i>Hao Yu, Mark Pritzker, Jeff Gostick</i>	
Impact of Power Electronic Converter Ripples on Vanadium Redox Flow Batteries.....	167
<i>Oindrilla Dutta, Reed M Wittman, Jacob Mueller</i>	
Investigation of Polarization in Vanadium Redox Flow Batteries with a Fluctuating Supply of Electrolyte Solution.....	168
<i>Pengfei Sun, Kaito Matsuo, Mehrzad Alizadeh, Patcharawat Charoen-Amornkitt, Takahiro Suzuki, Shohji Tsushima</i>	
Improved Vanadium Redox Flow Battery Performance through a Pulsating Electrolyte Flow Regime	170
<i>Renée De Wolf, Michiel De Rop, Jonas Hereijgers</i>	
Techno-Economic Optimization of Flow Batteries Using the Optimization Potential to Prioritize Different Optimization Possibilities for the Development of Industrial Scale Applications	172
<i>Daniel Gerlach, Jens Noack, Rabin Siva Dev, Ganzorig Davaasuren, Nataliya Roznyatovskaya, Sabine Trupp, Karsten Pinkwart</i>	
Intercalated Redox-Active Anions in Layered Double Hydroxides: Toward New Electrode Designs.....	174
<i>Patrick Gerlach, Camille Douard, Insaf Gaalich, Julien Sarmet, Fabrice Leroux, Christine Taviot-Guého, Gwenaëlle Toussaint, Philippe Stevens, Thierry Brousse</i>	
Lignin-Based Electrolytes for Redox Flow Batteries	176
<i>Monalisa Chakraborty, Mariona Battestini Vives, Omar Abdelaziz, Christian Hulteberg, Rakel Lindstrom, Amirreza Khataee</i>	

A02-LITHIUM ION BATTERIES

A02 - Digital Only Presentations

(Digital Presentation) Crystal Structure Study of Ga-Substituted $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ solid State Electrolyte with the Help of Rietveld Refinement.....	178
<i>Atul Kumar Mishra, Atul Mishra</i>	
(Digital Presentation) Direct Regeneration of NMC622 Cathode Material from Spent EV Li-Ion Batteries Via Hydrothermal Re-Lithiation.....	179
<i>Charles Lois Flores, Rinlee Cervera</i>	

A02 - Advanced Processing 1

Influence of Moisture on the Electrochemical Performance of Prelithiated C/SiO _x Composite Anodes for Li-Ion Batteries.....	180
<i>Hans Fenske, Teo Lombardo, Jessica Gerstenberg, Dominik Steckermeier, Christine Kern, Jürgen Janek, Arno Kwade</i>	
Cost-Effective Milled Silicon and Exfoliated Graphene Anode for High-Performance Li-Ion Batteries.....	182
<i>Mohammad Abdul Aziz, Yong Lak Joo, Ziang Gao</i>	
Revealing Aqueous-Processing Ni-Rich Cathode Cycling Performance in Term of Cathode Electrolyte Layer Formation and Phase Transition.....	183
<i>Heyin Chen, Maria Hahlin, William Robert Brant</i>	
Valorization of Waste Plastics into Nanostructured Materials for LI-ION Storage Application	184
<i>Ali Reza Kamali</i>	
(Invited) Circular Manufacturing of Next-Generation Lithium-ion Battery Cathode Materials with R2R Molten Salt Electrodeposition.....	185
<i>Heng Yang, Tanner Anderson, Haifeng Li, Rodrigo Rodriguez, Jason Reber, Badri Shyam, John B. Cook, John Busbee</i>	
The Effect of Cellulose Separator Water-Scavenging on Cycle Life in Lithium-Ion Batteries	186
<i>Drew Joseph Pereira, Hunter Addison McRay, Saurabh Bopte, Golareh Jalilvand</i>	

Reduction of the Calcination Temperature for Improvement of Ni-Rich Single-Crystal Cathode	188
<i>Soo-Been Lee, Hyung-Woo Lim, Yang-Kook Sun</i>	
Pre-Lithiation of Silicon-Based Anode Materials: Concepts and Realization	189
<i>Aleksei Kolesnikov, Laurin Profanter, Ilha Lee, Lukas Haneke, Martin Winter, Johannes Kasnatscheew</i>	
Influence of Particle Size and Morphology on Electrochemical Properties of Glass Particle-Based Separators for Lithium-Ion Batteries	190
<i>Philipp Rank, Sarah Spreng, Sebastian Müllner, Christina Roth, Thorsten Gerdes</i>	
Influence of Process Conditions during Aqueous and Direct Recycling of NMC811 Cathodes	192
<i>Felix Nagler, Nino Christian, Leonhard Kolb, Andreas Flegler, Michael Hofmann, Guinevere A. Giffin</i>	

A02 - Simulation and Modeling for Li-ion Batteries 1

(Invited) A "Master Curve" for Plating Onset, Reaction Inhomogeneity during Fast Charging: Experiment and Theory	194
<i>Aleksandar S Mijailovic, Guanyi Wang, Seth Waag-Swift, Mei Luo, Wenquan Lu, Qingliu Wu, Brian W. Sheldon</i>	
Modeling, Model Calibration, and Characterization of Graphite Anodes from Coal Derived Carbon for Battery Applications	195
<i>Abigail Paul, Regan Magee, Warren Wilczewski, Kody D Wolfe, Nathan Wichert, Fengkun Wang, Rafid Mollah, Matthew Jones, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
Towards a Circular Economy of Lithium-Ion Batteries – Is a Fast Ramp-up of Recycling and Circularity Sustainable?.....	196
<i>Jannis Wesselkamper, Simon Lux, Stephan Von Delft</i>	
Understanding the Influences of Laser Perforation on Thick Electrodes for Lithium Ion Batteries Via 3D Microstructure Simulations.....	198
<i>Lukas Krumbein, Simon Hein, Timo Danner, Benedikt Priefling, Matthias Neumann, Maher Kouli, Malte Mund, Volker Schmidt, Arnulf Latz</i>	
Revealing the Rate-Limiting Electrode of Lithium Batteries at High Rates and Mass Loadings	200
<i>Yongxiu Chen</i>	
Frequency Response Informed Order Reduction Approaches for Pseudo-2D Model for Li-Ion Batteries.....	201
<i>Astitva Mishra, Akash Suhas Jangale, Venkat R. Subramanian, Bharatkumar Suthar</i>	
Simulation Study of Li-Ion Batteries Considering the Porosity and Tortuosity of Separator.....	203
<i>Agnesia Permatasari, Magnus So, Yuki Mori, Yuki Saito, Gen Inoue</i>	
Modeling of Crystal Structure in Li-Rich Layered Oxides for Rechargeable Lithium Cells	205
<i>Arcangelo Celeste, Mariarosaria Tuccillo, Laura Silvestri, Sergio Brutti</i>	
Oxygen Hole Formation Controls Stability in LiNiO ₂ Cathodes: DFT Studies of Oxygen Loss and Singlet Oxygen Formation in Li-Ion Batteries	206
<i>Annalena R. Genreith-Schriever, Hrishit Banerjee, Ashok S. Menon, Euan N. Bassegy, Louis F. Piper, Clare P. Grey, Andrew J. Morris</i>	
Quantifying Volume Change in Battery Electrode Microstructures	207
<i>Hunter Teel, Joseph Steven Lopata, Taylor R. Garrick, Fengkun Wang, Han Zhang, Yangbing Zeng, Sirivatch Shimpalee</i>	

A02 - Battery Diagnosis 1

Using a Reference Electrode inside Li-Ion Cell As an Operando Sensor to Detect Aging Mechanisms.....	209
<i>Sylvie Genies, Alexia Bichon, Didier Buzon, Pierre Balfet, Cédric Debruyne, Elise Villemin, Marco Ranieri, Cédric Septet, Romain Franchi, Yvan Reynier, Philippe Azais, Olivier Raccurt</i>	

Aging Aware Battery Operation and State of Health Evaluation in Energy Storage Systems	211
<i>Mathilda Ohrelus, Rakel Lindstrom, Göran Lindbergh</i>	
Bayesian Approach to Estimate Distribution of Relaxation Times for Lithium-Ion Batteries	213
<i>Seongyoon Kim, Jung-Il Choi</i>	
Ageing and Post-Mortem Study of LNMO-Based Lithium Ion Battery Pouch Cells	215
<i>Christina Schmitt, Davin Maximillian, Dane Sotta, Agathe Martin, Cédric Debruyne, Yan Reynier, Mihaela Buga, Cosmin Ungureanu, Dennis Kopljär, K. Andreas Friedrich</i>	
High Precision Coulometry and Calorimetry Measurements of Side Reactions for Si/NCA and G/NMC811 Cells.....	217
<i>Luiza Streck, Thomas Roth, Andreas Noel, Ilya Zilberman, Andreas Jossen</i>	
Ultrasound Spectroscopy of Lithium-Ion Batteries: Insights into Layering Distances	219
<i>Simon Feiler, Philip Daubinger, Lukas Gold, Sarah Hartmann, Guinevere A. Giffin</i>	
Accelerated Aging of Lithium-Ion Batteries: Insights from Nonlinear Frequency Response Analysis.....	221
<i>Yan Ying Lee, Hoon Seng Chan, Andre Weber, Ulrike Krewer</i>	
Electrochemical Passivation of Aluminum As a Current Collector for Solid-State Polymer Batteries : PEO/LiTFSI Polymer Electrolyte.....	223
<i>Sun Kim, Sun Kim</i>	

A02 - Fast Charging of Li-ion Batteries

Towards Extreme Fast Charging of 4.6 V LiCoO ₂ Via mitigating High-Voltage Kinetic Hindrance	224
<i>Yu Tang, Yu Tang</i>	
Optimizing Extreme Fast Charging Strategy for Lithium-Ion Batteries: A Model Predictive Control Approach	225
<i>Kyunghyun Kim, Jung-Il Choi</i>	
Covalently Joined Electrode Architectures for Extreme Fast Charging Li-Ion Batteries	226
<i>Yerrick Rangom, Michael Pope</i>	
Aging-Sensitive Fast-Charging for Heavy-Duty Electric Vehicles	228
<i>Moritz Streb, Malin Andersson, Venu Gopal Prathimala, Verena Löfqvist Klass, Matilda Klett, Mikael Johansson, Göran Lindbergh</i>	
3D Progression of Dead Li on Graphite Electrodes during Extended Fast Charging.....	230
<i>Maha Yusuf, Yuxuan Zhang, Marm Dixit, Jacob Michael Lamanna, Jean-Christophe Bilheux, Johanna Nelson Weker, Michael F Toney</i>	

A02 - Li-ion Battery Cathodes 1

(Invited) High-Nickel Layered Oxide Cathodes: Crack Vs. Surface Reactivity	232
<i>Arumugam Manthiram</i>	
Quantitative Determination of the Compositional Inhomogeneity in NMC Cathode Materials by Williamson-Hall Analysis.....	233
<i>Mohammad Hossein Tahmasebi, Mark Obrovac</i>	
Entropic Stabilization in Lithium Rich Transition Metal Oxide Cathodes	235
<i>Sven Anders Burke, Shirley Meng</i>	
Exploring the Electrochemical Properties of Ultrathin LiMn _{1.5} Ni _{0.5} O ₄ Films at High and Low Current Rates for Lithium-Ion Micro Battery Applications	236
<i>Sruthy Subash, Kamala Bharathi Karuppanan, Kumaresan Lakshmanan, Kumaran Vediappan</i>	
On the Description of Electrode Materials Based on the Quantification of Ionic and Electronic Work Functions	238
<i>Karl-Michael Weitzel, Johanna Schepp, Jona Schuch, Jan Philipp Hofmann, Stefan Adams</i>	
Enhanced Lithium Ion Diffusivity of Nanosized Li _{1.2} Mn _{0.8} O ₂ Cathode Material Via Na and Ti Co-Doping.....	239
<i>Raesibe Sylvia Ledwaba, Phuti Esrom Ngoepe</i>	

AMIDR: A Complete Pulse Method for Measuring Cathode Solid-State Diffusivity	240
<i>Mitchell Afheldt Ball, Marc M. E. Cormier, Eniko Zsoldos, Nutthaphon Phattharasupakun, Michel B. Johnson, Michael Metzger, Chongyin Yang, Jeff R. Dahn, Ines Hamam, Ning Zhang</i>	
Multiscale Probing and Redesign of the Solid-State Synthesis Toward Defect-Free Ni-Rich Layered Cathodes	242
<i>Hyeokjun Park, Hyeongmin Jin, Hyungsub Kim</i>	

A02 - Electrolytes for Li-ion Batteries 1

(Invited) Effects of LiPF ₆ Salt Concentration on the Cycling Performance of NMC532 Cell Containing Organic Carbonate Solvents.....	243
<i>She-Huang Wu, Po-Han Lee</i>	
Anionic Effects on Li-Ion Activity and Intercalation Kinetics in Highly Concentrated Electrolytes.....	244
<i>Kaoru Dokko, Yosuke Ugata, Kazuhide Ueno, Masayoshi Watanabe</i>	
Optimizing the Potential Diagram for a Highly Sustainable and High-Energy-Density SiO _x /LiNi _{0.5} Mn _{1.5} O ₄ Battery	245
<i>Seongjae Ko, Xiao Han, Tatau Shimada, Norio Takenaka, Yuki Yamada, Atsuo Yamada</i>	
Alkyl Dicarboxylate-Based Electrolytes Can Enable Long-Lived Li-Ion Cells at High-Temperatures	247
<i>Tina Taskovic, Anu Adamson, Alison Clarke, Ethan D. Alter, Jeff R. Dahn</i>	
Regulating Ceramic-Polymer Interphase in Composite Solid Electrolytes	251
<i>Shida Xue, Feng Pan, Luyi Yang</i>	
Ionic Liquids, Synthesized and Utilized by Greener Methods, for the Application in High-Voltage Lithium-Ion Batteries	253
<i>Matteo Palluzzi, Akiko Tsurumaki, Aleksandar Matic, Paola D'Angelo, Maria Assunta Navarra</i>	
Improving Extreme Temperature and Charge Rate Performance in Li-Ion Batteries through Addition of Fluorinated Electrolyte Additives.....	255
<i>Brian M Kerber, Sarah Lucienne Guillot, Peng Du, Liu (Amy) Zhou, Shipra Garg, Monica Lee Usrey</i>	
Nonflammable Fluorinated Ester-Based Electrolytes for High Voltage Li Batteries with LiCoO ₂ Positive Electrode.....	256
<i>Yosuke Ugata, Kazuki Yukishita, Naoaki Yabuuchi</i>	
Eutectic Mixtures As Highly Concentrated and Molten Electrolytes with Nearly Single-Ion Conducting Behavior.....	257
<i>Susanna Krämer, Constantin G. Daniliuc, Martin Winter, Hans-Dieter Wiemhöfer, Mariano Gruenebaum</i>	
Fluorinated Graphene Fillers for High-Performance Solid-State Lithium Batteries	259
<i>Ananya Panda, Jagabandhu Patra, Jeng-Kuei Chang</i>	
Towards Moisture Tolerant Lithium-Ion Batteries: A Systematic Investigation on the Effect of Moisture on Ni-Rich NMC Cathodes.....	260
<i>Weldejewergis Gebrewahid Kidanu, Lina Munkhaugen, Philipp Schweigart, Camilla Lian, Ann Mari Svensson</i>	
Ethylene Carbonate Free Electrolytes with High Oxidative Stability for High Voltage Lnmo Spinel Cathode in Li-Ion Cells	262
<i>Jacob Compton, Michael Lain, Meltiani Belekoukia, Valentina Gentili, Ivana Hasa</i>	

A02 - Advanced Characterization 1

Temperature Dependent Discharge Rate Tests and Cycling Stability of High-Nickel Ncm Cathodes Employing a μ -Reference Electrode in All-Solid-State Pouch Cells.....	264
<i>Robin Schuster, Christian Sedlmeier, Gioele Conforto, Moritz Bohn, Tobias Kutsch, Hubert Andreas Gasteiger</i>	

Analysis of Electrode Materials for Li-Ion Batteries by Synchrotron Soft X-Ray Microspectroscopy	266
<i>Eiji Hosono, Daisuke Asakura, Wenxiong Zhang, Hayato Yuzawa, Masaki Kobayashi, Naoka Nagamura, Shingo Tanaka, Jun Miyawaki, Hisao Kiuchi, Takuji Ohigashi, Masaharu Oshima, Yoshihisa Harada</i>	
Structural and Dynamical Insights of Cu-Coordinated Cellulose Nanofibers for Li ⁺ Battery by NMR Spectroscopy	267
<i>Mounesha N Garaga, Lin Xu, Liangbing Hu, Steve G Greenbaum</i>	
Quantifying the Inactivation of Battery Electrode Material Particles.....	268
<i>Simon Wiemers-Meyer, Marc Vahnstiege, Till-Niklas Kroeger, Patrick Harte, Thomas Beuse, Mathis Jan Wölke, Sven Klein, Markus Börner, Martin Winter, Sascha Nowak</i>	
Speciation of Transition Metal Dissolution in Electrolyte from Common Cathode Materials	270
<i>Leah Rynearson, Sophia Tiano, Chamithri Jayawardana, Cali Antolini, Munaiah Yeddala, Dugan Hayes, Brett L. Lucht</i>	
Differences in the Ti ⁴⁺ /Ti ³⁺ Redox Reactions between Li ₄ Ti ₅ O ₁₂ and LiTi ₂ (PO ₄) ₃ Observed By Soft X-Ray Spectroscopy	271
<i>Daisuke Asakura, Hirokazu Kitaura, Hisao Kiuchi, Jun Miyawaki, Yoshihisa Harada, Masaki Kobayashi, Kenta Amemiya, Satoru Yoshioka, Eiichi Kobayashi, Yugo Miseki, Eiji Hosono</i>	

A02 - Li-ion Battery Anodes 1

Visualization of Lithium Plating Morphologies on Graphite Electrode By Operando X-Ray Tomography.....	272
<i>Antoine Klein, Matthew Sadd, Nataliia Mozhzhukhina, Martina Olsson, Shizhao Xiong, Aleksandar Matic</i>	
Understanding and Comparing the Stability of Water- Versus NMP-Based Tin(IV)Sulfide Electrodes Using Post-Mortem Analysis	273
<i>Jana Katharina Kupka, Yuri Surace, Damian Marlon Cupid, Hans Flandorfer</i>	
Electrochemical Performances Ti ₄ Ti ₅ O ₁₂ /Si Composite Anodes for Li-Ion Batteries	275
<i>Saloua Merazga, Fatima Boudeffar, Bouaoua Achouak, Amina Larabi, Mourad Mebarki, Malika Berouaken, Noureddine Gabouze</i>	

A02 - Advanced Characterization 2

Unveiling the Mechanisms of NMC622 Degradation during Cycling Using Ex Situ SEM, XRD, and Raman Studies	276
<i>Alicja Glaszczka, Sai Rashmi Manippady, Magdalena Winkowska-Struzik, Michal Struzik, Dominika Buchberger, Andrzej Czerwinski</i>	
Influence of Cyclic Alkyl Carbonate Ring-Opening Processes on Electrode/Electrolyte Interphase Formation in Li-Ion Batteries	278
<i>Neeha Gogoi, Erik J. Berg</i>	
Can Raman Spectra of NMC Material Family be Detangled?	280
<i>Dominika Buchberger, Alicja Glaszczka, Magdalena Winkowska-Struzik, Natalia Firlej, Sai Rashmi Manippady, Michal Struzik, Andrzej Czerwinski</i>	
Mechanical and Electrochemical Properties of Highly-Dense Li-Si Alloy Anodes Fabricated by Arc Plasma Deposition.....	282
<i>Sho Asano, Junichi Hata, Kenta Watanabe, Naoki Matsui, Kota Suzuki, Ryoji Kanno, Masaaki Hirayama</i>	
(Invited) A Novel Dems Approach for Studying Gas Evolution in Pouch Cells	284
<i>Meinan He, Mei Cai</i>	
Investigating the Change in the Microporous Structure of the Graphite Electrode during Formation	285
<i>Jonas L. S. Dickmanns, Lennart Reuter, Robert Morasch, Filippo Maglia, Roland Jung, Hubert Andreas Gasteiger</i>	

A02 - Li-ion Battery Cathodes 2

(Invited) Investigating Microstructural Effects of Composite NCM811 Cathodes on ALL-Solid-State Li-Ion Batteries Performance Under Low Operation Stacking Pressure	287
<i>Nae-Lih (Nick) Wu, Haowen Liu, Shiki Thi</i>	
Insights on the Buffer Effect in Blended Positive Electrodes for Lithium Ion Batteries	288
<i>Dimitrios Chatzogiannakis, M. Palacin, Montserrat Casas-Cabanas</i>	
Improved Cycle Life and Determination of Li Ion Transport Parameters in Mixed Cation Doped Ni-Rich NMC	290
<i>Ethan Williams, Emma Kendrick</i>	
Ni-Rich Cathode Active Materials Surface Degradation in Ambient Air with Stabilisation Treatment Proposal.....	292
<i>Joanna Maria Galantowicz, Elliot Coulbeck, Neil Tallant, Mark Simmons, Emma Kendrick</i>	
Understanding LiNiO ₂ Electronic Structure and Redox Mechanism by Raman and X-Ray Techniques.....	293
<i>Nataliia Mozhzhukhina, Aleksandar Matic, Gilles Moehl, Lucia Perez Ramirez, Jean-Pascal Rueff, Stephanie Belin, Antonella Iadecola, Quentin Jacket, Sandrine Lyonnard</i>	
Impact of Metallic Impurities on the Synthesis and Properties of NMC Cathode Material Obtained by Co-Precipitation.....	295
<i>Johann Chable, Nicole Bohn, Monika Raab, Holger Geßwein, Thomas Bergfeldt, Joachim R. Binder</i>	
Pushing the Energy-Lifetime Frontier of Li-Ion Batteries with Optimized Ni-Rich, Co-Free NMA-W Cathodes	297
<i>Ines Hamam, Roei Omessi, Jeff R. Dahn</i>	
Single-Crystal Li _{1+x} [Ni _{0.6} Mn _{0.4}] _{1-x} O ₂ Made By All-Dry Synthesis.....	298
<i>Matthew D. L. Garayt, Ning Zhang, Svena Yu, Jeffin James Abraham, Aidan Murphy, Roei Omessi, Ziwei Ye, Saad Azam, Michel B. Johnson, Chongyin Yang, Jeff R. Dahn</i>	
Synthesis, Structural and Electrochemical Investigation of Disordered Rock Salt Compounds Based on Ni and Ti.....	300
<i>Agnese Reitano, Sylvia Kunz, Matteo Bianchini</i>	
Operando High-Temperature X-Ray Absorption Spectroscopy of LiNiO ₂ Cathode Material during Synthesis.....	301
<i>Kei Kubota, Fumihiko Ichihara, Takuya Masuda</i>	

Olin Palladium Award Address

(Olin Palladium Award Address) Our Path to Long Lifetime Li-ion and Na-ion Cells	302
<i>Jeff R. Dahn</i>	

A02 - Li-ion Battery Anodes 2

(Invited) Controlling Nucleation and Growth of Lithium Metal for High Performance Batteries	303
<i>Ping Liu</i>	
Towards a Higher Energy Density for Lithium-Ion Battery Anodes Via Hierarchically Structured Silicon/Carbon Supraparticles Using Spray Drying	304
<i>Adil Amin, Moritz Loewenich, Hartmut Wiggers, Fatih Özcan, Doris Segets</i>	
Elucidating the Lithium-Ion Storage Mechanism in Insertion-Available Hard Carbon with Abundant Closed Porosity: Toward a Practical Material for Batteries	306
<i>Chen-Wei Tai, Wen-Yang Jao, Liang-Chieh Tseng, Chi-Chang Hu</i>	
Thin, Conformal Carbon-Coating of Silicon-Phosphorus Nanoparticle Agglomerates for Lithium-Ion Battery Anodes.....	310
<i>Samson Yuxiu Lai, Tommy Vikan Nordby, Raphael Kuhn, Alexey Kopusov, Hanne Flaten Andersen</i>	

Approach for Mitigating Interfacial Degradation in Silicon-Based Electrodes to Enhance Cycling Stability of Lithium-Ion Batteries and Capacitors	312
<i>Minju O, Kwangchul Roh</i>	
Unraveling the Interplay between Degradation Mechanisms during Battery Cycling Conditions: Influence on SEI Growth.....	313
<i>Diego Del Olmo, Maria Elzaurdi, Giorgio Baraldi, Maria Echeverria, Elixabete Ayerbe</i>	
Development of Graphite Anodes from Coal Derived Carbon.....	314
<i>Abigail Paul, Regan Magee, Warren Wilczewski, Kody D Wolfe, Nathan Wichert, Fengkun Wang, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
In-Situ Convertible Amorphous Silicon Nitride (SiNx) Anode: Resolving the Long-Term Cyclic Instability of Silicon	315
<i>Abirdu Woreka Nemaga, Samson Y Lai, Muhammad Abdelhamid, Alexey Kopolov, Jan Petter Mæhlen, Hanne Flaten Andersen, Asbjørn Ulvestad</i>	
Niobate Anodes for High Rate Lithium-Ion Batteries	317
<i>Mark Huijben, Rui Xia, Jie Zheng, Maarten Jager, Bernard Boukamp, Payam Kaghazchi, Johan E. Ten Elshof</i>	

A02 - Advanced Processing 2

(Invited) Modelling and Experiments to Guide Scale-up of Structured Electrode Manufacturing for Fast-Charging and Long-Life Li-Ion Cells.....	318
<i>Donal P. Finegan, Bertrand J. Tremolet De Villers, Ryan J Tancin, Francois L. E. Usseglio-Viretta, Kandler Smith, Nathaniel Sunderlin, Bertan Ozdogru, Jeffery M. Allen, Peter J Weddle, Dana Kern, Orkun Furat, Volker Schmidt</i>	
Influence of Binders on Printability and Battery Performance of Thick 3D-Printed Positive Electrode for Li-Ion Batteries.....	320
<i>Tu T. T. Nguyen, Sébastien Sallard, Vijay Rangasamy, An Hardy, Mohammadhosein Safari, Jasper Lefevere</i>	
Surface Controlled Silicon Nanoparticles Production and Their Effects on High Capacity and High Cyclability of All-Solid-State Lithium-Ion Batteries.....	321
<i>Makoto Kambara, Ryoshi Ohta, Takeo Hiraoka, Masashi Dougakiuchi</i>	
Multifunctional Separator for Li-Ion Batteries Enabling Acid Scavenging and Long Cyclability	322
<i>Fei Hu, Wyatt Tenhaeff</i>	
Ultrafast Laser Patterning of Silicon/Graphite Composite Electrodes to Boost Battery Performance	324
<i>Alexandra Meyer, Wilhelm Pfleging</i>	
Microwave Plasma Synthesis of Cathode Material for Lithium-Ion Batteries	325
<i>Rachel Dewees, Abhinav Noudari, Arjun Thapa, Mahendra Sunkara</i>	
Extending Cycle Life of Li-Ion Batteries Via Gas-Phase Nanocoating of Cathode Active Materials.....	327
<i>Sepideh Behboudikhiavi, Sébastien Moitzheim</i>	
Process- Structure Property Correlations in Continuous Processing of High-Power Anode Electrode Pastes for Application in Lithium Ion Batteries.....	328
<i>Kristina Borzutzki, Markus Börner, Olga Fromm, Uta Rodehorst</i>	
Aqueous Processing of Ni-Rich NMC Electrodes with High Areal Capacity and Excellent Long-Term Cycling Stability	329
<i>Yuri Surace, Nicolas Eshraghi, Damian Marlon Cupid</i>	
Ultra-High Energy Density LiFePO ₄ Electrodes	331
<i>Moarij Syed, Mark Obrovac</i>	

A02 - Poster Session

Electrochemical Synthesis of Nano-Structured Si and Graphene Composite for Li Ion Battery	333
<i>Yashkumar Patel, Anjaliben Vanpariya, Indrajit Mukhopadhyay</i>	

Effect of Doping Process Route on LiNiO ₂ Cathode Active Material Properties.....	335
<i>Sören L. Dreyer, Philipp Kurzhals, Svenja B. Seiffert, Philipp Müller, Aleksandr Kondrakov, Torsten Brezesinski, Jürgen Janek</i>	
The Influence of Ammonia Concentration on the Precipitation of Ni(OH) ₂ Precursor in the Synthesis of LiNiO ₂ Cathode Materials for Lithium-Ion Batteries	339
<i>Katja Kress</i>	
K _{0.5} FeF ₃ as a New Zero-Strain Cathode Material for Lithium-Ion Batteries.....	341
<i>Alexander Vogt, Holger Geßwein, Johann Chable, Aljoscha Baumann, Daniel Mutter, Daniel F Urban, Christian Elsässer, Jérôme Lhoste, Joachim R. Binder</i>	
Machine Learning Based Identification of Lithium-Ion Battery Cell Chemistries.....	343
<i>Christopher Wett, Dominik Goerick, Bugra Turan</i>	
All Dry in One Step (ADIOS to Water) Synthesis of W-Coated Li _{1+x} (Ni _{0.7} Mn _{0.3}) _{1-x} O ₂	345
<i>Svena Yu, Ning Zhang, Matthew D. L. Garayt, Kate Leslie, Chongyin Yang, Jeff R. Dahn</i>	
Synthesis of LiNi _{1/3} Mn _{1/3} Fe _{1/3} O ₂ as an Intended Cathode Material for Li-Ion Battery.....	347
<i>Roma Patel, Atul Mishra</i>	
Ni-Ion-Chelating Strategy for Mitigating the Deterioration of Li-Ion Batteries with Nickel-Rich Cathodes	348
<i>Sewon Park, Seon Yeong Park, Hyeong Yong Lim, Jeong-Hee Choi, Sang Kyu Kwak, Sung You Hong, Nam-Soon Choi</i>	
Revealing Phase Transition in Ni-Rich Cathodes Via Nondestructive Entropymetry Method.....	350
<i>Gulzat Nuroldayeva, Berik Uzakbaiuly, Desmond Adair, Zhumabay Bakenov</i>	
Enhancing the Performance and Stability of Li-Ion Batteries with Fluorinated Electrolytes: Insights from MD Simulation and Experimental Analysis.....	351
<i>Kan Homlamai, Montree Sawangphruk</i>	
Phase Transition Behavior of Biphasic Systems Affected By the Charge-Transfer Process	352
<i>Chihiro Yamamoto, Atsunori Ikezawa, Hajime Arai</i>	
Ex-Situ Studies of Hydraulic Pressure Effect on the Electrochemical, Structural and Morphological Properties of Nickel-Rich NMC	354
<i>Pawel Mikolaj Stepnicki, Dominika Buchberger, Alicja Glaszczka, Magdalena Winkowska-Struzik, Maciej Boczar, Andrzej Czerwinski</i>	
Effect of Calcination Temperature on the Structural and Electrochemical Properties of NMC Cathodes for Lithium-Ion Batteries	356
<i>Natalia Firlej, Magdalena Winkowska-Struzik, Krzysztof Gadomski, Tomasz Pietrzak, Dominika Buchberger, Andrzej Czerwinski</i>	
Thermodynamic Stability of Li _x NiO ₂ and Polyvinylidene Difluoride Materials for Lithium ⁺ Ion Batteries.....	358
<i>Megan Penrod, Benjamin Smith, Chloe Coates, Maria Rosner, Christopher A. O'Keefe, David S. Hall, Clare P. Grey</i>	
High-Performance Ni-Rich Li[Ni _{0.92-x} Co _{0.04} Mn _{0.04} Al _x]O ₂ Cathodes for High Energy Density Lithium-Ion Batteries	359
<i>Soo-Been Lee, Han Uk Lee, Yang-Kook Sun</i>	
Co-Sintering of Lithium Aluminum Germanium Phosphate (LAGP) Glass/Powder Composite Electrolyte for Multilayer Ceramic Batteries	360
<i>Young Ji Park, Taewook Kang, Sun Woog Kim</i>	
Versatile High-Valent Doping Strategy for Cathodes with Extremely High Ni Content	361
<i>Nam-Yung Park, Sin Gyu Lee, Yang-Kook Sun</i>	
Compositionally Partitioned Li[Ni _{0.9} Mn _{0.1}]O ₂ Cathode That Affords Fast-Charging Lithium-Ion Batteries.....	362
<i>Geontae Park, Ji-Hyun Ryu, Yang-Kook Sun</i>	
Influence of Battery Electrode Manufacturing Process on Electrode Characteristics and Electrochemical Performance.....	363
<i>Jean-Baptiste Guy, Benoit Chavillon, Eric Mayousse, Sophie Chazelle, Frederic Bossard, Willy Porcher, Sebastien Martinet</i>	

Microstructural Refinement and Surface Modification of Ni-Rich Cathodes for High-Performance Li-Ion Battery	365
<i>Myoung-Chan Kim, Kim Hwi, Yang-Kook Sun</i>	
Doping Strategy to Improve the Electrochemical Behavior of Lithium Rich Transition Metal Oxides As Cathodes for Lithium-Ion Batteries	366
<i>Arcangelo Celeste, Mariarosaria Tuccillo, Laura Silvestri, Sergio Brutti</i>	
Minimizing Carbon Content in Thiophosphate-Based Composite Cathodes for All-Solid-State Batteries.....	367
<i>Elias Reisacher, Pinar Kaya, Volker Knoblauch</i>	
In-Situ Formation of Low-Strain and Defect-Free Single Crystal NMC in Electrode Slurries	368
<i>Laurie Carrier, Mark Obrovac</i>	
Li ₃ InCl ₆ -Coated High-Voltage Cathodes for Thiophosphate-Based Solid-State Li Batteries.....	370
<i>Feng Jin, Laras Fadillah, Mir Mehraj Ud Din, Daniel Rettenwander</i>	
Factors Affecting Performance of Single-Crystal Nickel-Rich Layered Oxides Cathode.....	371
<i>Kuan-Zong Fung, Shu-Yi Tsai, Kenneth Fung, Yu-Hsuan Chen, Jen-Hao Yang, Chia-Chin Chang</i>	
Liquid-Phase Synthesis of the Li–Si–P–S–Cl Solid Electrolyte for All-Solid-State Li-Ion Battery	372
<i>Tomohiro Ito, Satoshi Hori, Masaaki Hirayama, Ryoji Kanno</i>	
Synthesis of a Conceptual New Single-Ion Conducting Polymer Electrolyte for All-Solid-State Batteries.....	374
<i>Marina Wittig, Bernhard Rieger</i>	
Electrospun Perovskite Nanofiber/Poly(vinylidene fluoride-cohexafluoropropylene) Quasi-Solid-State for Lithium-Metal Batteries.....	375
<i>Purna Chandra Rath, Shih-Ting Lo, Sheng-Wei Lee, Jeng-Kuei Chang</i>	
Phase Evolution and Thermodynamics of Al-Doped Cubic LLZO Studied by High-Temperature X-Ray Diffraction.....	376
<i>Oystein Gullbrekken, Kristoffer Eggestad, Maria Tsoutsouva, Daniel Rettenwander, Mari-Ann Einarsrud, Sverre Magnus Selbach</i>	
Multiple Diffusion Processes in Lithium-Ion Battery Electrolytes	379
<i>Lukas Lehnert, Arnulf Latz, Norbert Wagner, Maryam Nojabaee, Birger Horstmann</i>	
Improvement of Ionic Conductivity in Li ₇ La ₃ Zr ₂ O ₁₂ (LLZO) Solid Electrolyte By Doping with Aluminum/Tungsten.....	381
<i>Da-Been Hong, Jae-Wan Park, Jae-Hyun Shim, Moon-Sung Kim</i>	
Dual Electrolyte Design for Lithium-Ion Batteries	382
<i>Clément Pechberty, Sofia Reiner, Patrik Johansson</i>	
Charged-Particle-Irradiated Tin Oxyhydroxide Nanoparticle Anodes for Lithium-Ion Batteries.....	383
<i>Jaewoo Lee, Seunguk Cheon, Sung Oh Cho</i>	
Towards Sustainable Lithium-Ion Battery Anodes: Addressing the Critical Need for Graphite Recycling.....	385
<i>Liv (Clicia) Oftedal (Naldoni), Gunstein Skomedal, Robin Hansson</i>	
Investigation of the Solid Electrolyte Interphase of Silicon Wafers Using a Fluorine-Free Electrolyte	386
<i>Tamara Patranika, Kristina Edström, Guiomar Hernández</i>	
Experimental Analysis of the Current Distribution between Graphite and SiO _x in Blend Electrodes for Lithium-Ion Cells.....	387
<i>Julian Knorr, Thomas Kufner, Alexander Adam, Michael Anton Danzer</i>	
Alternating Si/C Thin-Films as Model Anode Material for Lithium-Ion Batteries	388
<i>Wiebke Hagemeyer, Tilo Held, Christina Roth</i>	
Fabrication of Si Anode for Enhancing Electrochemical Performance by Electrodeposition Method.....	389
<i>Yashkumar Patel, Anjaliben Vanpariya, Atul Mishra</i>	
Accelerating the Development of New Silicon-Based Anode Materials	391
<i>Marte Skare, Abirdu Woreka Nemaga, Alexey Koposov, Asbjørn Ulvestad</i>	

Electrochemical Performance of Dry Processed Graphite Electrode with PTFE Binder for Lithium-Ion Batteries	392
<i>Jun Ho Hwang, Hyundong Yoo, Seungeun Oh, Junho Kim, Seungeun Kim, Hansu Kim</i>	
Morphology Control of Ball Milled Si-Ti Alloys and a Comparison of Their Surface Reactivity with SiO _x	393
<i>Mina Salehabadi, Mark Obrovac</i>	
Highly Porous Fe ₃ O ₄ /Graphene Aerogels for Enhanced Lithium Storage.....	395
<i>Fei Wang, Xinyue Wen, Rakesh Joshi, Dipan Kundu</i>	
Thin-Film SiO _x Coated Carbon Nanofibers As Stable Anodes for Lithium-Ion Batteries	396
<i>Na-Yeong Kim, Ji-Won Jung</i>	
Highly Lithiophilic Oxidative Interfacial Layer for 3D Foam-Based Lithium Metal Anode: Lithium Impregnated Metal Foam Anode (LIMFA)	397
<i>Yusong Choi, Jaemin Lee, Tae-Young Ahn, Sang-Hyeon Ha</i>	
Effect of the Metal Node and Synthesis Method of Triphenylene Based MOFs on the Performance of Li-Ion Batteries	398
<i>Marta Haro, Isabel Ciria Ramos, Ines Tejedor, Ainhoa Urtizberea, Olivier Roubeau, Ignacio Gascon</i>	
Lithium-Ion Batteries Enhancing Cycling Performance of Silicon Graphite Anodes Using Carbon Nanotubes.....	400
<i>Francis Kinyanjui, Charifa Hakim</i>	
Lithium-Ion Battery Electrolyte Miscibility Studied By Spectroscopy.....	401
<i>Sofia Reiner, Clément Pechberty, Julia Maibach, Patrik Johansson</i>	
Unraveling Effects of Current Density and Silicon on Silicon-Graphite Composite Anodes By in-Situ Synchrotron X-Ray Diffraction.....	402
<i>Weicheng Hua, Philipp Schweigart, 95709904 Nylund, Camilla Lian, Federico Hector Cova, Ann Mari Svensson, Maria Valeria Blanco</i>	
Silicon Oxycarbide-Coated Bismuth for Enhanced Anode Stability in Lithium-Ion Batteries	404
<i>Anith Dzhanchin Mohd Sarofil, Winda Devina, Hyeon Seo Park, Jaehoon Kim</i>	
SnBi Alloy Composites Via Controlling Cooling Rate for High Performance Lithium-Ion Battery Anode	406
<i>Hyeon Seo Park, Winda Devina, Anith Dzhanchin Mohd Sarofil, Jaehoon Kim</i>	
Liovix® Printable Lithium Technology for Controlled and Scalable Prelithiation of Silicon Anodes.....	407
<i>Brian Fitch, Marina Yakovleva, Jian Xia</i>	
Understanding Electrochemical Properties for a Bio-Based Silicon Anode Electrode Enhanced with Carbon Nanostructure Conductive Additives and Water-Based Binders.....	408
<i>Zainab Karam, Chiara Busa</i>	
Battery Modeling: Fusing Equivalent Circuit Models with Data-Driven Surrogate Modeling.....	409
<i>Limei Jin, Franz Philipp Berek, Josef Granwehr, Rudiger-A Eichel, Karsten Reuter, Christoph Scheurer</i>	
A Hybrid Electrochemical Multi-Particle Model for Lithium-Ion Batteries	410
<i>Haider Adel Ali Ali, Luc H. J. Raijmakers, Dmitri L. Danilov, Peter H. L. Notten, Rüdiger-A. Eichel</i>	
Molecular Dynamics Analysis of Lithium-Ion Transport Properties in All-Solid-State Lithium-Ion Battery	412
<i>Zhehao Zhang, Naoya Uene, Sheng-Feng Huang, Takuya Mabuchi, Takashi Tokumasu</i>	
Modulation of Prelithiation Solution for Hard Carbon Anodes of Lithium-Ion Batteries	414
<i>Jagabandhu Patra, Jeng-Kuei Chang</i>	
Impedance Variation of All-Solid-State Battery Cell Using Li ₁₀ GeP ₂ S ₁₂ ; States-of-Charge Dependence Visualized by Distribution-of-Relaxation Time Analysis	415
<i>Satoshi Hori, Ryoji Kanno</i>	
High-Voltage Graphite//LiNi _{0.5} Mn _{1.5} O ₄ Full Cell with Bis(fluorosulfonyl)Imide and bis(trifluoromethyl)Sulfonylimide Ionic Liquid Electrolytes.....	417
<i>Purna Chandra Rath, Jeng-Kuei Chang</i>	

Influence from Mechanical Stress on State of Health of Large Prismatic Lithium-Ion-Cells Under Various Temperatures	418
<i>Erla Petursdóttir, Markus Kohlhuber, Helmut Ehrenberg</i>	
Strain Imaging of Electrode Materials in Li-Ion Batteries	419
<i>Keiji Takata</i>	
Why $\text{Li}_{(1-x)}\text{FePO}_4/\text{LiFePO}_4$ Is a Good Candidate to be Used as Reference Electrode	421
<i>Sylvie Genies, Pierre Balfet, Elise Villemin, Cédric Septet, Marco Ranieri, Romain Franchi, Olivier Raccurt</i>	
Analysis of Structural Changes in Practical Batteries during Overcharging Using Synchrotron X-Ray CT Imaging	423
<i>Xian Shi, Toshiki Watanabe, Kentaro Yamamoto, Shiro Kato, Masanori Fujii, Hajime Kinoshita, Toshiyuki Matsunaga, Yoshiharu Uchimoto</i>	
Flux Growth and Surface Modification of Highly-Crystalline Active Materials and Solid Electrolytes for High Performance Libs	425
<i>Kazuyuki Shishino, Tetsuya Yamada, Fumitaka Hayashi, Chiaki Terashima, Katsuya Teshima</i>	
Effect of Electrolyte Additives on the Performance of 18650 Cylindrical Ni-Rich Li-Ion Battery Cells.....	426
<i>Puttida Nanthamitr, Thitiphum Sangsanit, Worapol Tejangkura, Montree Sawangphruk</i>	
Is Transition Metal Dissolution a Major Degradation Process in Commercial Li-Ion Cells? Application of Impedance with Extended Sub-mHz Low-Frequency Range.....	427
<i>Lana Regent, Jozse Moskon, Miran Gaberscek, Robert Dominko</i>	
Polysiloxane-Coated PI Nonwoven Separators with Higher Thermal and Electrochemical Stability for Lithium Ion Battery Application.....	429
<i>Youngkwon Kim, Beum Jin Park, Ji-Sang Yu, Kyusoon Shin</i>	
Extreme Fast Charging of High Energy Density Lithium Ion Battery	431
<i>Jin Wook Lee, Sung-Min Park, Yang-Kook Sun</i>	
A Versatile Strategy for Manufacturing Separator-Free Li-Ion Battery Cells: Combination of Dry Process for Electrodes and Solvent-Based Impregnation of Polymer Electrolytes	432
<i>Timo Brändel, Yi-Chen Hsieh, Sven Klein</i>	
Life Cost Assessment of Using Binders of Sulfide-Based All Solid-State Lithium Batteries for Lithium-Ion Batteries	434
<i>Susan Montes, Alexander Beutl, Marcus Jahn, Artur Tron</i>	
Harmonization of Testing Procedures for All Solid State Batteries.....	435
<i>Yan Ying Lee, Andre Weber</i>	
Improving Lithium-Ion Batteries By Replacing Polyethylene Terephthalate Jellyroll Tape	436
<i>Anu Adamson, Tom Bötticher, Kenneth Tuul, Matthew D. L. Garayt, Saad Azam, Michael Metzger</i>	
Towards All-Extruded Custom-Shape Batteries	438
<i>Olga Guchok, Gilat Ardel, Tommer Kidar, Hadar Nakar, Heftsi Ragonas, Igor Shulman, Naum Naveh, Allen Zheng, Steven Greenbaum, Diana Golodnitsky</i>	
Battery Production Solvent Alternative to NMP - Jeffsol® MEOX.....	439
<i>Victoria White, Hui Zhou, Ke Zhang, Jerzy Gazda, Steven David Lacey</i>	
Fabrication and Characterization of $\text{LiNi}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{O}_2/\text{Li}_{0.6}\text{La}_{0.4}\text{TiO}_3/\text{Li}_4\text{Ti}_5\text{O}_{12}$ Full Cell All-Solid-State Thin Film Li-Ion Batteries for Energy Applications.....	442
<i>Sruthy Subash, Shintaro Yasui, Takanori Kiguchi, Kamala Bharathi Karuppanan</i>	
Enhancing Thermal Stability of Lithium-Ion Battery Separators with Sub-Micron Boehmite Coating	444
<i>Mi Jang, Jong-Oh Baek, Ji Su Chae, Junghyun Choi, Chanwoong Park, Dae-Bok Park, Byung Hyun Kim, Kwang Chul Roh</i>	

A02 - Li-ion Battery Cathodes 3

Evaluate the Limits of F Covalent Bonding with Transition Metals at High Valent States in $\text{Li}_2\text{MO}_2\text{f}$ (M = Mn, Co, Ni) Oxyfluoride	445
<i>Indrani Roy, Jordi Cabana</i>	
Solvent-Free Lithium-Ion Batteries to High Volumetric Capacity via Carbon Nanotube-Coated Ni-Rich Cathodes.....	447
<i>Jin Kyo Koo, Chaeyeon Ha, Jae Kwon Seo, Weerawat To-A-Ran, Young-Jun Kim</i>	
Solvent-Driven Degradation of Ni-Rich Cathodes Probed by Operando Gas Analysis	449
<i>Israel Temprano, Wesley M. Dose, Michael F. L. De Volder, Clare P. Grey</i>	
Enhancing Electrochemical Performance of Co-Free Cathode Materials for Lithium-Ion Batteries Via Surplus Lithium Incorporation.....	451
<i>Kunhee Ko, Kisuk Kang</i>	
Stabilizing the Reversible Oxygen Redox Reactions in Lithium-Rich Layered Cathodes Via the Surface-to-Bulk Enhanced D-P Hybridization	453
<i>Zijia Yin, Zijia Yin</i>	
The Particle Size Distribution of Ni-Rich NMC Particles Determines Their Electrochemical Performance at Cylindrical Li-Ion Battery Cells.....	454
<i>Nichakarn Anansuksawat, Montree Sawangphruk</i>	
What Affects More the NMC811 Cathode Powders: Lithium Excess, Washing or Aging?	455
<i>Magdalena Winkowska-Struzik, Dominika Buchberger, Witold Uhrynowski, Michal Struzik, Andrzej Czerwinski</i>	
Transition Metal-Doped Co-Free Layered Cathode for High-Performance Li-Ion Batteries.....	457
<i>Geontae Park, Myoung-Chan Kim, Yang-Kook Sun</i>	
Capacity Fading Mechanism of Ni-Rich Cathode Materials Focusing on Particle Interior	458
<i>Nam-Yung Park, Sang-Mun Han, Yang-Kook Sun</i>	
Linking Microstructure and Ionic/Electronic Conductivity in Composite Cathodes for Thiophosphate-Based All-Solid-State Lithium-Ion Batteries	459
<i>Nikolaos Papadopoulos, Elias Reisacher, Pinar Kaya, Volker Knoblauch</i>	
Stabilizing Cobalt-Free Li-Rich Layered Oxide Cathodes By Site-Specific Doping.....	461
<i>Yameng Fan, Wei Kong Pang, Qiong Cai, Zaiping Guo</i>	

A02 - Electrolytes for Li-ion Batteries 2

Ionogels Based on Dynamically Cross-Linked Polyrotaxanes and Ionic Liquids for Lithium-Ion Batteries.....	463
<i>Shanshan Yan, He Jia, Jean-François Gohy</i>	
Computar Simulator: Automated Computational Screening of Battery Electrolytes	464
<i>Rasmus Andersson, Fabian Årén, Emil Krutmeijer, Laetitia Cresto, J Magnus Rahm, Robert Sörensen, Per Ghosh, Romina Asadi, Patrik Johansson</i>	
Firefighting Gel Polymer Electrolyte for Non-Flammable Li-Ion Batteries Based on Extremely Low Amount of a Cross-Linkable Polymer.....	466
<i>Jihong Jeong, Hyun-Kon Song</i>	
Phosphonium-Based Ionic Liquid Electrolyte in Combination with Silicon Anodes and $\text{LiNi}_{0.5}\text{xMn}_{1.5\text{x}}\text{O}_4$ Cathodes for Lithium Ion Batteries	468
<i>Daniel Rogstad, 95709904 Nylund, Mika Malmer, Helene Langli, Ann Mari Svensson</i>	
Locally Concentrated Ionic Liquid Electrolytes for Lithium/Sulfurized Polyacrylonitrile Batteries	470
<i>Xu Liu, Stefano Passerini</i>	
A Step Towards the Impossible – the Combination of High Ionic Conductivity and Mechanical Stability in Highly Crystalline Solid Polyketone Electrolytes.....	472
<i>Rasmus Andersson, Isabell Lee Johansson, Guiomar Hernández, Jonas Mindemark</i>	

Nonflammable Gel Polymer Electrolyte for Lithium-Ion Batteries with Enhanced Safety and High-Temperature Performance.....	473
<i>Da-Ae Lim, Young-Kyeong Shin, Jinhong Seok, Dayoung Hong, Chul Haeng Lee, Kyoung Ho Ahn, Dong-Won Kim</i>	
Understanding the Connection between Li-Ion Transport Number and Electrochemical Performance in Fluorinated Ether-Based Electrolytes.....	474
<i>Hafiz Ahmad Ishfaq, Sara Drvaric Talian, Robert Dominko, Miran Gaberscek, Patrik Johansson</i>	
Spectroscopic and Computational Evaluation of Electrochemical Stability of Electrolyte Solutions; Solvents, Electrolytes and Their Concentration Dependence.....	475
<i>Yasuhito Aoki, Mami Oda, Sachiko Kojima, Takayuki Doi, Minoru Inaba</i>	
The Springback Effect in Pre-Densified Sulfidic Solid Electrolyte/Binder-Sheets and Their Implication as Separators in All-Solid-State Batteries – a First Approach.....	477
<i>Tobias Kutsch, Robin Schuster, Gioele Conforto, Moritz Bohn, Hubert Andreas Gasteiger</i>	
Synthesis of Polyhydroxy Urethane Network Based Solid Polymer Electrolytes from Bio-Sourced Carbonates and Amines.....	479
<i>Ashish Raj, Bruno Grignard, Christophe Detrembleur, Jean-François Gohy</i>	

A02 - Electrolytes for Li-ion Batteries 3

Solidification of a Silica-Based Solid Composite Electrolyte for Lithium-Ion Batteries Induced By UV Irradiation.....	480
<i>Dries De Sloovere, Ulrique Vounckx, Thomas Vranken, Gunter Reekmans, Peter Adriaensens, Philippe M. Vereecken, Marlies K. Van Bael, An Hardy</i>	
Development of a Polymer-Based Silicon-NMC Solid-State Cell.....	482
<i>Guinevere A. Giffin, Mara Goettlinger, Hendrik Bohn, Simone Peters, Mario Weller, Alexander Naßmacher, Timo Brändel, Alex Friesen</i>	
Defining Warburg Conductivity for Binary Electrolytes to Simplify Concentration Overpotential Calculation.....	483
<i>Basudev Choudhury, Akash Suhas Jangale, Bharatkumar Suthar</i>	
Design of High-Entropy Electrolytes Enabled By the High-Throughput and Autonomous Procedure.....	485
<i>Victor Martinez, Nis Fisker-Bødker, Smobin Vincent, Jin Hyun Chang</i>	
Synthesis and Characterization of Vitrimer-like Self-Healing Polymer Electrolytes for Lithium Metal Batteries.....	486
<i>Carla Barakat, He Jia, Jean-François Gohy</i>	
Si-Drive European Project: Developing Crosslinked Polymer and Composite Membrane Electrolytes for Lithium-Based Batteries.....	487
<i>Marisa Falco, Claudio Gerbaldi, Sofia Saffirio, Federico Smeacetto</i>	

A02 - Li-ion Battery Anodes 3

On the Chemo-Mechanics of Advanced Electrode Materials Via Operando Acoustic Transmission.....	489
<i>Kerry Sun, Gunnar Thorsteinsson, Dingyi Zhao, Daniel A. Steingart</i>	
(Invited) Chemomechanical Phenomena during Lithium Metal Plating.....	491
<i>Brian W. Sheldon, Jung Hwi Cho, Xingcheng Xiao, Huajian Gao, Christos E. Athanasiou, Xing Liu, Cole D. Fincher, W. Craig Carter, Yet-Ming Chiang, Kunjoong Kim, Jennifer L. M. Rupp, Changmin Shi</i>	
Operando NMR Characterization of Cycled and Calendar Aged Si Anodes.....	492
<i>Evelyna Wang, Marco-Tulio F Rodrigues, Baris Key</i>	
The Research of Different Strategies to Enhance Coulombic Efficiency of Sn/SnO _x Modified TiO ₂ As Anode Material in Lithium-Ion Battery By in Operando Analytical Techniques.....	493
<i>Cheng-Hsun Ho, Yu-Min Shen, Jow-Lay Huang, Chia-Chin Chang</i>	

Dilatometric Investigation of Si-Rich Contacting Anode Under External Pressure	495
<i>Sanaz Banifarsi, Abdelaziz Abdellatif, Margret Wohlfahrt-Mehrens</i>	
Unraveling the Lithium Storage Mechanism at Low Potentials in Niobium Pentoxide Anodes for Lithium-Ion Batteries	497
<i>Xilai Xue, Jakob Asenbauer, Tobias Eisenmann, Sirshendu Dinda, Giovanni Orazio Lepore, Silin Xing, Angelo Mullaliu, Thomas Diemant, Francesco D'Acapito, Tatjana N. Parac-Vogt, Maximilian Fichtner, Jens Tübke, Dominic Bresser</i>	
WO ₃ Nanostructures Modified with Carbon and Sulfur Used as Anode for Li-Ion Batteries	498
<i>Mireia Cifre Herrando, Gemma Roselló-Marquez, Dionisio Miguel García-García, Jose Garcia-Anton</i>	
Tortuosity Effect of Graphite Anodes for High-Performance Cylindrical Li-Ion Batteries.....	500
<i>Nattanon Joraleechanchai, Thitiphum Sangsanit, Kan Homlamai, Purin Krapong, Montree Sawangphruk</i>	
Nb-Based Oxides As High Power Negative Electrode Materials	501
<i>Olivier Crosnier, Etienne Le Calvez, Nicolas Dupre, Bruce S. Dunn, Thierry Brousse</i>	

A02 - Advanced Characterization 3

Understanding the Thermal Stability of Li-Rich Disordered Rock-Salt Oxyfluorides.....	502
<i>Neelam Sunariwal, Jordi Cabana</i>	
Material Selection for Fundamental Investigation of High Temperature Processes in Lithium-Ion Cathode Production	503
<i>Siebe Coessens, Behnam Bahramian, Inge Bellemans, Tijl Crivits, Christophe Detavernier, Kim Verbeke</i>	
Isotopic Labeling of Carbonate Solvents to Understand Gas Generation in Li-Ion Batteries and Gas Reduction by Fluorinated Organosilanes.....	505
<i>Brian M Kerber, Sarah Lucienne Guillot, Peng Du, Liu (Amy) Zhou, Shipra Garg, Monica Lee Usrey</i>	
Online Electrochemical Mass Spectrometry on Large-Format Li-Ion Cells	507
<i>Casimir Misiewicz, Robin Lundström, Istaq Ahmed, Matthew Lacey, William Robert Brant, Erik J. Berg</i>	
Cleaning up Operando Battery X-Ray Diffraction with Total Scattering Computed Tomography	509
<i>David Stephen Wragg</i>	

A02 - Li-ion Battery Cathodes 4

A Comprehensive Study on the Effect of Washing on Nickel-Rich Layered Transition Metal Oxides: Surface Characterization after Li ⁺ /H ⁺ -Exchange.....	511
<i>Rebecca Wilhelm, Stefan Oswald, Tim Kratky, Leonhard J. Reinschlüssel, Michele Piana, Sebastian Günther, Hubert Andreas Gasteiger</i>	
Structural and Electrochemical Investigation of 3D Tunnel Type Li _{0.44} MnO ₂ Cathode Material for Secondary Li-Ion Batteries	513
<i>Jaya Yadav, Sai Pranav Vanam, Valerie Pralong, Minjeong Gong, Dong-Hwa Seo, Prabeer Barpanda</i>	
Surface Degradation of NMC Electrodes Exposed to Air and Impact on Subsequent Cycling.....	515
<i>Erik Björklund, Robert S. Weatherup</i>	
The Effects of Small Amounts of Cobalt in LiNi _{1-x} Co _x O ₂ on Lithium Diffusion	517
<i>Eniko Zsoldos, Marc M. E. Cormier, Mitchell Afheldt Ball, Divya Rathore, Jeff R. Dahn</i>	
Microwave-Irradiation Suppresses the Jahn-Teller Distortion in Spinel LiMn ₂ O ₄ Cathode Material for Lithium-Ion Batteries.....	519
<i>Tebogo Retsepire Tsekeli, Aderemi Bashiru Haruna, Kenneth Ikechukwu Ozoemena</i>	

Does Anisotropic ‘Lattice’ Collapse Always Lead to Cracking in Ni-Rich Layered Oxide Cathode Particles?	520
<i>Ashok S. Menon, Nickil Shah, James A. Gott, Eleni Fiamegkou, Matthew J. W. Ogley, Galo Paez Fajardo, Naoum Vaenas, Ieuan Ellis, Paul Malliband, David Walker, Geoff West, Melanie J Loveridge, Louis F. Piper, Gerard Bree</i>	

A02 - Li-ion Battery Anodes 4

A Stable Fe ₃ O ₄ -Based Hybrid Anodes for High Performance Li-Ion Batteries.....	522
<i>Buse Bulut Köpüklü, Adnan Tasdemir, Selmiye Alkan Gursel, Alp Yurum</i>	
Electrode-Resolved Impedance and Potential Measurements to Investigate the Rate Capability of High Loading Micron-Silicon Anodes in All-Solid-State Batteries.....	523
<i>Gioele Conforto, Robin Schuster, Moritz Bohn, Tobias Kutsch, Hubert Andreas Gasteiger</i>	
The in Operando/Situ Analytical Techniques Assisted Study of Pre-Lithiated MoO _x @ TiO ₂ As the Anode Material of Lithium Ion Batteries	526
<i>Zhen Chong, Jow-Lay Huang, Chia-Chin Chang, Yu-Min Shen</i>	
Studying Degradation of Micro- and Nano-Scale Silicon in Si/ Rgo-Anode Materials for Lithium-Ion Batteries – Towards a Fair Comparison	528
<i>Tilo Held, Sebastian Müllner, Lukas Wölfel, Christina Roth</i>	
Investigating the Rheological Properties of Silicon/Carbon (Si/C) Composite Supraparticles Used in Lithium-Ion Battery Anodes.....	530
<i>Fatih Özcan, Jonas Watermann, Adil Amin, Moritz Loewenich, Hartmut Wiggers, Doris Segets</i>	
Sustainable SiO ₂ Nanostructures from Different Diatom Species As Anode Material for Future Generation Lithium-Ion Batteries.....	532
<i>Kesavan Thangaiyan, Jon Tobias Aga Karlsen, Weicheng Hua, Ann Mari Svensson, Maria Valeria Blanco</i>	
Surface Modification on TiNb ₂ O ₇ Anode Via Atmospheric Pressure Plasma Jet for High-Rate Lithium-Ion Battery.....	534
<i>Che-Ya Wu, Shih-Nan Hsiao, Rui-Tung Kuo, Tzu-Ying Lin, Masaru Hori, Jenq-Gong Duh</i>	

A02 - Battery Diagnosis 2

Potential and Limitations of Research Battery Cell Types for Electrochemical Data Acquisition	535
<i>Anna Smith, Pirmin Stüble, Andreas Hofmann, Lea Leuthner, Fabian Jeschull, Liuda Mereacre</i>	
Increasing Battery Performance with Ohmic Drop Compensation for an Electric Drone.....	537
<i>Nicolas Magne Tang, Celine Decaux, Pierre Xavier Thivel, Christine Lefrou</i>	
Revisiting the Anodic Stability of Aluminum Current Collectors in High-Voltage Li-Ion Batteries	538
<i>Ahmed S. Etman, Leif Nyholm</i>	
Understanding the Interplay between Temperature, State of Health, Rate of Ageing, and Overvoltage in Li-Ion Battery Cells	539
<i>Gints Kucinskis, Julija Hodakovska, Liga Britala, Artis Deze, Gunars Bajars</i>	
Dynamic Electrochemical Impedance Spectroscopy for Characterization of the State of Health of Graphite Electrodes	541
<i>Federico Scarpioni, Michael Warnecke, Hermann Pleiteit, Sascha Stallmann, Fabio La Mantia</i>	
The Study of High-Energy Lithium Polymer Cells for Second-Life Applications.....	543
<i>Ejikeme Raphael Ezeigwe, Lene Therese Backus Erichsen, Markus Solberg Wahl, Julia Wind, Preben J. S. Vie, Odne Stokke Burheim</i>	
Physical Model-Based State of Health Understanding of Severely Aged Lithium-Ion Batteries Under Real-World Automotive Operational Life	544
<i>Claudio Rabissi, Gabriele Sordi, Andrea Casalegno</i>	

A02 - Li-ion Battery Anodes 5

Improving the Electrochemical Performance of SiO ₂ Anode Material by Dual-Doping with Lithium and Titanium.....	547
<i>Seungeun Kim, Won Joon Jeong, Dong Jae Chung, Donghan Youn, Nam Gyu Kim, Junho Kim, Da Young Ko, Hansu Kim</i>	
Effects of Secondary Phase on Electrochemical Performance of Co-Free High Entropy Spinel Oxide Anodes for Lithium-Ion Batteries	548
<i>Jagabandhu Patra, Thi Xuyen Nguyen, Jyh-Ming Ting, Jeng-Kuei Chang</i>	

VOLUME 2

High Carbon Doping of Amorphous Silicon Nanoparticles in a One-Step Gas-Phase Process for Increased Cycling Stability.....	549
<i>Moritz Loewenich, Hans Orthner, Hartmut Wiggers</i>	
Fast and Durable Lithium Storage Enabled By Tuning Entropy in Wadsley-Roth Phase Titanium Niobium Oxides	551
<i>Jie Zheng, Rui Xia, Najma Yaqoob, Payam Kaghazchi, Johan E. Ten Elshof, Mark Huijben</i>	
Characterization of Nanostructured Tin Oxide Anodes Obtained By Electrolytic Oxidation for High-Energy Lithium-Ion Batteries.....	552
<i>Oliver Lohrberg, Mathias Weiser, Christian Heubner, Alexander Michaelis</i>	
A Scalable Furnace Technique to Grow Silicon Nanoparticles for High-Performance Li-Ion Battery Anodes.....	553
<i>Rohan Patil, Manisha Phadataré, Jonas Örtengren, Magnus Hummelgård, Nicklas Blomquist, Håkan Olin, Santosh Limaye, Joakim Bäckström, Ezio Zanghellini, Daniel Brandell, Guiomar Hernández</i>	
Doped Micron Silicon and Mxene Based Composite Anodes for High-Performance Li-Ion Batteries	554
<i>Rohit Choudhury, Narendra Kurra, Praveen Meduri</i>	

A02 - Battery Diagnosis 3

(Invited) Challenges for Accelerating Life Testing of Commercial Lithium-Ion Batteries	556
<i>Paul Gasper, Nathaniel Sunderlin, Nathan A. Dunlap, Donal P. Finegan, Kandler Smith, Foram Thakkar</i>	
A Data-Driven Quality Control Method for Li-Ion Cells	557
<i>Carmen M Lopez, Oliver Rodriguez Martinez</i>	
Understanding the Self-Discharge Redox Shuttle Mechanism of Dimethyl Terephthalate in Lithium-Ion Batteries	559
<i>Tom Böttcher, Anu Adamson, Sebastian Buchele, Ethan D. Alter, Michael Metzger</i>	
Post-Mortem Analysis of a Commercial Li-Ion Pouch Cell and the Effects of Aging on Overall Battery State of Health (SOH).....	561
<i>John Ostrander, Preben J. S. Vie, David Stephen Wragg, Alexey Kuposov, Torleif Lian, Julia Wind, Paul R Shearing, Markus Solberg Wahl</i>	
Characterisation of Smoke Particles from Lithium-Ion Battery Fire: Morphology, Size and Composition	563
<i>Ibtissam Adanouj, Emilio Napolitano, Marco Sommariva, Stefano Enzo, Natalia Lebedeva</i>	
Can One Project Cell Lifetime Using Wide Temperature Range Ultra-High Precision Coulometry?.....	564
<i>Kenneth Tuul, Tina Taskovic, Jessie Harlow, Michel B. Johnson, Jeff R. Dahn</i>	
How to Make a Single-Layer Pouch Cell That Matches the Performance of a Commercial Li-Ion Cell.....	567
<i>Matthew D. L. Garayt, Michel B. Johnson, Lauren Laidlaw, Mark A. McArthur, Simon Trussler, Jessie Harlow, Jeff R. Dahn, Chongyin Yang</i>	

Modified Chronoamperometry as an Evaluation Method for Li-Ion Batteries.....	569
<i>Sergio Pinilla, Jesús Inocente Medina-Santos, Enrique Garcia - Quismondo, Rebeca Marcilla, Jesus Palma</i>	
Understanding Lithium-Ion Battery Degradation through P2D Model Parameters Evolution.....	571
<i>Gabriele Sordi, Claudio Rabissi, Andrea Casalegno</i>	

A03-BATTERY SAFETY AND FAILURE MODES 4

A03 - Digital Only Presentations in Battery Safety and Failure Modes 4

Modeling and Analysis of Coupled Thermal and Mechanical Capacity Degradation in Silicon-Based Lithium-Ion Batteries.....	572
<i>Lubhani Mishra, Akshay Subramaniam, Taylor R. Garrick, Venkat R. Subramanian</i>	

A03 - Characterizing Thermal Behavior with Advanced Calorimetry Techniques 1

(Invited) Thermal Stability and Thermal Energy Measurements for a Lithium-Ion Pouch Cell with Different State of Health.....	573
<i>Torleif Lian, Preben J. S. Vie, Kjetil Valset, Ragni Mikalsen, Christoph Meraner, Tian Li, Reidar Stølen, Dag Olav Snersrud</i>	
Quantifying the Thermochemistry of Kinetic Transitions in a Solid-State Charged Li/Li ₂ O/LCO Cell Using Differential Scanning Calorimetry	576
<i>Bhuvsmita Bhargava, Nathan B Johnson, Samaa Zaman, Paul Albertus</i>	
Diagnostics of Safety Hazardous Ageing Conditions for Commercial Lithium-Ion Pouch Cells	577
<i>Preben J. S. Vie, Torleif Lian, Julia Wind, John Ostrander, Lena Spitthoff, Odne Stokke Burheim</i>	

A03 - Characterizing Thermal Behavior with Advanced Calorimetry Techniques 2

(Invited) Benchmarking and Predicting the Risks of Commercial Li-Ion Cells Undergoing Thermal Runaway	579
<i>Donal P. Finegan, Karina Masalkovaite, Paul Gasper, Paul R Shearing, Eric Darcy</i>	
Detailed Approach to Calculate the Heat Generation of Lithium-Ion Cells during Heat-Wait-Seek Tests in Accelerating Rate Calorimetry	580
<i>Philipp Finster, Sebastian Ohneseit, Hans Jürgen Seifert, Carlos Ziebert</i>	
Heat Generation Mechanisms of 18650 Lithium-Ion Battery Cells: An in-Depth Analysis.....	581
<i>Kenza Maher, Yahya Zakaria</i>	
Quantifying the Effects of Temperature and Depth of Discharge on Li-Ion Battery Heat Generation: An Assessment of Resistance Models for Accurate Thermal Behavior Prediction	582
<i>Sagar Vashisht, Dibakar Rakshit, Satyam Panchal, Michael Fowler, Roydon Fraser</i>	
Modeling Competitive Reaction Heat Sources and Variable Cooling Rates Applicable to Thermal Runaway Onset in Lithium-Ion Batteries	584
<i>Randy C. Shurtz, Andrew Kurzawski, John Hewson</i>	

A03 - Ageing Mechanisms

(Invited) Electrochemical and Postmortem Analyses of 18650-Type Li-Ion Secondary Battery Degraded at High and Low Temperature Environments	585
<i>Eiji Hosono, Sayoko Shironita, Daisuke Asakura, Yoshitsugu Sone, Minoru Umeda</i>	
Investigation of the Effect of Safety Function Failure in Lithium-Ion Battery Systems at High Overvoltage	587
<i>Jan Haß, Christina Schieber, Nikolas Jaroch, Florian Meilinger, Hans-Georg Schweiger</i>	
In-Situ Quantification of the Ageing Dynamics in Lithium-Ion Cells up to Failure-Near Conditions.....	588
<i>Philippa Scharpmann, Robert Leonhardt, Tim Tichter, Anita Schmidt, Jonas Krug Von Nidda</i>	

Calendar Aging of Lithium-Ion Batteries: Investigating the Influence of Electrolyte Additives in Open-Circuit and Floating State-of-Charge Conditions	589
<i>Karsten Geuder, Sebastian Klick, Sascha Nowak, Hans Jürgen Seifert, Carlos Ziebert</i>	
Degradation Diagnostics of Ni-Rich NMC in Lithium-Ion Batteries Aged in Different Degrading Conditions	591
<i>Nattanai Kunanusont, Thanathon Sesuk, Priew Eiamlamai, Sunisa Buakeaw, Phontip Tammawat, Pimpa Limthongkul</i>	

A03 - Policy, Field Experience, & Investigations

(Invited) Safety of Li-Ion Batteries: Current Challenges in a Policy Context	593
<i>Andreas Pfrang, Ibtissam Adanouj, Matthias Bruchhausen, Ricardo Da Costa Barata, Stephan Hildebrand, Mircea Lazareanu, Rafael Leite Patrão, Natalia Lebedeva</i>	
Analysis of Battery Testing Protocols in the Transition from the Lab to the Field: A Test Case Using Advanced Zn-MnO ₂ Batteries in Off-Grid Solar Microgrids	594
<i>Reed M Wittman, Olga Lavrova, Umer Anwer, Jinchao Huang, Gabriel Cowles, Sijo Augustine, Derrick Terry, Stan Atcitty, Henry Guan</i>	
Investigation of Water Ingress Driven Circuit Board Faults As a Contributory Factor to Battery Thermal Runaway	596
<i>Phillip Johns, Daniel Torelli</i>	
(Invited) Culprits or Collateral Damage? The Science behind Lithium-Ion Battery Failure Investigations.....	597
<i>Ryan Spray, Michael Barry, Troy Hayes</i>	
Challenges and Solutions for Integration of Energy Storage Systems in Hot Desert Regions	598
<i>Kenza Maher</i>	

A03 - Modeling and Analysis 1

(Invited) Improving Certainty in Battery Safety Profiles through Early-Stage Evaluation	599
<i>Alex Martin Bates, Paul Albertus, Judith Jeevarajan, Partha P. Mukherjee, Loraine Torres-Castro</i>	
Understanding the Effect of Mechanical Degradation on the Performance of Solid-State Batteries through Particle Simulations	600
<i>Magnus So, Agnesia Permatasari, Shinichiro Yano, Yuki Saito, Yuki Mori, Gen Inoue</i>	

A03 - Modeling and Analysis 2

(Invited) Battery System Safety Design Based on Studying the Runaway in Battery Cell	602
<i>Martin Jens Skarstind</i>	
Swelling of Polypropylene Separators and Its Effect on the Lithium-Ion Battery Performance	603
<i>Gennady Gor, Andrei V Maksimov, Olga Maksimova, Marcos Molina</i>	
Analysis of Heat Transfer Pathways That Affect Mitigation of Cascading Thermal Runaway	604
<i>Andrew Kurzawski, John Hewson</i>	

A03 - Characterizing Internal and External Short Circuits

New Method for Designing Robust External Short-Circuit Protection Systems at Different Scales	606
<i>Akos Kriston, Christian Bonato, Andreas Pfrang</i>	
Needle Penetration Studies on the Dynamics during Internal Short Circuits in Automotive Lithium-Ion Cells: Measurement of Internal Temperature and Short Circuit Current.....	607
<i>Hyojeong Kim, Hans Jürgen Seifert, Carlos Ziebert, Jochen Friedl</i>	
Analysis of Internal Short Circuit and Thermal Runaway of Li-Ion Battery Due to Mechanical Abuse.....	609
<i>Muhammad Sheikh, Muhammad Rashid</i>	

Understanding Internal Short Circuit Caused Thermal Runaway of Li-Ion Cells through in-Situ Diagnosis	610
<i>Siyi Liu, Mary K Long, Guangsheng Zhang</i>	

A03 - Characterizing Safety in Beyond Li-ion Battery Technologies 1

Operando Ultrasonic Characterization of Lithium Metal Batteries	611
<i>Wesley Chang</i>	
Macroscale Inhomogeneity of Electrochemical Lithium-Metal Plating Triggered by Gas Phase Evolution	612
<i>Kyoungoh Kim, Youngmin Ko, Kisuk Kang</i>	
(Invited) Safety Behavior of Lyten's High-Energy Li-S Cells with 3D Graphene™	613
<i>Ratnakumar Bugga</i>	
Failure Modes in Sulfide-Based All Solid-State Batteries (ASSB) Investigated By Operando SEM	615
<i>Carine Davoisne, Neelam Yadav, Mathieu Morcrette</i>	

A03 - Characterizing Safety in Beyond Li-ion Battery Technologies 2

(Invited) Safety and Performance Testing of Commercial Sodium-Ion Batteries	616
<i>Rachel Elizabeth Carter, Gordon Henry Waller, Corey T. Love</i>	
All-Solid-State Battery Safety Investigation in Calorimeter Coupled with Fast X-Ray Radiography	617
<i>Juliette Charbonnel, Natacha Darmet, Claire Deilhaes, Ludovic Broche, Magali Reytier, Pierre Xavier Thivel, Remi Vincent</i>	
Approaches to Control Air Stability, Capacity Retention, Gas Generation, and Impedance Growth of Layered Oxide Positive Electrode Materials for Sodium-Ion Batteries	618
<i>Libin Zhang, Hussein Hijazi, Ziwei Ye, Ethan D. Alter, Jay Deshmukh, Jeff R. Dahn, Michael Metzger</i>	
Development of Multi-Physical Simulation Models for Quasi-Static Load Analysis to Predict the Behavior of Li-Ion and Na-Ion Batteries Under Different Mechanical Abuse Loadings	620
<i>Noelia Cabello Moreno, Ana Maria Vicente Lopez</i>	
Non-Flammable Ether and Phosphate-Based Liquid Electrolytes for Sodium-Ion Batteries	621
<i>Wessel Willem Andries Van Ekeren, Ronnie Mogensen, Reza Younesi</i>	

A03 - Test and Characterization 1

(Invited) The Path to Vapour Cloud Explosions and Lithium-Ion Batteries	622
<i>Paul A. Christensen</i>	
Increasing Battery Safety of Lithium-Ion Batteries by Using Cell-Internal Glass Fiber Sensors for in-Situ Temperature Monitoring	623
<i>Alexandra Burger, Florian Krause, Bruno Bausch, Olaf Böse, Jannes Ophey, Andreas Wuersig, Dirk Uwe Sauer, Holger Kapels</i>	
Design of Novel Types of Phosphorus-Containing Flame-Retardant Hybrid Solid Electrolytes with Enhanced Ionic Conductivities	624
<i>Yinghui Zhang, Jean-François Gohy</i>	
Characterization of Behavior of Lithium Ion Battery Under Vibration and Shock Conditions	625
<i>Seong Bin Han, Sang-Youn Park, Byoung-Ho Choi</i>	
Using Artificial Solid-Electrolyte Interphase Coatings for Enhancing Safety of High-Energy Li-Ion Batteries from Material Level	627
<i>Nae-Lih (Nick) Wu, Shu Jui Chang, Hsi Chen</i>	

A03 - Poster Session

Experimental Analysis of Thermal Runaway Energy Release of an Automotive Li-Ion Battery Cell	628
<i>Frederik Novotny, Jürgen Köhler, Andrey Golubkov</i>	

Developing an Apparatus to Analyze Volume Changes in a Pouch Battery Cell.....	629
<i>Dongchan Kim, Sung Hwan Choi, Gyu Jang Sim, Jehyun You, In-Suk Choi</i>	
Interface Instability Analysis in Solid-State Lithium Batteries Using Advanced in Situ Methods.....	630
<i>Srabani Patra, Lénaïc Madec, Peter Moonen</i>	

A03 - Test and Characterization 2

Linking Key Features of Commercial Lithium-Ion Cells to Thermal Runaway Effects and Propagation Behaviour	632
<i>Jonas Krug Von Nidda, Nils Böttcher, Nawar Yusfi, Anita Schmidt</i>	
Towards Safer Batteries- 4D Imaging of Abuse Mechanisms in Lithium-Ion Batteries Using Synchrotron X-Ray Computed Tomography	633
<i>Shahabeddin Dayani, Henning Markötter, Anita Schmidt, Giovanni Bruno</i>	

A03 - Fast Charging and Lithium Plating

Linking Microstructure Modeling of Lithium-Ion Batteries during Rapid Charging to System Performance.....	635
<i>Hunter Teel, Joseph Steven Lopata, Taylor R. Garrick, Fengkun Wang, Han Zhang, Yangbing Zeng, Sirivatch Shimpalee</i>	
Comprehensive Analysis of Performance Evolution and Failure Mechanisms for Commercial Large-Format NMC-Gr Lithium-Ion Pouch Cells.....	636
<i>Paul Gasper, Foram Thakkar, Nathaniel Sunderlin, Aron Saxon, Andrew Schiek, Donal P. Finegan, Kandler Smith</i>	
Deconvoluting the Impact of Early-Life Abuse Conditions on the Cyclic Degradation of Lithium-Ion Cells	637
<i>Robert Leonhardt, Tim Tichter, Luca Scharpmann, Anita Schmidt, Jonas Krug Von Nidda</i>	
Battery Venting Caused By Fast Charging	638
<i>Xinlei Gao, Yalun Li, Gregory James Offer, Huizhi Wang</i>	
Monitoring Lithium Metal Plating in Battery Modules: Insights from NMR and Electrochemical Analysis.....	640
<i>Marvin Mohrhardt, Gunther Brunklaus, Tobias Brake, Julian Ulrich</i>	
Rapid Electrochemical Diagnosis of Battery Health and Safety from Cells to Modules	641
<i>Paul Gasper, Bryce Knutson, Nathaniel Sunderlin</i>	
Three-Dimensional Modeling of Dendrite Formation during Automotive Relevant Cycling	642
<i>Hunter Teel, Joseph Steven Lopata, Taylor R. Garrick, Sirivatch Shimpalee</i>	

A04-NEXT-GENERATION BATTERIES

A04 - Next Generation Electrodes and Electrolytes 1

(Invited) Role of Solvent Exchange Dynamics in the Performance of Metal Anode	643
<i>Vijay Murugesan</i>	
The Nanostructured Future of Electrolytes.....	644
<i>Alessandro Mariani, Xu Liu, Jin Han, Alberto Varzi, Stefano Passerini</i>	
Redox-Active Polymers Designed for the Circular Economy of Energy Storage Devices	646
<i>Alexander Giovannitti</i>	
Carbon: A Ubiquitous Electrode Material for Lithium-Based Rechargeable Batteries	647
<i>Surendra Kumar Martha, Shuvajit Ghosh</i>	

A04 - Solid State Batteries 1

(Invited) Ion Transport in Solid-State Electrolytes Based on TTF - TCNQ Charge-Transfer Complexes.....	649
<i>Lingyu Yang, Jennifer L. Schaefer</i>	
The “Buffer Layer” an Improved Electrode-Electrolyte Interface for Solid-State Batteries	650
<i>Gregory Schmidt</i>	
Challenges of Scaling-up the Wet-Chemical Synthesis of β -Li ₃ PS ₄	651
<i>Aurelia Gries, Frederieke Langer, Julian Schwenzel</i>	
Degradation Mechanisms of All-Solid-State Lithium-Ion Batteries with Sulfide-Type Electrolytes Based on High-Temperature Studies	652
<i>Keisuke Ando, Tomoyuki Matsuda, Takuya Miwa, Mitsumoto Kawai, Daichi Imamura</i>	

A04 - Solid State Batteries 2

Degradation Control of All-Solid-State Na Batteries by Inorganic Oxide Coated Positive Electrode Active Material.....	655
<i>Takaaki Ichikawa, Koji Hiraoka, Takeshi Kobayashi, Shiro Seki</i>	
Electro-Chemo-Mechanical Study of Cathode-Interface-Engineered All-Solid-State Lithium Batteries.....	657
<i>Longlong Wang</i>	
Chemical and Electrochemical Interaction of Halide and Sulfide-Based Electrolytes in Solid-State Batteries.....	659
<i>Artur Tron, Palanivel Molaiyan, Andrea Paoella, Marcus Jahn</i>	
The Influence of Pseudoplastic Flow Behavior on the Slot Die Process in Solid Electrolyte Production	660
<i>Andrea Wiegandt, Frederieke Langer, Julian Schwenzel</i>	
Influence of Extruder Setup and Process Parameters on the Product Quality of Solid Polymer Electrolytes Using Melt Extrusion	662
<i>Katharina Platen, Frederieke Langer, Julian Schwenzel</i>	
Doped Nasicon-Type Solid Electrolytes for Sodium-Ion Batteries from Scalable Spray-Flame Synthesis.....	664
<i>Mohammed-Ali Sheikh, Leon Müller, Hartmut Wiggers</i>	

A04 - Non-Li Ion Batteries 1

Investigation of Heteroatom Doped Graphene Anode for High-Capacity Alkali Metal-Ion Batteries	665
<i>Surishi Vashishth, Muthusamy Eswaramoorthy</i>	
Electrochemical and Thermal Evolution of P2 Na _{2/3} MnO ₂	667
<i>Bopitiye Dilan Krishna Kumara Thilakarathna, Helen Brand, Neeraj Sharma</i>	
How Reference Electrodes Improve Our Understanding of Degradation Processes in Half and Full-Cell KIB Setups.....	668
<i>Iurii Panasenko, Fabian Jeschull</i>	
Heterostructure Design of Anode Materials for High-Performance Sodium-Ion Batteries	670
<i>Hyojun Lim, Sang-Ok Kim</i>	
Improving Cycling Electrochemical Performance of P2-Type Na _{2/3} Mn _{2/3} Ni _{1/3} O ₂ by Controlling Its Crystallinity	671
<i>Riki Kataoka, Noboru Taguchi, Kohei Tada, Akihiko Machida, Nobuhiko Takeichi</i>	
Influence of Formation Temperature on Cycling Stability of Sodium-Ion Cells: A Case Study of Na ₃ V ₂ (PO ₄) ₂ F ₃ HC Cells.....	673
<i>Juan Forero-Saboya, Parth Desai, Encarnacion Raymundo-Piñero, Aurélien Canizares, Dominique Foix, Sathiya Mariyappan, Jean-Marie Tarascon</i>	

A04 - Next Generation Electrodes and Electrolytes 2

- (Invited) Exploiting Organic Materials for Next Generation Batteries 675
Leire Meabe, Itziar Aldalur, Mikel Arrese-Igor, Nicola Boaretto, Michel Armand, Eduardo Sanchez-Diez, María Martínez-Ibañez, Nagore Ortiz-Vitoriano
- (Invited) Design of Lithium Battery Electrolytes Based on Electrode Potentials..... 676
Yuki Yamada
- Metal Doping in 2D Co_3O_4 for Enhanced ORR/OER Electrocatalytic Performance 678
Muhammad Ghufron, Fitri Nur Indah Sari, Brahmanu Wisnu Saputro, Jyh-Ming Ting

A04 - Solid State Batteries 3

- (Invited) Stress and Surface Engineering for Dendrites-Suppressing Solid-State Electrolytes 679
Chunmei Ban
- Elucidating the Role of Anion Groups in Lithium-Ion Diffusion 680
Kyujung Jun, Byungju Lee, Gerbrand Ceder
- Performance Enhancement of Nickel Manganese Cobalt Oxide Cathodic Material for Solid-State Battery Technology by Surface Engineering 681
Paolo Melgari, Grace Bridgewater, Mark Copley, Daniela Dogaru
- Ionic Transport in Solid Poly(trimethylene carbonate)- $\text{Li}_{6.7}\text{Al}_{0.3}\text{La}_3\text{Zr}_2\text{O}_{12}$ Composite Electrolytes..... 683
Kenza - Elbouazzaoui, Funeka Nkosi, Daniel Brandell, Jonas Mindemark, Kristina Edström
- Effect of Particle Size Ratio on Microstructure and Active Material Utilization in Argyrodyte All-Solid-State Composite Cathodes 684
Dominik Steckermeier, Jessica Gerstenberg, Elisa Hartmann, Peter Michalowski, Arno Kwade

A04 - Next Generation Electrodes and Electrolytes 3

- Micellar Solubilization for High-Energy-Density and Long-Cycle-Life Aqueous Organic Redox-Flow Batteries..... 685
Youngsu Kim, Kisuk Kang
- Organic Bulk Liquid Redox Active Materials for Redox Flow Batteries 686
Rajesh B Jethwa, Angelina Castro-Trujillo, Julia Valentin, Lakshman V Kilari, Fernando Solorio-Soto, Stefan Stadlbauer, Stefan A Freunberger
- Rationally Designed in-Situ Gelled Polymer-Ceramic Hybrid Electrolyte Enables Superior Performance and Stability in Quasi-Solid-State Lithium-Sulfur Batteries 688
Vaidik Shah, Yong Lak Joo
- Machine Learning Approach for the Material Search of Fluoride-Ion Conductors 689
Naoki Matsui, Tomoaki Seki, Kota Suzuki, Masaaki Hirayama, Ryoji Kanno
- Surfactant-Assisted Synthesis of $\text{FeF}_3 \cdot 0.33 \text{H}_2\text{O}$ and Its Application As Cathodic Material for Electrochemical Energy Storage Devices: From Lithium to Fluoride-Ion Batteries 691
Federico Scesa, Eugenio Gibertini, Luca Magagnin, Maurizio Sansotera
- Effect of Mechanical Pressure on Lifetime, Expansion, and Porosity of Silicon Dominant Anodes in Laboratory Lithium-Ion Cells..... 693
Sven Friedrich, Stefan Stojcevic, Philip Rapp, Axel Durdel, Andreas Jossen

A04 - Multivalent Ion Batteries 1

- Insights into the Electrochemical Degradation of Aluminum Dual-Ion Batteries: Influence of Internal Cell Resistance & Applied Current Density 696
Martin Eckert, Franziska Jach, Maximilian Wassner, Ulrike Wunderwald

Uniform Zinc Plating Enabled By Polyimide Nanofiber Network for Long-Life Aqueous Zinc Metal Batteries	698
<i>Chi-Yu Lai, Yin-Song Liao, Jyh-Pin Chou, Chi-Chang Hu</i>	
Contribution of Anode and Cathode Potentials during Charging to the Performance of Aluminium-Ion Battery with Triethylamine-AlCl ₃ Electrolyte.....	700
<i>Charan Mukundan, Jean-Francois Drillet</i>	
Investigating the Effects of Modified Interlayer Spacing within Mixed Metal Oxide Cathode Materials for Next-Generation Aqueous Rechargeable Zinc-Ion Batteries	701
<i>Storm William D Gourley, Caio Miranda Miliante, Alejandra Ibarra Espinoza, Thomas James Baker, Oleg Rubel, Brian D Adams, Drew Higgins Higgins</i>	
Modified MnO ₂ -Based Cathode for Zinc-Ion Batteries Using Facile Processing and Easily Available Materials.....	702
<i>Junru Wang, Isabel Maria Mercês Ferreira, Veerle Vandeginste</i>	

A04 - Non-Li Ion Batteries 2

(Invited) Potassium-Ion Batteries	704
<i>Mauro Pasta</i>	
K _x Mn[Mn(CN) ₆] as a High Capacity Positive Electrode Material for Potassium Batteries	706
<i>Yuki Hoshi, Tomooki Hosaka, Ryoichi Tatara, Shinichi Komaba</i>	
Chimie Douce Derived K-Based P2-Type Transition Metal(s) Layered Oxides for Secondary K-Ion Batteries.....	708
<i>Pawankumar Kumar Jha, Pubali Barman, Artem M. Abakumov, Maximilian Fichtner, Prabeer Barpanda</i>	
Diffusion Kinetics in Multi-Phase K-Ion Cathodes.....	709
<i>John Cattermull, Shobhan Dhir, Ben Jagger, Andrew Goodwin, Mauro Pasta</i>	
Potassium Vanadium Fluorides as Positive Electrode Materials for K-Ion Batteries	711
<i>Kazushi Magara, Tomooki Hosaka, Ryoichi Tatara, Shinichi Komaba</i>	

A04 - Solid State Batteries 4

(Invited) A Dive into the Complex Mechanisms That May or May Not Increase Li/Na Mobility in Solid State Conductors	713
<i>Gerbrand Ceder</i>	
Sulfide-Based Solid-State Lithium-Sulfur Batteries: An in-Depth Study of the Li-Electrolyte Interface.....	714
<i>Sébastien Liatard, Marine Soler, Vasily Tarnopolsky, Céline Barchasz, Frédéric Le Cras, Anass Benayad, Eric De Vito</i>	
Inorganic Ultra-Rich Solid Composite Electrolytes for High-Voltage Solid-State Batteries.....	715
<i>Kevin Vattappara, Martin Finsterbusch, Dina Fattakhova-Rohlfing, Andriy Kvasha</i>	
Towards an in-Depth Understanding of Single-Ion Conducting Polymer Electrolytes for Lithium-Metal Batteries	717
<i>Alexander Mayer, Dominic Bresser</i>	
Solution-Processed Non-Crystalline Solid Electrolytes for Advanced Energy Storage	718
<i>Alex J. E. Rettie</i>	

A04 - Non-Li Ion Batteries 3

Improving K-Ion Battery Performance By Using K-Metal-Pretreated Electrolyte Solutions	719
<i>Tomooki Hosaka, Tatsuo Matsuyama, Ryoichi Tatara, Zachary Tyson Gossage, Shinichi Komaba</i>	
Increasing the Sodium Content in P2-Type Layered Oxides As Cathode Materials for Sodium-Ion Batteries.....	722
<i>Mingfeng Xu, Matteo Bianchini</i>	

Na(Co,Ti)O ₂ Cathodes for Na-Ion Batteries: A Proper Choice	723
<i>Daria Mikhailova, Mikhail Gorbonov, Hoang Bao An Nguyen, Björn Pohle</i>	
Employing a Thin Artificial CEI Layer on Na ₃ V ₂ (PO ₄) ₂ F _{3-2x} O _{2x} (0 < x < 1) by Atomic Layer Deposition; Structure Stabilization and Capacity Enhancement	725
<i>Sankalpita Chakrabarty, Ayan Mukherjee, Malachi Noked</i>	
Hierarchically Structured Potassium-Vanadium-Phosphate/C Composites As Possible High-Voltage Cathodic Materials for Potassium-Ion-Batteries.....	726
<i>Andreas Heyn, Fabian Jeschull, Joachim R. Binder, Nicole Bohn</i>	

A04 - Solid State Batteries 5

(Invited) Anode Free Solid State Battery - the Design Constraints and Opportunities.....	728
<i>Shirley Meng</i>	
Defining an Ontology for All Solid-State Battery Cells for Database Implementation	729
<i>Karl Larson, Basila Kattouf, Delina Damatov, Assaf Y Anderson, Paul Albertus</i>	
Interfacial Chemical Stability of Doped Li _{1-x} La ₃ Zr _{2-x} (Nb/Ta _x)O ₁₂ - with LiCoO ₂ Electrode Material.....	730
<i>Ioanna Maria Pateli, Mihkel Vestli, John Irvine</i>	

A04 - Advanced Characterization and Computation

(Invited) Unravelling Structural Implications on Charge Transport Mechanism in Nanostructured Electrode Materials for Energy Storage Devices.....	731
<i>Sevi Murugavel</i>	
Multimodal Operando Analysis of High-Capacity Electrodes with Photons and Neutrons	732
<i>Sebastian Risse</i>	
Computational Studies of Structure, Composition, and Electrochemical Behavior of Li-Ion Battery Components.....	734
<i>Dan Major, Amreen Bano</i>	
Enabling High-Areal Capacity and Long-Term Stability of Layered Oxide Cathodes in All Solid State Batteries.....	736
<i>Yong Yang</i>	
Advanced Characterization Development for Metal Anodes in Aqueous Batteries	737
<i>Sofia K. Catalina, Jianbo Wang, William C. Chueh, J. Tyler Mefford</i>	

A04 - Next Generation Electrodes and Electrolytes 4

(Invited) Extending Cycle and Calendar Life of Si Based Li-Ion Batteries By Localized High Concentration Electrolytes	738
<i>Xia Cao, Ran Yi, Ju-Myung Kim, Wu Xu, Ji-Guang Zhang</i>	
Automated Electrolyte Formulation and Coin Cell Assembly for High-Throughput Lithium-Ion Battery Research.....	739
<i>Jackie Yik, Leiting Zhang, Jens Sjölund, Xu Hou, Per Svensson, Kristina Edström, Erik J. Berg</i>	
Stable Cycling of High-Voltage Lithium Metal Batteries Enabled By Highly Concentrated Sulfolane-Based Gel Electrolytes.....	741
<i>Yuta Maeyoshi, Kazuki Yoshii, Hikari Sakaebe</i>	
Zinc-Iron Rechargeable Flow Battery with High Energy Density.....	742
<i>Negar Fouladvari, Eugenio Gibertini, Luca Magagnin</i>	

A04 - Non-Li Ion Batteries 4

(Invited) Ion-Exchange Route for the Cathode Development of Na-Ion Batteries.....	743
<i>Haegyum Kim</i>	

Aqueous Electrochemical Degradation of Phosphate Framework Materials: Mechanisms and Mitigation Strategies	744
<i>Linas Vilčiauskas, Jurga Juodkazyte, Jurgis Pilipavicius, Milda Petruleviciene, Davit Tediashvili</i>	
Mn-Rich P ² -Na _{0.67} [Ni _{0.1} Fe _{0.1} Mn _{0.8}]O ₂ As High-Energy-Density and Long-Life Cathode Material for Sodium-Ion Batteries	746
<i>Seung-Taek Myung, Ji Ung Choi</i>	

A04 - Next Generation Electrodes and Electrolytes 5

Interfacial Chemistry in Aqueous Lithium-Ion Batteries with Dilute Aqueous Electrolytes: A Case Study with V ₂ O ₅	747
<i>Xu Hou, Leitong Zhang, Neeha Gogoi, Kristina Edström, Erik J. Berg</i>	
First-Principles Calculations on Diffusion and Association Behavior of Fluoride Ions in Ba-Doped LaF ₃ Solid Electrolyte	749
<i>Akihide Kuwabara, Takafumi Ogawa, Craig Fisher, Hiroki Moriwake, Yuichi Ikuhara</i>	
Solvent-in-Salt Electrolytes for Fluoride Ion Batteries	750
<i>Omar Alshangiti, Giulia Galatolo, Gregory Rees, Hua Guo, James A. Quirk, James A. Dawson, Mauro Pasta</i>	
(Invited) Overview of Ionic Liquid Electrolytes Doped with δ-Metal Halides for Advanced Post-Lithium-Ion Batteries	751
<i>Vito Di Noto, Michele Vittadello, Steve G Greenbaum, Keti Vezzu, Gioele Pagot</i>	

A04 - Non-Li Ion Batteries 5

Inhibiting Oxygen Redox to Boost Ni Activity Enables Highly Stable Properties in Na _{0.67} Ni _{0.33} Mn _{0.67} O ₂	753
<i>Yongchun Li, Katherine Ann Mazzio, Yanan Sun, Philipp Adelhelm</i>	
Solvent Co-Intercalation As a Strategy for the Exploration of Novel Electrode Reactions for Rechargeable Metal-Ion Batteries	755
<i>Gustav Åvall, Guillermo Alvarez Ferrero, Youhyun Son, Knut Janßen, Philipp Adelhelm</i>	
Partial Replacement of Manganese in Sodium Manganese Hexacyanoferrate for Long-Life Sodium-Ion Cathode Materials.....	757
<i>Sebastian Buechele, Joachim R. Binder</i>	
Designing High-Performance and Water-Stable ‘Layered’ Na- Transition Metal Oxide Cathode Materials for Na-Ion Batteries By Invoking Fundamental Materials-Electrochemical Principles	759
<i>Amartya Mukhopadhyay</i>	
Bio-Waste Derived Hard Carbon: Effect of Treatment Conditions on Electrochemical Performance	761
<i>Aishuak Konarov, Maksat Maratov</i>	

A04 - Next Generation Electrodes and Electrolytes 6

Novel Electrode Designs and Configurations in Secondary Iron-Air Batteries	762
<i>Marvin Kosin, Mohamad Kassabeh, Jan Girschik, Jens Burfeind, Anna Grevé</i>	
Poor Cycling Performance of Rechargeable Lithium–Oxygen Batteries Under Lean-Electrolyte and High-Areal-Capacity Conditions: Role of Carbon Electrode Decomposition	764
<i>Shoichi Matsuda, Manai Ono</i>	
Electrochemical Analysis of Charge Overpotentials in Non-Aqueous Lithium and Sodium Oxygen Batteries.....	766
<i>Akhila Subhakumari, Naga Phani B. Aetukuri</i>	
CO ₂ -Assisted Li–O ₂ Batteries: Challenges and Strategies Towards Practicality	767
<i>Filipe Marques Mota</i>	

Improving Cycle Stability and Kinetics of Rechargeable Al/CO ₂ Batteries By Functional Cathode Materials	768
<i>Gustavo Diaz, Christopher Fetrow, Raju Vadthya, Shuya Wei</i>	

A04 - Non-Li Ion Batteries 5

Unraveling the Synthesis of Positive Electrodes for Na-Ion Batteries by in Situ XRD	769
<i>Mingfeng Xu, Jade Laurier, Mainul Akhtar, Matteo Bianchini</i>	

A04 - Multivalent Ion Batteries 2

(Invited) Understanding and Controlling Electrolyte Solvation-Stability Relationships Toward Energy Dense Multivalent Batteries	771
<i>Nathan T. Hahn</i>	
Fundamental Understanding of the Behavior Under Aging of Aqueous Magnesium-Based Concentrated Electrolytes	772
<i>Magali Gauthier, Malaurie Paillot, Alan Wong, Carine Maaliki, Bénédicte Montigny, Sophie Le Caër</i>	
--The Mg Electrode Cycling Mechanism in Simple Salt Glyme Electrolytes	774
<i>Andrzej Sankowski, Konstantinos Dimogiannis, Conrad Holc, Christopher Parmenter, Graham Newton, Darren Walsh, James O'Shea, Andrei Khlobystov, Lee Johnson</i>	
Electrolyte Mixtures and Organic Cathode Materials for Rechargeable Aluminum Batteries	775
<i>Robert J. Messinger, Theresa Schoetz, Jonah Wang, Leo W. Gordon, Harrison Asare, George John, Elizabeth J. Biddinger</i>	
Fatal Impurity for Electrochemical Mg Deposition/Dissolution	776
<i>Toshihiko Mandai</i>	

A04 - Next Generation Electrodes and Electrolytes 7

(Invited) Low-Temperature Electrolytes for G/NMC811 Cells	778
<i>Chunsheng Wang, Jijian Xu</i>	
An Overview on Polymer-Based Electrolytes with High Ionic Mobility for Safe Operation of Solid-State Batteries	779
<i>Marisa Falco, Gabriele Lingua, Silvia Porporato, Ying Zhang, Mingjie Zhang, Matteo Gastaldi, Francesco Gambino, Elisa Maruccia, Sofia Saffirio, Matteo Milanese, Hamideh Darjazi, Alessandro Piovano, Giuseppina Meligrana, Giuseppe Antonio Elia, Claudio Gerbaldi</i>	
Investigation of Sulfur Redox Chemistry in MoS ₂ Anodes for Potassium Ion Battery	781
<i>Ajay Piriya Vijaya Kumar Saroja, Yupei Han, Charlie Nason, Gopinathan Sankar, Yang Xu</i>	
Highly Concentrated Electrolytes for Lithium Sulfur Batteries – the Role of the Anion(s)	782
<i>Aginmariya Kottarathil, Maciej Marczewski, Patrik Johansson, Wladyslaw Wieczorek</i>	
Long-Lasting, Reinforced Electrical Networking in High-Loading Li ₂ S Cathode for High-Performance Lithium–Sulfur Batteries	783
<i>Hun Kim, Jae-Min Kim, Yang-Kook Sun</i>	

A04 - Next Generation Electrodes and Electrolytes 8

Challenges and Breakthroughs Towards the Development and Optimisation of a Zero Excess Li-S Battery	784
<i>Joshua Cruddos, Alex J. E. Rettie</i>	
Catalyst Degradation Mechanism Study of Lithium-Sulfur Batteries Based on Electrodeposition	785
<i>Hui Pan, Jan Franssaer</i>	

Cathode Design and Evaluation for the High-Sulfur-Loading, Lean-Electrolyte Lithium–Sulfur Battery	786
<i>Cheng-Che Wu, Sheng-Heng Chung</i>	
Non-Aqueous Rechargeable Rb-O ₂ Batteries	788
<i>Ryusei Fujimoto, Ryoichi Tatara, Daisuke Igarashi, Tomooki Hosaka, Shinichi Komaba</i>	
Tuning the Interfacial Chemistry for Stable and High Energy Density Aqueous Sodium-Ion/Sulfur Batteries	790
<i>Mukesh Kumar, Tharamani C. Nagaiah</i>	

A04 - Multivalent Ion Batteries 3

Exploring the Possibility of Aluminum Plating/Stripping from a Non-Corrosive Al(OTF) ₃ -Based Electrolyte	792
<i>Mahla Talari, Angelina Sarapulova, Eugen Zemlyanushin, Noha Sabi, Andreas Hofmann, Sonia Dsoke</i>	
Safe Solvent-in-Salt Electrolytes for Dendrite-Free Zinc Metal Batteries	793
<i>Minji Jeong, Jaehong Lim, Si Hyoung Oh</i>	
A New Approach in Surface Modification of Manganese Based Cathode Materials for Enhanced Performance in Zinc Aqueous Batteries	794
<i>Orynbay Zhanadilov, Hee Jae Kim, Seung-Taek Myung</i>	
A Comprehensive Study of the Parameters Affecting Magnesium Plating/Stripping Kinetics in Rechargeable Mg Batteries	795
<i>Taniya Purkait, Muath Radi, Charlotte Bodin, Remi Dedryvere, Alexandre Ponrouch</i>	
Development of Iron Fluoride Based Nanocomposite Materials to Enable High Performance Aluminium-Ion Batteries	796
<i>Juyan Zhang, Lan Zhang, Yunlong Zhao, Jiashen Meng, Bohua Wen, Suojiang Zhang, Qiong Cai</i>	

A04 - Solid State Batteries 6

(Invited) Advancing Understanding of Composite Polymer Electrolytes with LLZO Nanofibers	798
<i>Sanja Tepavecic, Michael Coughlan, Jungkuk Lee, Pallab Barai, Justin G. Connell, Venkat Srinivasan, Yuepeng Zhang</i>	
Lithium Magnesium Alloys: A Framework for Investigating Lithium Alloy Anodes for Solid State Batteries	799
<i>Jack Aspinall, Krishnakanth Sada, Hua Guo, Sudarshan Narayanan, Yvonne Chart, Ben Jagger, Emily Milan, David Armstrong, Mauro Pasta</i>	
Lithium Plating and Stripping Behaviors of Anode-Free Solid-State Lithium-Ion Batteries Depending on Composition of Protective Layer	800
<i>Da Young Ko, Hyun Jong Kim, Haeseok Park, Seung Do Mun, Jun Ho Hwang, Hansu Kim</i>	
Enabling Improved Electrochemical Performance of Lithium Metal Batteries with Fluorinated SO ₂ Based Nonflammable Inorganic Electrolyte	801
<i>Seong Hoon Choi, Jiwhan Lee, Seung Do Mun, Jun Ho Hwang, Hansu Kim</i>	

A04 - Multivalent Ion Batteries 4

(Invited) Zn Batteries: Stable Anode and High Energy Cathodes	802
<i>Chunyi Zhi</i>	
A Novel Aqueous Zinc-Ion Batteries with a Magnetron Sputtered Sn _x N _y Layer with Suppressed Dendrite Formation	803
<i>Dana Kurmangaliyeva, Aishuak Konarov, Zhumabay Bakenov</i>	

Development of Stabilized Organic Cathodes Via Grafting Redox-Active Molecules to Carbon in Aqueous Zinc-Ion Batteries for Energy Storage Systems	805
<i>Thomas James Baker, Alejandra Ibarra Espinoza, Storm William D Gourley, Brian D Adams, Drew Higgins Higgins</i>	
Structural Characterization and Electrochemical Performance of Spinel Oxide Cathodes for High Voltage Mg-Ion Batteries.....	806
<i>Evelyna Wang, Ritesh Uppuluri, Bob Jin Kwon, Erik Sarnello, Saul Lapidus, Baris Key</i>	
Powering Smart Windows: Unveiling Crystal Structure and Al-Ion Storage Correlation in WO ₃ Electrode Via XRD for Aqueous Al-Ion Battery with Real-Time Energy-Level Indication.....	807
<i>Rahuldeb Roy, Mukhesh K Ganesha, Pritha Dutta, Ashutosh Kumar Singh</i>	

A04 - Solid State Batteries 7

Void Growth Dynamics in Solid-State Batteries	808
<i>Bairav Sabarish Vishnugopi, Kaustubh Girish Naik, Partha P. Mukherjee</i>	
Mechanics-Coupled Interface Kinetics in Solid-State Batteries.....	809
<i>Debanjali Chatterjee, Kaustubh Girish Naik, Bairav Sabarish Vishnugopi, Partha P. Mukherjee</i>	

A04 - Multivalent Ion Batteries 5

Highly Concentration Aqueous Electrolytes for Zinc Metal Batteries	810
<i>Ibrahim Al Kathemi, Markus Antonietti, Roza Bouchal</i>	
Rationally Designed Spherical V ₂ O ₅ Encapsulated by 2d-VS ₂ as High Capacity Insertion Cathode for Mg-Ion Battery	811
<i>Ayan Mukherjee, Sankalpita Chakrabarty, Malachi Noked</i>	
Synthesis, Electrochemical Properties and Crystal and Electronic Structure Changes in Charge/Discharge Process of Spinel Type Cathode-Materials Mg _{1.33-y} (V _{1.67-x+y} Mn _x)O ₄ for Magnesium Secondary Batteries	812
<i>Yasushi Idemoto, Mina Takamatsu, Chiaki Ishibashi, Naoto Kitamura</i>	
Exploring Battery Materials for Ca Batteries	815
<i>Zhirong Zhao-Karger, Maximilian Fichtner</i>	

A04 - Li Metal 1

(Invited) Ultrafast Electrodeposition of Faceted Li Metal.....	816
<i>Yuzhang Li</i>	
Development of Anode-Free Lithium Metal Batteries	817
<i>Bing-Joe Hwang</i>	
Novel Current Collector for High Energy Density Lithium-Metal Batteries.....	818
<i>Mintao Wan, Haowen Liu, Nae-Lih (Nick) Wu, Stefano Passerini, Dominic Bresser</i>	
A BF ₃ -Doped MXene Dual-Layer Interphase for Reliable Lithium Metal Anode	819
<i>Junjie Niu</i>	
LIOVIX® Printable Lithium Technology for Lithium Anode Manufacturing at Scale.....	820
<i>Jian Xia, Brian Fitch, Marina Yakovleva</i>	

A04 - Next Generation Electrodes and Electrolytes 9

(Invited) A Chemical Mechanism of Carbonate Electrolyte Failure at Silicon Anode Interface for New Electrolyte Design.....	821
<i>Eliot Woods, Dezhen Wu, Haoyu Liu, Baris Key, John T. Vaughey, Zhengcheng Zhang</i>	
PEO-Based Polymer Membranes As Lithium Protective Interlayers to Improve the Interfacial Compatibility with Sulfide Solid Electrolytes	822
<i>Graziano Di Donato, Alberto Varzi, Maria Assunta Navarra, Stefano Passerini</i>	

FeF ₂ -Li Batteries in Ionic Liquid Electrolytes.....	824
<i>Lorenz Frank Olbrich, Mohan Sanghadasa, Mauro Pasta</i>	
Stable Cycling of BiSbSe _{1.5} Te _{1.5} Conversion-Alloying Anodes	826
<i>Sajid Ali Alvi, Ashley Black Serra, Ignacio Samir Jozami, Farid Akhtar, Patrik Johansson</i>	
Electrochemical Synthesis of Molybdenum Ditelluride (MoTe ₂) and Its Potential Application as Negative Electrode Material for Sodium Ion Battery	828
<i>Kenil Rajpura, Kenil Rajpura</i>	

A04 - Li Metal 2

Detrimental Effects of Metal Foil's Surface Imperfections on Metal Plating/Stripping and Facile Solutions.....	829
<i>Pan He, Jiaxing Huang, Yang Xu</i>	
Artificial SEI Layer Combined with Single-Ion Polymer Electrolytes to Prevent Dendrite Growth in Lithium Metal Batteries.....	831
<i>Jiajia Wan, Xu Liu, Stefano Passerini, Elie Paillard</i>	
High-Performance Lithium Metal Batteries	833
<i>Venkataraman Thangadurai</i>	
Lithium Electrode Protection for Long Cycle Life and High Rate Capability Batteries	834
<i>Yuriy Mikhaylik, Chariclea Scordilis-Kelley, Mike Laramie, Carlos Restrepo</i>	
Pinpointing the Blip: Coupled Transient Chemo-Mechanical Properties in Lithium-Metal Batteries	835
<i>Gunnar Thorsteinsson, Wesley Chang, Andrew Wang, Zoe Herman, Libby Katzman, Daniel A. Steingart</i>	

A04 - Non-Li Ion Batteries 6

Realizing High-Performances Sb Anodes for K-Ion Batteries	836
<i>Xiaoqiong Du, Biao Zhang, Valeria Nicolosi</i>	
Electrochemical Signatures of Potassium Plating and Stripping.....	837
<i>Josef Rizell, Wojciech Chrobak, Nataliia Mozhzhukhina, Shizhao Xiong, Aleksandar Matic</i>	
Transport Properties of Hard Carbons	839
<i>Giar Alsofi</i>	
Optimizing Dopant for Enhanced Oxygen-Redox Performance in P2-Na Cathode Materials for Sodium-Ion Batteries.....	840
<i>Manjae Cho, Seung-Taek Myung</i>	

A04 - Poster Session

Selection of Electrolyte Additives for Enhanced Mg-Air Battery Performance Supported By Data- Driven Approach	841
<i>Darya Snihirova, Linqian Wang, Min Deng, Bahram Vaghefinazari, Yulong Wu, Tim Würger, Robert Meißner, David Winkler, Christian Feiler, Daniel Höche, Sviatlana Lamaka, Mikhail Zheludkevich</i>	
Enhancing Structural of P2-Type Layered Cathode Material for Sodium-Ion Batteries through Cu Substitution.....	843
<i>Kim Hyejin, Seung-Taek Myung</i>	
High Rate Performance of Li Metal Anode in Na-Containing so ₂ -Based Inorganic Electrolyte.....	844
<i>Seung Do Mun, Jiwhan Lee, Seong Hoon Choi, Jun Sik Kim, Seungeun Kim, Hansu Kim</i>	
Towards Energy Dense Rechargeable Batteries Utilizing Zn and Cu	845
<i>Timothy N. Lambert, Bryan R Wygant, Ciara Wright, Joshua W. Gallaway, Alyssa M. Stavola, Eric Zimmerer, Valerio De Angelis, Jacob Mueller, Oindrilla Dutta, Krishna Acharya, Nirajan Paudel, Birendra Ale Magar, Gautam Ganapati Yadav, Gabriel Cowles, Sanjoy Banerjee</i>	

Physical and Electrochemical Properties of Transition Metal Oxides with Hollow Structure As Sulfur Host Material for Lithium-Sulfur Batteries	847
<i>Thanya Phraewphiphat, Adisak Promwicha, Sunisa Buakeaw, Pimpa Limthongkul</i>	
Tin Nanoparticles As High-Performance Anode for Sodium-Based Batteries: Preparation and Operando XRD Investigation	849
<i>Giovanni Gammaitoni, Matteo Bianchini</i>	
Metal(Pt, Pd)-Perovskite Oxide($\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$) Hybrid Material As a Bifunctional Electrocatalyst for Lithium-Air Battery	850
<i>Seoyoon Shin, Seokhee Lee, Tae Ho Shin</i>	
Intercalation Reaction Mechanism of Fluoride-Ions in (Ca, Sr)FeO ₂ Cathodes with Infinite Layer Structure for All-Solid-State Fluoride-Ion Batteries	852
<i>Kentaro Yamamoto, Yanchang Wang, Hisao Kiuchi, Toshiyuki Matsunaga, Toshiki Watanabe, Hidenori Miki, Hideki Iba, Kazuhiko Maeda, Yoshihisa Harada, Hiroshi Kageyama, Yoshiharu Uchimoto</i>	
Enabling High-Capacity Electrochemical Magnesium Intercalation in Prussian Blue Cathode Via Synthesis Route Optimization	854
<i>Dedy Setiawan, Jiwon Hwang, Jin Choi, Seung-Tae Hong</i>	
Electrocatalytic Activities of Sr ₂ BO ₃ Cl (B = Mn, Fe, Co, Ni) for Oxygen Reactions in Alkaline Solutions	855
<i>Kohei Miyazaki, Motohiro Ikeda, Yuto Miyahara, Changhee Lee, Takeshi Abe</i>	
Supporting Critical Raw Material Circularity – Graphite from Waste LIBS to Zn-Air Batteries.....	856
<i>Reio Praats, Kerli Liivand, Ivar Kruusenberg, Mari Lundström, Jani Sainio, Alexander Chernyaev</i>	
Revisiting Tin Oxide: A Systematic Investigation of Performance As a Function of Particle Size, Dopant and Electrolyte	857
<i>Charifa Hakim, Soha Aldroubi, Radu Dorin Andei, Nicolas Louvain, Julian Richard Tolchard</i>	
Insights into the Development and Performances of Ionogel-Based Electrolytes for Solid-State Lithium-Based Batteries	858
<i>Ying Zhang, Claudio Gerbaldi, Giuseppe Antonio Elia</i>	
Synthesis and Characterization of 2,5 Polybenzimidazole-ZrO ₂ Nanocomposite Membrane Towards Improved Vanadium Redox Flow Battery Performance	860
<i>Rama Bhattacharyya</i>	
Revealing the Cycling and Degradation Mechanism of Bi-Metallates As Anode Materials for Na-Ion Batteries	862
<i>Anders Brennhagen, Casper Skautvedt, Carmen Cavallo, Amalie Skurtveit, David Stephen Wragg, Alexey Kuposov, Anja Olafsen Sjøstad, Ponniah Vajeeston, Helmer Fjellvåg</i>	
First-Principles Calculations of Fluoride-Ion Migration in Fluorine-Ion Battery Electrolyte Material K ₂ BiF ₅	864
<i>Hiroki Moriwake, Akihide Kuwabara, Takafumi Ogawa, Craig Fisher, Yuichi Ikuhara, Eiki Niwa, Kaisei Hamaguchi, Daisuke Mori</i>	
Lithium Silicates as an Artificial SEI for Rechargeable Lithium Metal Batteries	866
<i>Yue-Sheng Chen, Yu-Sheng Su</i>	
An Ultrafast, Durable, and High-Loading Polymer Anode for Aqueous Zinc-Ion Batteries and Supercapacitors	868
<i>Xiaolei Wang</i>	
Printed for Performance: Harnessing the Electrochemical Potential of Prussian White Thick Electrodes Via 3D Printing	869
<i>Halima Khanom</i>	
Factors Improving Lithium Sulfur Battery Performance with Mesoporous Carbon-Sulfur Cathode by Mixing Vinylene Carbonate Electrolyte with Fluoroethylene Carbonate	871
<i>Yuto Kameoka, Takashi Hakari, Daisuke Okuda, Naoto Yasumura, Minako Deguchi, Shinji Ozaki, Masashi Ishikawa</i>	

Insights into Perylene-Tetra-Carboxylate Derivatives as Versatile Anode Materials for Alkali-Metal-Ion Batteries	873
<i>Anja Lenzer, Jakob Asenbauer, Kai Shi, Tobias Eisenmann, Dominic Bresser</i>	
Sustainable Recovery, Surface Chemical Engineering, and Upcycling of Spent Graphite into Dual-Ion Battery	874
<i>Shuvajit Ghosh, Madhushri Bhar, Udita Bhattacharjee, Satheesh Krishnamurthy, Kali Prasad Yalamanchili, Surendra Martha</i>	
Influence of Salt Concentration on Electrochemical Stability Window in Aqueous Electrolytes	876
<i>Abdul Wahab, Rene Pfeifer, Zahid Ali Zafar, Jiri Cervenka</i>	
Structure-Controlled Prussian Blue Analog as a Cathode Material for Long-Life Seawater Batteries	877
<i>Hyebin Jeong, Changshin Jo</i>	
Study on Morphology Control and N-Doping of Porous Carbon Cathode for Zinc-Ion Hybrid Supercapacitor	879
<i>Jeongsoo Hong, Changshin Jo</i>	
Biopolymer-Based Protective Layer for Stable and Highly Reversible Zinc Metal Anodes	881
<i>Jooyoung Jang, Changshin Jo</i>	
Engineering Block Copolymer-Derived Porous Carbon Nanofibers as Anodes for Sodium Ion Batteries	883
<i>Kenneth Gordon, Cameron Taj Romero, Zhi Liu, Griffin Usie, Karius Joseph, Emily Broussard, Ling Fei</i>	
3D Printed Freestanding Electrodes for High Energy Density Batteries	884
<i>Cameron Taj Romero, Kenneth Gordon, Zhi Liu, Karius Joseph, Emily Broussard, Ling Fei</i>	
Designing Architected Nickel Hydroxide Cathodes for Rechargeable Alkaline Nickel–Zinc Batteries	885
<i>Samuel W. Kimmel, Ryan H. Deblock, Jaret A. Manley, Benjamin M. Gibson, Cory M. Silguero, Debra R. Rolison, Christopher P. Rhodes</i>	
Constructing Stable Solid Electrolyte Interphase Using Gel Polymer Electrolytes for Anode-Free Lithium Metal Batteries with Enhanced Cycle Life	886
<i>A-Hyeon Ban, Jin-Ah Roh, Hyo-Geun Kim, Woo Jin Bae, Hyun-Sik Woo, Jongseok Moon, Dong-Won Kim</i>	
Stable Ammonium-Ion Batteries in Diluted Electrolyte By Manipulation of H-Bonding Network Via Ethylene Glycol	887
<i>Huifang Fei, Stefano Passerini, Alberto Varzi</i>	
Heterogeneous Electron Transfer with Redox Active Insulating Solid	889
<i>Soumyadip Mondal, Stefan A Freunberger</i>	
Zwitterionic Polyurethane Solid Polymer Electrolytes: A Pathway to High-Performance All-Solid-State Lithium-Ion Batteries	891
<i>Sangil Kim, Kun Wang, Yuechen Gao, Hyang Seol, Xingyi Lyu, Volodymyr Koverga, Hanzeng Guo, Tao Li, Anh Ngo, Gang Cheng</i>	
Enhancing Cycle Life of Lithium Metal Batteries By Regulating Solid-Electrolyte Interphase Using Gel Polymer Electrolyte	893
<i>Ji-Wan Kim, Myung-Keun Oh, Yeona Kim, Eun-Ji Kwon, Samuel Seo, Wonkeun Kim, Kyoungchan Ryu, Dong-Won Kim</i>	
Predicting Redox Potentials of Flow Battery-Relevant Model Electrolytes	894
<i>Nicolas Holubowitch</i>	
Synthesis and Characterization of $Ti_3C_2T_x$ Mxene for Flexible Current Collectors Fabricated through Inkjet Printing	896
<i>Prisca Viviani, Eugenio Gibertini, Federico Lissandrello, Luca Magagnin</i>	
Hollow and Silver-Cored Carbon Nanospheres as Effective Sulfur Hosts for Lithium-Sulfur Batteries	898
<i>Deaglán Bowman, Kevin M Ryan, David McNulty</i>	

Electrodeposited Lithiophilic Zn Thin Film on the Current Collector for Improved Cyclability of Anode-Free Lithium Metal Battery	900
<i>Pooria Afzali, Luca Magagnin</i>	
Low-Cost and Sustainable Aqueous Lithium-Ion Batteries by All-Organic PTCDI Anodes	901
<i>Martin Karlsmo, John Brown, Alexis Grimaud, Patrik Johansson</i>	
Computer Simulation Study of Lithium and Oxygen Adsorption on Ruthenium Dioxide (110) Surface.....	902
<i>Khomotso Portia Maenetja, Kgakgathu Alfonta Chokoe, Phuti Esrom Ngoepe</i>	
Zinc Slurry Electrodes for Double Flow Zinc-Nickel Batteries	903
<i>Martin Opitz, Seniz Sörgel</i>	
Investigating the Impedance of an Iron/Iron Redox Flow Battery at Different State of Charge Conditions – a Distribution of Relaxation Times Analysis.....	904
<i>Sai Venkata Akhil Kumar Challuri, Jens Noack</i>	
Heterointerface-Induced Fast Na ⁺ Transport of Sn Anode Using a Yolk-Shell Structure for Fast-Charging and Stable Sodium-Ion Batteries	906
<i>Hyojun Lim, Sang-Ok Kim</i>	
High-Performance Organic Electrode Materials	907
<i>Zhenzhen Wu, Shanqing Zhang</i>	
Metal-Doped ZIF-8 Derived Hollow Carbon for High-Performance Lithium-Sulfur Batteries.....	909
<i>Kirill Murashko, Nabin Subedi, Anna Lähde, Jorma Jokiniemi</i>	
Surface Engineering of Ni-Rich Cathode with Spinel Structure for Improved Performance of All-Solid-State Batteries	911
<i>Wooyoung Jin</i>	
Realization High-Voltage Stabilization of O3-Type Layered Oxide Cathodes for Sodium-Ion Batteries by Sn Simultaneously Dual Modification	912
<i>Tengfei Song, Lin Chen, Dominika Gastol, Bo Dong, José F Marco, Frank J Berry, Peter R. Slater, Daniel Reed, Emma Kendrick</i>	
Copper Vanadium Sulfide as an Anode Material in Sodium-Ion Batteries.....	914
<i>Kelly Murphy, Niraj Patil, Syed Abdul Ahad, Hugh Geaney, Tadhg Kennedy, Shalini Singh, Kevin M Ryan</i>	
Solid-State Polymer Battery: Manufacturing Process and Characterization	916
<i>Amina Toudjine, Vincent Calmes, Mélanie Dendary, Philippe Borel, Paulin Truche, Thibaut Dussart</i>	
Development of Novel High Capacity Fluoride Ion Battery Cathode Utilizing Anion Redox of Sulfur.....	918
<i>Zulai Cao, Yuki Orihara, Kentaro Yamamoto, Toshiyuki Matsunaga, Toshiki Watanabe, Ryogo Ohashi, Shintaro Tachibana, Hidenori Miki, Kazuto Ide, Hideki Iba, Yoshiharu Uchimoto</i>	
A Urea Modified Ternary Aqueous Electrolyte with Tuned Intermolecular Interactions and Confined Water Activity for Highly Stable Zinc-Ion Batteries	920
<i>Ziqing Wang, Charles Buddie Mullins</i>	
Manganese-Based Tunnel and Layered Oxide Cathodes for Secondary Alkali-Ion Batteries.....	922
<i>Jaya Yadav, Sai Pranav Vanam, Baskar Senthilkumar, Penpithcha Amonpattaratkit, Prabeer Barpanda</i>	
Na-Sn Alloy Regulated Protective Coating Layer Enables the Long Life Dendrite-Free Sodium Metal Batteries	923
<i>Megala Moorthy, Bala Krishnan Ganesan, Hariharan Dharsekaran, Yeong-A Kim, Jeong-Hyeon Song, Yun-Sung Lee</i>	
Investigating the Mechanisms of Li Dendrite Formation in Sulfide Solid Electrolytes for All-Solid-State Batteries.....	924
<i>Yongjun Park, Jaehee Park, Kentaro Yamamoto, Toshiyuki Matsunaga, Toshiki Watanabe, Yoshiharu Uchimoto</i>	

Li ₂ S-PI ₃ Cathode for High-Energy-Density All-Solid-State Lithium-Sulfur Batteries	926
<i>Wenli Pan, Kentaro Yamamoto, Toshiyuki Matsunaga, Toshiki Watanabe, Tomoki Uchiyama, Nobuya Machida, Atsushi Sakuda, Akitoshi Hayashi, Masahiro Tatsumisago, Yoshiharu Uchimoto</i>	
Structural Tuning Strategy to Improve Ionic Conductivity of Eco, Cost-Effective Zr-Based Halide Solid Electrolyte	930
<i>Joohyeon Noh, Kisuk Kang</i>	
SiO ₂ Nanoparticle Coating to Enable Polyethylene-Based Na-Ion Battery Separators	931
<i>Marina Leite, Melissa Courtney, John Hanrahan, Amit Kumar, Tadhg Kennedy</i>	
Investigation of Stable Structures and Electronic States of Spinel MgCo _{2-z} Ni _{0.5} MnAl _z O ₄ (z = 0, 0.3) during Discharge Process As Cathode Materials for Magnesium Rechargeable Batteries Using First-Principles Calculations	933
<i>Chiaki Ishibashi, Ryo Takeuchi, Yuki Hirata, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto</i>	
Nafion-Based Quasi-Solid-State Polymer Electrolyte for Lithium-Sulfur Batteries	935
<i>Martina Gerle, Brigitta Sievert, Ernestino Lufrano, Isabella Nicotera, K. Andreas Friedrich, Maryam Nojabaee</i>	
On the Chemomechanical Behavior in Solid-State Sodium Sulfur Batteries	936
<i>Hung Quoc Nguyen, Juraj Todt, Jozef Keckes, Mir Mehraj Ud Din, Daniel Rettenwander</i>	
Simulation of Lithium-Sulfur Batteries and Optimization of Cathode Structure	937
<i>Yuki Mori, Gen Inoue</i>	
Toward Large-Scale Production of Solid-State Batteries: Manufacturing Process Analysis and Cost Assessment for the Composite Cathode	939
<i>Philipp Voss, Jaschar Atik, Oliver Krätzig, Jens Leker, Simon Lux</i>	
Molten Salt Based High Entropy Electrolytes for Calcium Batteries	941
<i>Johanna Timhagen, Jonathan Weidow, Patrik Johansson</i>	
Investigation of Aliovalent Substitution in the Solid Sodium Ion Electrolyte Na ₂ ZrCl ₆	944
<i>Hao Guo, Matteo Bianchini</i>	
Lithium Dendrite Formation inside Li ₃ PS ₄ Solid Electrolyte Observed Via Multimodal/Multiscale Operando X-Ray Computed Tomography	946
<i>Kentaro Yamamoto, Xiaoyu Liu, Jaehee Park, Toshiki Watanabe, Tsuyoshi Takami, Atsushi Sakuda, Akitoshi Hayashi, Masahiro Tatsumisago, Yoshiharu Uchimoto</i>	
Tight-Binding Modelling of Deep Eutectic Solvent Based Electrolytes	948
<i>Mirna Alhanash, Patrik Johansson</i>	
Sustainable Lignin-Based 3D Porous Carbon Nanofibers As a Na-Ion Battery Anode	949
<i>Misbah Mushtaq, Anne Beaucamp, Maurice N Collins, Tadhg Kennedy</i>	
A Tetramethylurea-Electrolyte-Based Lithium-Oxygen Battery with High Performance and Alternative Mechanism	951
<i>Xiaodong Lin, Zongqiang Sun, Quan-Feng Dong</i>	
Development of Multi-Analysis By Operando Spectroscopy / Elemental Measurement in Oxide-Type All-Solid-State Na Batteries	952
<i>Koji Hiraoka, Kazuo Yamamoto, Takeshi Kobayashi, Tetsuo Sakamoto, Shiro Seki</i>	
Binderless Sheet-Type Oxide-Sulfide Composite Solid Electrolyte for All-Solid-State Batteries	954
<i>A-Yeon Kim, Hun-Gi Jung, Hyeon-Ji Shin, Jun Tae Kim</i>	
Development of Moisture Absorbent Ceramic-Coated Separators for Advanced Lithium-Ion Batteries	955
<i>Sinho Choi, Tae-Hee Kim</i>	
Innovative Investigation of Ordered Mesoporous Carbon Modified Separator for High Performance Lithium-Sulfur Batteries	956
<i>Yelim Kwon, Jungho Lee, Chenglin Cui, Hansol Kim, Ji Man Kim</i>	
Monitoring of Energy Storage Mechanism of Zn/Meso-MnO ₂ Battery System Using X-Ray Absorption Fine Structure	958
<i>Hansol Kim, Chenglin Cui, Yelim Kwon, Jungho Lee, Ji Man Kim</i>	

Ceramic Composite Gel Polymer Electrolyte for Aqueous Zinc-Ion Battery.....	961
<i>Seungmin You, Chaeun Kang, Joeeun Park, Jae-Kwang Kim</i>	
Mesoporous Silica Engineered Lithium Metal Batteries: Unraveling the Mechanisms behind Dendrite Inhibition and Enhanced Electrochemical Performance	962
<i>Jungho Lee, Yelim Kwon, Chenglin Cui, Hansol Kim, Ji Man Kim</i>	
An Improved Lithium-Sulfur Battery By Using Porous Carbon As the Sulfur Template	964
<i>Jinseok Han, Jae-Kwang Kim</i>	
Resolving the Incomplete Charging Behavior of Redox-Mediated Li-O ₂ Batteries Via Sustainable Protection of Li Metal Anode	965
<i>Hun Kim, Min-Jae Kim, Yang-Kook Sun</i>	
Modelling Ca ²⁺ Mobility and Dynamics in Solvent-Free Molten Salt Electrolytes for Calcium Batteries.....	966
<i>Carolina Cruz, Patrik Johansson</i>	
Snsb Film As a Long Cycle Life Binder Free Anode Material for Sodium-Ion Batteries Facilitated By High Concentration Electrolyte	967
<i>Stephen O'Sullivan, Kevin M Ryan, Hugh Geaney, Tadhg Kennedy</i>	
Ptve-Impregnated 3-Dimensional Porous Carbon for High-Properties Organic Battery.....	969
<i>Chae Kyoung Kim, Hye Jung Kim, Jae-Kwang Kim</i>	
Li _{1.3} Al _{0.3} Ti _{1.7} (PO ₄) ₃ /PEO Polymer Double-Layer Electrolyte to Improve Electrochemical Properties of Li-CO ₂ Battery	970
<i>Hakbeom Lim, Jae-Kwang Kim</i>	
Sputtered LiFePO ₄ for Solid State Batteries.....	971
<i>Elena Lopez Pazos, Luca Nobili, Luca Magagnin</i>	
A Dual-Approach for Extending the Lifespan of Cobalt-Free Na[Ni _{0.55} Mn _{0.35} Fe _{0.1}]O ₂ cathode Via Bi ⁵⁺ -Doping and Bi ₂ O ₃ Coating in Sodium-Ion Batteries	972
<i>Raghvendra Mishra, Rajendra Kumar Singh</i>	
Improving the Electronic Conductivity of Alluaudite Na _{2.5} Fe _{1.75} (SO ₄) ₃ Cathodes for Na-Ion Batteries.....	973
<i>Briana Siobhan Mulligan-Clarke, Marina Moraes Leite, Tadhg Kennedy</i>	
Designing Fluorine-Free Electrolytes for Practical Sodium Metal Anodes and Seawater Batteries	975
<i>Jinuk Kim, Ji Oh Kim, Jinwoo Lee</i>	
Improving Structural and Chemical Stability of O3-Type Sodium Layered Oxide Cathode Via Fluorination	976
<i>Tae-Yeon Yu, Seong-Eun Park, Yang-Kook Sun</i>	
Formation of N-Rich Solid Electrolyte Interphase with LiNO ₃ Solution for Lithium Metal Powder Batteries.....	977
<i>Dongyoon Kang, Cyril Bubu Bubu Dzakpasu, Sun-Yul Ryou, Hongkyung Lee, Yong Min Lee</i>	
Calcium – Oxygen Batteries: Challenges and Possibilities	978
<i>Zaher Slim, Gavriilo Šekularac, Grgur Mihalinec, Patrik Johansson, Vladimir Panic, Zoran Mandic</i>	
Advances in 2D Ultrathin Nanosheets of a ₂ FeSiO ₄ (A= Li, Na, K) for Next-Generation Alkali-Ion Batteries.....	979
<i>Lalit Kumar Singh, Jaehoon Kim</i>	
Development of Wet-Li ₂ ZrO ₃ -Coating Process for LiNi _{0.8} Co _{0.1} Mn _{0.1} O ₂ Cathode for All-Solid-State Batteries.....	982
<i>Quoc-Anh Tran, Laras Fadillah, Roman Zettel, Volker Hennige, Mir Mehraj Ud Din, Daniel Rettenwander</i>	
Conduction/Densification Enhancement of Na _{1+x} Zr ₂ Si _x P _{3-x} O ₁₂ Nasicon Solid Electrolyte for Solid-State Na Batteries	984
<i>Kuan-Zong Fung, Shu-Yi Tsai, I-Chun Liu</i>	
Critical Minerals, Critical Capacity and Critical Evaluation	985
<i>Isabella Stephens</i>	

Cell Performance Prediction of the Particle Structure of All-Solid-State Batteries By Numerical Simulation and Machine Learning	987
<i>Gen Inoue, Chiyuri Komori, Shinichiro Yano, Magnus So</i>	
Computationally Predicted New Solid-State Electrolyte ($\text{Li}_{5+x}\text{PS}_{4+x}\text{Cl}_{2-x}$: $0 \leq x \leq 2$) and Poly Sulfide Cathodes ($\text{Li}_{3+y}\text{PS}_9$ or $\text{Li}_{5+y}\text{PS}_9\text{Cl}_2$: $0 \leq y \leq 9$) for High Performance Li Metal Anode Batteries.....	989
<i>Tridip Das, Sergey Morozov, Boris Merinov, Sergey Zybin, Moon Young Yang, William A Goddard</i>	
Computational Investigation of Halide Solid Electrolytes for Na-Based Batteries.....	992
<i>Hafssa Arraghraghi, Matteo Bianchini</i>	

A04 - Solid State Batteries 8

(Invited) Integration of Sulfide and Halide Based Solid-Electrolyte Membranes with Li-Ion Cathodes	993
<i>Jagjit Nanda</i>	
Modelling Interfaces for Solid Electrolytes.....	994
<i>Jan Dippell, Timo Danner, Arnulf Latz</i>	
Li_2GeS_3 : New Structural Type of Lithium Solid Electrolyte for All-Solid-State Batteries	995
<i>Ji Hun Roh, Seung-Tae Hong</i>	
Designing Better Li Metal Anodes for Solid-State Batteries Using a Combined Experiment/Theory Approach.....	996
<i>Marissa Wood, Yiran Xiao, Megan C. Freyman, Bo Wang, Cheng Zhu, Sichi Li</i>	
A Computational Model for All-Solid-State Batteries Coupling Electrochemistry and Solid Mechanics on Resolved Microstructures Enabling Optimization of Battery Electrode Design.....	997
<i>Christoph Paul Schmidt, Stephan Sinzig, Gil Robalo Rei, Wolfgang A. Wall</i>	

A04 - Next Generation Electrodes and Electrolytes 10

(Invited) New Synthesis Strategies to Develop High Performance Sulfur-Carbon Composites Cathodes for Lithium/Sulfur Batteries.....	999
<i>Yoon Hwa</i>	
In-Operando Spectroscopy to Study the Effect of Alkaloids on Polysulfide Shuttling in Lithium-Sulfur Batteries.....	1000
<i>Taber Yim, Rhyz Pereira, Vibha Kalra</i>	
Porous Carbon Textile Decorated with VC/ V_2O_{3-x} Hybrid Nanoparticles: Dual-Functional Host for Flexible Li-S Full Batteries	1001
<i>Viet Phuong Nguyen, Hyungcheoul Shim, Jae-Hyun Kim, Seung-Mo Lee</i>	
Multi-Scale Analysis of Lithium-Sulfur Pouch Cells Using Imaging Methods	1002
<i>Tobias Arlt, Florian Schmidt, Ralf F. Ziesche, Sören Selve, Tom Boenke, Thomas Abendroth, Yan Lu, Susanne Dörfler, Sebastian Risse, Holger Althues, Stefan Kaskel, Ingo Manke</i>	

A04 - Next Generation Electrodes and Electrolytes 11

New Gel-Polymer Electrolyte for High-Performance $\text{Li} \text{LiFePO}_4$ Cells with Enhanced Safety.....	1003
<i>Qi Li, Jian Wang, Mintao Wan, Stefano Passerini, Dominic Bresser</i>	
Organic Modification of Silica-Based Ionogels Improves the Electrolyte/Electrode Contact and Influences Their Functional Properties.....	1004
<i>Jonas Mercken, Dries De Sloovere, Bjorn Joos, Lavinia Calvi, Gianfabio Mangione, Elien Derveaux, Peter Adriaensens, Marlies K. Van Bael, An Hardy</i>	
Printable 2D Materials for Thin Film Batteries and Supercapacitors	1006
<i>Johan E. Ten Elshof, Yang Wang, Mohammad Mehrali, Mark Huijben</i>	

Bridging Aqueous and Organic Electrolytes: Intercalation Mechanism of TiS_2 in Sustainable Aqueous Li-Ion Batteries	1008
<i>Leiting Zhang, Franziska Maria Kühling, Agnes-Matilda Mattsson, Xu Hou, Chao Zhang, William Robert Brant, Kristina Edström, Erik J. Berg</i>	

A04 - Non-Li Ion Batteries 7

$\text{P}^2\text{-Na}_{2/3}[\text{Mn}_{1-x}\text{Sc}_x]\text{O}_2$ Electrode in Sodium-Batteries	1010
<i>Kodai Moriya, Yusuke Miura, Eun Jeong Kim, Tomooki Hosaka, Ryoichi Tatara, Shinichi Kumakura, Shinichi Komaba</i>	
Probing the Mo-Redox in Alluaudite Battery Materials	1012
<i>Pubali Barman, Pawan Kumar Kumar Jha, Sai Gautam Gopalakrishnan, Pieremanuele Canepa, Prabeer Barpanda</i>	
Crystal Orientation-Dependent Interface Compatibility in the Oxide Composite Cathode by in Situ Heating Transmission Electron Microscopy	1014
<i>Sunyoung Lee, Hayoung Park, Jungwon Park, Kisuk Kang</i>	
Simulating Hard Carbon for Sodium-Ion Batteries with the DFN Model	1015
<i>Evelina Wikner, Ritambhara Gond</i>	
On Synthesis and Electrochemical Performance of $\text{Na}_4\text{Fe}_3(\text{PO}_4)_2(\text{P}_2\text{O}_7)$ Cathode for Sodium-Ion Batteries	1017
<i>Yaprak Subasi, Haidong Liu, Reza Younesi</i>	
Engineering Transition Metal Layers for Long Lasting Anionic Redox in Layered Sodium Manganese Oxide	1019
<i>Natalia Voronina, Seung-Taek Myung</i>	

A04 - Solid State Batteries 9

(Invited) Different Designs for Ta-Doped Llzo Based Solid State Battery Prepared By Tape-Casting	1020
<i>Mihkel Vestli, Ioanna Pateli, John Irvine</i>	
Microstructure- and Surface-Modified Ni-Rich Layered Cathode for High-Energy All-Solid-State Batteries	1021
<i>Tae-Yeon Yu, Un-Hyuck Kim, Jin Wook Lee, Yang-Kook Sun</i>	
Mechanistic Underpinnings of Heterogeneities in Solid-State Battery Cathode	1022
<i>Kaustubh Girish Naik, Bairav Sabarish Vishnugopi, Partha P. Mukherjee</i>	
Digital-Twin Modeling and Simulations on All-Solid-State Batteries	1023
<i>Yong Min Lee</i>	
Optimizing Ionic-Electronic Pathways Via Bioinspired Self-Polymerized Dopamine in All-Solid-State Composite Cathode	1024
<i>Thuy Hoai Linh Vuong, Jae Seok Nam, Weerawat To A Ran, Chaeyeon Ha, Young-Jun Kim</i>	

A04 - Next Generation Electrodes and Electrolytes 12

Effect of Electrolyte on Sodium-Ion Storage Behavior into Non-Graphitizable Carbon Negative Electrode	1026
<i>Shota Tsujimoto, Changhee Lee, Yuto Miyahara, Kohei Miyazaki, Takeshi Abe</i>	
Sintered Electrospun Fibrous Electrodes via Compression and Laser Perforation for Redox Flow Battery	1030
<i>Kyu Lee, Maedeh Pahlevaninezhad, Sara Abouali, Francesco P Orfino, Edward P. L. Roberts, Erik Kjeang, Michael Pope, Jeff Gostick</i>	
Towards Totally Aqueous Membrane-Free Flow Batteries: Fundamentals and Challenges	1032
<i>Paula Navalpotro, Santiago Enrique Ibañez, Eduardo Pedraza, Rebeca Marcilla</i>	
Novel CuSi_2P_3 -Based Semi-Solid Anolyte for Redox Flow Batteries	1034
<i>Xuefeng Zhang, Wenwu Li, Hongning Chen</i>	

A04 - Next Generation Electrodes and Electrolytes 13

Towards Semi-Solid Organic Redox Flow Batteries: Material Screening, Electrochemical Performance, and Reactor Design Optimization	1038
<i>Riccardo Zaffaroni, Angel Alfonso Villanueva, Nolan Van Der Willige, Nathanael Brandt, Antoni Brentjes, Simone Dussi, Michele Tedesco</i>	
Study of the Properties of Iron/Iron Redox Flow Batteries	1039
<i>Sai Venkata Akhil Kumar Challuri, Jens Noack</i>	
Lean-Electrolyte Lithium-Sulfur Cells with a Core-Shell Cathode Configuration with High Active-Material Loading and Energy Density.....	1040
<i>Sheng-Heng Chung, Yun-Chen Wu</i>	
A Glass-Interphase for Highly Reversible and Stable RT-Na/S Batteries	1042
<i>Chhail Bihari Soni, Chhail Soni</i>	
Strategies to Stabilize the Sodium metal anode for High-energy Room-temperature Sodium-Sulfur Batteries.....	1043
<i>Vipin Kumar</i>	

A04 - Non-Li Ion Batteries 8

Insights into P-Type Iron- and Manganese-Based Layered Sodium Cathodes.....	1044
<i>Jiali Peng, Sylvio Indris</i>	
Effect of Particle Size and Polytypes on Redox Reversibility of Layered $\text{Na}_{0.76}\text{Ni}_{0.38}\text{Mn}_{0.62}\text{O}_2$ Electrode.....	1046
<i>Eun Jeong Kim, Ryoichi Tatara, Tomooki Hosaka, Kei Kubota, Shinichi Kumakura, Shinichi Komaba</i>	

A05-ELECTROCHEMICAL INTERFACES IN ENERGY STORAGE: THEORY MEETS EXPERIMENT

A05 - Silicon-Electrolyte Interfaces

(Invited) Advanced Photoelectron Spectroscopy on Battery Materials: Lessons Learnt on Silicon-Containing Electrodes	1048
<i>Fabian Jeschull, Jiarong He, Ahmad Ghamlouche, Lydia Gehrlein, Julia Maibach</i>	
In Situ Raman Spectroelectrochemical Investigation of Composite Si Nanoparticle-Based Anode for Li-Ion Batteries during (de)Lithiation Process	1049
<i>Zuzana Vlcková, Martin Jindra, Gabriela Soukupová, Tomáš Lapka, Farjana Sonia, Martin Müller, Jiri Cervenka, Antonín Fejfar, Fatima Hassouna, Otakar Frank</i>	
Unveiling the Dynamics of Solid Electrolyte Interphase Evolution in Li-Ion Batteries Via Operando X-Ray Reflectivity: Experimental Insights for Advanced Energy Storage.....	1050
<i>Zijie Lu, Samuel Tardif, Guiomar Hernández, Jonas Mindemark, Sandrine Lyonard</i>	
Operando X-Ray Absorption Spectroscopy of Solid Electrolyte Interphase Formation on Silicon Anodes.....	1052
<i>Jack E. N. Swallow, Michael Fraser, Nis-Julian Kneusels, Jodie F. Charlton, Christopher G. Sole, Conor Phelan, Erik Björklund, Peter Bencok, Carlos Escudero, Virginia Pérez-Dieste, Clare P. Grey, Rebecca J. Nicholls, Robert S. Weatherup</i>	

A05 - Cathode-Electrolyte Interfaces

(Invited) First Principles Examination of Multiple Criteria of Organic Solvent Oxidative Stability in Batteries.....	1053
<i>Kevin Leung</i>	

Evolution of Phases at the Surface and Interface of Mn Based Spinel Cathode with Coating Layer - a Spectroscopic Investigation	1054
<i>Farheen N Sayed, Erik Björklund, Adam J Lovett, Sundeep Vema, Steffen P Emge, Amoghavarsha Mahadevegowda, Caterina Ducati, Robert S. Weatherup, Clare P. Grey</i>	
Theoretical Study on Inhibition of Oxygen Evolution in Layered Cathode Materials during Charging	1055
<i>Kuan-Yu Lin, Shi-Hong Xu, Santhanamoorthi Nachimuthu, Jyh-Chiang Jiang</i>	
Insights into Performance and Degradation of Commercial Ni-Rich Cathodes: A Modeling Perspective.....	1056
<i>Svenja Both, Timo Danner, Simon Hein, Adrian Lindner, Saeed Abdolhosseini, Wolfgang Menesklou, Ulrike Krewer, Arnulf Latz</i>	

A05 - Metal-Electrolyte Interfaces

(Invited) Optimization of Carbonate Electrolytes for Lithium Metal Anodes	1058
<i>Brett L. Lucht</i>	
Construction of Dendrite-Free Metallic Lithium Anodes: From Static Lithiophilic Adsorption to Dynamic Electrochemical Diffusion Kinetics	1059
<i>Jian Wang, Hongzhen Lin, Stefano Passerini</i>	
In-Situ Probing the Origin of Interfacial Instability of Na Metal Anode.....	1060
<i>Yuchen Ji, Luyi Yang, Feng Pan</i>	
Investigations on the Initial-Stages of Lithium Deposition/Dissolution Processes in Sulfolane Based Electrolytes.....	1062
<i>Ivan Genov, Alexander Tesfaye, Svetlozar Ivanov, Andreas Bund</i>	

A05 - Poster Session

Fabrication and Model-Guided Design of Thick-Format Lithium Ion Electrodes	1064
<i>Kedi Hu, Alan C. West, Daniel A. Steingart</i>	
Electrode Parameterization as an Investigative Tool for Solid Electrolyte Interphase Evolution Monitoring on Commercial Lithium-Ion Battery Electrodes	1065
<i>Roksana Jackowska, Yongxiu Chen, Dimitra Spathara, Emma Kendrick</i>	
Development of Operando Spectroscopy Measurement Technique for Single-Electrode Particle.....	1066
<i>Hayate Mukofukasawa, Shinji Matsumoto, Tamotsu Sawahashi, Koji Hiraoka, Shiro Seki</i>	
Quantifying the Lithium Loss in the Graphite Anodes of Commercial Batteries.....	1068
<i>Jia Guo, Yaqi Li, Kjeld Pedersen, Leonid Gurevich, Daniel-Ioan Stroe</i>	
LiPON/Multilayer-Graphene Interface Enables High-Rate Charging and Discharging.....	1070
<i>Satoshi Yamamoto, Ryotaro Sakakibara, Munekazu Motoyama, Norikazu Ishigaki, Wataru Norimatsu, Yasutoshi Iriyama</i>	
Stepwise Optimization of Single-Ion Conducting Polymer Electrolytes for High-Performance Lithium-Metal Batteries	1072
<i>Xu Dong, Zhen Chen, Xinpei Gao, Alexander Mayer, Hai-Peng Liang, Stefano Passerini, Dominic Bresser</i>	
(Poster Award Winner 1) Investigating the Impact of Ethylene Carbonate Reaction Pathways on the Solid Electrolyte Interphase in Li-Ion Batteries	1073
<i>Robin Lundström, Neeha Gogoi, Xu Hou, Erik J. Berg</i>	
Role of Copper as Current Collectors in the Reductive Reactivity of Polymers for Anode-Free Lithium Metal Batteries - Insights from DFT and AIMD Studies	1075
<i>Liang-Ting Wu, Santhanamoorthi Nachimuthu, Daniel Brandell, Chia-Ni Tsai, Pei-Hsuan Wang, Yeh-Wei Li, Jyh-Chiang Jiang</i>	

Stabilizing of Lithium-Solid-Electrolyte Interfaces by Atomic Layer Deposition Prepared Nano-Interlayers for a Model All-Solid-State Battery.....	1076
<i>Rainer Götz, Zahra Ahaliabadeh, Princess Stephanie Llanos, Aliaksandr S. Bandarenka, Tanja Kallio</i>	
High Areal Capacity Cycling of Three-Electrode Sodium/NBA/Sodium Cells	1077
<i>Karl Larson, Eric A Carmona, Paul Albertus</i>	
(Poster Award Winner 2) Solvation Effects in Electrochemical Double Layers and Static Simulations.....	1078
<i>Constantin Schwetlick, Max Schammer, Birger Horstmann, Arnulf Latz</i>	
First Principles Modelling of Growth of Hybrid Organic-Inorganic Films	1080
<i>Arbresha Muriqi, Michael Nolan</i>	
Synthesis and Interface Stabilization of Chalcogenide-Based Solid Electrolytes in Solid-State Sodium Batteries	1081
<i>Hui Wang</i>	

A05 - Fundamentals of Charge Storage

(Invited) The Electric Double Layer Revisited from an Atomistic Perspective	1082
<i>Axel Gross</i>	
Position-Dependent Storage in Mixed Conductors: Generalized Storage Model, Improved Mott-Schottky Analysis and Correct CV-Response.....	1083
<i>Chuanlian Xiao, Hongguang Wang, Robert Usiskin, Peter A Van Aken, Joachim Maier</i>	

A05 - Charging Process

(Invited) Revealing Charge Storage Processes at the Interfaces of Supercapacitor Electrodes.....	1084
<i>Xuehang Wang</i>	
(Invited) Combining Constant Potential Molecular Dynamics and Experiments to Study Electrolyte Effects at Solid/Liquid Interfaces.....	1085
<i>Alessandra Serva, Mathieu Salanne</i>	
Improving Lithium Intercalation Kinetics at Nanoconfined Electrochemical Interfaces	1086
<i>Simon Fleischmann</i>	

A05 - Advanced Simulation Techniques

(Invited) Study of Electrochemical Interfaces Using DFT and the Classical Liquid Theory Hybrid Simulations.....	1087
<i>Minoru Otani</i>	
A Novel, Efficient Approach to Simulate the 3D Resolved Spatial and Temporal Development of Space-Charge Layers in Solid Electrolytes	1088
<i>Stephan Sinzig, Christoph P. Schmidt, Wolfgang A. Wall</i>	
Pinnwall: Heterogeneous Electrode Models from Integrating Machine Learning and Atomistic Simulation	1090
<i>Lisanne Knijff, Thomas Dufils, Yunqi Shao, Chao Zhang</i>	

A05 - Degradation Process

Exploring Operando Electrochemical Techniques to Track Degradation Mechanisms in Li-Ion Batteries.....	1091
<i>Matheus Leal De Souza, Mathieu Morcrette, Patrice Simon</i>	

Interfacial Degradation Processes in Solid-State Batteries during High Temperature Processing and the Mitigation Strategies.....	1093
<i>Mir Mehraj Ud Din, Lukas Ladenstein, Joseph Ring, Daniel Knez, Stefan Smetazcek, Markus Kubicek, Mohsen Sadeqi-Moqadam, Gerald Kothleitner, Andreas Limbeck, Jürgen Fleig, Günther Redhammer, Daniel Rettenwander</i>	
Atomistic-Scale Simulations Toward the Understanding of the Conversion–Alloying Mechanism in Li-Ion Battery Anodes	1095
<i>Heesoo Park, Adri Van Duin, Alexey Kopusov</i>	

VOLUME 3

Multimodal Characterization of Nucleation and Progression of Interfacial Degradation in All Solid-State Batteries.....	1097
<i>Partha P Paul, Ji Hu, Robert Scott Young, Ludovic Broche, Alex Rettie, Marco Dimichiel, Philip Withers</i>	
Effect of Applied Stress on the Interfacial Kinetics, Ionic Conductivity, and Other Phenomena in Thin-Film Solid-State Batteries.....	1099
<i>Bhuvsmita Bhargava, Stefan Theodoru, Lane Crofton, Alexander C Kozen, Zoey Warecki, David Murdock Stewart, Yueming Song, Gary Rubloff, Paul Albertus</i>	

A05 - Interfacial Chemistry

(Invited) Computing the Newns-Anderson Chemisorption Function from First Principles.....	1100
<i>Harald Oberhofer</i>	
Effect of Water As an Electrolyte Additive for Lithium Plating.....	1101
<i>Sai Gourang Patnaik, Mark Aarts, Maarten Debucquoy, Philippe M. Vereecken</i>	
Mathematical Model Based on Staircase Structure for Impedance Analysis of Non-Ideal and Non-Uniform Processes in Porous Electrodes.....	1103
<i>Nobuhiro Ogihara, Yuichi Ito</i>	
In-Operando Detection Method for Lithium Metal Deposition during Fast Charging of Lithium-Ion Batteries Derived from Impedance Modeling	1105
<i>Josef Keilhofer, Filip Adam Dorau, Hao-Chen Hsiao, Rüdiger Daub, Bharatkumar Suthar</i>	

A05 - Emerging Battery Systems

(Invited) Engineering Local Chemical Environments in Electrolytes and at Electrode-Electrolyte Interface for Efficient Aqueous Batteries	1106
<i>Maria R. Lukatskaya</i>	
Nanotwinned Structure in Copper Affects Lithium Deposition Behavior at Electrolyte-Electrode Interface in Anode-Free Lithium Metal Battery	1107
<i>Hao-Yu Ku, Shang-Tzu Liu, Chun-Lung Huang, Chi-Chang Hu</i>	
Improving the Performance of Flame-Retarding Sodium Bis(Oxalato)Borate in Triethyl Phosphate Electrolyte for Sodium Ion Batteries	1111
<i>Charles Aram Hall, Alexander Buckel, Lars Olow Simon Colbin, Reza Younesi</i>	

A05 - Solid-Electrolyte Interphases

(Invited) Modeling of the Electric Double Layer (EDL) at Li/SEI/Electrolyte Interfaces	1113
<i>Yue Qi</i>	
Tailoring Breathing Behaviour of Solid Electrolyte Interphases (SEIs) Unraveled by Cryo-TEM.....	1114
<i>Xuyun Guo, Xiaoqiong Du, Valeria Nicolosi, Biao Zhang, Ye Zhu</i>	
Correlating Solid-Electrolyte Interface Composition to Charge Transfer Resistance for Improved Low-Temperature Performance of Lithium-Ion Batteries	1115
<i>Triesha Singh, Bryan D. McCloskey</i>	

How Relevant Are SEI Studies from Half Cell Samples to Understand Aging Mechanisms in Potassium Batteries? An in-Depth Photoelectron Spectroscopy Study	1116
<i>Iurii Panasenکو, Leonie Wildersinn, Fabian Jeschull</i>	

A05 - Diffusion Process

Transition-Metal Interdiffusion in Solid-State Batteries Revealed By Cryo-TEM.....	1117
<i>Ruizhuo Zhang, Florian Strauss, Lin Jiang, Lee Casalena, Letian Li, Jürgen Janek, Aleksandr Kondrakov, Torsten Brezesinski</i>	
Interface Induced Fast Ion Conduction in Complex Hydride/Oxide Nanocomposites: Interplay between Hydride and Oxide Properties	1118
<i>Peter Ngene</i>	
Combined Operando Investigations Reveal Correlation between Formation Parameters and Transport Mechanisms in Solid Electrolyte Interphases of Lithium-Ion Battery Anodes	1119
<i>Michael Stich, Jesus Eduardo Valdes Landa, Isabel Pantenburg, Bernhard Roling, Andreas Bund</i>	
Intercalation Pathway in Graphite Particles Analyzed with a Multi-Layer Phase Field Model.....	1120
<i>Antoine Cordoba, Marion Chandesris, Mathis Plapp</i>	

A05 - Materials Modelling and Design

(Invited) Electrochemical Interfaces in Energy Storage: Theory Meets Experiment	1122
<i>Tejs Vegge</i>	
Theoretical and Experimental Performance Characterization of Battery Anodes Comprised of Coal Derived Graphite	1123
<i>Abigail Paul, Regan Magee, Warren Wilczewski, Kody D Wolfe, Nathan Wichert, Fengkun Wang, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
Improving Cycling Performance of Anode-Free Lithium Metal Batteries By Electrolyte Design.....	1124
<i>Wei-Nien Su, Chia-Xin Wang, Wan-Yu Liao, Bing-Joe Hwang</i>	
Dual-Additive Approach for Tuning Si-Based Anode Interphase Realized By Operando ATR-FTIR	1125
<i>Masoud Baghernejad, Matthias Weiling, Felix Pfeiffer, Christian Lechtenfeld, Diddo Diddens, Lars Frankenstein</i>	

A06-NEW DEVELOPMENTS AND APPLICATIONS OF ELECTRODE BINDERS FOR RECHARGEABLE BATTERY AND OTHER ELECTROCHEMICAL SYSTEMS

A06 - Invited Talks 1

(Invited) Development of Binders, Surface Coatings and Electrolytes to Stabilize Silicon Anodes for Lithium Batteries	1127
<i>Brett L. Lucht</i>	
(Invited) Polymer Design for Beyond Lithium Ion Batteries	1128
<i>Zhenan Bao</i>	
(Invited) Design of Specific Polymer Binders for Stabilization of Si Based Anode in Lib.....	1129
<i>Noriyoshi Matsumi</i>	
(Invited) Autonomous Self-Healable Silicon Anode for Next Generation Lithium-Ion Batteries.....	1130
<i>Neslihan Yuca, Emre Guney, Omer Suat Taskin, Ilknur Kalafat, Büsra Çetin</i>	
(Invited) SiO and LiNi _{0.5} Mn _{1.5} O ₄ Composite Electrodes with Functional Polymer Binders.....	1132
<i>Ryoichi Tataru, Shogo Yamazaki, Yuto Tomoi, Asako Oishi, Shinichi Komaba</i>	
(Invited) Optimizing the Binder Distribution in Battery Electrodes with Manufacturing Process Simulations and Machine Learning.....	1134
<i>Alejandro A. Franco</i>	

(Invited) Improving Our Understanding of Conducting Polymer Binders	1136
<i>Christian Kuss, Anh Ngoc Tram Mai, Van At Nguyen, Mariam Odetallah, Marco Lobato De Faria</i>	

A06 - Invited Talks 2

(Invited) Anode and Cathode Self-Adhesive Ionomers for Durable Alkaline Water Electrolysis	1138
<i>Paul Kohl, Habin Park, Parin Shah</i>	
(Invited) Advanced Fluoropolymer Binder for Solvent-Free Manufacturing of Lithium-Ion Battery Electrodes	1139
<i>Shidi Xun, Shankar Aryal, Crystal Waters, Tejas Upasani</i>	
(Invited) Electrochemically Active Materials: Meeting the High-Energy Density Challenge.....	1140
<i>Prashant Nagesh Kumta, Oleg Velikokhatnyi, Mayur Gaikwad, Ramalinga Kuruba, George E Blomgren</i>	
(Invited) Challenges with Novel Binders for LiNi _{0.5} Mn _{1.5} O ₄ li-Ion Battery Electrodes	1141
<i>Alma Mathew, Satu Kristiina Heiskanen, Matthew Lacey, Reza Younesi, Daniel Brandell</i>	

A06 - Invited Talks 3

(Invited) Coordinatively Cross-Linked Binders for Silicon-Based Electrodes for Lithium Ion Batteries.....	1142
<i>Lucas Huet, Philippe Moreau, Thomas Devic, Nicolas Dupre, Lionel Roue, Bernard Lestriez</i>	
(Invited) Design of Application of Low Tortuosity Electrode for Lithium Batteries	1144
<i>Jia Xie, Renjie He, Gangling Tian</i>	
(Invited) Binder Investigation for Silicon Electrode of Lithium-Ion Batteries.....	1145
<i>Wenquan Lu, Devashish Salpekar, Linghong Zhang, Sanpei Zhang, Yan Qin, Joseph Kubal, Bryant Polzin, Stephen E. Trask, Quinton Meisner, Xinwei Zhou, Yuzi Liu, Zhengcheng Zhang, Andrew N. Jansen</i>	
(Invited) Utilizing Conjugated Imine Polymers to Stabilize Nanoparticle Silicon Anodes.....	1146
<i>Trevor R. Martin, Leah Rynearson, Mackenzie Kuller, Joseph Quinn, Chongmin Wang, Brett L. Lucht, Nathan R. Neale</i>	
(Invited) Multifunctional Binders for High-Performance Rechargeable Batteries	1147
<i>Ran Zhao, Zhifan Hu, Mengge Lv, Feng Wu, Chuan Wu, Ying Bai</i>	
Enhancing Performance of Anode-Free Li-Metal Batteries	1148
<i>Roy Marrache, Tamir Assa, Lina Faktorovich, Tzach Mukra, Pini Shekhter, Emanuel Peled</i>	

A06 - Invited Talks 4

(Invited) Impact of Binder Selection in Advanced Lithium Battery Electrode Fabrication and Performance.....	1149
<i>Fang Dai, Mei Cai</i>	
(Invited) Cation Conducting Binders: From Liquid to Solid-State Batteries	1150
<i>Jelena Popovic-Neuber</i>	
New Liquid Electrolytes Consisting of Li Salts and Urea Derivatives for Li-Ion Batteries.....	1151
<i>Nanako Ito, Tomooki Hosaka, Ryoichi Tatara, Shinichi Komaba</i>	
(Invited) Functional Binder for Battery Electrode: Formation of Hierarchically Ordered Structures in Conductive Polymers to Enhance Ion and Electron Transport in the Electrode	1153
<i>Gao Liu</i>	
(Invited) A Multifunctional Polynorbonene Binder System Enabling Next-Generation Lithium-Ion Batteries.....	1154
<i>Fabio Albano, Taylor Juran, John Chmiola</i>	

(Invited) Functional Protective Coatings Based on Polysaccharides and Single-Ion Conducting Polymers for Li Metal Batteries	1156
<i>Mariana Vargas Ordaz, Claudio Gerbaldi, Miran Gaberscek, Robert Dominko</i>	
(Invited) Organic Binders for Rechargeable Lithium Batteries	1157
<i>Xin He</i>	

A06 - Binder/Additive

Multifunctional Aqueous Binder for Cathode Processing	1158
<i>Jinhua Sun</i>	
Electrochemical Impact of Inhomogeneous Binder Distribution in Lithium-Ion Battery Electrodes.....	1159
<i>Tobias Lein, Moritz Hauser, Christian Heubner, Alexander Michaelis</i>	
Understanding the Role of the Binder on the Microstructure and Properties of PTFE-Based Solvent-Free Electrodes.....	1161
<i>Guillaume Matthews, Benjamin Meyer, Patrick Grant</i>	
Meaningful Metrics for an Efficient Solvent-Free Formulation of Polymer – Argyrodite Hybrid Solid Electrolyte	1162
<i>Ronan Chometon, Marc Dechamps, Jean-Marie Tarascon, Christel Laberty-Robert</i>	
Understanding of Polyacrylic Acid as Binder for High Silicon Containing Anodes and Ni-Rich Cathodes	1164
<i>Buket Boz, Lukas Neidhart, Miljana Vuksanovic, Andrea Paoletta, Katja Froehlich, Marcus Jahn</i>	
Development of Dual-Functional Polyamide Imidazole Binder for Silicon Anode Lithium-Ion Battery	1166
<i>Junho Kim, You Kyung Park, Seong Hoon Choi, Da Young Ko, In Hwan Jung, Hansu Kim</i>	
Redox Shuttle Additives for Sodium-Ion Batteries	1167
<i>Dhrubajyoti Das, . Nagmani, Ananya Kumar, Sreeraj Puravankara</i>	
Next-Generation Battery Components Derived from Soft Dendritic Colloids.....	1168
<i>Michael J. Petrecca, Akhil Shenoy, Jaden R. Leatherman, Orlin D. Velez, Peter S. Fedkiw</i>	

A06 - Membrane/Electrolyte/Interface

A Protocol for Predicting Lithium-Ion Battery Performances Reflecting the Three-Dimensional Structure of Electrodes	1169
<i>Toshihiko Mandai, Kei Nishikawa, Gen Inoue, Kiyoshi Kanamura</i>	
Multi-Functionalized High Ionic Conductive Soft Matter for Separator-Free All Solid-State Lithium-Ion Battery.....	1171
<i>Fu-Ming Wang</i>	
3D Fiber Network Enhanced Composite Polymer Electrolytes for All-Solid-State Sodium Batteries.....	1173
<i>Suli Chen, Haiying Che, Fan Feng, Zi-Feng Ma</i>	
Interfacial Layers to Enable Recyclability of All-Solid-State Lithium Batteries.....	1174
<i>Yi-Chen Lan, Enrique Daniel Gomez</i>	
Enhancing the Chemical Stability of Fluoride-Ion Batteries.....	1175
<i>Giulia Galatolo, Omar Alshangiti, Gregory Rees, Mauro Pasta</i>	
Structural Batteries – the Best or Worst of Two Worlds	1176
<i>Alexander Beutl, Qixiang Jiang, Alexander Bismarck, Helmut Kühnelt</i>	
Understanding the Drying Process and Mud Cracking of Li-Ion Battery Electrodes through Synchrotron X-Ray Computed Tomography	1178
<i>Andrew R T Morrison, Will Dawson, Dan J L Brett, Paul R Shearing</i>	
Solution Processable Polyaniline with High Electrochemical Charge Capacity	1180
<i>Ryan Gettler, Patrick Kinlen, Matthias Young, S. Emad Renfroe, Yangchuan Xing</i>	

A07-INTERPLAY BETWEEN TEMPERATURE AND BATTERY PHENOMENON

A07 - Digital Only Presentations in Interplay between Temperature and Battery Phenomenon

Predicting the Heat Generation Rate in Large Format Pouch-Type Lithium-Ion Battery Cells for Automotive Applications.....	1181
<i>Han Zhang, Taylor R. Garrick, Christine Labaza, Jing Gao, Brian Koch, Xiaoniu Du, Chihwan Choi, Song-Yul Choe</i>	
Leveraging Molecular Dynamics to Improve Porous Electrode Theory Modeling Predictions of Lithium-Ion Battery Cells.....	1182
<i>Sean T. Dix, Jeffrey S. Lowe, Mehdi Rashvand Avei, Taylor R. Garrick</i>	

A07 - Heat Generation and Degradation

(Invited) Potentiometric Entropy Measurements and Isothermal Operando Calorimetry to Identify the Charging Mechanisms of Battery Materials	1183
<i>Laurent Pilon</i>	
3D Electrothermal Model for Internal Temperature Distribution in Lithium-Ion Battery Cell and Module	1184
<i>Erwan Tardy, Pierre-Xavier Thivel, Florence Druart, Pierre Kuntz, Didier Devaux, Yann Bultel</i>	
Identifying Thermal Decomposition Mechanisms of the Solid Electrolyte Interphase with in-Situ Gas Analysis of Lithium-Ion Batteries	1186
<i>Leon Schmidt, Kie Hankins, Lars Bläubaum, Michail Gerasimov, Ulrike Krewer</i>	
(Invited) Estimating OCP-Temperature Dynamics for Determining Lithium-Ion Battery Entropy Coefficients	1188
<i>Dharmika Widanalage, Oliver Queisser, Sabine Paarmann, Thomas Wetzel</i>	
(Best Presentation Award - 1st Place) Cyclic Aging Study of Commercial Li-Ion Batteries Focusing on Temperature.....	1190
<i>Lisa Cloos, Oliver Queisser, Thomas Wetzel</i>	

A07 - Keynote Session

(Keynote) Evidence of the Interplay of Temperature on Local and Global Battery Phenomena.....	1191
<i>Corey T. Love, Rachel Elizabeth Carter, Todd A. Kingston, Partha P. Mukherjee, Matthieu Dubarry, Gordon Henry Waller</i>	
(Keynote) Thermal Performance Optimisation at Cell Level, to Achieve Better, Longer Lasting Battery Packs.....	1192
<i>Alastair Hales, Gregory James Offer, Waseem W. J. Marzook, Yatish Patel, Ruihe Li, Yingchen Xie, Xuning Feng</i>	
(Keynote) Rapid Thermal Management for Fast Charging of Energy-Dense Lithium-Ion Batteries.....	1196
<i>Chao-Yang Wang, Teng Liu, Xiao-Guang Yang, Shanhai Ge, Nathaniel V. Stanley, Eric S. Rountree, Yongjun Leng, Brian D. McCarthy</i>	
(Keynote) Interplay of Aging Temperature and Thermophysical Properties of Lithium-Ion Battery Electrodes	1197
<i>Amy Marconnet, Sabrina Herberger, Sabine Paarmann, Philipp Seegert, Thomas Wetzel</i>	
(Keynote) Thermo-Electrochemical Interactions in Solid-State Batteries.....	1198
<i>Partha P. Mukherjee, Bairav Sabarish Vishnugopi</i>	

A07 - Extreme Environments

Multiscale Modelling of Battery Systems at Low Temperatures: Impact of Microscale on Performance.....	1199
<i>Joao Cunha, Hong Yin, Lifeng Liu, Paulo J. Ferreira</i>	
Temperature-Dependent Interplay of Chemical Versus Electrochemical Electrolyte Oxidation at Ni-Rich Cathodes.....	1201
<i>Leonhard Johannes Reinschluessel, Lennart Reuter, Hubert Andreas Gasteiger</i>	
(Best Presentation Award - 2nd Place) Investigating Low Temperature Reaction Mechanisms of Alloy Anodes for Lithium-Ion Batteries.....	1203
<i>Kelsey Anne Cavallaro, Sun Geun Yoon, Matthew McDowell</i>	
Probing the Entropy of Coal Derived Graphite for Battery Applications.....	1204
<i>Abigail Paul, Regan Magee, Warren Wilczewski, Kody D Wolfe, Nathan Wichert, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	
Temperature Dependent Life Cycle Analyses of Anodes from Coal-Derived Carbons.....	1205
<i>Abigail Paul, Regan Magee, Warren Wilczewski, Kody D Wolfe, Nathan Wichert, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	

A07 - Poster Session

A Study on Impedance Change of Lithium-Ion Batteries Depending on Charging Current Profile at Low Temperature.....	1206
<i>Jaemin Lee, Sang-Hyeon Ha, Hyunki Yoon, Yusong Choi</i>	
How the Effective Thermal Conductivity of Lithium-Ion Cell Electrodes Is Impacted By the Compression during Calendering	1207
<i>Julia C. Gandert, Marcus Müller, Thomas Wetzel</i>	
Carbon Patterned Layer for the Low-Temperature Performance of Lithium-Ion Batteries.....	1209
<i>Jaemin Lim, Siyoung Park, Dohwan Kim, Jaemin Lim</i>	

A07 - Pack and Thermal Management Design

(Invited) Sensor Integration in Lithium-Ion Cells from a Systems Perspective.....	1210
<i>Jan Philipp Schmidt</i>	
Cell to Pack Modelling of Li-Ion Batteries for Electric Vehicle Applications: Development and Potential Challenges	1211
<i>Muhammad Rashid, Tao Zhu, Selcuk Atalay, Nessa Fereshteh Saniee, Truong Dinh, Andrew McGordon</i>	
Battery Emulator for Coupled Electro-Thermo Powertrain Testing	1212
<i>Jarrett Peskar, Kerry Sado, Austin Downey, Kristen Booth, Jamil Khan</i>	
Thermo-Electrochemical Simulation of Large-Format Li-Ion Cells in 3D Using the Battery Modelling Toolbox (BattMo)	1213
<i>August Johansson, Oscar Bolzinger, Simon Clark, Eibar Flores, Halvor Nilsen, Xavier Raynaud, Francesca Watson</i>	

A07 - Modeling Across Scales

(Invited) Effect of Temperature on Lithium-Ion Battery Voltage Response and How to Model It in the Mechanistic Modeling Approach.....	1215
<i>Matthieu Dubarry, Alexa Fernando</i>	
(Invited) Methods for the Parameterisation of Battery Thermal Models.....	1216
<i>Gavin White, Alastair Hales, Gregory James Offer, Yatish Patel</i>	

Effect of Solvent Segregation on the Performance of Lithium-Ion Batteries	1217
<i>Ruihe Li, Simon E. J. O'Kane, Andrew Wang, Taeho Jung, Monica Marinescu, Charles W. Monroe, Gregory James Offer</i>	

A07 - Instrumentation and Characterization

(Best Presentation Award - 3rd Place) Evaluating the Safety Limits of Soft Shorting in Li-Ion Batteries.....	1219
<i>Bret Schumacher, Lauren Marbella, Daniel A. Steingart</i>	
(Invited) Understanding the Interplay between Thermal and Electrochemical Phenomena in Li-Ion Cells through in-Situ Diagnosis.....	1220
<i>Guangsheng Zhang</i>	
Non-Ambient in-Operando X-Ray Diffraction Study of Li-Ion Batteries on Laboratory Diffractometers.....	1221
<i>Lei Ding, Anil Kumar, Marco Sommariva, Umesh Tiwari, Milen Gateshki, Daniel Lee, Zhaohui Bao, Thomas Degen</i>	
(Invited) On the Role of Thermo-Electrochemical Coupling in Li-Ion Batteries.....	1222
<i>Todd A. Kingston, Cary L. Pint, Rachel Elizabeth Carter, Corey T. Love, Md Mahdi Ul Ishtiaque, Andrew Harkaway, Jayanth R. Ramamurthy</i>	
Plasmonic Based Fibre Optic Sensors as an in-Situ Battery Diagnostic Technique	1223
<i>Christopher Gardner, Elin Langhammer, Joe Fleming, Alexander John Roberts, Rohit Bhagat, Tazdin Amietszajew</i>	
Inhomogeneous Degradation in Lithium-Ion Batteries: The Effect of Thermal Gradients	1224
<i>Gregory James Offer, Shen Li, Cheng Zhang, Yan Zhao, Monica Marinescu</i>	

ECS Battery Division Awards Session

(Battery Division Student Research Award Sponsored by Mercedes-Benz Research & Development) Quantitative SEI-Based Descriptors for Li metal Liquid Electrolyte Design	1225
<i>Gustavo M. Hobold</i>	
(Battery Division Student Research Award Sponsored by Mercedes-Benz Research & Development) Rationalizing Fast Lithium-ion Diffusion in Inorganic Lithium Superionic Conductors.....	1226
<i>Kyujung Jun, Gerbrand Ceder</i>	
(Battery Division Postdoctoral Associate Research Award Sponsored by MTI Corporation and the Jiang Family Foundation) Aqueous Batteries for Grid-Scale Storage: Beyond Highly Concentrated Electrolytes.....	1227
<i>David Reber, Maximilian Becker, Jonathan R. Thurston, Scott E. Waters, Brian H. Robb, Sam R. Jarvis, Ruben-Simon Kuehnel, Corsin Battaglia, Michael P. Marshak</i>	
(Battery Division Early Career Award Sponsored by Neware Technology Limited) Towards Scalable and Sustainable Battery Recycling for Circular Energy Storage	1229
<i>Zheng Chen</i>	
(Battery Division Early Career Award Sponsored by Neware Technology Limited) Understanding Interfacial Mechanisms that Govern Performance in Solid-State Batteries.....	1230
<i>Matthew McDowell</i>	
(Battery Division Technology Award) An Odyssey Through the Uncharted Waters of Post Lithium-Ion Batteries	1231
<i>John Muldoon</i>	
(Battery Division Research Award) Advanced Characterization of Electrochemical Interfaces and Systems for Next-Generation Batteries	1232
<i>Shirley Meng</i>	

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

B01 - Energy Storage 1 - Capacitors

Developing Hybrid Aqueous Li/Na-Ion Capacitors by Electrodes Synthesized by Facile Recycling and Reuse Process: Waste to Wealth	1233
<i>Himadri Tanaya Das</i>	
An-All-Solid State Supercapacitor Device from E-Waste Derived Activated Carbon	1234
<i>Prashant Dubey, Shashank Sundriyal, Priyanka Maheshwari</i>	
Pillared Graphene for Supercapacitor Applications.....	1235
<i>Omar Hassan, Giovanna Formiga Franklin, Patrice Simon, Lionel Dubois, Pierre-Louis Taberna, Florence Duclairoir</i>	
Boosting the Performance of on-Chip Vertically-Aligned Carbon Nanotube Supercapacitors Via Solvent-Free Radiofrequency Nitrogen Plasma Treatment	1237
<i>Hung-Wei Li, Justyna Piwek, Adrian Mihai Ionescu</i>	
Sustainable Laser Induced Supercapacitors from Cork Natural Substrates.....	1240
<i>Alessandra Imbrogno, Jahidul Islam, Chiara Santillo, Rachele Castaldo, Lamprini Sygellou, Cathal Larrigy, Richard Murray, Eoghan Vaughan, Khairul Md Hoque, Aidan J Quinn, Daniela Iacopino</i>	
Advanced Characterization of Pillared Graphene-Based Materials for Supercapacitors.....	1241
<i>Yassine Ben Cherifi, Stephanie Pouget, Yves Chenavier, Lionel Dubois, Hakima Mendil-Jakani, Florence Duclairoir</i>	
Activated Carbon Nanofiber Sheets Derived from Electrospun Lignin: PVA Blend for Flexible Supercapacitors	1242
<i>Mandeep Singh, Ashish Gupta, Shashank Sundriyal, Sanjay Dhakate</i>	
Study and Characterization of Solid State, Flexible, Wire-Shaped Supercapacitor for Textile Energy Storage Purpose.....	1243
<i>Francesco Seller, Mara Serrapede, Pietro Zaccagnini, Alessandro Pedico, Andrea Lamberti</i>	

B01 - Energy Storage 2 - Batteries

Mixed-Dimensional (1D-2D) Carbon as a Conductive Additive and Enabler for Next Generation Lithium-Ion Batteries	1244
<i>Steven David Lacey, Ali Saadun, Florian Klunker, Corsin Battaglia, Ruben-Simon Kuehnel</i>	
Development and Testing of Innovative Carbon Nanotubes/ Copper Composite Foils, Towards Lighter and Mechanically Improved Anode Current Collector for Lithium-Ion Batteries	1245
<i>Anthony Valero, Julien Barbe, Emanuele Barborini, Guillaume Lamblin</i>	
Developing Tailor-Made Core-Shell Hard Carbon Materials As Anode Materials in Sodium Ion Batteries.....	1248
<i>Paul Alexander Appel, Shu-Han Wu, Jonas Krug Von Nidda, Tim Fellingner</i>	
Synthesis of Graphene / Copper Composite Thin Foils As Innovative Anode Current Collectors for Lithium-Ion Batteries	1249
<i>Julien Barbe, Anthony Valero, Emanuele Barborini, Guillaume Lamblin</i>	
Investigating Charge Transfer Mechanisms at Graphene-Electrolyte Interfaces for Enabling Rechargeable Li-CFx Batteries Via Electrochemical Fluorination.....	1250
<i>Jiankun Pu, Venkatasubramanian Viswanathan</i>	

B01 - Sensors

Microelectrode Set Made of Carbon Nanotubes for the Detection of Biomolecules and Neurotransmitters	1251
<i>Noe T Alvarez, Pankaj Gupta</i>	

Wearable Fabric Sensor Using Functionalized MWCNT Nanocomposite Material	1252
<i>Chelsea Monty-Bromer, Victoria Stege, Shelby Daniels, Michael Fulmer, Zachary Cheney, Ronald Otterstetter</i>	
(Invited) Directed Evolution and Machine Learning for Improved ssDNA-SWCNTs Sensor for Nitric Oxide Detection	1254
<i>Sayyed Hashem Sajjadi, Yahya Rabbani, Sara Behjati, Vitalijs Zubkovs, Stefano Cattaneo, Valentina Basoli, Sibylle Grad, Ardemis Anoush Boghossian</i>	
Plasma-Enabled Biocompatible Graphene Quantum Dot Hydrogels as Smart and pH Responsive Cancer Therapeutic Agents.....	1255
<i>Wei-Hung Chiang, Darwin Kurniawan</i>	

B01 - Synthesis and Characterization of Carbons

Molten Carbonate Transformation of the Green House Gas CO ₂ to Graphitic Nanomaterials	1256
<i>Stuart Licht</i>	
Polyhydroxy Fullerene for Synthesizing Noble Metal Nanoparticles	1260
<i>Vijay Krishna, Yue Xu, Roberts Williams</i>	
The Relevance of Carbon for Energy Transition: Ways to Assess Its Surface Properties and Standardize Their Characterization	1261
<i>Fatih Özcan, Amin Amin, Adib Caidi, Thomas Lange, Volker Peinecke, Doris Segets</i>	
Prediction of Mycotoxin Response of DNA-Wrapped Nanotube Sensor with Machine Learning.....	1263
<i>Yahya Rabbani, Sara Behjati, Benjamin Lambert, Sayyed Hashem Sajjadi, Mojtaba Shariaty-Niassar, Ardemis Anoush Boghossian</i>	

B01 - Optoelectronic Properties and Devices

(Invited) Aligning Dense Arrays of Semiconducting Carbon Nanotubes for Logic and RF Technologies.....	1264
<i>Michael S. Arnold</i>	
Next-Generation Polymeric Organic Semiconductors for Electrochemical Transistors with Applications in Bioelectronics.....	1265
<i>Garrett Lecroy, Camila Cendra, Alberto Salleo, Alexander Giovannitti</i>	
A Study on Film Properties Control of Atomic Layer Deposition Amorphous Carbon for PRAM Electrode Application	1266
<i>Tae Hyun Kim, Myoungsub Kim, Seungwon Park, Seung-Min Chung, Hyungjun Kim</i>	
(Invited) Evaluating Chemical Doping and Charge-Carrier Transport in Carbon Nanotube Dispersions	1267
<i>Andrew Ferguson, Justin Earley, Martha Alejandra Hermosilla Palacios, Marissa Martinez, Alexander Spokoyny, Jeff Blackburn</i>	
Doping Graphene By Physisorption to Influence Electrochemical Activity and Probing Local Electrochemistry on 10 Micron Spots	1268
<i>Ravi Saraf, Jay Min Lim, Akshat Saraf, Rafal Korlacki</i>	
Enhanced Intrinsic Electrochemical Capacitance in Carbon Nanotube Yarns for Increasing Electrical Power Generation.....	1270
<i>Seongjae Oh, Shi Hyeong Kim</i>	
Γ-Graphyne: A Promising Electron Acceptor for Organic Photovoltaics	1272
<i>Anton Stasyuk, Olga A. Stasyuk, Miquel Solà</i>	
Exploring Fullerene-Perovskite Interactions by Means of Density Functional Simulations	1273
<i>Sergio Posada Perez, Gibu George, Albert Poater, Miquel Solà</i>	

B01 - Catalysis and Fuel Cells

Boosting Oxygen Reduction Reaction with Fe-Based Single-Atom Catalysts: The Role of Cluster Interactions	1275
<i>Anthony Dessalle, Javier Quilez-Bermejo, Feina Xu, Vanessa Fierro, Alain Celzard</i>	
Microwave-Assisted Synthesis of Nitrogen-Doped Carbon Catalysts for Oxygen Reduction Reaction with Tunable Selectivity	1277
<i>Milena Setka, Albert Behner, Milutin Smiljanic, Marjan Bele, Nejc Hodnik, Miroslav Šooš</i>	
N-Doped Norbornane sp ² Carbon Framework: An Efficient Electrocatalyst for Oxygen Reduction and Hydrogen Evolution Reaction	1280
<i>Rupali Mane, Neetu Jha</i>	
New Highly Graphitized N-Doped Carbon as a Robust Support for Pt Electrocatalysts	1281
<i>Jong-Sung Yu, Ha-Young Lee, Cheol-Hwan Shin</i>	
Visible Light Driven CO ₂ Photoreduction Using TiO ₂ Nanotube Arrays Embedded with Low Bandgap Carbon Nitride Nanoparticles	1282
<i>Damini Vrushabendrakumar, Kazi Alam, Narendra Chaulagain, Navneet Kumar, Karthik Shankar</i>	
3D Printed Carbon Framework with the Graphene Aerogel for Microbial Fuel Cell Application	1283
<i>Konstantin G. Nikolaev, Jiqiang Wu, Xuanye Leng, Artemii S. Ivanov, Ricardo J. Vazquez, Samantha R. McCuskey, Guillermo C. Bazan, Kostya S. Novoselov, Daria V. Andreeva</i>	
Chicken Feathers-Derived Carbon Electrodes for Capacitive Deionization.....	1284
<i>Ahsan Habib</i>	

B01 - Poster Session

Preparation of Conductive Composite Resin Using Metallic and Semiconducting SWCNTs	1285
<i>Shihao Niu, Yusuke Matsumiya, Toshifumi Konishi</i>	
Capability of Activated Carbon and Multiwalled Carbon Nanotubes in Hydrogen Adsorption.....	1287
<i>Qui Quach, Erik Biehler, Tarek M Abdel-Fattah</i>	
2-Dimensional and 3-Dimensional Carbon Structures for Hydrogen Storage.....	1289
<i>Erik Biehler, Qui Quach, Tarek M Abdel-Fattah</i>	
Step Potential Electrochemical Spectroscopy (SPECS) Technique to Investigate the Ageing of Carbon Electrodes in Organic-Based Electrochemical Capacitors	1291
<i>Sylwia Sroka, Przemyslaw Galek, Krzysztof Fic, Jakub Menzel</i>	
Direct Growth of Carbon Nanotubes on Silver Substrate for Determination of Fluoroquinolone	1292
<i>Abdalghaffar Mohammad Osman</i>	
A Study on MXene/Graphene Composite Coatings for Electromagnetic Shielding Paints.....	1295
<i>Young-Seok Kim, Byoung Wan Lee</i>	
Anisotropic Lens-Shaped Mesoporous Carbon with Bifunctional Dual Metal Single Atom Electrocatalyst for Na Seawater Battery	1296
<i>Dongyoon Woo, Ji Oh Kim, Jinwoo Lee</i>	
Evaluation of Stability of Performance of Electrochemically Exfoliated Graphene for Electrochemical Double-Layer Capacitors.....	1297
<i>Gustavo Freitas De Souza, Bianca Fortes Palley, Milena Nakagawa De Arruda, Biljana Šljukic, Emerson Sarmiento Gonçalves</i>	
A Sustainable Li-Ion Capacitor Using Sawdust-Derived Activated Carbon Cathode Paired with Prelithiated Al Foil Anode	1299
<i>Xiaoyang Guo, Tianye Zheng, Jia Zhang, Markus Solberg Wahl, Odne Burheim, Steven T Boles</i>	
Preparation of Transparent Conductive Films Using Carbon Nanotubes	1300
<i>Yusuke Matsumiya, Yusuke Tsushima, Toshifumi Konishi</i>	

Solar Desalination with Monolithic Foams Containing a Combination of Graphite and SnSe Featured with a Hierarchical Structure and Bimodal Pores for Spontaneous Salt Rejection.....	1302
<i>Yong-Woo Choi, Pil Jin Yoo</i>	
Bioactive Ion-Based Switchable Supercapacitors	1303
<i>Panlong Li, Julia Grothe, Stefan Kaskel</i>	
Electrochemical Property of Activated Carbon Monolith from Potato for Supercapacitor Electrode	1304
<i>Nam Il Kim, Minhu Hwang, Jae-Suk Lee, Tae-Ho Yoon</i>	

C01-CORROSION GENERAL SESSION

C01 - Digital Only Presentations

(Digital Presentation) Life Cycle Cost and Technical Analysis of Corrosion Control Methods to Prevent Failures in Water Service Systems	1305
<i>Andres Marquez, Rishi Ramkellawan, Chris Maharaj</i>	

C01 - General Session 1

Corrosion Properties of Quenching and Partitioning-Processed Martensitic Stainless Steels	1308
<i>Gaojie Li, Kees Kwakernaak, Marta Muratori, Ali Smith, Maria Santofimia, Yaiza Gonzalez-Garcia</i>	
Effect of Selenium on Dissolution of Manganese Sulfide Inclusions in Stainless Steel	1309
<i>Masashi Nishimoto, Tomoki Katsuyama, Izumi Muto, Yu Sugawara</i>	
Corrosion Behavior of Fe-P Binary Alloys in Low-pH Solution.....	1310
<i>Haruka Sato, Izumi Muto, Masashi Nishimoto, Takuya Hara, Takumi Nishimoto</i>	
Corrosion Resistance of Stainless Steel Containing Mo-Rich Areas.....	1311
<i>Haruka Saito, Izumi Muto, Masashi Nishimoto, Yu Sugawara</i>	
Effect of Fe Doped Electrolyte on Advanced Alkaline Water Electrolysis.....	1312
<i>Maximilian Demnitz, Rodrigo Lira Garcia Barros, Thijs Theodorus De Groot, John Van Der Schaaf</i>	

C01 - General Session 2

Correlation of Microstructural Events with Stress Corrosion Cracking Initiation Behaviour in Additively Manufactured Ni-Based Alloy 718: Microcapillary Electrochemical Technique Implementation.....	1314
<i>Arshad Yazdanpanah, Reynier Revilla, Iris De Graeve, Manuele Dabalà</i>	
Effects of Mg ₂ Si Addition on the Pitting Corrosion Resistance of AA7075 Prepared by Spark Plasma Sintering.....	1316
<i>Ko Ebina, Izumi Muto, Masashi Nishimoto, Yu Sugawara</i>	
Electrochemical Behavior of Mg and Zn-Substituted HA Composite Coating on Titanium Produced By Plasma Electrolytic Oxidation	1317
<i>Nima Valizade, Alireza Sabour Rouh Aghdam, George Jarjoura</i>	

C01 - General Session 3

Electrochemical Frequency Modulation: Investigation of Double Layer Capacitance and Solution Resistance.....	1318
<i>Shashi Lalvani, Ian Jaslow</i>	
Characterization of High Zinc Al-Zn-Mg-Cu Alloy By Electrochemical Noise and Current Transient Measurements	1319
<i>Ankur Kumar, Gajanan Chaudhari, S. K Nath</i>	

Hydrogen Diffusion and Trapping Behaviour in DP Steels: An Electrochemical Hydrogen Permeation Study	1320
<i>S Sudharsan, Kallem Shekar Reddy, Yoganandan Govindaraj, Lakshman Neelakantan</i>	
Characterisation of Molten Lithium Carbonate Corrosion on SiC Heating Elements Using Raman Spectroscopy	1322
<i>Shuoshuo Zhang, John Thomas SIRR Irvine</i>	
Proton Radiation Effect on Iron Thermal Oxides: Point Defects, Microstructure & Corrosion Electrochemistry	1323
<i>Ho Lun Chan, Rasheed Auguste, Elena Romanovskaia, Terry Xie, Angelica Lopez Morales, Sean Mills, Franziska Schmidt, Shivani Srivastava, Valentin Romanovski, Christopher Winkler, Jie Qiu, Yongqian Wang, Digby D. Macdonald, Mark Asta, Djamel Kaoumi, Farida Selim, Blas Uberuaga, Peter Hosemann, John R. Scully</i>	
The Mechanism of Titanium Hydride Formation on Grade-2 Titanium.....	1325
<i>Adam Morgan, Vahid Dehnavi, Dmitriy Zagidulin, David Shoesmith, James J. Noël</i>	

C01 - General Session 4

The Effects of Trace H ₂ S Levels on the Structure of Surface Scales in CO ₂ Corrosion.....	1326
<i>Sandhya Rai, Vishal Metri, Christopher D Taylor, Nicholas J. Laycock</i>	
An Electrocrystallization Approach for Modeling Protective Scale Formation in CO ₂ Corrosion of Carbon Steel	1328
<i>Vishal Metri, Sandhya Rai, Nicholas J. Laycock</i>	
Electrochemical, Microstructural and Mechanical Investigations of H ₂ O ₂ -Driven Degradation of Ti6Al4V	1331
<i>Michel Prestat, Geoffrey Ringot, Lallie Duval, Anne Le Gac, Lorenz Holzer, Maxime Dumouchel, Flavien Vucko</i>	
Computer Simulation of Pitting Corrosion in Galvanostatic Conditions	1333
<i>Vishal Metri, Van Anh Nguyen, Valliappan V, Nicholas J. Laycock, Taha Kubbar, Fadwa El-Mellouhi, Roger Newman</i>	
Understanding and Modeling the Stochastic Nature of Corrosion Reactions in Atmospheric Conditions	1335
<i>Ryan Michael Katona, Demetri Maestas, Mark Wilson, David Montes De Oca Zapiain, Michael Anthony Melia, Philip James Noell, Rebecca Filardo Schaller</i>	
The Interplay of Anodic Passivation and Oxygen Evolution of Medium Entropy Alloys in Artificial Seawater	1336
<i>Anncia Wetzel, Ozlem Ozcan, Julia Witt, Daniel Morell</i>	
Corrosion and Mechanical Properties of Multi Principal Element Alloys Designed By Using Diffusion Couples.....	1337
<i>Yasemin Yesilcicek, Anncia Wetzel, Ozlem Ozcan, Julia Witt, Matthias Dimper</i>	
Investigating the Use of Mg-3Pb Alloy for Cathodic Protection of Mg Alloys.....	1338
<i>Marta García-Corredora, Raul Reyes-Riverol, Federico R. Garcia-Galvan, Violeta Barranco, Juan Carlos Galvan, José Antonio Jiménez, Santiago Fajardo</i>	
Mitigation of Galvanic Corrosion in CFRP-Metal Couples through Addressing the Carbon Surface	1340
<i>Stanley Ofoegbu, Mario Ferreira, Mikhail Zheludkevich</i>	
1-(Tert-Butoxy)Propan-2-Amine and It's Efficacy Towards Corrosion Inhibition of Mild Steel in Marine Environment – Experimental Study	1342
<i>Smrithy Subash, Sumedha Moharana</i>	

C01 - General Session 5

Differences between Using Mortars and Solutions When Testing Sodium Silicate as Corrosion Inhibitor for Construction Steel.....	1343
<i>Lucía Morán Ayala, Maria Alejandra Frontini, Marcela Vazquez, Maria Beatriz Valcarce</i>	

1-Benzyl-4-Phenyl-1H-1,2,3-Triazole as a Green Corrosion Inhibitor for Carbon Steel Reinforcing Bars in Concrete Elements	1345
<i>Loreto J Pamatmat Dacio, Jorge Escribano, Oladis Troconis De Rincon, Leonardo X. Alvarez, Brendy Carolina Rincon Troconis</i>	

Corrosion Division Morris Cohen Graduate Student Award Address

(Corrosion Division Morris Cohen Graduate Student Award) Evolution of Passivity and Passivity-Breakdown for Cr and Cr-Containing Alloys	1346
<i>Sanjay Choudhary, Sebastian Thomas, Nick Birbilis</i>	

Corrosion Division Rusty Award for Mid-Career Excellence Address

(Corrosion Division Rusty Award for Mid-Career Excellence) Enhancing the Corrosion Resistance of Additively Manufactured Metallic Materials: The Role of Feedstock Modification.....	1347
<i>Rajeev Kumar Gupta, Bhuvana Vukkum, Ahmed A Darwish</i>	

Corrosion Division H. H. Uhlig Award Address

(Corrosion Division H. H. Uhlig Award) A Journey From Ice-Breakers to Biomedical Implants: Multifacets of Corrosion.....	1348
<i>Sannakaisa Virtanen</i>	

C01 - Poster Presentations

Insights into Corrosion of Current Collectors for Magnesium Batteries	1349
<i>Laurin Rademacher, Joachim Häcker, Norbert Wagner, Maryam Nojabae, K. Andreas Friedrich</i>	
Corrosion and Degradation Behavior Using Aluminum and Copper As Refrigerant Piping.....	1350
<i>Seiji Uchiyama, Yuji Kimura, Koji Hiraoka, Satoshi Uemura, Shiro Seki</i>	
Evaluation of Adhesion for Better Electrodeposited Cu Foil on Titanium Substrate	1354
<i>Kuan-Zong Fung, Shu-Yi Tsai, Zih-Jhun Li, Hsing-Mei Chou</i>	
Probing the Effect of Environments on the Stability of Ni ₂ P Nanoparticle Electrocatalysts	1355
<i>Ricardo Andres Rivera-Maldonado, Jared E. Abramson, Gerald Seidler, Brandi Michelle Cossairt</i>	
Anodic Oxide Layers on Aluminum-Lithium Alloy.....	1357
<i>Shirley Navas Diaz, Luis F. Frederico Dick</i>	

C02-CORROSION IN NUCLEAR ENERGY SYSTEMS: FROM CRADLE TO GRAVE 3

C02 - Used Fuel Disposal Containers

Graphite Cast Iron GGG40 for Disposal Containers: The Corrosion Mechanism in Opalinus Clay Water	1358
<i>Andrés Gabriel Muñoz, Dieter Schild</i>	
Evaluating the Corrosivity of Relevant Environments That Can Form on the Surface of Spent Nuclear Fuel Canisters	1360
<i>Ryan Michael Katona, Andrew Knight, Charles Bryan, Rebecca Filardo Schaller</i>	
Stress Corrosion Cracking of Austenitic Stainless Steels in Environments Relevant to Spent Nuclear Fuel Storage	1361
<i>Rebecca Filardo Schaller, Ryan Katona, Jason Taylor, Charles Bryan</i>	
A Kinetic Study of Repassivation of Stainless Steel	1362
<i>Armando Shehi, Sanjay Choudhary, Robert G Kelly</i>	

Preferential Corrosion in Cold Sprayed Cu Induced by Oxide Inclusions	1363
<i>Xuejie Li, Fraser Filice, Jeffrey D. Henderson, Mehran Behazin, Sridhar Ramamurthy, Ivan Barker, James J. Noël</i>	
Stress Corrosion Cracking of Copper in Humid Bentonite Powder	1364
<i>Shinji Fujimoto, Sayaka Miyabe, Hiroaki Tsuchiya</i>	
Dynamic Change in Throwing Power for the Cu-to-Carbon Steel Galvanic Couple in the Presence of Bentonite	1365
<i>Xuejie Li, Xinran Pan, Fraser Filice, Dmitrij Zagidulin, Sina Matin, James J. Noël</i>	
Investigating of the Effect of Air-Formed Surface Films on Copper Corrosion Properties.....	1367
<i>Ghazal Shafiee, Peter Keech, Mehran Behazin, Samantha Michelle Gateman</i>	
The Influences of Traces of Oxygen and Sulfide on the Corrosion of Copper Under Canadian Nuclear Waste Disposal Conditions	1368
<i>S. Ramamurthy, Jian Chen, Dmitrij Zagidulin, Christina Lilja, Erik Bergendal, Mehran Behazin, Peter Keech, Nikitas Diomidis, James J. Noël, David Shoesmith</i>	
Investigating the Influence of Pre-Grown Copper Oxide Film on Sulfide-Induced Corrosion of Copper	1370
<i>Erik Bergendal, Elham Salehi Alaei, Christina Lilja, Jian Chen, Mehran Behazin, David Shoesmith, James J. Noël</i>	
In Situ Measurement of Hydrogen Absorption into Copper-Coated Titanium Using Neutron Reflectometry and Electrochemical Impedance Spectroscopy	1372
<i>Arthur Situm, Behrouz Bahadormanesh, Lars Bannenberg, Frans Ooms, Hunter Feltham, Guerman Popov, Mehran Behazin, Lyudmila V. Goncharova, James J. Noël</i>	

C02- Nuclear Fuel, Cladding, and Reactors

High Temperature Oxidation of Zircaloy-4 Under Conditions Simulating a Loss of Cooling Accident in Spent Fuel Pools Examined with Raman Imaging and ¹⁸ O Tracer Techniques.....	1373
<i>Michel Mermoux, Christian Duriez</i>	
Evaluation of the Corrosion Properties of FeCrAl Alloys for Fuel Rods Cladding in the Entire Fuel Cycle.....	1374
<i>Rajnikant V Umretiya, Andrew K Hoffman, Liang Yin, Raul B Rebak</i>	
High Temperature Corrosion Behavior of 15-15Ti Cladding Tube Material in Contact with Liquid Lead, Outside, and Cs ₂ MoO ₄ , Inside	1375
<i>Dogaç Tari, Teodora Retegan Vollmer, Christine Geers</i>	
Oxidation of Alloy 690 in Simulated Pressurized Water Reactor Primary Coolant – Experiments and Modeling.....	1377
<i>Vasil Karastoyanov, Iva Betova, Martin S. Bojinov</i>	

C02 - Corrosion in Molten Salts

Revisiting Open Circuit Corrosion of Cr in Unpurified Molten FLiNaK Salts with a Multi-Modal Approach	1378
<i>Elena Romanovskaia, Ho Lun Chan, Francisco Garfias, Valentin Romanovski, Sara Mastromarino, Raluca O. Scarlat, John R. Scully</i>	
Corrosion Behavior of Binary Ni-Cr Alloys in Molten FLiNaK Salts at Different Electrochemical Potentials	1380
<i>Ho Lun Chan, Elena Romanovskaia, Sean Mills, Minsung Hong, Valentin Romanovski, Benjamin Kuster, Chaitanya Peddeti, Nathan Bieberdorf, Andy Minor, Peter Hosemann, Mark Asta, John R. Scully</i>	
Effect of Fission Products on Molten Salt Corrosion for Nuclear Reactor Applications.....	1381
<i>Ruchi Gakhar</i>	
Understanding the Corrosion of Copper in Nitric Acid By Tuning the Solution Chemistry	1382
<i>Sebastian A, Skaanvik, Xuejie Li, Jessica Winslade, Jeffrey D. Henderson, Jonas Hedberg, Mehran Behazin, Mark Biesinger, James J. Noël</i>	

C03-METALLIC, ORGANIC, INORGANIC, AND COMPOSITE COATINGS FOR CORROSION PROTECTION

C03 - Organic Coatings

(Invited) New Experimental and Modelling Approaches to Predict Better Corrosion and Protection Properties of Coated Metals	1383
<i>Herman Albert Terry, Negin Madelat, Nourhan Abdelrahman, Meisam Dabiri Havigh, Zahra Jiryaei, Benny Wouters, Mats Meeusen, Annick Hubin, Tom Hauffman</i>	
Efficiency of Anti-Corrosion Protective Coatings Based on Graphene Oxides Functionalised with Green Inhibitors.....	1384
<i>Do Thuy Linh, Fx Perrin</i>	
Smart Composite Coatings for Corrosion Protection	1386
<i>Durgambika Venkatachalam, Aakyat Singh, Yoganandan Govindaraj, Manoj Prabhakar Jothi Manickam, Arulkumar Ganapathi, Michael Rohwerder, Lakshman Neelakantan</i>	
Corrosion Protection of Galvanised Steel Using Organic Coatings Containing Inhibitive Additives Based on Benzothiazoyl Succinic Acid.....	1387
<i>Geraint Williams, Peter Morgan</i>	
Organic Coating for Oxide Removal on Copper Surfaces.....	1388
<i>Jashanpreet Kaur, Vikram Singh, Yuanjiao Li, A. C. Liberati, Golnoush Asadiankouhidehkordi, Christian Moreau, Mark Aloisio, Cathleen Crudden, Janine Mauzeroll</i>	

C03 - Conversion Coatings, Inorganic and Metallic Coatings 1

(Invited) Multiscale Electrochemical Analysis of Sol-Gel Films Modified with Eco-Friendly Corrosion Inhibitors for Active Corrosion Protection of AZ61 Magnesium Alloy.....	1389
<i>Federico R. Garcia-Galvan, Jesús Martín Cordón, Noemí Carmona, Irene Llorente, Santiago Fajardo, Sebastian Feliu, Juan Carlos Galvan, Violeta Barranco</i>	
Deposition Mechanism, Structure and Corrosion Protection of ZrO ₂ -Based Conversion Coatings on AA6060 Primary and Recycled Aluminum Alloys.....	1391
<i>Erlind Mysliu, Kathrine Sletteberg Storli, Hanna Marie Skogøy, Stephan Kubowicz, Ingeborg-Helene Svenum, Otto Lunder, Andreas Erbe</i>	
The Importance of Current Density in Electrolytic Phosphate Coatings.....	1392
<i>Federico Lissandrello, Luca Magagnin</i>	
Anodization and Plasma Electrolytic Oxidation Treatments of AZ91D Mg Alloy in Alkaline Aqueous Solutions.....	1393
<i>Zheng Shao, Masashi Nishimoto, Izumi Muto, Yu Sugawara</i>	
Effect of Electrolyte Concentration and Voltage on the Morphology and Corrosion Resistance of PEO Coated AA6061	1394
<i>Eden May Bayungan Dela Pena, Salvacion Orgen</i>	

C03 - Conversion Coatings, Inorganic and Metallic Coatings 2

Hydrogen Permeation Study on Zinc-Nickel Coated Ultra-High Strength Martensitic Steels.....	1395
<i>Manoj Prabhakar Jothi Manickam, Aravinth Ravikumar, Asier Salicio-Paz, Bart Van Den Bossche, Daniel Höche, Maria Lekka, Michael Rohwerder</i>	
Formation of Plasma-Nitrided Barrier Layers Against Hydrogen Absorption and Diffusion in Pure Iron	1396
<i>Yu Sugawara, Tomohiro Kudo</i>	
Ti-Al-C Based MAX Phase Coating As Corrosion Protection for Ferritic Bipolar Plates	1397
<i>Manoj Prabhakar Jothi Manickam, Martin Rohloff, Uwe Lindemann, Angela Kruth, Michael Rohwerder</i>	

Corrosion Properties of a Novel FeCrMoNbB Thin Film Metallic Glass Deposited by DC Magnetron Sputtering.....	1398
<i>Weverson Capute Batalha, Virginie Roche, Yannick Champion, Marc Mantel, Alberto Moreira Jorge Junior</i>	

C03 - Ultra Thin Coatings and Inhibition Layers

(Invited) On the Inhibition Mechanism of an Alkylammonium Nitrate Ionic Liquid Family on Al Alloys: Electrochemical and XPS/in Situ PM-IRRAS Studies	1400
<i>Oumäïma Gharbi, Christophe Méthivier, Mireille Turmine, Vincent Vivier</i>	
Corrosion and Protection of Synthetic Intermetallic Compounds and Bulk Aluminum Alloy Under Simulated Atmospheric Conditions	1401
<i>Peter Rodic, Ingrid Milosev, Gerald S. Frankel</i>	
Adsorption of 2-Mercaptobenzothiazole Organic Inhibitor and Its Effects on Copper Anodic Oxidation in Alkaline Environment.....	1403
<i>Vishant Garg, Sandrine Zanna, Antoine Seyeux, Frederic Wiame, Vincent Maurice, Philippe Marcus</i>	
Electrochemical Deposition of N-Heterocyclic Carbene on Steels As a Corrosion Protective Layer	1404
<i>Thilini Malsha Suduwella, Vikram Singh, Mark Aloisio, Ahmadreza Nezamzadeh Ezhieh, Cathleen Crudden, Janine Mauzeroll, Yuanjiao Li</i>	
N-Heterocyclic Carbene Based Nanolayer for Copper Film Oxidation Mitigation.....	1406
<i>Elad Gross</i>	

C04-ANALYTICAL TOOLS IN CORROSION RESEARCH

C04 - Advanced Analytical Methods 1

(Invited) Contribution of Oxygen Reduction to Mg Corrosion: Computational Modelling.....	1407
<i>Daniel Höche, Cheng Wang, Wen Xu, Mikhail Zheludkevich, Sviatlana Lamaka</i>	
Contribution of Oxygen Reduction to Mg Corrosion: Experimental Evidence By Electrochemical Microprobes.....	1408
<i>Sviatlana Lamaka, Cheng Wang, Wen Xu, Mikhail Zheludkevich, Daniel Höche</i>	

C04 - Advanced Analytical Methods 2

(Invited) In-situ Evaluation of Brass Dezincification Corrosion Under Galvanostatic Polarization Combined with Video Observation	1410
<i>Yoshinao Hoshi, Yoshiyuki Otake, Kaito Kito</i>	
Visualization and Location Determination of Pit Initiation Sites in Martensitic Stainless Steel during Corrosion-Fatigue Cyclic Plastic Deformation	1411
<i>Robert Lacasse, Christophe Hitz, Pierre-Antony Deschênes, Isabelle Montplaisir, Lydia Damphousse, Alexandre Lapointe, Carlo Baillargeon, Lindsay Grandy, Janine Mauzeroll</i>	
Monitoring Atmospheric Corrosion of Carbon Steel Under Controlled Electrolyte Droplet Distributions	1412
<i>Keer Zhang, Ehsan Rahimi, Nils Van Den Steen, Herman Terryn, J. M. C. Mol, Yaiza Gonzalez-Garcia</i>	
Screen-Printed Impedance Sensor for Atmospheric Corrosion of Silver.....	1413
<i>Masayuki Itagaki, Kanako Nawamoto, Hikari Watanabe, Isao Shitanda</i>	

C04 - Advanced Analytical Methods 3

Application of in-situ EIS to Galvanic Corrosion of Aluminum Alloy Coupled with High-Tensile Steel.....	1414
<i>Riko Watanabe, Yoshinao Hoshi</i>	

Application of Impedance Spectroscopy in the Study of Aluminium Alloy 1100 in Cement Pastes.....	1416
<i>Xiang Li, Sébastien Caes, Thomas Pardoën, Geert De Schutter, Bruno Kursten</i>	
Monitoring the Degradation of Metallic Beverage Can Lids in Realistic Conditions Using Electrochemical Impedance Spectroscopy	1417
<i>Nian Liu, Alexandros Filippas</i>	
Liquid Structure and Anti-Corrosion Effect of Super-Concentrated Electrolyte Solution.....	1419
<i>Hikari Watanabe, Yurina Yoshida, Isao Shitanda, Masayuki Itagaki</i>	
Corrosion Behavior of Al Alloy A6061 Jointed with High-Tensile Strength Steel By Friction Stir Welding in NaCl Solution.....	1421
<i>Kotaro Noguchi, Azusa Ooi, Eiji Tada</i>	

C04 - Advanced Analytical Methods 4

Corrosion Electrochemistry at Micro/Nano-Scale.....	1422
<i>Sanjay Choudhary, Robert G Kelly</i>	
Hydrogen Video Imaging System for Visualizing Microstructure-Dependent Hydrogen Diffusion Behaviors in Polycrystalline Metals	1423
<i>Hiroshi Kakinuma, Saya Ajito, Tomohiko Hojo, Motomichi Koyama, Eiji Akiyama</i>	
Multimodal in Situ synchrotron Analysis Reveals the Effect of the Oxygen Evolution Reaction on Corrosion of a Ni-Cr-Mo Alloy	1425
<i>Alfred Larsson, Andrea Grespi, Giuseppe Abbondanza, Josefín Eidhagen, Dorotea Gajdek, Konstantin Simonov, Xiaoqi Yue, Ulrich Lienert, Zoltan Hegedues, Mattia Scardamaglia, Andrey Shavorskiy, Lindsay Merte, Jinshan Pan, Edvin Lundgren</i>	

C04 - Advanced Analytical Methods 5

Resolving the Dependence of Aluminum Alloy Corrosion on Grain Orientation by Scanning Electrochemical Cell Microscopy	1428
<i>Yuanjiao Li, Janine Mauzeroll, Alban Morel</i>	
Minimize Surface Change for Corrosion Study Using a Chronopotentiometric Approach Method in SECCM	1429
<i>Hu Zhou, Alban Morel, Janine Mauzeroll</i>	
Understanding the High Scan Rate PDP Curves Obtained By Seccm.....	1430
<i>Hu Zhou, Alban Morel, Janine Mauzeroll</i>	

D02-PLASMA AND THERMAL PROCESSES FOR MATERIALS MODIFICATION, SYNTHESIS, AND PROCESSING 5

D02 - Plasma-Assisted Fabrication of Electrodes and Catalysts

(Invited) Plasma-Thermal Assisted Design of Smart Hybrid Carbon/Metal Sulfide Electrodes	1431
<i>Neelakandan Marath Santhosh, Janez Zavašnik, Uros Cvelbar</i>	
Post O ₂ Plasma-Induced Fabrication of 1T-WS ₂ /a-WO ₃ Heterostructure for Superior Hydrogen Evolution Reaction Electrocatalysts Via Hydrogen Spillover	1432
<i>Jinill Cho, Hyunho Seok, Taesung Kim</i>	
High Surface Area MoS ₂ and WS ₂ As Active HER Catalysts	1433
<i>Jorit Obenlinschloß, Jean-Pierre Glauber, Jan-Lucas Wree, Anjana Devi</i>	
Regulated and Gradual Polymorph Transition By Thermal and Plasma Treatment on Transition Metal Dichalcogenides	1435
<i>Dongho Lee, Hyunho Seok, Sihoon Son, Seokchan Lee, Dayoung Yu, Taesung Kim</i>	

D02 - Plasma-Synthesized Device Structures

- (Invited) Plasma-Synthesized Coupled Nanoplasmonic Gold for DNA Sensing..... 1437
Vasyl Shvalya, Martina Modic, Janez Zavašnik, Damjana Rozman, Ibrahim Abdulhalim, Uros Cvelbar
- Microplasma Nanoengineering of Hybrid Plasmonic Nanostructures for Rapid and Ultrasensitive Surface-Enhanced Raman Scattering-Based Sensing 1438
Yi-Jui Yeh, Kuo-Lun Tung, Wei-Hung Chiang

D02 - Plasma Etching and Patterning

- A Cyclic Etching Process Using HFE-347mcc3 as a Lower-GWP Alternative to Perfluorocarbons for High-Aspect-Ratio SiO₂ Features 1439
Sanghyun You, Chang-Koo Kim
- Investigating the Metal-Plasma Interaction during the Patterning of MgZnO Alloys, Used for Compute and Memory Applications..... 1440
Leila Ghorbani, Shreya Kundu, Frederic Lazzarino, Stefan De Gendt
- Plasma and Etch Process Modulation of Subgap Trap State Density in a-Ingaznox Thin-Film Transistors 1442
George Mattson, Kyle Vogt, John F Wager, Matt Werden Graham

D02 - Plasma-Assisted Fabrication of Novel Materials

- Exploring the Mechanisms Driving Thermal Growth of Copper Oxide Nanowires 1443
Martin Kosicek, Janez Zavašnik, Oleg Baranov, Barbara Šetina Batic, Uros Cvelbar
- Low-Temperature and Catalyst-Free Plasma Synthesis of Plastics-Derived Graphene Quantum Dots 1444
Wei-Hung Chiang, Ren-Jie Weng, Darwin Kurniawan
- Phase Controlled Synthesis and Characterization of Large Area 2D Tin Sulfides 1445
Jean-Pierre Glauber, David Zanders, Jan-Lucas Wree, Anjana Devi

D02 - Plasma-Assisted Fabrication of Thin Film Structures

- (Invited) Plasma-Enhanced Deposition Mechanism of Hydrogenated Amorphous Carbon Analyzed By Combining Reactive Species Measurement and Machine Learning..... 1446
Hiroki Kondo, Takayoshi Tsutsumi, Kenji Ishikawa, Makoto Sekine, Hiroyuki Kousaka, Masaru Hori
- Optical and Mechanical Properties of Si-Based Thin Films for Photonic Applications..... 1448
Peter Mascher, Brahim Ahammou, Fahmida Azmi, Jean-Pierre Landesman, Christophe Levallois
- A Comparison of Low-Temperature Deposition for SiO₂ in PECVD Using SiH₄ and TEOS..... 1449
Yutaka Kusuda, Takahiro Miyashita, Yuki Asai, Hiroyuki Nishinaka

D02 - Poster Session

- On the Scope of the Oxygen Plasma Treatment on FTO Electrodes for Electrochemical Processes 1451
Daniel Ramirez, Gonzalo Riveros, Patricia Díaz, Martin Faundez, Enrique Dalchiele, Ricardo Marotti, Daniel Gau, Carina Cabrera, Rodrigo Wittwer
- Investigating the Effect of Plasma Parameters on the Dielectric Constant of Sicoh Thin Films Grown by PECVD Using Dimethyldimethoxysilane 1453
Jinseok Choi, Gwang-Seok Chae, H. J. Yeom, Wonchul Kee, Hyo-Chang Lee, Hyun-Dam Jeong, Jung-Hyung Kim
- Influence of Dielectric Material Thickness on the Formation of Atmospheric Plasma 1454
Juš Polanšek, Uros Cvelbar

D03-ADVANCED 3D INTERCONNECT TECHNOLOGIES AND PACKAGING 2

D03 - Digital Only Presentations

(Invited, Digital Presentation) Overview of Current and Future 3D Heterogeneous Integration Architectures	1455
<i>Adel Elsherbini</i>	
(Invited, Digital Presentation) 2-D Van Der Waal Materials for Advanced Interconnect Applications	1456
<i>Yaw Obeng, Jesus Perez</i>	
(Invited, Digital Presentation) Integration of 2D Material Characterization and Reliability into Device Manufacturing	1457
<i>Elisabeth Mansfield, Jason Holm, Robert Keller</i>	
(Invited, Digital Presentation) Copper Nanowire 3-D Interconnects for Mm-Wave Applications	1458
<i>Rhonda R Franklin, Bethanie Stadler, Rashaunda Henderson, Aditya Dave, Yali Zhang, Alison Harpel, Joseph Um, Nikita Majabeen</i>	

D03 - Process & Integration 1

(Invited) Ru Selective Metal Deposition for Hybrid Metallization in Nano-Interconnect Applications.....	1459
<i>Marleen H. Van Der Veen, Akhilesh Kumar Mandal, Seongho Park, Herbert Struyf, Zsolt Tokei, Annelies Delabie</i>	
(Invited) Hybrid Bonding from Hype to Reality: How Will Hybrid Bonding Dtw Pave the Way to Large Set of Applications?	1461
<i>Martin Gallezot</i>	
(Invited) Physical Analysis and Modeling of Wafer-to-Wafer Copper Hybrid Bonding at Sub-Micron Pitches.....	1462
<i>Kevin Ryan, Christopher Netzband, Nathan Ip, Satohiko Hoshino, Hojin Kim, Adam Gildea, Andrew Tuchman, Scott Lefevre, Ilseok Son, Hirokazu Aizawa, Kaoru Maekawa</i>	
(Invited) Wafer Singulation - Laser Processing Combined: From Past to Future Hybrid Bonding.....	1464
<i>Rogier Evertsen</i>	

D03 - Process & Integration 2

Release of Redox Additives Via Megasonic Energy for High Selectivity/Low-Stress STI CMP	1466
<i>Adam T. Caridi, Kiana A. Cahue, Jason J. Keleher</i>	
(Invited) 3D Silicon Capacitors in the Frantic Race Towards Ultra High Integration in Advanced Packages	1467
<i>Catherine Bunel</i>	
Unraveling the Slurry/Substrate Interfacial Reaction Mechanism for Wide Band Gap (WBG) Chemical Mechanical Planarization (CMP)	1468
<i>Joseph L. Powell, Ara Philipossian, Yasa Sampurno, Jason J. Keleher</i>	

D03 - Poster Session

Investigation of CMP Process of Silica Substrate by Ceria Abrasive: Insights from Molecular Dynamics Simulation with Neural Network Potential	1469
<i>Fukiko Ota, Teruo Hirakawa, Nanami Antoku, Daisuke Iikura, Akihiro Orita, Yoshishige Okuno, Satoyuki Nomura</i>	
Effect of Cu Pad Geometry and Dishing in Cu/Sic Hybrid Bonding Process: A Finite Element Analysis Study.....	1470
<i>So-Yeon Park, Cha-Hee Kim, Gwang-Sik Oh, Young Su Yun, Jiho Kang, Sarah Eunkyung Kim, Won-Jun Lee</i>	

D03 - Reliability

- (Invited) Reliability Challenges in Advanced 3D Technologies..... 1471
Emmanuel Chery, Corinna Fohn, Joke De Messemaeker, Eric Beyne
- (Invited) Comparison of Empirical Models for Broadband Insertion Losses in TSV-Interconnects..... 1473
Kevin J Coakley, Pavel Kabos, Stephane Moreau, Yaw Obeng
- (Invited) The Laser-Integrated FIB-SEM for Faster 3D Packages Characterization and Failure Analysis..... 1474
Olena Vertsanova, Benjamin Tordoff

D04-WATER-ENERGY NEXUS RESEARCH RELATING TO ELECTROCHEMICAL SCIENCES

D04 - Large-Scale Water Treatment

- (Invited) Evaluating Urban Water-Energy Systems Based on UN Sustainable Development Goals (SDGs)..... 1476
Nirmal Khandan
- (Invited) Molecular Dynamics Simulation Insights into Plasma Treatment of Emerging Pollutants in Water 1477
Pascal Brault
- (Invited) Plasma Sources for Growth of Carbonaceous Materials for Energy Efficient Water Treatments 1479
Eva Kovacevic, Andrea Jagodar, Neelakandan Marath Santhosh, Janez Zavašnik, Agnes Petit, Loic Gimenez, Shahzad Hussain, Thomas Strunskus
- Using Cell Motility and Particle Tracking to Deduce Mechanisms and Kinetics Underlying Photocatalytic Water Disinfection in Real Time..... 1480
Niraj Ashutosh Vidwans, Bhupesh Pydiraju Y, Eshan Sandhu, Pushkar P. Lele, Sreeram Vaddiraju
- Exploring the Use of Static Mixers for Enhanced Flow-Electrode Capacitive Deionization..... 1481
Maira Raquel Ceron, Alexandra E. L. Overland, Steven A. Hawks
- PFAS Degradation from Water by Using Metal Oxide as Photocatalyst..... 1482
Junjie Niu
- (Invited) the Removal of Bisphenols from Wastewaters with Atmospheric Pressure Plasma 1483
Nataša Hojnik, Ana Kovacic, Martina Modic, Martina Štampar, Martin Rafael Gulin, Christina Nannou, Lelouda-Athanasia Koronaiou, David Heath, James Leon Walsh, Bojana Žegura, Dimitra Lambropoulou, Uros Cvelbar, Ester Heath
- Non-Equilibrium Plasma Oxidation of Elemental Hg..... 1485
Andrea Jurov, Jan Gacnik, Igor Živkovic, Sergio Ribeiro Guevara, Jože Kotnik, Sabina Berisha, Sreekanth Vijayakumaran Nair, Uros Cvelbar, Milena Horvat
- (Invited) A Flexible Anti-Biofilm Hygiene Coating for Water Devices 1486
Junjie Niu

D04 - Surface Engineering, Water Splitting and Separations

- (Invited) Ratchet Based Ion Pumps for Selective Ion Separations 1487
Alon Herman, Dafna Meltser, Eden Grossman, Karen Shushan, Gideon Segev
- (Invited) Negative Ions, Nanoparticles and Their Transport to Substrates: Towards Better Control of Plasma-Based Fabrication of Surfaces with Tunable Wetting Properties..... 1489
Johannes Berndt, Dario Sciacqua, Christian Borrmann, Tristan Verge, Loic Gimenez, Thomas Strunskus

Highly Porous Copper Catalysts for Electrochemical Ammonia Production from Nitrate-Containing Waste Water	1491
<i>Jenn Fang Su</i>	

D04 - Poster Session

Designing a Stable and Electrically Conductive Colloidal Suspension for Improved Flow Electrode Capacitive Deionization	1492
<i>Alexandra E. L. Overland, Maira Raquel Ceron, Steven A. Hawks</i>	

E01-METAL ELECTRODEPOSITION FROM FUNDAMENTALS TO APPLICATIONS

E01 - Electrodeposition of Enhanced Materials: Electrical and Thermal Conductivities

Thermal Efficiency Evaluation after Thermocompression of Copper Layer Obtained By Dynamic Hydrogen Bubble	1493
<i>Jonathan Schoenleber, Goulven Janod, Lucas Chachay, Marie-Pierre Gigandet, Yan Avenas, Remi Daudin, Jean-Michel Missiaen, Didier Bouvard, Rabih Khazaka, Jean-Yves Hihn</i>	
Silver-Alloys Electrodeposition for Electrical Conductivities.....	1494
<i>Quentin Orecchioni, Marie-Pierre Gigandet, Joffrey Tardelli, Jean-Yves Hihn</i>	
Electro-Codeposition of Composite Materials for Enhanced Thermal and Electrical Properties.....	1495
<i>Timothy Hall, Dan Wang, Huong Le, Holly Garich, Nick Roberts</i>	
Light-Induced Platinum Deposition on Silicon-Based Semiconductor Devices	1496
<i>Mathias Fritz, Christian Elieser Hoess, Finn-Merlin Deckert, Andreas Bund</i>	
Electrodeposition of Transition Metal Dichalcogenide Thin- Films from Non-Aqueous Solvents.....	1497
<i>Shibin Thomas, Victoria K Greenacre, Yasir J Noori, Nema M Abdelazim, Jiapei Zhang, Sarah A Alodan, Sami Ramadan, Philip N Bartlett, Gillian Reid, C. H. Kees De Groot, Norbert Klein</i>	
Electrodeposited Nanowires for High Density Interconnects of GaN-Based MicroLEDs.....	1498
<i>Maximilian Vergin, Georg Schöttler, Steffen Bornemann, Florian Meierhofer, Andreas Waag</i>	

E01 - Highlighting Early Career Researchers

Effect of the Reinforcement Phase on the Electrical and Mechanical Properties of Cu-SWCNTs Nanocomposites for Potential Application on Conductors Wires.....	1499
<i>Edgar Leonardo Castellanos, Ana Maria Arizmendi-Morquecho, Eduardo Martinez Guerra</i>	
Activation Processes for Electrodeposition on Passive Nickel Surfaces.....	1500
<i>Khavar Akbarova, Martin Leimbach, Andreas Bund</i>	
Electrochemical Nucleation and Growth: A Multimicroscopy Approach at the Same Scale	1501
<i>Daniel Torres, Miguel Bernal Lopez, Jon Ustarroz</i>	
Cu Foil Modification By Ag Inkjet Printing for Improved Li Plating in Anode-Free Li Batteries.....	1503
<i>Eugenio Gibertini, Seyedalireza Mirbagheri, Luca Magagnin</i>	
Laser Assisted Electrodeposition of Metals and Alloys.....	1504
<i>Roberto Bernasconi, Dario Crimella, Ali Gokhan Demir, Barbara Previtali, Luca Magagnin</i>	
Preparation and Characterization of Tin-Nickel Coatings for Corrosion Protection of PEM Electrolyzer Components	1505
<i>Martin Leimbach, Mario Kurniawan, Carlos Aziz, Christian Elieser Hoess, Mathias Fritz, Andreas Bund</i>	
Design Principles for Heterointerfacial Alloying Kinetics at Metallic Anodes in Rechargeable Batteries.....	1506
<i>Kent J. X. Zheng</i>	
Pulse-Electrodeposition and Growth Mechanism of Nanotwinned Copper Nanowires inside High Aspect-Ratio Anodic Aluminum Oxide.....	1507
<i>Hsin-Yu Chen, Chien-Neng Liao</i>	

Influence of High Surfactant Concentrations on the Morphology and Crystallinity of Electrodeposited Antimony and Bismuth Nanowires	1508
<i>Michael Florian Peter Wagner, Kuan Hsun Lin, Wilfried Sigle, Christina Trautmann, Maria Eugenia Toimil Molares</i>	

E01 - Poster Session

Application in Self-Adsorption Pd Nanoparticles with High Adhesion	1509
<i>Pei-Tsen Wei, Tzu Chien Wei</i>	
Cu TSV Filling with Cetyltrimethyl Ammonium Cations (CTA ⁺) and Br ⁻	1510
<i>Hui Won Eom, Hae Jin Kwak, Myung Jun Kim</i>	
Electrodeposition of Cu Nanocubes in the Presence of Cl ⁻ and Br ⁻	1512
<i>Jooyoung Eo, Seolim Yoon, Jiwoo Oh, Myung Jun Kim</i>	
Magneto-hydrodynamic Redeposition of Cations Onto the Anode	1514
<i>Hansaem Jang, Daniel Roe, Gilberto Teobaldi, Oscar Cespedes, Alexander Cowan</i>	
Correlation between Copper(II)-Lactate Complexes in Aqueous Alkaline Solutions and Copper(I) Oxide (Cu ₂ O) Electrodeposited	1516
<i>Ryusuke Yuasa, Ryutaro Miura, Tsutomu Shinagawa, Kazuhiro Fukami, Kuniaki Murase</i>	
Local Heating Induced Single-Crystalline Phase Control in Electrochemical Synthesis of Nanomaterials.....	1518
<i>Myoungwon Lee, Hyun Ahn</i>	
Electrochemical Synthesis of Core-Shell Nanoparticles by Seed-Mediated Selective Deposition	1519
<i>Joon Ho Park, Hyun Ahn</i>	
Electrochemical Strategies to Control Dendritic Growth in Sodium-Metal Batteries	1520
<i>Meghdad Hosseinzadegan, Leif Nyholm, Guiomar Hernández, David Rehlund</i>	
PVD Coatings as Protective Films in Fashion Industry	1521
<i>Massimo Innocenti, Mariya Vorobyova Vorobyova, Lorenzo Donati, Elia Cioppi, Walter Giurlani, Stefano Mauro Martinuzzi, Claudia Giovani, Diana Bettoni, Andrea Caneschi</i>	
Synthesis of APTES-Capped Self-Adsorption Pd Nanoparticles and Application in Metallization on Glass Substrate with High Adhesion	1523
<i>Pei-Qing Yang, Tzu Chien Wei</i>	
Control of Crystallographic Growth Orientation and Twinning Structure in Copper Nanowires by Template-Assisted Electrodeposition	1524
<i>Hao-Che Huang, Hsin-Yu Chen</i>	

E01 - Nucleation and Growth of Electrodeposited Metals

(Invited) Electroless Cu, Pb and Ag Monolayer Deposition – Generality of an Electroless Monolayer Deposition Phenomenon	1525
<i>Mariam Dalgamouni, Stanko Brankovic</i>	
(Invited) High-Throughput Local Electrochemistry Coupled with (in-situ) microscopy to Advance on the Fundamentals of Electrochemical Nucleation and Growth	1526
<i>Jon Ustarroz, Daniel Torres, Miguel Bernal Lopez, Monica Parpal Gimenez, Mohamed El Marini, Sanaa Chemchoub, Leonardo Bertolucci Coelho</i>	
Comparison of Electrochemical Characteristics of in Film on Cu and Ru Surfaces	1528
<i>Mai Thi Ngoc La, Kohei Nakayama, Fumihiro Inoue</i>	
Effect of Pulse Parameters on Early Stage Nucleation Phenomena	1530
<i>Trina Dhara, Soukhin Chakraborty, Partha P. Mukherjee, Sunando Dasgupta</i>	
The Enigma of Titanium Electrodeposition on Various Substrates	1531
<i>Sudarshan Lal</i>	
The Effect of Halide Adsorption on Pb Underpotential Deposition on Au.....	1532
<i>Natasa Vasiljevic, Alicja Szczepanska</i>	

Study of Structural Morphology of Electrodeposited Ni Film	1534
<i>Ayesha Mubshrah, Walther Schwarzacher</i>	

E01 - Novel Applications

(Invited) Bottom-up Gold Filling for Manufacture of X-Ray Gratings: Mechanism and Implications.....	1535
<i>Daniel Josell, Thomas P Moffat</i>	
(Invited) Hybrid Interfaces: Ni Electrodeposition on Top of PCPDT-BT	1537
<i>Claudio Fontanesi, Andrea Stefani, Luca Pasquali</i>	
Electrochemical Deposition Processes for Fabrication of Cathodes/Anodes of Alkaline Water Electrolysis Device.....	1539
<i>Masahiro Kunitomo, Yasuhiro Fukunaka, Hiroshi Ito, Takayuki Homma</i>	
Electrodeposited Ni-Based Catalysts for the Oxygen Evolution Reaction.....	1540
<i>Yashwardhan Deo, Niklas Thissen, Anna K. Mechler</i>	
Porous Silicon and Silicon Nanotubes with Embedded FePt Nanoparticles Investigated by High Temperature Magnetic Measurements.....	1542
<i>Klemens Rumpf, Petra Granitzer, Roberto Gonzalez-Rodriguez, Jeffery Coffey</i>	
Analysis of Pre-Treatment Processes to Enable Electroplating on Nitrided Steel.....	1543
<i>Samuel J. McMaster, Franz Krümming, Vishnu Kizhavallil Chandrasekharan, Andreas Bund, Andrew Cobley, John Edward Graves</i>	
Controlled Morphology Direct Iron Reduction from an Alkaline Slurry of Hematite for a Low-Cost Energy Storage Technology.....	1545
<i>Anastasiia Konovalova, Carinna Lapson, Paul A. Kempler</i>	

E01 - Alloys and More

Electrodeposition of Zn-Cr Alloys: A Comparison with Pure Zinc.....	1546
<i>Francesca Galeotti, Federico Lissandrello, Luca Magagnin</i>	
High Entropy Alloy Deposition from an Aqueous Bath	1547
<i>Donya Ahmadkhaniha, Caterina Zanella</i>	
Electrochemical Reduction from CO ₂ to CH ₄ By Electrodeposited Cu/L-Histidine Hybrid Materials.....	1548
<i>Yuki Tsuda, Sahori Takeda, Nobuhiko Takeichi</i>	
Electrochemical Additive Manufacturing of Binary and Ternary Alloys at the Micro Scale by Electrohydrodynamic Redox 3D Printing	1550
<i>Nikolaus Porenta, Mirco Nydegger, Maxence Menétrey, Souzan Hammadi, Alain Reiser, Ralph Spolenak</i>	
Local pH Change during CoMo-TiO ₂ Composite Electrodeposition and Alkaline HER Electrolysis	1551
<i>Cheng Wang, Elizabeth J Podlaha</i>	
New Materials for Alkaline Fuel Cells from Electroplating Industries Waste Solution Oxygen Reduction Reaction Catalyzed by Pd on Carbon Nanotubes, Graphene and Carbon Black.....	1553
<i>Marco Bonechi, Matteo Savastano, Walter Giurlani, Arianna Meoli, Irene Maccioni, Antonio Bianchi, Massimo Innocenti</i>	

E01 - Beyond Water

(Invited) Solvation Control in Deep Eutectic Solvent Electrolytes for Stable Plating/Stripping of Zn in Battery Applications.....	1555
<i>Benedetto Bozzini, Elisa Emanuele, Claudio Mele, Jacopo Strada</i>	
Ruthenium Electrodeposition from Non-Aqueous Electrolytes Containing Divalent Ions	1557
<i>Roberto Bernasconi, Federico Lissandrello, Claudia Letizia Bianchi, Gianmarco Griffini, Luca Magagnin</i>	
Electrochemical Investigations of Ag and Bi in Choline Chloride-Ethylene Glycol DES Electrolyte.....	1558
<i>Gøril Jahrsengene, Zhaohui Wang, Ana Maria Martinez</i>	

Metal/Metal Multilayers Electrodeposited from Ethaline	1560
<i>João F. S. Salgueira, Natalia G. Sousa, Pedro De Lima-Neto, Paulo N. S. Casciano, Adriana Correia, Walther Schwarzacher</i>	
Influence of Lithium Diffusion into Copper Current Collectors on Lithium Electrodeposition in Anode-Free Lithium-Metal Batteries	1561
<i>Yu-Kai Huang, Leif Nyholm</i>	
Localized Electrochemical Deposition Using Copper Pyrophosphate-Based Electrolyte.....	1563
<i>Yunha Song, Jinhyun Lee, Youjung Kim, Jinmyeong Seo, Inseong Hwang, Sanghwa Yoon, Bongyoung Yoo</i>	

E02-ELECTRODEPOSITION OF POROUS MATERIALS AND MATERIALS WITH COMPLEX GEOMETRIES

E02 - Dealloying

(Invited) Dealloyed Materials for Corrosion Protection.....	1564
<i>Jonah Erlebacher, Jodie Baris, Chengao Zhou, Sonia Hou, Chao Wang, Elaf Anber, Sebastian Lech, Mitra Taheri</i>	
Self-Detachment of Nanoporous Thin Films.....	1565
<i>Gideon Henkelmann, Jorg Weissmuller</i>	
Nanoporous Cu-Sn Intermetallic Material for Interconnects in Electronic Packaging.....	1567
<i>Nikolay Dimitrov, Ezer Castillo, Michael Njuki, Abdullah Faisal Pasha</i>	
Silver-Rich Clusters Reveal the Initial Size of Nanoscale Network during Dealloying Via Kinetic Monte Carlo Simulation	1569
<i>Yong Li, Jürgen Markmann, Jorg Weissmuller</i>	

E02 - Complex Geometries 1

(Invited) Making Nanostructured Composites Via Inner-Pore Electrodeposition into Nanoporous Metals.....	1571
<i>Ayman A. El-Zoka</i>	
Conformal Electrodeposition of Mesoporous Silica over High Aspect Ratio (AR>100) Nanomesh Electrodes	1573
<i>Venkataramana Rishikesan, Genis Vanheusden, Nicolas Chanut, Rob Ameloot, Philippe M. Vereecken</i>	
Gold Ultralow Loading on Nickel Foam for Nitrogen Electrochemical Reduction	1575
<i>Rachela Gabriella Milazzo, Giuseppe Tranchida, Marco Leonardi, Silvia Scalese, Guido Guglielmo Condorelli, Salvatore Lombardo, Stefania M. S. Privitera</i>	
Modification of Anodic TiO ₂ Nanotubes with Au	1576
<i>Damian Kowalski, Patrycja Henkiel, Lina Sepúlveda, Mewin Vincent</i>	
Metal Filled Nanostructured Silicon a Platform to Interlink Magnetism and Optics	1578
<i>Petra Granitzer, Klemens Rumpf, Roberto Gonzalez-Rodriguez, Jeffery Coffey</i>	
Reactive Aerosol Jet Printing of 2D and 3D Ag Patterns	1579
<i>Eugenio Gibertini, Luca Magagnin</i>	

E02 - Porous Materials 1

(Invited) Mesoporous Metallic Materials Electrodeposited from Polymeric Micelle Assemblies for Energy Applications	1580
<i>Eva Pellicer, Jordi Sort</i>	
Electrosynthesis and Performance of Homogeneously Mesoporous Ni-Rich Ni-Pt Thin Films for Efficient Hydrogen Evolution Reaction in Acidic Media.....	1582
<i>Konrad Eiler, Salvador Pané, Jordi Sort, Eva Pellicer</i>	

Breaking Free - Unlocking the Potential of Dynamic Hydrogen Bubble Templating Materials	1584
<i>Adrian A Mularczyk, Adam Wijpkema, Antoni Forner-Cuenca</i>	
Pore Size Effects in Templated Porous Ag Electrodes for Electrochemical CO ₂ - Reduction	1587
<i>Maaïke Van Ittersum, Claudia Keijzer, Karen Van Den Akker, Peter Ngene, Petra E. De Jongh</i>	
Uniformity of Electrodeposited Coatings Onto Additively Manufactured Graphite Lattice Electrodes	1589
<i>Auston L. Clemens, Kyle Jung, Anna N. Ivanovskaya, Jonathan T. Davis, Christine Orme, Buddhinie Srimali Jayathilake, Rohan Akolkar, Nikola A. Dudukovic</i>	

E02 - Poster Session

Ni-P Electroless Plating of Polyethylene Terephthalate Fibers with Various Twist Number Utilizing Supercritical CO ₂ -Assisted Catalyzation	1590
<i>Hikaru Kondo, Tomoyuki Kurioka, Wan-Ting Chiu, Chun-Yi Chen, Tso-Fu Mark Chang, Roka Ueno, Arisa Jinno, Hiromiti Kurosu, Masato Sone</i>	
Supercritical CO ₂ Assisted Ni-P Electroless Plating of PET Components with Complex 3D Structures.....	1591
<i>Ami Iwasaki, Po-Wei Cheng, Tomoyuki Kurioka, Chun-Yi Chen, Kei Takase, Hiroshi Ishihata, Tso-Fu Mark Chang, Masato Sone</i>	
Cathodic Deposition of Conductive MOF Films: Mechanism and Applications	1593
<i>Sijie Xie, Jan Fransaer</i>	
Weakly Nonlinear Analysis of Flow-Driven Porous Anodic Oxide	1594
<i>Sajal Wankhede, Dipin S. Pillai</i>	

E02 - Periodic and 3D Nanostructured Materials

(Invited) Tailor-Made Hierarchical Nested-Network Nanoporous Metals By Dealloying	1595
<i>Shan Shi</i>	
Coupling Metal Oxides and Dendritic Gold Current Collectors for High-Performance Hybrid Supercapacitors on Silicon Wafer.....	1596
<i>Davide Arcoraci, Marco Reina, Pietro Zaccagnini, Luisa Baudino, Mara Serrapede, Andrea Lamberti</i>	
Electrodeposition of 3D Au _{1-x} Ag _x Nanowire Networks – Influence of Ag on the Electrochemical Properties.....	1598
<i>Mohan Li, Ina Schubert, Nils Ulrich, Wilfried Sigle, Harol Moreno Fernandez, Christina Trautmann, Maria Eugenia Toimil Molares</i>	
3-D Nanostructure Palladium Synthesis By Electrochemical Deposition for Hydrogen Sensor with Switching Resistance Characteristic in Normal Temperature and Pressure	1599
<i>Inseong Hwang, Subeen Park, Jinmyeong Seo, Yunha Song, Sanghwa Yoon, Bongyoung Yoo</i>	

E02 - Complex Geometries 2

(Invited) Magnetic Field Assisted Electrodeposition of Topographically and Chemically Structured Copper-Nickel Deposits	1600
<i>Kristina Tschulik, Maximilian Gerwin, Zaher Jlailati</i>	
Development of Electrodeposited Hierarchical Dendritic Wick Structure for Ultra-Thin Vapor Chamber Applications	1601
<i>Chao-Yang Chiang, Jui-Chen Yu, En-Chia Liu, Chien-Neng Liao</i>	

E02 - Porous Materials 2

Electrochemically Modulated Multi-Metal Sulfides/3D-Graphene Scaffold for Sustainable Energy Generation and Storage	1602
<i>Sankar Sasidharan, Jaime Sanchez Sanchez, Keyvan Mirehbar, Assa Aravindh Sasikala Devi, Zhenyuan Xia</i>	
Electropolymerization of a Conjugated Polymer on Top of a Different Conjugated Polymer for Yarn Actuators	1603
<i>Jose G. Martinez, Shayan Mehraeen, Edwin Jager</i>	
Tailoring Substrate Topography to Enhance Wicking Performance of Electrodeposited Cu Porous Films.....	1604
<i>En-Chia Liu, Jui-Cheng Yu, Chao-Yang Chiang, Chien-Neng Liao</i>	
Electro-Chemo-Mechanical Coupling in Hierarchical Nanoporous Gold-Polypyrrole-Water Hybrids	1605
<i>Olga Matts, Nadiia Mameka</i>	

E04-CURRENT TRENDS IN ELECTRODEPOSITION - AN INVITED SYMPOSIUM

ECS Electrodeposition Division Research Award Address

(Electrodeposition Division Research Award) Electrodeposition as an Enabling Technology in Future Semiconductors, Energy Storage, and Sustainable Metal Production.....	1607
<i>Rohan Akolkar</i>	
(Electrodeposition Division Research Award) New Frontiers of Electrodeposition for Metallic Finishes.....	1608
<i>Massimo Innocenti, Walter Giurlani, Antonio De Luca, Marco Bonechi, Andrea Comparini, Ivan Del Pace, Margherita Verrucchi, Andrea Caneschi</i>	

E04 - Current Trends in Electrodeposition

(Invited) Electro-Bio-Fabrication of Soft Matter.....	1609
<i>Greg F Payne</i>	
(Invited) Electrochemical Deposition for Applications in the Semiconductor Industry.....	1611
<i>Aleksandar Radisic, Harold Philipsen, Zaid El-Mekki, Ehsan Shafahian, Punith M. K. Kumar, Herbert Struyf, Jaber Derakhshandeh, Philippe M. Vereecken</i>	
(Invited) Atomic Scale Details in Electrochemistry & Electrodeposition: The Good, the Bad, and the Ugly	1613
<i>Marcel J. Rost</i>	
(Invited) Confined Electrodeposition Enables Additive Manufacturing of Metals at Micro- and Nanoscale	1615
<i>Dmitry Momotenko</i>	
(Invited) Electrodeposition of In and Ga from Non-Aqueous Electrolytes	1616
<i>Jan Franssaer, Wouter Monnens</i>	

F01-ADVANCES IN INDUSTRIAL ELECTROCHEMISTRY AND ELECTROCHEMICAL ENGINEERING

F01 - Digital Only Presentations

(Digital Presentation) Synthesis and Characterization of Dispersed Zinc Oxide	1617
<i>Liliya A Frolova, Olga V Sergeyeva</i>	

F01 - Carbon Dioxide Reduction to Ethylene

Technoeconomic Assessment of Large-Scale Ethylene Production via the Electrochemical Reduction of CO ₂	1618
<i>John Flake, Cameron Bachar, Albert S Dalum, Bruce Huynh, Hannah Porta, Rahul Ramaraju, Ella Sheets, Hingyu Yi, Barry Guillory, John Pendergast, Feng Jiao</i>	
Modulating the Product Distribution of the Electrochemical Reduction of CO ₂ on Copper at Relevant Current Densities	1619
<i>Walter Agustin Parada Villarroel, Urban Sajevec, Mohammad Peirow Asfia, Pavlo Nikolaienko, Karl J. J. Mayrhofer</i>	
Improving Gas Diffusion Electrodes for Electrochemical CO ₂ Reduction: Influence of the Ionomer	1620
<i>Vera Ubbenjans, Jannik Bothe, Robert Keller, Matthias Wessling</i>	
Durability of CO and CO ₂ Electrolyzers with Copper Electrocatalysts, Gas Diffusion Electrodes, and Anion Exchange Membranes	1622
<i>John C. Flake, Mustapha Bello, Monsuru Olatunji Dauda, John C Hendershot, Ricardo Gonçalves, Feng Jiao, Yushan Yan, Koffi Yao</i>	
Cell Designs Optimizing the Cathode Outlet Purity of CO ₂ Electrolyzers	1623
<i>Tobias Kistler, Peter Agbo</i>	

F01 - Carbon Dioxide Reduction, Electrodialysis and Peroxide Production

What Is Needed for Industrial Carbon-Dioxide Electroreduction: From Electrode Development to Process Optimization	1624
<i>Csaba Janaky</i>	
Electrochemical CO ₂ Reduction to Formic Acid As Feedstock for Biotechnological Processes	1625
<i>Dhananjai Pangotra, Barbara Bohlen, Luciana Vieira, Jonathan Fabarius, Arne Roth, Volker Sieber, Carsten Pietzka, Benjamin Wriedt, Hans-Joachim Kost, Athanassios Ziogas, Patrick Löb</i>	
Optimization of Flow-By CO ₂ Electrolyzers: Impact of Differential Pressure and Gas Diffusion Layer Composition	1626
<i>Alana Rossen, Nick Daems, Tom Breugelmans</i>	
A Novel Circuit-Based Model of a Bipolar Membrane Electrodialysis Reactor for Offshore Chemical Synthesis	1629
<i>Jack Ledingham, Kyra Sedransk Campbell, Alasdair Campbell</i>	
Process Intensification of Electrodialysis through the Investigation and Elimination of Maldistribution	1631
<i>Jack Ledingham, Jonathan Howse, Alasdair Campbell, Elliot Tyndale-Biscoe, Kyra Sedransk Campbell</i>	
Low-Cost and Scalable Electrodes for Anodic Production of Hydrogen Peroxide Via 2e ⁻ Water Oxidation	1633
<i>Dhananjai Pangotra, Luciana Vieira, Arne Roth</i>	
Crossover Understanding of a Hydrogen Peroxide Electrosynthesis Device By Combining Oxygen Reduction and Organics Oxidation Reaction	1634
<i>Penghui Ding, Mikhail Yu. Vagin, Viktor Gueskine, Xavier Crispin</i>	

F01 - Electrolysis and Recycling

Experimental and Theoretical Investigations of Shunt Currents between Alkaline Water Electrolyzers	1635
<i>Deniz Dogan, Burkhard Hecker, Hermann Tempel, Rüdiger-A. Eichel</i>	

Mimicking Industrial Alkaline Water Electrolysis on a Laboratory Scale Using a Cost-Effective Beaker Cell Approach.....	1637
<i>Niklas Thissen, Dominik A. M. Vogel, Jil J. Thoede, Julia Hoffmann, Nicolai Schmitt, Sebastian Tigges, Bastian J. M. Etzold, Anna K. Mechler</i>	
Application of Industrial-Scale Lithium Sulphate Electrolysis in Battery Recycling	1639
<i>Tony Boyd, Clive Brereton, Jeremy Moulson, Warren Wolfs, Luke Glynn</i>	
Electrolytic Reduction of UO ₂ Microspheres Synthesized Via Internal Gelation Method	1641
<i>Han-Hung Hsu, Tom Breugelmans, Thomas Cardinaels, Bart Geboes</i>	

F01 - Pollution Prevention

Methods for Electrolyte Treatment and Hexavalent Chromium Reduction in Industrial Electrochemical Machining (ECM).....	1643
<i>Prabodha Jayasinghe, Scott Sneddon, Ares Argelia Gomez Gallegos, Mark Spicer, Anjali K M De Silva</i>	
Electrochemical Degradation of Toluene Using TiO ₂ Nanotubes.....	1644
<i>Karla Verónica Bolaños-Romero, Antonia Sandoval-González, Goldie Oza, Juan Manriquez, Erika Bustos</i>	

VOLUME 4

F01 - Electrochemical Engineering 1

Neodymium Metal Production Via Chloride Based Molten-Salt Electrolysis.....	1645
<i>Nicholas Scott Sinclair, Benjamin P Holcombe, Alex Baker, Eunjeong Kim, Scott McCall, Rohan Akolkar</i>	
A Numerical and Experimental Sensitivity Analysis on Electrochemical Neutral Pickling for Stainless Steel Using Secondary Current Distribution	1647
<i>Alvaro Bossio Castro, Ruben Gielen, Edoardo Basilico, Jan Fransæ, Martine Baelmans</i>	
Zincate Replacement, an Economical a Sustainable Alternative for the Metal-Coating of Aluminum	1649
<i>Anke Walter, Bogdan Tomin, Lars Kohlmann, Carsten Krause, Heiko Brunner</i>	

F01 - Electrochemical Engineering 2

Electrochemical Deposition in Vertical Tubes : An Hydrodynamic and Mass Transfer Study.....	1651
<i>Theo Salvi, Loic Hallez, Benjamin Legrand, Baptiste Fedi, Magali Barthes, Jean-Yves Hihn</i>	
Quasi-in-Situ Analysis of Electropolished Additively Manufactured Stainless Steel Surfaces	1654
<i>Lukas Esper, Ulf Noster, Ulrich Schultheiss, Andreas Bund</i>	
Electrocoagulation Coupled to Electro-Oxidation for the Electrochemical Treatment of Hemodialysis Wastewater.....	1656
<i>Victor Julián González-Nava, Francisco Javier Bacame-Valenzuela, Yolanda Reyes-Vidal, Selene Sepúlveda-Guzmán, Juan Manriquez, Erika Bustos</i>	

F02-ELECTROCHEMICAL SEPARATIONS AND SUSTAINABILITY 6

F02 - Water Purification and Wastewater Treatment 1

(Invited) Recent Progress in Redox Flow Deionization	1657
<i>Choonsoo Kim, Seonghwan Kim</i>	
(Invited) Development and Scale-up of Membrane Capacitive Deionization (MCDI) for Desalination and Water Reuse	1658
<i>Chen-Shiuan Chen, Tsai-Hsuan Chen, Chia-Hung Hou</i>	
Desalination Fuel Cell Stacks: Scaling up the Co-Production of Electricity and Clean Water	1659
<i>Salman Abdalla, Shada Abu Khalla, Matthew E. Suss</i>	

Bifunctional Deionization and Lithium Recovery Via Four-Step Constant Voltage Operation of Hybrid Capacitive Deionization with Composite Electrodes	1661
<i>Sung-Il Jeon, Sungho Bae, Kangwoo Cho</i>	
(Invited) Electrochemical Deionization for Water Desalination and Direct Lithium Extraction.....	1662
<i>Xitong Liu</i>	
(Invited) Non-Uniformly Polarized Reactive Electrochemical Membrane (REM) for Water Purification	1663
<i>Jinxing Ma, Kui Yang, Zhifeng Yang</i>	
Organic Faradaic Desalination Cell Based on Polyimide Symmetric Electrodes.....	1665
<i>Alba Fombona Pascual, Nagaraj Patil, Enrique Garcia - Quismondo, Nicolas Goujon, David Mecerreyes, Rebeca Marcilla, Jesus Palma, Julio J. Lado</i>	
3D Silver Sponge Electrodes for High-Rate Faradaic Deionization of High-Salinity Waters.....	1667
<i>Zachary Garbe Neale, Ryan H. Deblock, Debra R. Rolison, Hunter O. Ford, Jeffrey W. Long</i>	

F02 - Resource Recovery, Recycling, and Chemical Purification 1

(Invited) Transforming Metal-Containing Secondary Resources into Functional Materials for Electrochemical Energy Applications.....	1668
<i>Xochitl Dominguez-Benetton</i>	
Solid-State Electrolyte for Lithium Extraction from Salt Lake Brines.....	1670
<i>Chong Lei, Hui Wu</i>	
Electrodialysis of Lithium Sulfate Solutions from Hydrometallurgical Recycling of Spent Lithium-Ion Batteries	1671
<i>Jiyong Zhu, Dongxin Kang, Joey Chung-Yen Jung, Pang-Chieh Sui</i>	
Electrochemical Oxidation of Cobalt at a Platinum Electrode in a Chloride Medium	1673
<i>Iryna Makarava, Zulin Wang, Benjamin Wilson, Kirsi Yliniemi, Mari Lundström</i>	
Battery Electrode-Based Lithium Recovery from Geothermal Brines	1675
<i>Monika Bäuerle, Laura Herrmann, Fabian Jeschull</i>	

F02 - Poster Session

Optimization of Synergistic Leaching of Valuable Metals from Spent Lithium-Ion Batteries by the Sulfuric Acid-Malonic Acid System Using Response Surface Methodology.....	1676
<i>Pengwei Li</i>	
Activated Carbon Electrodes Obtained from Crude Glycerol for Capacitive Deionization Desalination.....	1677
<i>Luis Augusto Martins Ruotolo, Kamilla Malverde Barcelos, Kaique S. G. C. Oliveira, Patricia Trevisani Juchen</i>	
Materials Properties vs. Device Performance: Batch Testing of MnO _x -Loaded Carbon Nanofoam Papers for Low-Energy Faradaic Deionization	1678
<i>Zachary Garbe Neale, Ryan H. Deblock, Debra R. Rolison, Megan B. Sassin, Jeffrey W. Long</i>	
Gold Recovery from Thiosulfate Leaching Solution Using Silicon Powder and Electrochemical Monitoring of Its Process	1679
<i>Shinji Yae, Yuna Iwai, Yumi Takashima, Takumi Osaka, Ayumu Matsumoto</i>	
Effect of Water Vapor on Hydrogen Isotopes Separation by Polymer Electrolyte Fuel Cell.....	1680
<i>Koichiro Furusawa, Toranosuke Nago, Mikito Ueda, Hisayoshi Matsushima</i>	
Deuterium Isotope Separation By Polymer Electrolyte Fuel Cell with Gas Circulation System	1681
<i>Toranosuke Nago, Koichiro Furusawa, Mikito Ueda, Hisayoshi Matsushima</i>	
Hydrogen Depolarized Anode Assisted pH Shift Electrolysis: An Experimental Analysis.....	1683
<i>Robert Kiefel, Andreas Jupke</i>	
Electro-Oxidation of Diols in Polymer Recycling: Facilitating Separation and Refining Products	1685
<i>Jan Haß, Marcel Gausmann, Andreas Jupke</i>	

Recovery of Bio-Based Fumaric Acid By Electrochemically Induced pH Shift Crystallization..... 1687
Christian Schröder, Andreas Jupke

F02 - Water Purification and Wastewater Treatment 2

(Invited) Electro-Separation Combined with Electro-Conversion for Wastewater Treatment and Recovery: Case Study of Electro-Precipitation or Electro-Sorption Combined with Advanced Electro-Oxidation 1689
Emmanuel Mousset

(Invited) Electrochemically Driven Ion-Exchange Remediation of Water Containing High Fluoride Content 1690
A. Robert Hillman, Abdulcabbar Yavuz, Asuman Unal, Salih Cihangir, Karl Ryder

Electrochemical Ion Separations By Recyclable Electrode Cell 1692
Julio J. Lado, Alba Fombona-Pascual, Daniel Pérez-Antolín, Enrique Garcia - Quismondo, Jesus Palma, Edgar Ventosa

A Novel Circuit-Based Model of Electrodialysis Avoiding the Use of Empirical Parameters 1693
Jack Ledingham, Ngai Yin Yip, Kyra Sedransk Campbell, Alasdair Campbell

(Invited) Electrochemistry Combined in Situ Neutron Reflectometry: A Powerful Tool for a More Sustainable Environment..... 1695
Hanyu Wang, Riccardo Candeago, Mathieu Doucet, Jim Browning, Xiao Su

(Invited) Microwave Dielectric Relaxation Spectroscopy: A Technique to Inform Ion Transport in Hydrated Polymer Membranes..... 1696
Geoffrey M. Geise

(Invited) Layered Double Hydroxides with Enhanced Interlayer Space for Electrochemical Energy Storage and Deionization 1697
Yang Wang, Qianfeng Pan, Yixuan Qiao, Song Peng

Functionalized Nanoporous Ceramic Membranes for Electrodialysis Treatment of Harsh Wastewater 1698
Emily Rabe, Stephanie Candelaria, Olivia Lenz, Rachel Malone, Greg Newbloom

A Comprehensive Study on the Ion-Selective Behavior of MnO_x for Electrochemical Deionization..... 1700
Yi Heng Tu, Chi-Chang Hu

F02 - Resource Recovery, Recycling, and Chemical Purification 2

Trash to Treasure: Recovery of Trace Platinum from Industrial Process Solutions 1701
Linfan Cui, Kirsi Yliniemi, Jaana Vapaavuori, Mari Lundström

Redox-Mediated Enantioselective Interactions in Chiral Metallopolymers Possessing Supramolecular Chirality..... 1703
Jemin Jeon, Johannes Elbert, Xiao Su

Electrocoagulation Technique for Treating Swine Slaughterhouse Wastewater from Batch to Semicontinuous Operation Mode 1705
Miguel A Sandoval, Oscar Coreño, Verónica García, Ricardo Salazar

The Efficiency Improvement of Electrodeposition of High-Purity Zn by a Proper Electrolyte Solution Preparation from Spent Pickling Liquor by Anion-Exchange Separation..... 1706
Hanna Zakiyya, Tamas Kekesi

Electrochemical Reduction of Ytterbium in Non-Aqueous Solvents - Towards Production of Pure Medical Lutetium-177 1707
Robin Aerts, Bart Geboes, Karen Van Hecke, Koen Binnemans, Thomas Cardinaels

Electrochemical Dewatering of Cellulosic Nanomaterials 1709
Santosh Hanamant Vijapur, Santosh R More, Huong Le, Timothy Hall, E. Jennings Taylor, Maria Inman, Stephen Snyder, Kim Nelson, Robert M Handler

Screening Electrochemical Phosphorous Recovery Conditions in Real and Synthetic Wastewater Streams	1710
<i>Kody D Wolfe, Sana Heydarian, Lawrence O. Ajayi, Syed Asad Abbas, Jason Trembly, Damilola Daramola</i>	
CO-Driven Au Recovery and Nanoparticle Synthesis By in-Situ CO ₂ Reduction on Gas-Diffusion Electrodes	1711
<i>Luis F. Leon-Fernandez, Omar Martinez-Mora, Jan Fransaer, Xochitl Dominguez-Benetton</i>	

F02 - Carbon Dioxide Capture

A Two-Dimensional Transport Model of Bipolar Membrane Electrodialysis for the Electro-Regeneration of Carbon Capture Solvents	1713
<i>Jack Ledingham, Alasdair Campbell, Kyra Sedransk Campbell</i>	
Electrochemical Direct Air Capture of Carbon Dioxide by a Redox-Mediated Salt Splitting Process	1715
<i>Thomas Young George, Lucie Mangold, Clifton Wang, Daniel P. Schrag, Michael J. Aziz</i>	
Electrochemically Induced CO ₂ Capture Enabled By Aqueous Organic Redox Chemistry	1716
<i>Yan Jing, Kiana Amini, Dawei Xi, Martin Jin, Abdulrahman Alfaraidi, Roy G. Gordon, Michael J. Aziz</i>	
Electrochemically Mediated Amine Regeneration for Efficient CO ₂ Separation: Development and Characterization of Blend Electrolytes	1718
<i>Ahmad Hassan, Mim Rahimi</i>	

F03-PULSE AND REVERSE PULSE ELECTROLYTIC PROCESSES 4: IN HONOR OF EJ TAYLOR

F03 - Industrial Applications of Pulse and Pulse Reverse Electrolysis

(Keynote Address) Developing Industrial Applications of Pulse Electrolytic Processes	1719
<i>Earl Jennings Taylor</i>	
(Invited) Industrial Relevance of Pulsed Electrochemical Methods	1721
<i>Wolfgang Hansal, Selma Hansal, Susanna Weiß</i>	

F03 - Pulse and Pulse Reverse Electrodeposition 1

Pulse Electrodeposition in the Presence of Corrosion Reactions during the Off-Time	1722
<i>Sudipta Roy, Todd Green</i>	
Use of Pulsed Currents with Long Off-Times to Increase Proprieties of Trivalent Chromium Based Deposits	1723
<i>Martin Marcelet, Marie-Pierre Gigandet, Bruno Vuillemin, Joffrey Tardelli, Kamyar Ahmadi, Stanko R. Brankovic, Jean-Yves Hihn</i>	
Effect of Pulsed Currents on Oxygen and Carbon Contents of Trivalent Chromium Based Deposits	1725
<i>Julymar Rodriguez, Severine Lallemand, Marie-Pierre Gigandet, Martin Marcelet, Benjamin Legrand, Joffrey Tardelli, Jean-Yves Hihn</i>	
Electrodeposition of Metals and Their Alloys in Ionic Liquids Using Pulse Plating	1726
<i>Adriana Ispas, Anna Endrikat, Andreas Bund</i>	
Pulse and Pulse/Reverse Techniques for Electrodeposition of Rhenium and Refractory Metals	1727
<i>Daniel E Hooks, Michael McBride, Nathan Brown, Courtney L Clark, Enkeleda Dervishi</i>	
Coating Applications By Pulse/Pulse Reverse Electrolysis	1728
<i>Timothy Hall, Holly Garich, Dan Wang, Santosh Hanamant Vijapur, Rajeswaran Radhakrishnan, Huong Le, Stephen Snyder, Maria Inman, Earl Jennings Taylor</i>	

F03 - Pulse and Pulse Reverse Electrodeposition 2

- Pulse Electrodeposition of High Moment-High Resistivity Cofex (X=P, O) Alloys and Multilayers for Inductor Application 1729
Alphan Berkem, Peter Quaye, Nafiseh Amiri, Stanko Brankovic
- Reverse Pulse Plating of Thick and Crack-Free Magnetic Layers for MEMS Manufacturing..... 1731
Roberto Bernasconi, Riccardo Cesaro, Christian Rinaldi, Luca Magagnin
- One-Step PRC Surface Pretreatment for Plating Onto Al Alloys 1732
Rajeswaran Radhakrishnan, Santosh Hanamant Vijapur, Timothy Hall, Maria Inman, Stephen Snyder

F03 - Pulse and Pulse Reverse Surface Finishing

- Surface Finishing or Shaping By Pulse/Pulse-Reverse Electrolysis..... 1733
Timothy Hall, Rajeswaran Radhakrishnan, Houg Le, Andrew Moran, Holly Garich, Danny Liu, Stephen Snyder, Maria Inman, Earl Jennings Taylor
- The Potential of Dynamic Electrochemistry for Post-Processing of 3D-Printed Metal Parts..... 1734
Selma Hansal, Wolfgang Hansal, Susanna Weiß
- Selective Surface Feature Electropolishing of Additively Manufactured 316L Using Pulse Electrochemistry 1735
Alex J Mirabal, Daniel E Hooks, Jamie A Stull
- Application of Pulse Techniques for the Electropolishing of Titanium and Gold Alloys in Deep Eutectic Solvents 1737
M. Lucia Nascimento, Adriana Ispas, Andreas Bund

F03 - Pulse and Pulse Reverse Electrolytic Conversion

- Pulse/Pulse Reverse Electrolysis for Electrochemical Conversion Technologies 1739
Timothy Hall, Katherine Lee, Santosh Hanamant Vijapur, Holly Garich, Santosh R More, Stephen Snyder, Maria Inman, Earl Jennings Taylor

F04-ELECTROCHEMICAL CONVERSION OF BIOMASS 4

F04 - Poster Session

- Green Chemistry of the Future: Co-Electrosynthesis of Biobased Platform Chemicals and Hydrogen..... 1740
Linda Brösgen, Calvin Lam, Jens Tübke, Robin Kunkel, Julia Melke
- Characterization and Performance Evaluation of Geranium Leaves Activated Carbon for Energy Storage Applications..... 1742
Akshay ., Vadali Venkata Satya Siva Srikanth
- Electrochemical Reduction of HMF: Study of Alkyl Ammonium Bromides as Electrode-Electrolyte Modifier..... 1743
Mohammad Peirow Asfia, Pavlo Nikolaienko, Walter Agustin Agustin Parada Villarroel, Karl J. J. Mayrhofer

F04 - Utilizing Biomass in Paired Electrolyses

- Anode Catalysts for Electrocatalytic Alcohol Oxidation Coupled to CO₂ Reduction in Continuous-Flow Electrolyzers..... 1744
Attila Kormanyos, Adrienn Szirmai, Csaba Janaky, Balázs Endrodi
- Paired Electrosynthesis 2,5-Furandicarboxylic Acid (FDCA) and 2-Butanone in a Flow-Cell 1745
Tobias Harhues, Maria Charlotte Padligur, Saskia Fischer, Matthias Wessling, Robert Keller

Electrochemical Oxidation of Hydrothermal Liquefaction-Derived Aqueous Phase for Simultaneous H ₂ Production.....	1747
<i>Swanand Sadashiv Bhatwadekar, Nickolas W Riedel, Fan Lin, Bhanupriya Boruah, Lyndi E. Strange, Juan A. Lopez-Ruiz</i>	
Hydrogen Production Via Mediated Electrolysis of Biomass from Distillery Whisky Waste Streams	1749
<i>Robert Price, Lewis Macdonald, Jun Li, Edward Brightman</i>	
Glycerol Electrooxidation in Flow Reactors	1750
<i>Rachel Naomi Gaines, Adam Sibal, James John Griebler, Raghuram Gaddam, Lauren C Harris, Beth Ann Kleimenhagen, Ashrith Keshireddy, Andrew A. Gewirth, Joaquin Rodriguez Lopez, Simon A Rogers, Ashlynn S Stillwell, Paul Kenis</i>	
Electrocatalytic Conversion of Glucose into Hydrogen and Value-Added Compounds on Gold and Nickel Catalysts.....	1751
<i>Theo Faverge, Antoine Bonnefont, Marian Chatenet, Christophe Coutanceau</i>	

F04 - Electrochemical Conversions of Biomass

Towards Electrobiofuels: Economics and Environmental Impacts	1754
<i>Christopher M. Saffron</i>	
Deconvoluting the Role of Electrolyte pH, Structural Sensitivity, and Electric Field Effects on the Electrochemical Hydrogenation of Phenol.....	1755
<i>Brianna Markunas, Joshua David Snyder</i>	
Characterization of Potential Dependent Fouling of Cu Electrodes during Electrochemical Hydrogenation and Hydrogenolysis of Furfural in Acid	1757
<i>Andrew S. May, Elizabeth J. Biddinger</i>	
Carbon-Based Electrode Materials for Electrocatalytic Transformations	1758
<i>Christian Schröder, Hugo Nolan, Marc Brunet Cabré, Filippo Pota, Niall Mc Evoy, Kim McKelvey, Paula E. Colavita</i>	
Electro-Oxidative Valorization of Biomass-Derived Furanics	1759
<i>Adam Holewinski</i>	
Investigating the Effect of Alkali Metal Cations on Kolbe Electrolysis.....	1760
<i>Talal Ashraf, Guido Mul, Bastian Mei</i>	
Selective Anodic Conversion of Technically Relevant Lignin	1762
<i>Siegfried R Waldvogel</i>	
NAD-Regenerating Biocathode Applied to Electroenzymatic Conversion of Lignin	1763
<i>Vladyslav Mishyn, David Hickey, Sofiene Abdellaoui</i>	
Electromediated Oxidation of Hydrolysed Bacterial Cellulose.....	1765
<i>Neptun Yousefi, Benjamin Wilson, Eero Kontturi</i>	
Lignin Nanoparticles as Charge Storage Centers in Organic Battery Electrodes	1766
<i>Van Chinh Tran, Mohammad Morsali, Mika H. Sipponen, Isak Engquist</i>	

G01-ATOMIC LAYER DEPOSITION AND ETCHING APPLICATIONS 19

G01 - Keynote

(Keynote) ALD Challenges and Opportunities in Light of Future Trends in Si-Based Nanoelectronics	1767
<i>Johan Swerts</i>	

G01 - ALD for Semicon Applications

Understanding Growth Mechanism of Atomic Layer Deposition of TiSiO ₂ for Spacer in Double Patterning Process	1768
<i>Sanghun Lee, Seunggi Seo, Wonate Noh, Il-Kwon Oh, Hyungjun Kim</i>	

Low-Temperature Atomic Layer Deposition of High-K SbO _x for Thin Film Transistors	1769
<i>Amin Bahrami, Jun Yang, Xingwei Ding, Panpan Zhao, Shiyang He, Sebastian Lehmann, Mikko Laitinen, Jaakko Julin, Mikko Kivekäs, Timo Sajavaara, Kornelius Nielsch</i>	
New Materials for Memory Applications by Atomic Layer Deposition.....	1770
<i>Andrea Illiberi, Alessandra Leonhardt, Matthew Surman, Leo Lukose, Ranjith Ramachandra, Vivek Koladi Mootheri, Mihaela Popovici, Michael Givens</i>	
Influence of Increasing Deposition Temperature during Atomic Layer Deposition on Electrical Properties and Reliability in Al ₂ O ₃ - Doped ZrO ₂ Based Two-Dimensional and Three-Dimensional Metal-Insulator-Metal Decoupling Capacitors	1771
<i>Konstantinos Efsthios Falidas, Kati Kühnel, Maximilian Bernd Everding, Matthias Rudolph, Malte Czernohorsky, Johannes Heitmann</i>	
Atomic Layer Deposition of HfAlO _x for High-k Gate Dielectrics	1775
<i>Messaoud Bedjaoui, Mélanie Dartois, Vincent Jousseau, Emmanuel Nolot, Yann Mazel, Jérôme Richy, Céline Bout</i>	
In-Situ Reflectance Absorption Infra-Red Spectroscopy (RAIRS) Study on ALD of HfO ₂ on TiN and Pt Electrodes	1777
<i>Jiyoung Kim, Jin-Hyun Kim, Minjong Lee, Dan Le, Yeeun Hong, Siun Song, Si Joon Kim, Rino Choi</i>	

G01 - ALD On 0D and 1D Materials

(Invited) Atomic Layer Deposition on 1D Nanomaterials for Various Applications	1778
<i>Raul Zazpe, Hanna Sopha, Mouli Thalluri, Ludek Hromadko, Jhonatan Rodriguez Pereira, Martina Rihova, Jan M. Macak</i>	
Atomic Layer Deposition for Quantum Dots Displays' Devices Stabilization.....	1780
<i>Di Wen, Kun Cao, Eryan Gu, Xuwei Jiang, Yanwei Wen, Rong Chen</i>	

G01 - ALD of/on Dichalcogenides

(Invited) Enabling High Quality Dielectric Passivation on Monolayer WS ₂ Using a Sacrificial Graphene Oxide Template	1781
<i>Pieter-Jan Wyndaele, Jean-Francois De Marneffe, Stefanie Sergeant, Cesar Javier De La Rosa, Steven Brems, Arantxa Maestre Caro, Stefan De Gendt</i>	
(Invited) Advanced Atomic Layer Deposition Cycle Schemes for Large-Area Synthesis of 2D Transition Metal Dichalcogenides	1782
<i>Ageeth Anke Bol</i>	
Growth Mechanism and Film Properties of Atomic-Layer-Deposited Titanium Oxysulfide	1783
<i>Bart Macco, Jeroen Van Kasteren, Saravana Balaji Basuvalingam, Miika Mattinen, Andrea Bracesco, Wilhelmus M. M. (Erwin) Kessels, Ageeth Bol</i>	
(Invited) Atomic Layer Processing of MoS ₂	1785
<i>Elton Graugnard</i>	

G01 - Poster Session

Atomic Layer Etching of Al ₂ O ₃ Using F Radical and Al Precursors: Surface Reaction and Reaction Mechanism Study	1787
<i>Yewon Kim, Gyejun Cho, Okhyeon Kim, Ye Rim Choi, Khabib Khumaini, Hye-Lee Kim, Jun Hyuck Kwon, Minsu Kim, Byungchul Cho, Sangjoon Park, Won-Jun Lee</i>	
Morphological and Electrical Characterization of AlGa _N /Ga _N Heterostructures Modified By Atomic Layer Etching	1788
<i>Christian Miersch, Stephan Wege, Johannes Heitmann, Franziska Christine Beyer</i>	
Platinum Catalysts via Fluidized Bed Atomic Layer Deposition for PEM Fuel Cells	1789
<i>Fiona Pescher, Miriam Von Holst, Arbëri Salihi, Philipp Heizmann, Julian Stiegeler, Severin Vierrath</i>	

Oxygen Evolution Reaction Performance Changes with Varying Crystallinity and Thickness of Atomic Layer Deposited RuO ₂ Film	1790
<i>Jaehwan Lee, Seung-Min Chung, Hyungjun Kim</i>	
Mechanism of Infiltration between Alumina and Polyurea for Stretchable Patterned Thin Film.....	1792
<i>Jae Seok Lee, Seung Hak Song, Byoung-Ho Choi</i>	
Atomic Layer Deposition and Characterization of Bi ₁ Se ₁ Thin Films	1793
<i>Amin Bahrami, Shiyang He, Xiang Zhang, Magdalena Ola Cichocka, Jun Yang, Jaroslav Charvot, Filip Bures, Stephan Schulz, Kornelius Nielsch, Alla Heckel</i>	
Sulfur- and Nitrogen- Containing Molybdenum Films with a Thermally Stable Precursor	1794
<i>Andrea Leoncini, Chandan Kr Barik, Feng Q Liu, Jiecong Tang, John Sudijono, Mark Saly</i>	
Stepwise Growth of Crystalline MoS ₂ in Atomic Layer Deposition	1796
<i>Ah-Jin Cho, Seung Ho Ryu, Seong Keun Kim</i>	

G01 - Area-Selective ALD

(Invited) Atomistic Insights into Continuous and Area-Selective ALD Processes: First-Principles Simulations of the Underpinning Surface Chemistry	1797
<i>Bora Karasulu</i>	
Surface Reaction Kinetics for Inherent Selective Atomic Layer Deposition of Tantalum Oxide.....	1799
<i>Kun Cao, Zilian Qi, Eryan Gu, Yanwei Wen, Rong Chen</i>	
(Invited) Small Molecule Inhibitor-Based Approaches for Area-Selective Deposition from First Principles.....	1800
<i>Ralf Tonner-Zech</i>	
Surface Passivation of Polymer Based Redistribution Layers for Area Selective Deposition of an Oxygen Barrier	1802
<i>Anita Brady-Boyd, Emmanuel Chery, Robert O'Connor, Darragh O'Neil, Silvia Armini</i>	
(Invited) Area Selective Deposition Using Homometallic Precursor Inhibitors.....	1804
<i>Han-Bo-Ram Lee</i>	
Inherently Selective Atomic Layer Deposition for Optical and Sensor Applications: Microreactor Direct Atomic Layer Processing (μ DALP™).....	1805
<i>Maksym Plakhotnyuk, Atilla C Varga, Karolis Parfeniukas, Ivan Kundrata, Julien Bachmann</i>	

G01 - Atomic Layer Etching 1

(Invited) The Use of Plasmas for Isotropic Atomic Layer Etching	1807
<i>Nicholas John Chittock, Wilhelmus M. M. (Erwin) Kessels, Harm Knoops, Adrie Mackus</i>	
Analysis of Operational Characteristics of AlGaIn/GaN MIS-HEMT with Different Slant-Recessed-Gate Structures	1809
<i>Hsin Chu Chen, An-Chen Liu, Yung-Yu Lai, Hao-Chung Kuo</i>	

G01 - Atomic Layer Etching 2

(Invited) Novel Surface Reactions in Low-Temperature Regime for High-Aspect-Ratio Dielectric Etching	1811
<i>Masanobu Honda, Ryutaro Suda, Koki Tanaka, Masahiko Yokoi, Maju Tomura, Yoshihide Kihara</i>	
Comparative Analysis of Surface Characterization Techniques for Atomic Layer Etching	1812
<i>Reza Jafari Jam, Yoana Ilarionova, Amin Karimi, Muhammad H. Asif, Dmitry B. Suyatin, Jonas Sundqvist</i>	
Atomic Layer Etching of GaN and AlGaIn Using CH ₄ /H ₂ , H ₂ and HCl Chemistry	1814
<i>Marco Radehaus, Stephan Wege, Christian Miersch, Elias Ricken, Mario Krug</i>	
(Invited) Plasma-Enhanced Atomic Layer Etching for Metals and Dielectric Materials	1815
<i>Heeyeop Chae, Yongjae Kim</i>	

G01 - Spatial/Solution/Fast ALD

(Invited) FALP (Fast Atomic Layer Processing) a Chamber for Combined PEALD and ALE Processes	1816
<i>Stephan Wege, Aditya Kumar Soni, Elias Ricken, Vardhman Singh Chaudhary</i>	
Solution ALD Processing of Halide Perovskite Thin Films Yields Superior Functional Quality and Stability Than Classical Processing.....	1817
<i>Vanessa Koch, Maissa K. S. Barr, Pascal Büttner, Marcus Bär, Christoph Brabec, Julien Bachmann</i>	
Atomic Layer Deposition of Multi-Component Films Using Precursor Co-Dosing	1818
<i>Paul Poodt</i>	
Numerical Simulation of Spatial Atomic Layer Deposition on Moving Substrates with Microgrooves and Porous Structures.....	1819
<i>Zoushuang Li, Kun Cao, Bin Shan, Rong Chen</i>	
Development of in-Situ Methods for Solution ALD	1820
<i>Maissa K. S. Barr, Vanessa Koch, Julien Bachmann, Fei Ding, Cindy Ly Tavera Mendez, Jan-Paul Grass, Dorothea Wissler, Olaf Brummel, Jörg Libuda, Klaus Götz, Tobias Unruh, Pei-Chun Liao, Ryan Crisp</i>	

G01 - ALD for Battery Applications

Stabilized Positive Electrode Material to Enable High Energy/Power Density Lithium-Ion Batteries	1821
<i>Zahra Ahaliabadeh, Ville Miikkulainen, Miia Mäntymäki, Tanja Kallio</i>	
Scaling a Gas Phase Residual Lithium Conversion Process on Ni-Rich NMC Cathode Materials in Commercial Fluidized Bed Reactors	1823
<i>Jaime W Dumont, Meghan Herbert-Walters, Madison Martinez, Drew Lewis, Barbara K Hughes, Arrelaine A Dameron</i>	
Atomic Layer Deposition of $\text{Li}_x\text{Co}_y\text{O}_z$ Cathodic Thin Films for Li-Ion Batteries.....	1824
<i>Antoine Peisert, Noureddine Adjeroud, Damien Lenoble, Guillaume Lamblin</i>	
Plasma-Enhanced Atomic Layer Deposition of Lithium Nickel Oxide Thin Film Model Systems	1825
<i>Meike Jantien Pieters, Cristian Van Helvoirt, Mariadriana Creatore</i>	
New ALD ZnO Precursors and Processes for Protective Coatings on Lithium-Ion Battery Cathodes.....	1827
<i>Jorit Obenlünenschloß, Rajesh Pathak, Anil U. Mane, Jeffrey W. Elam, Anjana Devi</i>	
(Invited) Dual Coatings, Triple the Benefit; Atomic Armor for Better Battery Performance.....	1829
<i>Barbara K Hughes, Meghan Herbert-Walters, Madison Martinez, Nicholas Turner, Jaime W Dumont, James Trevey</i>	
Atomic Layer Deposition of Lithium Borate and Borophosphate Thin Films for Lithium-Ion Battery Applications	1830
<i>Tippi Verhelle, Arpan Dhara, Lowie Henderick, Jolien Dendooven, Christophe Detavernier</i>	
Chemical Vapor Treatment to Develop Solid-Electrolyte-Interphase and Remove Residual Lithium Compounds.....	1832
<i>Rajesh Pathak, Rahul Shevate, Vepa Rozyyev, Jeffrey W. Elam</i>	
Forming Artificial Solid-Electrolyte-Interfaces between Lithium Metal Anodes and Halide and Sulfide Solid Electrolytes in All-Solid-State-Batteries Via Spatial-Atomic-Layer-Deposition.....	1833
<i>Ulas Kudu, Diana Chaykina, Nico Huijssen, Auke Kronemeijer, Mahmoud Ameen</i>	
(Invited) Nanostructured Solid State Battery Architectures Enabled by Atomic Layer Deposition	1835
<i>Alexander C Kozen</i>	

G01 - ALD of Conductive Oxides

- Toward an Insulator-to-Metal Transition (IMT) in VO_x Deposited by ALD: Huge Effect on Large IR Transmission Range..... 1836
Aline Jolivet, Julien Cardin, Cédric Frilay, Olivier Debieu, Philippe Marie, Sylvain Duprey, Franck Lemarié, Xavier Portier, Philippe Bazin, Joris More-Chevalier, Premysl Fitl, Stalislav Cichon, Ján Lancok, Petr Jiríček, Weiqian Yuan, Wojciech Jadwisieniczak, David Ingram, Christophe Labbé
- Nb (V, Nb/V)-Doped TiO₂ Films as New Transparent Conducting Oxides Synthesized by a Novel ALD Process: Effect of Dopant Content and Growing Conditions 1838
Getaneh Diress Gesesse, Olivier Debieu, Aline Jolivet, Cédric Frilay, Sylvain Duprey, Xavier Portier, Christian Dufour, Philippe Marie, Christophe Labbé, Mohamad El Roz, Julien Cardin
- Atomic Layer Deposition of NiO Using Different Precursors with Different Oxygen Sources..... 1840
Vyshnav Kannampalli, Lionel Santinacci, Maxime E. Dufond, Marcel Schmickler, Anjana Devi
- Strontium Vanadate Deposited by ALD: Toward a New Synthesis Approach..... 1842
Aline Jolivet, Julien Cardin, Aiman Cheik, Cédric Frilay, Fabrice Gourbilleau, Franck Lemarié, Xavier Portier, Wojciech Jadwisieniczak, David Ingram, Moussa Mezhoud, Ulrike Lüders, Arnaud Fouchet, Christophe Labbé

G01 - ALD for Thermoelectrics

- Precision Interface Engineering of CuNi Alloys by Powder ALD Toward High Thermoelectric Performance..... 1844
Amin Bahrami, Shiyang He, Chanwon Jung, Siyuan Zhang, Ran He, Kornelius Nielsch
- ALD-Based Interface Engineering for Improving Electrical Conductivity of Nanoporous Thermoelectric Materials..... 1845
Seunghyeok Lee, Sung-Jin Jung, Gwang Min Park, Seung-Hyub Baek, Heesuk Kim, Jin-Sang Kim, Tae Joo Park, Seong Keun Kim

G01 - Molecular Layer Deposition

- Oxidative Molecular Layer Deposition of Conductive PEDOT Coatings Onto Polymer Sponges to Form Compressible Porous Electrodes..... 1846
Matthias J. Young, Mahya Mehregan, Gabe Luebbert, Katrina G. Brathwaite, Quinton K. Wyatt, Eric Throm, David Stalla
- Molecular Layer Deposition of Metal Phosphonates: A New Class of Hybrid Coating Layers 1847
Arpan Dhara, Aditya Chalishazar, Jolien Dendooven, Christophe Detavernier

G01 - Infiltration Processes

- Atomic Layer Deposition within Polymers Templates for Spatially Controlled Growth and Doped Materials 1849
Rotem Azoulay, Tamar Segal-Peretz
- Chemical Vapor Functionalization of Polymer Membranes for Water Treatment 1851
Jeffrey W. Elam, Anil U. Mane, Rajesh Pathak, Vepa Rozyyev, Rahul Shevate

G01 - ALD of Metals

- (Invited) Thermal Atomic Layer Deposition of Elemental Antimony and Bismuth Films 1852
Charles H. Winter, Daniel Beh, Zachary J. Devereaux, Thomas Knisley
- (Invited) Exploring New ALD Processes for Coinage and Transition Metals through Molecularly Engineered Precursors 1853
Anjana Devi

Modeling the Atomic Layer Deposition of Metal Thin Films: Studying the Surface Reaction Mechanism By Density Functional Theory Simulations	1854
<i>Ji Liu, Michael Nolan</i>	
Nucleation Behavior and Growth Characteristics of Atomic-Layer Deposited Iridium Thin Films with Ticp and Oxygen	1855
<i>Hong Keun Chung, Han Kim, Tae Joo Park, Seong Keun Kim</i>	
Effect of Surface Pretreatment to Reduce the Incubation Period of Iridium Thin Films Grown by ALD on the Oxide Surface	1856
<i>Myung Jin Jung, Se-Hun Kwon</i>	

G01 - ALD for (Electro)catalysis

(Invited) Nucleation, Growth and Location Regulation of Heterogeneous Catalysts Synthesized by Atomic Layer Deposition	1857
<i>Yong Qin</i>	
Every Step Counts: Importance of Final ALD Sequences for Oxygen Evolution Reaction Catalysts	1858
<i>Ruben Blomme, Rahul Ramesh, Lowie Henderick, Christophe Detavernier, Jolien Dendooven</i>	
Digital Composition Control of Cobalt Nickel Oxides by ALD for the Oxygen Evolution Reaction	1860
<i>Renee Van Limpt, Marek Lavorenti, Mengmeng Lao, Marcel A. Verheijen, Michail N. Tsampas, Mariadriana Creatore</i>	
ALD-Based IrO _x /Ir Supported Electrocatalysts for Water Electrolysis Technology	1864
<i>Romain Platel, Fabien Dufour, Julien Thuilliez, Sara Cavaliere, Deborah J. Jones, Jacques Rozière</i>	
Atomic Layer Deposition of Ru Nanoparticles on Low Surface Energy Carbon Supports for Alkaline Hydrogen Evolution Reaction.....	1865
<i>Sitaramanjaneya M. Thalluri, Raul Zazpe, Jhonatan Rodriguez Pereira, Hanna Sopha, Jan M. Macak</i>	

G01 - ALD of Nitrides

Thermal Atomic Layer Deposition of Silicon Carbonitride: A Density Functional Theory Study	1867
<i>Tanzia Chowdhury, Ye Rim Choi, Yewon Kim, Hye-Lee Kim, Khabib Khumaini, Romel Hidayat, Jae Seok An, Jang-Hyeon Seok, Jung Woo Park, Won-Jun Lee</i>	

G01 - Plasma Processes

Plasma Anneal As a Stress Control Method in Low Temperature Al ₂ O ₃ ALD Coatings.....	1868
<i>Jacques Kools, Alter Zakhster, Pierre Caries, John Hill</i>	
Multi-Scale Simulations of Gas-Phase Particles Generated in Plasma Enhanced Atomic Layer Deposition Processes	1870
<i>Yusuke Kosaki, Naoya Uene, Takuya Mabuchi, Takashi Tokumasu</i>	

G02-SEMICONDUCTOR PROCESS INTEGRATION 13

G02 - Digital Only Presentations in Semiconductors, Dielectrics, and Metals for Nanoelectronics

20

(Digital Presentation) Improving Field-Effect Transistor Performance through Pulsed Laser Irradiation-Mediated MoS ₂ -Metal Contact Engineering.....	1872
<i>Sumayah Shakil Wani, Yao-Zen Kuo, K. M. M. D. K Kimbulapitiya, Yu-Lun Chueh</i>	
(Invited, Digital Presentation) Langmuir-Type Formulation for Atomic-Order Surface Reactions of Reactant Gases on Si (100) and Ge (100) Surfaces	1873
<i>Junichi Murota</i>	

G02 - Devices and Process Technology 1

- (Invited) Sequential 3D Integration of Ge Transistors on Si CMOS 1875
Mikael Ostling, Per-Erik Hellstrom
- (Invited) Stacking High Mobility Channels 1876
Yi-Chun Liu, Chien-Te Tu, Wan-Hsuan Hsieh, Yu-Rui Chen, Bo-Wei Huang, Chun-Yi Cheng, Chee Wee Liu
- (Invited) Vertically Stacked Graphene Junction Diodes 1878
Masao Nagase

G02 - Devices and Process Technology 2

- (Invited) Al-Al Waferbonding Process Development for Heterogeneous Integration 1880
Sebastian Schulze, Matthias Wietstruck, Thomas Voß, Patrick Krüger
- Evaluation of Anisotropic Biaxial Stress in Extremely-Thin Body (100) Silicon-Germanium-on-Insulator p-Type Metal-Oxide-Semiconductor Field-Effect-Transistor by Oil-Immersion Raman Spectroscopy 1882
Yuiha Maeda, Ryo Yokogawa, Sho Sugawa, Chia-Tsong Chen, Kasidit Toprasertpong, Mitsuru Takenaka, Shinichi Takagi, Atsushi Ogura
- Stress Relaxation of Extremely-Thin-Body Ge-on-Insulator p-Type Metal-Oxide-Semiconductor Field-Effect Transistor Along <100> and <110> Observed By Oil-Immersion Raman Spectroscopy 1884
Ryo Yokogawa, Yuiha Maeda, Sho Sugawa, Chia-Tsong Chen, Mitsuru Takenaka, Shinichi Takagi, Atsushi Ogura
- Epi Source-Drain Damage Mitigation During Channel Release of Stacked Nanosheet Gate-All-Around Transistors 1887
Curtis Durfee, Ivo Otto Iv, Subhadeep Kal, Shanti Pancharatnam, Matthew Flaugh, Toshiki Kanaki, Matthew Rednor, Huimei Zhou, Liqiao Qin, Luciana Meli, Nicolas Loubet, Peter Biolsi, Nelson Felix

G02 - Devices and Process Technology 3

- (Invited) Simulations of Ultra-Scaled Electronic Devices with a Novel Flexible Nano-TCAD Nano-Electronic Simulation Software (NESS) Environment 1890
Vihar Petkov Georgiev
- (Invited) Technology Scaling from Bulk to Fin and Nano-Sheet Transistors 1891
Kazuhiko Endo
- (Invited) Mechanical Stress Simulations for Advanced Logic Devices 1892
Geert Eneman, Anabela Veloso, Paola Favia, An De Keersgieter, Fabian Bufler, Philippe Matagne, Geert Hellings, Naoto Horiguchi
- (Invited) In-Depth Understanding of the Key Contributors to the Total Flicker Noise in Advanced Logic Devices 1895
Bogdan Cretu, Abderrahim Tahiat, Anabela Veloso, Eddy Simoen
- (Invited) Thermally Oxidized Yttrium Oxide on Germanium for n-Mos Capacitor and Field-Effect Transistor 1899
Keisuke Yamamoto, Wei-Chen Wen, Dong Wang, Hiroshi Nakashima

G02 - Memory and Process Technology

- (Invited) Physical Understanding of HfZrO₂/Si FeFET Memory and Its AI Applications 1901
Shinichi Takagi, Kasidit Toprasertpong, Zuocheng Cai, Eishin Nako, Ryosho Nakane, Mitsuru Takenaka
- (Invited) BEOL-Compatible Oxide Semiconductor Logic and Memory Devices 1903
Xiao Gong

(Invited) Fabrication Technique of Ferroelectric $\text{Hf}_x\text{Zr}_{1-x}\text{O}_2$ Thin Films Using ALD-ZrO ₂ Nucleation Layers.....	1905
<i>Takashi Onaya</i>	

G02 - Memory, Wide-Gap Semiconductor Devices and Processes

(Invited) Characterization of Metal/GaN Schottky Contacts - Review from the Early Days.....	1907
<i>Kenji Shiojima</i>	
(Invited) Characteristics of GaN/High-k Capacitors Under Positive Bias Stress	1909
<i>Toshihide Nabatame, Tomomi Sawada, Yoshihiro Irokawa, Yasuo Koide, Kazuhito Tsukagoshi</i>	
Beyond the Disturb Limit of Conventional 2D NAND: Superior Coupling Characteristics from Structural Benefit of 3D NAND	1911
<i>Joung Ho Yoon, Ji Hwon Lee, Jun Sik Hong, Yong Sik Yim</i>	
Skyrmion Based Synaptic Device Having Perpendicular Magnetic-Tunnel-Junction Spin-Valve Sensor	1912
<i>Yohan Choi, Han-Sol Jun, Ho-Jung Kwon, So-Hyun Lee, Yeon-Soo Shin, Tae-Hun Shim, Jea-Gun Park</i>	

G02 - Emerging Technologies & Processes 1

(Invited) Suspended 1D/2D Nanomaterials: Progress on a Waferlevel Technology and Applications.....	1914
<i>Sascha Hermann, Simon Böttger, Martin Hartmann</i>	
(Invited) Metal-Organic Chemical Vapor Deposition of WS ₂ on Patterned Substrate	1916
<i>Atsushi Ogura, Kirito Cho, Ryo Yokogawa, Naomi Sawamoto, Hideaki Machida, Masato Ishikawa, Hiroshi Sudoh, Hitoshi Wakabayashi</i>	
(Invited) Silicon Quantum Dot Single-Electron Pumps for the Closure of the Quantum Metrology Triangle	1920
<i>Akira Fujiwara, Gento Yamahata, Nathan Johnson, Shuji Nakamura, Nobuhisa Kaneko</i>	
(Invited) Photo-Assisted Electron Emission from Silicon-Based Electron Emission Devices.....	1922
<i>Hidetaka Shimawaki, Masayoshi Nagao, Katsuhisa Murakami</i>	

G02 - Emerging Technologies & Processes 2

(Invited) Epitaxial Growth Technique for Si _{1-x} Sn _x Binary Alloy Thin Films	1924
<i>Masashi Kurosawa, Shigehisa Shibayama, Mitsuo Sakashita, Osamu Nakatsuka</i>	
(Invited) Design of Surface Oxidation and Nitridation Reactions on 4H-SiC for the Advanced SiC Gate Stack Formation Processes.....	1926
<i>Koji Kita</i>	
Nanoscale Periodic Modulation of Doping over Large Areas with Block Copolymer Lithography and Ion Implantation.....	1928
<i>Stefano Kuschlan, Valentina Gianotti, Michele Laus, Francesc Pérez-Murano, Jordi Llobet, Marta Fernandez-Regulez, Caroline Bonafos, Michele Perego, Gabriele Seguini, Marco De Michielis, Graziella Tallarida</i>	
Novel Wet Etchant for Highly Selective Etching of Si _{1-x} Ge _x -Film to Si-Film with Sodium Periodate Oxidant	1931
<i>Changjin Lee, Ji-Eun Lee, Eun-Woo Jang, Ji Hoon Kim, Jea-Gun Park</i>	

G02 - Microsystems 1

(Invited) SAE-MEMS Technology for Electrostatic Vibrational Energy Harvesters	1933
<i>Daisuke Yamane, Yuya Tanaka</i>	

(Invited) Mechanical Property Design of Multilayered Ti/Au Microcomponents by Electrodeposition Toward High-Sensitive MEMS Accelerometers.....	1935
<i>Masato Sone, Tso-Fu Mark Chang, Tomoyuki Kurioka, Chun-Yi Chen, Parthojit Chakraborty, Hiroyuki Ito, Katsuyuki Machida, Yoshihiro Miyake</i>	
(Invited) Leading-Edge Diamond FET, MEMS, and Photodetector Devices.....	1937
<i>Yasuo Koide</i>	

G02 - Microsystems 2

(Invited) Formation and Characterization of Fe-Silicide Nanodots for Optoelectronic Application.....	1939
<i>Seiichi Miyazaki, Katsunori Makihara</i>	
(Invited) Optical Biosensors in Photonic Integrated Circuits for Smart System Integration.....	1941
<i>Patrick Steglich, Martin Paul, Christian Mai, Giulia Lecci, Michael G. Weller, Andreas Mai</i>	
(Invited) Detection of Wavelength Information by Filter-Free Wavelength Sensor and Its Applications.....	1942
<i>Yong-Joon Choi, Tsugumi Sakae, Kakeru Nakano, Mibu Ryoma, Ryuya Matsubara, Tomoya Ide, Kazuhiro Takahashi, Toshihiko Noda, Hiromu Ishii, Kazuaki Sawada</i>	

G02 - Emerging Technologies & Processes 3

(Invited) Integration of Functional Nanostructures and Nanoparticles into Micro- and Nanoelectronic Components and Systems.....	1945
<i>Christoph Robert Meinecke, Thomas Blaudeck, Till Korten, Christopher Bickmann, Georg Heldt, Julia Hann, Danny Reuter, Stefan Diez, Stefan E. Schulz, Harald Kuhn</i>	
(Invited) Atmospheric-Pressure Reactive Thermal Plasma Jet Technology for Decarbonization of Semiconductor Manufacturing	1947
<i>Seiichiro Higashi, Hibiki Kato, Jiawen Yu, Kyohei Matsumoto, Hiroaki Hanafusa</i>	
(Invited) Magneto-Mechanical Micro-Nano Devices with Electrodeposited Magnetostriction Films.....	1949
<i>Takahito Ono</i>	
Controlling Diameter and Morphology of Colloidal-Silica-Abrasives Via Designing Surfactant Functional Group.....	1951
<i>Pilsu Kim, Min-Uk Jeon, Hyeong-Ju Jin, Ho-Jun Ahn, Ju-Yeon Kim, Jin-Hyung Park, Jea-Gun Park</i>	

G02 - Emerging Technologies & Processes 4

Effect of Ferric Catalyst on Chemical Decomposition of Polyimide-Film-Surface for Enhancing Chemical-Mechanical-Planarization Polishing-Rate	1954
<i>Seongin Kim, Seon-Hwa Kang, Jin-Woong Cho, Jin-Hyung Park, Jea-Gun Park</i>	
Silicon-Germanium on Insulator CMP Slurry Designed with Oxidant and Accelerator Heading an Amine Functional Group for Remarkably Enhancing Polishing Rate.....	1957
<i>Manhyup Han Han, Eun-Seong Kim, Kyung-Sik Lee, Jea-Gun Park</i>	
Impact of Oxygen on the Generation of Slip Lines and the Electronic Properties of Si-based Substrates	1959
<i>Alexandra Abbadie, C. Pribat, V. Gredy, V. Brouzet, E. Sereix</i>	
Electrical Characterization of Ultra-Thin Silicon-on-Insulator Films Doped By Means of Phosphorus End-Terminated Polymers.....	1961
<i>Andrea Pulici, Stefano Kuschlan, Gabriele Seguini, Fabiana Taglietti, Marco Fanciulli, Riccardo Chiarcos, Michele Laus, Michele Perego</i>	

G02 - Poster Session

Hierarchical Networks Composed of Silver Micromeshes and Silver Nanowires for Optoelectronic Devices	1963
<i>Seoin Kang, Choong-Heui Chung</i>	
Synthesis of Dielectric Al-Doped HfO ₂ Thin Film by Polymer-Assisted Deposition	1964
<i>Gyeongbae Park</i>	
Amorphous Carbon Monolayer: A Novel and Effective Interlayer for Metal/Oxide Interface	1965
<i>Viswanath G. Lee, Sangyeob Lee</i>	
Study of Nb ₂ O ₅ High-k Dielectric Material Deposited By Atomic Layer Deposition for Metal-Insulator-Metal Capacitor	1966
<i>Kou Ihara, Christophe Labbé, Julien Cardin, Cédric Frilay, Maxime Lemenager</i>	
Multimodal Microscopy Characterisation of 2D Materials	1967
<i>Angela Flack</i>	

G02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics 1

Threshold Switching of ALD-NbO _x Films for Neuromorphic Applications	1969
<i>Jaehyun Moon, Ju-Hun Lee, Kitae Kim, Junho Kim, Soohyung Park, Yeonjin Yi, Seung-Youl Kang</i>	
Natural Organic Carbohydrate Materials Based Resistive Random Access Memory for Sustainable Neuromorphic Computing Systems.....	1970
<i>Feng Zhao</i>	
Multi-Bit Self-Rectifying Synaptic Memristor Having Tri-Layer Structure for Quantization Aware Training of Quantized Neural Network	1972
<i>Dae-Seong Woo, Hyun-Do Choi, Hong-Uk Jin, Jae-Kyeong Kim, Tae-Hun Shim, Jea-Gun Park</i>	

G02 - Semiconductors, Dielectrics, and Metals for Nanoelectronics 2

3-Terminal Igzo FET Based 2T0C DRAM Combined Bit-Line Structure	1975
<i>Ji-Hun Kim, Hyeon-Jun Kim, Ki-Jun Kim, Tae-Hun Shim, Jin-Pyo Hong, Jea-Gun Park</i>	
Recent Theoretical Advancement of Boron-Rich Compounds for Applications in High-Density Energy Conversion Devices	1978
<i>Bin Liu</i>	
Mixed Oxide High-K Dielectrics - from Gate Dielectrics to Non-Volatile Memories to SSI-LEDs.....	1979
<i>Yue Kuo</i>	
HfO ₂ -Based Switching Devices with Nitridation of the Bottom Electrode.....	1980
<i>Durga Misra, Aseel Zeinati</i>	

H01-STATE-OF-THE-ART PROGRAM ON COMPOUND SEMICONDUCTORS 66 (SOTAPOCS 66)

H01 - Energy Conversion: Solar Cells and Photovoltaics

(Invited) Two-Dimensional Low-Toxicity Absorbers for Efficient and Air-Stable Indoor Photovoltaics	1985
<i>Paola Vivo</i>	

H01 - InN

- (Invited) Atomic Layer Deposition as the Enabler for the Meta Stable Semiconductor InN and Its Alloys 1986
Henrik Pedersen
- (Invited) Understanding Plasma-Assisted Atomic Layer Epitaxy of InN and Opportunities for Collaboration through the Office of Naval Research Global..... 1987
Charles Robert Eddy, Neeraj Nepal, Jeffrey Woodward, Peco Myint, Chenyu Wang, Xiaozhi Zhang, Lutz Wiegart, Andrei Fluerasu, Randall Headrick, Karl Ludwig

H01 - Optoelectronics

- (Invited) Transistor-Injected Quantum-Cascade Devices: Novel Sources for Mid-Wave Infrared Emission 1988
John Michael Dallesasse, Raman Kumar, Robert Kaufman
- (Invited) Applications of Electrochemistry Toward Blue/Green and SWIR-Wavelength VCSELs 1991
Bingjun Li, Chenziyi Mi, Rami Elafandy, Jin-Ho Kang, Jung Han
- Electrochemistry in Photonic Devices Processing: a Disruptive Approach in GaN Technology 1992
Carole Pernel, Ilyes Medjahed, Margaux Audibert, Amélie Dussaigne, Frederic Barbier, Guillaume Veux, Brigitte Martin, Ludovic Dupré

H01 - Power Electronics: GaN and Beyond

- (Invited) Towards GaN Passivation: Identification of GaN Surface/Interface States 1994
Yury Turkulets, Ilan Shalish
- Degradation and Failure Mechanism of p-GaN Gate E-Mode GaN HEMTs 1997
Abhas Mehta, Hisashi Shichijo, Jungwoo Joh, Chang Suh, Moon Kim
- (Invited) Towards GaN-on-GaN High-Power Electronic Devices 1999
Michal Bockowski
- (Invited) GaN Photoconductive Semiconductor Switches for Efficient High-Voltage Power Conversion Applications 2000
Andrew Koehler, Geoffrey Foster, Jacob Leach, Kevin Udvary, Heather Splawn, Karl D. Hobart, Travis J. Anderson
- (Invited) Recent Advances and Challenges of MOCVD-Grown AlScN/GaN HEMTs 2001
Sebastian Krause, Philipp Döring, Isabel Streicher, Patrick Waltereit, Peter Brückner, Stefano Leone
- (Invited) Ferroelectric Nitride Semiconductors: Epitaxy, Properties, and Emerging Device Applications..... 2003
Zetian Mi
- (Invited) Heterogeneous Integration of Ultrawide Bandgap III-Nitrides and Diamond..... 2004
Edwin L. Piner, Mark W. Holtz

H01 - Poster Session

- Exploring the Dielectric Properties of Lanthanide Oxide Thin Films 2006
Tinsley Elizabeth Deforest, Shekhar Bhansali, Frank K Urban, Dongmei Dong, Lihua Lou, Arvind Agarwal, Sofia Pinzon, Benjamin Derby, James Valdez, Blas Uberuaga, Cortney R. Kreller

H02-SEMICONDUCTOR WAFER BONDING: SCIENCE, TECHNOLOGY AND APPLICATIONS 17

H02 - Fundamental and Characterization 1

- (Invited) Bonding Strength of Cu-Cu Hybrid Bonding for 3D Integration Process 2007
Nobutoshi Fujii, Shunsuke Furuse, Hirotaka Yoshioka, Naoki Ogawa, Taichi Yamada, Takaaki Hirano, Suguru Saito, Yoshiya Hagimoto, Hayato Iwamoto
- DCB Bonding Energy Measurement Using Confocal IR Microscopy 2009
Lucas Colonel, Aziliz Calvez, Frank Fournel, Vincent Larrey, Stephane Moreau, Frédéric Mazen, Francois Rieutord
- Delamination Behavior Characterization during Bond Strength Measurement2011
Tomoya Iwata, Junya Fuse, Marie Sano, Fabiana Lie Tanaka, Fumihiko Inoue

H02 - Fundamental and Characterization 2

- Edge Bonding Voids Management Using Humid Helium Bonding Atmosphere 2013
Frank Fournel, Vincent Larrey, Christophe Morales, Laurent Gaëtan Michaud
- Inline Bondwave Monitoring for Direct Bonding, Process Optimization and Impact on Post-Bond Distortion..... 2015
Laurent Gaëtan Michaud, Frank Fournel, Christophe Morales, Martin Schmidbauer, Karine Abadie, Thomas Plach, Markus Wimplinger
- Infrared Spectroscopy Study of Edge Water Penetration at Hydrophilic Bonding Interface 2017
Paul Noël, Vincent Larrey, Christophe Morales, Francois Rieutord, Didier Landru, Frank Fournel
- Nanosecond Laser Irradiation for Interface Bonding Characterization 2019
Vincent Larrey, Arthur Arribehaute, Brendon Caulfield, Pablo Acosta Alba, Christophe Morales, Paul Noël, Mathieu Opprecht, Frank Fournel, Didier Landru, Francois Rieutord

H02 - Fundamental and Characterization 3

- Application of Machine Learning Algorithm for Defect Analysis in Semiconductors Using High Resolved Scanning Acoustic Microscopy 2021
Arya Sukumaran Nair, Peter Czurratis, Denis Bogucanin
- (First Best Student Paper Award) Polymer to Silicon Direct Bonding for Microelectronics..... 2023
Margaux Dautriat, Pierre Montméat, Frank Fournel

H02 - Hybrid Bonding and 3D Applications

- (Invited) Hybrid Bonding for 3D Applications: Improvements and Limitations 2026
Emilie Deloffre, Bassel Ayoub, Sandrine Lhostis, Florent Dettoni, Frank Fournel, Pierre Montméat, Sebastien Mermoz
- Process and Design Challenges for Hybrid Bonding..... 2028
Vikas Dubey, Dirk Wunsch, Knut Gottfried, Maik Wiemer, Tobias Fischer, Anke Hanisch, Sebastian Schermer, Christian Helke, Micha Hasse, Danny Reuter, Stefan E. Schulz, Sanghamitra Ghosal, Lutz Hofmann
- SAB-Enabled Room Temperature Hybrid Bonding 2030
Pablo Renaud, Karine Abadie, Frank Fournel, Christophe Dubarry, Floriane Baudin, Aurelie Tauzin
- Hydrophilic Bonding of SiO₂/SiO₂ and Cu/Cu using Sequential Plasma Activation 2033
Kai Takeuchi, Takeki Ninomiya, Michitaka Kubota, Masaya Kawano, Takeshi Takagi, Niwa Masaaki, Tadahiro Kuroda, Tadatomo Suga

A Comprehensive Study on Chemical Bonding and Open Spaces with Silicon Carbon Nitride Films for Direct Bonding.....	2035
<i>Sodai Ebiko, Koki Onishi, Akira Uedono, Serena Iacovo, Fumihiko Inoue</i>	

H02 - Surface Activated and Low Temperature Wafer Bonding 1

(Invited) Modified SAB Methods for Hybrid and All-Cu Bonding for 3D Integration below 200°C	2038
<i>Tadatomo Suga, Kanji Otsuka</i>	
Fabrication and Electrical Characterization of GaAs/GaN Junctions.....	2040
<i>Shota Ishimi, Makoto Hirose, Yasuo Shimizu, Yutaka Ohno, Yasuyoshi Nagai, Jianbo Liang, Naoteru Shigekawa</i>	
Surface Activated Si-Si Wafer Bonding Using Different Ion Species	2041
<i>Matthias Danner, Bernhard Rebhan, Péter Kerepesi, Wolfgang S. M. Werner</i>	
(First Best Paper Award) Vacuum Quality Impact on Covalent Bonding.....	2043
<i>Karine Abadie, Quentin Lomonaco, Laurent Michaud, Frank Fournel, Christophe Morales</i>	

H02 - Surface Activated and Low Temperature Wafer Bonding 2

Soft Surface Activated Bonding of Hydrophobic Silicon Substrates	2046
<i>Quentin Lomonaco, Karine Abadie, Jean-Michel Hartmann, Christophe Morales, Paul Noël, Tanguy Marion, Christophe Lecouvey, Anne-Marie Papon, Frank Fournel</i>	
(Second Best Paper Award) Preferred Grain Orientation to Enhance Interdiffusion at Room Temperature in Atomic Diffusion Bonding: A Fundamental Study Using Ni and Cu Films.....	2049
<i>Shun Kikuchi, Fuki Goto, Takehito Shimatsu, Miyuki Uomoto</i>	
Oxide-Free SiC-SiC Direct Wafer Bonding and Its Characterization.....	2051
<i>Péter Kerepesi, Bernhard Rebhan, Matthias Danner, Karin Stadlmann, Heiko Groiss, Peter Oberhumer, Jiri Duchoslav, Kurt Hingerl</i>	
Atomic Diffusion Bonding in Air Using Oxide Films.....	2053
<i>Takehito Shimatsu, Miyuki Uomoto, Hitomi Fukunaga, Hiroyuki Makita, Yudai Suzuki, Yuhei Kozuka, Arina Muraoka, Takayuki Saito</i>	

H02 - Surface Activated and Low Temperature Wafer Bonding 3

Stability of Interface Morphology and Thermal Boundary Conductance of Direct Wafer Bonded GaN/Si Heterojunction Interfaces Annealed at Growth and Annealing Temperatures	2055
<i>Kenny Huynh, Michael Evan Liao, Xingxu Yan, John Tomko, Thomas Pfeifer, Viorel Dragoi, Nasser Razek, Eric Guiot, Raphael Caulmilone, Xiaoqing Pan, Patrick E Hopkins, Mark S. Goorsky</i>	
Improved Thermal Boundary Conductance in Annealed Direct Wafer Bonded Si-Ge.....	2057
<i>Kenny Huynh, Michael Evan Liao, Thomas Pfeifer, Xingxu Yan, Bernhard Rebhan, Christoph Floetgen, Xiaoqing Pan, Patrick E Hopkins, Mark S. Goorsky</i>	

H02 - Die to Wafer Bonding

(Invited) Die to Wafer Direct Bonding: Overview of Processes for Optoelectronic and 3D at CEA	2059
<i>Pierre Montméat, Clement Castan, Noura Nadi, Frank Fournel, Emilie Bourjot, Bertrand Szlag, Karim Hassan, Loic Sanchez</i>	
(Invited) Micro-Transfer-Printing: A Novel Technology for Volume D2W Integration.....	2061
<i>Sebastian Wicht, Sandra Gozdzik, Kavana Mandya Sreenivasa Setty, Aarushee Rangra, Niclas Heise</i>	
High Cleanliness and High Hydrophobic/Hydrophilic Contrast Done by Direct Wafer Bonding for Die-to-Wafer Self-Assembly	2064
<i>Pierre Montméat, Thierry Enot, Alice Bond, Adele Thiolon, Emilie Bourjot, Frank Fournel</i>	

Low-Temperature Deposited SiO ₂ for Advanced Chiplet.....	2066
<i>Hayato Kitagawa, Koki Onishi, Junya Fuse, Akira Uedono, Tomoya Iwata, Fumihiro Inoue</i>	

H02 - Poster Session

Crystal Lattice Rearrangement Occurred at Au/Ag Bonded Interface in Atomic Diffusion Bonding in Vacuum.....	2068
<i>Fuki Goto, Hikaru Iemura, Miyuki Uomoto, Takehito Shimatsu</i>	
(Second Best Student Paper Award) Blade Test in Atmospheric-Pressure Ar Gas to Characterize Bonded Interface Fabricated Using Atomic Diffusion Bonding.....	2069
<i>Hikaru Iemura, Fuki Goto, Miyuki Uomoto, Takehito Shimatsu</i>	

H02 - Wafer Bonding for Sensors and MEMS

(Invited) Wafer Bonding for MEMS Integration and Packaging.....	2071
<i>Frank Niklaus, Gaehun Jo, Pierre Edinger, Kristinn B. Gylfason, Simon J. Bleiker</i>	
Investigation of Anodic Bond Formation Process and Potential Use of the Results	2073
<i>Roy Knechtel, Micaela Wenig, Martin Seyring, Dominik Kley</i>	
Efficient Xe Filling of MEMS Vapor Cells Empowered by Customized Triple Stack Wafer Bond Processing.....	2077
<i>Ali Roshanghias, Jaroslaw Kaczynski, Augusto Rodrigues, Martina Hübner, Markus Zauner, Giovanna Grosso, Nikolai Andrianov, Muhammad Khan, Thomas Grömer, Tino Fuchs, Alfred Binder</i>	
Investigation of the Processing Behavior and Stability of Different Glass Frit Materials.....	2079
<i>Roy Knechtel, Micaela Wenig, Stefan Svoboda, Martin Seyring, Manuela Göbel, Uwe Schwarz, Tobias Seifert, Frank Roscher, Maik Wiemer</i>	
Recent Developments in Low Temperature Wafer Level Metal Bonding for Heterogenous Integration	2081
<i>Tobias Wernicke, Bernhard Rebhan, Vesa Vuorinen, Mervi Paulasto-Krockel, Vikas Dubey, Kevin Diex, Dirk Wünsch, Mario Baum, Maik Wiemer, Shuji Tanaka, Joerg Froemel, Knut E. Aasmundtveit, Hoang V. Nguyen, Viorel Dragoi</i>	

H02 - SiC, GaN, Li-based, Diamond and Other Material Bonding 1

(Invited) Direct Bonding and Its Interface for High-Density Integration of Superconducting Qubits	2083
<i>Masahisa Fujino, Yuuki Araga, Hiroshi Nakagawa, Katsuya Kikuchi, Noboru Miyata</i>	
Hydrophilic Bonding of GaN and Diamond Substrates	2085
<i>Takashi Matsumae, Sho Okita, Shoya Fukumoto, Masanori Hayase, Yuichi Kurashima, Hideki Takagi</i>	
Towards Controlled Transfer of (001) β -Ga ₂ O ₃ to (0001) 4H-SiC Substrates.....	2087
<i>Michael Evan Liao, Kenny Huynh, Brandon Carson, Lezli Matto, Kaicheng Pan, James Spencer Lundh, Marko Tadjer, Karl D. Hobart, Mark S. Goorsky</i>	

H02 - SiC, GaN, Li-based, Diamond and Other Material Bonding 2

Solid and Liquid State Dewetting of Thin Silicon Films Sandwiched between Two Silicon Carbide Substrates	2089
<i>Maëlle Le Cunff, Nikolay Cherkashin, Francois Rieutord, Didier Landru, Oleg Kononchuk</i>	
Direct Wafer Bonding of 128° Y-Cut LiNbO ₃ : A Pathway to High Frequency (50 GHz) Filter Applications.....	2091
<i>Lezli Matto, Michael Evan Liao, Kenny Huynh, Dorian Luccioni, Mark S. Goorsky</i>	

H03-LOW-DIMENSIONAL NANOSCALE ELECTRONIC AND PHOTONIC DEVICES 16

H03 - Digital Only Presentations

- (Digital Presentation) Present Status and Future Prospects of Large Area Growth and Devices of Two-Dimensional Materials 2093
Jinbo Pang, Rui Liu, Fengxue Wang, Chongyang Hou, Hui Wang, Caihui Li, Mingjun Kong, Hong Liu, Weijia Zhou

H03 - 2D Materials 1

- (Invited) Direct Laser Induced Gold Wiring of 2D Materials with Sub-Mm Resolution 2095
Kai Braun, Olympia Geladari, Martin Eberle, Andreas Schnepf, Alfred J. Meixner
- (Invited) Exciton Transport in Strained 2D Semiconductors..... 2097
Steffen Michaelis De Vasconcellos, Robert Schmidt, Roberto Rosati, Samuel Brem, Raul Perea-Causin, Iris Niehues, Johannes Kern, Johann Preuß, Robert Schneider, Ermin Malic, Rudolf Bratschitsch
- (Invited) Deformation of 2D Semiconductors By Interfaces with Organic Materials 2098
Daisuke Kiriya
- Simultaneous Piezoelectrocatalytic Hydrogen-Evolution and Degradation of Water Pollutants By Quartz Microrods@Few-Layered MoS₂ Hierarchical Heterostructures 2099
Sz-Nian Lai, Yu-Ting Lin, Jyh Ming Wu

H03 - Nanophotonic Devices

- (Invited) Near-Field Optics and Its Applications in Nanophotonic Devices: A Review 2100
Victor Wong, Giovanni Fanchini
- (Invited) Nanowires from Dilute Nitride and Dilute Bismide Alloys for Nanophotonics 2102
Irina A Buyanova, Fumitaro Ishikawa, Weimin M Chen
- (Invited) Manipulating Light Emission from Rare Earth Doped Nanoparticles for Applications in Theranostics..... 2104
Fiorenzo Vetrone

H03 - Perovskites

- (Invited) Confined and Free-Standing Perovskite Nanowires for X-Ray Detection 2105
Jesper Wallentin
- (Invited) Processing of Perovskite Materials for Optoelectronic Devices..... 2107
Kai Oliver Brinkmann, Timo Maschwitz, Manuel Runkel, Cedric Kreusel, Ahmed Kadid, Lena Merten, Alexander Hinderhofer, Frank Schreiber, Federico Fabrizi, Sana Khan, Surendra Anantharaman, Thomas Riedl
- (Invited) Metal Halide Perovskite Heterostructures: Synthesis and Fundamental Charge Transfer Studies 2109
Song Jin
- (Invited) Atomic Imaging and Device Characterization of Molecularly Thin 2D Hybrid Perovskites2110
Kai Leng
- (Invited) Achieving Stable Black-CsPbI₃ Thin-Films for Opto-Electronic Applications2112
Rafikul Ali Saha, Giedrius Degutis, Julian Steele, Maarten Roeffaers

H03 - 2D Materials 2

(Invited) Growth of Hexagonal Boron Nitride by MOCVD for Electronic and Photonic Applications.....	2114
<i>Jong Kyu Kim</i>	
(Invited) Interlayer Excitons in Two-Dimensional Perovskite/Monolayer Transition Metal Dichalcogenide Heterostructures.....	2115
<i>Dehui Li, Yingying Chen, Wendian Yao, Zeyi Liu, Dong Yang</i>	
(Invited) Thermoelectric Transport in Nanostructured 3D Topological Insulators and Stacked 2D Materials / Ferrecrystals.....	2116
<i>Kornelius Nielsch</i>	
(Poster Award - 2nd Place) Layer-Number Engineered Momentum-Indirect Interlayer Excitons with Large Spectral Tunability	2118
<i>Wendian Yao, Dong Yang, Dehui Li</i>	
(Invited) Self-Powered Image Sensors Based on Vertical Van Der Waals 2H/1T' -MoTe ₂ Homojunctions	2119
<i>Yunxia Hu, Zhaoli Gao, Zhengtang Luo, Xiaoyu Huo</i>	

H03 - Low-Dimensional Materials 1

(Invited) Nanoscale Devices for Accelerating AI Algorithms	2120
<i>Rehan Kapadia, Ragib Ahsan, Hyun Uk Chae, Jun Tao</i>	
Phase Transition Engineering of Vanadium Dioxide Induced by Oxygen Vacancies	2121
<i>Samiksha Bajaj, Jyh Ming Wu</i>	
(Invited) Low-Dimensional Carbon Materials - Synthesis and Properties	2122
<i>Thomas Wägberg</i>	
Single-Atom Pt Decorated ZnO Nanoflowers	2123
<i>Po-Han Chen, Jyh Ming Wu</i>	
(Invited) Quest for Fully Spin and Optically Polarized Semiconductor Nanostructures for Room-Temperature Opto-Spintronics	2124
<i>Y. Q. Huang, V. Polojärvi, S. Hiura, P. Höjer, A. Aho, R. Isoaho, T. Hakkarainen, M. Guina, S. Sato, J. Takayama, A. Murayama, I. A. Buyanova, Weimin M Chen</i>	

H03 - Energy and Catalysis

(Invited) Photoactive Inorganic Nanosystems for Environmental and Energy-Related Applications	2125
<i>Elisa Moretti</i>	
(Invited) Piezocatalysis for Treating a Massive Industrial Dye Solution and Hydrogen Production	2126
<i>Jyh Ming Wu</i>	
(Invited) Role of Heterojunctions in Metal Oxide Heterostructures for Energy and Environmental Applications.....	2127
<i>Nicola Pinna, Muhammad Hamid Raza</i>	
(Invited) Three-Dimensional Filter of Polyvinylidene Difluoride (PVDF) Implanted Rice Husk-Derived Silicon Dioxide of Porous Solid-State Electrolytes	2128
<i>Tzu Yun Liang</i>	
(Poster Award - 3rd Place) Photocatalysis of TiO ₂ Nanosheets Prepared by the Cellulose Nanofiber Template	2129
<i>Yu-Ching Chen, Jyh Ming Wu</i>	
(Poster Award - 1st Place) Emerging Effect of Vertical-Oriented WSe ₂ Interfacial Layers in the CIGSe Thin Film Solar Cells.....	2130
<i>Chia-Chen Chung, Jun-Nan Liu, Tzu-Yi Yang, Chih-Huang Lai, Yu-Lun Chueh</i>	

H03 - Poster Session

Active Diatomic Pairs Induced Interlayer Spacing Engineering in 2D Materials for Highly Efficient Energy Conversion Device..... 2132
Dong Chen, Shaoce Zhang, Yue Hou, Rong Zhang, Huilin Cui

H03 - Low-Dimensional Materials 2

(Invited) Anti-Ambipolar Phototransistors Based on Mixed-Dimensional Heterojunctions 2133
Johnny C Ho

(Invited) Transparent Conductive Films of PEDOT:PSS-Amino Acid Composite 2134
Ramesh Y. Adhikari, Div Chamria, Ege Kutlubas

(Invited) Recent Advancements in the Development of Semiconductor Quantum Dots for Solid-State Light Emitting Diodes and Photovoltaic Devices..... 2135
Hsueh-Shih Chen

Energy-Band Engineering By Remote Doping of Self-Assembled Monolayers Leads to High-Performance Igzo/P-Si Heterostructure Photodetectors 2136
Gunhoo Woo, Dong Hyun Lee, Hocheon Yoo, Taesung Kim

Structural, Electrical and Optical Properties of Zn-Doped SrVO₃ Thin Films Grown By Co-Sputtering 2138
Axel Rouviller, Aline Jolivet, Alex Misiak, Moussa Mezhoud, Christophe Labbé, Julien Cardin, Xavier Portier, Christian Dufour, Philippe Marie, Adrian David, Ulrike Lüders, Fabrice Gourbilleau

Multiscale Electrical Response Assessment of Metal Nanowire Transparent Electrodes: A Computational Strategy 2141
Davide Grazioli, Angelo Simone

H03 - Flexible Electronics

(Invited) Wireless Healthcare Flexible Sensor System..... 2142
Kuniharu Takei

(Invited) Fabrications and Applications Using Liquid Metal Towards Stretchable Electronics..... 2143
Hiroki Ota

H04-GALLIUM NITRIDE AND SILICON CARBIDE POWER TECHNOLOGIES 13

H04 - General

(Invited) Benchmarking of Beyond the State-of-the-Art Vertical GaN Devices 2145
Ulf Gisslander, Mietek Bakowski

(Invited) Challenges in Fabricating and Scaling up Silicon Carbide Wafers and Devices 2147
Hrishikesh Das, Petr Kostelnik, Karel Kocian, Tomas Novak, Martin Domej, Swapna Sunkari, Joshua Justice

Synchrotron X-Ray Topography Studies for Defect Formation at the Early Stage of PVT-Grown 4H-SiC Crystals..... 2148
Shanshan Hu, Yafei Liu, Qianyu Cheng, Zeyu Chen, Balaji Raghothamachar, Michael Dudley

(Invited) Wide Bandgap Semiconductor Based Devices for Digital and Industrial Applications 2150
Qin Wang, Ashutosh Kumar, Martin Berg, Olof Öberg, Mietek Bakowski, Jang-Kwon Lim, Hithiksha Krishna Murthy, Konstantin Kostov, Saeed Akbari, Michael Salter, Peter Ramvall

(Invited) Advanced Design Concepts for Vertical Gallium Nitride MOSFETs 2151
Andrew T. Binder, Jeffrey Steinfeldt, Andrew A. Allerman, Caleb E. Glaser, Luke Yates, Richard Floyd, Michael L. Smith, Brian D. Rummel, Kevin J. Reilly, Paul Sharps, Robert J. Kaplar, James A. Cooper

Analysis of Basal Plane Dislocation Motion Induced By P+ Ion Implantation Using Synchrotron X-Ray Topography	2153
<i>Zeyu Chen, Yafei Liu, Qianyu Cheng, Shanshan Hu, Balaji Raghathamachar, Michael Dudley</i>	

H04 - GaN Devices

(Invited) Switching Characteristics of GaN Power Transistors	2155
<i>Michael Shur, Xueqing Liu, Trond Ytterdal</i>	
(Invited) Recent Progress in Medium-Voltage Vertical GaN Power Devices	2156
<i>Luke Yates, Andrew T. Binder, Anthony Rice, Andrew M. Armstrong, Jeffrey Steinfeldt, Vincent M. Abate, Michael L. Smith, Brian D. Rummel, Caleb E. Glaser, Andrew A. Allerman, Mary H. Crawford, Brendan P. Gunning, Ozgur Aktas, Travis J. Anderson, Karl D. Hobart, Andrew Koehler, Alan G. Jacobs, James C Gallagher, Nadeemullah Mahadik, Marko Tadjer, Mona Ebrish, Bhawani Shankar, Ke Zeng, Srabanti Chowdhury, James A. Cooper, Robert J. Kaplar</i>	

H04 - GaN Substrates

(Invited) Better GaN Substrates Are the Key to Advancing GaN Device Technology	2158
<i>Jaime A. Freitas, James C. Culbertson</i>	
(Invited) Effect of Seed Crystal Orientation on Ammonothermal Growth of GaN	2159
<i>Jonny Valenzuela, Siddha Pimputkar</i>	
Investigation of Growth Sectors in Gallium Nitride Substrate Wafers from Ammonothermal and Patterned Hype Growth Methods	2160
<i>Yafei Liu, Shanshan Hu, Zeyu Chen, Qianyu Cheng, Balaji Raghathamachar, Michael Dudley</i>	

H04 - GaN Doping

(Invited) Gallium Nitride for Vertical Power Devices: Improving Morphology and Unintentional Impurities for Better Devices	2162
<i>James S. Speck, Esmat Farzana, Kai Shek Qwah, Zachary J. Biegler, Ashley Wissel-Garcia, Iris Celupica-Liu, Takeki Itoh</i>	
(Invited) In-Situ MOCVD Etching of GaN Using XeF ₂ for Selective-Area-Epitaxial-Regrowth of p-Type GaN for High Voltage PN Diodes	2164
<i>Andrew A. Allerman, Andrew T. Binder, Andrew M. Armstrong, Jeffrey Steinfeldt, Robert J. Kaplar</i>	
(Invited) Effect of Oxygen on Activation Annealing of Mg-Doped GaN	2165
<i>Ashutosh Kumar, Qin Wang, Peter Ramvall</i>	
(Invited) Selective Area Growth, Etching, and Doping of GaN By MOCVD for Power Electronics	2167
<i>Bingjun Li, Jung Han</i>	
(Invited) Understanding Mg-Related Defects for Vertical GaN p-n Junction Structures Via p-Type Ion Implantation	2168
<i>Mark S. Goorsky, Michael Evan Liao, Kenny Huynh, Yekan Wang, James Tweedie, Zlatko Sitar, Ramon Collazo, Kacper Sierakowski, Michal Bockowski, Xianrong Huang</i>	

H04 - SiC Technologies

(Invited) Application of 3D in-Situ X-Ray Visualization to Track the Formation of Dislocation Clusters during PVT Growth of SiC	2169
<i>Peter Wellmann, Sven Strüber, Johannes Steiner, Jonas Ihle, Jana Schultheiss, Binh Duong Nguyen, Stefan Sandfeld, Michael Salamon, Norman Uhlmann</i>	
(Invited) Growth and Characterization of 200 mm SiC Crystals and Substrates	2170
<i>Egidio Carria, Erik Sörman, Jimmy Thörnberg, Alexandre Ellison, Bjorn Magnusson, Carlo Riva</i>	

(Invited) On the Advantage of Deploying ALD-Deposited Gate Oxides for 4H-Silicon Carbide MOS Applications	2171
<i>Arne Benjamin Benjamin Renz, Oliver James Vavasour, Qinze Cao, Vishal Shah, Marina Antoniou, Peter Michael Gammon</i>	
Investigating the Distribution Pattern of Threading Edge Dislocation Low Angle Grain Boundaries in 4H-SiC Wafers Using Synchrotron X-Ray Topography	2173
<i>Qianyu Cheng, Yafei Liu, Zeyu Chen, Shanshan Hu, Balaji Raghothamachar, Michael Dudley</i>	

H04 - Poster Session

Impact of Parasitic Gate Capacitance on RF Performance in GaN-Based HEMTs for X-Band Applications.....	2175
<i>Sung-Jae Chang, Hyeon-Seok Jeong, Hyun-Wook Jung, Su-Min Choi, Il-Gyu Choi, Youn-Sub Noh, Seong-Il Kim, Sang-Heung Lee, Ho-Kyun Ahn, Dong-Min Kang, Dae-Hyun Kim, Jong-Won Lim</i>	
Novel T-Shaped Gate Structure of AlGaIn/GaN HEMTs on Si for RF Application	2178
<i>Hyun-Wook Jung, Il-Gyu Choi, Sung-Jae Chang, Hyeon-Seok Jeong, Su-Min Choi, Ho-Kyun Ahn, Dong-Min Kang, Dae-Hyun Kim, Jong-Won Lim</i>	
The Correlation between the Microstructure and the Characteristic Luminescence in the High Crystalline α -Ga ₂ O ₃ Grown on the Thin-Wall Single Crystal Al ₂ O ₃	2180
<i>Yong-Hee Lee, Duyoung Yang, Byeongjun Gil, Mi-Hyang Sheen, Euijoon Yoon, Yongjo Park, Ho Won Jang, Sangmoon Yoon, Miyoung Kim, Young-Woon Kim</i>	

I01A-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - DIAGNOSTICS/CHARACTERIZATION METHODS, MEA DESIGN/ MODEL

I01A - Digital Only Presentations

(Digital Presentation) Modeling the Effect of Membrane Electrode Assembly Microstructure on Thermal and Water Transport in Polymer Electrolyte Fuel Cells	2181
<i>Arturo Sánchez-Ramos, Pablo A. Garcia-Salaberrí</i>	

I01A - Modeling 1

(Invited) Challenges and Opportunities for the Computational Analysis of Electrochemical Energy Systems.....	2183
<i>Marc Secanell</i>	
Open-Source and Multi-Fluid Numerical Modeling of Proton Exchange Membrane Fuel Cell	2184
<i>Wei Liu, Anders Christian Olesen, Vincenzo Liso, Torsten Berning</i>	
Investigation of the Distribution of the Mass Transport and Reaction Rates in a Fuel Cell By the Integrated Fuel Cell System Simulator Including the Dynamics of Air, H ₂ , and Cooling Systems.....	2185
<i>Shigeki Hasegawa, Sanghong Kim, Yoshihiro Ikogi, Miho Kageyama, Motoaki Kawase</i>	
Modelling Analysis of MEA Dynamic Operation Under Real-World Automotive Driving Cycle.....	2187
<i>Amedeo Grimaldi, Francesco Verducci, Elena Colombo, Andrea Casalegno, Andrea Baricci</i>	
Performance Analysis of Non-Humidified High-Temperature PEFC by Fuel Cell System Simulator	2189
<i>Ryosuke Ichikawa, Ryo Sakakibara, Suguru Uemura, Yutaka Tabe</i>	

VOLUME 5

Integration of Machine Learning Models into Three-Dimensional Numerical Simulation of Polymer Electrolyte Membrane Fuel Cells.....	2193
<i>Ryuki Matsumoto, Tsutomu Takayama, Takayuki Tsukamoto, Ippei Tsujimura</i>	

A Machine Learning Accelerated Hierarchical 3D+1D Model for Proton Exchange Membrane Fuel Cells.....	2195
<i>Yuwei Pan, Haijun Ruan, Yagya N Regmi, Billy Wu, Huizhi Wang, Nigel Brandon</i>	
Taking Advantage of the Operating Heterogeneities in PEMFC: Numerical Study with a Pseudo-3D Model	2197
<i>Marine Cornet, Arnaud Morin, Jean-Philippe Poirot-Crouvezier, Pascal Schott, Yann Bultel</i>	
Transient Characteristics of the Low-Temperature PEMFC: A Comparative Analysis Using a Physics-Based Model	2199
<i>Akshaykumar Narsinhbhai Desai, Surajeet Mohanty, Venkatasailanathan Ramadesigan, Suneet Singh</i>	
A Multiscale Modeling Approach to Identify and Quantify the Transport Limitations in Proton Exchange Membrane Fuel Cells.....	2201
<i>Thomas Jahnke, Konrad Gülicher, Arnaud Morin</i>	
Parameterization and Validation of a 2-Dimensional, Transient, Two-Phase MEA Model Capable of Simulating Electrochemical Impedance Spectra	2203
<i>Michael Eppler, Matthias Hanauer, Christophe Gerling, Ulrich Berner, Michael Eikerling</i>	
Numerical Simulation of Liquid Water Behavior in PEFCs with Different GDL Wettability	2205
<i>Hiroshi Naito, Shuichiro Hirai</i>	

I01A - Modeling 2

Understanding Charge, Mass, and Heat Transfer in Fuel Cells for Transport Applications – Insights from the Camelot Project.....	2206
<i>Patrick Fortin, David Harvey, Jake Coole, Yejung Choi, Victor Shokhen, Simon Enz, Senén Moya, Severin Vierrath</i>	
Multiscale Modeling of the Membrane Electrode Assembly in Polymer Electrolyte Fuel Cells: Interaction of Pore Size and Wettability of Porous Layers	2207
<i>Pablo A. Garcia-Salaberry, Arturo Sánchez-Ramos</i>	
Modeling the Environment-Dependent Kinetics of Oxygen Reduction Reaction – a Continuum Model for Electric Double Layer.....	2208
<i>Masao Suzuki Shibata, Yu Morimoto, Iryna Zenyuk, Adam Z. Weber</i>	
Capturing the Microstructural Complexities of PEMFC Catalyst Layers and Local Transports Therein Using Network Modeling Approach	2210
<i>Shahriar Alam, Jeffrey S Allen</i>	
Utilization of Pt Nanoparticle Catalysts during Capillary Condensation Phenomenon in PEMFC: A Lattice DFT Simulation Based on 3D Reconstruction of TEM Images	2211
<i>Clint John Cortes Otic, Masazumi Arao, Masashi Matsumoto, Hideto Imai, Ikuya Kinefuchi</i>	
Numerical Simulation of Local Entropy Generation of Oxygen Transport in Cathode Diffusion Media of PEFC.....	2213
<i>Kosuke Nishida</i>	
Numerical Reconstruction of Proton Exchange Membrane Fuel Cell Gas Diffusion Layers.....	2215
<i>Danan Yang, Himani Garg, Steven B. Beale, Martin Andersson</i>	
Fuel-Cell Performance and Stability during Liquid-Water Removal Cycles.....	2216
<i>Aslan Kosakian, Fei Wei, Jeremy (Jie) Zhou, Seongyeop Jung, Jonathan Sharman, Marc Secanell</i>	
Numerical Simulation of the Two-Phase Flow Dynamics in an Alkaline Water Electrolyzer Considering Difference in Bubble Diameter	2218
<i>Ryo Kanemoto, Takuto Araki, Shigenori Mitsushima</i>	
Bubble and Dissolved Gas Distribution in Flow through Membraneless Water Electrolysis.....	2220
<i>Daniel Niblett, Mohamed Mamlouk</i>	

I01A - Poster Session

Improving PEMFC Performance with Customized Catalyst Combinations and Advanced Mixing Techniques.....	2222
<i>Jieun Lee, Sung Yong Cho, Youngick Cho, Minju Cho, Sungchul Lee</i>	
Investigating the Applicability of Rotating Disk Electrode Measurements for Determining Catalyst Activity in Fuel Cells.....	2224
<i>Marcel Müller, Julia Melke, Birgit Kintzel</i>	
Influence of Ionomer Chemistry on Oxygen Permeability in Hydrocarbon-Based Proton-Exchange Membrane Fuel Cells	2225
<i>Hannes Liepold, Hien Nguyen, Andreas Münchinger, Severin Vierrath</i>	
Gas Diffusion Electrode for Oxygen Evolution Reaction Catalyst Testing	2226
<i>Vinod Kumar Puthiyapura, Christopher Mark Zalitis, James Stevens</i>	
Control of Liquid Water Transport in Cathode of PEFC Using Wettability-Patterned Electrodes	2227
<i>Reiya Kaneko, Vedant Chate, Kosuke Nishida</i>	
(Poster Award - Honorable Mention) Probing the Catalyst-Ionomer Interface in Catalyst Layers with Sulfo-Phenylated Polyphenylene Ionomers Using CO-Displacement and Stripping Techniques	2229
<i>Robert James Anton, Shikai Sun, Karen Swider-Lyons, Cortney Mittelsteadt, Michael Adamski, Benjamin Britton, Yu Morimoto, Iryna Zenyuk</i>	
Localized Study of the CCM with Graded Ionomer and Catalyst Loading across the X-Y and Z Directions Using Current Scan Shunt.....	2230
<i>Yejung Choi, Patrick Fortin</i>	
Comparison of Different Carbon Supports By Simulation of Agglomeration in Polymer Electrolyte Fuel Cell Catalyst Ink.....	2231
<i>Yuki Saito, Magnus So, Gen Inoue</i>	
Using Magnetic Field Analysis for Localizing Defects of Fuel Cell & Electrolyzer Components	2233
<i>Sistan Rasuli, Kerstin Witte-Bodnar, Erik Grunwald, Volker Naumann, Sebastian Porstmann, Stefan Polster, Klemens Ilse</i>	
Neutron Nanomediators for Non-Invasive Temperature Mapping of Fuel Cells.....	2234
<i>Antonia Ruffo, Markus Strobl, Michel Kenzelmann, Pierre Boillat</i>	
Self-Supporting Microporous Layer for Polymer Electrolyte Fuel Cells	2236
<i>Makoto Yoshikawa, Kotaro Yamamoto, Zhiyun Noda, Masahiro Yasutake, Tatsumi Kitahara, Yuya Tachikawa, Stephen Matthew Lyth, Akari Hayashi, Junko Matsuda, Kazunari Sasaki</i>	
Simulations of Wolter Optics Tomography of a Fuel Cell.....	2238
<i>Daniel Seth Hussey, Michael Cyrus Daugherty, Youngju Kim, David Jacobson, Jacob Michael Lamanna</i>	
The Porous Structure Design of Catalyst Layer by Controlling Particle Size Distribution of PEMFC Catalyst Ink.....	2239
<i>Minju Cho, Sung Yong Cho, Youngick Cho, Ji-Eun Lee, Sungchul Lee, Eun-Byeol Park, Young-Min Kim, Eun Heui Kang</i>	

I01A - Catalyst Layer 1

Observation of Catalyst Layer Structure Formation from Electrode Slurry By White Light Confocal Microscopy	2240
<i>Takahiro Suzuki, Ryo Kirigaya, Shohji Tsushima</i>	
Evaluating Ink Structure Using Ultrasonic Spray Coating for PEMFC MEA.....	2242
<i>Seon-Ho Lee, Seunghee Woo, Yun Sik Kang, Seokhee Park, Sung-Dae Yim</i>	
Influence of Ethanol Decomposition on Dispersion of PEFC Catalyst Ink.....	2243
<i>Takashi Sasabe, Toshihiko Ogura, Koki Okada, Haruto Oka, Katsunori Sakai, Shuichiro Hirai</i>	

Investigating Nano-Sized Dispersity and High Crystallinity of Perfluoro-Sulfonic Acidionomer in Polymer Electrolyte Fuel Cell Electrodes Via Electrospray Deposition.....	2245
<i>Seo Won Choi, Hyunguk Choi, Won Young Choi, Young Je Park, Hyeon E Cho, Seong Shin, Sung Kwan Ryu, Young Gi Yoon, Chanho Pak, Chi-Young Jung</i>	
In-Situ Spectroscopic Investigation of 3-D Gas Diffusion Electrodes for Fuel Cell Reactions in Half-Cell Setups	2246
<i>Rameshwori Jalan, Bruna Ferreira Gomes, Christina Roth</i>	
Illuminating Oxygen Reduction Reaction Kinetics in High Temperature Polymer Electrolyte Membrane Fuel Cells Using EIS	2248
<i>Panagiotis I. Giotakos, Stylianos G. Neophytides</i>	
Performance and Durability of Carbon-Free Ionomer-Free PEFC Cathode Using Pt Nanosheet Catalyst.....	2249
<i>Hiroshi Fukunaga, Takaaki Sasaki, Ahmad Zulfikri Taning, Sakae Takenaka</i>	
Multi-Modal Structure and Distribution Analysis of Functional Groups on Carbon Supports for Polymer-Electrolyte Fuel Cells	2251
<i>Masashi Matsumoto, Masazumi Arao, Shota Katayama, Shiori Kudo, Takahiko Asaoka, Yoichiro Tsuji, Yoshiharu Sakurai, Yoshiharu Uchimoto, Hideto Imai</i>	
Understanding the Increase in H ₂ /Air PEM Fuel Cell Performance of Pt Based Cathode Catalysts with the Tailored Pore Structure of Mesoporous Graphitic Spheres.....	2254
<i>Roberta Karla Francesca Della Bella, Alexander Gunnarson, Hannaneh Hosseini, Paul Paciok, Marc Heggen, Carlos Cuadrado Collados, Matthias Thommes, Ferdi Schüth, Hubert Andreas Gasteiger</i>	
Analysis of Transmission Line Models for PEMFC Impedance Modelling.....	2257
<i>Kersten Schwab, Andre Weber</i>	

I01A - Catalyst Layer 2

(Invited) Characterization of PEM Fuel Cell Catalyst Layers – from Powder to End of Life.....	2258
<i>Nada Zamel, Patrick Schneider, Linda Ney, Dietmar Gerteisen, Anne-Christine Hadrich, Yuze Hou</i>	
Grooved Electrodes for High Power Density Fuel Cells.....	2259
<i>Chunghyuk Lee, Wilton Kort-Kamp, Haoran Yu, David A. Cullen, Brian M. Patterson, Tanvir Alam Arman, Siddharth Komini Babu, Rangachary Mukundan, Rod L. Borup, Jacob S. Spendelow</i>	
Mass Transport Impedance in a PEMFC with Superhydrophobic Catalyst Layers.....	2260
<i>Luis Duque, Antonio Molinero, Juan Carlos Oller, José Miguel Barcala, Ester Díaz-álvarez, M. Antonia Folgado, Antonio M Chaparro</i>	
Electrospun Fuel Cell Electrodes and Their Behavior Under Hydrogen/Air Start-up/Shut-Down Conditions	2262
<i>Valentina Kallina, Mehtap Oezaslan, Frederic Hasche</i>	
Characterization of Catalyst Layer Using Gas Diffusion Electrode Half-Cell System for High Temperature Polymer Electrolyte Membrane Fuel Cell	2263
<i>Hyeon Seung Jung, Dong Hee Kim, Jong Gyeong Kim, Chanho Pak</i>	
Quantification Method of Mass Transfer Resistance in Cathode Catalyst Layer in PEFC.....	2264
<i>Hikaru Ogawa, Yuji Okada, Miho Kageyama, Hisaaki Gyoten, Shuka Murakami, Motoaki Kawase</i>	
MRI Study of the Influence of the Catalytic Layer on the Interfacial Water Transfer in PEMFC Membrane-Electrode Assemblies	2268
<i>Christine Mrad, Jean-Christophe Perrin, Assma El Kaddouri, Laouès Guendouz, Kévin Mozet, Jérôme Dillet, Olivier Lottin</i>	

Quantifying Sheet Resistance and in-Plane Electrical Resistivity of PEM Water Electrolyzer Components.....	2270
<i>Nikolai Utsch, Florian Berg, Fabian Scheepers, Sebastian Holtwerth, Meital Shviro, Werner Lehnert, Anna K. Mechler</i>	
A Lumped Model of Water and Heat Transport in a PEMFC Fuel Cell and the Associated Methods for Estimating the Effective Transport Parameters.....	2271
<i>Rémi Bligny, Valentin Leduc, Giuseppe Sdanghi, Jérôme Dillet, Feina Xu, Sophie Didierjean, Tobias Schmitt, Matthias Hanauer, Ulrich Sauter, Gael Maranzana</i>	
Progress in the Measurements of Coupled Transport Mechanisms in the Electrolyte of a PEM Based Thermogalvanic Cell.....	2273
<i>Maike Willke, Nils-Eric Rahm, Tim Diedrich, Stephan Kabelac</i>	

I01A - GDL & MPL

Porous Electrode Optimization for PEMFCs Using 3D Printing Technology.....	2275
<i>Hosni Elwan, Daniel Niblett, Mohamed Mamlouk</i>	
On the Importance of MPL Structural Characteristics for PEM Fuel Cell Performance.....	2277
<i>Ruediger Schweiss, Magnus Herb, Raj Earla, Christian Meiser</i>	
Enhanced Water Management in Fuel Cell Cathodes by the Application of Superhydrophobic Fluorinated Carbon Microporous Layers.....	2279
<i>Stephen Matthew Lyth, Enes Muhammet Can, Kazunari Sasaki</i>	
Importance of Directed Water Removal: Intruding Microporous Layer Material into the Gas Diffusion Layer Substrate.....	2280
<i>Anne Berger, Yen-Chun Chen, Jacqueline Gatzemeier, Felix N. Buechi, Hubert Andreas Gasteiger</i>	
Effect of Hydrophilic and Hydrophobic Composite Microporous Layer Coated Gas Diffusion Layers on PEFC Performance.....	2282
<i>Peng Wang, Hironori Nakajima, Tatsumi Kitahara</i>	
Towards Conformal and Fluorine-Free Coatings on Carbon Fiber Substrates for Polymer Electrolyte Fuel Cells.....	2284
<i>Irene Sinisgalli, Adrian A Mularczyk, Antoni Forner-Cuenca</i>	
Measuring Thermal Conductivity of Single Thickness Fibrous Gas Diffusion Layers Using Transient Plane Source Method.....	2286
<i>Victor Soares, Claire McCague, Kim Pascal, Esmaeil Navaei Alvar, Majid Bahrami</i>	

I01A - MEA Degradation & Durability

(Invited) Fuel Cell Component Durability for Million Mile Fuel Cell Trucks.....	2289
<i>Rod L. Borup, Adam Z. Weber, Deborah J. Myers, K. C. Neyerlin, Ahmet Kusoglu, Rajesh Ahluwalia, Rangachary Mukundan, David A. Cullen, Jacob S. Spendelow, Gregory Kleen</i>	
Comparison of MEA Degradation through FCV Actual Driving Test and Load-Cycle Durability Test.....	2290
<i>Shota Katayama, Masashi Matsumoto, Hideto Imai, Takahiko Asaoka, Kazuki Amemiya</i>	
Impact of Dwell Time and Lower Potential Limit during Voltage Cycling on PEM Fuel Cells Catalyst Durability.....	2292
<i>Elaheh Hantoosh Zadeh, Mohammad Shojayian, Erik Kjeang</i>	
Cathode Loading Impact on PEM Fuel Cell Performance Losses in Voltage Cycling Based Accelerated Stress Tests.....	2294
<i>Carla Sophie Harzer, Roberta Karla Francesca Della Bella, Hubert Andreas Gasteiger</i>	
Numerical Simulations for in-Plane Distribution of Platinum Degradation in Dynamic Operating Conditions of Polymer Electrolyte Membrane Fuel Cells.....	2297
<i>Keisuke Komiyama, Tsutomu Takayama, Ryuki Matsumoto, Takayuki Tsukamoto, Masakazu Yoneda</i>	

1D Spatially Resolved Model of Alloyed Catalyst Degradation in LT-PEMFC.....	2298
<i>Ambroz Kregar, Matej Prijatelj, Tomaž Katrašnik</i>	
Heterogenous Degradation of Cathode Catalyst Layers: Influence of O ₂ Partial Pressure and Various Stressors Under Load Cycling Conditions	2300
<i>Matthew Coats, Jonathan Braaten, Lei Cheng, Björn Marcel Stühmeier, Sarah Stewart, Christina Johnston, Svitlana Pylypenko</i>	
Microscale Simulation of Carbon Support Structure Degradation in Polymer Electrolyte Fuel Cell.....	2302
<i>Gen Inoue, Agnesia Permatasari, Yuki Saito, Magnus So, Okamura Kaisei</i>	
Impact of GDL Hole on Chemo-Mechanical Membrane Degradation Investigated by 4D in-Situ Visualization.....	2304
<i>Yixuan Chen, Amin Bahrami, Nitish Kumar, Francesco P Orfino, Monica Dutta, Esmaeil Navaei Alvar, Michael Lauritzen, Erin Setzler, Alexander Agapov, Erik Kjeang</i>	

I01A - Imaging 1

(Invited) Pulsed Neutron and Synchrotron X-Ray Imaging of Liquid Water Formation and Transport in Polymer Electrolyte Fuel Cells	2307
<i>Satoru Kato, Yuki Higuchi, Akihiko Kato, Yoshihiro Matsumoto, Hirotoshi Hayashida, Wataru Yoshimune, Takahisa Suzuki, Shogo Hibi, Yoriko Matsuoka, Satoshi Yamaguchi, Daigo Setoyama, Kazuhisa Isegawa, Hiroshi Nozaki, Masashi Harada, Norihiro Fukaya, Takenao Shinohara, Yasutaka Nagai</i>	
Demonstration of Fast Simultaneous Neutron and X-Ray Tomography for Fuel Cell Water Content Measurements.....	2309
<i>Jacob Michael Lamanna, Michael Cyrus Daugherty, Youngju Kim, Daniel Seth Hussey, Eli Baltic, David Jacobson</i>	
Quantifying Spatiotemporal Heterogeneity within Fuel Cells Using Simultaneous Neutron and X-Ray Tomography (NeXT).....	2310
<i>Pranay Shrestha, Jacob Michael Lamanna, Kieran Fahy, Junseob Kim, Chunghyuk Lee, Jason Keonhag Lee, Eli Baltic, Daniel Seth Hussey, David Jacobson, Spencer Lytle, Aimy Bazylak</i>	
Investigating the Influence of Inlet Relative Humidity on Polymer Electrolyte Membrane Fuel Cell Performance by Visualizing 4-D Water Distributions in Gas Diffusion Layers	2311
<i>Leya Roshani Kober, Pranay Shrestha, Spencer Lytle, Aimy Bazylak</i>	
The Role of Thermal Conductivity on Liquid Water Distribution in GDLs	2313
<i>Jonathan Halter, John A Macdonald, Fabusuyi Akindele Aroge, Olivia C Lowe, Francesco P Orfino, Esmaeil Navaei Alvar, Monica Dutta, Erik Kjeang</i>	
Interactions between Catalyst Layer Degradation and Liquid Water Distribution in Polymer Electrolyte Fuel Cells	2315
<i>Fabusuyi Akindele Aroge, Jonathan Halter, Olivia C Lowe, John A Macdonald, Francesco P Orfino, Monica Dutta, Erik Kjeang</i>	
Structure, Ionomer and Water Distribution in Catalyst Layer of Proton Exchange Membrane Fuel Cell	2317
<i>Arnaud Morin, Florian Chabot, Lionel Porcar, Sébastien Rosini</i>	
Nanoscale in-Situ Characterization of Polymer Electrolyte Membrane Fuel Cell Catalyst Layers for Improved Water Management	2318
<i>Spencer Lytle, Harsharaj Birendrasingh Parmar, Tess Seip, Lijun Zhu, Jian Wang, Aimy Bazylak</i>	
Effects of Operating Conditions on Membrane Electrode Assembly Saturation and Hydration Revealed By Operando Small- & Wide-Angle X-Ray Scattering	2319
<i>Kinanti Hantiyana Aliyah, Timon Lazaridis, Anne Berger, Christian Appel, Manuel Guizar Sicairos, Andreas Menzel, Hubert Andreas Gasteiger, Felix N. Buechi, Lorenz Gubler, Jens Eller</i>	
New Characterizations for PEFC Under Sub-Zero Temperature.....	2321
<i>Jongmin Lee, Wenmei Liu, Hannah Löffler, Pierre Boillat</i>	

Study of Fuel Cell Stacks Combining Pseudo-3D Multi-Physics Simulations with Experimental Mappings of Current Density and Liquid Water.....	2323
<i>Jean-Philippe Poirot-Crouvezier, Arnaud Morin, Pierrick Balestriere, Christophe Vacquier</i>	

I01A - Cell Level Analytics

(Invited) Beyond Electrochemical Impedance Spectroscopy: Advanced Methods for Studying the Dynamics of Electrochemical Processes	2324
<i>Tanja Vidakovic-Koch</i>	
Pressure and Impedance Based in Situ Diagnostic Methods for Water Management in Proton Exchange Membrane Fuel Cells Applications.....	2325
<i>Florian Mack, Silvia Nasarre Artigas, Hong Xu</i>	
Noninvasive Local Impedance Determination in Polymer Electrolyte Fuel Cells Stacks	2327
<i>Arnaud Schuller, Thomas J. Schmidt, Jens Eller</i>	
Investigation of the Effect of Airborne Contaminants on PEM Fuel Cell Stack Performance and Degradation Using Electrochemical Impedance Spectroscopy, AVL Thda™ and FTIR Gas Analyzer	2329
<i>Tansu Özel, Stefan Bürger, Carsten Cremers</i>	
Impedance Study of the Effect of Cell Compression on PEMFC Under Various Oxygen Supply Conditions	2330
<i>Akihisa Tanaka, Keisuke Nagato, Andre Weber, Morio Tomizawa, Masayuki Nakao</i>	
Impact of Clamping Force Distribution on Loss Processes in a Segmented PEMFC	2332
<i>Philipp Oppek, Tobias Goosmann, Andre Weber</i>	
Electrochemical Impedance Analysis of Direct Ammonia Fuel Cell Operation and Clamping Effects.....	2333
<i>Erno Kempainen, Iris Dorbandt, Karuppasamy Dharmaraj, Rania Hanna, Maximilian Reinhardt, Christian Schary, Rutger Schlatmann, Sonya Calnan</i>	
Fault Detection and Identification for Polymer Electrolyte Membrane Fuel Cell Stack by External Magnetic Field.....	2335
<i>Leonard Freisem, Olivier Chadebec, Gilles Cauffet, Yann Bultel, Sébastien Rosini</i>	
Modeling and Validation of Assisted Cold Start for a PEMFC Coupled to a Thermochemical Preheater	2337
<i>Patrick Sarkezi-Selsky, Thomas Jahnke</i>	
A Fuel Cell's Big Brother: Artificial Intelligence for Monitoring Fuel Cells	2338
<i>Lukas Klass, Alexander Kabza, Frank Sehnke, Katharina Strecker, Markus Hölzle</i>	
Development of New Electrochemical Method for Measuring Gas Permeability of PEM Fuel Cell Components.....	2340
<i>Alina Madalina Darabut, Yevheniia Lobko, Yurii Yakovlev, Vladimír Matolin, Iva Matolinová</i>	
In Situ Real-Time Simultaneous NMR Analyses of Anode and Cathode Exhausts of Direct Ethanol and Methanol Fuel Cells.....	2342
<i>Ryeo Yun Hwang, Oc Hee Han</i>	

I01A - Imaging 2

(Invited) Leveraging Imaging Techniques to Accelerate the Advancement of Polymer Electrolyte Membrane Water Electrolyzers	2343
<i>Aimy Bazylak</i>	
Characterization of Transport Pathways in Electrolyzers Using Neutron and X-Ray Tomography	2344
<i>Michael Cyrus Daugherty, Jacob Michael Lamanna, Youngju Kim, Daniel Seth Hussey, Eli Baltic, David Jacobson</i>	
Two-Phase Flow Through the PTL of PEM Water Electrolyzer: MRI Experiments and Numerical Modeling Using Phase-Field Theory	2345
<i>Bilal Amoury, Tien Dung Le, Jérôme Dillet, Sébastien Leclerc, Gael Maranzana, Sophie Didierjean</i>	

3D Imaging of PEMFC Electrode Microstructure by Electron Tomography and 3D FIB/SEM	2347
<i>Laure Guetaz, Adem Ghorbel, Thomas David, Zineb Saghi, Mohamed Ahmed-Maloum, Marc Prat, Michel Quintard, Stephane Cotte, Joël Pauchet, Arnaud Morin</i>	
Effect of Fuel Cell Electrode Fabrication on Ionomer Nanostructure in Correlation with Electrochemical Performances	2351
<i>Pierre Toudret, Marie Heitzmann, Jean-François Blachot, Arnaud Morin</i>	
Through-Plane Cerium Ion Migration and Diffusion Analysis on Plymer Electrolyte Membrane by Operando X-Ray Fluorescence Spectroscopy	2354
<i>Yuki Orikasa, Aika Takezawa, Kaoruko Morita, Yoichiro Tsuji, Takahiko Asaoka, Maria Ohki, Oki Sekizawa, Kiyofumi Nitta</i>	

I01B-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - DESIGN, FABRICATION AND OPERATION OF CELLS, STACKS AND SYSTEMS

I01B - Electrodes & MEAs

Recycling of Platinum Group Metals	2356
<i>Laura Ashfield</i>	
Spatial Atomic Layer Deposition of Iridium Oxide Electrocatalyst Layers for PEM Electrolysis.....	2357
<i>Corné Frijters, Hardik Jain, Jie Shen, Mahmoud Ameen, Jamie Greer, Nicolas Blasco, Paul Poedt</i>	
Design of Carbon Aggregation Structure in Polymer Electrolyte Fuel Cell Catalyst Ink by Solvent Hydrophilicity	2358
<i>Shuhei Yoshino, Masashi Harada, Naoki Hasegawa, Ryosuke Jinnouchi</i>	
Development of Multi-Nozzle Electro spray Device for Fabrication of Cathode Catalyst Layer on Polymer Electrolyte Fuel Cells.....	2360
<i>Makoto Uchida, Chisami Yoneyama, Kayoko Tamoto, Tomio Sugiyama, Chihiro Taguchi, Shimao Yoneyama, Yuhei Miyamoto</i>	
Interaction of Catalysts for Unitized Regenerative Fuel Cells	2362
<i>Annabelle Maletzko, Eduardo Daniel Gomez Villa, Birgit Kintzel, Harald Fietzek, Gordon Schmidt, Jürgen Christen, Peter Veit, Philipp Kühne, Julia Melke</i>	
Impact of Missing Cathode Catalyst Layer Areas on Performance and Durability in PEM Fuel Cells.....	2364
<i>Jonas Stoll, Nana Zhao, Erik Kjeang, Zhiqing Shi</i>	
Highly Robust Fuel Cell Electrodes Using Pt Thin Film Catalysts As Reversal Tolerant Anodes.....	2366
<i>Wipula Priya Rasika Liyanage, Siddharth Komini Babu, Alper Can Ince, Ugur Pasaogullari, Jacob S. Spendelow</i>	
New Advances in Graded PEMFC Catalyst Layers	2367
<i>Marc Ayoub, Matthew Brodt, Vicent Lloret Segura, Simon Thiele</i>	

I01B - Poster Session

Modeling and Sizing of a Y-Shaped Laminar Flow Micro-Fluidic Fuel Cell.....	2369
<i>Mayken Espinoza Andaluz, Xiaoqiang Zhang, Danan Yang, Martin Andersson</i>	
Influence of Contact Pressure and Flow Rate on the Performance of Anion Exchange Membrane Electrolysis	2371
<i>Michelle Sophie Lemcke, Wolfram Münchgesang, Nadine Menzel, Michael Bron</i>	
Characterizing Reversible and Irreversible Degradation Effects of PEM Water Electrolyzer Stacks	2372
<i>Felix Dittmar, Stefan Bürger, Carsten Cremers</i>	
Bifunctional Electrocatalyst Materials for Improved Cell Reversal Tolerance in PEM Fuel Cell.....	2374
<i>Sooyoung Yoon, Mehtap Oezaslan, Frédéric Hasché</i>	

Mitigating the Degradation of Electrodes in Alkaline Water Electrolysis during Shutdown Mode by Interrupting Reverse Current	2375
<i>Bonghyun Kim, Wan Sik Kim, Junseok Sim, Young Han Jung, Asiya Mohaseen Tamboli, Changhee Kim</i>	
(Poster Award - 1st Place) Liquid Water Permeability in a Hydrophobic Microporous Layer for the Anode Interdigitated Flow Field of a Gas-Liquid Separating Polymer Electrolyte Membrane Water Electrolyzer	2376
<i>Shunji Kubota, Hironori Nakajima, Motohiko Sato, Asuka Shima, Masato Sakurai, Yoshitsugu Sone</i>	
Microwave Drying of Catalyst Layers for Fuel Cells and Electrolysers	2378
<i>Emanuel Albert Heider, Julian Bader, Simone Kiesel, Steffen Kühn, Hai-Anh Tran, Moritz Oesterlein, Ludwig Joerissen</i>	
Towards Reliable Stability Measurements of OER Catalysts	2379
<i>Aline Bornet, Simon Pitscheider, Erlend Bertheussen, Christoffer Mølleskov Pedersen, Annabelle Maletzko, Nedjeljko Seselj, Gustav Karl Henrik Wiberg, Christian Kallesøe, Julia Melke, Carsten Cremers, Matthias Arenz</i>	
Power Generation Characteristics of Polymer Electrolyte Fuel Cells with Electrocatalysts Supported on SnO ₂ in High Current Density Range	2381
<i>Taichi Ogawa, Shogo Nakamura, Ryo Miyamoto, Masahiro Yasutake, Zhiyun Noda, Junko Matsuda, Masamichi Nishihara, Akari Hayashi, Kazunari Sasaki</i>	

I01B - Stacks and Durability Testing 1

Projected Fuel Cell Stack Costs Using Non-PGM Cathode Electrocatalysts	2384
<i>Karen Swider-Lyons, Sejal Patel, Chris Rainford</i>	
Performance and Durability of Next Generation Automotive Membrane Electrode Assemblies in Automotive Short Stacks	2385
<i>Stefan Zink, Jürgen Hunger, Deborah J. Jones, Marta Zaton, Silvain Buche, Adam Hodgkinson, Albert Albert, Olav Finkenwirth, Ivan Ponomarev, Mark Muggli, Hannes Barsch, Ludwig Joerissen</i>	
Anode Defects' Propagation in Polymer Electrolyte Membrane Fuel Cells Stack	2386
<i>Yann Bultel, Corine Bas, Florence Dubelley, Fabrice Micoud, Sébastien Rosini, Christine Nayoze-Coynel</i>	
Understanding the Break-in of PEM Fuel Cells: A Comprehensive Study of Break-in Methods and Underlying Mechanisms	2388
<i>Felix Haimerl, Emilio Avellone, Aliaksandr S. Bandarenka</i>	
Method for Systematic Validation of a Physically Based PEMFC Model By Spatially Resolved Impedance Measurements	2389
<i>Tobias Goosmann, Philipp Oppek, Andre Weber</i>	
Investigation of Ionomer/Catalyst Interfacial Degradation in PEMFC Using Pt Nanoparticle Array Electrode	2390
<i>Dong Wook Lee, Jonghyun Hyun, Kyunghwa Seok, Euntaek Oh, Hanmin Bae, Jeessoo Park, Hee-Tak Kim</i>	
Effect of Superhydrophobic Catalyst Layers on PEMFC Durability	2391
<i>M. Antonia Folgado, Luis Duque, Ester Diaz-Alvarez, Antonio M Chaparro, Susana Merino, Daniel Plaza, Gonzalo De Diego, Rebeca Hernández, Marta Serrano</i>	

I01B - Stacks and Accelerated Durability

(Invited) Why and How Should the PEMFCs be Recycled? – Focus on the MEA Case	2393
<i>Lenka Svecova</i>	

Investigating Proton Exchange Membrane Fuel Cell Durability at Intermediate Temperatures (80 – 120 °C)	2395
<i>Björn Eriksson, Martina Butori, Elisabeth Oldenburg, Linnéa Strandberg, Carina Lagergren, Björn Wickman, Raket Lindstrom, Göran Lindbergh</i>	
Impact of Reinforced Polymer Electrolyte Membrane Scratch on Fuel Cell Durability Using 4D X-Ray Computed Tomography Technique	2397
<i>Amin Bahrami, Nitish Kumar, Yixuan Chen, Francesco P Orfino, Monica Dutta, Michael Lauritzen, Erin Setzler, Alexander Agapov, Erik Kjeang</i>	
Design and Operation of PEM-Electrolyzers Considering Cost and Efficiency	2399
<i>Fabian Scheepers, Markus Staehler, Andrea Burdzik, Martin Müller</i>	
(Invited) Addressing Durability in Long-Life, Low-Power Fuel Cells	2400
<i>Daniel Leonard, Rod L. Borup, Tommy Rockward, Cortney R. Kreller, Mahlon Wilson, Victor Siller, Igor Usov</i>	
Development and Evaluation of Accelerated Durability Tests Under Realistic Operating Conditions for PEMFC Stacks – a Systematic Approach	2401
<i>Miriam Koprek, Robert Schlumberger, Christian Wachtel, Florian Wilhelm, Joachim Scholta, Markus Hölzle</i>	
Optimization of Realistic Accelerated Stress Tests for PEM Fuel Cells Using Standardized Automotive Driving Cycles.....	2402
<i>Paul Thiele, Luís Gouveia, Oliver Ulrich</i>	
Supercapacitive Electrolyzer for Decoupled Hydrogen Production	2405
<i>Esteban Toledo Carillo, Mario García-Rodríguez, Lorena Sanchez-Moreno, Joydeep Dutta</i>	

I01B - Stacks and Durability Testing 2

(Invited) Parametric Investigation of Electrochemical Hydrogen Compression: An Experimental Study.....	2406
<i>Majid Aziz, Utsav Raj Aryal, Ajay Krishna Prasad</i>	
Production of Novel Tubular Electrochemical Hydrogen Compressor	2407
<i>Wibke Zängler, Robert Keller, Matthias Wessling</i>	
Miniature Fuel Cells for Long-Term Unattended Power Needs	2408
<i>Cortney R. Kreller, Wakeiyo Hettinga, Jeremy Jernigen, Rod L. Borup, Eric L. Brosha, Tommy Rockward, Mahlon Wilson</i>	
Efficient High Temperature PEMFC Metallic Stack	2409
<i>Charalampos Neofytidis, Fotios Paloukis, Nikolaos Athanasopoulos, Stylianos G. Neophytides, Maria Daletou</i>	
Hydrogen Fuel Cell Aiming at Vehicle Propulsion: Onboard or Off-Board Electricity Generation?.....	2410
<i>Tatiana Santos Andrade, Torbjörn Thiringer</i>	
Challenges of Using Fuel Cells to Deliver Aircraft Propulsion Power.....	2411
<i>Carsten Cremers</i>	
Design and Construction of a LT-PEM Fuel Cell System for Aviation Application.....	2412
<i>Stefan Bürger, Carsten Cremers, Niels Urban</i>	
Modeling of Proton Exchange Membrane Fuel Cell Stack and Start Strategy Optimization with a Multi-Objective Genetic Algorithm.....	2413
<i>Zhao Liu, Hui Cui Chen, Tong Zhang, Thomas Von Unwerth, Carmen Meuser</i>	

I01B - Flow Field(s), Plates and Channels

Improving Water Management and Reactant Distribution in PEM Fuel Cells Via Flow Fields with Biomimetic Auxiliary Channels	2414
<i>Eric Alexander Chadwick, Pranay Shrestha, Harsharaj Birendrasingh Parmar, Aimy Bazylak, Volker Paul Schulz</i>	

Miniature Fuel Cell with Monolithically Fabricated Si Electrodes- Application of a PDMS Flow Channel for Operando Observation -	2415
<i>Masanori Hayase, Gaku Yoshimura, Yuta Sakai, Takeo Yamaguchi</i>	
Tailoring Parallel Channel Flow Fields for Efficient Mass Transport and Compression in Proton Exchange Membrane Fuel Cells	2417
<i>Harsharaj Birendrasingh Parmar, Eric Alexander Chadwick, Pranay Shrestha, Spencer Lytle, Aimy Bazylak</i>	
Lightweight and Efficient: Exploring Low-Weight Bipolar Plates for Alkaline PEM Fuel Cells	2418
<i>Santiago Rojo Osorio, Carlos Ignacio Sanchez-Saenz</i>	
Investigation of the Effect of Graphite Bipolar Plate Flow Channel Inhomogeneities and Faults on HT-PEM Fuel Cell Stack Performance.....	2419
<i>Tansu Özel, Samuel Kraft, Carsten Cremers</i>	
Plasma Electrolytically Surface-Engineered SS316L Bipolar Plates for PEM Fuel Cells	2420
<i>Palika Durga Prasad, Lakshman Neelakantan</i>	
Investigating the Suitability of Printed Circuit Components for Fuel Cells	2422
<i>Yannick Garsany, Kevin Cronin, Keith Bethune, Richard Stroman</i>	
Nonuniform Compensation of the Current Density Distribution in the Polymer Electrolyte Fuel Cell Using Local Heating	2423
<i>Shangwei Zhou, Lara Rasha, Linlin Xu, Wenjia Du, Paul R Shearing, Dan J L Brett, Rhodri Jervis</i>	
Dimensionless Moduli Governing Under-Rib Transport Phenomenon in Polymer Electrolyte Fuel Cell	2424
<i>Yulei Ma, Miho Kageyama, Hisaaki Gyoten, Motoaki Kawase</i>	
Modeling Electrical Conductivity of Injection-Molded Polymer Composite Bipolar Plates	2427
<i>Maxwell T Myers, Jonathan K Trimpey, David B Beevers, Charles E Bakis, Adam S Hollinger</i>	

I01B - Gas Diffusion Layers

Hydrophobic Conductive Coatings for Fuel Cell Gas Diffusion Layers	2429
<i>Merit Bodner, Fabio Blaschke, Florian Tritscher</i>	
Investigation of Gas Diffusion Layer Degradation in Polymer Electrolyte Fuel Cell Via Chemical Oxidation.....	2431
<i>Joel Mata Edjokola, Viktor Hacker, Merit Bodner</i>	
Relevance of GDL Properties Regarding GDL Quality Assurance	2433
<i>Carsten Cremers</i>	
Capillary Pressure Controlled Water Pathways in Gas Diffusion Layers for Polymer Electrolyte Fuel Cells Designed By Additive Manufacturing.....	2434
<i>Tim Doerenkamp, Felix N. Buechi, Thomas J. Schmidt, Jens Eller</i>	
An Experimental Study on the Correlation between Characteristics of Gas Diffusion Layer and Performance Depending on Relative Humidity Variation in Proton Exchange Membrane Fuel Cell	2436
<i>So Yeon Lee, Chi-Yeong Ahn, Hyungwon Shim</i>	
Water Transport Modeling in a Microporous Layer for a Polymer Electrolyte Membrane Water Electrolyzer Having a Gas-Liquid Separating Interdigitated Flow Field	2437
<i>Hironori Nakajima, Henrik Ekström, Asuka Shima, Yoshitsugu Sone, Göran Lindbergh</i>	

I01C-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - ION-EXCHANGE MEMBRANE AND IONOMER DEVELOPMENT, PERFORMANCE, AND DURABILITY

I01C - Poster Session

Next Generation Fluorine-Free Proton Exchange Membranes for Electrochemical Energy Applications.....	2439
<i>Sara Andrenacci, Eugenia Sandru, Patrick Fortin</i>	
Casting Electrodes on PEEK Reinforced Sulfonated Polyphenylsulfone Membrane	2440
<i>Niklas Van Treel, Regina Qelibari, Giorgi Titvinidze, Carolin Klose, Andreas Münchinger, Edgar Cruz Ortiz, Severin Vierrath</i>	
Species Transport in Hydrophilic Nafion-Coated Cu Catalysts for CO ₂ Electroreduction	2441
<i>Peace O. Adesina, James Elliott, Alexei A Lapkin</i>	
Design of Bipolar Membranes to Increase CO Formation Rates in Bicarbonate Electrolysers at Low Voltage.....	2443
<i>Aubry S. R. Williams, Benjamin A. W. Mowbray, Xin Lu, Yongwook Kim, Curtis P. Berlinguette</i>	
Embrittlement of PFSA Reinforced Membrane Interfaces after Ex-Situ Chemical-Mechanical Aging.....	2444
<i>Corine Bas, Marie Crouillere, Florence Dubelley, Mylène Robert, Assma El Kaddouri, Olivier Lottin, Jérôme Dillet, Kévin Mozet, Jean Christophe Perrin</i>	
Applicability of Phosponated Poly(pentafluorostyrene) Fiber Reinforced Nafion Composite Membranes in Low-Temperature Fuel Cells	2446
<i>Miriam Komma, Muhammad Solihul Mu'Min, Dunia Abbas, Maximilian Wagner, Anja Krieger, Simon Thiele, Thomas Boehm, Jochen Alfred Kerres</i>	
Reinforced Membranes with PTFE Matrix and Sulfonated Hydrocarbon Electrolyte for PEM Fuel Cells.....	2448
<i>Juniko Nur Pratama, Hyejin Lee, Dongwon Shin, Byungchan Bae</i>	
Alkaline-Stable Poly(phenylene-co-arylene ether) Block Copolymer-Based Anion Exchange Membranes with Alkyl Side Chain.....	2449
<i>Hugeun Kwon, Hyejin Lee, Dongwon Shin, Byungchan Bae</i>	
Poly(arylene alkylene)s Carrying Quaternary Ammoniums via Flexible Phenylpropyl Spacers as Hydroxide Conducting Membranes.....	2450
<i>Si Chen, Dong Pan, Haiyue Gong, Patric Jannasch</i>	
Molecular analysis of hydrogen-bond structures in polymer electrolyte membrane in polymer electrolyte fuel cells below freezing temperatures	2452
<i>Hiroki Nishizawa, Takuya Mabuchi, Naoya Uene, Takashi Tokumasu</i>	
Comparative Analysis of Degradation of Pristine Nafion and Catalyst Coated Membrane Subjected to Ex-Situ Fenton's Test Approach	2454
<i>Sudeshna Patra, Patrick Trinke, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
Molecular Simulation of Nafion Swelling in the Cathode Catalyst Layer of Polymer Electrolyte Fuel Cells.....	2455
<i>Naoki Koda, Kohei Sato, Clint John Cortes Otic, Ikuya Kinefuchi</i>	
(Poster Award - Honorable Mention) Durable Polybenzimidazole Anion Exchange Membranes for Alkaline Water Electrolyzers	2457
<i>Oskar Boström, Seung-Young Choi, Lu Xia, Felix Lohmann-Richters, Patric Jannasch</i>	
Hydroxide Conducting Naphthalene-Containing Polymers and Membranes Via Polyhydroxyalkylations	2459
<i>Triet Nguyen Dai Luong, Si Chen, Patric Jannasch</i>	
Water Dissociation Interfaces in Bipolar Membranes for H ₂ Electrolysers.....	2460
<i>Dora Alicia Garcia-Osorio, Hansaem Jang, Bhavin Siritanaratkul, Alexander Cowan</i>	

Ionomer-Dependent Oxygen Evolution Reaction in a Half-Cell and a Liquid Electrolyzer	2461
<i>Joy Marie Mora, Guangfu Li, Po-Ya Abel Chuang</i>	

I01C - Ionomer & Membrane Development

(Invited) Monopolar and Bipolar Membranes Based on Nanofiber Electrospinning	2462
<i>Peter N. Pintauo</i>	
Influence of Monomer Configuration on the Performance of Poly(quarterphenyl piperidinium) Anion Exchange Membranes.....	2463
<i>Pegah Mansouri Bakvand, Dong Pan, Andrit Allushi, Patric Jannasch</i>	
Understanding How Anion Exchange Membranes and Cationic Polymer/Catalyst Interactions Behave with Time in Alkaline Electrolysis	2465
<i>Andrew M. Herring, Mei-Chen Kuo, Ivy Wu, Jack Creel, Marco Salgado, E. Bryan Coughlin</i>	
Poly(arylene alkylene piperidinium)s for Anion Exchange Membrane Water Electrolyzers	2467
<i>Dong Pan, Manuel Hegelheimer, Pegah Mansouri Bakvand, Simon Thiele, Patric Jannasch</i>	
Advanced PEM Electrolyzer Membrane for Hydrogen Crossover Mitigation.....	2469
<i>Fan Yang, Qiang Sun, Cortney Mittelsteadt</i>	
Preparation and Optimization of Novel Anisotropic Proton-Exchange Membranes with Enhanced through-Plane Conductivity.....	2470
<i>Jian Li, Dario R Dekel, Viatcheslav Freger</i>	
Advances in Reinforced Polymer Electrolyte Membrane Designs for Improved Direct Coated Electrodes	2472
<i>Amr Kobaisy, Akinari Kurokawa, Kazushi Oshiro, Masaki Tani, Masashi Maruyama, Rie Miyake, Takafumi Namba, Yurika Ueda</i>	
Cross-Aligned PTFE Nanofiber Reinforced Composite Membrane for PEM Fuel Cells	2474
<i>Ki Ro Yoon</i>	
Electrospun Sulfonated Silica/P(VDF-TrFE)-Based Composite Membranes for PEM Fuel Cells	2476
<i>Begüm Yarar Kaplan, Naeimeh Rajabalizadeh Mojarrad, Ahmet Can Kirlioglu, Selmiye Alkan Gursel</i>	
Thermo-Mechanical Stability of Hydrocarbon-Based Pemion [®] Proton Exchange Membranes.....	2477
<i>Seyed Hesam Mirfarsi, Aniket Kumar, Jisung Jeong, Michael Adamski, Scott McDermid, Benjamin Britton, Erik Kjeang</i>	
Nanocellulose as a Sustainable Polymer Electrolyte	2480
<i>Stephen Matthew Lyth, Thomas Bayer, Masamichi Nishihara, Kazunari Sasaki</i>	

I01C - Ionomer Characterization: Theory and Experiments

(Invited) Molecular Insights into Water Structure and Proton Transfer at the Interfaces in Bipolar AEM/PEM Membranes	2481
<i>Stephen J. Paddison</i>	
Effect of Anionic, Cationic, and Non-Ionic Surfactants on the Structural Stability and Morphology of Perfluorinated Sulfonic Acid Membranes	2482
<i>Adam Imel, Brian Barth, Thomas A. Zawodzinski</i>	
Investigating the Electro-Osmotic Coefficients of PFSA and Anion-Exchange Ionomers Using Microelectrodes	2483
<i>John G. Petrovick, Douglas I. Kushner, Priyamvada Goyal, Clayton J. Radke, Adam Z. Weber</i>	
Hydrogen Production with Seawater-Resilient Bipolar-Membrane Electrolyzers	2484
<i>Daniela Marin, Joseph T. Perryman, Michaela Burke Stevens, Adam C. Nielander, Shannon W. Boettcher, Thomas F. Jaramillo</i>	
Evaluation of Hydrogen Crossover in Pemfcs at Intermediate Temperature (80 - 120 °C).....	2485
<i>Martina Butori, Björn Eriksson, Carina Lagergren, Göran Lindbergh, Rakel Lindstrom</i>	

Fundamentals of Gas Permeation in PEM Water Electrolyzers Operated at High Pressures	2487
<i>Kaustubh Khedekar, Kui Li, Ryan Gebhardt, Andrew Park, Rod L. Borup, Siddharth Komini Babu</i>	
Hydrogen and Oxygen Permeability through PEFC Membrane and Membrane Electrode Assembly.....	2489
<i>Miho Kageyama, Beste Balci, Shotaro Danjo, Kimiyo Nakamichi, Motoaki Kawase</i>	
Hydrogen Crossover in Anion Exchange Membrane Fuel Cells	2492
<i>Nikola Nikolic, Björn Eriksson, Rakel Lindstrom, Carina Lagergren, Göran Lindbergh</i>	
Understanding of Ionic Structure Change Under Hydration Levels by Using CSAFM.....	2494
<i>Osung Kwon, Jaehyung Park</i>	

I01C - Membrane Degradation and Durability

(Invited) Membrane Degradation in Polymer Electrolyte Membrane Fuel Cells for Heavy Duty Applications.....	2495
<i>Rangachary Mukundan, Claire Arthurs, Ahmet Kusoglu, Siddharth Komini Babu, Xiaojing Wang, Tanya Agarwal, Rod L. Borup</i>	
Simulation of Proton Exchange Membrane Durability Under Fuel Cell Vehicle Operation – a Fundamental Study	2496
<i>Mohammad Shojayian, Mohsen Mazrouei Sebdani, Erik Kjeang</i>	
Determination of Membrane Degradation in Polymer Electrolyte Fuel Cells with in-Situ and Ex-Situ Measurements	2498
<i>Mathias Heidinger, Daniel Sandu, Viktor Hacker, Merit Bodner</i>	
Radical Attack and Damage Mitigation in Hydrocarbon-Based Ionomers.....	2499
<i>Lorenz Gubler, Tym De Wild, Tamas Nemeth, Thomas Nauser</i>	
Mechanism of Ionomer Degradation as a Consequence of Defective Anode PEMFC.....	2501
<i>Corine Bas, Florence Dubelley, Marie Crouillere, Laetitia Dubau, Marian Chatenet, Touhami Salah, Olivier Lottin, Assma El Kaddouri, Jérôme Dillet, Julia Mainka, Christine Nayoze-Coynel, Sébastien Rosini, Yann Bultel</i>	
Chemo-Mechanical Durability of Reinforced Fuel Cell Membranes in the Presence of Metallic Foreign Particles	2503
<i>Nitish Kumar, Yixuan Chen, Mohammadamin Bahrami, Francesco P Orfino, Monica Dutta, Michael Lauritzen, Erin Setzler, Alexander Agapov, Erik Kjeang</i>	
High Durability of Pemion® Proton Exchange Membranes in Cross-Pressure Accelerated Mechanical Stress Tests	2506
<i>Seyed Hesam Mirfarsi, Aniket Kumar, Jisung Jeong, Michael Adamski, Scot Jones, Scott McDermid, Benjamin Britton, Erik Kjeang</i>	
Electrospun High Performance Polymer Reinforced Membranes for Exceptional Durability Fuel Cell Membrane Electrode Assemblies.....	2509
<i>Marta Zaton, Nicolas Donzel, Sara Cavaliere, Jacques Rozière, Deborah J. Jones, Emily Nesling, Josef Bobolecki, Silvain Buche</i>	
In-Situ Fatigue Lifetime Modeling of a Reinforced Membrane by Projecting Critical Accumulated Plastic Dissipation Energy from Pressure Differential-Accelerated Mechanical Stress Tests	2510
<i>Mohsen Mazrouei Sebdani, Heather Baroody, Erik Kjeang</i>	
Suppression of Chemical Degradation By Gas Barrier Polymer Electrolyte Membranes.....	2514
<i>Masamichi Nishihara, Zulfi Gautama, Yang I, Yasir Hutapea, Kazunari Sasaki</i>	
Suppression of PEFC Membrane Degradation By Using SnO ₂ As Electrocatalyst Support	2515
<i>Shogo Nakamura, Taichi Ogawa, Zulfi Gautama, Zhiyun Noda, Masahiro Yasutake, Stephen Matthew Lyth, Junko Matsuda, Akari Hayashi, Masamichi Nishihara, Kazunari Sasaki</i>	
Polyphenols as an Alternative to Lanthanide Alloys for PFSA Oxidative Stability	2519
<i>Tanya Agarwal, Siddharth Komini Babu, Ajay Krishna Prasad, Suresh Advani, Rod L. Borup</i>	
Insight into the Chemical Stability of N-Heterocyclic Ammonium Groups for Anion-Exchange Polyelectrolytes	2520
<i>Yiqi Jin, Nanjun Chen, Hui Li, Haijun Liu, Jiantao Fan</i>	

Improving the Durability and Performance of Anion Exchange Membranes for Water Electrolyzers..... 2522
Maira Raquel Ceron, Auston L. Clemens, Magi Mettry Yassa, John Joseph Karnes, James Spencer Oakdale

I01C - Catalysts Ionomers

Deconvolution of Charge-Transfer, Mass Transfer, and Ohmic Resistances of Phosphonic Acid-Sulfonic Acid Ionomer Binders in Electrochemical Hydrogen Pumps..... 2523
Karthik Arunagiri, Andrew Jark-Wah Wong, Luis A Briceno-Mena, Michael John Janik, Jose A Romagnoli, Christopher G. Arges

Effect of Solvent on Ionomer Adsorption Behavior of Polymer Electrolyte Membrane Fuel Cell Catalyst..... 2525
Dan Wu, Tsuyohiko Fujigaya

Towards Conformally Grafted Thin Film Ionomers for High Performance Polymer Electrolyte Fuel Cells..... 2529
Rens Jan Horst, Antoni Forner-Cuenca

Exploring Proton Activity at the Membrane/Electrode Interface with Microelectrodes 2531
Grace C. Anderson, Siddharth Rajupet, John G. Petrovick, Douglas I. Kushner, Alexis T. Bell, Adam Z. Weber

Analysis of Cerium Ion Transport in Anode Side Catalyst Layer for Improving Polymer Electrolyte Membrane Durability of Polymer Electrolyte Fuel Cells 2532
Hiroto Suzuki, Takashi Tokumasu, Takuya Mabuchi

In-Situ Analysis of Electrodes Using Fine-Tuned Poly(Terphenyl Piperidinium) Ionomers in Anion Exchange Membrane Fuel Cells..... 2534
Timon Novalin, Dong Pan, Nikola Nikolic, Björn Eriksson, Carina Lagergren, Göran Lindbergh, Patric Jannasch, Rakel Lindstrom

Influence of Sidechain Length in Perfluoro-Sulfonic Acid Ionomer on Electrode Slurry Interactions and Finalized Microstructure in the Polymer Electrolyte Fuel Cells..... 2537
Won Young Choi, Hyunguk Choi, Seo Won Choi, Young Je Park, Hyeon E Cho, Seong Shin, Sung Kwan Ryu, Young Gi Yoon, Min Jae Ko, Chiyoun Jung

I01D-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - CATALYST ACTIVITY/DURABILITY FOR HYDROGEN(-REFORMATE) ACIDIC FUEL CELLS

I01D - 01 Non-PGM Catalysts

Heat-Treatment of a Fourteen Membered Macrocyclic Fe Complex for Electrocatalytic Oxygen Reduction 2539
Yuta Nabae, Hideo Notsu, Shinsuke Nagata, Mami Miyoshi, Teruaki Hayakawa, Ryota Goto, Takeo Ichihara, Makoto Moriya, Sotaro Honda, Zhiqing Feng, Hiroshi Yoshida, Masato Machida, Junya Ohyama

Iron-Phthalocyanine Based Oxygen Reduction Reaction Electrocatalyst: Structure-Performance Relationship Evolution during Pyrolysis 2541
Mohsin Muhyuddin, Laura Capozzoli, Enrico Berretti, Eamonn Murphy, Shengyuan Guo, Alessandro Lavacchi, Plamen Atanassov, Carlo Santoro

Fe-N-C Catalysts Synthesized on Conductive Non-Carbon Support Materials for Improved PEMFC Durability 2543
Wenjamin Moschkowitsch, Sara Cavaliere, Frederic Jaouen

Me-N-C Electrocatalyst Foams for the Oxygen Reduction Reaction in PEFCs..... 2545
Stephen Matthew Lyth, Albert Mufundirwa, Shoyo Suzuki, Joshua Chandrasekar, Kazunari Sasaki

(Invited) Strategies to Improve the Stability of Fe/N/C Catalysts in PEM Fuel Cells..... 2547
Gaixia Zhang, Xiaohua Yang, Jean-Pol Dodelet, Shuhui Sun

Non-PGM Cathode Electrocatalysts for PEM Fuel Cells.....	2549
<i>Georgios Charalampopoulos, Ilias Maniatis, Maria Daletou</i>	
Fe-N-C Oxygen Reduction Catalysts Via Chemical Vapor Deposition in Fluidized Bed Reactor	2551
<i>Mathias Primbs, Elisabeth Hornberger, Pierre Schroeer, Sören Selve, Peter Strasser</i>	
Nanostructured Fe-N-C Electrocatalysts with CeO ₂ Additives for PEM Fuel Cells	2552
<i>Ahmet Can Kirlioglu, Merve Buldu-Akturk, Faezeh Rahbarshendi, Alp Yurum, Selmiye Alkan Gursel, Begum Yarar Kaplan</i>	
A New Catalyst System for the Oxygen Reduction Reaction (ORR) at Fuel Cell Cathodes: P-Block Precious Group Metal-Free Tin and Nitrogen-Doped Carbon (SnNC) Catalyst	2553
<i>Fang Luo, Luca Silvioli, David A. Cullen, Andrea Zitolo, Frederic Jaouen, Peter Strasser</i>	

I01D - 02 Non-PGM Catalysts & Pt Cathode Catalysts

Investigating Oxygen Reduction Performance of Fe-N-C Catalysts for Proton Exchange Membrane Fuel Cells.....	2555
<i>Asad Mehmood, Tim-Patrick Fellingner</i>	
Structure and Activity-Durability Tradeoff of Coated Fe-N-C Catalysts for the Oxygen Reduction Reaction.....	2557
<i>Li Jiao, Moulay-Tahar Sougrati, Frederic Jaouen</i>	
(Invited) 25 Years of the Thin-Film Rotating Disk Electrode Technique	2559
<i>Thomas J. Schmidt, Hubert Andreas Gasteiger</i>	
Towards a Realistic Prediction of Catalyst Durability from Liquid Half-Cell Tests	2560
<i>Timo Imhof, Roberta Karla Francesca Della Bella, Bjoern Marcel Stuehmeier, Hubert Andreas Gasteiger, Marc Ledendecker</i>	
Effect of Dissolved Gases on Pt Nanoparticle Catalysts Investigated By in Situ SAXS, XAS Measurements.....	2562
<i>Takeshi Watanabe, Teppei Kawamoto, Hiromichi Nishiyama, Yuji Hiraoka, Mitsuru Wakisaka, Ichiro Hirosawa, Junji Inukai</i>	
Enhancement of the ORR Activity and Durability of Pt/C by the Modification with Melamine and N-Containing Aromatic Compounds	2564
<i>Shin-Ichi Yamazaki, Masafumi Asahi, Noboru Taguchi, Tsutomu Ioroi</i>	
Oxygen Reduction Reaction Activity of Platinum Nanosheets Derived from Layered Platinic Acid	2566
<i>Yuki Tokura, Shino Toma, Daisuke Takimoto, Wataru Sugimoto</i>	
PGM Recovery: Maximizing PGM Dissolution through Minimizing Ostwald Ripening.....	2568
<i>Shuang Ma Andersen, Raghunandan Sharma</i>	

I01D - Poster Session

Exploring a Facile Synthetic Procedure of Iron-Based Platinum Group Metal-Free Electrocatalyst for Polymer Electrolyte Fuel Cells	2569
<i>Winnie Kong, Emre Burak Boz, Antoni Forner-Cuenca</i>	
Improving Oxygen Reduction Reaction Activity through Defect Engineering of Atomically Dispersed Iron Electrocatalysts for Proton Exchange Membrane Fuel Cells	2571
<i>Seung Yeop Yi, Jinwoo Lee</i>	
Effects of Oxygen Defects in Zr Oxide-Based Thin Films on Oxygen Reduction Reaction in Acidic Media.....	2572
<i>Yuri Watanabe, Koichi Matsuzawa, Ryuji Monden, Takaaki Nagai, Akimitsu Ishihara</i>	
(Poster Award - 2nd Place) Enhancement of ORR Activity of Pt Catalyst for PEFCs By Modification with Hydrogen-Bonded Organic Framework Composed of Melamine and Cyanuric Acid	2575
<i>Taise Miyata, Hideo Inoue, Hideo Daimon, Takayuki Doi, Minoru Inaba</i>	

Exploring the Degradation Mechanism on Pt _x Co _y Alloy Catalysts for Oxygen Reduction Reaction by Operando X-Ray Absorption Spectroscopy.....	2577
<i>Yunfei Gao, Tomoki Uchiyama, Kentaro Yamamoto, Toshiki Watanabe, Neha Thakur, Ryota Sato, Toshiharu Teranishi, Hideto Imai, Yoshiharu Sakurai, Yoshiharu Uchimoto</i>	
Pt-Ta-Co Electrocatalysts for Polymer Electrolyte Fuel Cells.....	2579
<i>Ryo Miyamoto, Taichi Ogawa, Ryosuke Nishiizumi, Masahiro Yasutake, Zhiyun Noda, Masamichi Nishihara, Akari Hayashi, Junko Matsuda, Kazunari Sasaki</i>	
Structural Effects on ORR Performances of Carbon-Free Connected Platinum–Cobalt Catalysts with Chemically Ordered Superlattice Structures	2581
<i>Qiancheng Liao, Hidenori Kuroki, Takeo Yamaguchi</i>	
Carbon-Free, Connected Core-Shell Nanoparticle Catalysts with Advanced Oxygen-Reduction Performances for PEFCs	2583
<i>Aparna Chitra Sudheer, Anilkumar Gopinathan M., Hidenori Kuroki, Takeo Yamaguchi</i>	
Investigation of Catalyst Degradation in Proton Exchange Membrane Fuel Cell By Identical Location Electron Microscopy	2585
<i>Linnéa Strandberg, Victor Shokhen, Magnus Skoglundh, Björn Wickman</i>	
Molecular Dynamics Analysis of the Scattering Phenomena of Oxygen Molecules on an Ionomer Surface in Catalyst Layer of Fuel Cell	2586
<i>Keisuke Mizuki, Takuya Mabuchi, Ikuya Kinefuchi, Takashi Tokumasu</i>	
CO Oxidation Behavior of Pt/RuO ₂ -Sphere Catalyst in Acidic Electrolyte	2588
<i>Takahiro Saida, Ryohei Igami, Nanai Niki, Haruka Yamaki, Takahiro Maruyama</i>	
Relationship between Electrode's Composition, Porosities and Performance on Mesoporous Pt/C Catalysts	2590
<i>Rémi Blanchard, Wissam El Harrati, Maidhily Manikandan, El Mahdi Halim, Julien Durst</i>	
(Poster Award - 3rd Place) Synthesis of Spherical Mesoporous Carbon (SMPC) Support and Electrochemical Properties of Pt/SMPC Catalyst.....	2591
<i>Sorataka Yoshikawa, Minyoung Kim, Hideo Inoue, Hideo Daimon, Takayuki Doi, Minoru Inaba</i>	
(Poster Award - Honorable Mention) Ta ₂ O ₅ Catalyst Support for Polymer Electrolyte Fuel Cells	2593
<i>Kojiro Sanami, Ryosuke Nishiizumi, Masahiro Yasutake, Zhiyun Noda, Stephen Matthew Lyth, Junko Matsuda, Akari Hayashi, Kazunari Sasaki</i>	

101D - 21 Anode Catalysts & Cathode Catalyst Layers

Performance of a Small PEMFC Stack Operated with CO/H ₂ Mixtures.....	2595
<i>Mehmet S Yazici, Ceyhun Yildirim, Murat Kilic, Betul Erdor Turk, Fatma Gul Boyaci San, Emin Okumus</i>	
Development of IrO ₂ Nanosheet–Pt/C Composite as Reversal Tolerant Anode Catalysts for Polymer Electrolyte Fuel Cell	2596
<i>Tingwei Huang, Wataru Sugimoto</i>	
Catalyst Layer Structure Properties and Electrode Performance with the Addition of Polyethylene Glycol.....	2599
<i>Maidhily Manikandan, Rémi Blanchard, El Mahdi Halim, Julien Durst, Jessica Chamier</i>	
(Invited) Modeling of Catalyst Degradation in Toyota's Mirai and Its Application to Target-Setting for Future PEFC's Durability	2601
<i>Norihiro Fukaya, Shinobu Sekine, Shota Katayama, Kazuki Amemiya, Takao Watanabe</i>	
Experimental Campaign on PEMFC Catalyst Degradation: Enlightening the Impact of Automotive Operational Cycles Combined with Short-Stops	2602
<i>Elena Colombo, Andrea Casalegno, Amedeo Grimaldi, Laure Guetaz, Andrea Baricci</i>	
Proposing a Model for Platinum Nanoparticles Dissolution in PEM Fuel Cells to Describe Unexplained Electrocatalyst Degradation Consequent to Low Cell Voltage Excursion.....	2604
<i>Elena Colombo, Andrea Casalegno, Thomas Jahnke, Andrea Baricci</i>	

Molecular Additives at the Catalyst Ionomer Interface	2606
<i>Joshua David Snyder</i>	
Effect of Polybenzimidazole Coating on Acetylene Black for Durability of Polymer Electrolyte Membrane Fuel Cell	2607
<i>Tsuyohiko Fujigaya, Dan Wu, Chaerin Kim</i>	
Regeneration Strategies for Ruthenium-Poisoned ORR Catalysts in Reformate PEM Fuel Cells	2609
<i>Qiang Guo, Frédéric Hasché, Mehtap Oezaslan</i>	

I01D - 22 Pt-Alloy Cathode Catalysts

Carbon Corrosion Behavior of Carbon Support Materials for PGM-Based Catalysts in PEM Fuel Cells	2611
<i>Thomas Merzdorf, Elisabeth Hornberger, Sebastian Ott, Laurin Riebel, An Guo, Pierre Schröer, Peter Strasser</i>	
Electrode Coating Process Impact on the Performance of Pt and PtCo Fuel Cell Cathode Catalysts	2613
<i>El Mahdi Halim, Lisa Pierinet, Rémi Blanchard, Maidhily Manikandan, Thi Bich Hue Tran, Micah Barker, Janith Kariyawasam, Fanny Tricot, Julien Durst</i>	
On the Importance of the Volcano Slope and Mechanistic Pathways to Comprehend Activity and Selectivity Trends in Electrocatalysis	2615
<i>Kai S. Exner</i>	
(Invited) Facile and Scalable Production of an Intermetallic Nanocatalyst for High-Power Proton-Exchange-Membrane Fuel Cell	2618
<i>Yung-Eun Sung, Jongmin Lee</i>	
A Deeper Insight into Stability of Pt-Alloy Nanoparticles as Oxygen Reduction Reaction Electrocatalysts	2619
<i>Tina Dukic, Leonard Jean Moriau, Iva Klofutar, Martin Šala, Matija Gatalo, Nejc Hodnik</i>	
(Invited) Structure-Reactivity Relationship for Pt-Rare Earth Electrocatalysts for Oxygen Reduction Reaction	2621
<i>Sara Cavaliere, Carlos Augusto Campos-Roldán, Pierre-Yves Blanchard, Raphael Chattot, Jacques Rozière, Deborah J. Jones</i>	
Revealing the Synthesis and Degradation Mechanisms of Pt-Rare Earth Metal Alloy Catalysts by Multiple in-Situ Techniques	2622
<i>Yang Hu, Pei Liu, Florian Gellrich, Jens Oluf Jensen, Qingfeng Li</i>	

I01D - 31 Pt-Alloy Cathode Catalysts & New Support Materials

Electrochemical Top-Down Synthesis of Nanostructured Electrocatalysts for Polymer Electrolyte Membrane Fuel Cells	2623
<i>Peter Maximilian Schneider, Theophilus Kobina Sarpey, Johannes Fichtner, Batyr Garlyyev, Aliaksandr S. Bandarenka</i>	
Challenges of Pt-Ni Aerogel PEMFC-Cathode Catalyst Layers Under Automotive-Relevant Conditions	2625
<i>Meriem Fikry, Alvaro Jose Garcia, Juan Herranz, Pavel Khavlyuk, Alexander Eychmüller, Thomas J. Schmidt</i>	
Enhancing the Hydrogen-Air Fuel Cell Performance of Octahedral Pt _{ni} Nanoalloys with Rational Design of Dopants, Layering and Support in the PEM Fuel Cells	2627
<i>Lujin Pan, Alice Parnière, Olivia Dunseath, Cesar Weber, Jiasheng Lu, Michal Ronovský, Malte Klingenhof, Aleks Arinchtin, Hyung-Suk Oh, Pierre-Yves Blanchard, Sara Cavaliere, Marc Heggen, Rafal E. Dunin-Borkowski, Alejandro M. Bonastre, Fabio Dionigi, Jonathan Sharman, Deborah J. Jones, Peter Strasser</i>	
(Invited) The More Elements the Better? Studying Structure-Function Relations in High Entropy Alloy Nanoparticles As Fuel Cell Electrocatalysts	2628
<i>Rebecca Katharina Pittkowski, Kirsten M. Ø. Jensen, Jan Rossmeisl, Matthias Arenz</i>	

Oxygen Reduction Reaction Properties of Dry-Process Synthesized Pt-Non PGM Transition Metal Multi-Component Alloys: Influence of Transition Metal Elements	2629
<i>Yoshihiro Chida, Takeru Tomimori, Naoto Todoroki, Toshimasa Wadayama</i>	
Relationship between Surface States of Carbon Support and Electrode Reaction Activity in Cathode Catalyst Layer Toward High Power Output of Polymer Electrolyte Fuel Cells by Large-Scale Reactive Molecular Dynamics Simulations.....	2632
<i>Tetsuya Nakamura, Yuta Asano, Yusuke Ootani, Nobuki Ozawa, Momoji Kubo</i>	
Single Cell Performance and Durability of Pt and Pt-Based Catalysts Supported on Mesoporous Carbon	2636
<i>Hideo Daimon, Minyoung Kim, Yuki Oka, Taise Miyata, Sorataka Yoshikawa, Takayuki Doi, Hideo Inoue, Minoru Inaba</i>	
The Formation Mechanism of Ordered Mesoporous Carbon with Network-Structure: A Novel Support Material for Pt-Based Catalysts in PEFC Cathodes	2639
<i>Toshihiro Miyao, Hanako Nishino, Hiroko Yamazaki, Satoko Sato, Kayoko Tamoto, Makoto Uchida, Akihiro Iiyama, Kazuya Shibanuma, Mika Sodenno, Naoto Koizumi, Yasuto Hoshikawa</i>	
Development of Highly Active Pt/C-Based Catalysts for the ORR Using an Ordered Mesoporous Carbon with Network Structure As a Support Material: Focus on the Pt Loading Process.....	2642
<i>Satoko Sato, Hiroko Yamazaki, Hanako Nishino, Kayoko Tamoto, Makoto Uchida, Akihiro Iiyama, Kazuya Shibanuma, Mika Sodenno, Naoto Koizumi, Yasuto Hoshikawa, Toshihiro Miyao</i>	
Highly Durable Electrocatalyst with Low-Loading Pt-Co Dispersed over Graphene Nanofiber for Oxygen Reduction Reaction Under PEMFC Condition	2644
<i>Lina Chong, Wenjiang Ding</i>	

I01D - 32 New Support Materials Based on Carbon

Mesoporous Carbon Supported Catalyst for Heavy Duty Fuel Cells	2646
<i>Siddharth Komini Babu, Samuel McKinney, Xiaojing Wang, Haoran Yu, Kui Li, Geoff McCool, Barr Zulevi, Andrew Park, David A. Cullen, Rod L. Borup</i>	
Development of MEAs Using Mesoporous Carbon Fibers as Cathode Carbon Supports.....	2648
<i>Daichi Yasufuku, Kazunari Sasaki, Akari Hayashi</i>	
Scalable Synthesis of Stable Electrocatalyst for Oxygen Reduction Reaction.....	2650
<i>Hannaneh Hosseini, Alexander Gunnarson, Timo Imhof, Nguyen Khang Tran, Marc Ledendecker, Ferdi Schüth</i>	
CVD Growth Graphene Foam Functionalized with Platinum for Fuel Cells Applications	2652
<i>Daniela Ion-Ebrasu, Radu Dorin Andei, Constantin Catalin Negrila, Iulian Boerasu, Elena Carcadea, Adriana Marinouiu, Bogdan Stefan Vasile</i>	
The Durability of the Platinum/Polypyrrole Nanotubes' Catalysts in Oxygen Reduction Reaction.....	2653
<i>Yevheniia Lobko, Yurii Yakovlev, Alina Madalina Darabut, Viacheslav Kalinovykh, Dušan Kopecký, Nataliia Tsud, Jaroslava Novakova, Iva Matolinová</i>	
(Invited) The Stability of Nanomaterials in Electrochemical Energy Conversion, Illustrated on Selected Examples.....	2654
<i>Marc Ledendecker</i>	

I01D - 41 New Support Materials - Carbon and Oxides

Strong Coupling Effects between Single Metal Site-Rich Carbon and PtCo Intermetallic Catalysts for Heavy-Duty Meas.....	2655
<i>Yachao Zeng, Li Chenzhao, Nancy N. Kariuki, David A. Cullen, Deborah J. Myers, Jian Xie, Gang Wu</i>	

Elucidation of the Interplay between the Features of the Precursor and the Physicochemical Properties of “Core-Shell” Hierarchical Carbon Nitride Electrocatalysts for the Oxygen Reduction Reaction.....	2656
<i>Soufiane Boudjelida, Angeloclaudio Nale, Enrico Negro, Ketì Vezzù, Gioele Pagot, Vito Di Noto</i>	
PEFC Electrocatalysts Using Ta-Based Support on Mesoporous Carbon	2658
<i>Ryosuke Nishiizumi, Kojiro Sanami, Masahiro Yasutake, Zhiyun Noda, Stephen Matthew Lyth, Masamichi Nishihara, Akari Hayashi, Junko Matsuda, Kazunari Sasaki</i>	
Highly Durable and Active Electrocatalysts Using Pt Nanorod Catalysts Supported on Nb Doped SnO ₂ for Polymer Electrolyte Fuel Cells Operating at Wide Temperature Range.....	2660
<i>Katsuyoshi Kakinuma, Tetsuro Tano, Guoyu Shi, Makoto Uchida, Akihiro Iiyama</i>	
The Impact of Mesopores of SnO ₂ Catalyst Support on the Performance of Polymer Electrolyte Fuel Cells.....	2662
<i>Masanori Inaba, Ryuichi Murase, Tomohiro Takeshita, Satoru Kosaka, Naoko Takahashi, Keiichiro Oh-Ishi, Kimihiro Tsuchiya, Takeshi Nobukawa, Kensaku Kodama</i>	
Effect of Cerium Oxide Nanoparticle Morphology on the Performance and Durability of Hydrogen/Air Fuel Cell Electrodes	2664
<i>Begum Yarar Kaplan, Bilal Iskandarani, Mohammed Ahmed Zabara, Alp Yurum, Selmiye Alkan Gursel</i>	
Highly Dispersed Pt on Ceria with N-Doped Carbon As High Durable Catalyst for ORR and High Tolerant to H ₂ S and CO for HOR in PEMFCs	2665
<i>Rong Zeng, Ling Liu, Jiasi Yan, Lijun Jiang</i>	

I01E-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - MATERIALS FOR ALKALINE FUEL CELLS AND DIRECT-FUEL FUEL CELLS

I01E - Liquid Alkaline Electrolysis

Numerical Two-Phase Simulations of Alkaline Water Electrolyzers.....	2669
<i>Steffen Hess, Shidong Zhang, Thomas Kadyk, Werner Lehnert, Michael Eikerling, Steven B. Beale</i>	
A Three-Dimensional, Multiphysics Model of An Alkaline Electrolyzer.....	2670
<i>Diogo Loureiro Martinho, Torsten Berning, Mohammadmahdi Abdollahzadehsangroudi, Anders Ronne Rasmussen, Jakob Hærviq, Samuel Simon Araya</i>	
Zero-Gap Porous Silicon Membrane Electrodes for Alkaline Electrolysis	2673
<i>Akash Raman, Sjoerd Van Der Werf, Han Gardeniers, David Fernandez Rivas, Arturo Susarrey Arce</i>	

I01E - Poster Session

Optimization of PdCu Alloys as Efficient and Durable HOR Electrocatalysts in Anion Exchange Membrane Fuel Cells	2675
<i>Maria Vincenza Pagliaro, Hamish Andrew Miller, Claudio Evangelisti, Francesco Bartoli, Marco Bellini, Enrico Berretti, Carolina Castello, Lorenzo Poggini, Francesco Vizza</i>	
Silver-M-Phthalocyanine (M= Co,Fe,Cu) Electrocatalysts for Oxygen Reduction Reaction in H ₂ /O ₂ Anion Exchange Membrane Fuel Cells.....	2677
<i>Carolina Castello, Maria Vincenza Pagliaro, Francesco Bartoli, Marco Bellini, Tailor Peruzzolo, Enrico Berretti, Hamish Andrew Miller, Francesco Vizza</i>	

I01E - Alkaline Hydrogen Catalysts and Fundamentals

Bridging Li-Ion Batteries and Fuel Cells: From Cathode Leaching Residue to Atomic-Scale Catalytic System.....	2679
<i>Mengjie Liu, Lawrence Yoon Suk Lee</i>	

Non-Precious Hydrogen Oxidation Catalysts for Anion Exchange Membrane Fuel Cells	2680
<i>Simon Amigues, Nicolas Bibent, Arsène Gervex, Anastassiya Khan, Andrea Zitolo, Amir Gasmí, Raphael Chattot, Laetitia Dubau, Frederic Maillard, Frederic Jaouen</i>	
Improved Activity and Durability of Carbon-Coated Pd and PdNi Anode Catalysts in AEMFC.....	2682
<i>Ricardo Sgarbi, Huong Doan, Nicolas Bibent, Simon Amigues, Frederic Jaouen, Marian Chatenet</i>	
The Positive Effects of Carbon-Coating Layers on Protecting the Nanoparticle Towards Poisoning Ions or Gases	2684
<i>Huong Doan, Ricardo Sgarbi, Quentin Labarde, Marian Chatenet</i>	

I01E - Alkaline Membranes and Devices

Covalent Crosslinking of High-Density Polyethylene Trimethylammonium-Based Radiation-Grafted Anion Exchange Membranes for Reduced Water Uptakes and Swelling	2686
<i>Arun Prakash Periasamy, Rachida Bance-Souahli, Daniel K Whelligan, John R Varcoe</i>	
Anion Exchange Membrane Using Fused Expanded Pyridinium As Their Cationic Unit	2688
<i>Tsuyohiko Fujigaya, Yuki Motoishi, Chaerin Kim, Naoki Tanaka</i>	
Effect of Asymmetrically Reinforced Membrane on Anion Exchange Membrane Fuel Cell.....	2689
<i>Frederic Jaouen, Simon Amigues, Nicolas Bibent, Raphael Chattot, Amir Gasmí, Baptiste Bach, Cristina Iojoiu, Emilie Planes, Björn Eriksson, Nikola Nikolic, Henrik Grimler</i>	
MOF-Derived Trifunctional High Entropy Sulfides as an Electrocatalyst for Alkaline Unitized Regenerative Fuel Cell Application.....	2691
<i>V R Siddhartha Sairam Kalahasti, Mithun Sarkar, Anshu Jha, Yashwant Pratap Kharwar, Prakash Chandra Ghosh, Arnab Dutta</i>	

I01E - Alkaline Oxygen Reduction

Unveiling the Impact of Carbon Corrosion on the Degradation of Fe-N-C Catalyst Layers in Alkaline Media	2693
<i>Yuping Ku, Kavita Kumar, Ivan Khalakhan, Andreas Hutzler, Carina Götz, Vicent Lloret Segura, Konrad Ehelebe, Karl J. J. Mayrhofer, Simon Thiele, Thomas Boehm, Serhiy Cherevko</i>	
Unlocking Bifunctional Electrocatalytic Performance of Co-MOF-Derived Catalysts for ORR and OER.....	2695
<i>Gulnara Yusibova, Nadezda Kongi, Yevgen Karpichev</i>	
An Inexpensive and Earth-Abundant Aluminium Based Single Atom Catalyst for Efficacious Oxygen Reduction Reaction	2696
<i>Shahan Atif, Omeshwari Bisen Yadora, Karuna Kar Nanda</i>	
From Synthesis to Application: Ni ₃ Fe N As Oxygen Reduction Electrocatalyst in Anion Exchange Membrane Fuel Cells	2698
<i>Joesene J. Soto, Hector Abruna</i>	
The Oxygen Reduction Reaction on Pt and Ag Catalysts in Alkaline Media in Rrde and Half-Cell Setups	2699
<i>Alexander Rampf, Michael Braig, Stefano Passerini, Roswitha Zeis</i>	
In-Situ Observation of Adsorption Species on Platinum Catalyst in Oxygen Reduction Reaction Using High Energy Resolution XAFS.....	2701
<i>Hirohisa Tanaka, Daiju Matsumura, Naoki Yamamoto, Kei Tanaka, Genki Nakamura, Yuto Hagihara, Kusano Shogo, Kenji Ishii, Jun'Ichiro Mizuki</i>	
Manganese and Nitrogen Doped Biomass-Based Activated Carbons As Electrocatalysts for Oxygen Reduction and Water Splitting.....	2703
<i>Loreta Tamasauskaitė-Tamasiunaitė, Daina Upskuvienė, Aldona Balciunaitė, Dijana Simkunaite, Vitalija Jasulaitienė, Gediminas Niaura, Audrius Drabavicius, Jurate Vaiciuniene, Aleksandrs Völperts, Ance Plavniece, Galina Dobeleva, Aivars Zhurinskis, Luis Cesar Colmenares-Rausseo, Jannicke Kvello, Kätlin Kaare, Ivar Kruusenberg</i>	

Rationalizing the Effect of the Redox-Inactive Metals on the Activity of Oxides in Oxygen Electrocatalysis.....	2704
<i>Denis A. Kuznetsov, Yi-Hsuan Wu, Christoph R. Müller</i>	
Kinetic Insights into the Mechanism of Oxygen Reduction Reaction on Fe ₂ O ₃ /C Composites	2705
<i>Arya Gopal S., E. P. Anuroop, Azhagumuthu Muthukrishnan</i>	

I01E - Anodes: Non-H₂ Oxidation Reactions

Enhancing Direct Methanol Oxidation with Pt-Pd Alloy Nanoparticles Synthesized By Gas Diffusion Electrocatalysis (GDEx).....	2707
<i>Omar Martinez Mora, Luis F. Leon-Fernandez, Jan Fransaeer, Xochitl Dominguez-Benetton</i>	
One- Step Electrosynthesis of New Catalysts Based on Conjugated Organic Polymers and Copper for Highly Efficient Ethanol Oxidation	2709
<i>Mama El Rhazi, Anas El Attar, Badr Bouljoihel, Amine Ezzahi</i>	
Transition Metal (Ni/Cu) Based Bimetallic Catalyst for Glycerol Oxidation	2710
<i>Saptarshi Gupta, Mahuya De</i>	
Trimetallic Alloy as an Electrocatalyst for Direct Low Temperature Fuel Cells: The Case of MF Oxidation on Pt ₃ Pd ₃ Sn ₂	2712
<i>Radhey Shyam Yadav, Alex Schechter, Haya Kornweitz</i>	
Development of a High-Performance Ammonium Formate Fuel Cell.....	2713
<i>Zhefei Pan, Liang An</i>	
Au-Based MOFs as Anodic Electrocatalysts for Direct Borohydride Fuel Cells	2715
<i>Ines Belhaj, Alexander Becker, Filipe M. B Gusmão, Biljana Šljukic, Miguel Chaves, Salette S Balula, Luís Cunha Silva, Diogo M. F Santos</i>	

I01F-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - POLYMER-ELECTROLYTE ELECTROLYSIS

I01F - Digital Only Presentations

(Digital Presentation) Dynamic Thermal Detection of Water Electrolyzer with Dual-Layer Characteristic Temperature Based on IR	2716
<i>Zixuan Shangguan, Cunman Zhang</i>	
(Digital Presentation) Modeling Water Transport in Proton Exchange Membrane Electrolyzers through First Principles	2718
<i>Shikhar Motupally, Lubhani Mishra, Venkat R. Subramanian</i>	
(Digital Presentation) Metal Alloy Nanoparticles Dispersed in Amorphous Titanosilicate for Hydrogen Evolution Reaction Catalyst with Much Lower Overpotential Than That of Benchmark Catalyst in a Wide pH Range.....	2720
<i>Koteswararao Vemula</i>	

I01F - 01 PEM Hydrogen Evolution and Oxygen Evolution Beyond Ir

Ru-Loaded Highly Graphitized Porous Carbon with High Pyrrolic-N Content for Superb Electrochemical Hydrogen Evolution.....	2721
<i>Jong-Sung Yu, Cheol-Hwan Shin, Jeong-Hoon Yu</i>	
Investigating the Effects on Replacing Platinum by Molybdenum as Cathode Electrocatalysts in Proton Exchange Membrane Water Electrolysis	2722
<i>Alexis Piñeiro, Dimitrios Perivoliotis, Xiuyu Wu, Eduardo Gracia-Espino</i>	
Ru Perovskites with Enhanced Activity and Durability for the OER in Acid Media	2724
<i>Isabel Rodriguez Garcia, José Luis Gómez De La Fuente, Dmitry Galyamin, Paula Kayser, Mohamed Abdel Salam, Mohamed Mokhtar, José Antonio Alonso, Maria Retuerto, Sergio Rojas</i>	

Enhanced Oxygen Evolution Activity and Stability of RuO ₂ (110) Surface by Ti Doping	2726
<i>Naoto Todoroki, Naomi Naraki, Toshimasa Wadayama</i>	
Fabrication of Faceted Metal Nanocrystal Electrodes By Solid-State Dewetting	2729
<i>Rakesh Kumar Sharma, Shreyas Harsha, Guido Mul, Marco Altomare</i>	
Strong Metal-Support Interaction – a Tool for Enhancing the Hydrogen Evolution Reaction Performance.....	2730
<i>Milutin Smiljanic, Stefan Panic, Marjan Bele, Francisco Ruiz-Zepeda, Luka Pavko, Lea Gašparic, Anton Kokalj, Miran Gaberscek, Nejc Hodnik</i>	
Trapped Platinum Single-Site Catalysts for the Hydrogen Evolution Reaction	2732
<i>Po-Yuan Huang, Peng Tang, Jack E. N. Swallow, Diego Gianolio, Robert S Weatherup, Mauro Pasta</i>	

I01F - 02 Anion Exchange Membrane Electrolysis

Performance and Durability of Poly(norbornene) Anion-Conducting Membranes and Ionomers	2733
<i>Paul Kohl, Habin Park, Parin Shah</i>	
Initial Degradation Issues in AEMWE and the Importance of Catalyst/Ionomer Binding	2734
<i>Jonghyun Hyun, Hee-Tak Kim</i>	
Polymer Design Strategies for Alkaline Membrane Water Electrolysis	2735
<i>Eun Joo Park, Christopher Arges, Hui Xu, Chulsung Bae, Cy Fujimoto, Ivana Matanovic, Yu Seung Kim</i>	
Investigation of Electrocatalyst and Ionomer Interaction in Anion Exchange Membrane Water Electrolysis	2736
<i>Ashwini Reddy Nallayagari, Frédéric Murphy, Maria Luisa Di Vona, Elena Baranova</i>	
Water Transport and Salt Precipitation in Anion-Exchange Membrane Electrolyzers	2738
<i>Susanne Koch, Joey Disch, Sophia K. Kilian, Lukas Metzler, Severin Vierrath</i>	
Highly Durable Membrane–Electrode-Assemblies Using High M _w and Ether-Free Polyfluorene- Based Electrolytes for Anion Exchange Membrane Water Electrolyzer	2740
<i>Hidenori Kuroki, Shoji Miyanishi, Sreekanth Narayanaru, Roby Soni, Gopinathan M. Anilkumar, Takeo Yamaguchi</i>	
Materials Integration and Catalyst Interfaces in Anion Exchange Membrane, Low Temperature Electrolysis	2742
<i>Shaun M Alia, Melissa Kreider, Emily K. Volk, Ai-Lin Chan, Arielle L Clauser, Josh D Sugar</i>	

VOLUME 6

The Power of Reference Electrodes in AEM Electrolysis	2743
<i>Naveen Guruprasad, Thijs Theodorus De Groot, John Van Der Schaaf</i>	
Platinum Group Metal-Free Catalyst Loading Optimization for Dry Cathode Operation in Anion Exchange Membrane Water Electrolysis	2744
<i>Matteo Rossini, Burak Koyuturk, Amirreza Khataee, Göran Lindbergh, Ann Cornell</i>	

I01F - 02 PEM Ir Based Oxygen Evolution Electrocatalyst

(2022-2023 ECS Toyota Young Investigator Fellowship) Enhanced Water Electrolysis Using Layered Coaxial Nanowire Electrodes	2746
<i>Tanvir Alam Arman, Abdurrahman Yilmaz, Andres O. Godoy, Wipula Priya Rasika Liyanage, Dmitri Routkevitch, Siddharth Komini Babu, Jasna Jankovic, Ugur Pasaogullari, Jacob S. Spendelow</i>	
Investigating the Reaction Mechanism of Iridium Oxides for PEM Water Electrolysis by Operando Soft X-Ray Absorption Spectroscopy.....	2747
<i>Neha Thakur, Yadan Ren, Tomoki Uchiyama, Kuowei Liao, Mitsuharu Fujita, Ikkei Arima, Toshiki Watanabe, Kentaro Yamamoto, Tsuyoshi Takami, Toshiyuki Matsunaga, Yoshiyuki Kuroda, Shigenori Mitsushima, Yoshiharu Uchimoto</i>	

Degradation of Sb-Doped SnO ₂ Supported IrRu-Based Electrocatalysts for PEM Water Electrolysis Via Accelerated Stress Protocols	2750
<i>Eduardo Daniel Gomez Villa, Annabelle Maletzko, Birgit Kintzel, Nedjeljko Seselj, Simon Pitscheider, Erlend Bertheussen, Julia Melke</i>	
Activity and Durability of ALD-ZrO ₂ Coated IrO ₂ Film in Sulfuric Acid	2752
<i>Koichi Matsuzawa, Satoshi Yamada, Yuma Kohara, Akimitsu Ishihara</i>	
OER Activity of Iridium Nanoparticle Catalysts By RDE and Comparison with MEAs.....	2754
<i>Tsutomu Ioroi, Tsukasa Nagai, Zyun Siroma, Kazuaki Yasuda</i>	
Regulating the Electronic Structure of IrO _x /SnO _y with NaCl for Efficient Proton Exchange Membrane Water Electrolysis.....	2755
<i>Sol Kim, Jinwoo Woo, Yen-Linh Thi Ngo, Jong Hyun Jang, Bora Seo</i>	
Deciphering the Roles of Chemistry and Structure in Iridium Oxide Oxygen Evolution Catalysts through the Study of Annealed Iridium Oxide Nanoparticles	2756
<i>Delphine Clauss, Vincent Martin, Jakub Drnec, Marta Mirolo, Laetitia Dubau, Frederic Maillard</i>	
Iridium-Cobalt Oxide from Modified Adam's Fusion Synthesis Method as Electrocatalyst for Oxygen Evolution Reaction	2758
<i>Marc Francis Labata, Guangfu Li, Po-Ya Chuang</i>	
Low Loading and High Utilization Ratio of Iridium Catalyst Coated Smoltek Carbon Nanofibers Used as Anode Material for PEM Water Electrolyzers.....	2759
<i>Xin Wen, Bastien Penninckx, Jaime Sanchez Sanchez, Ellinor Ehrnberg, Qi Li, Fabian Wenger</i>	
(Invited) Fundamental Structure-Function Relationships for Iridium Oxide Catalysts in PEM Water Electrolyzers.....	2761
<i>Iryna Zenyuk, Clifton Wang, Yu Morimoto, Lei Cheng</i>	

I01F - Poster Session

Automated Production of Catalyst Coated Membranes for PEM Water Electrolysis Using a Direct Ultra-Sonic Spray Coating Approach	2762
<i>Eduardo Daniel Gomez Villa, Utkarsh Maurya, Julia Melke</i>	
Effect of Electrolyte Anions on the Activity of Iridium Oxide Catalysts for Water Electrolysis.....	2764
<i>Weijie Cao, Tomoki Uchiyama, Neha Thakur, Mitsuharu Fujita, Ikkei Arima, Toshiki Watanabe, Kentaro Yamamoto, Tsuyoshi Takami, Toshiyuki Matsunaga, Yoshiyuki Kuroda, Shigenori Mitsushima, Yoshiharu Uchimoto</i>	
Activity and Durability of Mn Binary Oxide-Based Electrocatalyst for an Alternative Anode.....	2766
<i>Yuma Kohara, Akimitsu Ishihara, Koichi Matsuzawa</i>	
Iridium Single Atom Catalysts for Oxygen Evolution Reaction in Acidic Medium.....	2769
<i>Jean Rouger, Sara Cavaliere, Frederic Jaouen, Deborah J. Jones, Fabien Dufour, Maureen Georges, Julien Thuilliez</i>	
Investigating the Stability of Electrodeposited NiMo Alloy for Hydrogen Evolution Reaction in Alkaline Media	2770
<i>Abdul Majeed, Bastian J. M. Etzold</i>	
Oxygen Evolution Reaction Activity of Iridium Oxide with Strange Structure, Its Toward PEM Water Electrolysis.....	2772
<i>Takanobu Ishida, Yuko Takeda, Yuta Watanabe, Naoya Aoki</i>	
Durability of Water Electrolysis Cells Against the Long-Term Voltage Fluctuation Simulating Wind Power.....	2773
<i>Taisei Hoshii, Kazunari Sasaki, Akari Hayashi</i>	

I01F - 21 Supported Ir for Oxygen Evolution

Supported Iridium Catalysts for Water Electrolyzers	2777
<i>Yagya N Regmi, Thomas Lau, Donato Decarolis, Andrew Beale, Magnus Ronning, Laurie King</i>	
TiN _x O _y /TiN Supported Ir-Oxide/Ir As Efficient OER Electrocatalyst for Acidic Water Electrolysis.....	2778
<i>Raghunandan Sharma, Swapnil S. Karade, Shuang Ma Andersen</i>	
Towards Low Iridium Loading in Proton-Exchange Membrane Water Electrolysis: Full-Cell Performance of IrO _x @TiO ₂ Core-Shell Particles in Anode Catalyst Layers	2779
<i>Selina Finger, Darius Hoffmeister, Tien Ching Ma, Anna T. S. Freiberg, Simon Thiele, Chuyen Pham, Andreas Hutzler</i>	
Towards Low Iridium Loading in Proton-Exchange Membrane Water Electrolysis: Scalable Synthesis of IrO _x @TiO ₂ Core-Shell Particles	2783
<i>Darius Hoffmeister, Selina Finger, Lena Fiedler, Andreas Körner, Matej Zlatar, Simon Thiele, Andreas Hutzler, Chuyen Pham</i>	
Understanding the Role of Electronic Interactions in Oxide-Supported Iridium Oxide Catalysts for the Oxygen Evolution Reaction.....	2785
<i>Ziba S. H. S. Rajan, Tobias Binninger, Dominique Gouveia, Mark Blumenthal, Darija Susac, Rhiyaad Mohamed</i>	
Tungsten Oxide-Based Materials as Catalyst Support for Oxygen Evolution Reaction.....	2787
<i>Yung-Tin Pan, Lu Yu Chueh, Yu-Wei Hsu</i>	
Supported-Ir Catalysts: The Impact of the Supports' Chemical Composition on the Oxygen Evolution Reaction	2788
<i>Lucinda Blanco Redondo, Yevheniia Lobko, Miquel Rodriguez, Thu Ngan Dinhová, Tomas Hrbek, Iva Matolínová</i>	
Iridium Oxide Nanorods Supported on Sb-Doped SnO ₂ As Highly Active Oxygen Evolution Catalysts for PEM Water Electrolysis	2790
<i>Guoyu Shi, Tetsuro Tano, Donald A. Tryk, Akihiro Iiyama, Makoto Uchida, Miho Yamaguchi, Katsuyoshi Kakinuma</i>	
Operando and Dynamic XAS Studies of Metal-Support Interactions of Iridium-Based Catalysts for Oxygen Evolution Reaction (OER) in Proton Exchange Membrane Water Electrolysis (PEMWE)	2792
<i>Jochen Klein, Leon Schley, Sonja Blaseio, Mehtap Oezaslan</i>	
Iridium on Conductive Support: Towards Low Iridium Anodes in PEM Electrolyzers	2794
<i>Qingying Jia, Qiang Sun, Fan Yang, Ian Anderson, Amir Peyman Soleymani, Jasna Jankovic, Cortney Mittelsteadt</i>	

I01F - 21 Impact of Bubble Generation

Visualization of Bubble Behaviors in Flow Fields of PEM Water Electrolyzer.....	2796
<i>Lizhen Wu, Zhefei Pan, Yun Liu</i>	
Elucidating the Role of Flow Fields in Bubble Removal from Porous Transport Layers	2798
<i>Lijun Zhu, Alexandre Tugirumubano, Aimy Bazylak</i>	
Operando Identification of Temperature-Dependent Pore-Scale Gas Saturations in PEM Water Electrolyzers.....	2799
<i>Chaeyoung Tina Ham, Pranay Shrestha, Spencer Lytle, Aimy Bazylak</i>	
In-Situ X-Ray Observation of Bubbles in Porous Transport Layer of PEM Water Electrolysis.....	2800
<i>Natsuki Matsukuma, Hiroshi Naito, Takashi Sasabe, Hiroyuki Kawai, Keisuke Fujita, Shuichiro Hirai</i>	
Visualization of Hydrogen Bubbles Using Synchrotron X-Ray CT inside Porous Transport Layer of Direct Toluene Electro-Hydrogenation Electrolyzers.....	2802
<i>Fátima Isabella Reyna Peña, Antonio Atienza-Márquez, Sunpil Jang, Ryuhei Shiono, Kaito Shigemasa, Takuto Araki, Kensaku Nagasawa, Shigenori Mitsushima</i>	

Visualization of Oxygen Bubbles on a Flat Ionomer-Coated Platinum Electrode.....	2804
<i>Hideki Suwa, Ryo Kanemoto, Kohei Toyama, Sota Kishi, Takuto Araki</i>	
Enhanced Transport in Electrochemical Reactors Using Advanced 3D Printed Electrodes.....	2806
<i>Jonathan T. Davis, Kansas Seung, Joshua Aaron Hammons, Thomas J Ferron, Swetha Chandrasekaran, Sarah Baker, Eric B Duoss, Shinyoung Kang, Tiras Y Lin</i>	
Utilization of 3-D Volume of Fluid Simulations to Understand Oxygen Evolution through Multilayer Porous Transport Layers for PEMWE Improvement.....	2807
<i>Mitchell Sepe, Hyunseok Cho, Sirivatch Shimpalee</i>	

I01F - 22 Big Picture Electrolysis Issues

The Business Model of an Emerging Hydrogen Market in the Swedish Transportation Sector – outlook towards 2050	2808
<i>Mirjam Särnbratt, Nathalie Fransson, Herman Hansson, Kerstin Sernhed, Kristina Lygnerud, Martin Andersson</i>	
Characterizing the Dynamic Response and Start-up Process of the Electrolyzer for Operation Optimization in Renewable Energy Applications.....	2809
<i>Zixuan Shangguan, Cunman Zhang</i>	
Novel Strategies for Efficient Water Electrolysis	2811
<i>Thomas Wågberg, Eduardo Gracia-Espino, Guangzhi Hu</i>	
Analysis of PEM Membrane Electrode Assemblies Impact on the Levelized Cost of Hydrogen	2812
<i>Thomas I. Valdez, Kosu Takatsuji, Fan Yang, Qingying Jia, Cortney Mittelsteadt</i>	
Analysing the Degradation Phenomena of a Commercial Proton Exchange Membrane Water Electrolyzers.....	2814
<i>Benjamin Kimmel, Tobias Morawietz, Indro Biswas, Pawel Gazdzicki, Aldo Gago, K. Andreas Friedrich</i>	
Effect of Operating Temperature and Pressure on the Limiting Current Density of PEM Electrolysis Cell Based on Theoretical Prediction Model and Experiments	2815
<i>Songsong Ma, Yasufumi Ishikawa, Tomoko Saitou, Kohei Ito</i>	
Manufacturing Challenges, Opportunities, and Successes for PEM Electrolysis at Scale	2817
<i>Christopher B. Capuano, Katherine E. Ayers, Serafina Fortiner, Ryan Ouimet</i>	
Advancing Fundamental Understanding of Electrolyzers for Cost-Effective Green H ₂ Production	2818
<i>Nicolas Dubouis</i>	

Carl Wagner Memorial Award Address

(ECS Carl Wagner Memorial Award) Free Electrons to Molecular Bonds and Back - The Dark Side of Solar Fuels and Chemicals	2819
<i>Peter Strasser</i>	

I01F - 31 Electrolysis Cell Testing

Lifting the Lids on Reference Electrodes in PEMWE: Previous Approaches and Current Application.....	2821
<i>Lena Viviane Buehre, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
Coupled Simulation of Chemical Membrane Degradation and Oxygen Crossover in PEM Water Electrolysis	2825
<i>Christoph Eckert, Patrick Trinke, Boris Bensmann, Richard Hanke-Rauschenbach</i>	
Evaluation of Degradation Processes in Alkaline and PEM Water Electrolyzers.....	2826
<i>Beatriz Sánchez Batalla, Sakthivel Mariappan, Nicky Bogolowski, Claudia Weidlich, Jean-Francois Drillet</i>	

Revealing the Impact of Cell Conditioning on PEMWE Catalyst Layer Morphology.....	2827
<i>Tess Seip, Ahmed Moayad Hasan, Harsharaj Birendrasingh Parmar, Lijun Zhu, Spencer Lytle, Jian Wang, Adam Hitchcock, Nima Shaigan, Marius Dinu, Khalid Fatih, Spencer Lytle, Aimey Bazylak</i>	
Enhancing Durability of Polymer Electrolyte Membrane Water Electrolyzer through Incorporation of Gas Recombination Catalyst in Membrane.....	2828
<i>Kui Li, Kaustubh Khedekar, Mahlon Wilson, Jacob S. Spendelow, Siddharth Komini Babu</i>	
Comparative Study of Degradation Features in Proton Exchange Membrane Water Electrolysis: Irregular Renewable Energy Vs Regular Steady-State/Dynamic Loads.....	2830
<i>Anastasiia Voronova, Sol Kim, Hee-Young Park, Jong Hyun Jang, Bora Seo</i>	
Impact of Low Catalyst Loading and Incorporation of Additives on Structure and Performance of PEM Electrolyzer Catalyst Layers	2831
<i>Sarah Zaccarine, Shaun M Alia, Jayson Foster, Bryan S. Pivovar, Svitlana Pylypenko</i>	
Materials Mitigation Strategies and Anode Catalyst Durability in Low Temperature Electrolysis	2832
<i>Shaun M Alia, Ai-Lin Chan, Samantha Medina, Kimberly S. Reeves, Haoran Yu, David A. Cullen, Jaehyung Park, Nancy N. Kariuki, A. Jeremy Kropf, Deborah J. Myers</i>	
Impact of Position and Platinum Loading of Recombination Interlayers in Proton Exchange Membranes on the Anodic Hydrogen Content in Water Electrolysis	2833
<i>Dunia Abbas, Agate Martin, Patrick Trinke, Markus Bierling, Boris Bensmann, Simon Thiele, Richard Hanke-Rauschenbach, Thomas Boehm</i>	
(Invited) Electron Microscopy Investigation of Electrolyzer Degradation.....	2834
<i>David A. Cullen, Haoran Yu, David Arregui-Mena, Elliot Padgett, Shaun M Alia, Guido Bender, Siddharth Komini Babu, Rangachary Mukundan</i>	
Investigation of the Impact of Chloride Contamination on Degradation in PEM Water Electrolyzer Cells.....	2835
<i>Eveline Kuhnert, Ozge Kiziltan, Viktor Hacker, Merit Bodner</i>	

I01F - 32 Porous Transport Layers

Thin Sputtered Titanium Nitride Layers for Corrosion Protection of 316L Stainless Steel Under PEM Water Electrolyzer Anode-like Conditions.....	2837
<i>Khaoula Chergui, Benoit Lescop, Michel Prestat, Flavien Vucko, Valérie Demange, Ludivine Rault, Francis Gouttefangeas, Loïc Joanny, Michael Walls, Gael Maranzana, Stéphane Rioual</i>	
1D One-Phase Modeling of the Anode Catalyst Layer/Porous Transport Layer Interface Affecting Proton Exchange Membrane Water Electrolysis	2839
<i>Tien Ching Ma, Manuel Hegelheimer, Andreas Hutzler, Richard Hanke-Rauschenbach, Simon Thiele</i>	
Corrosion-Resistant and Electrically Conductive Oxide Coatings for Metal Bipolar Plates for PEM Electrolyzers.....	2841
<i>David Kolenaty, Jiri Capek, Jiri Rezek, Petr Zeman</i>	
Manufacturable Microporous Layers on Sintered Titanium for PEM Electrolysis Applications	2843
<i>Alex Hill, Daniel Goliber, Sean Gosselin, Derek Tsaknopoulos, Piyush Kar, Alexander B Papandrew</i>	
Understanding Porous Transport Layer Structure-Property-Performance Relationships in PEM Water Electrolyzers	2845
<i>Jacob A Wrubel, Sam Ware, James L. Young, Elliot Padgett, Leiming Hu, Robin Rice, Guido Bender</i>	
Microporous Transport Layers Facilitating Low Iridium Loadings in Polymer Electrolyte Water Electrolyzers.....	2846
<i>Carl Cesar Weber, Robin Meinert, Christian Appel, Mirko Holler, Lorenz Gubler, Salvatore De Angelis, Felix N. Buechi</i>	

Influence of Anode Flow-Field Channel Distance on the Performance of Polymer Electrolyte Membrane Water Electrolyzers	2848
<i>Matthias Felix Ernst, Jannik Birkholz, Carina Schramm, Matthias Kornherr, Hubert Andreas Gasteiger</i>	

I01F - 41 Alkaline Oxygen Evolution Electrocatalysis

Promoting AEM Water Electrolyzer Performance and Reproducibility by Tumbler Milling of Ni ₃ Fe-LDH OER Catalyst.....	2851
<i>Irina Galkina, Alaa Y. Faid, Nikita Grigorev, Wulyu Jiang, Patrick Borowski, Svein Sunde, Meital Shviro, Werner Lehnert, Anna K. Mechler, Fabian Scheepers</i>	
The Influence of Doping in the Electrocatalytic Properties of NiFe ₂ O ₄ -Derived Nitrides	2852
<i>José Antonio Coca Clemente, Maria Retuerto, Pilar Ocón, Sergio Rojas</i>	
Operando Investigations of Reversible and Irreversible Transformations of Metal Organic Framework Based Catalysts during the Oxygen Evolution Reaction.....	2854
<i>Julia Linke, Thomas Rohrbach, Adam Hugh Clark, Michal Andrzejewski, Nicola Pietro Maria Casati, Marco Ranocchiari, Thomas J. Schmidt, Emiliana Fabbri</i>	
Iron Phosphates as Highly Efficient Precatalysts for Oxygen Evolution Reaction and Their in Situ Electrochemical Conversion.....	2856
<i>Yuuki Sugawara, Keigo Kamata, Aoi Matsuda, Takeo Yamaguchi</i>	
Nanoporous Architecture of Mo Incorporated Nifeldh Oxygen Evolution Reaction (OER) Electrode for Efficient Water Electrolysis	2858
<i>Asiya Mohaseen Tamboli, Young Han Jung, Junseok Sim, Bonghyun Kim, Wan Sik Kim, Changhee Kim</i>	
Self-Repairing Ability of Hybrid Cobalt Hydroxide Nanosheets As Oxygen Evolution Catalysts in Alkaline Electrolytes	2859
<i>Yoshiyuki Kuroda, Ritsuki Nakajima, Tatsuya Taniguchi, Yuta Sasaki, Yoshinori Nishiki, Zaenal Awaludin, Takaaki Nakai, Akihiro Kato, Shigenori Mitsushima</i>	
Advanced and Scalable Polyol-Mediated Synthesis Route for Highly Active Ni Metal Sulfides (M = Fe, Mn, Cr, Mo) As Efficient Electrocatalysts for Sea/Saline Water Oxidation.....	2862
<i>Muhammad Sohail Riaz, Pau Farràs Costa</i>	
Lattice Oxygen Exchange in Transition Metal Oxyhydroxides and Metal Hydroxide Organic Frameworks Elucidated for the Oxygen Evolution Reaction	2865
<i>Mikaela Gorlin, Nicole Alessandra Sagui, Daniel Jia Zheng, Kaylee Lynn McCormack, Zeinab Khosravizadeh, Junghwa Kim, Hongbin Xu, Jiayu Peng, Per Malmberg, Yuriy Román-Leshkov, Mario Valvo, Yang Shao-Horn, Tomas Edvinsson</i>	
Oxygen Evolution Reaction with ZrCo and ZrNi Electrode Materials	2868
<i>Sylvain Le Tonquesse, Simone Altendorf, Yuri Grin, Iryna Antonyshyn</i>	
Rational Design of Fe-Based Layered Double Hydroxide for Water Oxidation: Molecular and Cationic Engineering.....	2869
<i>Alvaro Seijas Da Silva, Victor Oestreicher, Vicent Lloret Segura, Adrian Hartert, Roger Sanchis-Gual, Eugenio Coronado, Gonzalo Abellán</i>	
Nickel Oxide-Aerogel Electrocatalysts for Oxygen Evolution Reaction in Alkaline Media: Experimental Approaches and Modeling-Assisted Strategies for Improving Performance and Durability	2871
<i>Luigi Osmieri, Wilton Kort-Kamp, Haoran Yu, Deborah J. Myers, Raphael P. Hermann, David A. Cullen, Edward F. Holby, Piotr Zelenay</i>	

I01F - 42 Alkaline Electrocatalysis

Efficient Alkaline Hydrogen Evolution Reaction Using Superaerophobic Ni Nanoarrays with Accelerated H ₂ Bubble Release.....	2873
<i>Jaerim Kim, Sang-Mun Jung, Yong-Tae Kim, Jong Kyu Kim</i>	

Enhanced Hydrogen Evolution Reaction Performance in Alkaline Water Electrolysis: Tuning the 1T Structure of Ni Doped MoS ₂ Via Co-Sputtering System.....	2874
<i>Wan Sik Kim, Junseok Sim, Young Han Jung, Bonghyun Kim, Asiya Mohaseen Tamboli, Chang-Hee Kim</i>	
Non-Noble Transition Metal-Based Electrocatalysts for Green Hydrogen Production from Anion Exchange Membrane (AEM) Seawater Electrolyzer.....	2875
<i>Praveen Kumar Selvam, Muhammad Sohail Riaz, Pau Farràs Costa</i>	

I01Z-POLYMER ELECTROLYTE FUEL CELLS AND ELECTROLYZERS 23 (PEFC&E23) - PLENARY

I01Z - PEFC&E Plenary 1

Research and Innovation Activities on PEM Fuel Cells and Electrolysers Supported by the Clean Hydrogen Partnership.....	2876
<i>Claudiu Pavel, Nikolaos Lympelopoulou, Eleni Kontonasiou, Luca Feola, Kostis Sakellaris, Mirela Atanasiu</i>	
FC-Platform Activities and Post Analysis of Durability Tested MEA.....	2877
<i>Norimitsu Takeuchi, Kazuhiko Shinohara, Motoaki Kawase, Hideto Imai, Keitaro Sodeyama</i>	
Load Profile Test Development and Analysis from Heavy Duty Truck Drive Cycles.....	2878
<i>Leonidas Tsikonis</i>	
PEM Water Electrolyzers: Key Enabler of the Green Energy Transition?	2879
<i>Marcelo Carmo, Katherine E. Ayers</i>	

I01Z - PEFC&E Plenary 2

(Invited) High Performing Fuel Cell Stack and Systems.....	2880
<i>Andreas Bodén, Lisa Kylhammar, Johanna Dombrovskis, Gert Göransson</i>	
Accelerated Stress Tests to Project PEM Fuel Cell Durability	2881
<i>Leonardo Isaias Astudillo, Roberta Karla Francesca Della Bella, Hubert Andreas Gasteiger, Carla Sophie Harzer, Franziska Carmen Hnyk, Timon Lazaridis, Christopher Warsch</i>	
Present and Future Perspectives on Fuel Cell Membrane Chemical Stability	2883
<i>Michael Yandrasits</i>	

I02-PHOTOVOLTAICS FOR THE 21ST CENTURY 19: NEW MATERIALS AND PROCESSES

I02 - Perovskite 1

(Invited) Correlation of Exciton and Charge Carrier Dynamics with the Performance of Metal Halide Perovskite Solar Cells.....	2884
<i>Yasuhiro Tachibana</i>	
Fabrication Knowledge and Techniques for Multiporous-Layered-Electrodes Perovskite Solar Cells (MPLE-PSCs)	2886
<i>Seigo Ito</i>	
The Next Frontier of Solar Energy: Transparent Photovoltaics.....	2887
<i>Nobuyuki Matsuki</i>	
Investigating the Molecular Orientation and Thermal Stability of Spiro-OMeTAD and Its Dopants By Near Edge X-Ray Absorption Fine Structure.....	2889
<i>Anita Brady-Boyd, Kerry Hazeldine, Rachel Elizabeth Cross, Gongxizi Ren, Arthur Connell, Chris P Kershaw, Peter J Holliman, David Andrew Evans</i>	

I02 - Perovskite 2

(Invited) Efficient and Stable Perovskite Solar Cells Enabled By Surface Engineering with Bulky Organic Molecules.....	2890
<i>Kai Zhu</i>	
(Invited) Interface Engineering for Organic and Perovskite Photovoltaics	2891
<i>Hideo Ohkita</i>	
Rapid Manufacturing of Thin Films for Perovskite Solar Cells	2893
<i>Thad Druffel</i>	

I02 - Perovskite 3

(Invited) Development of Perovskite Photovoltaic Devices Using Electrodeposition	2894
<i>Lara Perrin, Mirella Al Katrib, Emilie Planes</i>	
UV-Durable Fully-Printed Carbon-Based Multi-Porous-Layered-Electrode Perovskite Solar Cells Using SrTiO ₃ Electron Transport Layer	2895
<i>Takaya Shioki, Ryuki Tsuji, Kouta Oishi, Seigo Ito</i>	
Interface Engineering for Highly Efficient Perovskite Photovoltaics.....	2896
<i>Nga Phung, Andrea Bracesco, Mariadriana Creatore</i>	
Effect of Laser Type on Material Characteristics of Halide Perovskite Solar Cell Materials Fabricated Via Laser Molecular Beam Deposition.....	2898
<i>Nobuyuki Matsuki, Tomomasa Sato</i>	

I02 - Thin Films

(Invited) Performance Improvement and Potential Applications of Ultrathin Organic Solar Cells.....	2900
<i>Kenjiro Fukuda, Takao Someya</i>	
Kinetics of Charge Transfer at Carbon-Based Counter Electrodes for Dye-Sensitized Solar Cells with Aqueous Electrolytes.....	2902
<i>Daniel Holz hacker, Andreas Ringleb, Derck Schlettwein</i>	
Effect of the Magnetostriction Induced on the Crystalline Structure of Nanoparticulate TiO ₂ Photoanodes and Their Relationship with the Photovoltaic Response of Black-Dye Sensitized Solar Cells.....	2903
<i>Jesus Israel Valdez Nava, Isa Fernanda Pérez-Nava, Erika Bustos, José Alberto García-Melo, Juan Manriquez</i>	

I02 - Silicon PV and Recycling

(Invited) Sustainable Recycling of Metals from Solar Cells	2904
<i>Guillaume Zante, Rodolfo Marin Rivera, Jennifer M Hartley, Andrew P Abbott</i>	
(Invited) Recovery Of Silver And Silicon From EoL PV Modules	2906
<i>Guy Chichignoud, Yohan Parsa, Victorien Iwazsko, Yun Luo</i>	
New Chemistries for Silver and Lead Recovery from End-of-Life Silicon Solar Modules	2908
<i>Natalie Click, Theresa Chen, Randall Adcock, Meng Tao</i>	
(Invited) Interface Treatments for High-Efficiency MoO _x Based Silicon Heterojunction Solar Cells.....	2909
<i>Olindo Isabella, Liqi Cao, Paul Procel, Luana Mazzarella, Yifeng Zhao, Engin Özkol, Jin Yan, Can Han, Guangtao Yang, Miro Zeman</i>	
Copper as an Alternative Metallization Scheme for Photovoltaics.....	2911
<i>Thad Druffel</i>	

I03-HIGH TEMPERATURE CORROSION AND MATERIALS CHEMISTRY 15

I03 - Session 1

- (Invited) Chemical and Microstructural Reaction Paths in High-Temperature Alloys in Contact to Molten Salts..... 2912
Christine Geers
- (Invited) The Internal Oxidation Mechanism of Ti60 Alloy in NaCl-coated Environment at 600° C..... 2913
Wenzheng Chen, Rui Li, Li Liu, Fuhui Wang
- High Temperature Corrosion of Inconel 625 and Pure Nickel in Contact with Fluoride Melts 2915
Aida Nikbakht, Behnam Bahramian, Christine Geers
- (Invited) Comparative High Temperature Properties of Iron-Chromium-Aluminum and Zirconium Alloys 2916
Hamdy Abouelella, Rajnikant V Umretiya, Raul B Rebak
- (Invited) Pt-Modified Aluminide Coatings for Ni-Base Single Crystal Superalloy 2917
Yiming Jiang, Shuai Li, He Liu, Zebin Bao, Shenglong Zhu, Fuhui Wang
- Cyclic and Isothermal Oxidation Behavior of a Directionally Solidified Ni-Al-Ti-Co-Cr Superalloy 2918
Alimohammad Fazeli Tehrani, Hassan Farhangi, Dmytro Orlov, Mohsen Pirmohammadi

I03 - Session 2

- Effect of Secondary Oxidants (CO₂ and/or H₂O) on Oxidation of Fe-20Cr-(Mn, Si) 2919
Hongji Cui, Jianqiang Zhang, David Young
- Corrosion Behaviour of Ni-Based Alloys 230, 617 and 601 in CO₂ Gas at 750 and 850°C 2921
Haoyi Li, Thuan Nguyen, Jianqiang Zhang, David Young
- Potential of Knudsen Effusion Mass Spectrometry (KEMS) for Energy Materials Science 2923
Torsten Markus, D. Henriques
- Understanding Degradation Behavior of Direct-Ammonia Solid Oxide Fuel Cells Using Nanoscale Analyses 2924
Katherine Develos Bagarinao, Hiroki Muroyama, Toshiaki Matsui, Haruo Kishimoto, Teruhisa Horita
- Phase Transformation of YSZ Electrolyte in Anode-Supported SOFCs..... 2925
Qingchuan Bai, Katherine Develos Bagarinao, Tomohiro Ishiyama, Toshiaki Yamaguchi, Haruo Kishimoto
- Modelling of Ni Nitridation in NH₃-Fueled Solid Oxide Fuel Cells 2926
Ming Chen, Yijing Shang, Nestor Chatenet, Peter Vang Hendriksen, Omid Babaie Rizvandi, Henrik Lund Frandsen
- Reactive Condensation of Cr Vapor on Aluminosilicates Containing Alkaline Oxides..... 2927
Travis Kent Van Leeuwen, Ryan Dowdy, Amberly Guerrero, Paul Gannon

I04-IONIC AND MIXED CONDUCTING CERAMICS 14: IN HONOR OF PROF. ANIL VIRKAR

I04 - Digital Only Presentations

- (Digital Presentation) Facile Fabrication of Nickel and Sc-Doped Zirconia Cermet Electrode Thin Film on YSZ Substrate Via Screen-Printing for Solid Oxide Electrochemical Cells 2929
Christine Mae Macalisang, Rinlee Cervera
- (Digital Only Presentation) Effects of Ink Solvent on the Screen-Printing Fabrication and Morphology of LSM-YSZ Thin Films Deposited on YSZ Substrate for Solid Oxide Electrochemical Cells..... 2930
Jessa Hablado, Rinlee Cervera

(Digital Presentation) Fabrication and Characterization of 4Sc4YSZ/LSM-4Sc4YSZ Novel Electrode-Supported Half-Cell Composition for Solid Oxide Electrochemical Cells	2931
<i>Pearl Jamela Diamansil, Rinlee Cervera</i>	

I04 - Electrodes for SOFCs and SOECs

Boosting the Stability and Performance of SOFCs: A New Approach to Oxygen Storage Capacity Using Lanthanum-Doped Ceria Interlayer Technology.....	2932
<i>Xuan Dong Nguyen, Seok Hee Lee, Hyung Tae Lim, Tae Ho Shin</i>	
(Invited) Developing Electrodes for Solid Oxide Fuel Cells What I Learned from Anil Virkar about Designing High Performance Electrodes.....	2933
<i>Tad J Armstrong</i>	
(Invited) Boosting Solid Oxide Fuel Cell Performance through the Effect of of Interstitial Oxide Ion Supplying of Oxygen Storage Capacitance Materials at Cathodic Functional Layer	2934
<i>Tae Ho Shin, Dong Nguyen Xuan, Sang Won Lee, Hye Young Kim</i>	
(Invited) Mixed Conductors for Advanced Solid Oxide Fuel Cells.....	2936
<i>Venkataraman Thangadurai</i>	
Enhancing Electrochemical CO ₂ Reduction of La(Sr)Fe(Mn)O ₃ with Metal (Ru, Ni, Co, and Fe) Catalytic Additives for High-Temperature CO ₂ Electrolysis Cells.....	2937
<i>Seokhee Lee, Sang Won Lee, Tae Ho Shin</i>	
Mixed Ionic-Electronic Conductivity in Oxygen-Free K ₂ NiF ₄ -Type Hydrides.....	2938
<i>Hendrik Pieter Rodenburg, Vasileios Kyriakou, Nongnuch Artrith, Peter Ngene</i>	
Ni and Fe Doped (La,Sr)TiO ₃ Fuel Electrodes for Solid Oxide Cells – Electrical and Electrochemical Properties	2940
<i>Shu Wang, Peter Vang Hendriksen, Bhaskar Reddy Sudireddy</i>	
Total Energy and Total Power for the SOEC: Critical Role of Area Specific Resistance in Hydrogen Production Rate	2941
<i>Mark Williams</i>	

I04 - Modeling Mixed Ionic and Electronic Conduction

(Invited) Mixed Conduction in Ceramic Electrolytes For Intermediate-Temperature Fuel Cells and Electrolyzers.....	2942
<i>Robert J. Kee, Huayang Zhu, Sandrine Ricote, Greg Jackson</i>	
Intolerance of Ruddlesden-Popper La ₂ NiO _{4±δ} Structure to a-Site Cation Deficiency.....	2943
<i>Aleksandr Bamburov, Yevgeniy Naumovich, Dmitry Khalyavin, Aleksey Yaremchenko</i>	
(Invited) From Electronic Conductivity Measurement to Its Role on Oxygen Electrode Delamination Phenomena: A Brief Review	2944
<i>Liangzhu Zhu</i>	

I04 - Fundamental Properties and Mechanisms

(Invited) Optically and Chemically Modulated Oxygen Transport across Interfaces.....	2946
<i>Han Gil Seo, Thomas Defferriere, Harry L. Tuller</i>	
(Invited) Oxide Ion Conductivity and Oxide Vacancy Diffusion Coefficient of Stabilized ZrO ₂ and Doped CeO ₂ Discussed Based on Classical Defect Chemistry with Particular Focus on Valence State (2+, 3+, and 4+) of Doped Cations.....	2947
<i>Junichiro Mizusaki</i>	
Dr. Virkar's Self-Reflections on Research Career.....	2949
<i>Anil Virkar</i>	
(Invited) Chemical Intricacies of Mixed Ionic-Electronic Conducting Perovskite Oxides	2950
<i>Arumugam Manthiram</i>	

(Invited) Some Perspectives on Thermodynamics, Kinetics, Mechanics and Phase Transformations of Ionic and Mixed Conducting Ceramics.....	2951
<i>I-Wei Chen</i>	
(Invited) Dry Process for Thick Electrode in Batteries	2952
<i>Shirley Meng</i>	

High-Temperature Energy, Materials, & Processes Division J. B. Wagner, Jr. Young Investigator Award Address

(High-Temperature Energy, Materials, & Processes Division J. B. Wagner, Jr. Young Investigator Award) Protonic Ceramic Electrochemical Cells for Power Generation, Hydrogen Production, and Chemicals Synthesis.....	2953
<i>Chuancheng Duan</i>	

I04 - Proton Conductors for SOFCs and SOECs

(Invited) Proton Surface Exchange Kinetics and Stability of Thin-Film Triple Conducting Oxides for Protonic Ceramic Electrolysis Cells	2954
<i>Jongmin Lee, Haley H Buckner, Nicola H. Perry</i>	
(Invited) Understanding the Performance Limits of Solid Acid Fuel Cells with Pt Electrocatalysts	2955
<i>Sossina Mariam Haile, Louis Shen Wang</i>	
Dependence of Proton Diffusivity on Dopant Concentration in Yttrium-Doped Barium Zirconate; First-Principles Study	2957
<i>Kazuki Shitara, Akihide Kuwabara, Yuji Okuyama, Yoshihiro Yamazaki</i>	
High Performance Protonic Ceramic Electrochemical Cells Operating at <500°C.....	2959
<i>Fan Liu, Hao Deng, Bin Liu, Chuancheng Duan</i>	

I04 - Materials Stability and Device Degradation

(Invited) Materials Stability in Anode-Supported Solid Oxide Cells	2960
<i>Scott A Barnett</i>	
(Invited) Ruddlesden-Popper Oxides As Bi-Functional Oxygen Electrodes.....	2961
<i>Srikanth Gopalan</i>	
Degradation Issues in Solid Oxide Electrolysers.....	2962
<i>Miguel A Laguna-Bercero</i>	
Conductivity Increase As a Result of the Disappearance of Short-Range Ordering in a Scandia-Zirconia Electrolyte	2963
<i>Shuoshuo Zhang, Cristian Daniel Savaniu, John Thomas Sirt Irvine</i>	
(Invited) On Degradation Mechanisms of Ni-YSZ Fuel Electrodes in Solid Oxide Cells	2965
<i>Mogens Bjerg Mogensen, Gurli Mogensen</i>	
Minimizing Coke Formation at $\text{La}_{0.3}\text{Ca}_{0.7}\text{Fe}_{0.7}\text{Cr}_{0.3}\text{O}_{3-\delta}$ Perovskite Anodes in a Syngas Fed-SOFC.....	2967
<i>Adam Stuart Bass, Anand Chandra Singh, Scott Paulson, Viola Ingrid Birss</i>	
(Invited) Forming Multifunctional Ceramics with Different ZrO ₂ Polymorphs: Mixed Ion-Electron Conducting Properties of Zirconium Titanium Oxides.....	2969
<i>Robert A. Walker, Joshua B. Sinrud, Melissa McIntyre</i>	
(Invited) Achieving Extreme High Ion-Current Densities in Tailored Materials, Structures, and Interfaces	2970
<i>Eric Wachsman</i>	

I04 - Novel Chemical Processing Methods

Solid Oxide Electrochemical Cells for Nitrogen and Oxygen Production	2971
<i>Xiufu Sun, Francesco Mondì, Patricia Rabelo Monich, Stéven Pirou, Henrik Lund Frandsen, Peter Vang Hendriksen</i>	

Biogas Reforming Combined with Co-Electrolysis inside AC:DC Operated Solid Oxide Electrolyser Cells	2973
<i>Federico Mattera, Vincenzo Liso, Mads Pagh Nielsen, Thomas Lyck Smitshuysen, Soren Højgaard Jensen</i>	
High-Performance CO ₂ and H ₂ O Co-Electrolysis Based on Micro-Structured Hollow Fiber Solid Oxide Electrolysis Cell.....	2975
<i>Peng Yan, Kang Li</i>	
(Invited) Utilization of Bio-CO ₂ and Bio-Methane for Fuel Production: Integration Solid Oxide Electrolyzer, Low Energy Plasma Reformer with Fischer-Tropsch Synthesis	2976
<i>S Elangovan, Joseph Hartvigsen, Michele Hollist, Jessica Elwell</i>	
(Invited) Ceramic-Based Electrochemical Systems for Sustainable Transition to Zero-Carbon Energy	2977
<i>Turgut M. Gür</i>	
Managing the Scaling Relationship for Plasma-Activated Electrolysis Toward Nitrogen Fixation	2978
<i>Susanta Bera, Myung-Jin Jung, Se-Hun Kwon, Anja Herrmann, Richard Van De Sanden, Michail N. Tsampas</i>	
Development of Durable Materials for Cost Effective Water Splitting	2980
<i>John Pietras, Brian Oistad, Xin Qian, Srikanth Gopalan, Yu Zhong, Wenyuan Li</i>	

I04 - Poster Session

Exploring Key Factors for Oxygen Evolution Reaction on La _{2-x} Sr _x NiO _{4+Δ} by Oxygen Defect Engineering	2981
<i>Soma Kobata, Yuta Kimura, Koji Amezawa, Masatsugu Oishi, Fumito Fujishiro, Ikuma Takahashi, Shunsuke Yagi, Takashi Nakamura</i>	
Preparation of Textured Polycrystalline La ₂ NiO _{4+δ} Membranes and Their Oxygen-Transporting Properties.....	2984
<i>Giamper Eliseo Escobar Cano, Zhijun Zhao, Fabian Riebesehl, Oliver Stölting, Bernd Breidenstein, Armin Feldhoff</i>	
Coating Effects of Sm _{0.2} Ce _{0.78} M _{0.02} O _{2-δ} (M=Ni, Co, Pd, NiCo) Layer on Ni/YSZ Anode for Internal Dry Reforming in Solid Oxide Fuel Cells	2985
<i>Junho Kim, Hong Ryun Jung, Jeong Woo Yun</i>	
Effect of Backbone Selection on the Enhanced Electrocatalytic Activity of Pr ₂ Ni _{0.6} Cu _{0.4} O ₄ Infiltrated Oxygen Electrodes.....	2986
<i>Mohamad Khoshkalam, Peter Vang Hendriksen</i>	
Phase-Field Modelling of Microstructure Evolution in Solid Oxide Cells.....	2988
<i>Yijing Shang, Ming Chen</i>	
Modification of Fuel Electrode Microstructure for Protonic Ceramic Cells by the Infiltration of Various Metal Nanoparticles	2989
<i>Jun Ho Jo, Hyung-Tae Lim</i>	
Interface Modification of LATP-Based Solid-State Li Metal Batteries Using Composite Polymer Electrolyte and Li-in Alloy	2990
<i>Min Joo Kim, Dongjae Kang, Seok Hee Lee, Hyung-Tae Lim</i>	
Which Interfaces Matter Most? Variability in Grain Boundary Defect Chemistry and Conductivity in a Concentrated Solid Electrolyte	2991
<i>Hasti Vahidi, Alejandro Mejia, Shengquan Xuan, Angel Cassiadoro, Abdnego Abdi, David Mebane, William J Bowman</i>	
Distribution of Relaxation Times of Fuel Electrodes for Reversible Solid Oxide Cells Fabricated Under Various Conditions	2993
<i>Yohei Nagatomo, Yuya Tachikawa, Stephen Matthew Lyth, Junko Matsuda, Kazunari Sasaki</i>	
Effects of Current Collector on Internal Visualization of Solid Oxide Cells.....	2995
<i>Ko Yoshiga, Takeaki Okamoto, Yuya Tachikawa, Kazunari Sasaki</i>	

A Study on Electrochemical Properties of Fuel-Electrode-Supported Reversible Solid Oxide Cells	2998
<i>Ryota Ozaki, Kei Yamada, Kazutaka Ikegawa, Tsutomu Kawabata, Chie Uryu, Yuya Tachikawa, Junko Matsuda, Kazunari Sasaki</i>	
Effects of Doping on Conduction/Densification of $\text{BaCe}_{0.5\delta}\text{Zr}_{0.3}\text{Y}_{0.2}\text{O}_{3-\delta}$ Electrolyte for Green Hydrogen Applications.....	3001
<i>Kuan-Zong Fung, Shu-Yi Tsai, Yuan Jie Tsai</i>	
Approaches to Reduce the Operating Temperature of Protonic Ceramic Electrochemical Cells to $<450^\circ\text{C}$	3002
<i>Fan Liu, Liyang Fang, Chuancheng Duan</i>	

I04 - Solid State Batteries and Novel Phenomena

Oxygen Electrode Surface Constructing for Reversible Protonic Ceramic Electrochemical Cells	3003
<i>Shunrui Luo, Pei Kai, Yu Chen, Jordi Arbiol</i>	
Mixed Ionic Electronic Conduction Caused by Phase Transformation and Interfacial Segregation in an Entropy Stabilized Oxide.....	3004
<i>Hasti Vahidi, Benjamin Lam, Alexander Dupuy, Justin Cortez, Pulkit Garg, Timothy Rupert, Julie Schoenung, William J Bowman</i>	
(Invited) Understanding the Effects of Metal Nanoparticle Exsolution from $\text{La}_{0.3}\text{Ca}_{0.7}\text{Fe}_{0.7}\text{Cr}_{0.3}\text{O}_{3-\delta}$ Perovskites on $\text{CO}_2\text{-CO}$ Electrocatalysis.....	3006
<i>Sara Bouzidi, Haris Masood Ansari, Adam Stuart Bass, Viola Ingrid Birss</i>	
(Invited) Grain Texture and Transport in Sintered Lithium Cobaltite	3008
<i>Cameron W Tanner</i>	
Non-Arrhenius Ionic Conductivity Behaviour in Antiperovskite Solid Electrolytes for Sodium Metal Batteries	3010
<i>Brigita D Darminto, Mauro Pasta, Hyeon Jeong Lee, Hua Guo, Gregory Rees, John Cattermull, Maria Diaz-Lopez, Kenjiro Hashi, Naoaki Kuwata, Andrew Goodwin</i>	
(Invited) On Non-equilibrium Thermodynamics in Electrochemical Systems.....	3011
<i>Xiao-Dong Zhou</i>	
(Invited) Controlling Metal Exsolution on Oxides By External Drivers – Role of Elastic Strain and Ion Irradiation.....	3012
<i>Bilge Yildiz, Jiayue Wang</i>	

I04 - Fabrication and Synthesis

(Invited) Mixed Ionic Electronic Conductors (MIECs): The Importance of Fast and Slow Processes	3013
<i>John Anthony Kilner</i>	
Highly Conducting Sc and Y co-doped Zirconia Solid Electrolyte Thin Films Prepared via Pulsed Laser Deposition for Solid Oxide Electrochemical Cells Applications.....	3014
<i>Jennet Rabo, Takashi Tsuchiya, Kazuya Terabe, Rinlee Butch Cervera</i>	
Advancements in Additive Manufacturing of Protonic Ceramic Fuel Cells.....	3015
<i>Muhammad Imran Asghar</i>	
Facile and Low Temperature Synthesis of $\text{Nd}_{1.8}\text{Sr}_{0.2}\text{NiO}_{4-\delta}$ Cathode Nanofibers for Intermediate Temperature Solid Oxide Fuel Cells.....	3016
<i>Anushree P Khandale, R Vinoth Kumar</i>	
(Invited) Development of Thin-Film Solid Oxide Cells for Power Generation and Hydrogen Production	3018
<i>Nguyen Q. Minh</i>	
Facile Preparation of Porous Ni-YSZ Electrode Composite Material: From Highly Dense to Desirable Electrode Porosity Even without Pore Former	3019
<i>Christine Mae Macalisang, James Francis Imperial, Rinlee Butch Cervera</i>	

Mitigating Chemo-Mechanical Degradation in Sulfide-Based All-Solid-State Batteries Comprising Sulfur Composite Cathode and Li-Si Alloy Anode.....	3020
<i>Hyung-Tae Lim</i>	

105-PHOTOCATALYSTS, PHOTOELECTROCHEMICAL CELLS, AND SOLAR FUELS 13

105 - Metal Oxide Photocatalysts & Electrocatalysts for Water Splitting 1

Analysis of Photocatalytic Properties of Titanium Dioxide Electrode Supported By Hydroxyapatite Co-Catalyst in a Marine Solar Cell.....	3021
<i>Htoo Wunn, Shinichi Motoda, Motoaki Morita, Haruki Itakura</i>	
Transition Metal Doped BiVO ₄ Photoanodes: A Mechanistic Study.....	3023
<i>Miguel García-Tecedor, Alejandro García-Eguizábal, Mariam Barawi Moran, Miguel Gomez-Mendoza, Imdea Energy, Ignacio J Villar-Garcia, Marta Liras, Victor A. De La Peña O'Shea</i>	
SrTiO ₃ Based Two Dimensional Nanoplatelets for Low-Cost Solar Hydrogen Generation: Materials Beyond the State-of-the-Art	3024
<i>Marjeta Macek Kržmanc, Suraj Gupta, Nina Daneu, Matjaž Spreitzer</i>	
The Effect of Oxygen Vacancies on Oxygen Evolution: The Case of BiVO ₄	3026
<i>Nicklas Österbacka, Hassan Ouhbi, Julia Wiktor, Francesco Ambrosio</i>	
Exsolution of Co Nanoparticles on La ₂ Ti ₂ O ₇ for Efficient OER/ORR Reaction.....	3027
<i>Hong Zhang, Hong Zhang</i>	
Photocatalytic Activity and Electron Storage Capability of TiO ₂ Aerogels with Adjustable Surface Area	3028
<i>Anja Hofmann, Roland Marschall, Pascal Voepel, Alexandra Rose, Barbara Milow</i>	
Metal Doping in SrTiO ₃ Photocatalyst to Improve the Photocatalytic Activity for CO ₂ Conversion.....	3030
<i>Shoji Iguchi, Takechi Nakamoto, Shuying Wang, Shimpei Naniwa, Hiroyuki Asakura, Saburo Hosokawa, Tsunehiro Tanaka, Kentaro Teramura</i>	
Development of a Simple Ink Coating Procedure for BiVO ₄ Photoanodes for Oxygen Evolution.....	3033
<i>Kira Viktoria Henke, Henning Weinrich, Hermann Tempel, Rüdiger-A. Eichel</i>	
Effect of Adhesion Layer at the Pt/TiO ₂ Interface on the Degradation Pathways of TiO ₂ -Protected III-V Water-Splitting Photocathodes	3035
<i>Diwakar Suresh Babu, Sven Schneider, Roel Van De Krol</i>	
Epitaxial Strain Modulation of Photoelectrochemical Properties of Epitaxial Bismuth Vanadate Photoanodes.....	3037
<i>Erwin Fernandez, Daniel Grave, Roel Van De Krol, Fatwa Firdaus Abdi</i>	
Facile Fabrication of Indium-Doped TiO ₂ Via Anodization As Photoanodes for Photoelectrochemical Water Splitting Under Visible Light.....	3038
<i>Shuchi Sharma, Arunachala Mada Kannan, Ranga Rao Gangavarapu</i>	
High Entropy Induced γ -NiOOH Formation in Layered Double Hydroxide as Highly-Active and Ultra-Stable Electrocatalyst for Oxygen Evolution Reaction	3039
<i>Thi Xuyen Nguyen, Chia-Chien Tsai, Van Thanh Nguyen, Yan-Jia Huang, Yen-Hsun Su, Rui-Kun Xie, Yu-Jung Lin, Jyh-Fu Lee, Jyh-Ming Ting</i>	
Titanium Nanotubes as an Effective Electrocatalyst Support for Hydrogen Evolution Reaction.....	3040
<i>Khaled M. Alaqad, Tarek A. Kandiel, Chanbasha Basheer</i>	
Eco-Friendly TiO ₂ and ZnO Biocar Nanocomposites: Transforming Water Decontamination and Bacteria Inactivation.....	3042
<i>Osman Urper, Prabin Kharel, Nivedhitha Jothinarayanan, Karoline Kroghstad, Lars Eric-Roseng, Miina Saebo, Walter Aker, Kaiying Wang</i>	

I05 - Metal Oxide Photocatalysts & Electrocatalysts for Water Splitting 2

SrTiO ₃ Epitaxially Protected Si-Photocathode for Photoelectrochemical Water Splitting	3045
<i>Hsin-Chia Ho, Milutin Smiljanic, Zoran Jovanovic, Blaž Jaklic, Janez Kovac, Miha Cekada, Jiri Hlinka, Nejc Hodnik, Matjaž Spreitzer</i>	
Molecular Relays in Nanometer Scale Alumina: Effective Protection Layers for Water-Submersed Halide Perovskite Photocathodes	3047
<i>Eran Edri, Yuval Harari, Chandra Shakher Pathak</i>	
Strategies for Sustainable Fuel Production Via Photoelectrochemical Synthesis.....	3048
<i>Sejin Im, Yoongu Lim, Subramani Surendran, Uk Sim</i>	
Stabilization of Silicon Photoanode By Hafnium Zirconium Oxide Interlayer for Efficient Solar Water Oxidation.....	3049
<i>Sola Lee, Sungkyun Choi, Harry A. Atwater, Ho Won Jang</i>	
Hole Extraction Beyond the Depletion Layer in Ge-Doped Hematite Photoanode.....	3050
<i>Edson Roberto Leite, Murillo Henrique De H. M. Rodrigues, Joao Junior</i>	
Decoupling the Effects of Temperature and High Photon Fluxes in Photoelectrochemical Water Splitting	3051
<i>Franky Esteban Bedoya Lora, Isaac Holmes-Gentle, Lorenzo Aimone, Sophia Haussener</i>	
Interface and Structural Engineering of Cr Doped Zinc Oxide/Graphene Photoanode with Enhanced Photoelectrochemical Water Splitting	3053
<i>Mohaseen Tamboli, Hyeonwook Park, Chinho Park</i>	
Oxysulfide-Based Photocatalyst Sheet Modified with Silica Layer for Z-Scheme Overall Water Splitting at Atmospheric Pressure.....	3054
<i>Swarnava Nandy, Takashi Hisatomi, Tsuyoshi Takata, Kazunari Domen</i>	
Zirconium (Oxy)Nitriles for (Photo)Electrochemical Applications	3056
<i>Verena Streibel, Johanna Leonie Schönecker, Laura Idoya Wagner, Thomas Maier, Teodor Apetrei, Johanna Eichhorn, Saswati Santra, Ian D. Sharp</i>	
Spin States and Spin Order in Perovskite Oxide Oxygen Evolution Electrocatalysts	3058
<i>Emma Minne, Achim Fungerlings, Marcus Wohlgemuth, Gertjan Koster, Felix Gunkel, Rossitza Pentcheva, Christoph Baeumer</i>	
Metastable Ni(I)-TiO _{2-x} Photocatalyst: Self-Amplifying H ₂ Evolution from Plain Water without Noble Metal Co-Catalyst and Sacrificial Agent	3060
<i>Marco Altomare, Shanshan Qin, Viktoriia A. Saveleva, Zdenek Badura, Ondrej Tomanec, Anca Mazare, Giorgio Zoppellaro, Alberto Vertova, Angelo Taglietti, Alessandro Minguzzi, Paolo Ghigna, Patrik Schmuki</i>	
Core-Shell and Yolk-Shell Nanocrystals for Hydrogen Production	3061
<i>Yung-Jung Hsu</i>	

I05 - Metal Oxide Photocatalysts & Electrocatalysts for Water Splitting 3

(Invited) Highly Nanoporous Hematite with Optimal Doping for an Efficient Photoelectrochemical Water Splitting.....	3062
<i>Ji-Hyun Jang</i>	
(Invited) Acid Stable Water Oxidation Catalysts for PEM Water Electrolysis	3063
<i>Ryuhei Nakamura</i>	
(Invited) Thermo-Photo Catalysis for Energy and Environment.....	3064
<i>Yun Hang Hu</i>	
(Invited) Advances in Photon-Harvesting Technologies for Perovskite Absorbers and Water Splitting Reactions	3065
<i>Sanjay Mathur, Thomas Fischer</i>	
(Invited) Modulation of Photocatalytic Activity with Oxygen Vacancies in Metal Oxides.....	3066
<i>Nianqiang Wu</i>	

(Invited) Stable Layered Oxyhalide Photocatalysts for Visible-Light-Induced Water Splitting.....	3067
<i>Ryu Abe</i>	
(Invited) Tuning and Transferring Slow Photons for Unprecedented Visible Light Photocatalysis	3068
<i>Thomas L Madanu, Bao-Lian Su</i>	
(Invited) Surface and Structural Dependent Reactivity of Alkylphosphonic Acids-Modified Titanium Oxide Nanostructures with 2-Chloroethyl Ethyl Sulfide Under Visible Light Excitation	3069
<i>Olga A Baturina, Spencer Giles, Andrew P Purdy, Daniel Ratchford, William A Maza</i>	

I05- Photocatalysts and Electrocatalysts Beyond Metal Oxides 1

(Invited) Polymeric Carbon Nitride for Photocatalytic Overall Water Splitting.....	3070
<i>Shaohua Shen</i>	
(Invited) Chirality-Induced Spin Selectivity Enabling Efficient Spin-Dependent Oxygen Evolution Reaction and High-Performance Photoelectrochemical Water Splitting	3071
<i>Hyungsoo Lee, Chan Uk Lee, Juwon Yun, Wooyong Jeong, Chang-Seop Jong, Jaehyun Son, Young Sun Park, Gyumin Jang, Subin Moon, Jooho Moon</i>	

I05 - Catalysis Toward Nitrogen-Containing Compound Conversion

Photoelectrochemical Nitrate Reduction to Ammonia Using Metal Oxide Based Photosensitisers.....	3072
<i>Elan D. R. Mistry, Alex J. E. Rettie</i>	
Photocatalytic TiO ₂ Nanotube Layers on 3D Substrates Using Bipolar Electrochemistry	3073
<i>Hanna Sopha, Lina Marcela Sepúlveda Sepúlveda, Jan M. Macak</i>	
Light-Induced Ammonia Generation over Defective Carbon Nitride Modified with Pyrite	3075
<i>Judith Zander, Roland Marschall</i>	
Electrochemical Ammonia Production from Wastewater in a Flow Cell Reactor	3077
<i>Noemi Pirrone, Sara Garcia Ballesteros, Simelys Hernandez, Federico Bella</i>	
Artificial Photosynthesis of Ammonia by Semiconducting Plasmonic NIR Energy	3079
<i>Zhenhuan Zhao</i>	

I05 - Poster Session

Rh-WO ₃ Electrocatalyst for Hydrogen Evolution Reaction in the Alkaline Seawater Electrolyte.....	3080
<i>Ngoc Anh Nguyen, Enkhjin Chuluumbat, Ho Suk Choi</i>	
Single Crystal (K,Nb)Nb ₃ /CuO Heterostructures for Synergistic Photo-Piezocatalytic Activity	3081
<i>Eunmi Im, Yuho Min, Geon Dae Moon</i>	
Catalytic Activity of Au-Cu Alloy on TiO ₂ Nanotubes for Alcohol Oxidation.....	3082
<i>Wiktoria Lipinska, Katarzyna Grochowska, Jakub Karczewski, Emerson Coy, Katarzyna Siuzdak</i>	
Development of Durable Large-Sized CO ₂ Electrolysis Cells for Industrial Applications	3084
<i>Naoya Fujiwara, Yusuke Kofuji, Satoshi Mikoshiba, Ryota Kitagawa, Atsushi Matsunaga, Isamu Kikuchi, Soichiro Shimotori</i>	
Perovskite-Type Oxynitride Nanofibers Performing Photocatalytic Oxygen and Hydrogen Generation	3085
<i>Anja Hofmann, Morten Weiß, Jana Timm, Roland Marschall</i>	
Incorporation of (Co-Ni)P Based Electrocatalysts in Tin Sulfide Photoelectrodes	3087
<i>Gonzalo Riveros, Javier Reyes, Josefa Osses, Daniel Ramirez, Loreto Hernández</i>	
Ball-Milled P-CuGaO ₂ Particles As a Semitransparent Scaffolding Material for Dye-Sensitized Molecular Photocathodes	3089
<i>Hiromu Kumagai, Yasuomi Yamazaki, Osamu Ishitani</i>	
Synthesis and Analysis of Titanium Based Metal Organic Frameworks for Photocatalysis.....	3091
<i>John Kurowski, Emily Pearce, Daniel Kissel</i>	

Visible Light Photocatalysis: Green Hydrogen Production.....	3092
<i>Maria Isabel Alvarado-ávila, Fei Ye, Joydeep Dutta</i>	

I05 - Mechanistic Studies on Adsorption, Photocatalysis and Electrocatalysis

Photo-Generated Charge Carrier Dynamics in Metal Oxide Photocatalysts	3093
<i>Yasuhiro Tachibana</i>	
Current-Voltage Analysis Tool for Solar Fuel Production (CATS).....	3094
<i>Tobias Kistler</i>	
(Invited) Computational and Experimental Studies of Solar Water Splitting Technologies	3095
<i>Tadashi Ogitsu</i>	
(Invited) Computational Predictions of Site-Dependent Reactivities for Complex Reactions in Confinement	3096
<i>Shubham Malviya, Peng Bai</i>	
(Invited) Operando Optical Spectroscopy Analyses of Photoelectrochemical Water Oxidation Kinetics.....	3097
<i>James Durrant</i>	
Integration of Charge-Carrier Dynamics and Electrochemical Modeling in a Unified Microkinetic Model for the Oxygen Evolution Reaction in Water Splitting.....	3098
<i>Bart F. H. Van Den Boorn, Matthijs Van Berkel, Anja Bieberle-Hütter</i>	
(Invited) High Productivity Electrocatalytic Water Splitting Using Diverse Water Sources.....	3101
<i>Kazuhiro Takanabe</i>	
(Invited) Long Term Operation of Photoelectrochemical Devices: Experiments and Modeling.....	3102
<i>Sophia Haussener</i>	
Degradation Processes in Bipolar Membrane CO ₂ -Electrolysis Studied by Time-Resolved X-Ray Tomography.....	3103
<i>Robert Fischer, Matthieu Dessieux, Federica Marone, Felix N. Buechi</i>	
The Influence of Electrochemical Bias on the Exciton Dynamics of MoS ₂ thin Films	3105
<i>Gergely Ferenc Samu, Peter Toth, Krisztina Sárossi, Károly Mogyorósi, Barnabás Gilicze, Imre Seres, Zsolt Bengery, Péter Jójárt, Viktor Chikán, Csaba Janaky</i>	
Solar Water Splitting Device Integrated Carbon-Based Electrodes and Carbon-Based Perovskite Solar Cells	3106
<i>Ryuki Tsuji, Seigo Ito</i>	

I05 - Photocatalysts and Electrocatalysts Beyond Metal Oxides 2

The Localized Surface Plasmon Resonances (LSPR) Origin of W ₁₈ O ₄₉ and Application in Photocatalysis.....	3108
<i>Ma Zhaoyu, Junying Zhang</i>	
(Invited) High Efficiency, Ultra-Stable Solar Hydrogen Production.....	3109
<i>Zetian Mi</i>	
(Invited) Multijunction III-V Semiconductors for Photo-Electrochemical Hydrogen Production: Recent Progress in Efficiency, Durability, and Cost.....	3110
<i>Todd G Deutsch, Keenan Wyatt, Myles A. Steiner, James L. Young</i>	
(Invited) Plasmonic Aerogels for Gas-Phase Photocatalytic Reactions.....	3111
<i>Mingjia Zhi</i>	
Tandem Semiconductor Microwire Slurries for Solar Hydrogen Generation.....	3112
<i>Saumya Gulati, Matthew Mulvehill, Joshua M. Spurgeon</i>	
MOCVD of Zn: Tuning Thin Film Properties Towards Catalytic Applications.....	3113
<i>Jean-Pierre Glauber, Ji Liu, Julian Lorenz, Sebastian Bragulla, Björn Müller, Corinna Harms, Michael Wark, Michael Nolan, Anjana Devi</i>	

Solar Hydrogen Production and Biomass Reforming Using Earth-Abundant Non-Toxic Si-Based Photocatalysts.....	3115
<i>Jungki Ryu</i>	
Hydrogen Evolution Using a Highly Efficient MoS ₂ -Carbon Nano-Onion Heterostructure Electrocatalyst.....	3116
<i>Jae-Jin Shim, Muhammed Shafi Parasseeri, Abdullah Al Mahmud</i>	
Composites of Carbons/Indium Sulfide for Hydrogen Peroxide Production and Water Purification.....	3117
<i>Akshay Tikoo, Koushik A. K. S, Praveen Meduri</i>	
Employing Electrochemical Potential Cycling to Controlling Surface to Volume Ratio of Nanoporous Gold and Photoelectron Injection into Electrolyte.....	3119
<i>Fatemeh Ebrahimi, Xinyan Wu, Nadiia Mameka, Alexander Petrov, Manfred Eich</i>	
Layered Nanocomposites of Polymer-Functionalized Reduced Graphene Oxide and Borocarbonitride with MoS ₂ and MoSe ₂ and Their Hydrogen Evolution Reaction Activity.....	3120
<i>Swaraj Servottam, Chintamani Nagesa Ramachandra Rao</i>	

I05 - Photocatalytic or Electrocatalytic Carbon Dioxide Conversion 1

(Invited) Electrochemical CO ₂ Reduction to Chemical Feedstocks: System Capacity and Specifications for Carbon Neutrality.....	3122
<i>Masakazu Sugiyama, Shingi Yamaguchi, Hiroji Ebe, Hiromu Kumagai, Tsutomu Minegishi</i>	
(Invited) Stabilization and Activation of Copper(I)-Oxide-Semiconducting Interfaces for Photoelectrochemical Reduction of Carbon Dioxide.....	3124
<i>Pawel J. Kulesza, Iwona A. Rutkowska</i>	
(Invited) Exploring Solar-Driven CO ₂ Reduction to C ₂₊ Products.....	3125
<i>Alex J King, Justin C. Bui, Chanyeon Kim, William Wei, Keon-Han Kim, John Safipour, Ahmet Kusoglu, Francesca Maria Toma, Alexis T. Bell, Adam Z. Weber</i>	
(Invited) Dye-Sensitized Molecular Photoelectrodes for CO ₂ Reduction Using Water as a Reductant.....	3126
<i>Osamu Ishitani</i>	
(Invited) Electrosynthesis of Long-Chain Hydrocarbons and Oxygenates.....	3128
<i>Boon Siang Jason Yeo</i>	
(Invited) Electrocatalytic Reduction of Carbon Dioxide over Aluminum-Added Copper Oxide Gas Diffusion Electrode.....	3129
<i>Tsutomu Minegishi, Daiki Komori, Hiroji Ebe, Hiromu Kumagai, Masakazu Sugiyama</i>	
(Invited) Electrocatalysts and Processes for Carbon Dioxide Reduction.....	3130
<i>Astrid M Mueller</i>	
(Invited) High-Rate CO ₂ Reduction Reactions: From Electrocatalysts to Gas-Diffusion Electrodes.....	3131
<i>Kazuhide Kamiya</i>	
An Optical-Electronic-Catalytic Coupled Multi-Physical Simulation for Sunlight-Driven CO ₂ Reduction Device Based on Light Absorbers Patterned with Island Electrocatalysts.....	3133
<i>Yuzhu Chen, Meng Lin</i>	

I05 - Photocatalysts and Electrocatalysts Beyond Metal Oxides 3

New Insights and Strategies for the Efficient Use of Conjugated Porous Polymers in Photoelectrochemical Solar Fuel Production.....	3135
<i>Mariam Barawi Moran, Elena Alfonso, Sandra Palenzuela, Miguel García-Tecedor, Ignacio J Villar-Garcia, Freddy Oropeza, Marta Liras, Victor A. De La Peña O'Shea</i>	
(Invited) Organic Polymer Dots for Photocatalysis.....	3137
<i>Haining Tian</i>	
(Invited) Solar Panel Technologies for Light-to-Chemical Conversion.....	3138
<i>Erwin Reisner</i>	

(Invited) Limitation of Molecular Twisting: Upgrading a Donor-Acceptor Dye to Drive H ₂ Evolution	3140
<i>Guido Mul, Kaijian Zhu, Annemarie Huijser</i>	
(Invited) Towards Broadband Photocatalysis	3141
<i>Dongling Ma</i>	
Extending the Success of Halide Perovskites from Solar Cells to Photoelectrodes and Photocatalysts	3142
<i>Salvador Eslava, Matyas Daboczi, Yasmine Baghdadi, Filipp Temerov, Michael Sena, Junyi Cui</i>	
Post-Synthetic Modifications of Ti(IV)-Based Metal-Organic Frameworks for Enhanced Photocatalysis and Conductivity	3143
<i>Daniel Kissel</i>	
(Invited) MOF-Derived Nanosheet Arrays As Advanced Electrocatalysts for Water Splitting	3144
<i>Limin Qi</i>	
(Invited) C–C Bond Cleavage of Lignin with an Organic Dye-Sensitized Photoanode	3146
<i>Saerona Kim, Hyeong Cheol Kang, Gyu Leem, Jae-Joon Lee</i>	
Viable Route to Green Hydrogen: Sea Water Photocatalysis	3147
<i>Deepa Khushalani</i>	

I05 - Photocatalytic or Electrocatalytic Carbon Dioxide Conversion 2

Visualizing the Effect of Temperature on Carbonate Salt Production in CO ₂ Electrolysis.....	3148
<i>Vasant Batta, Qianpu Wang, Spencer Lytle, Aimy Bazylak</i>	
Ultra-High-Rate CO ₂ Reduction Reactions to Multicarbon Products with a Current Density of 1.7 a cm ⁻² in Neutral Electrolyte	3149
<i>Asato Inoue, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya</i>	
Synergistic Integration of Zr-MOF (UiO-66) and Bi Electrocatalysts for Enhanced CO ₂ Conversion to Formate	3151
<i>Jun Tae Song, Yuta Takaoka, Atsushi Takagaki, Motonori Watanabe, Tatsumi Ishihara</i>	
(Invited) Solar-Driven H ₂ O ₂ Production via Cooperative Auto- and Photocatalytic Oxidation in Fine-Tuned Reaction Media	3153
<i>Dong Ki Lee, Jeehye Byun, Byeong Cheul Moon</i>	
(Invited) Selective and Efficient Electrochemical CO ₂ Reduction Reaction from Cu and Cu-M Binary Alloys.....	3154
<i>Jihun Oh</i>	
Surface Hydroxyl Groups Enhance Ethylene Selectivity in Acidic CO ₂ Reduction Reaction	3155
<i>Zhu Chen, Yufei Cao, David Sinton, Jun Ge, Edward H. Sargent</i>	
Hydrodynamics Change Tafel Slopes in Electrochemical CO ₂ Reduction on Copper	3156
<i>Nicholas B. Watkins, Zachary J. Schiffer, Yungchieh Lai, Charles B. Musgrave, Harry A. Atwater, William A Goddard, Theodor Agapie, Jonas C. Peters, John M. Gregoire</i>	
Unintended Cation Crossover in CO ₂ Conversion MEA Cells: Causes and Effects.....	3157
<i>Gumaa El-Nagar, Flora Haun, Siddharth Gupta, Sasho Stojkovikj, Matthew T. Mayer</i>	
Integrated Capture and Electrochemical Conversion of CO ₂ into CO.....	3159
<i>Yiyou Celine Xiao, Christine M. Gabardo, Shijie Liu, Geonhui Lee, Yong Zhao, Colin P. O'Brien, Rui Kai Miao, Yi Xu, Jonathan P. Edwards, Mengyang Fan, Jianan Erick Huang, Jun Li, Panagiotis Papangelakis, Tartela Alkayyali, Armin Sedighian Rasouli, Jinqiang Zhang, Edward H. Sargent, David Sinton</i>	
Impedance Spectroscopy with Microscopic Reference Electrodes as a Technique to Study Electrode Kinetics in Dye-Sensitized Solar Cells.....	3160
<i>Daniel Holzhaecker, Derck Schlettwein</i>	

Enhancement in the Rate of CO ₂ Photoreduction Using Divalent Strontium Cation (Sr ²⁺) Doped TiO ₂ Nanotube Arrays	3162
<i>Damini Vrushabendrakumar, Kazi Alam, Navneet Kumar, Narendra Chaulagain, Harshitha Rajashekhar, Saralyn Riddell, Karthik Shankar</i>	
Aqueous Solution-Gel Deposition of Copper-Based Photo-Electrodes for Multipurpose Photo-Electrochemical Systems	3164
<i>Ken Elen, Bjorn Joos, Nele Debusschere, Robbe Jacobs, Kristy Talukdar, An Hardy</i>	

I05 - Photocatalytic or Electrocatalytic Carbon Dioxide Conversion 3

Mass Transport in a Gas-Fed CO ₂ Electrolyzer with a Forward-Bias Bipolar Membrane	3165
<i>Matthieu Dessieux, Robert Fischer, Sophia Haussener, Felix N. Buechi</i>	
Breaking Barriers to a Sustainable Future: Enhancing CO ₂ Reduction through Advanced Voltage Diagnosis	3167
<i>Fatemeh Arabyarmohammadi, Ali Shayesteh, Rui Kai Miao, Colin P. O'Brien, Tartela Alkayyali, Geonhui Lee, Roham Dorakhan, Mohammad Zargartalebi, Edward H. Sargent, David Sinton</i>	
Carbon Supported Pd Nanostructures for Electrochemical Reduction of Carbon Dioxide – Effects of Ozonation	3169
<i>Milla Suominen, Lilian Moumaneix, Anna Kobets, Tanja Kallio</i>	
The Importance of Substrate Pore Size and Hydrophobicity in Gas Diffusion Electrodes for CO ₂ Reduction	3170
<i>Francesco Bernasconi, Alessandro Senocrate, Corsin Battaglia</i>	
Modeling and Performance Projections of a Dual-Purpose CO ₂ Capture and Energy Storage Device from Oceanwater	3172
<i>Rachel Silcox, Rohini Bala Chandran</i>	
Electrochemical Gaseous Carbon Monoxide Reduction Using Cu Nanoparticles in Acidic Electrolytes	3173
<i>Ryo Kurihara, Kaito Nagita, Keitaro Ohashi, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya</i>	
Carbon Dioxide Reduction on Alloyed Galinstan	3175
<i>Aya Mohamed, Peter Bogdanoff</i>	
Early Failure Detection for CO ₂ Reduction Electrolyzers Via in-Line Electrochemical Impedance Spectroscopy	3177
<i>Colin P. O'Brien, Hugh Warkentin, Sarah Holowka, Benjamin Maxwell, Mariam Awara, Mark Bouman, Ali Shayesteh, Rachael Nicholas, Alexander Ip, Essam Elshawi, Christine Gabardo, David Sinton</i>	
Multi-Factor Approach on How to Enhance the System Stability of CO ₂ Electrochemical Conversion to C ₂₊ Products from Hours to a Month	3178
<i>Baran Sahin, Vinicius Facci Allegrini, Marc Kraehling, Kerstin Wiesner-Fleischer, Angelika Tawil, Remigiusz Pastusiak, Erhard Magori, Elfriede Simon, Olaf Hinrichsen</i>	
SO ₂ -Tolerant Electrocatalytic Reduction of CO ₂ from Simulated Industrial Flue Gas	3180
<i>Panagiotis Papangelakis, Rui Kai Miao, Ruihu Lu, Adnan Ozden, Shijie Liu, Ning Sun, Colin P. O'Brien, Yongfeng Hu, Mohsen Shakouri, Qunfeng Xiao, Mengsha Li, Behrooz Khatir, Jianan Erick Huang, Yakun Wang, Yurou Celine Xiao, Feng Li, Ali Shayesteh, Qiang Zhang, Pengyu Liu, Hanqi Liu, Kevin Golovin, Jane Howe, Ziyun Wang, Jun Li, Edward H. Sargent, David Sinton</i>	
Solar-Rechargeable Redox Flow Battery: Drawbacks and Opportunities Under Thermal Loads	3182
<i>Dowon Bae</i>	
Energy Conversion and Storage in a Li Photorechargeable Battery	3184
<i>Marta Haro, Isabel Ciria Ramos, Emilio J. Juarez-Perez</i>	

I06-CROSSCUTTING MATERIALS INNOVATION FOR TRANSFORMATIONAL CHEMICAL AND ELECTROCHEMICAL ENERGY CONVERSION TECHNOLOGIES 5

I06 - Accelerated Discovery & Development of Energy Materials 1

(Invited) Data-Driven Design for Energy Materials.....	3187
<i>Kristin A. Persson</i>	
(Invited) Multiscale Simulations of Materials Degradation in Hydrogen Production and Storage Applications.....	3188
<i>Brandon C. Wood</i>	
(Invited) Multiscale Modeling of Heterogeneous Interfaces for Hydrogen Production	3189
<i>Anh Tuan Pham</i>	
(Invited) The Liquid Sunlight Alliance: Solar-to-Chemical Energy Using Systems of Catalytic Microenvironments.....	3190
<i>Frances Houle, Harry A. Atwater</i>	

I06 - Accelerated Discovery & Development of Energy Materials 2

(Invited) Importance of Accelerated Stress Tests in Accelerated Discovery of Energy Materials.....	3191
<i>Rangachary Mukundan</i>	
(Invited) Accelerating Electrocatalysts' Activity and Stability Assessments.....	3192
<i>Serhiy Cherevko, Ken Jenewein, Moritz Geuß</i>	
(Invited) A Practical Approach to Model Development and Validation for High Performance SOFC and SOEC Systems.....	3193
<i>Ram Ramanan</i>	
(Invited) Coupling of Electrochemistry with Surface Science and Computational Modeling to Understand Nanoparticle Electrocatalysts.....	3194
<i>Xingyi Deng, Dominic Alfonso, Dan C. Sorescu, Thuy Duong Nguyen Phan, Douglas Kauffman</i>	

I06 - Energy Materials Innovation 1

(Invited) Hydrogen Consortium: Technical Progress on Renewable Hydrogen Production R&D.....	3195
<i>Huyen N Dinh</i>	
(Invited) Crosscutting Materials and Molecular Catalysts in Hybrid Photoelectrodes for Liquid Solar Fuel Production.....	3196
<i>Gerald J Meyer</i>	
(Invited) Ammonia Electrolysis from Fundamentals to Scale up.....	3197
<i>Christian E Alvarez Pugliese, Ozhan Gecgel, Gerardine G Botte</i>	
(Invited) Water Splitting Materials for Solar Thermochemical Hydrogen Production.....	3198
<i>Sean R Bishop, Andrew I Smith, Keith R King, Arielle L Clauser, Josh D Sugar, Andrea Ambrosini, Michael Sanders, Eric N Coker, Anthony H McDaniel</i>	
Transition Metal Nitrides for the Electrocatalysis of the Electrochemical Ammonia Synthesis	3199
<i>Julian Lorenz, Sebastian Bragulla, Jean-Pierre Glauber, Anjana Devi, Björn Müller, Michael Wark, Ji Liu, Michael Nolan, Corinna Harms</i>	

I06 - Energy Materials Innovation 2

(Invited) Developing Catalysts and Interfaces for Hydrogen Production By Water Electrolysis and Solar Photoelectrochemistry.....	3201
<i>Thomas F. Jaramillo</i>	

(Invited) Ionic Transport and Structure of Battery Electrolytes, Electrodes and Interfaces: New NMR, Diffraction and Optical Microscopy Approaches	3202
<i>Clare P. Grey</i>	
(Invited) Hydrogen Benchmarking Project: Progress and Future Opportunities	3203
<i>Katherine E. Ayers, Marcelo Carmo, George Roberts, Olga A Marina, Ellen B Stechel, Chengxiang("cx") Xiang, Karl Gross</i>	
(Invited) The Need for Standardized Benchmarking of Solid Oxide Cells	3204
<i>Christian Lenser, Norbert H. Menzler</i>	
(Invited) Current Status and Progress in Anion Exchange Membrane Electrolysis	3205
<i>Immanuel Vincent, Ekain Fernandez, Fernandez Carretero Francisco Jose, Ion Velasco, Alberto Garcia</i>	
(Invited) Enhanced Material Durability of Transition Metal-Antimony X-Ide Nanoparticles in Oxygen Reduction Electrocatalysis.....	3206
<i>Gaurav A. Kamat, Roulince Bobby Dukuly, Neha Bothra, Michal Bajdich, Michaela Burke Stevens, Thomas F. Jaramillo</i>	
Activity and Stability of High-Surface-Area Nickel-Based Catalysts for the Alkaline Hydrogen Evolution Reaction Under Industrially Relevant Conditions	3208
<i>Anders A. Feidenhans'L, Sune Daaskov Egelund, Ib Chorkendorff, Jakob Kibsgaard, Gastón O. Larrazábal</i>	

I06 - Integrated Materials Synthesis, Characterization and Theory 1

(Invited) Novel Strategies in the Design of the Oxygen Evolving Catalysts for Water Electrolysis.....	3210
<i>Petr Krtil, Roman Nebel, Lalita Sharma</i>	
(Invited) Development of Sustainable Electrocatalysts for Anion Exchange Membrane Fuel Cells and Electrolyzers	3211
<i>Hamish Andrew Miller, Francesco Bartoli, Maria Vincenza Pagliaro, Marco Bellini, Tailor Peruzzolo, Claudio Evangelisti, Carolina Castello, Lorenzo Poggini, Francesco Vizza</i>	
(Invited) Metal Oxide Nanoparticles for Stable Alkaline Oxygen Evolution Reaction in an Anion Exchange Membrane Electrolyser Cell	3213
<i>Pau Farràs Costa, Hanka Besic, Wenming Tong, Fabio Dionigi, Peter Strasser</i>	
(Invited) Local pH in the (Photo/Electro) Catalytic Environment.....	3214
<i>Frances Houle</i>	
(Invited) In Situ Photoelectron Spectroscopy Reveals the Chemical Nature of Semiconductor Surface States	3215
<i>Marco Favaro</i>	

I06 - Integrated Materials Synthesis, Characterization and Theory 2

(Invited) Challenges with Ceria Diffusion Barrier Layer	3217
<i>S Elangovan, Tyler Hafen, Taylor Rane, Jenna Pike, Julian Escobar, Olga A Marina</i>	
(Invited) Transition Metals in Ni/GDC for the Reversible Solid Oxide Cell Operation: Optimization of the Mo-Au-Ni Synergy and Further Enhancement Via Substitution of Mo with Fe	3218
<i>Fotios Zaravelis, Lamprini Sygellou, Athina Souvalioti, Dimitris K. Niakolas</i>	
Forward-Bias 3D-Junction Bipolar Membranes for Electrochemical CO ₂ Reduction to CO.....	3219
<i>Jiyun Kwen, Juan Herranz, Thomas J. Schmidt</i>	
Selective Ion Conducting Polymers for Non-Aqueous Redox Flow Battery Applications	3220
<i>Geoffrey M. Geise</i>	

I06 - Materials to Market 1

(Invited) Materials Challenges for the Green Hydrogen Economy at Scale.....	3221
<i>Karen Swider-Lyons, Cortney Mittelsteadt</i>	

(Invited) Solar Fuel Processing: Performance and Longevity Requirements and Trends	3222
<i>Sophia Haussener</i>	
(Invited) Towards Developing a Highly Efficient and Durable Water Electrolyser with Low-Cost Cell Components	3223
<i>Aldo Saul Gago, Jorge Torrero, Tobias Morawietz, Daniel Garcia, K. Andreas Friedrich</i>	

I06 - Poster Session

(Best Student Poster Award) Energy Harvesting from Carbon Dioxide Capture through an Ionic Liquid Based Supercapacitor	3225
<i>Davide Molino, Pietro Zaccagnini, Simone Martellone, Alessandro Pedico, Giuseppe Ferraro, Sergio Bocchini, Andrea Lamberti</i>	
Overpotential Behavior of Electrolysis and Fuel Cell Modes of Molten Carbonate Cells	3227
<i>Choonggon Lee, Samuel Koomson</i>	

I06 - Materials to Market 2

(Invited) A Sustainable Future Fueled By Science: Recent Advances in Power-to-X Activities at Topsoe	3228
<i>Elena Marzia Sala, Sune Dalgaard Ebbesen, Peter Gustav Blennow, Aiswarya Krishnakumar Padinjarethil, Daniel Bovin Drasbæk, Thomas Heiredal-Clausen, Giovanni Perin, Jeppe Rass-Hansen, Kim N. Dalby, Ramchandra Tiruvalam, Anne Hauch</i>	
(Invited) Energy Materials Development at Ceres: From Nanometers to Megawatts	3229
<i>Robert Leah, Per Hjalmarsson, Mike Lankin, Jeffrey De Vero, Uyime Donatus, Raghav Srivastara, Santanu Ray, Fiona-Mairead McKenna, Chandra Macauley, Subhasish Mukerjee, Caroline Hargrove, Mark Selby</i>	
(Invited) SOEC Upscale; Material Challenges	3230
<i>Peter Vang Hendriksen, Peyman Khajavi, Henrik Lund Frandsen, Shu Wang, Morten Phan Klitkou, Bhaskar Reddy Sudireddy</i>	
(Invited) Crosscutting Materials Innovation for Transformational Chemical and Electrochemical Energy Conversion Technologies—Solid Oxide Cells	3232
<i>Jean-Claude Njodzefon, Ulrich Sauter, Andre Weber</i>	

J01-LUMINESCENCE AND DISPLAY MATERIALS: FUNDAMENTALS AND APPLICATIONS

J01 - Digital Only Presentations

(Digital Presentation) One-Step Hydrothermal Preparation of Chiral Carbon Quantum Dots and Its Chiral Recognition of Glutamine Enantiomers	3233
<i>Xiashi Zhu, Xiang Li</i>	

J01 - Phosphors for Lighting 1

Luminescence and Excited State Dynamics of $Tb_{1-x}Eu_xAl_3(BO_3)_4$ ($x=0.01-0.20$)	3234
<i>Leonardo Ceccon, Silvia Ruggieri, Fabio Piccinelli, Marco Bettinelli</i>	

J01 - Phosphors for Lighting 2

Systematic First-Principles Calculations of Ce^{3+} -Dopant in Garnet-Type Oxide Phosphors	3235
<i>Nora Izzati Binti Binti Mohd Razip, Mega Novita, Kazuyoshi Ogasawara</i>	
UVC Emission Devices Based on Alternating Current Inorganic Electroluminescence Using $Y_2SiO_5:Pr^{3+}$ Phosphors	3236
<i>Taewook Kang, Sun Woog Kim, Jongsu Kim</i>	

J01 - Quantum Dots and Molecules

Quantum Yield of the Emission of Carbon Quantum Dots: Tricks Due to Solvent Polarity and Excitation Dynamics	3237
<i>Oleg Dimitriev, Dmitriy V. Kysil, Andriy V. Vasin, Alexander N. Zaderko, Roman B. Kozakevych, Alexey N. Nazarov, Madalina Furis</i>	
Near-Infrared Emission of Ag ⁺ Doped CuInSe ₂ Quantum Dots	3239
<i>Chia-Ju Lin, Yuan Chen, Hsueh-Shih Chen</i>	
Growth of Medium-Sized InP Quantum Dots with High Photoluminescence Efficiency and Enhanced Stability.....	3240
<i>Ho Yi-Jui, Chen Cheng-Yang, Hsueh-Shih Chen</i>	

J01 - Optical Thermometry

SrAl ₁₂ O ₁₉ :Eu,Cr As Luminescence Thermometers.....	3242
<i>Justyna Zeler, Eugeniusz Zych, Mateusz Kwiatkowski</i>	
Towards High-Quality Broad-Range Luminescence Thermometry - the Case of Pr ³⁺ -Activated Garnets	3243
<i>Eugeniusz Zych, Dagmara Kulesza, Paulina Bolek, Joanna Jedon, Joanna Trojan-Piegza, Justyna Zeler</i>	

J01 - Poster Session

Crystal Structure-Photoluminescence Correlations in Ce ³⁺ -Doped Ca ₂ ZnSi ₂ O ₇ phosphors	3244
<i>Kyeongsoon Park, S. Y. Gwon, S. H. Kim</i>	
Development of NaY ₉ Si ₆ O ₂₆ :Yb ³⁺ Phosphor with High Thermal Stability and Its Crystals Structure and Luminescent Properties for NIR Anti-Counterfeiting.....	3245
<i>Sun Woog Kim, Taewook Kang, Young Ji Park</i>	
Optimization of First-Principles Calculation Conditions for Ce ³⁺ in Perovskite-Type Oxides	3246
<i>Hinaka Hashimoto, Kazuyoshi Ogasawara</i>	
Theoretical Analysis of Anomalous Emission of Eu ²⁺ in Crystals By First-Principles Calculation.....	3247
<i>Tatsunori Okamura, Kazuyoshi Ogasawara</i>	
Prediction of Emission Level Energy of Mn ⁴⁺ in Oxides Based on the Local Structure Using First-Principles Calculations and Machine Learning	3248
<i>Shuma Tanaka, Kazuyoshi Ogasawara</i>	
First-Principles Calculations of the Optical Spectra of Uranium Ions in Oxide Crystals.....	3249
<i>Toshiki Masago, Kazuyoshi Ogasawara</i>	
Prediction of 4f-5d Transition Energy of Ce ³⁺ in Oxides By First-Principles Calculations and Machine Learning.....	3250
<i>Mamoru Honda, Kazuyoshi Ogasawara</i>	
Optimization of the First-Principles Calculation Conditions of d ³ Ions in SrTiO ₃	3251
<i>Sayaka Okada, Shuma Tanaka, Kazuyoshi Ogasawara</i>	
Probing the Recombination Process at the Intermixed Interface of a Solution-Processed Organic Light Emitting Diode By Impedance Spectroscopy	3252
<i>Ji Soo Kim, Youn Sang Kim, Soon-Hyung Kwon</i>	

K01-ADVANCES IN ORGANIC AND BIOLOGICAL ELECTROCHEMISTRY

K01 - Organic Electrochemistry 1

(Keynote) Metallaelectro-Catalyzed Bond Activations.....	3254
<i>Lutz Ackermann</i>	

(Invited) Electroreductive C-S and C-O Bond Cleavage in Thioethers and Alcohols	3256
<i>Helena Lundberg</i>	
Anodic Chlorination of Poly(3-(2-ethylhexyl)Thiophene) Films Facilitated by Constructing Ordered Structures.....	3257
<i>Tomoyuki Kurioka, Ikuyoshi Tomita, Shinsuke Inagi</i>	
Single Benzene Yellow Fluorophore: Anodic Synthesis of Tetrahydrobenzodifuran	3258
<i>Yohei Okada, Zimo Wang, Genki Horiguchi, Hihidero Kamiya</i>	
(Invited) Electrocatalytic Radical-Polar Crossover Hydrofunctionalization of Alkenes	3259
<i>Hyunwoo Kim</i>	
Enzymatic Bioelectrocatalysis for Organic Electrosynthesis	3260
<i>Shelley D. Minteer</i>	
(Invited) Delivering Electrons and Protons to the Substrate in Molecularly-Based Reductive Electrocatalysis.....	3261
<i>Gabriel Durin, Mi-Young Lee, Christian Kahl, Thomas Weyhermüller, Chenhui Han, Johannes Zenner, Jacob Johny, Alexis Bordet, Nicolas Kaeffer, Walter Leitner</i>	
A Molecular Copper Catalyst for Electrochemical Conversion of CO ₂ to C ₂₊ Products	3262
<i>Na Liu, Hong Qing Liang, Sebastian Wohlrab, Robert Francke</i>	
Oxidative C-F Bonds Activation Using Electrochemical Techniques	3263
<i>Ikumi Akiba, Naoki Shida, Mahito Atobe</i>	

K01 - Bioelectrochemistry 1

(Keynote) Electrochemical and Mass Spectrometry Measurements of Nanometer Vesicles	3265
<i>Andrew G Ewing</i>	
Biogas-Upgrading of Anaerobic Digestion Effluent CO ₂ into CH ₄ Using a Microbial Electrosynthesis Cell	3266
<i>Minsoo Kim, Shuwei Li, Eunseo Kim, Young Eun Song, Dong-Yeol Lee, Jeom-Soo Kim, Jung Rae Kim</i>	
Genetic Code Expansion in the Service of Bioelectrochemistry	3267
<i>Lital Alfonta, Itay Algov, Anastasya Boyarski, Lu Zhou, Yael Cohen, Itay Moshel, Michael Shaferman, Michael Meijler</i>	
Investigating Enzyme-Based Electrode Processes Using Electrochemical Impedance Spectroscopy and Distribution of Relaxation Time Analysis.....	3268
<i>Federica Torrigino, Katharina Herkendell</i>	
Low-Cost Platforms for Point-of-Use Sensors	3270
<i>Ariel L Furst</i>	

K01 - Poster Session

Catalytic Activity of Atomic Metals Clusters Decorated Polyaniline Electrodes in Electrochemical Oxidation of 1-Propanol	3271
<i>Shohei Yoshida, Keisuke Okamoto, Tomoyuki Kurioka, Chun-Yi Chen, Parthojit Chakraborty, Takamichi Nakamoto, Masato Sone, Tso-Fu Mark Chang</i>	
Electron Uptake from Solid Electrodes Regulates the More Efficient Conversion of CO ₂ to Polyhydroxybutyrate with Rhodospirillum rubrum	3273
<i>Shuwei Li, Minsoo Kim, Da Seul Kong, Eunseo Kim, Eun Joo Park, Won Gyeong Park, Jung Rae Kim</i>	
Electrochemistry of Chelation-Stabilized Hypervalent Bromine(III) Compounds	3274
<i>Aija Gudkova, Igors Sokolovs, Nayereh Mohebbati, Philipp Woite, Michael Roemelt, Edgars Suna, Robert Francke</i>	
A Low-Cost, Safe and Anion-Flexible Method for the Electrosynthesis of Diaryl Iodonium Salts	3276
<i>Anton Scherkus, Bernd H. Müller, Robert Francke</i>	

Real-Time Mass Spectrometry for Simultaneous Monitoring of Electrode Dissolution and Reaction Product Distribution during Organic Electrosynthesis	3278
<i>Pavlo Nikolaienko, Johanna Ranninger, Balázs B. Berkes, Karl J. J. Mayrhofer</i>	
Tools to Simulate Resonance Raman Spectra for in-Situ Studies of Electron Transport Mediators and Bioelectrocatalysts.....	3279
<i>Umut Ozuguzel, Adelia Aquino, Shelley Minteer, Carol Korzeniewski</i>	

K01 - Organic Electrochemistry 2

Synthetic Chemistry and Microelectrode Arrays: Building Stable Platforms for Point of Care Diagnostics	3280
<i>Kevin D Moeller, Yu-Chia Chang, Albert Huang</i>	
(Invited) Electrocatalytic Syntheses with Interfacial Control.....	3281
<i>Anna Wuttig</i>	
Electroreduction of CO ₂ into CO Using Amine-Modified Diamond Electrode.....	3282
<i>Takashi Yamamoto, Tatsuhiko Mikami, Mai Tomisaki, Yasuaki Einaga</i>	
(Invited) Electrochemical Synthesis of Chelation-Stabilized Organo- Λ^3 -Bromanes	3284
<i>Igors Sokolovs, Edgars Suna, Robert Francke</i>	
TEMPO-Modified Polymethacrylates As Mediators in Electrosynthesis - Influence of the Molecular Weight on Redox Properties and Electrocatalytic Activity	3285
<i>Adrian Prudlik, Nayereh Mohebbati, Robert Francke</i>	
Construction of Pyridine Backbone Via Electrochemical Skeletal Editing of Pyrrole-Derivatives	3287
<i>Tatsuya Morimoto, Kazuhiro Okamoto, Naoki Shida, Mahito Atobe</i>	
(Invited) Exploring Electrochemical Deep Reduction for Accessing New Chemical Space.....	3289
<i>Alastair J. J. Lennox</i>	
Peroxodicarbonate as Versatile Green Oxidizer	3290
<i>Siegfried R Waldvogel</i>	

VOLUME 7

(Invited) Electrochemical Multi-Electron Oxidation of Thiophene-Derivatives Promoted by Coordination of Electrolytes.....	3291
<i>Naoki Shida</i>	

K01 - Bioelectrochemistry 2

(Keynote) Enabling Continuous Molecular Monitoring in vivo via Implantable and Wearable Aptamer-Based Sensors.....	3292
<i>Netz Arroyo</i>	
(Invited) Increasing the Reproducibility and Stability of Temperature-Responsive Elastin-like Polymer Surfaces.....	3293
<i>Jeffrey M Halpern, Stanley Feeney, Grace Higgins, Myranda Sims, Zahraa Albeshir, Galen Arnold, Jeffery Waters, Eva Rose M Balog</i>	
Nitric Oxide As a Signaling Molecule for Biofilm Formation and Dispersal in Mediated Electron Transfer Microbial Electrochemical Systems.....	3294
<i>Kevin Beaver, Ashwini Dantanarayana, Ana Bonizol Zani, Danielle L. Lehto, Shelley D. Minteer</i>	
Utilising Fourier Transform Voltammetry to Advance the Enzyme Electrochemistry Toolkit.....	3295
<i>Henry Lloyd-Laney, Nicholas Yates, James Stapleton, Alice Hewson, Natalia Baranska, Alan Bond, David Gavaghan, Alison Parkin</i>	
Direct Electrochemical Regeneration of NADH and Its Biomimetics	3296
<i>David P. Hickey, Chase Bruggeman</i>	

K01 - Organic Electrochemistry 3

(Keynote) Reversible CO ₂ Reduction Electrocatalysis in Solar-Powered Chemistry.....	3297
<i>Erwin Reisner</i>	
Electrochemistry and Organic Synthesis: New Adventures with Olefin Coupling Reactions and Electrode Surfaces.....	3298
<i>Kevin D Moeller, Enqi Feng, Ruby Krueger, Zachary Medcalf, Polina Barzova, Sarah Wagner</i>	
Anodic Synthesis of Peptides in Biphasic Electrolytic Solutions.....	3299
<i>Kazuhiro Chiba, Shingo Shinjo, Yoshikazu Kitano, Yohei Okada</i>	
Catalytic Electricity Promoted Electrochemical Synthesis.....	3300
<i>Eisuke Sato, Mayu Fujii, Haruka Yoshida, Seiji Suga</i>	
Facile Synthesis of Nitrogen Cation-Doped Polycyclic Aromatic Hydrocarbons by Anodic Intramolecular Pyridination.....	3301
<i>Shinsuke Inagi, Yushi Ohno, Shogo Ando, Daisuke Furusho, Ikuyoshi Tomita</i>	
Formation of Arylsulfonates Using Electroreductive Cleavage of Cone-Calix[4]Arene Nosylates – EPR and Theoretical Study.....	3303
<i>Alan Liška, Jiri Klíma, Jiri Ludvík</i>	
Selective Newman-Kwart Rearrangement Under Mild Conditions Enabled by Heterogeneous Photocatalysis and Electrochemical Catalysis.....	3304
<i>Robert Francke, Patrick Enders, Tobias Taeufer, Katrina Prane, Adrian Prudlik</i>	
Supramolecular Interactions between Reduced Vitamin K ₁ and Dissolved CO ₂ and H ₂ O in Aprotic Solvents.....	3306
<i>Richard David Webster</i>	

K01 - Bioelectrochemistry 3

(Keynote) Are Organic and Biological Electrochemistry That Different?.....	3308
<i>Uwe Schröder</i>	
Combining Electrochemistry and Protein Engineering to Elucidate Outer-Sphere Effects in Hydrogenase Catalysis.....	3309
<i>Christophe Leger</i>	
Markov State Models for Electrostatic Channeling in Bioelectrocatalysis.....	3311
<i>Christina Wark, Yan Xie, Scott Calabrese Barton</i>	
Using Enzymes to Understand and Control the Local Environment of Catalysis.....	3312
<i>Samuel J. Cobb, Azim M Dharani, Ana Rita Oliveira, Inês A. C. Pereira, Erwin Reisner</i>	
Single-Entity Bioelectrochemistry.....	3314
<i>Ziwen Zhao, Nikolaos Kostopoulos, Sagar Ganguli, Alina Sekretareva</i>	
Fast Fourier-Transform Impedance Spectroscopy Applied to Electrochemical Sensors.....	3315
<i>Lior Sepunaru, Brian Roehrich, Kaylyn Leung, Julian Gerson, Tod Kippin, Kevin Plaxco</i>	

L01-PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY, ELECTROCATALYSIS, AND PHOTOELECTROCHEMISTRY GENERAL SESSION

L01 - Digital Only Presentations

Quantifying Volume Change in Porous Electrodes Via the Multi-Species, Multi-Reaction Model.....	3316
<i>Taylor R. Garrick, Miguel Fernandez, Mark Verbrugge, Christine Labaza, Rafid Mollah, Brian Koch, Matthew Jones, Jing Gao, Xiujie Gao, Nicholas Irish</i>	
(Digital Presentation) Development of a Low Cost Pencil Lead Electrode for Simultaneous Detection of Amoxicillin and Uric Acid.....	3318
<i>Dulal Chandra Kabiraz, Rakibul Hasan</i>	

L01 - Electrode Processes 1

- Is Ethanol Essential for the Lithium-Mediated Nitrogen Reduction Reaction? 3319
Jon Bjarke Valbaek Mygind, Jakob Bruun Pedersen, Peter Vesborg, Katja Li, Niklas Henrik Deissler, Mattia Saccoccio, Shaofeng Li, Jakob Kibsgaard, Xianbiao Fu, Suzanne Zamany Andersen, Ib Chorkendorff, Rokas Sazinas
- Effect of Electrode Potential on the Surface Chemical Composition of Au-Pd Nanoparticles..... 3320
Daniel Guay, Sagar Prabhudev, Sebastian Kohsakowski, Cybelle Palma De Olivera Soares, Jan Soder, Sven Reichenberger, Jacob Johny, Stephan Barcikowski, Ana Tavares
- Proton-Coupled Electron Transfer Involving Localized Electronic Defects on Solid Surfaces 3322
Robert Warburton
- Self-Terminated Surface Reconstruction of Lanthanum Nickelates Promotes Alkaline Oxygen Evolution 3323
Yi-Hsuan Wu, Marcel Janák, Paula M. Abdala, Denis A. Kuznetsov, Christoph R. Müller
- Understanding the Effects of Transition Metal Impurities on Nickel (oxy) Hydroxide Electrocatalysts in Alkaline Media 3324
Raul A. Marquez-Montes, Kenta Kawashima, Yoon Jun Son, Emma Kalokowski, Michael Espinosa, Lettie A. Smith, Chikaodili E. Chukwuneke, Nathan Miller, Charles Buddie Mullins
- A High-Entropy Oxide as High-Activity Electrocatalyst for Water Oxidation..... 3326
Shu Ni, Mohana V Kante, Moritz L Weber, Iris C. G Van Den Bosch, Emma Minne, Lisa Heymann, Lorenz J. Falling, Nicolas Gauquelin, Martina Tsvetanova, Daniel M. Cunha, Gertjan Koster, Felix Gunkel, Slavomir Nemšák, Horst Hahn, Leonardo Velasco Estrada, Christoph Baeumer
- Surface Dual-Modification of Nano-Cu₂O for Controlling CO₂ Electrochemical Reduction to Ethylene and Syngas..... 3327
Haiqiang Luo, Bo Li, Jian-Gong Ma, Peng Cheng
- Investigating the Electrochemical Absorption of Hydrogen into Palladium Nanoparticles 3329
Lilian Moumaneix, Akseli Rautakorpi, Tanja Kallio
- Nitrogen Electrochemical Reduction into Ammonia: The Li-Mediated Pathway with Lights and Shadows 3330
Anna Mangini, Lucia Fagiolari, Julia Amici, Carlotta Francia, Silvia Bodoardo, Federico Bella
- Decoupled Electrolysis Based on Pseudocapacitive Auxiliary Electrodes: Mechanism and Enhancement Strategies..... 3332
Andris Sutka, Martins Vanags, Mairis Iesalnieks

L01 - Modeling and Energy Storage/Conversion

- Reproducibility and Post-Publication Criticism: A Crisis in Electrocatalysis? 3333
Jan Niklas Hausmann, Prashanth W. Menezes
- Spectroelectrochemical and Computational Study of Quinoline Based Molecules - Potential Anti-Alzheimer's Drugs..... 3335
Magdalena Z. Wiloch, Dariusz G. Piekarski, Natalia Baran, Adam Kubas, Martin Jönsson-Niedziółka
- Monitoring the State of Health (SOH) of Green Batteries (GreenBat)..... 3336
Eugenio Sandrucci, Federico Marini, Sergio Brutti
- Insights into the Structure Sensitivity of Fe-Based Materials for the Oxygen Evolution Reaction..... 3338
Ricardo Alonso Martinez Hincapie, Viktor Colic
- Multiphysics Electrochemical Impedance Simulations of Complex Multiphase Electrodes..... 3339
Danqi Qu, Hui-Chia Yu
- The Impact of Concentration and Electric-Field Dependent Susceptibilities on Electrolyte Models..... 3340
Manuel Landstorfer

DFT Simulations on the Nitrogen Reduction Reaction Activity of Transition Metal Nitride and Oxynitride.....	3341
<i>Ji Liu, Jean-Pierre Glauber, Julian Lorenz, Sebastian Bragulla, Björn Müller, Corinna Harms, Michael Wark, Anjana Devi, Michael Nolan</i>	

L01 - Electrode Processes 2

Decoupling Reaction, Diffusion and Ohmic Processes in Fast-Charging Electrodes: A New Model for CV Data Analysis.....	3342
<i>Johan E. Ten Elshof, Rui Xia, Jie Zheng, Mark Huijben</i>	
Electrode Reactions on Conducting Polymers	3343
<i>Mikhail Yu. Vagin</i>	
Effect of Chlorine on Copper Electrodeposition	3344
<i>Prajwal Ayadathil, Abhijit Chatterjee</i>	
Heterogeneous Capture and Release of Energy Metals Using Carborane-Tethered Electrodes	3345
<i>Gabriel Menard, Maxwell Mattejat, Hila Benhaim</i>	
Redox Behavior of Arsenic (III) and Copper (II) Mixtures on Ultraflat Au (111) Thin Film Electrodes	3347
<i>Tybur Casuse-Driovinto, Angelica Benavidez, Noah Jemison, Jose M. Cerrato, Fernando H. Garzon</i>	
Characterization of Fuel Cell Catalyst Layers in a Gas Diffusion Electrode Setup (GDE).....	3348
<i>Pascal Lauf, Konrad Ehelebe, Vicent Lloret Segura, Karl J. J. Mayrhofer, Serhiy Cherevko</i>	
Surface Curvature Effect on Dual-Atom Site Electrocatalysis	3350
<i>Vladislav Ivanistsev, Ritums Cepitis, Nadezda Kongi, Jan Rossmeisl</i>	
Analysis of Reaction Rate and Product Selectivity of Ethanol Electrolytic Oxidation Reaction in the Flow Reactor	3352
<i>Kai Hung Cheng, Keisuke Namura, Motoaki Kawase</i>	
Electrochemical Stimulation of Monopolar Electrodes.....	3354
<i>Daniel Scherson, Arvind Singh Heer, Harlan Mantelli, Nicholas Georgescu, Qi Han</i>	
Elucidating Oxygen Reduction Mechanisms on Organic Mixed Ionic-Electronic Conducting Polymers.....	3356
<i>Ana De La Fuente Duran, Allen Yu-Lun Liang, Iliaria Denti, Emily E Penn, Adam Marks, William C. Chueh, Alberto Salleo, Alexander Giovannitti, J. Tyler Mefford</i>	

L01 - Water Remediation

Multi-Metal Oxide Catalyst for Electrochemical Oxidation of Organic Pollutants.....	3357
<i>Keyvan Mirehbar, Jaime Sanchez Sanchez, Julio J. Lado, Jesus Palma</i>	
High-Efficiency Cycling Piezo-Degradation of Organic Pollutants and the Piezocatalysis-Adsorption Duality of MoS ₂ Nanoflowers	3358
<i>Hsun-Yen Lin</i>	
Sensor Absorbents for Heavy Metal Ions By Low-Cost Functionalization of Porous Carbons	3359
<i>Mats Sandberg, Ioannis Petsagkourakis, Valerio Beni</i>	
Ammonia Recovery from Manure Wastewater and Simultaneous Electrosynthesis and Wastewater Treatment Using Ion Selective Redox Material.....	3360
<i>Song Jin</i>	
PFAS-Free Carbon Electrodes for Efficient Micropollutants Removal through Heterogeneous Electro-Fenton: From Material Synthesis to Module Design	3361
<i>Mojtaba Mohseni, Waralee Dilokekunakul, Wibke Zängler, Kristof Demeestere, Gijs Du Laing, Süleyman Yüce, Robert Keller, Matthias Wessling</i>	
Electrochemical Phosphorous Recovery from Wastewater: Modeling & Scale-up Considerations	3363
<i>Kody D Wolfe, Ardavan Zanganeh, Richard N Arthur, Jason Trembly, Damilola Daramola</i>	

Effect of the Magnetostriction Induced on the Crystalline Structure of Nanoparticulate TiO ₂ Films Supported on Stainless Steel Mesh Electrodes and Their Relationship with the Photocatalytic Decoloration of Aqueous Orange G Solutions	3364
<i>Jesus Israel Valdez Nava, Erika Bustos, Laura Lupita Martinez Rodriguez, Fabricio Espejel-Ayala, Selene Sepúlveda-Guzmán, Juan Manriquez</i>	
Electrochemical Oxidation of Synthetic Wastewater Sludge on Ni Foam for Nutrient Recovery.....	3365
<i>Luisa Barrera, Elif Selin Sahin, Gerardine G Botte, Marta Hatzell</i>	

L01 - Poster Session

Considerations of Reference Electrodes and Liquid Junction Potentials for Accurate Electro catalysis Studies	3366
<i>Kenta Kawashima, Raul A. Marquez-Montes, Yoon Jun Son, Antony Elvin Fernando Milton, Thuy Vy Le, Clarissa Guo, Lettie A. Smith, Chikaodili E. Chukwunke, Rinish Reddy Vaidyula, Charles Buddie Mullins</i>	
Gas-Phase CuPd Bimetallic Cluster-Modified Electrodes as Model Electrocatalysts for CO ₂ Conversion.....	3367
<i>Dimitra Papamichail, Deema Balalta, Imran Abbas, Jason Song, Thomas Altantzis, Sara Bals, Deepak Pant, Ewald Janssens, Didier Grandjean, Peter Lievens</i>	
Highly Transparent and Stable N-Type Protective Layers for Spray Pyrolyzed CuO Thin Films for Photoelectrochemical Energy Conversion- a Comparative Study	3368
<i>Devanshi Zala, Vardhan Shah, Devanshi Zala</i>	
Ag Nps@PEDOT Nanocomposite Electrosynthesis at a Polarised Liquid Liquid Interface.....	3369
<i>William Cheuquepan, Andrés Felipe Quintero Jaime, Angelika Holzinger, Micheal D. Scanlon</i>	
Enhancing Material Analysis with Statistical and Computer Vision Techniques: A Comprehensive Approach for Evaluating Electrode Quality	3370
<i>Vineetha Vinayakumar, Adarsh Jain, Doris Segets</i>	
Temperature-Dependent Investigation of ORR Kinetics on Non-Precious Metal-Free Catalysts in Alkaline Media - Doping Effect on Electrocatalysis	3371
<i>Rubul Das, Manoj Neergat</i>	
Development of a Fast in Situ Scanning Tunneling Microscope for Studies of Electrocatalyst Surfaces	3372
<i>Fabian Schroefel, Matthias Greve, Karsten Tarhouni, Olaf M. Magnussen</i>	
Surface Diffusion on Ag(100) and Cu(100) Electrodes in the Presence of Low Coverage Halides.....	3373
<i>Chaolong Yang, Reihaneh Amirbeigi Arab, Olaf M. Magnussen</i>	
Atomic Force Microscopy Characterization of Electrochemically Polished Nickel-Titanium Memory Alloy	3375
<i>Tarek M Abdel-Fattah</i>	
Metal Ions Removal from Aqueous Media Using an Electrokinetic Cell.....	3377
<i>Tarek M Abdel-Fattah</i>	
Developing Fluorine-Free Coatings to Repel Low Surface Tension Liquids in Gas Diffusion Electrodes for CO ₂ Electrolyzers.....	3379
<i>Mert Can Erer, Antoni Forner-Cuenca</i>	
Engineering Gas Diffusion Electrode Microstructures for the Electrochemical Reduction of CO ₂	3381
<i>Senan F. Amireh, Remy Richard Jacquemond, Antoni Forner-Cuenca</i>	

L01 - Electrocatalysts and Electrocatalysis 1

Promoting Pd-Catalyzed Conversion of CO to Formate	3382
<i>Lei Wang</i>	

Electro-Catalytic Nitrogen Reduction by Metal Oxynitride Thin Films: Effect of Metal Oxophilicity, and Role of Lattice Nitrogen	3383
<i>Francis D'Souza, A. Ganesan, Precious Chukwunye, Kabirat Balogun, Mojgan Gharee, Thomas R. Cundari, Jeffry Kelber</i>	
Catalyst Stability in Electrolytic Production of Hydrogen Peroxide: Importance, Challenges, and Standardized Degradation Protocols	3384
<i>Guilherme Vilalba Fortunato, Daniele Costantino Jung, Jisik Choi, Marc Ledendecker, Marcos R. V. Lanza</i>	
What Controls Activity Trends of Electrocatalytic Water Splitting? - Activation Energy Vs. Frequency Factor.....	3386
<i>Aleksandar R. Zeradjanin</i>	
In Situ STM Investigations of Cu(100) and Bimetallic Ag/Cu(100) Model Catalysts for CO ₂ Electroreduction in Bicarbonate Solution.....	3388
<i>Reihaneh Amirbeigi Arab, Olaf M Magnussen</i>	
Insight into the Formation and Catalytic Mechanism of “CO Pool” during Electrocatalytic Conversion of CO ₂	3390
<i>Anbang He, Jun Du</i>	
Electrocatalytic Activities of High-Entropy Oxides for the Oxygen Evolution Reaction	3392
<i>Yun-Hyuk Choi</i>	
Electrochemical Analysis on Transition Metal Nitride Catalysts for Nitrogen Reduction Reaction	3393
<i>Helga Dögg Flosadóttir, Ása Hanifpour, Egill Skulason</i>	

L01 - Novel Methods/Materials

Single-Impact Electrochemistry for Bacterial Sensing.....	3394
<i>Estelle Lebegue, Hassiba Smida, Arthur Langlard, Dorine Ameline, Christine Thobie-Gautier, Mohammed Boujtita</i>	
Two-Dimensional Carbon Nitride as a Support of Single Metal Atom for Carbon Dioxide Reduction Reaction	3396
<i>Sergio Posada Perez, Anna Vidal López, Miquel Solà, Albert Poater</i>	
Synthesis of Nb-MXenes for Electrocatalysis Applications.....	3398
<i>Meriene Gandara, Marta Oliveira Martins, Biljana Šljukic, Emerson Sarmiento Gonçalves</i>	
Re(bipyridine)-Polypyrrole Monolayer Deposition on Nanoporous Carbon Scaffolds for Electrochemical CO ₂ Reduction.....	3400
<i>Fatemeh Sadat Mousavizadeh Mojarad, Manila Ov, Cody Carr, Jialang Li, Warren Edward Piers, Viola Ingrid Birss</i>	
Electrical Conductivity Measurements of the Binary NaCl-CaCl ₂ , the Ternary NaCl-CaCl ₂ -BaCl ₂ and the Quaternary NaCl-CaCl ₂ -BaCl ₂ -ZnCl ₂ Molten Salts.....	3402
<i>Wojciech Gebarowski, Kent-Robert Molvik, Camilla Sommerseth, Ole Kjos</i>	
Highly Exposed MoS ₂ Nanosheets Grown Under pH Modulated Non-Equilibrium Hydrothermal Route and Its Electrocatalytic Hydrogen Evolution Performance	3404
<i>Naznin Shaikh, Indrajit Mukhopadhyay, Abhijit Ray</i>	
Photo-Chemical Sucralose Degradation in an Aqueous Medium Using a Photo-Fenton System Equipped with Stainless Steel Mesh Cathodes Modified By Nanostructured TiO ₂ - and C TiO ₂ -Based Films for Continuous Electro-Generation of H ₂ O ₂	3405
<i>Laura Lupita Lupita Martinez Rodriguez, Heidi Belen Resendiz Flores, Jesus Israel Valdez Nava, Erika Bustos, Juan Manriquez</i>	
Choice of Surfactants and Its Impact on the Capacitive Behaviour of PEDOT-Carbon Nanotubes Composites Synthesised at the Liquid Liquid Interface	3407
<i>Nicolas Rojas-Sanabria, Andrés Felipe Quintero Jaime, Angelika Holzinger, Micheal D. Scanlon</i>	
Charge Carrier Trapping in the Surface Region of BiVO ₄ Photoanodes.....	3408
<i>Sarp Kaya</i>	

Temperature Influence on the Staging Process in Carbon Materials during Anionic Intercalation	3409
<i>Mikhail V. Gorbunov, Daria Mikhailova</i>	
An Sub-Micron Double-Layer Capacitance of a Microwell Array for Biomolecular Sensing	3411
<i>Qiuzhe Xie, Chih-Ting Lin</i>	
Electrolyte Engineering for Improved Selectivity of Electrochemical CO ₂ Reduction	3413
<i>Ji Mun Yoo, Katharina Trapp, Maria R. Lukatskaya</i>	
Use of Surface Features with Controlled Kinetics to Verify Fits of Scanning Electrochemical Microscopy Images	3415
<i>Nathaniel Leslie, Janine Mauzeroll</i>	

L01 - Electrocatalysts and Electrocatalysis 2

Nanostructured Fe-Doped Nickel Sulfide on Ni Foam As Electrocatalyst for Oxygen Evolution Reaction	3416
<i>Jiahui Zhu, Paolo. P. Pescarmona</i>	
How to Perform Reliable IR Compensation in Electrocatalysis?	3418
<i>Weiran Zheng</i>	
Nano-Impact Single-Entity Electrochemistry Enables Plasmon-Enhanced Electrocatalysis	3420
<i>Sagar Ganguli, Ziwen Zhao, Onur Parlak, Yocefu Hattori, Jacinto Sa, Alina Sekretareva</i>	
Hydrogen Reduction Reduction (HRR)	3422
<i>Hai-Xu Wang, Yogesh Surendranath</i>	
Copper-Based Catalyst Yields Unusual Ammonia Yield in Nitrate Electroreduction	3424
<i>Abhishek Kumar, Abhishek Garg</i>	
Tracking Oxygen Evolution Activities of Perovskite Oxide Catalysts By 3D Electrochemical Impedance Spectroscopy	3425
<i>Yuta Inoue, Yuto Miyahara, Kohei Miyazaki, Changhee Lee, Takeshi Abe</i>	
Activated Vacuum Residue for Efficient Oxygen Reduction Reaction in Alkaline Media	3427
<i>Almaz S. Jalilov</i>	

L01 - Voltammetry and Microscopy

Graphene as a Platform in Surface-Enhanced Infrared Absorption Spectroscopy (SEIRAS) for Amino-TEMPO Electro-Grafting	3428
<i>Jeanne N'Diaye, Abdur-Rahman Siddiqui, Kristin Martin, Joaquin Rodriguez Lopez</i>	
Probing Bubble Properties during Hydrogen Evolution Reaction on Platinum Micropatterns Using Scanning Electrochemical Microscopy	3430
<i>Xiaohan Shao, Qianhong Zhu, Ting Wang, Mourin Jarin, Xing Xie, William Abraham Tarpeh</i>	
Understanding Performance Limitations in Water Splitting Photoelectrodes at the Nanoscale	3431
<i>Lukas Wolz, Harishankar Balakrishnan, Guanda Zhou, Ian D. Sharp, Achim Hartschuh, Johanna Eichhorn</i>	
Morphology of RuO ₂ (110) Films during Electrochemistry	3432
<i>Austin Jerad Reese, Neha Wadehra, Jin Suntivich, Darrell Schlom</i>	
Surface Modification of Li Metal Anodes Using Ag Nanoparticles and PVDF: An EC-AFM Investigation	3433
<i>Weerawat To-A-Ran, Young-Jun Kim</i>	
Fitting Kinetics of Arbitrarily-Shaped Finite Reactive Features Using Their Scanning Electrochemical Microscopy Images	3434
<i>Nathaniel Leslie, Janine Mauzeroll</i>	
Thermodynamic Analysis of Coal Derived Graphite for Battery Anodes Using the Multi-Species, Multi-Reaction Model	3435
<i>Abigail Paul, Regan Magee, Warren Wilczewski, Kody D Wolfe, Nathan Wichert, Rafid Mollah, Matthew Jones, Jason Trembly, John A. Staser, Taylor R. Garrick</i>	

Reliable Information about Electrochemical Potentials from Cyclic Voltammograms That Look “Messy”	3436
<i>Valentine I. Vullev, Jaime O. O`mari</i>	
Monitoring Copper Ion Leaching from a Metalloporphyrin-Based Cathode for Rechargeable Magnesium Batteries	3437
<i>Tom Philipp, Ebrahim Abouzari-Lotf, Maximilian Fichtner, Janine Mauzeroll, Steen Brian Schougaard, Christine Kranz</i>	

L01 - Electrolysis and Electrochemical Processes

Achieving Tunable Selectivity and Activity of CO ₂ Electroreduction to CO Via Bimetallic Silver-Copper Electronic Engineering	3439
<i>Meng Li, Yue Hu, Gang Dong, Tianci Wu, Dongsheng Geng</i>	
Electrochemical Method for Detection and Quantification of Lead Particulate in Tap Water.....	3441
<i>Noe T Alvarez, Artur Huseinov, Gabrielle R. Dangel</i>	
Direct Electroreduction of Carbonate to Formate.....	3442
<i>Hai-Bin Ma, Enric Ibáñez Alé, Nuria López, Boon Siang Jason Yeo</i>	
Gas-Phase Electrochemical Conversion of Methane on Boron-Doped Diamond Gas Diffusion Anodes.....	3443
<i>Adam Vass, Hanadi Ghanem, Stefan M. Rosiwal, Tanja Franken, Regina Palkovits, Guido Mul, Michail N. Tsampas, Georgios Katsoukis, Marco Altomare</i>	
Electrochemical Valorization of Glycerol: Catalyst Development and Product Analysis	3445
<i>Shayan Angizi, Ecem Yelekli Kirici, Drew Higgins Higgins</i>	
Carbon and Energy Efficient Ethanol Electrosynthesis By Acidic CO ₂ Reduction.....	3446
<i>Ali Shayesteh, Feng Li, Tartela Alkayyali, Erfan Shirzadi, Fatemeh Arabyarmohammadi, Roham Dorakhan, Colin P. O'Brien, Christine M. Gabardo, Adnan Ozden, Mohammad Zargartalebi, Lizhou Fan, Panagiotis Papangelakis, Yong Zhao, Edward H. Sargent, David Sinton</i>	
Activity and Selectivity Modulation of CO ₂ Electroreductions at Au-Water Interfaces Via Tuning Localcation Concentrations	3447
<i>Xueping Qin, Tejs Vegge, Heine Anton Hansen</i>	

L03-ADVANCED TECHNIQUES FOR IN SITU ELECTROCHEMICAL SYSTEMS 6

L03 - Digital Only Presentations in Advanced Techniques for In Situ Electrochemical Systems 6

(Digital Presentation) Electrochemical Hydrogen Production and Charge Storage Mechanisms on Mxenes Via in-Situ/Operando Raman Spectroelectrochemistry.....	3449
<i>Denis Johnson, Ray Yoo, Abdoulaye Djire</i>	
(Digital Presentation) In-Situ Spectroelectrochemistry to Unveil the Mechanism of Green Ammonia Production on the Ti ₂ N Nitride Mxene	3450
<i>Denis Johnson, Ray Yoo, Abdoulaye Djire</i>	

L03 - Fundamental In-Situ Liquid Electrolyte Studies

(Invited) Probing the Oxygen Reduction and Hydrazine Oxidation Reactions Using Transient Amperometric Techniques.....	3451
<i>Ana C. Tavares, Diwakar Kashyap, Cybelle Palma De Oliveira Soares, Gaetan Buvat, Guy Denuault, Daniel Guay</i>	
Advancing Liquid-EM Techniques and Workflows for Operando Studies of Energy Materials.....	3453
<i>Nynke Albertine Krans, Madeline Dressel Dukes, Stamp Walden, Kate Marusak, Tim Eldred, Yaofeng Guo, John Damiano</i>	

Insights into the Complex Oxidation Behaviour of Aqueous H ₃ PO ₃ through in Situ P K- Edge XANES.....	3455
<i>Enggar Wibowo, Raul Garcia-Diez, Tomas Bystron, Marianne Van Der Merwe, Martin Prokop, Anna Efimenko, Mauricio Arce, Alexander Steigert, Regan George Wilks, Karel Bouzek, Marcus Bär</i>	
In Situ Investigation of Electrochemically Mediated Carbon Capture and Release Via Quinone Chemistry in Aqueous Media	3457
<i>Kiana Amini, Thomas Cochard, Yan Jing, Jordan D. Sosa, Dawei Xi, Maia Alberts, Roy G. Gordon, Michael J. Aziz</i>	

L03 - Fundamental In-Situ Solid-Liquid Interface Studies 1

Measurement of Surface Diffusion at Electrochemical Interfaces Using in Situ Linear Optical Diffraction	3459
<i>Lasse Kattwinkel, Olaf M. Magnussen</i>	
Visualizing pH and Mass Transport at Hydrogen Evolving Electrodes with Fluorescence Lifetime Microscopy	3460
<i>Jorrit Bleeker, David Vermaas, Wolter Jager</i>	
Probing Dielectric Relaxation of Water at Electrochemical Interfaces with Low-Frequency SERS Spectroscopy	3462
<i>Katsuyoshi Ikeda</i>	
Simultaneous Optical and Electrical Monitoring of Charge Percolation in Flow Electrodes.....	3464
<i>Maria Charlotte Padligur, Christian Jürgen Linnartz, Stephan Zimmer, John Linkhorst, Matthias Wessling</i>	

L03 - Fundamental in-situ Solid-Liquid Interface Studies 2

The Chemistry of Interfacial Ions: In Situ XPS and XAS	3465
<i>Hassan Nagra, Nipon Deka, Marco Favaro, Axel Knop-Gericke, Rik Mom</i>	
Role of Chemisorbing Species in Growth at Liquid Metal-Electrolyte Interfaces Revealed by in Situ X-Ray Scattering.....	3467
<i>Andrea Sartori, Olaf M Magnussen, Bridget Murphy</i>	
Soft X-Ray Operando Characterization of Electrochemical Interfaces	3468
<i>Robert Temperton, Mattia Scardamaglia, Suyun Zhu, Andrey Shavorskiy</i>	
In Situ Electrochemical Raman Spectroscopy of MXenes in Confined Electrolytes	3470
<i>Kateryna Shevchuk, Kyle Matthews, Ruocun (John) Wang, Yury Gogotsi</i>	
Probing of Near-Surface Cations during the Oxygen Evolution Reaction (OER) Using Operando XAS	3471
<i>Nipon Deka, Rik Mom</i>	

L03 - Fundamental in-situ Catalyst Layers Studies

(Invited) In Situ Characterization during Electrode Processing: The Role of Hidden Parameters	3473
<i>Doris Segets</i>	
X-Ray Photoelectron Spectroscopy Investigation of Catalyst-Ionomer Interactions for PEMFC Electrodes	3475
<i>Jayson Foster, Carlos Baez-Cotto, Patrick Schneider, Maryam Ahmadi, Jasna Jankovic, Nada Zamel, Scott A Mauger, Svitlana Pylypenko</i>	
Accelerating Real-Time Analysis of Gas Diffusion Electrodes Using Different Coupled Mass Spectrometry Techniques	3476
<i>Ina Reichmann, Vicent Lloret Segura, Konrad Ehebele, Karl J. J. Mayrhofer, Serhiy Cherevko</i>	

An Electrochemical Cell for Operando Grazing-Incidence X-Ray Absorption Spectroscopic Studies of Low-Loaded Electrodes	3478
<i>Maximilian Winzely, Justus S. Diercks, Olga V. Safonova, Peter Rüttimann, Adam Hugh Clark, Paul Maurice Leidinger, Sumant Phadke, Maarten Nachtegaal, Thomas J. Schmidt, Juan Herranz</i>	

L03 - In-situ Electrocatalyst and Reaction Mechanism Studies 1

(Invited) In Situ Atomic Force Microscopy and X-Ray Spectroscopy of Electrocatalysts.....	3480
<i>Andrew Akbashev</i>	
Operando XAS Investigation of Bimetallic Iron–Molybdenum Sulfide Electrocatalysts for the Hydrogen Evolution Reaction	3481
<i>Anastassiya Khan, Adina Morozan, Vincent Artero, Andrea Zitolo</i>	
Operando x-Ray Absorption Spectroscopy Investigation of Secondary Metal Doping into Iron-Nitrogen-Carbon Catalysts for Oxygen Electroreduction.....	3482
<i>Fang Luo, Aaron Roy, Moulay-Tahar Sougrati, Anastassiya Khan, David A. Cullen, Xingli Wang, Mathias Primbs, Andrea Zitolo, Frederic Jaouen, Peter Strasser</i>	
Hydrous Iridium Oxide Thin Films: Revealing the Structure of a Highly Active Model Catalyst By in-Situ Ir L ₃ -Edge XANES and EXAFS.....	3483
<i>Marianne Van Der Merwe, Yonyhyuk Lee, Raul Garcia-Diez, Enggar Wibowo, Tathiana Kokumai, Anna Efimenko, Mauricio D. Arce, Catalina Elena Jiménez, Alexander Steigert, Götz Schuck, Michael J. Sear, Pip Clark, Marco Favaro, David Starr, Christoph Scheurer, Marcus Bär</i>	
Interfacial Structures of Heterogeneous Systems Determined by Using in-Situ XAFS	3484
<i>Sang-Wook Han, Eun-Suk Jeong, Inhui Hwang</i>	

L03 - In-situ Electrocatalyst and Reaction Mechanism Studies 2

Operando Studies of Electrochemical Interfaces By High-Energy Surface x-Ray Scattering.....	3485
<i>Olaf M. Magnussen</i>	
The Impact of Operando Analysis in the Understanding of Oxygen Evolution Reaction Ranging from Intrinsic to Technical Scales	3487
<i>Ioannis Spanos, Marc Frederic Tesch, Ahyoun Lim, Robert Schlögl</i>	
Mechanisms of Stabilization and Degradation of Transition Metal Oxygen Electroreduction Catalysts with in-Situ Electrochemical Flow Cell ICP-MS.....	3489
<i>Gaurav A. Kamat, Ashton M. Aleman, Aniket Sandip Sandip Mule, Melissa E Kreider, Shijing Sun, Wei-ke Ye, Kevin Tran, Michaela Burke Stevens, Thomas F. Jaramillo</i>	
In Situ Transmission Electron Microscopy and Soft X-Ray Spectro-Microscopy to Understand Electrochemical Processes.....	3491
<i>Drew Higgins Higgins, Ahmed Abdellah, Chunyang Zhang, Kholoud Abousalem, Robert Black, Haytham Eraky, Adam Hitchcock</i>	

L03 - In-situ Electrocatalyst and Reaction Mechanism Studies 3

Investigating the Electrochemical CO ₂ Reduction Mechanism on Oxide-Derived Copper Using in Situ FTIR Spectroscopy	3492
<i>Ernest Pahuyo Delmo, Yihua Song, Yian Wang, Minhua Shao</i>	
Quantitative Analysis of CO ₂ Evolution in an Alkaline Electrolyte Solution By Differential Electrochemical Mass Spectroscopy	3493
<i>Atsunori Ikezawa, Juri Kida, Shugo Shimizu, Hajime Arai</i>	
Exploring the Influence of Malachite Forming on Oxide-Derived Copper Electrodes on C ₂ + Product Selectivity	3495
<i>Saeede Tafazoli, Muhammed Yusufoglu, Timuçin Balkan, Sarp Kaya</i>	

The Influence of the Interfacial pH on the Electrochemical CO ₂ Reduction Towards Formate on Cu Electrodes	3496
<i>Georgios Katsoukis, Hilbert C Heida, Merlin Gutgesell, Guido Mul</i>	
Real Time Analysis of the CO ₂ Reduction Reaction Products in a Cu-Gde Setup	3498
<i>Urban Sajevic, Walter Agustin Agustin Parada Villarroel, Pavlo Nikolaienko, Karl J. J. Mayrhofer</i>	

L03 - In-situ Studies of Batteries 1

(Invited) Neutrons as a Powerful Tool for Better Understanding Electrochemistry on Various Length and Time Scales.....	3499
<i>Ralph Gilles</i>	
NMR Spectroscopic Investigations of the Performance Limiting Mechanisms of Lithium-Sulfur Batteries.....	3500
<i>Jana Beatrice Fritzsche, Sunita Dey, Christopher A. O'Keefe, Clare P. Grey</i>	
(Invited) Considerations in Sample Environment and Data Processing for Operando Cell Studies by Neutron Depth Profiling	3502
<i>Jamie Lynn Weaver</i>	

L03 - Poster Session

In Situ Characterization of Atomic-Scale Surface Restructuring of Copper Electrodes Under CO ₂ Electroreduction Conditions	3503
<i>Jing Tian, Reihaneh Amirbeigi Arab, Antonia Herzog, Canrong Qiu, Arno Bergmann, Beatriz Roldan Cuenya, Olaf M Magnussen</i>	
Operando Surface X-Ray Diffraction Studies of Co Oxide Catalyst Films for Electrochemical Water Splitting.....	3505
<i>Jochim Stettner, Tim Wiegmann, Canrong Qiu, Finn Reikowski, Mathilde Bouvier, Ivan Pacheco, Manon Bertram, Firas Faisal, Olaf Brummel, Jörg Libuda, Jakub Drnec, Philippe Allongue, Fouad Maroun, Olaf M. Magnussen</i>	
Operando X-Ray Diffraction Studies of Co Oxide Model Catalysts during Alcohol Oxidation and Oxygen Evolution Reaction	3507
<i>Carl Hendric Scharf, Jochim Stettner, Jing Tian, Konrad Dyk, Fouad Maroun, Olaf M. Magnussen</i>	
In Situ Surface X-Ray Diffraction Studies of the Electrochemical Double Layer on Pt(111).....	3509
<i>Finn Schröter, Jan Ole Fehrs, Timo Fuchs, Jakub Drnec, Andrea Sartori, Olvido Irrazabal Moreda, David A. Harrington, Olaf M. Magnussen</i>	
Dynamic Nuclear Polarization from Lithium Metal, a New Method to Study Lithium Batteries	3511
<i>Marie Juramy, Svetlana Menkin, Kieran Mylrea, Teresa Insinna, Clare P. Grey</i>	
Temperature Dependent Operando High Energy Surface X-Ray Diffraction Studies of Pt(111) Oxidation.....	3513
<i>Jan Ole Fehrs, Timo Fuchs, Finn Schröter, Matthias Greve, Jakub Drnec, Olvido Irrazabal Moreda, Andrea Sartori, Valentin Briega Martos, Serhiy Cherevko, David A. Harrington, Olaf M. Magnussen</i>	
Designing a Novel Setup for High-Throughput Investigations of Electrochemical Reactions in Real Time.....	3515
<i>Angelina Cuomo, Pavlo Nikolaienko, Karl J. J. Mayrhofer</i>	
Probing the Electrode-Liquid Interface Using Operando total-Reflection X-Ray Absorption Spectroscopy	3516
<i>Andrea Grespi, Alfred Larsson, Dorotea Gajdek, Josefin Eidhagen, Jinshan Pan, Lindsay Merte, Edvin Lundgren</i>	

L03 - In-situ Studies of Batteries 2

(Invited) Advances in XPS Analysis of Battery Materials.....	3518
<i>Kateryna Artyushkova, Sarah Zaccarine, Jennifer Mann</i>	
Tracking Mn and Zn in Rechargeable Aqueous Zn-MnO ₂ Batteries By Operando X-Ray Absorption.....	3520
<i>Cheng Liu, Wenhai Wang, Ashley Black Serra, Vlad Martin Diaconescu, Lorenzo Stievano, Laura Simonelli, Dino Tonti</i>	
Synchrotron Capabilities in a Laboratory Setting: In Situ X-Ray Absorption Spectroscopy of Disordered Vanadium Ferrite Electrodes for Lithium-Ion Batteries.....	3521
<i>Ryan H. Deblock, Hunter O. Ford, Christopher N. Chervin, Debra R. Rolison, Michelle D. Johannes, Jeffrey W. Long</i>	
Operando Ambient Pressure X Ray Photoelectron Spectroscopy for Li-Ion Battery Electrode/Electrolyte Interface Probing	3523
<i>Qianhui Liu, Tove Ericson, Ida Kallquist, Fredrik Lindgren, Maria Hahlin</i>	

L03 - In-situ Studies of Batteries 3

Battery Thermalization for Operando Synchrotron Powder Diffraction: Application to the Ca-TiS ₂ System.....	3525
<i>Raphaëlle Houdeville, Victor Fuentes, Francois Fauth, M. R. Palacin</i>	
Unveiling the Inner Workings of Lithium-Sulfur Pouch Cells: A Multimodal Operando Analysis Approach.....	3527
<i>Rafael Müller, Sebastian Risse, Andre Hilger, Nikolay Kardjilov, Tom Boenke</i>	
Investigating Solid Electrolyte Interphase Layer Dynamics in the Electrochemical Li-Mediated Ammonia Synthesis.....	3529
<i>Niklas Henrik Deissler, Jon Bjarke Valbaek Mygind, Katja Li, Valerie Anne Niemann, Peter Benedek, Valentin Vinci, Jakob Drnec, Thomas F. Jaramillo, Jakob Kibsgaard, Ib Chorkendorff</i>	
In-Situ Scanning Transmission X-Ray Microscopy Studies of MnO ₂ -Based Supercapacitor Electrodes.....	3531
<i>Haytham Eraky, Chunyang Zhang, Drew Higgins Higgins, Adam Hitchcock</i>	

L04-PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY IN IONIC LIQUIDS 6

L04 - Physical and Analytical Electrochemistry in Ionic Liquids 1

Electroless Deposition of Base Metals at the Liquid/Liquid Interface of Ionic Liquids.....	3534
<i>Naoya Nishi, Naohiro Yoshida, Yishan Zhou, Yuko Yokoyama, Tetsuo Sakka</i>	
Understanding Aluminium Electrochemistry in Aqueous and Aqueous-Ionic Liquid Mixtures for Aluminium-Ion Batteries.....	3536
<i>Abhishek Lahiri, Arunabhiram Chutia</i>	
Electrodeposition of Reactive Aluminum-Nickel Coatings in an AlCl ₃ :[Emim]Cl Ionic Liquid Containing Nickel Nanoparticles.....	3538
<i>María Del Carmen Mejía Chueca, Christoph Baumer, Michael Stich, Adriana Ispas, Andreas Bund</i>	
Electrodeposition of Au and AgAu Nanoparticles from Reverse Micelles – Tuning Particle Properties and Understanding Solvent and Confinement Effects by Ensemble and Single Entity Approaches.....	3539
<i>Thais Schroeder Rossi, Marius Spallek, Maximilian Jaugstetter, Maximilian Gerwin, Fengli Yang, Eduardo Ortega, Beatriz Roldan Cuenya, Kristina Tschulik</i>	
Nanoscale Investigations of the Electric Double Layer in Protic Ionic Liquids.....	3541
<i>Christian Rodenbücher, Yingzhen Chen, Klaus Wippermann, Carsten Korte</i>	

Influence of Acidity, Water and Temperature on the Double Layer Properties of Protic Ionic Liquids for Future Fuel Cell Applications	3543
<i>Carsten Korte, Yanpeng Suo, Klaus Wippermann, Christian Rodenbücher</i>	
Dynamics of Novel Zinc Ion Electrolytes	3545
<i>Sophia Suarez, Domenec Paterno, Tawhid Pranto, Fariha Ahmed</i>	
Synthesis and Characterization of Neoteric Boronium Ionic Liquids	3546
<i>Paul C. Trulove, Christopher D. Stachurski, James H. Davis, Tyler Cosby, Nathaniel E. Larm, David P. Durkin</i>	
Electrochemical Approach for Studying Local Dynamic Heterogeneity of Ionic Liquids Applied to Neoteric Boroniums.....	3547
<i>David P. Durkin, Christopher D. Stachurski, Tyler Cosby, Nathaniel E. Larm, James H. Davis, Paul C. Trulove</i>	
Trifluoroacetamide-Based Eutectic Electrolyte with High Oxidative Stability	3548
<i>Kazuki Yoshii, Yuta Maeyoshi, Takuya Uto, Toshiyuki Moriuchi</i>	

L04 - Physical and Analytical Electrochemistry in Ionic Liquids 2

Modulating Entropic Driving Forces to Promote Metal Ion Mobility in Ionic Liquids	3549
<i>Matthew A. Gebbie, Jack McAlpine</i>	
Solid-State NMR Revealing the Impact of Polymer Additives on Li-Ion Motions in Plastic-Crystalline Succinonitrile Electrolytes	3550
<i>Julia Möller</i>	
Solvation Structure and Dynamics in Ionic Liquid Electrolytes with Hydrofluoroether for Li-Ion Batteries.....	3551
<i>Burcu Gurkan, Drace Penley, Hazel Gerber, Mounesha N Garaga, Steve G Greenbaum, Edward Maginn</i>	
Ionic Liquid - Glyme Mixtures to Modify Solvation Chemistry, Electrochemical and Physiochemical Properties in Lithium Containing Electrolytes	3552
<i>Elizabeth J. Biddinger, Michael Keating, Elijah Bernard, Sharon Lall-Ramnarine, Robert J. Messinger</i>	
Anomalous Increase in Double Layer Capacitance in Ionic Liquid-Metal Salt Blends	3553
<i>Jack McAlpine, Hrishikesh Tupkar, Matthew A. Gebbie</i>	
Electrochemical Behavior of Tris(2,2'-bipyridine)Iron Complex in 1-Butyl-1-Methylpyrrolidinium Bis(fluorosulfonyl)Amide Ionic Liquid in the Presence and Absence of Lithium Ion	3554
<i>Yasushi Katayama, Shodai Kato, Nobuyuki Serizawa</i>	
Voltammetry in Microemulsion Formed by Electron Donor Solution in Organic Solvent Ionic Liquid Microdroplets in Aqueous Electrolyte	3555
<i>Katarzyna Dusilo, Marcin Opallo</i>	
Use of Ionic Liquid as Crystallization Inhibitor in Water-Lithium Bromide Absorption Chiller	3557
<i>Sean Brahim, Joseph Walczuk, Stefan Maat, Lutz Richter, Christine Tillmann, Mathias Safarik</i>	
Ionic Liquid Initiated Corrosion Products on Steel	3559
<i>Illia Dobryden, Sichao Li, Wei Zhao, Shun Yu, Sandra Siljeström, Dan Persson, Peter Sjövall, Mark Rutland</i>	
Role of Ionic Liquids As Modifiers of Ru-Based Catalysts for Water Electrolysis.....	3560
<i>Jacob Johny, Ioannis Spanos, Neha Antil, Savarithai Jenani Louis Anandaraj, Alexis Bordet, Marc Frederic Tesch</i>	

L04 - Poster Session

Electrodeposition Behavior of Al-Au Alloys in AlCl ₃ -NaCl-KCl-AuCl Molten Salt.....	3562
<i>Masaya Sugizaki, Hisayoshi Matsushima, Mikito Ueda, Midori Kawamura</i>	

Controlling Selectivity in Electrocatalysis By Ionic Liquids: Oxidation of 2,3-Butanediol on Pt(hkl) Electrodes Modified By [C ₂ C ₁ im][Otf].....	3563
<i>Juntao Yang, Tian Yang, Evanie Franz, Xin Deng, Lukas Fromm, Nicola Taccardi, Zhi Liu, Andreas Göring, Peter Wasserscheid, Olaf Brummel, Jörg Libuda</i>	
Comparative Study on Transport Property of Asymmetric Fluorosulfonyl(trifluoromethylsulfonyl)Amide-Based Phosphonium Ionic Liquids	3564
<i>Katsuhiko Tsunashima, Seiya Kikuchi, Kosuke Nishikawa, Yusuke Tsuchida, Takatoshi Kawaji, Yusuke Funasako, Hirohisa Yamada</i>	
An Electrochemical Description of 1-Alkyl-3-Methylimidazolium Chloride Ionic Liquids.....	3566
<i>Igor Efimov, Charlotte Borrill, Kyra Sedransk Campbell</i>	

L07-NANOSCALE ELECTROCHEMISTRY

L07 - Energy Storage and Batteries

(Invited) Fundamentals of Thin Film Growth and Etching: How Small Atomic Processes Govern Macroscopic Effects	3568
<i>Marcel J. Rost</i>	
(Invited) Electrolyte Design for Li-Ion and Li Metal Batteries.....	3569
<i>Chunsheng Wang</i>	
(Invited) Nanostructured Metal Fluorides as Earth-Abundant High-Capacity Cathodes	3570
<i>Feng Wang</i>	
(Invited) Structure Reconstruction Strategy for High-Energy Lithium Ion Batteries without Capacity Sacrifice.....	3572
<i>Qi Liu, Tingting Yang</i>	
Electrodeposited Lithiophilic Nanoparticles As Artificial Interphase for Anode-Free Lithium Ion Batteries.....	3573
<i>Gilles Ernest Moehl, Ralph Gilles</i>	
Exploring the Role of Molecular Intercalants in Electrochemical Production of Graphene-Based 2D Materials.....	3575
<i>Zhenyuan Xia, Daheng Zhang, Sankar Sasidharan, Assa Aravindh Sasikala Devi, Jiahao Shi, Jian-Hua Su, Jinhai Huang</i>	

L07 - PGM Catalysts for Oxygen Reduction Reaction and Fuel Cells

(Invited) Unravelling the Core of Fuel Cell Performance: Engineering the Electrolyte (ionomer)/Catalyst Interface.....	3576
<i>Jian Xie</i>	
(Invited) Electrochemical Characterization of Catalyst/Ionomer Interfaces	3577
<i>Ahmet Kusoglu</i>	
Enhanced Kinetics of Oxygen Reduction Reactions in Alkaline Solutions inside Mesoporous Electrodes	3578
<i>Kota Nakahara, Atsunori Ikezawa, Hajime Arai</i>	
High-Entropy Alloys as Oxygen Reduction Reaction Electrocatalysts for Proton Exchange Membrane Fuel Cells Application.....	3580
<i>Daniel Wan, Guangyu Chen, Jay Yan, Feng Wang, Minhua Shao</i>	
A Revolutionary Approach to Study the Hydrogen Electrode Formation on Different Noble Metals Exposed to Monolayer to Sub-Monolayers Range of Water Using Scanning Kelvin Probe	3583
<i>Arulkumar Ganapathi, Martin Rabe, Michael Rohwerder</i>	
Fabrication of Self-Standing Porous Foam-like PdM (M = Ni, Fe, Co) Nanocrystals for Boosted Ethanol Oxidation Electrocatalysis	3585
<i>Aboubakr M. Abdullah, Adewale Kabir Ipadeola, Belal Salah, Kamel Eid</i>	

L07 - Fuel Cell Technology

- (Invited) Understanding PEMFC by Advanced Electron Microscopy 3586
Paulo J Ferreira
- (Invited) Durable Hybrid Electrocatalysts for Fuel Cells 3587
Minhua Shao, Fei Xiao
- (Invited) Nanomembrane Coating for Advanced Electrocatalysis 3588
Kazuhiro Takahashi

L07 - Poster Session

- Automated Processing of Nano-Impact Electrochemistry Signals Using Data-Driven Template Matching..... 3589
Ziwen Zhao, Arunava Naha, Sagar Ganguli, Alina Sekretareva
- Gas-Phase Pd Clusters-Modified Mesoporous Copper Oxide Hollow Spheres As Electrocatalysts for CO₂ Reduction to Ethylene..... 3591
Thi Hong Trang Nguyen, Oriol Gutiérrez Sanchez, Vana Chinnappa Chinnabathini, Dimitra Papamichail, Deepak Pant, Didier Grandjean, Trang Nguyen
- 2D Metal Covalent Organic Frameworks Towards Electrochemical Catalysis 3593
Hao Huang, Kaiying Wang
- Fabrication of Cu-Single Atom Catalyst Supported on Unique 2D Graphdiyne Analogue-Based Porphyrin Metal Covalent Organic Frameworks for Carbon Dioxide Reduction Application 3595
Zubair Masaud, Hao Huang, Lars Eric-Roseng, Kaiying Wang

L07 - Catalysis for Oxygen Reduction and Evolution Reactions

- (Invited) Designing Advanced Low-PGM Core-Shell Electrocatalysts for Fuel Cells and Electrolyzers 3597
Kotaro Sasaki, Xueru Zhao
- (Invited) Progress in Development of Platinum Group Metal-Free Electrocatalysts for Oxygen Reduction Reaction in Polymer Electrolyte Fuel Cells 3598
Hanguang Zhang, Edward F. Holby, Wilton Kort-Kamp, Piotr Zelenay
- Tuning Mo Incorporation in Ni-Fe-Mo Solid Solutions: Towards an Improved Hydrogen Adsorption Energy..... 3600
Mouna Rafei, Xiuyu Wu, Alexis Piñeiro, Vladimir Miranda La Hera, Thomas Wågberg, Eduardo Gracia-Espino
- Disentangling pH Effects on Electrocatalytic Reactions 3602
Michael Eikerling, Xinwei Zhu, Jun Huang
- Dramatic Electrochemical Tuning of the Plasmonic Spectrum of a Metal Nanoparticle on a Mirror 3604
Alexander Vaskevich, Lev Chuntanov, Arghyadeep Basu, Ifat Kaplan-Ashiri, Gilad Haran

L07 - Catalysts and Supports for Electrocatalysis

- (Invited) Durable and Highly Active Fe-N-C Catalysts for PEM Fuel Cells 3606
Gang Wu
- (Invited) Effects of Nano-Structure on the Kinetics of the Oxygen Reduction over N-Doped Carbon..... 3607
Yuta Nabae
- Formation of Pores on Pure Ti in Highly Concentrated Sulfuric Acids..... 3609
Hiroaki Tsuchiya, Ryoma Sato, Shinji Fujimoto
- A Density Potential Functional Approach for Mesoscopic Metal-Solution Interfaces 3610
Jun Huang

L07 - Nanocatalysis for Water Electrolyzing, Nitrogen Reduction and CO2 Reduction

(Invited) Research Progress of Electrocatalyst and MEA of PEM Fuel Cell and Water Electrolyser	3611
<i>Zhigang Shao</i>	
Nanoengineered Bifunctional Porous Ni ₅ P ₄ Electrocatalyst with Accelerated Bubble Departure and Reduced Overpotential for Solar-Driven Water Splitting	3612
<i>Shubra Lalwani, Xinnan Lu, Lin Yuan, Mohamed Abbas Abdelsalam, Tiejun Zhang, Shubra Lalwani</i>	
Developing Cu-Co-Based Catalysts for Enhanced OER in Alkaline Water Electrolysis	3613
<i>Worawee Saei, Joachim Pasel, Fabian Scheepers, Carsten Korte</i>	
Electrochemical Reduction of Nitrate to Ammonia Using Copper Oxide Catalysts	3614
<i>Taesung Kwon, Hyeon Beom Cho, Ki Min Nam</i>	
Revealing the Ambience-Dependent Structural Evolutions of Mo-Based Metal-Organic Frameworks with in Situ TEM for Efficient Electrocatalytic N ₂ Reduction to NH ₃	3615
<i>Kai-Yuan Hsiao, Ming-Yen Lu</i>	
Utilizing the Complexity of Transition Metal Phosphide Surfaces to Tune Nitrate Reduction Selectivity	3617
<i>Emily Nishiwaki, Ding-Yuan Kuo, Brandi Michelle Cossairt</i>	
“Dewetted” Metal Nanoparticles As a Platform to Study Electrocatalytic Reactions	3618
<i>Shreyas Harsha, Rakesh Sharma, Martin Dierner, Andrea Casanova, Christoph Baeumer, Igor Makhotkin, Guido Mul, Paolo Ghigna, Johannes Will, Erdmann Spiecker, Marco Altomare</i>	

L07 - Nanocatalyst Design for Electrocatalysis

(Invited) To Prepare 2D Au Nanoplates and Its Controlled Molecular Self-Assembly (MS) Mechanism	3620
<i>Jian-Wei Guo</i>	
Efficient Synthesis of Nitric Acid Under Air Atmosphere with Lattice-Confined Ru Clusters	3621
<i>Xin Li, Michael K. H. Leung</i>	
Single-Impact Electrochemistry of Redox Liposomes for the Detection of Virulence Factors	3623
<i>Arthur Langlard, Christine Thobie-Gautier, Mohammed Boujtita, Estelle Lebegue</i>	
Designing Multidimensional and Interconnected Multi-Element Nanostructures by Exsolution-Self-Assembly in a Complex Concentrated Oxide	3625
<i>Huiming Guo, Christopher Mead, Marquez Balingit, Soham Shah, Xin Wang, Mingjie Xu, Ich Tran, Toshihiro Aoki, Jack Samaniego, Kandis Leslie Abdul-Aziz, Lincoln Lauhon, William J Bowman</i>	
Electrochemistry and Electronic Structure of the Deuterium-Grown Boron-Doped Diamond Interfaces	3627
<i>Adrian Olejnik, Michal Sobaszek, Maria Brzhezinskaya, Mateusz Ficek, Robert Bogdanowicz</i>	
Biosensing with Tailored Track-Etched Nanochannels	3630
<i>Dila Kaya, Vanina M. Cayón, Christina Trautmann, Maria Eugenia Toimil Molares</i>	
How the Facet Edge Controls the Overall CO Oxidation in Nanoporous Gold: Combined Atomistic Characterization/DFT Study of Residual Ag Distribution and Catalytic Activity	3631
<i>Prajwal Ayadathil, Aditya Sandupatla, Abhijit Chatterjee</i>	

L08-NANOSTRUCTURED METAL OXIDES AND POLYOXOMETALLATE CLUSTERS IN ELECTROCATALYSIS, ELECTROCHEMICAL ENERGY CONVERSION, AND STORAGE

Europe Section Heinz Gerischer Award Address

(Europe Section Heinz Gerischer Award) Endeavours in the Electro-Solar World of Schottky, Mott and Gerischer..... 3632
Patrik Schmuki

L08 - Oxygen Electrochemistry

(Keynote) Oxygen Reduction and Evolution Reactions on Faceted $Mn_xCo_{1-x}Fe_2O_4$ Nanoparticles Prepared By Induction-Coupled Plasma..... 3633
Ana C. Tavares, Jiyun Chen, Nicolas Dumaresq, Fabiola Navarro-Pardo, Sergei Manzhos, Nadi Braidy

(Invited) Enhancement of Activity of Low-Pt-Content-Catalysts Toward Oxygen Reduction through Admixing with Metal Oxide Cocatalysts 3635
Pawel J. Kulesza, Iwona A. Rutkowska, Aldona Kostuch, Marta Lukowska, Sylwia Zoladek, Vito Di Noto, Enrico Negro, Ketì Vezzù

Charge Transfer-Induced Geometric Distortion in $Ni(HCO_3)_2@CNT$: Impact on Enhanced Catalytic Performance for Oxygen Evolution and Reduction Reactions 3636
Jaeryeol Jeong, Min Hyung Lee

Selectivity of Control of Oxygen Reduction Reaction over Mesoporous Transition Metal Oxides Catalysts for Electrified Purification Technologies 3637
Zhixing Wu, Mikhail Yu. Vagin, Robert Boyd, Penghui Ding, Oleksandr Pshyk, Grzegorz Greczynski, Magnus Odén, Emma M Björk

L08 - Oxygen Evolution Reaction

(Keynote) Kinetic and Non-Kinetic Limitations during Oxygen Evolution Reaction on Nickel-Iron Oxyhydroxide Electrodes 3640
Marc Koper

(Keynote) Development of Advanced High Surface Area Metal Oxide Aerogels for Oxygen Evolution Reaction Electrocatalysis 3641
Lior Elbaz

Catalytic Active Sites Determination and Charge Transport of Transition Metal Oxides for Oxygen Evolution Reaction 3642
Fang Song

L08 - Electrocatalytic Carbon Dioxide Reduction

(Keynote) Metal Enhanced Cr_2O_3/Ga_2O_3 an Efficient and Selective Electrocatalyst for the Conversion of CO_2 to C_{2+} Products 3643
Andrew B. Bocarsly, Stephanie Dulovic, Steven P. Cronin, Alma Paola Hernandez-Gonzalez, Josef A. Lawrence

(Invited) Application of Metal Oxide Active Supports for Enhancement of Electrocatalytic Reduction of Carbon Dioxide..... 3645
Iwona A. Rutkowska, Anna Chmielnicka, Olena Siamuk, Karolina Sobkowicz, Beata Rytelawska, Pawel J. Kulesza

An in-Depth Exploration of the Electrocatalytic Stability of Sn-Based Electrocatalysts for the Electrochemical CO_2 Reduction Towards Formate 3646
Kevin Van Daele, Nick Daems, Deepak Pant, Tom Breugelmanns

L08 - Electroreduction of Inert Molecules: CO₂, CO and N₂

(Invited) The Role of the Catalyst Microenvironment in the Electrochemical Reduction of Carbon Monoxide	3648
<i>Balázs Endrodi, Attila Kormanyos, Deján Drágity, Noémi Galbicsek, Csaba Janaky</i>	
Exploring the Mechanism of the Electrochemical Polymerization of CO ₂ over CeO ₂ (110)	3649
<i>Florian Keller, Johannes Döhn, Axel Gross, Michael Busch</i>	
Zn-Based Catalysts for Selective and Stable Electrochemical CO ₂ Reduction at High Current Densities	3651
<i>Ilias Stamatelos, Cao Thang Dinh, Werner Lehnert, Joachim Pasel, Meital Shviro</i>	
Investigation of Iron Based Di-Atomic Catalysts to Identify Active Sites for Coupled Reduction Reactions of CO ₂ and N ₂	3653
<i>Saswati Santra, Verena Streibel, Ian D. Sharp</i>	
Understanding Performance Fading during CO Electrolysis in Zero Gap Electrolyzers	3655
<i>Mohd Monis Ayyub, Andrea Serfozo, Balázs Endrodi, Csaba Janaky</i>	

L08 - Materials Chemistry for Electrocatalysis

(Keynote) Polyoxometallate Functionalized Membranes for Next Generation Fuel Cells, Electrolyzers and Other Devices	3656
<i>Andrew M. Herring, Mei-Chen Kuo, Chuloong (Christoph) Kim, E. Bryan Coughlin, Marco Salgado</i>	
(Keynote) Experimental and Computational Insights into Electronic Structure and Redox Properties of Bare and Doped Co ₃ O ₄ Nanocrystals of Euhedral Morphology and Their Heterojunctions with Alien Oxides and Carbon Materials	3657
<i>Zbigniew Sojka, Joanna Grybos, Filip Zasada, Szymon Wierzbicki, Witold Piskorz, Krzysztof Kruczala</i>	
Solution-Based Synthesis of Cathode Materials for Lithium Ion Batteries.....	3659
<i>An Hardy, Dries De Sloovere, Marlies K. Van Bael</i>	

L08 - Electrochemical Water Splitting

Plasma-Driven Synthesis of 3D Self-Supported Ni-Fe Nanostructures for Green Hydrogen Production	3661
<i>Ameya Ranade, Mengmeng Lao, Remco H. M. Timmer, Hans J. N. Van Eck, Michail N. Tsampas</i>	
Hollow TiO ₂ Supports for Enhanced Acidic Oxygen Evolution Activity.....	3663
<i>Laurie King, Debora Belami, Umesh Jonnalagadda, Wenhao Fan, James Kwan, Yagya Regmi</i>	
Developing a Highly Stable Quaternary Sn-Sb-Mo-W Scaffold to Protect Active Metals for Corrosion during the Oxygen Evolution in Acidic Media	3664
<i>Alexis Piñeiro, Xiuyu Wu, Mouna Rafei, Paul Jonathan Mörk, Eduardo Gracia-Espino</i>	

L08 - Hydrogen Evolution Reaction

(Keynote) Single Atom Co-Catalysts in Photocatalytic H ₂ Generation.....	3666
<i>Patrik Schmuki</i>	
Effect of Electrochemical Surface Oxidation on Intrinsic Activity Towards the Hydrogen Evolution Reaction of Ultra-Smooth Nanocrystalline Ni Thin Films	3667
<i>Daniela Neumüller, Lidija D. Rafailovic, Igor A. Pasti, Christoph Gammer, Jürgen Eckert</i>	

L08 - Structure and Reactivity of Electrochemical Interfaces

- (Keynote) Competition of Oxygen and Chlorine Evolution on Oxide Surfaces – a Soft X-Ray and
Dems Approach to Identification of Active Site..... 3669
*Petr Krtil, Katerina Minhova Macounova, Catalina Astudillo, Kaoruho Sakata, Kenta
Amemiya*
- (Invited) DFT Studies on Interactions between Heteropolyacids, Noble Metal Ions, and TiO₂
Support 3670
Renata Tokarz-Sobieraj, Piotr Niemiec, Dorota Rutkowska-Zbik
- (Invited) Tuning the Activity of Iron Phosphide Electrocatalysts for Sustainable Energy Conversion 3671
*Saim Emin, Takwa Chouki, Manel Machreki, Plamen Stefanov, Iwona A. Rutkowska, Beata
Rytelewska, Pawel Kulesza, Georgi Tyuliev, Moussab Harb, Luis Azofra*
- (Invited) Metal Oxide Mixed Sulphide of Controlled Crystal Structure As Catalysts for Two-
Electron Water Oxidation 3672
Adam Slesinski, Elzbieta Frackowiak

L08 - Nanostructured Materials Engineering in Electrocatalysis

- (Keynote) Iridium Deposition By Galvanic Displacement of Cu on a One-Pot Configuration..... 3673
*Kristian Fredrik Klepp Thorbjørnsen, Anita Hamar Reksten, Tor Olav Sunde, Sander Øglænd
Hanslin, Jaakko Akola, Svein Sunde*
- (Invited) High Yield and Selective Electrocatalytic Reduction of Nitroarenes via Polyoxometalate
Redox-Mediated Chronoamperometry 3675
Daniel Harry Broadhurst, Mark Symes
- (Invited) Understanding and Optimization of Versatile Molecular and Coordination Polymer-Based
3d Transition Metal Oxygen Evolution Reaction Catalysts..... 3676
Yonggui Zhao, Devi Prasad Adiyeri Saseendran, Carlos A. Triana, Greta Ricarda Patzke

L08 - Electrocatalytic and Photoelectrochemically Active Materials

- Separating the Effects of Band Bending and Covalency in Hybrid Perovskite Oxide Electrocatalyst
Bilayers for Water Electrolysis..... 3678
*Lisa Heymann, Moritz L Weber, Marcus Wohlgemuth, Marcel Risch, Regina Dittmann,
Christoph Baeumer, Felix Gunkel*
- ZIF-67 Grown in Situ over Carbon Fiber Felt (CFF) for Alkaline Water Splitting 3680
*Lucas Bitencourt Theodoroviez, David Alexandro Graves, Biljana Šljukic, Emerson Sarmento
Gonçalves*
- Benchmarking Activity and Stability of Layered Double Hydroxides (LDHs) Electrocatalysts for
Alkaline Water Electrolysis 3682
*Vicent Lloret Segura, Adrian Hartert, Alvaro Seijas Da Silva, Moritz Geuß, Anna T. S.
Freiberg, Karl J. J. Mayrhofer, Simon Thiele, Gonzalo Abellán, Serhiy Cherevko*
- Direct Observation of Solid-Phase Crystallization of an Amorphous Complex Oxide in the
Transmission Electron Microscope 3683
*Jenna L. Wardini, George F. Harrington, Dennis Kemp, Roger A. De Souza, William J
Bowman*

L08 - Poster Session

- Stability of the Fe₃O₄ ($\sqrt{2} \times \sqrt{2}$)R 45° Surface in 0.1 M NaOH Investigated by High-Energy Surface
X-Ray Diffraction..... 3685
*Jonas Bunge, Doris Grumelli, Jan Ole Fehrs, Timo Fuchs, Leon Jacobse, Jochim Stettner,
Andreas Stierle, Olaf M. Magnussen*

Anion-Driven Nanostructuring of Copper Electrodeposits for Tuning the Selectivity of Electrochemical CO ₂ Reduction Reaction.....	3687
<i>Cini M M Suresh, Pravin P Ingole</i>	
Nicop Anchored Porous Ti ₃ C ₂ tx Support with 3D Interconnected Structure for Advanced Hydrogen Evolution Reaction Electrocatalysts.....	3689
<i>Minjun Kim, Pil Jin Yoo</i>	
Enhanced Oxygen Evolution Reaction Activity and Structural Stability of Sulfur and Manganese Substituted Co(OH) ₂	3690
<i>Umair Shamraiz, Bastian J. M. Etzold</i>	
Sb ₂ Se ₃ -Based Photoelectrodes for Solar Hydrogen Production and CO ₂ Reduction.....	3691
<i>John Mark Christian Dela Cruz, Gergely Ferenc Samu, Csaba Janaky</i>	
Formation of the Heterojunction Based on Titania Modified with Ni and Ag Sulfide Via SILAR Method - Electrochemical and Photoelectrochemical Activity	3692
<i>Wiktoria Lipinska, Manjunath Shinnur, Katarzyna Grochowska, Ryan Crisp, Katarzyna Siuzdak</i>	
Effect of pH on the Selectivity of γ -MnO ₂ Electrocatalysts Towards Oxygen Evolution Reaction in the Presence of Chloride Ions in Alkaline Environment.....	3694
<i>Olga A Baturina, Matthew Finn, Brandice Weathers</i>	
Fast and Facile Microwave Synthesis of Cubic CuFe ₂ O ₄ Nanoparticles for Electrochemical CO ₂ Reduction	3695
<i>Judith Zander, Roland Marschall</i>	
Investigation of Pd Based Metal-Carbon As Bifunctional Electrocatalyst for OER and ORR.....	3696
<i>Surishi Vashishth, Muthusamy Eswaramoorthy</i>	
Electrospun Polymer Supported Cu _x O Nanostructures for CO ₂ Reduction Reaction.....	3697
<i>Adam Elbataoui, Aljabour Abdalaziz, Stefan Wurster, Daniel Bautista, Sandra Schlögl, Jürgen Eckert, Lidija D. Rafailovic</i>	
Study of the Hydrogen Evolution Reaction on Macroscopic Snse-Based Photoelectrodes	3699
<i>Qianqian Ba, Peter Toth, Csaba Janaky</i>	
Comparing Commercially Available Gas Diffusion Layers in the Electrochemical CO ₂ Reduction Reaction.....	3701
<i>Angelika Anita Samu, Balázs Endrodi, Csaba Janaky</i>	
Tungstosilicic Acid: A Promising Electrolyte for Redox Flow Battery	3703
<i>Shreya Sharma, Himanshu Kumawat, Manoj Neergat</i>	
Nanostructured 3D Mesoporous α -Fe ₂ O ₃ Nano-Cubes As a High-Performance Electrode for Supercapacitors	3705
<i>Umisha Singh, Shobha Shukla, Sumit Saxena</i>	

L08 - Development and Characterization of Electrocatalytic Interfaces

Metal-Oxygen Covalency Competition of Unsymmetrical Metal Pairs for Enhanced Bifunctional Oxygen Electrocatalysis	3706
<i>Tao Zhou, Zheng Xiao Guo</i>	
Scalable Production of Nickel-Cobalt Based Anode Materials for Alkaline Electrolysis: A Multi-Technique Approach from Micro Powder Analysis to Electrochemical Performance.....	3707
<i>Vineetha Vinayakumar, Adarsh Jain, Mohit Chatwani, Timo Wagner, Christian Marcks, Nicolas Wöhrl, Anna K. Mechler, Doris Segets</i>	
The Electronic Structure of Transition Metal (TM) Oxides for the Oxygen Evolution Reaction: The Critical Role of TM 3d Hole State.....	3709
<i>Freddy Oropeza, Hongxia Wang, Kelvin Hongliang Zhang, Jan Philipp Hofmann, Victor A. De La Peña O'Shea</i>	

Assessing the Stability of Co ₃ O ₄ Under Oxygen Evolution Reaction Conditions at Low and Mild pH.....	3711
<i>Tatiana Priamushko, Evanie Franz, Daniel Escalera López, Olaf Brummel, Jörg Libuda, Freddy Kleitz, Serhiy Cherevko</i>	
Unraveling the Crystal Facet and Support Effects on the Oxygen Evolution Activity of Cobalt Oxide Using Single Nanoparticle Electrocatalysis.....	3712
<i>Hatem M. A. Amin, Zhibin Liu, Yuman Peng, Manuel Corva, Seyed Pouya Hosseini Yazdeli, Rossitza Pentcheva, Kristina Tschulik</i>	

L09-PHYSICAL AND ELECTROCHEMICAL PROCESSES AT FLOW BATTERY ELECTRODES

L09 - Flow Batteries - New Topics

Adaptation of a Vanadium Redox Flow Battery for Thermal Applications Using a Solid Capacity Booster	3714
<i>Sabrina Berling, Jose Manuel Hidalgo, Sotirios Mavrikis, Nagaraj Patil, Enrique Garcia - Quismondo, Jesus Palma, Carlos Ponce De Leon</i>	
(Invited) Understanding Capacity Fade Behavior in Aqueous Organic Redox Flow Batteries Via Zero-Dimensional Models and High-Throughput Cell Cycling	3715
<i>Eric M. Fell, Michael J. Aziz</i>	
X-Ray Absorption Spectroscopy Studies of Ti-Mn Redox Flow Battery to Clarify the Redox Reaction.....	3717
<i>Daisuke Asakura, Eiji Hosono, Miho Kitamura, Koji Horiba, Eisuke Magome, Hiroyuki Setoyama, Eiichi Kobayashi, Hayato Yuzawa, Takuji Ohigashi, Takaaki Sakai, Ryoichi Kanega, Takashi Funaki, Yukari Sato, Akihiro Ohira</i>	
Improving the Selectivity of Commercial Membranes in Vanadium Redox Flow Batteries through the Direct Deposition of an Additional Selective Layer	3718
<i>Marco Cecchetti, Andrea Casalegno, Matteo Zago</i>	
Mitigation of Discharged Capacity Decay and Volume Variation in Vanadium Redox Flow Batteries By Modifying Electrolytes Composition.....	3720
<i>Francesco Toja, Luca Perlini, Daniele Facchi, Andrea Casalegno, Matteo Zago</i>	
High-Throughput Screening of Molecules for Flow Batteries	3722
<i>Pekka Peljo, Gabriel Gonzalez, Eduardo Martínez González, Qiujun Li, Jenna Hannonen, Ulriika Mattinen, Andrea Hamza, Flora Németh, Adam Madarasz, Imre Papai, Anton Nechaev, Petri M Pihko</i>	
(Invited) Relationship of Pseudo-Capacitive Current in Sulphuric Acid and Vanadium Flow Battery Reaction Kinetics at Carbon Electrodes	3723
<i>Maria Al Hajji Safi, D. Noel Buckley, Andrea Bourke, Robert P. Lynch</i>	

L09 - Flow Battery Alternative Electrolytes

Stability of Highly Soluble Ferrocyanides at Neutral pH for Energy Dense Flow Batteries.....	3724
<i>David Reber, Jonathan R. Thurston, Maximilian Becker, Michael P. Marshak</i>	
Screening of First-Row Transition Metal Complexes for Aqueous Redox Flow Batteries: Experimental and Density Functional Theory Approaches	3725
<i>Noura Rahbani, Piotr De Silva, Corentin Bellay, Solène Guihéneuf, Thibault Godet-Bar, Emmanuel Baudrin</i>	
Electrochemical Evaluation of Manganese Electrolytes for Redox Flow Batteries	3727
<i>Erlantz Villar, Amirreza Khataee, Rakel Lindstrom</i>	
Fabrication and Performance of Symmetric Flow Battery Systems Incorporating Novel Pyridinium Anolytes	3728
<i>Sharmila Samaroo, Charley Hengesbach, Taylor D. Opolka, William R. Kruper, David Hickey, Thomas F. Guarr</i>	

Preventing Degradation in a Flavin Mononucleotide-Based Redox Flow Battery: An NMR and EPR Study	3729
<i>Dominic Hey, Rajesh B Jethwa, Nadia L Farag, Bernardine L. D. Rinkel, Evan Wenbo Wenbo Zhao, Clare P. Grey</i>	

Novel Approaches for Improving Solubility of Pyridinium Anolytes in Non-Aqueous Redox Flow Batteries.....	3731
<i>David P. Hickey, Sharmila Samaroo, Charley Hegensbach, Thomas F. Guarr</i>	

L09 - Poster Session

Multi-{Physics, Phase, Scale} Computational Modeling of Interface-Coupled Problems in Redox Flow Battery Design.....	3732
<i>Mojtaba Barzegari, Maxime Van Der Heijden, Victor De Haas, Antoni Forner-Cuenca</i>	

Scaling up Electrode Manufacturing with Non-Solvent Induced Phase Separation Technology	3734
<i>Simona Buzzi, Remy Richard Jacquemond, Antoni Forner-Cuenca</i>	

Designing Metal Complexes for Redox Flow Batteries By High-Throughput Synthesis	3736
<i>QiuJun Li, Pekka Peljo</i>	

L09 - VRFB Electrodes

(Invited) Effect of Electrochemical Treatment and pH on the Kinetics of V ^{II} -V ^{III} Reactions on Glassy Carbon Electrodes.....	3738
<i>Varsha Sasikumar S P, Robert P. Lynch, Maria Al Hajji Safi, Maria Rybalchenko, D. Noel Buckley, Andrea Bourke</i>	

High Performance Nitrogen-Doped Hierarchical Nanostructured Carbon Electrode for Vanadium Redox Flow Batteries	3740
<i>Gerardo Maria Maria Pagano, Simone Fiorini Granieri, Matteo Zago, Andrea Casalegno, Fabio Di Fonzo</i>	

Turbostratic Carbon Nano Onion Electrode for High Power Density Vanadium Redox Flow Battery	3742
<i>Simone Fiorini Granieri, Gerardo Maria Pagano, Marco Cecchetti, Hannes Radinger, Frieder Scheiba, Matteo Zago, Andrea Casalegno, Fabio Di Fonzo</i>	

Electrode Imbibition and Surfactant Interactions with Vanadium Flow Battery Electrolytes	3744
<i>Adam Imel, Brian Barth, Thomas A. Zawodzinski</i>	

Modification of Carbon Electrodes with Mxene (Ti ₃ C ₂ T _x) for Vanadium Redox Flow Batteries	3745
<i>Kavin Teenakul, Sayed Ali Ahmad Ali Ahmad Alem, Anupma Thakur, Babak Anasori, Amirreza Khataee</i>	

(Invited) The Effect of Surfactants on Vanadium Electrochemistry in Porous Carbon Electrodes.....	3746
<i>Brian Barth, Thomas A. Zawodzinski</i>	

Laser Perforated Dual-Scale Porous Electrodes Considering the Interdigitated Flow Field for Vanadium Redox Flow Battery.....	3747
<i>Lv Wenrui, Menglian Zheng, Yansong Luo</i>	

Systematic Assessment of Electrode Wettability for Vanadium Redox Flow Batteries.....	3748
<i>Caio Vinicios Juvencio Da Silva, Erik Kjeang</i>	

A Comparative Study of Electrode Parameters of Vanadium Redox Flow Batteries for Improved Design and Performance.....	3750
<i>Abdul Ali, Venkatasailanathan Ramadesigan</i>	

L09 - Flow Battery Electrode Design

(Invited) Investigating the Influence of Electrolyte Additives and Anode Structures on Electroplating Performance Towards Use in Iron-Based Batteries.....	3752
<i>Inmaculada Gimenez-Garcia, Antoni Forner-Cuenca</i>	

Predictable Local Polarization inside Electrodes By Three-Dimensional Multi-Scale Model in Flow Batteries.....	3754
<i>Yansong Luo, Menglian Zheng, Lv Wenrui</i>	
Integrating Micro-Patterned Flow Fields into Electrode Architecture Via Non-Solvent Induced Phase Separation for High Performance Redox Flow Batteries	3755
<i>Baichen Liu, Rémy Jacquemond, Johan Hjelm, Antoni Forner-Cuenca</i>	
Polarization Behaviors and Morphology during Zinc Deposition and Dissolution in Zinc Flow Battery	3757
<i>Yusuke Tachida, Ryoma Yamada, Masatsugu Morimitsu</i>	
Expanding the Scanning Electrochemical Microscopy Toolset for Evaluating Electron Transfer Kinetics of Concentrated and Specialized Redox Electrolytes on Carbon Surfaces.....	3759
<i>Raghuram Gaddam, Peisen Qian, Joaquin Rodriguez Lopez</i>	
Exploring Conductive Polymer Coatings to Target Reaction Selectivity in Aqueous All-Iron Redox Flow Batteries.....	3761
<i>Emre Burak Boz, Ronald De Bruijne, Antoni Forner-Cuenca</i>	
Stereolithography 3D Printing As a Versatile Tool to Manufacture Porous Electrodes for Redox Flow Batteries.....	3763
<i>Maxime Van Der Heijden, Marit Kroese, Jacky Olinga, Zandrie Borneman, Antoni Forner-Cuenca</i>	
Manufacturing Strategies for Engineering Carbon Electrodes Via Non-Solvent Induced Phase Separation.....	3765
<i>Remy Richard Jacquemond, Charles Tai-Chieh Wan, Fikile R. Brushett, Antoni Forner-Cuenca</i>	

L10-INTERFACIAL ANALYSIS FOR ENERGY STORAGE

L10 - Poster Session

Investigation of Interfacial Behavior of Ni-Rich NCM Cathode Particles in Sulfide-Based Solid-State Electrolyte	3766
<i>Orynbassar Mukhan, Ji-Su Yun, Sung-Soo Kim</i>	

L10 - Advanced Methods for Interfacial Analysis

(Invited) Confocal Raman Microscopy in the Study of Ion Insertion Processes and Material Dimensional Change	3767
<i>Carol Korzeniewski, Jiahe Xu</i>	
Towards Operando Secondary Ion Mass Spectrometry Imaging of Lithium Redistribution in Solid-State Lithium-Ion Batteries: Correlation of Structural, Chemical and Electrochemical Characteristics	3768
<i>Santhana Eswara, Luca Cressa, Tom Wirtz</i>	
Transient Short Circuit-Based Degradation of Lithium and Sodium Anode-Free Batteries.....	3770
<i>Svetlana Menkin, Jana Beatrice Fritzke, Rebecca Larner, Clare P. Grey</i>	
3D Morphological Evolution of Dead and Active Lithium at the Graphite-Separator-Electrolyte Interface during Fast Charging	3771
<i>Maha Yusuf, Markus Wied, Anders Kaestner, Jacob Michael Lamanna, Markus Strobl, Vanessa Wood, Michael F Toney, Johanna Nelson Weker</i>	
Electrochemical Scanning Probe Microscopy Evaluation of Li-Ion Battery Cathode Degradation through in Situ Oxygen Evolution Measurement and Interfacial Property Characterization	3773
<i>Abhiroop Mishra, Joaquin Rodriguez Lopez</i>	
(Invited) Insights into Processes at the Electrode/Electrolyte Interface of Battery Electrodes Via Scanning (Electrochemical) Probe Microscopy	3775
<i>Sven Daboss, Tom Philipp, Krishnaveni Palanisamy, Jan Romer, Christine Kranz</i>	

Understanding the Development and Properties of SEI in Concentrated Aqueous Electrolytes Via Scanning Electrochemical Microscopy	3776
<i>Zachary Tyson Gossage, Nanako Ito, Tomooki Hosaka, Ryoichi Tatara, Shinichi Komaba</i>	
Probing the Dynamic Na Metal/Nasicon Interface in Sodium-Ion Batteries.....	3778
<i>Sivakkumaran Sukumaran, Stephen J Skinner, Decio Lima, Richard Dawson</i>	
Determining the Composition and Structure of a High-Performing SEI Layer for Lithium-Mediated Nitrogen Reduction to Ammonia.....	3780
<i>Valerie Anne Niemann, Mathieu Doucet, Hanyu Wang, Niklas Henrik Deissler, Peter Benedek, Jon Bjarke Valbaek Mygind, Sang-Won Lee, William Abraham Tarpeh, Ib Chorkendorff, Adam C. Nielander, Thomas F. Jaramillo</i>	
Nanoisland Formation on the Low Index Planes of Pt By Repeated Electro-Oxidation and-Reduction	3782
<i>Timo Fuchs, Fabian Schroefel, Jan Ole Fehrs, Nick Merkel, Simon Kempf, Jonas Bunge, Canrong Qiu, David A. Harrington, Jakub Drnec, Olaf M. Magnussen</i>	

L10 - Fundamental Processes at Interfaces and Interphases

(Invited) Molecular Imaging of the Local Solvation, Nucleation and Growth Processes at Electrode-Electrolyte Interfaces	3784
<i>Yingjie Zhang</i>	
Electrochemically Induced Breakdown of Integrated Microsupercapacitors Based on Lipon	3785
<i>Sneha Prabhakaran, Sami Oukassi, Charles Leroux, Frédéric Voiron</i>	
The Electrode/Electrolyte Interface in MXene-Based Electrochemical Capacitors	3787
<i>Masoud Foroutan Koudahi, Elzbieta Frackowiak</i>	
Continuum and Equivalent Circuit Modelling of Porous Electrode Charging	3788
<i>Mathijs Janssen, Christian Pedersen, Timur Aslyamov</i>	
(Invited) Composite Electrodes – the Challenge of Characterizing Ionic Transport on the Liquid Side of the Solid-Liquid Interface	3790
<i>Steen Brian Schougaard</i>	
Electrochemical Characterization of Artificial Solid Electrolyte Interphase Developed on Graphite Via ALD	3791
<i>Jonas Schlaier, Roman Fedorov, Shixian Huang, Yair Ein-Eli, Michael Schneider, Christian Heubner, Alexander Michaelis</i>	
Unexplored Reaction Pathways of Ethylene Carbonate during Solid Electrolyte Interphase Formation	3792
<i>Tim Melin, Xu Hou, Neeha Gogoi, Robin Lundström, Erik J. Berg</i>	
Electrochemical Analysis in Charge-Transfer Science: Polarity at Electrode Surfaces Affect Electrochemical Analyses for Charge-Transfer Systems.....	3793
<i>Jaime O. O`mari</i>	
Enhanced Electrochemical Activity Volcanoes in Flat-Band Twisted Trilayer Graphene	3794
<i>Mohammad Babar, Ziyang Zhu, Rachel Kurchin, Venkat Viswanathan</i>	

LA-LATE POSTER PRESENTATIONS IN BATTERIES AND ENERGY STORAGE

LA - Late Digital Only Poster Presentations in Batteries and Energy Storage

(Digital Presentation) Unraveling of the Morphology and Chemistry Dynamics in the FEC-Generated Silicon Anode SEI across Delithiated and Lithiated States.....	3795
<i>Koffi Yao, Rowan Jahan Mou, Sattajit Barua, Daniel P. Abraham</i>	
(Digital Presentation) Designing New Complex Hydrides Based on Transition Metals for Hydrogen Storage Applications.....	3797
<i>Munavvar Husain</i>	

(Digital Presentation) Electrochemical Impedance Analysis of Three-Electrode Cell with Solid Electrolyte/Liquid Electrolyte Interface	3799
<i>Tatsumi Suzuki, Chengchao Zhong, Keiji Shimoda, Ken'Ichi Okazaki, Yuki Orikasa</i>	
(Digital Presentation) Electrospun N-Doped CNFs Embedded Metal Oxides with Improved Graphitization for Superior Pseudocapacitive Energy Storage.....	3800
<i>Vaishali Tanwar, Ajay Parashar, Aditi Ashok Gujare, Pravin P Ingole</i>	
(Digital Presentation) Operando X-Ray CT Analysis of Silicon-Solid Electrolyte Mechanical Interface of All-Solid-State Battery	3801
<i>Mao Matsumoto, Yuya Sakka, Chengchao Zhong, Keiji Shimoda, Ken'Ichi Okazaki, Hisao Yamashige, Yuki Orikasa</i>	
(Digital Presentation) Chemical Workflow of Characterizing Lithium-Ion Battery Electrodes: From SEM-Eds PCA and FIB Tof-SIMS Analysis to XPS	3802
<i>Chengge Jiao, Fang Zhang, Ruijie Shao, Chris Stephens, Tim Nunney</i>	

LA - Late Poster Presentations in Batteries and Energy Storage (Monday)

Experimental Validation of Newman Model Analysis for Modern Li-Ion Battery Cathode Materials	3804
<i>Marlene Andersen Nham, Robert Morasch, Johannes Landesfeind</i>	
Improvement of Electrochemical Performances of Electrochromic-Zinc Ion Batteries System Utilizing V ⁴⁺ -V ₂ O ₅ As a Cathode	3807
<i>Yonghan Kim</i>	
Understanding the Phase Transitions in Tin Foil Electrodes for Sodium-Ion Batteries through Light Microscopy and Kinetic Analysis.....	3808
<i>Jia Zhang, Tianye Zheng, Xiaoyang Guo, Ka-Wai Eric Cheng, Kwok-Ho Lam, Steven T Boles</i>	
Effect of Glycine on a Fe-Based Electrolyte for Redox Flow Batteries	3810
<i>Emanuele Maria Groiss, Mattia Duranti, Edoardo Gino Macchi</i>	
Development of High Electrochemical Performance-Reliability TiO ₂ Nanoparticle-Mulberry Paper Based Supercapacitor	3812
<i>Seonghun Lee, Hyungsub Yoon, Tae Gwang Yun</i>	
A Scalable Approach to Synthesize Cobalt-Free LNMO Cathode Materials for High Energy Density Lithium Ion Batteries	3813
<i>Tao Hu, Yan Lin, Pekka Tynjälä, Shubo Wang, Gayathri Peta, Harishchandra Singh, Doron Aurbach, Ulla Lassi</i>	
NMC811 Electrodes with High Mass Loadings Enabled By Non-Solvent Induced Phase Inversion	3816
<i>Mark Weijers, Pranav Karanth, Pierfrancesco Ombrini, Davide Ripepi, Frans Ooms, Fokko M. Mulder</i>	
Molecular Design for Organic Redox Flow Batteries	3817
<i>Darius Aryan Pakarinen, Helena Lundberg, Rakel Lindstrom, Amirreza Khataee</i>	
Stability of Alizarin for Aqueous Organic Redox Flow Batteries	3819
<i>Meysam Maleki, Sarah Imhanria, Lisa Duguet, Marc-Antoni Goulet</i>	
Operando ¹⁷ O NMR Studies of Degradation in Li-Oxygen Batteries	3820
<i>James Ellison, Clare P. Grey</i>	
Optimizing Si-Dominant Anodes in High-Energy Li-Ion Batteries with a Binary Binder System: Exploring Impacts on Adhesion, Cohesion, and Electrochemical Performance.....	3822
<i>Ebrahim Abouzari Lotf, David Zhengjun Zhu, Mark Zihao Zhang, Will Weiyong Zhou</i>	
Fast Estimation of Entropy Profiles for Lithium-Ion Batteries	3824
<i>Jinsong Hua, Preben J. S. Vie, Julia Wind</i>	

LA - Late Poster Presentations in Batteries and Energy Storage (Tuesday)

Impact of Short Chain Polymer in Ionic Conductivity for Polymer Solid-State Electrolyte Towards Inter-/Intramolecular O-H Bond	3827
<i>Nur Izzah Abd Binti Abd Azes, Lechen Yang, Jaehoon Choi, Daniel Reed, Emma Kendrick</i>	

Basicity and Stability of Argyrodite Sulfide-Based Solid Electrolytes	3828
<i>Shi-Kai Jiang, Sheng-Chiang Yang, Wei-Hsiang Huang, She-Huang Wu, Wei-Nien Su, Bing Joe Hwang</i>	
Cathode Active Material Synthesis and Battery Performance Tests for Li-Ion Batteries Obtained from Domestic Raw Materials: A Special Case Study from Ore to Battery	3829
<i>Hilal Seda Kutluata, Melih Özduran, Emre Kaçaner, Yigit Altinsel, Nuray Demirel, Orhan Yilmaz</i>	
Theoretical Study of Nucleation and Growth in Lithium Metal Batteries.....	3831
<i>Madison Morey, Emily Ryan</i>	
Measuring Temperature Dependence of Entropy Via Temperature Ramps Using Float Current Analysis.....	3832
<i>Meinert Lewerenz, Mohamed Azzam, Moritz Ehrensberger, Reinhard Scheuer, Christian Endisch</i>	
Thermal Behavior Test and Simulation of Fresh and Aged Lfp/Lto Rechargeable Cells	3834
<i>Miaomiao Ma</i>	
A Perspective on the Use of Physics-Inspired Machine-Learned Molecular Force Fields on Battery Physics.....	3835
<i>Huziel E. Saucedo</i>	
Improving SiO _x Electrode Performance in Pressurized Pouch Cells with a Ceramic Coated Separator.....	3836
<i>Junhyeok Choi, Seungyeop Choi, Suhwan Kim, Jaejin Lim, Yong Min Lee</i>	
Multifunctional Positive Electrodes for Structural Batteries	3837
<i>Richa Chaudhary, Leif E. Asp</i>	

VOLUME 8

Advancing Lithium Battery Performance through Gel Electrolytes: Investigating EC-Based Blends with HNBR and PEC for Enhanced Conductivity.....	3839
<i>Rozita Sadeghzadeh, David Lepage, Arnaud Prébé, Gabrielle Foran, David Ayme-Perrot, Mickael Dolle</i>	
Creating a Visual Topic Map for Battery Researchers Using a Large Global Open Dataset	3840
<i>Sae Dieb, Luca Foppiano, Keitaro Sodeyama, Mikiko Tanifuji</i>	
Lithium Distribution and Site Disorder in Halide-Substituted Lithium Argyrodites: A Structural and Transport Study	3842
<i>Ajay Gautam, Marnix Wagemaker</i>	
Laser-Induced Printing of Next Generation Silicon-Graphite Anodes for the Development of Advanced Lithium-Ion Batteries	3843
<i>Ulrich Rist, Yannic Sterzl, Viktoria Falkowski, Wilhelm Pflöging</i>	
Elucidation of Electrochemical Performance of Few-Layered Graphene As Aluminium Battery Cathode Material: Effect of the Common O and S Impurities	3844
<i>Shaikshavali Petnikota, Glaydson Dos Reis, Fathima Ali Kayakool, Vadali Venkata Satya Siva Srikanth, Juho Välikangas, Ulla Lassi, Mikael Thyrel</i>	
Electrochemistry-Based Diagnosis of Li Plating for Fast-Charging Li-Ion Batteries	3845
<i>Hong Rim Shin, Siwon Kim, Jong-Won Lee</i>	
Electrochemical Characterization of Stable Cu(II)/Cu(I) Electrolytes for Redox Flow Battery	3846
<i>William Gomes Morais, Emanuele Maria Groiss, Valentina La Valle, Edoardo Gino Macchi</i>	
Mxene/SnO ₂ QDs Heterostructure Based Separator Interlayer Enable Kinetically Boosted Lithium-Sulfur Batteries.....	3848
<i>Shungui Deng, Jakob Heier, Chuanfang (John) Zhang</i>	
Simscape Framework for Digital Lithium-Ion Battery Twins: Electrode & Electrolyte Domains	3849
<i>Rafal Pakula, Mukul Parmananda, Johannes Landesfeind</i>	
Error Analysis for Transport Properties of Lithium-Ion Battery Electrolytes.....	3853
<i>Ashvini Sivasengaran, Johannes Landesfeind</i>	

Three-Electrode Coin Cell with Gold Micro-Reference Electrode	3856
<i>Mahla Bakhshi, Ashvini Sivasengaran, Johannes Landesfeind</i>	
Enhanced Performances for Solid-State Lithium-Ion Batteries with Llzo Thin Electrolyte and Silicon-Nanowires Electrode.....	3859
<i>Marco Cornago, Hugh Geaney, Abinaya M Sankaran</i>	
An in-Operando XRD Study of TiO ₂ Based Anode Materials for Secondary Li Ion Batteries Application	3861
<i>Yu-Min Shen, Guan-Bo Liao, Jyun-Siang Wang, Jow-Lay Huang</i>	
Li-Ion Dynamics in Li ₂ S:LiI Composites – on the Effect of Solid-Solution Formation on Overall Li ⁺ Transport.....	3862
<i>Anna Jodlbauer, Katharina Hogrefe, H. Martin R. Wilkening</i>	
Kg-Scale Conversion of Coal Based Industrial Waste to a Graphitic Material for Application As an Excellent Anode Material in Lithium-Ion Battery	3863
<i>Fathima Ali Kayakool, Vadali Venkata Satya Siva Srikanth, Shreyas J Kashyap, Krishna Rao Gunnum Gunnum, Balachandran Gnanaprakasam</i>	
Highly Conformal Solid Electrolyte for Li-Ion Batteries By Atomic Layer Deposition	3864
<i>Milad Madadi, Mari Heikkinen, Anish Philip, Maarit Karppinen</i>	
High Performance Anode Binder	3866
<i>Ramin Amin-Sanayei, Hunter Ye, Wenjun Wu</i>	
Understanding the Reaction Mechanism and Kinetics of Mediated Li-O ₂ Batteries Using Flow Set-Ups and Cyclic Voltammetry.....	3867
<i>Gabriela Horwitz, Vera Kunz, Israel Temprano, Samuel Niblett, Clare P. Grey</i>	
Different Damage Imprinting in Lithium Ion Cells.....	3870
<i>Jan Haß</i>	
Towards Low Cost and Long Duration Iron-Air Flow Batteries	3871
<i>Marina Tabuyo-Martinez, Ameya Bondre, Antoni Forner-Cuenca</i>	
Methods for Characterization of Heterogeneous Aging in Large Lithium-Ion Batteries.....	3873
<i>Gian Marco Trippetta, Yuan Fang, Amer Siddiqui, Rakel Lindstrom, Göran Lindbergh, Henrik Ekström</i>	
Enhancing Carbon Fiber Properties through Lignin-Cellulose Composites: A Comparative Study of Hardwood Vs. Softwood Lignin Sources	3874
<i>Azega Rajaras, Jenny Bengtsson, Hans Theliander, Per Lundgren</i>	
Borate-Coated Co-Free LiNi _{0.5} Mn _{1.5} O ₄ : Enhanced Performance and Stability for High-Power-Density Libs	3875
<i>Umair Nisar, Joachim Bansmann, Margret Wohlfahrt-Mehrens, Peter Axmann</i>	
Polarization Reduction of a Novel Cell Configuration Based on Thin-Film Electrolyte on Porous Oxide Framework for Solid State Batteries Application	3876
<i>Kuan-Zong Fung, Shu-Yi Tsai, Ricardo Jimenez, Lourdes Calzada, Isabel Sobrados</i>	
Characterizing the Cathode Degradation Process from Thermal Abuse in Solid State Batteries	3877
<i>Megan Diaz, Alex Martin Bates, Nathan Brenner Johnson, Yuliya Preger, Loraine Torres-Castro</i>	
Space Charges in Solid State Batteries: Friend, Foe or Fantasy?	3878
<i>Hanan Al-Kutubi, Swapna Ganapathy, Marnix Wagemaker</i>	

LA - Late Poster Presentations in Batteries and Energy Storage (Wednesday)

Synergistic Impact of Electrolyte Components: Interplay between the Novel Phosphorus-Based Additives and Conducting Salt Advancing NMC811 SiC Cell Performance.....	3880
<i>Baharehalsadat Sadeghi, Christian Woelke, Mykhailo Shevchuk, Gerd-Volker Röschenthaler, Martin Winter, Isidora Cekic-Laskovic</i>	
Enhancing Ion Mobility in Solids with Physics-Informed and AI-Driven Descriptors	3882
<i>Mohsen Sotoudeh, Axel Gross</i>	

Synergistic Effect of Lithium (difluoromethanesulfonyl)(trifluoromethanesulfonyl)Imide (LiDFTFSI) and Vinylene Carbonate (VC) on High Performance of NMC811 Graphite Cells	3883
<i>Peng Yan, Mykhailo Shevchuk, Christian Woelke, Felix Pfeiffer, Debbie Berghus, Masoud Baghernejad, Gerd-Volker Röschenhaler, Martin Winter, Isidora Cekic-Laskovic</i>	
High-Capacity, High-Rate Nanosized Bismuth-Antimony Embedded in N-Doped Carbon Matrix Via Facile Pyrolysis As Anodes for Advanced Li Storage.....	3885
<i>Chi Rong Sun, Anith Dzhanchinah Mohd Sarofil, Winda Devina, Jaehoon Kim</i>	
Investigations into a Perforated Reference Electrode Applied in Small Li-Ion Pouch Cells.....	3886
<i>Philipp Stehle, Daniel Rutz</i>	
Morphology Dependent Electrochemical Performance of Hydrothermally Synthesized Birnessite-Type Manganese Dioxide in Aqueous Aluminum Ion Batteries.....	3888
<i>Azadeh Abdi, Rasoul Sarraf-Mamoory, Andreas Bund, Michael Stich</i>	
Sputter Grown Hexagonal WSe ₂ @Graphite Nanoflakes for Electrochemical Energy Storage.....	3889
<i>Akshay Tomar, Sheetal Issar, Ravikant Adalati, Ramesh Chandra</i>	
New Low Cost Sulfide Electrolytes for All Solid State Batteries	3890
<i>Hari Raj, Audric Neveu, Valerie Pralong</i>	
Enhancing Temperature-Dependent Li-Ion Battery Behavior Predictions with Transfer Learning.....	3892
<i>Meghana Sudarshan, Vikas Tomar</i>	
Lithium Dendrite Propagation in Anode-Free Lithium Metal Batteries: An in-Operando Scanning Electron Microscopic Study	3893
<i>Hsin-Yueh Liu, Pei-Jung Chao, Jeng-Chian Chiou, Shi-Kai Jiang, Chen-Jui Huang, Luca Bertoli, Daniel Friesen, Xin Guan, Jonas Mindemark, Wei-Nien Su, Daniel Brandell, Bing-Joe Hwang</i>	
Insights into the First Multi Transition Element Containing Ruddlesden Popper-Type Cathode for Fluoride Ion Batteries.....	3894
<i>Oliver Clemens, Vanita Vanita</i>	
Heteroatom-Doped Carbon-Shelled Iron Phosphide Microcuboids as Freestanding Negative Electrodes for Long Cycling Sodium-Ion Batteries	3895
<i>Kwadwo Asare Owusu, Abinaya M Sankaran</i>	
From High-Throughput Experimentation to Data-Driven Analysis in the Development of Liquid Electrolytes for Lithium-Ion Batteries.....	3897
<i>Christian Woelke, Peng Yan, Martin Winter, Isidora Cekic-Laskovic</i>	
Dithiolate-Based Scorpion Arm Ligand Synthesis and Characterization	3899
<i>Md Motiur Rahaman Mazumder, Rejaul Islam, Rezoanul Islam</i>	
Monitoring the Synthesis of Nickel-Poor and Nickel-Rich Oxide Cathode Materials for Lithium-Ion Batteries with Synchrotron-Based XRD and Sxas	3901
<i>Bixian Ying, Jack Fritzipatirk, Zhenjie Teng, Karin Kleiner</i>	
Tuning the Composition, Crystal Structure and Morphology of Manganese(III/IV) Oxide for High-Power Storage Applications	3902
<i>Daniel Raymond Jones, Haytham E. M. Hussein, Eleri A. Worsley, Sajad Kiani, Kittiwat Kamlungsua, Thomas M. Fone, Christopher O. Phillips, Davide Deganello</i>	
Elevating Energy Density in Li-Ion Batteries through Electrospun Nanotubular Titania-Polymer Interfaces	3905
<i>Vahid Charkhesht, Begum Yasar Kaplan, Selmiye Alkan Gursel, Alp Yurum</i>	
Influence of Tin (Sn) Dispersion on the Synthesis of Silicon Nanowires on Graphite Substrates for Li-Ion Batteries Anodes.....	3906
<i>Luigi Jacopo Santa Maria, M. Zain Bin Amjad, Dominika Capkova, Hugh Geaney, Abinaya M Sankaran</i>	
Potential Profiles through the PEM Water Electrolyzer Anode Compartment and Cost-Effective Cell Components	3907
<i>Sebastian Karl Proch, Manish Kadam, Abhinandan Chiney, Jörgen Westlinder</i>	

State-of-Charge Dependent Change in the Microporous Structure of Graphite Electrodes 3908
*Lennart Reuter, Jonas L. S. Dickmanns, Simon Kücher, Sven Friedrich, Robert Morasch,
Andreas Jossen, Hubert Andreas Gasteiger*

LB-LATE POSTER PRESENTATIONS IN CARBON NANOSTRUCTURES AND DEVICES

LB - Late Poster Presentations in Carbon Nanostructures and Devices

A Novel and Large-Scale Rapid Green Synthesis of Few-Layer and Multi-Layer Graphene 3910
Nowduru Ravikiran, Balaji Padya, Pawan Kumar Jain, Vadali Venkata Satya Siva Srikanth
Nanoscale Carbon Allotrope at Zero-Dimension: From Small Carbon Nanoparticles to Carbon Dots
and Their Organic Hybrids 3911
Ya-Ping Sun

LC-LATE POSTER PRESENTATIONS IN CORROSION SCIENCE AND TECHNOLOGY

LC - Late Digital Only Poster Presentations in Corrosion

(Digital Presentation) Coffee Extract Assisted Synthesis of Cu²⁺-Doped NiFe₂O₄ and Influence on
Corrosion for Steel in Acidic Environment 3913
*Alvaro J Avendaño, Jimmy Morales, Guillermo Alfonso, Claudia Patricia Granja, Andrés
Dector, Jairo Alberto Gómez Cuaspud*

LD-LATE POSTER PRESENTATION IN DIELECTRIC SCIENCE AND MATERIALS

LD - Late Poster Presentations in Dielectric Science and Materials

Impacts of E-Beam Irradiation on Polycrystalline Metals in Both Bulk and Thin Film Forms 3914
*Najmin Ara Sultana, Manish Ojha, Aiman H Al-Allaq, Yousuf S Mohammed, Tilda Pendleton,
Helmut Baumgart, Abdelmageed Elmustafa*
Mechanical Properties of Vcrmn and Vcrmnti High Entropy Alloys 3915
Najmin Ara Sultana, Yousuf S Mohammed, Helmut Baumgart, Abdelmageed Elmustafa
Tuning of the Effective Refractive Index of Crystalline Si Thin Films with Controlled Modification
of Nanohole Dimensions By Dry-Etching 3916
Sarah Zayouna, Mikko Erik Kjellberg, Nevan Abeyratne, Stephan Schröder, Srinivasan Anand

LE-LATE POSTER PRESENTATIONS IN ELECTROCHEMICAL/ELECTROLESS DEPOSITION

LE - Late Poster Presentations in Electrochemical/Electroless Deposition

Electrophoretic Deposition of Polyethylene Oxide-Based Gel-Polymer Electrolyte for 3D Lithium-
Ion Batteries 3919
Anar Arinova, Arailym Nurpeissova
High-Resolution Electron Microscopic Characterization of Surfaces and Interfaces of Calcium in
Calcium-Sulfur Batteries 3920
Marco Koegel, Christoph Kiesl, Reinhard Böck, Jannik C. Meyer

LF-LATE POSTER PRESENTATIONS IN ELECTROCHEMICAL ENGINEERING

LF - Late Digital, Poster Presentations in Electrochemical Engineering

Development of a Lab-Scale Tribo-Electrochemical Approach for Chemical Mechanical
Planarization 3922
Dayo Akintan Afekare

Electrochemical Conversion of High Pressure CO ₂	3923
<i>Xu Lu</i>	

LF - Late Poster Presentations in Electrochemical Engineering

A Comprehensive Review of Aging Models in Lithium-Ion Batteries.....	3924
<i>Seyed Saeed Madani</i>	
Towards Zero Waste Recovery of Li-Ion Battery	3925
<i>Ze He</i>	
Electrochemical Analysis and Quantification of Anodic Oxidation on Activated Carbon Cloth Electrodes through Cyclic Voltammetry	3926
<i>Clara Ehinger, Lily Callen, Airelle Alejandre, Lauren Valentino</i>	

LG-LATE POSTER PRESENTATIONS IN ELECTRONIC MATERIALS AND PROCESSING

LG - Late Poster Presentations in Electronic Materials and Processing

Modified Carbonyl Iron Powders to Have Partial Interface Bonding for Stretchable Polymer Matrix Composites	3927
<i>Byungil Hwang, Hyungsub Yoon, Heebo Ha</i>	
Acid Leaching of CIGS Solar Cells: A Focus on Silver and Indium	3928
<i>Ioanna Teknetzi, Burçak Ebin</i>	
Thermal Atomic Layer Deposition of Gallium Nitride Films Using Tris(dimethylamido)Gallium and Ammonia	3930
<i>Yerim Choi, Okhyeon Kim, Jian Heo, Hye-Lee Kim, Won-Jun Lee</i>	

LH-LATE POSTER PRESENTATIONS IN ELECTRONIC AND PHOTONIC DEVICES AND SYSTEMS

LH - Late Poster Presentations in Electronic and Photonic Devices and Systems

High Reliability Tungsten-Doped Indium Zinc Oxide Thin Film Transistors for Display Applications.....	3931
<i>Jing-Zhong Deng, Tsung-Che Chiang, Zhen-Hao Li, Po-Tsun Liu, Yue Kuo</i>	
Fabrication of Chiral Plasmonic Photocatalyst By Circularly Polarized Light and Enantioselective Hydrogen Generation Activity.....	3933
<i>Haeun Kang, Dong Il Won, Dong Ha Kim</i>	

LI-LATE POSTER PRESENTATIONS IN FUEL CELLS, ELECTROLYZERS, AND ENERGY CONVERSION

LI - Late Digital Only Presentations in Fuel Cells, Electrolyzers, and Energy Conversion

(Digital Presentation) Study of Structural and Ionic Conductivity Property in Gd ³⁺ and Sm ³⁺ Co- Doped Ceria for Low Temperature SOFC Electrolyte Application	3934
<i>Prerna Vinchhi, Prerna Vinchhi</i>	
(Digital Presentation) Efficient Mixed Ionic Electronic Conductor (MIECs) for Conventional SOFC.....	3936
<i>Dr Rizwan Raza, Shahzad Rasool</i>	
(Digital Presentation) New Magnetron Sputtering Fabrication Process for Ba _{0.5} Sr _{0.5} Co _{0.8} Fe _{0.2} O _{3-δ} Miec Thin Film Membranes on Porous Support for Oxygen Permeation Applications	3937
<i>Basma Mewafy, Olga Ravkina, Jan Wallis, Marcel Wetegrove, Robert Kircheisen, Ralf Kriegel, Jens Wartmann, Angela Kruth</i>	

(Digital Presentation) Operando x-Ray Fluorescence Spectroscopic Study of in-Plane Cerium-Ion Radical Quencher Distribution in Polymer Electrolyte Membranes	3938
<i>Kaoruko Morita, Aika Takezawa, Naoki Kitano, Akira Kuwaki, Akihiko Kato, Satoshi Yamaguchi, Kazuma Shinozaki, Yuki Orikasa</i>	

LI - Late Poster Presentations in Fuel Cells, Electrolyzers, and Energy Conversion (Monday)

Multi-Functional Alkaline Electrolysis Setup for Industrially Relevant Testing of Cell Components	3940
<i>Martin Maide, Alise-Valentine Prits, Sreekanth Mandati, Rainer Küngas</i>	
Active Electrochemical Catalysts for Ammonia and Hydrogen Evolution Reaction	3942
<i>Di-Yan Wang</i>	
Improvement of Oxygen Reduction Reaction Performance of Fe-N-C Catalyst.....	3943
<i>Genki Nakamura, Hirohisa Tanaka</i>	
Exploring the Activity-Stability Landscape of Nife-LDH for the Oxygen Evolution Reaction at Industrially Relevant Alkaline Electrolysis Conditions	3945
<i>Sarmad Iqbal, David Müller, Christodoulos Chatzichristodoulou</i>	
Ternary Oxide Semiconductors and Alloys: Compositional Effects on Band Structure and Optoelectronic Properties	3946
<i>Krishnan Rajeshwar, Fahad Danladi, Efsthios Meletis, Abhishek Rawat</i>	
Development of Novel Coating on Metallic Bipolar Plates for Proton Exchange Membrane Water Electrolyzer Application	3947
<i>Samaneh Shahgaldi, Aditya Singh</i>	
Electrocatalysts for High Temperature (100-200 °C) and Pressure (45 bar) Alkaline Electrolysis.....	3949
<i>Pradipkumar Leuaa, Christodoulos Chatzichristodoulou</i>	
Tailoring Binding Abilities By Incorporating Oxophilic Transition Metals on 3D Nanostructured Ni Arrays for Accelerated Alkaline Hydrogen Evolution Reaction.....	3950
<i>Jaerim Kim, Hyeonjung Jung, Sang-Mun Jung, Yong-Tae Kim, Jeong Woo Han, Jong Kyu Kim</i>	

LI - Late Poster Presentations in Fuel Cells, Electrolyzers, and Energy Conversion (Tuesday)

Process Intensification and Performance Assessment of Sputtered Gadolinium Doped Ceria (GDC) Barrier Layer in Large-Area Solid Oxide Fuel Cell Short Stack.....	3951
<i>Hafiz Sami Ur Rehman, Nunzia Coppola, Arpana Singh, Pierpaolo Polverino, Giovanni Carapella, Dario Montinaro, Francesca Martinelli, Veronica Granata, Alice Galdi, Luigi Maritato, Cesare Pianese, Luca Braglia, Piero Torelli, Carmela Aruta</i>	
Causes and Effects of Unintended Cation Crossover in CO ₂ Reduction Cells.....	3952
<i>Gumaa El-Nagar, Flora Haun, Siddharth Gupta, Sasho Stojkovikj, Matthew T. Mayer</i>	
In Situ Investigation on Cl ⁻ Repellency Effect of Electrolyte Additive on NiOOH for Alkaline Sea Water Splitting.....	3953
<i>Kahyun Ham, Ahyoun Lim, Ioannis Spanos</i>	
Activation of Commercial Stainless-Steel Electrodes for Highly Efficient and Stable Anion-Exchange Membrane Electrolysis	3954
<i>Tao Jiang, P. V. Aravind, Bayu Jayawardhana, Paolo P. Pescarmona, Vasileios Kyriakou</i>	
Ultra-Low Loading IrO ₂ on Porous Transport Layer for Catalysis of Proton Exchange Membrane Water Electrolysis.....	3955
<i>Jie Shen, Frennie Bens, Bas Van Dijk, Davide Ripepi, Oscar Diaz-Morales</i>	
Long Term Evolution of MEA for AEM	3956
<i>Sepanta Dokhani, Amirreza Khataee, Anders Lundblad, Goran Lindbergh</i>	
LiMn ₂ O ₄ as a Model System to Understand the Mn Dissolution Mechanism during Water Oxidation.....	3957
<i>Omeshwari Yadorao Bisen, Max Baumung, Florian Schöneward, C. A. Volkert, Marcel Risch</i>	

LI - Late Poster Presentations in Fuel Cells, Electrolyzers, and Energy Conversion (Wednesday)

Diffusion-Restricted Cation Exchange Derived Rhodium Nanoparticles for Hydrazine Assisted Hydrogen Production.....	3959
<i>Hak Hyeon Lee, Ji Hoon Choi, Dong Su Kim, Hyung Koun Cho</i>	
Core-Shell Nanofiber Composites As Highly Active and Robust Anodes for Direct-Hydrocarbon Fueled Solid Oxide Fuel Cells.....	3960
<i>Yonseok Choi, Hee-Jin Cho, Jinwook Kim, Joon-Young Kang, Jongsu Seo, Jun Hyuk Kim, Seung Jin Jeong, Dae-Kwang Lim, Il-Doo Kim, Woochul Jung</i>	
Thin Membranes Using PFSA-Vinylon Intermediate Layer for PEM Fuel Cells	3961
<i>Jedeok Kim, Kazuya Yamasaki, Hitoshi Ishimoto</i>	
Polymeric Anion Exchange Membranes for Green Hydrogen Production.....	3962
<i>Andrea Roggi, Elisa Martinelli</i>	
Metal–Organic Framework CPO-27 Derivatives As Non-Precious Metal Catalyst for Anion Exchange Membrane Fuel Cell	3964
<i>Yusuf Pradesar, Afandi Yusuf, Daniel Manaye Kabtamu, Chen-Hao Wang, Hsin-Chih Huang</i>	
Experimental Investigations for Recycling and Characterisation of EVA, PVF and PET Polymers from Waste Photovoltaic Modules.....	3965
<i>Marek Krolkowski, Piotr Zach</i>	
Washable and Eco-Friendly PEDOT:PSS Coated Silk Yarn Based-Transpiration-Driven Electrokinetic Power Generator with Tremendous Energy Generation.....	3967
<i>Hyungsub Yoon, Byungil Hwang, Tae Gwang Yun</i>	
Nickel-Doped Cobalt Oxyhydroxide Nanowires Coupled Polyaniline Functionalizedcarbon Cloths As Multifunctional Electrocatalysts for Hydrogen/Oxygen Evolutionreactions at All pH Levels	3968
<i>Niranjnmurthi Lingappan, Wonoh Lee</i>	
Exploring the Local Optoelectronic Properties of ALD Grown TiO ₂ Photoelectrode-Coatings with Atomic Force Microscopy Methods	3970
<i>Maryam Pourmahdavi, Ragle Raudsepp, Steffen Fengler, Herman Kriegel, Jiri Kollmann, Thomas Klassen, Mauricio Schieda, Francesca Maria Toma</i>	
Rapid Fabrication of Efficient and Stable Microporous Electrodes for Practical Alkaline Water Electrolysis	3971
<i>Xinge Jiang, Sophie Costil, Vasileios Kyriakou, Taikai Liu, Tao Jiang, Hanlin Liao</i>	
Viability of Solid Oxide Fuel Cell Vehicles with on-Board CO ₂ Capture	3972
<i>Scott A Barnett, Travis Anthony Schmauss</i>	
Synthesis of Ir Nanoparticles As Promoters for the Stabilization of Fenc-Catalysts Under Ssc Conditions	3973
<i>Lars Sondershausen, Vladislav Gridin, Nicole Segura Salas, Kathrin Hofmann, Ulrike I. Kramm</i>	

LJ-LATE POSTER PRESENTATIONS IN LUMINESCENCE AND DISPLAY MATERIALS, DEVICES, AND PROCESSING

LJ - Late Poster Presentations in Luminescence and Display Materials, Devices, and Processing

Spectro-Electrochemiluminescence Analysis of the Simultaneous Emission of Two Luminophores	3974
<i>David Ibáñez, María Begoña González-García, David Hernández-Santos, Pablo Fanjul</i>	

LK-LATE POSTER PRESENTATIONS IN ORGANIC AND BIOELECTROCHEMISTRY

LK - Late Poster Presentations in Organic and Bioelectrochemistry

Electrosynthetic Carboxylation of Biomass-Derived Compounds in Ionic Liquids.....	3975
<i>Astrid Kjær Steffensen, Helena Lundberg, Anders Riisager</i>	

Electroreductive Desulfurative Transformations with Thioethers As Alkyl Radical Precursor.....	3976
<i>Julius Kuzmin, Johannes Röckl, Nils Schwarz, Jonas Djossou, Guillermo Ahumada, Mårten Ahlquist, Julius Kuzmin</i>	
Direct Electrochemical Reductive Synthesis - a Tool for Novel Classes of N-Oxy Heterocycles	3977
<i>Johannes Winter, Siegfried R Waldvogel</i>	
Electrochemical Reduction of C-O Bonds	3978
<i>Piret Villo, Malin Lill, Zainab Alsaman, Adrian Soto Kronberg, Victoria Chu, Guillermo Ahumada, Hemlata Agarwala, Mårten Ahlquist, Helena Lundberg</i>	
Tetrabutylammonium Borohydride: A Sacrificial Reductant in Organic Electrosynthesis.....	3979
<i>Guillermo Ahumada, Malin Lill, Julius Kuzmin, Ellymay Goossens, Astrid Steffensen, Helena Lundberg</i>	
Iron-Mediated Electrolysis for Selective Oxidative Decarboxylation of C-Terminal Acids Using Metal-Binding Residue.....	3980
<i>Adam J. Sowers, Kim S. Halskov, Kevin D Moeller</i>	
Investigating the Effects of Cold Plasma on Cancer Cell Migration in the Presence of a Static Magnetic Field.....	3981
<i>Ramin Mehrabifard</i>	

LL-LATE POSTER PRESENTATIONS IN PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY, ELECTROCATALYSIS, AND PHOTOELECTROCHEMISTRY

LL - Late Digital Only Poster Presentations in Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry

(Digital Presentation) Porous Silicon Formed by Electrochemical, Chemical and Combined Etching	3983
<i>Zhumabay Zhumabay</i>	
(Digital Presentation) Perovskite-Type Lanthanum Ferrite Synthesis Using Industrial Sugarcane Molasse and Its Application in Electrochemical Detection of Acetaminophen.....	3985
<i>Cindy Vanessa Castellanos Bernal, Jimmy Morales, Guillermo Alfonso, Claudia Patricia Granja, Andrés Dector, Jairo Alberto Gómez Cuaspud</i>	
(Digital Presentation) Green Synthesis of Calcium Ferrite Particles and Preliminary Study of Their Application for Electrochemical Detection	3986
<i>Kevin Steven Gómez Lara, Jimmy Morales, Guillermo Alfonso, Claudia Patricia Granja, Andrés Dector, Jairo Alberto Gómez Cuaspud</i>	
(Digital Presentation) Electrochemical Study of Mxene-Metal Oxide Composites for the Degradation of PVC-Based Microplastics.....	3987
<i>Nur Alom, Habiba Yeasmin, Tan Kim Han, R Saidur, Mamun Jamal</i>	

LL - Late Poster Presentations in Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry

Solar Energy Is Effectively Converted to Electricity and Hydrogen Using Cyanobacteria.....	3989
<i>Youngrok Lee, Jihwan Lee, Sunghyun Kim</i>	
DFT Studies on Cu _n /TiO ₂ (n=1-7) System for Water Splitting.....	3991
<i>Renata Tokarz-Sobieraj, Vidya Kaipanchery, Agnieszka Drzewiecka-Matuszek, Dorota Rutkowska-Zbik</i>	
Towards Sustainable Hydrogen Peroxide Electroproduction: Activated Carbon from Sewage Sludge As an Eco-Friendly Electrode Material	3992
<i>Julio Cesar Lourenço, Tulio P. Porto, Igor P. C. Cruz, Beatriz Nogueira, Nicolas Perciani De Moraes, Guilherme Vilalba Fortunato, Liana Alvares Rodrigues, Robson Silva Rocha, Marc Ledendecker, Marcos R. V. Lanza</i>	
Is There the Fourth Law of the Thermodynamics?.....	3994
<i>Alexandr I. Chernomorskii</i>	

Analysis of the Impact of Operating Conditions on Performance of H ₂ Gas – Aqueous Manganese Redox Flow Batteries	3997
<i>Catherine Farrow, Stefano Mezzavilla, Dillon Pandya, Emilia Ranta, Oliver Fernihough, Ben Liddington, Ashkan Kavei, Tim Von Werne</i>	
Accelerating Electrocatalyst Innovation: High-Throughput Automated Microkinetic Modeling	3998
<i>Richard H West, Magda H Barecka, Qing Zhao</i>	
Determination of Electrochemical Pretreatment Voltage Limits, Scan Rate and Cycle Number	4000
<i>Mert Tas, Gülsah Elden, Sai Venkata Akhil Kumar Challuri, Jens Noack</i>	
Characterization of the Photothermal Response in Nanocomposite Silica Aerogel Materials with Thin Metal Films	4004
<i>Amanda Capacchione, Nima Talebzadeh, Mubariz Nagi, Thomas Cooper, Paul O'Brien, Marina Freire-Gormaly</i>	

LM-LATE POSTER PRESENTATIONS IN SENSORS

LM - Late Digital Only Poster Presentations in Sensors

(Digital Presentation) Obtaining Copper-Deficient Cobalt Ferrite Nanoparticles from Facile Glycerol-Assisted Synthesis and Electrochemical Sensing of Acetaminophen.....	4005
<i>Guillermo Alfonso, Claudia Patricia Granja, Jimmy Morales, Andrés Dector, Jairo Alberto Gómez Cuaspud</i>	
A Flexible Sensor for Vancomycin Fabricated By Depositing Molecularly Imprinted Carbon Paste on a Wire	4006
<i>Yasuo Yoshimi, Haruka Okamura, Keigo Dosaka, Aaryashree Aaryashree</i>	

LM - Late Poster Presentations in Sensors (Monday)

Optimization of Osmium Metal Loading in Redox Polymer for Biosensing Applications	4010
<i>William Lowery, Pragun R Tuladhar, David E Cliffl</i>	
Fast Screening of Fentanyl Illicit Drug By the Electrochemical Enhancement of Raman Intensity	4011
<i>David Ibáñez, María Begoña González-García, David Hernández-Santos, Pablo Fanjul</i>	
Development of Glutamate Sensor Based on Mxene/NiO Modified Screen Printed Carbon Electrode.....	4012
<i>Adnan Bin Aziz, Nur Alom, Tan Kim Han, R Saidur, Mamun Jamal</i>	
Fabrication of High-Performance pH Sensor Based on NiO/Mxene/PANI Modified Sensing Platform	4014
<i>Syda Wasy Yelmai, Nur Alom, Tan Kim Han, R Saidur, Mamun Jamal</i>	
Non-Enzymatic Lactose Sensor Based on Mxene-NiO Modified Nickel Foam Electrode	4016
<i>Asfia Akter Rifā, Neshi Rani Bar, Nur Alom, Tan Kim Han, R Saidur, Mamun Jamal</i>	

LM - Late Poster Presentations in Sensors (Wednesday)

3D-Printed Microfluidics System Coupled with Electrochemical pH Control for Enhanced Chlorine Detection	4018
<i>Shane O'Sullivan, Fernando Diaz, Ian Seymour, Alan O'Riordan</i>	
A Single Trapped Vesicle Enhances the Sensing of Dynamic in-Teractions between Tau Protein and Lipid Membrane	4020
<i>Ke-Le Chen, Ru-Jia Yu, Yi-Tao Long</i>	
Freshness Indicating Substance Sensor in Meat Using Molecularly Imprinted Carbon Paste Electrode.....	4021
<i>Yasuo Yoshimi, Yui Sato, Takumi Iwasaki, Aaryashree Aaryashree</i>	
Detection of VOCs Using Doped ZnO Nanorods.....	4023
<i>Papa Kojo Amoah, Helmut Baumgart, Yaw Obeng, Tarek M Abdel-Fattah, Qui Quach</i>	

LZ-LATE PRESENTATIONS IN ELECTROCHEMISTRY IN SPACE

LZ - Late Poster Presentations in Electrochemistry in Space

- Selective CO₂ Electrolysis on Cu-on-MgO/Mg(OH)₂ Catalyst through Enhanced CO₂ Adsorption..... 4024
Ding Huei Tsai, Tung-Ta Wu, Lu Yu Chueh, Liao Wei-Chieh, Wen-Yueh Yu, Yung-Tin Pan

M01-RECENT ADVANCES IN SENSORS SYSTEMS 4

M01 - Digital Only Presentations

- (Digital Presentation) A Novel Method for Precise Measurement of Displacement Using Eddy Currents at High Temperature 4025
Ikhyun Kwon, Cheong Worl Kim
- (Digital Presentation) Construction of a Novel Phosphate Potential Sensor and Its Application..... 4027
Chengyin Wang, Chenguang Zhang, Tianyi Wang
- (Digital Presentation) Evaluation of a WSN Integrated to an IoT Services in a Food Chain's Blockchain System 4029
Cátia Siueia, William Okunsebor, Mario Siteo

M01 - Recent Advances in Sensor Systems Session 1

- Electrochemical Framework for Dynamic Tracking of Soil Organic Matter (SOM) 4030
Vikram Narayanan Dhamu, Anirban Paul, Sriram Muthukumar, Shalini Prasad
- Non-Equilibrium Nitrate Detection in Ionophore-Based Solid-Contact Ion-Selective Electrodes..... 4032
Ryan Gettler, Matthias Young, Shima Mehregan, Henry D Koenig
- An Electrochemical Approach to in-Situ Continuous Soil Nitrate Monitoring 4033
Mohammed Eldeeb, Vikram Narayanan Dhamu, Anirban Paul, Sriram Muthukumar, Shalini Prasad
- Leveraging an AI-Assisted Electrochemical Sensor Array to Visualize Digital Fingerprints of Complex Liquids 4034
Gianmarco Gabrieli, Matteo Manica, Patrick Ruch
- Ultraviolet CMOS Image-Sensor Via Energy Down Shift Mechanism of Blue-Light Emitting Quantum-Dots for Environment Analysis 4036
Uihyeon Jung, Jun-Seong Park, Tae-Hun Shim, Jea-Gun Park
- Experimental and Simulation Studies of Acetone Detection By Pt-Au Nanofilm Sensors 4038
Yuma Taniguchi, Taro Kato, Yusuke Hamanaka, Takahisa Tanaka, Ken Uchida
- Deposition of Composite Nanoparticle-Based Thin Films for Gas Sensing..... 4040
Jiri Capek, Kalyani Shaji, Stanislav Haviar, Petr Zeman
- Electrochemical Removal of Dissolved Oxygen for the on-Site Sensing of Free Sulfites in Wines 4041
Gregoire Herzog, Július Gajdár, Mathieu Etienne

M01 - Recent Advances in Sensor Systems Session 2

- Error-Aware, Layer-Resolved Characterisation of Lithium-Ion Batteries Based on Ultrasonic Resonance and Parametric Analysis 4043
Yuankai Ren, Ming Huang, Yatish Patel, Frederic Cegla, Bo Lan
- Li-Ion Cell in Operando Monitoring and Prognostication Using CMUT Devices 4044
Andrew Cannon
- Lithium-Ion Capacitor Characterization Using Optical Fiber Sensors 4046
Markus Solberg Wahl, Xiaoyang Guo, Jacob Lamb, Steven T Boles, Odne Stokke Burheim
- Ultrasonic Methods for Characterizing Layered Electrodes of Lithium-Ion Batteries 4047
Ming Huang, Frederic Cegla, Bo Lan

Cerium Ion Adsorption to Fluorine-Doped Tin Oxide Electrodes.....	4048
<i>Molly M Macinnes</i>	
Dual-Function Sensing Platform for Hg ²⁺ Based on a Redox-Active Thiosemicarbazone Receptor.....	4049
<i>Ciprian Florea, George Octavian Buica, Madalina Andreea Pandele, Manuela-Elena Voicu, Robert Cretu, Luisa Pilan, Matei Raicopol</i>	
Fabrication of a Palladium Hydride pH Microelectrode with an Extended Lifetime.....	4051
<i>Yuanjiao Li, Janine Mauzeroll, Samuel Charles Perry</i>	
Monitoring Electrochemical Signals from Sacrificial Coatings for Pipeline Materials with Membrane-Based Sensors.....	4052
<i>Arnaldo Rendon, Zineb Belarbi, Serguei N. Lvov, Omer Dogan, Derek M. Hall</i>	

M01 - Recent Advances in Sensor Systems Session 3

Amine-Functionalized Pencil Graphite Electrode for Simultaneous Determination of Dopamine and Uric Acid.....	4053
<i>Dulal Chandra Kabiraz, Shahed Ahmed</i>	
Development of Electrochemical Paper-Based Devices for Field Assays.....	4056
<i>Anastasios Economou, Christos Kokkinos, Dionysios Soulis, Varvara Pagkali, Mamas Prodromidis</i>	
Platinum and Palladium Nanoparticles on Boron-Doped Diamond for the Electrochemical Detection of Hydrogen Peroxide: A Comparison Study.....	4057
<i>Elizabeth Monique Monroe, Paula Cordero, Sarah Kazemeini, Andrea Murillo-Soto, Cory Rusinek</i>	
Highly Sensitive Acetylcholine Biosensing Via Chemical Amplification of Enzymatic Processes in Single Track-Etched Nanochannels.....	4058
<i>Vanina M. Cayón, Yamili Toum Terrones, Gregorio Laucirica, Gonzalo Fenoy, M. Lorena Cortez, Maria Eugenia Toimil Molares, Christina Trautmann, Waldemar Marmisolle, Omar Azzaroni</i>	
Electro-Structured Cu Distorted Nanopyramids for Superior Sweat Glucose Sensing.....	4059
<i>Chiranjeevi Srinivasa Rao Vusa, Nachiket Gokhale, Siddhartha Panda</i>	

M01 - Recent Advances in Sensor Systems Session 4

Sensitive Recognition of Acetamidiprid with a Unique Electrochromic Molecular Imprinted Polymer Sensor.....	4060
<i>Esma Mutlu, Ahmet Senocak, Erhan Demirbas, Atif Koca, Duygu Akyuz</i>	
Cellulose Based Antimicrobial Nanocomposite Surface Coatings for Sensing of Biological Contaminants.....	4061
<i>Jason J. Keleher, Katey M Sheets, Heather M Kamuda</i>	
Novel Amino Acid Based Molecularly Imprinted Polymers as Recognition Elements for Electrochemical Detection of Contaminants of Emerging Concern (CEC).....	4062
<i>Claire Beddok, Carole Calas-Blanchard, Gad Fuks</i>	

M01 - Poster Session

Increasing Sensitivity and Selectivity for Heavy Metal Sensing through Microfluidic Electrochemical Sensor.....	4064
<i>Mohammad Hossein Ghanbari, Bastian J. M. Etzold</i>	
Membraneless Ionic Liquid Droplet Nanoprobe for Vapor Sensing and Gas Phase Scanning Electrochemical Microscopy.....	4066
<i>Hyun Ahn, Suhyuk Choi</i>	

Controlled Surface Functionalization Using Aryldiazonium Salts for the Development of Aptasensing Platforms.....	4067
<i>Ciprian Florea, Andra Mihaela Onas, Andreea Madalina Pandele, Matei Raicopol, Luisa Pilan</i>	
Robust Type III Potentiometric Sensors for SO _x Realized Via Fast Solid-State Potassium Ion Conductors.....	4068
<i>Mohamad Khoshkalam, Peter Holtappels, Bhaskar Reddy Sudireddy</i>	
Fabrication of a Capacitive BaTiO ₃ -PDMS Hand Sign Language Sensor and Its Signal Classification Aided by Machine Learning	4070
<i>Frances Danielle Fernandez, Sukeun Yoon, Jin-Heong Yim, Hong Kyoong Choi, Jihoon Kim</i>	
High-Sensitivity Hydrogen Sulfide Electrochemical Gas Sensor Based on CNT/Pt Cluster Electrode.....	4071
<i>Jinbeom Kwon, Daewoong Jung, Yuntae Ha, Suji Choe, Soobeen Baek, Dong Geon Jung, Byoungho Kang</i>	
High-Sensitivity Mechanochromic Sensor Using Core-Shell Colloidal Crystals.....	4072
<i>Young-Seok Kim, Sanghoon Lee, Shin Geun Park, Wonmok Lee</i>	
Characterization of a Waveguide with 45 Degree Reflectors for the Detection of Carbon Dioxide.....	4073
<i>Junyeop Lee, Seongpil Hwang, Narae Bang, Dong Geon Jung, Daewoong Jung</i>	
Blood Cell Detection Method Using Single-Entity Electrochemistry	4076
<i>Byung-Kwon Kim</i>	
Improved Structural Stability of CuO Via Bi Doping for Glucose Sensing	4077
<i>Jiajing Zhong, Weiran Zheng</i>	

M02-BIOSENSORS, LAB-ON-CHIPS, POINT-OF-CARE TESTING, IN VITRO, AND IN VIVO IMAGING 2

M02 - Real-Time Monitoring with Sensors

Understanding Neurotransmission Using Single Vesicle Electrochemistry	4079
<i>Xianchan Li</i>	
(Invited) Voltammetric Measurement of Neuropeptides and Neurohormones with Carbon-Fiber Microelectrode Biosensors	4081
<i>Alexander George Zestos, Michelle Hadad, Nadine Hadad, Nadiyah Alyamni, Jandro L. Abot</i>	
(Invited) Real Time Monitoring of Target Binding for the Development of Clinical Diagnostic Tests.....	4082
<i>Leyla Soleymani, Yingfu Li, Payel Sen, Zijie Zhang</i>	
(Invited) Cavitas Biosensors for Non-Invasive Monitoring of Blood Chemicals.....	4083
<i>Kohji Mitsubayashi</i>	
Gradient Porous Graphene-Based Ion-Selective Electrode for Real-Time Monitoring of Sweat Electrolyte	4084
<i>Zhaoli Gao, Kan Kan Yeung</i>	
(Invited) Electrochemical Microbiosensors for Real-Time Monitoring of Reactive Oxygen Species in Living Tissues	4086
<i>Emanuela Andreescu</i>	
(Invited) All-3D-Printed Devices for Electrochemical Sensing	4087
<i>Christos Kokkinos</i>	
(Invited) Calibration-Free Ion-Selective Electrodes and Optodes for Decentralized Electrolyte Monitoring.....	4088
<i>Xuwei Wang</i>	

M02 - Optical Sensors and Bio-Imaging 1

- (Invited) Emissive Transition-Metal Complexes and Their Applications for Optical Sensing and Bioimaging 4089
Wenfang Sun
- (Invited) Novel Plasmonic Materials as Fluorescence Enhancers for Biosensing and Bioimaging in Near Infrared Window 4090
Fang Xie
- (Invited) Nanoplasmonic Optofluidic Biosensors for Rapid and Precise Immune Functional Analysis in Personalized Immunotherapy 4091
Pengyu Chen
- (Invited) Paper-Based SERS Quantitative Analysis for Cancer Diagnosis and Subtyping 4092
Ming Li

M02 - Wearable Sensors, Lab-on-Chips and Point-of-Care Testing 1

- (Invited) Smartphone Diagnostics Meets CRISPR..... 4093
Qingshan Wei
- (Invited) COVID-19 As a Technology Accelerator for High-Speed Polymerase Chain Reaction (PCR)..... 4094
Marc Jozef Madou
- (Invited) Optical Paper-Based Microfluidic Devices for Point-of-Care Testing 4096
Nianqiang Wu
- (Invited) Towards Self-Powered Biosensing 4097
Shelley D. Minteer
- (Invited) Breath and Skin Gas Sensing for Rapid POC Medical Diagnostics 4098
Perena Gouma
- (Invited) Stretchable and Biodegradable Sensors Based on Liquid Metal-Polymer Composites Encapsulated in Microfluidics 4099
Xingyu Jiang, Shuaijian Yang, Leni Zhong
- (Invited) Wearable Intelligent Sensors and Electronic (WISE)- Problem, Progress and Perspective..... 4100
Tailin Xu, Xueji Zhang

M02 - Wearable Sensors, Lab-on-Chips and Point-of-Care Testing 2

- Detection of Covid-19 with Dual-Signal Probes in Paper Microfluidics 4101
Helen Xiong, Yingjie Hang, Nianqiang Wu
- (Invited) Skin-Interfaced Wearable Biosensors 4102
Wei Gao
- (Invited) Lab-in-a-Tube Design Enables a Rapid Diagnosis of Infectious Disease..... 4103
Tony Hu
- (Invited) Soft Electrochemical Biosensors and Supercapacitors 4104
Wenlong Cheng
- (Invited) Magnetofluidic Platforms for Point-of-Care Detection of Infectious Diseases 4105
Tza-Huei Jeff Wang
- Nanostructured Electrochemical Devices and Self-Powered Systems for Biosensing 4106
Yuanjing Lin

M02 - Optical Sensors and Bio-Imaging 2

- Tandem Affinity Purification of FITC-Labelled Target Protein for Biomedical Applications 4107
Kakoli Bose

(Invited) Biosensing for Biomanufacturing of Therapeutics	4108
<i>Junhyeong Wang, Mahshid Hosseini, Irfan Ismail, Eduardo Barbieri, Shriarjun Shastry, Kimberly Ritola, Stefano Menegatti, Michael Daniele</i>	
(Invited) Therapeutic Drug Monitoring Using Quantitative Surface Enhanced Raman Scattering	4109
<i>Anja Boisen</i>	
(Invited) Metal and Nonmetal Plasmonic Nanostructures for Surface-Enhanced Raman Spectroscopy Detection	4110
<i>Haibin Tang, Guowen Meng</i>	
(Invited) Luminescence Nanothermometers: Using Light to Detect Temperature	4111
<i>Fiorenzo Vetrone</i>	
(Invited) Calibration of Upconverting Materials and Nanoprobes	4112
<i>Callum M. S. Jones, Adilet Zhakeyev, Jose Marques-Hueso</i>	
(Invited) A Three-Biomarker Strategy for Diagnosis of Acute Myocardial Infarction Via a Multiplex Electrochemiluminescence Immunoarray	4114
<i>Hua Cui, Mingquan Guo, Zachary J. Smith</i>	

M02 - Electrochemical Biosensors 1

(Invited) Advanced Scanning Probe Microscopy for Studying Biofilm Formation and Single Cell Entities at Electrified Interfaces	4115
<i>Giada Caniglia, Andreas Hellmann, Sven Daboss, Christine Kranz</i>	
(Invited) Nickel Nanoparticles Modified Carbon Film Electrodes for Detection of Sugars.....	4116
<i>Osamu Niwa</i>	

M02 - Wearable Sensors, Lab-on-Chips and Point-of-Care Testing 3

(Invited) Sustainable Paper Substrates for Biosensor Development	4117
<i>Sushanta Mitra</i>	
Parallel Amperometric and Potentiometric Multianalyte Detection in a Microfluidic System	4118
<i>Pragun R Tuladhar, William Lowery, David E Cliffl</i>	
Biosensor for Rapid Measurement of Lactate in Exhaled Breath Condensate	4119
<i>Shulin Zhang, Danny O'Hare</i>	
Strategies for Embedding Electrochemical Sensors and Enzymatic Biofuel Cells into Miniaturized Platforms	4121
<i>Itthipon Jeerapan</i>	
Stretchable Electrodes for Medical Devices.....	4122
<i>Matteo Saini, Stefania Andreula, Chiara Taveggia, Chiara Groppi, Marco Trezzi, Laura Spreafico, Luca Gussoni</i>	

M02 - Poster Session

Electrochemical Synthesis of Self-Doped Poly(3,4-ethylenedioxythiophene) and Application to Flexible Biosensors	4123
<i>Yuxin Jing, Fumika Miyai, Hidenori Okuzaki</i>	
Cellulose Nanocrystals As a Key in Wearable Sensors	4124
<i>Jessica Heline Lopes Da Fonseca</i>	
Better Reception, Better Signal! Investigating the Impact of Electrochemical Immunosensor Architecture on Sensitivity	4125
<i>Adrian Hannon, Kieran McGourty, Tadhg Kennedy</i>	
Applications of Optical Method As an Effective Platform for Progesterone Sensing Using Carbon Dots and Graphene Oxide	4127
<i>Disha Disha, Poonam Kumari, Raj Rani, Manoj Kumar Nayak</i>	

Development of an Electrochemical Sensor for Histamine Detection, Based in the Formation of Complexes with Chelating Agents	4128
<i>Cinthya Paola Felix Navarro, Amed Gallegos Tabanico, Jorge Jimenez Canale, Hisila Santacruz Ortega, Jose Sarabia Sainz</i>	
Electrochemical Biosensors Composed of Polyethylenimine (PEI) and Graphene Derivatives for Rapid Detection of Alzheimer’s Disease	4129
<i>Bianca Fortes Palley, Milena Nakagawa De Arruda, Gustavo Freitas De Souza, Julio Cesar Artur, Marli Leite De Moraes, Emerson Sarmento Gonçalves</i>	
A Flexible Aptasensor Based on Silver–Modified PVC Membrane Electrode Detection of Chikungunya Virus in Human Serum.....	4131
<i>Pradakshina Sharma, Mohd Rahil Hasan, Jagriti Narang</i>	

M02 - DNA - or Aptamer-Based Biosensors

Electrochemical Aptamer-Based Biosensor Developed to Monitor PCA3 and PSA Released by Prostate Cancer Cells.....	4132
<i>Valber De A Pedrosa</i>	
Exploration of DNA Binding Proteins As a Versatile Tool for Fabrication of DNA-Protein Complexes and Its Application to Biosensing System	4134
<i>Erika Komiya, Shouhei Takamatsu, Daimei Miura, Kaori Tsukakoshi, Wakako Tsugawa, Koji Sode, Kazunori Ikebukuro, Ryutaro Asano</i>	
(Invited) Functional Nucleic Acids as Bacterial and Viral Sensors	4137
<i>Yingfu Li</i>	
(Invited) Continuous Molecular Monitoring in Interstitial Fluid Via Wearable Microneedle Aptamer-Based Sensors.....	4138
<i>Netz Arroyo</i>	
(Invited) F-ALDH, a New Catalyst for Enzyme and Aptamer- Based Electrochemical Biosensors	4139
<i>Alina Vasilescu, Roberta Maria Banciu, Andreea Ftodiev, Georgiana Necula Petrareanu, Camelia Bala, Cristina Purcarea</i>	

M02 - Detection of Pathogens and Toxins with Biosensors

(Invited) Pathogen Agnostic Biodetection at the Point of Need	4141
<i>Harshini Mukundan</i>	
(Invited) A Biosensor Platform for on-Site Virus Visualization	4142
<i>Daimei Miura, Wakana Hayashi, Kensuke Hirano, Ikkei Sasaki, Kaori Tsukakoshi, Wakako Tsugawa, Koji Sode, Kazunori Ikebukuro, Ryutaro Asano</i>	

M02 - Electrochemical Biosensors 2

Development of an Integrated Multi-Method Electrochemical Biosensor for Rapid-on-Site Detection and Quantification of Cyanotoxins	4144
<i>Abraham Ogungbile, Izthak Icin, Sefi Vernick</i>	
Solid Reservoir Reference Electrode.....	4146
<i>Minh Ngoc Anh Tran, Gabriele Capilli, Thomas Szkopek</i>	
Engineering Photoelectrochemical Detection by Combining Nanozyme and Oxygen Reduction	4148
<i>Akhilesh Babu Ganganboina</i>	
Engineering a Fully Biodegradable Multiplexed Biosensing Platforms Based on Chitosan Lignin Composites to Detect Biomarkers	4149
<i>Hassan Hamidi, Daniela Iacopino</i>	
Developing Disintegrable and Biodegradable Sensors Using Nanofiber-Reinforced Water-Borne Polyurethane.....	4151
<i>Gargi Ghosh, Atanu Bag, Nae-Eung Lee</i>	

Gold Nanoparticles Decoration of Zinc Oxide Nanostructures for Bio-Sensing Applications.....	4152
<i>Rakefet Almog, Eden Shashar, Yelena Sverdlov, Kian Kadan-Jamal, Yosi Shacham-Diamand</i>	

Z01-GENERAL STUDENT POSTER SESSION

Z01 - General Student Poster Session

Application of Novel Magnetic Activated Carbon-Zeolite Y- Alginate Composites for Removing Organic Dyes.....	4154
<i>Nicholas Russo, Ameel Sabir, Dairina Hernandez Ortega., Qui Quach, Tarek M Abdel-Fattah</i>	
Coffea Rubiaceae Biochar for Removing Organic Dyes from Aqueous Media	4156
<i>Ameel Sabir, Dairina Hernandez Ortega., Nicholas Russo, Qui Quach, Tarek M Abdel-Fattah</i>	
Magnetic Mesoporous Organo-Silicate Composite for Removing Organic Dyes from Aqueous Media.....	4158
<i>Nicholas Russo, Matthew Freeman, Qui Quach, Tarek M Abdel-Fattah</i>	
Supported Manganese Organic Framework as Catalyst for Hydrogen Evolution Reaction	4160
<i>Qui Quach, Erik Biehler, Tarek M Abdel-Fattah</i>	
Free Standing Electrodes: From Roll Product to 41-Layer Pouch Cells	4162
<i>Andreas Gigl, Bernd Eschelmüller, Markus Ungerank, Katja Froehlich, Marcus Jahn</i>	
Exploring the Efficiency of Lithium Stripping/Plating in Solid Polymer Anode-Free Lithium Cells.....	4164
<i>Xin Guan, Daniel Brandell, Jonas Mindemark</i>	
Attempts to Electrochemically Synthesize Palladium Superhydrides By High Pressure Method – Combination of Electrolytic Hydrogen Charging and Electroplating of Protective Coatings –	4166
<i>Tomoya Hashimoto, Naoki Fukumuro, Shinji Yae</i>	
Modulating Charge Percolation in Biocompatible Norbornene Redox-Active Polymers Obtained Via ROMP	4168
<i>Nafisa Aden Ibrahim, Adolfo I. B. Romo, Steven Zimmerman, Joaquin Rodriguez Lopez</i>	
Study on Factors Affecting Water Resistance of Titanium Negative Electrode Materials for Na Batteries.....	4169
<i>Tetsuya Ishikawa, Naoaki Yabuuchi</i>	
Anodic Oxidation and Corrosion Resistance of Ta-Containing High Entropy Alloys.....	4171
<i>Toshimasa Ishizawa, Masashi Nishimoto, Izumi Muto, Yu Sugawara</i>	
Effect of Parasitic Gas Evolution Reactions on the All-Vanadium Redox Flow Battery Performance	4172
<i>Xiao Qian, Seunghun Jung</i>	
Synthesis and Characterization of Responsive Antimicrobial Materials for Chronic Wound Management	4174
<i>Katey M Sheets, Chiara M Hurd, Heather M Kamuda, Mallory A Havens, Jason J. Keleher</i>	
Cobalt Organic Framework Supported over Carbon-Based Materials as Novel Catalysts in the Hydrolysis of Sodium Borohydride.....	4175
<i>Erik Biehler, Qui Quach, Tarek M Abdel-Fattah</i>	
Lithiophilic Nanowire Architectures as Hosts for Lithium Metal Anodes	4177
<i>Syed Abdul Ahad, Shayon Bhattacharya, Michela Ottaviani, Kevin M Ryan, Tadhg Kennedy, Damien Thompson, Hugh Geaney</i>	
Improving the Cyclic Reversibility of Layered Li-Rich Cathodes by Combining Oxygen Vacancies Introduction and Surface Fluorination.....	4178
<i>Aierxiding Abulikemu, Toshiyuki Matsunaga, Tsuyoshi Takami, Kentaro Yamamoto, Tomoki Uchiyama, Toshiki Watanabe, Miki Inada, Yoshiharu Uchimoto</i>	
Anionic Additive-Integrated Electrolyte Therapy: Enhancing High-Voltage Stability and Performance in Lithium-Ion Batteries	4180
<i>Aakash Ahuja, Ajit Kumar, Abhinanda Sengupta, Harshita Lohani, Pratima Kumari, Sagar Mitra</i>	

Investigating the Impact of Si/C Supraparticles Size Distribution on the Lifetime of Li-Ion Battery Half-Cells	4181
<i>Adil Amin, Moritz Loewenich, Julius T. Kahl, Mena-Alexander Kräenbring, Hartmut Wiggers, Fatih Özcan, Doris Segets</i>	
Highly Stable and Active Ru Clusters Supported on Boron Carbon Nitride for Acidic Water Oxidation.....	4183
<i>Xiaofang Bai, Xiuping Zhang, Yujiao Sun, Mingcheng Huang, Jiantao Fan, Shaoyi Xu, Hui Li</i>	
Alluaudites: From Sulfates to Tungstates	4185
<i>Pubali Barman, Debasmita Dwibedi, Prabeer Barpanda</i>	
Striking a Balance between Carbon Mediated Cathode Degradation and SEI Engineering Towards Stable High-Performance Solid-State Batteries.....	4187
<i>Abhirup Bhadra, Dipan Kundu</i>	
Quantifying the Thermochemistry of Kinetic Transitions in a Li/Li ₂ O/Layered Metal Oxide Cathode Solid-State Battery with Varying Cathode States of Charge	4189
<i>Bhuvsmita Bhargava, Nathan B Johnson, Samaa Zaman, Paul Albertus</i>	
A Facile Synthesis of Al ₂ O ₃ -Coated LiNi _{1/3} Co _{1/3} Mn _{1/3} O ₂ with Improved Cycle Life Prepared By a Wet-Chemical Method.....	4190
<i>Liga Britala, Maris Knite, Gints Kucinskis</i>	
Redox Active Organic Liquids for Energy Storage	4192
<i>Angelina Castro Trujillo, Rajesh Bharat Jethwa, Stefan Stadlbauer, Julia Valentin, Stefan A Freunberger</i>	
Unraveling Plasmonic Effects in Plasmon-Enhanced Lithium–Oxygen Batteries	4194
<i>Kyunghee Chae, Minju Kim, Filipe Marques Mota, Dong Ha Kim</i>	
Electrochemical Model-Based State-Space Approach for Real-Time Parameter Estimation of Lithium-Ion Batteries	4195
<i>Kyeongun Cho, Sanghyun Kim, Seongyoon Kim, Jung-Il Choi</i>	
Nanocrystals Conversion Chemistry within Slit-like 2D-Nanogap for High-Rate Cyclic Stability of Lithium-Ion Battery Anodes.....	4196
<i>Sungho Choi, Yu-Rim Hong, In-Su Lee, Soojin Park</i>	
Anodic Dissolution of Aluminum in Sodium-Ion Batteries: A Comparison of Electrolyte and Solvent Composition	4197
<i>Lars Olow Simon Colbin, Charles Aram Hall, Ahmed S. Etman, Alexander Buckel, Leif Nyholm, Reza Younesi</i>	
Lithium Trapping in Silicon Nanowire Anodes for Lithium-Ion Batteries.....	4199
<i>Aaron Hennessy, Mei Li, Hugh Geaney, Kevin M Ryan</i>	
Identification and Quantification of Lithium Ion Battery Electrolyte Residues in Blackmass Via Headspace-GC-MS/FID	4201
<i>Jakob Michael Hesper, Martin Winter, Sascha Nowak</i>	
In-situ Studies of Aqueous Organic Redox Flow Batteries	4202
<i>Dominic Hey, Clare P. Grey, Evan Wenbo Wenbo Zhao</i>	
Hydride-Ion Conduction in AELiH ₃ (AE = Sr, Ba).....	4204
<i>Takashi Hirose, Naoki Matsui, Kenta Watanabe, Kota Suzuki, Takashi Saito, Takashi Kamiyama, Masaaki Hirayama, Ryoji Kanno</i>	
Improved Lewis Acidity Using Ionic Liquid-Grafted Bimetallic Zr/Ti UiO-66 Fillers for Composite Solid Electrolytes	4206
<i>Jeong-Won Ho, Pil Jin Yoo</i>	
In-Situ Observation of the Formation and Relaxation Processes of Concentration Gradients in a Lithium Bis(fluorosulfonyl) Amide–Tetraglyme Solvate Ionic Liquid Using Digital Holographic Interference Microscopy.....	4207
<i>Go Kamesui, Kei Nishikawa, Mikito Ueda, Hisayoshi Matsushima</i>	
Chemomechanical Failure of Solid Composite Cathodes Accelerated by High-Strain Anodes in All-Solid-State Batteries	4208
<i>Junhee Kang, Beomsu Kim, Jonghyeok Yun, Jong-Won Lee</i>	

Innovative High-Voltage Cathode Architectures for Doped Ammonium Vanadium Oxide: Overcoming Limitations and Boosting Energy Density	4209
<i>Zarrin Khan, Aakash Ahuja, Md. Adil, Sagar Mitra</i>	
Troubleshooting CNT Bundling with Electrospray Method in LiFePO ₄ Cathode Material	4210
<i>Ilgyu Kim, Ji-Won Jung</i>	
Solid Electrolyte Coated NCM523 for Composite Cathode in All-Solid-State Batteries	4211
<i>Jun Tae Kim, Hyeon-Ji Shin, Hun-Gi Jung</i>	
Internally Connected Porous Polymer Electrolyte Membrane for Long-Lasting Flexible Zinc-Air Batteries	4212
<i>Kwang Won Kim, Ki Ro Yoon, Seon-Jin Choi</i>	
Accelerated 3D Simulation for Analyzing Electrochemical and Thermal Distribution in Lithium- Ion Batteries	4214
<i>Sanghyun Kim, Seongyoon Kim, Jinho Ha, Jung-Il Choi</i>	
Investigating the Reaction Mechanism of Vinylene Carbonate Additive in Lithium Ion Batteries Using X-Ray Photoelectron Spectroscopy	4216
<i>Laura J. King, Xu Hou, Erik J. Berg, Maria Hahlin</i>	
A Near Dimensionally Invariable Electrode Material: Li _{8/7} Ti _{2/7} V _{4/7} O ₂	4217
<i>Itsuki Konuma, Naoaki Yabuuchi</i>	
Robust-Dense Composite Cathode with Improved Three-Dimensional Ionic Percolation Network and Electrode/Electrolyte Interface for the Development of All-Solid-State Sodium Batteries	4218
<i>Pratima Kumari, Ajit Kumar, Harshita Lohani, Aakash Ahuja, Abhinanda Sengupta, Sagar Mitra</i>	
Silicon Nanowires Diameter Modification for the Lithium-Ion Batteries	4220
<i>Mei Li, David McNulty, Aaron Hennessy, Kevin M Ryan</i>	
Investigation of a 2D Metallic Selenide for Supercapacitive Applications	4223
<i>Weihao Li, Alexey Ganin</i>	
Ion Transport in Plasticized Li _{1.5} Al _{0.5} Ge _{1.5} (PO ₄) ₃ Based Electrolytes	4224
<i>Moran Lifshitz, Anna Greenbaum, Kaito Sasaki, Alex Gladkikh, Yuri Feldman, Diana Golodnitsky</i>	
Highly Fluorinated and Boron Containing Anion Derived Stable Anode and Cathode Interfaces for Long Cycle and High Voltage Sodium Metal Batteries	4225
<i>Harshita Lohani, Dale Duncan, Mega Kar, Pratima Kumari, Sagar Mitra</i>	
Vertically Aligned Nanocomposite Thin Films Incorporating 3D-Architectures for Micro-Battery Applications	4226
<i>Adam J Lovett, Venkateswarlu Daramalla, Debasis Nayak, Farheen Sayed, Amoghavarsha Mahadevegowda, Caterina Ducati, Ben Spencer, Sian Dutton, Clare P. Grey, Judith L. Driscoll</i>	
Conductivity Improvement of LiBF ₄ Containing Electrolyte for Enhanced Application in Lithium- Ion Batteries	4228
<i>Julia Meierl, Ingo Krossing</i>	
The Influence of Discharge Mediators on Singlet Oxygen Generation in Lithium-Air Batteries	4231
<i>Bhargavi Pant, Soumyadip Mondal, Rajesh B Jethwa, Rhys Bunting, Stefan A Freunberger</i>	
Elastic Interfacial Layer Enabled the High-Temperature Performance of Lithium-Ion Batteries Via Utilization of Synthetic Fluorosulfate Additive	4233
<i>Hyeongyu Moon, Huibeom Nam, Min Pyeong Kim, Seung Lee, Hyeongjun Kim, Min Ho Jeon, Yoon-Sung Lee, Koeun Kim, Joong-Hyun Chun, Sang Kyu Kwak, Sung You Hong, Nam-Soon Choi</i>	
Impact of Coating Layer Parameters on Electrode Tortuosity	4234
<i>Lukas Neidhart, Katja Froehlich, Franz Winter, Marcus Jahn</i>	
Multivariate Analysis of Synchrotron X-Ray Data for Battery Research	4236
<i>Erlend Tibergh North, Alexey Kuposov, David Stephen Wragg</i>	
An Insight into the Lithium Plating – Operando Gas Evolution Study	4237
<i>Amritha Sandra, Ulriika Mattinen, Rakel Lindstrom</i>	

Pair Distribution Function Analysis of Local Structural Rearrangement in Spinel Vanadium Oxide Cathodes	4238
<i>Anwesa Samanta, Jordi Cabana</i>	
Uncovering the Mechanisms behind the Limited Discharge Duration of Silicon-Air Batteries with Alkaline Electrolytes	4239
<i>Richard Schalinski, Stefan L Schweizer, Ralf B Wehrspohn</i>	
Synthesis and Electrochemical Characterization of Novel Electrolyte Additives for High Performance in Lithium-Ion Batteries with Si-Based Anodes.....	4241
<i>Noah Schmidt-Meinzer, Ingo Krossing</i>	
The Trade-Off between Extended Lifetime and Resource Utilization Efficiency - a Critical Analysis of Battery Second-Use Concepts Using Materials Flow Analysis.....	4244
<i>Anne Christina Christina Sehnal, Jannis Wesselkamper, Simon Lux, Stephan Von Delft</i>	
Co-Free Heteroatom-Doped P2-Type Layered Oxide Cathodes: Advancing High Power Sodium-Ion Battery Technology	4246
<i>Abhinanda Sengupta, Ajit Kumar, Aakash Ahuja, Harshita Lohani, Pratima Kumari, Abhinanda Sengupta</i>	
Two Dimensional Pb-F-Cl and Ba-F-Cl As Supercapacitor Electrode Materials	4248
<i>Swaraj Servottam, Chintamani Nagesa Ramachandra Rao</i>	
Improvement of Charge/Discharge Performance of Li Metal Battery Using Ionic Liquid Electrolyte with 3DOM PI Separator.....	4249
<i>Yuma Shimbori, Koichi Kajihara, Kiyoshi Kanamura</i>	
Investigation of Transition Metal Oxides & Phosphates for Zn-Ion/Zn-Air Batteries	4251
<i>Deepa Singh, Prabeer Barpanda</i>	
Efficient Sodium-Ion Storage Using MoS ₂ @rGO Nanocomposite Anode: Exploring Na-Ion Diffusion in Metallic Phase	4253
<i>Manish Kumar Singh, Jayashree Pati, Jagdees Prasad, Jeng-Kuei Chang, Rajendra Dhaka</i>	
Visualising Chemical Transformations in Si-Based Electrodes through Operando Tomography.....	4254
<i>Casper Skautvedt, Anders Brennhagen, Stefano Checchia, David Stephen Wragg, Alexey Kopusov</i>	
High-Rate Performance of Antimony Chalcogenides (Sb ₂ X ₃) Studied By Operando X-Ray Diffraction (XRD)	4255
<i>Amalie Skurtveit, Andrew Pastusic, Anders Brennhagen, Carmen Cavallo, David Stephen Wragg, Alexey Kopusov</i>	
Incorporation of PEDOT:PSS to Reduce Iridium Loading at Anode Catalyst Layer for Proton Exchange Membrane Water Electrolysis.....	4257
<i>Yujiao Sun, Shaoyi Xu, Hui Li</i>	
Three-Dimensional Microstructure-Based Deformation Predictions in Battery Electrodes.....	4259
<i>Hunter Teel, Joseph Steven Lopata, Taylor R. Garrick, Fengkun Wang, Han Zhang, Yangbing Zeng, Sirivatch Shimpalee</i>	
Surface Modification of NaCrO ₂ Positive Electrode Material for Sodium-Ion-Batteries.....	4261
<i>Fritz Wortelkamp, Jingkwang Hwang, Kazuhiko Matsumoto, Rika Hagiwara, Ingo Krossing</i>	
High-Capacity Nickel-Based Layered Oxides Containing Niobium Ions for Lithium-Ion Batteries	4262
<i>Saeka Yamaki, Yosuke Ugata, Naoaki Yabuuchi</i>	
Probing the Structure Evolution of Na-Cu-Mn-O Based Layered Oxide Cathode Materials in Sodium Ion Batteries	4263
<i>Tingting Yang, Zijia Yin</i>	
Effect of Oxygen Functionalities inside Carbon Micropore on Lithium-Sulfur Battery Performance	4265
<i>Luna Yoshida, Yuki Orihara, Masashi Ishikawa</i>	
Ab Initio Molecular Dynamics Study on Self-Healing Solid Polymer Electrolyte for Lithium Metal Batteries.....	4267
<i>Yu-Ting Zhan, Santhanamoorthi Nachimuthu, Jyh-Chiang Jiang</i>	
Shunt Current Analysis of Vanadium Redox Flow Battery System with Multi-Stack Connections.....	4268
<i>Xiaobo Zhao, Seunghun Jung</i>	

Bipolar Electrochemistry for Functionalization of 2D Materials	4269
<i>Anastasiia Bazylevska, Miriam C. Rodríguez González, Steven De Feyter</i>	
(General Student Poster Award Winner, 3rd Place) Corrosion Electrochemistry in Molten Flinak Salts	4270
<i>Ho Lun Chan, Elena Romanovskaia, Minsung Hong, Debashish Sur, Valentin Romanovski, Peter Hosemann, John R. Scully</i>	
A Cu-Containing High-Entropy Alloy with High Corrosion Resistance and Low Surface Electrical Resistance	4272
<i>Natsumi Fujiwara, Izumi Muto, Masashi Nishimoto, Yu Sugawara</i>	
Electrochemical Preparation and Characterization of Gold Coatings on Stainless Steel Bipolar Plates for Corrosion Protection in PEM Electrolyzers	4273
<i>Christian Elieser Hoess, Martin Leimbach, Mario Kurniawan, Mathias Fritz, Andreas Bund</i>	
The Effect of Cu and Zn Addition on the Intergranular Corrosion Resistance of Al-Mg-Si Alloy.....	4274
<i>Mutsuki Inagaki, Izumi Muto, Masashi Nishimoto, Tadashi Minoda, Mai Takaya, Yoshihiko Kyo, Yu Sugawara</i>	
Filiform Corrosion on Polyester Powder-Coated Aluminum	4275
<i>Michael J. Petrecca, Yosra Kotb, Jonathan Prout, Abhirup Basu, Orlin D. Velev, Peter S. Fedkiw</i>	
Crevice Corrosion Initiation and Growth of Die-Cast ADC12 Aluminum Alloy	4276
<i>Kaito Takeuchi, Izumi Muto, Masashi Nishimoto, Yu Sugawara</i>	
Stimuli-Responsive CeO ₂ Removal Via Surface Redox Modulation during Shallow Trench Isolation (STI) Post-Chemical Mechanical Planarization (p-CMP)	4277
<i>Tatiana R. Cahue, Ryan J. Gentile, Jason J. Keleher</i>	
Investigation of Antibacterial Efficacy of CuCrO ₂ Delafossite Thin Films Against E. coli	4278
<i>Sreeram Sundaresh, Kalpathy B. Sundaram</i>	
Decoupled Electrolysis: A Novel Method for Water Splitting Using WO ₃ Auxiliary Electrode	4279
<i>Mairis Iesalnieks, Martins Vanags, Andris Sutka</i>	
CO ₂ Separation Using Electrochemical Hydrogen Pumping.....	4281
<i>Sota Kanazawa, Hisayoshi Matsushima, Mikito Ueda</i>	
An Easy-to-Use 3D-Printed Electrochemical Cell for In Situ Raman Spectroscopy	4283
<i>Kenta Kawashima, Yoon Jun Son, Ziqing Wang, Roger F. Rose, Raul A. Marquez-Montes, Lettie A. Smith, Chikaodili E. Chukwunke, Charles Buddie Mullins</i>	
Relationship between Bubble Generation Behavior and Hydrogen Evolution Performance at High Current Densities during Alkaline Water Electrolysis	4284
<i>Daisuke Kitajima, Ryuta Misumi, Shigenori Mitsushima</i>	
RuNiO _x Interface Promotes Hydrogen Production from Alkaline Seawater	4287
<i>Hao Luo, Zheng Xiao Guo</i>	
Design of Ni-Fe Hybrid Metal Hydroxide Nanomaterials As Self-Repairing Anode Catalysts For Alkaline Water Electrolysis	4288
<i>Ryuki Okada, Tatsuya Taniguchi, Yuta Sasaki, Yoshinori Nishiki, Zaenal Awaludin, Takaaki Nakai, Akihiro Kato, Shigenori Mitsushima, Yoshiyuki Kuroda</i>	
Electrochemical Production of Methyltetrahydrofuran, a Biofuel for Diesel Engines	4291
<i>Mia D. Stankovic, Jessica F. Sperry, Curtis P. Berlinguette</i>	
Effect of Pore Size on the Oxygen Evolution Reaction Activity of Hydrogel Electrodes Composed of Hybrid Cobalt Hydroxide Nanosheets	4292
<i>Hiroki Wago, Ritsuki Nakajima, Tatsuya Taniguchi, Yuta Sasaki, Yoshinori Nishiki, Zaenal Awaludin, Takaaki Nakai, Akihiro Kato, Shigenori Mitsushima, Yoshiyuki Kuroda</i>	
Electrochemical Oxidation of Resorcinol: An Integrated Experimental and Theoretical Study.....	4295
<i>Marco Bonechi, Walter Giurlani, Elena Mariani, Fabio Biffoli, Giulio Pappaianni, Andrea Stefani, Andrea Marchetti, Claudio Fontanesi, Massimo Innocenti</i>	

Morphological Control of Functional TiO ₂ Films on Magnetic Nanoparticle's Surface by Utilizing the Boric Acid-Containing Solutions.....	4297
<i>Yuki Watanabe, Akira Kishimoto, Takahiro Ito, Masanobu Kawata, Shun Ito, Shun Yokoyama, Hideyuki Takahashi</i>	
Effect of Structure to Promote Organic Residue Removal during Cu Post-Chemical Mechanical Planarization (p-CMP) Cleaning.....	4299
<i>Abigail L. Dudek, Adam T. Caridi, Kevin R Reyes, Jason J. Keleher</i>	
Metal-Organic Frameworks Based Autonomous Water Harvesting & Sustainable Energy Generation from Ambient Air.....	4300
<i>Ji Hyun Lee, Seon-Jin Choi, Ki Ro Yoon</i>	
Survey of Activated Cleaning Chemistries for Low-Stress Post-Chemical Mechanical Planarization Cleaning of Silicon Carbide.....	4301
<i>Joseph L. Powell, Jason J. Keleher</i>	
Gadolinia Doped Ceria with Engineered Grain Boundaries as Potential Electrolyte Material for Thin-Film Solid Oxide Fuel Cells.....	4302
<i>Gal Avioz Cohen, Nini Pryds, Yoed Tsur</i>	
The Trade-Off Relationship between Particle Proximity Effect and Low-Pt Loading to Optimize Oxygen Reduction and Methanol Oxidation Reaction Activity.....	4304
<i>Jiarun Cheng, Dongsheng Geng</i>	
Strong Catalyst-Support Interaction in WO _x Nanowires Supported Iridium Nanocatalysts: A Pathway to Efficient Water Electrolysis.....	4306
<i>Lu Yu Chueh, Chun-Han Kuo, Ren-Hao Yang, Ding Huei Tsai, Meng-Hsuan Tsai, Chueh-Cheng Yang, Han-Yi Chen, Chia-Hsin Wang, Yung-Tin Pan</i>	
The Active Interface of Iron-Decorated Cobalt (Oxy)Hydroxide for Oxygen Evolution Reaction.....	4308
<i>Qu Jiang, Fang Song</i>	
Enhanced Oxygen Evolution Reaction Activity of Fe-Doped Lithium Nickel-Based Metal Oxide through Modification of Nickel Oxidation State.....	4309
<i>Young Han Jung, Asiya Mohaseen Tamboli, Wan Sik Kim, Bonghyun Kim, Junseok Sim, Changhee Kim</i>	
Study on the Design of Electrocatalysts for Polymer Electrolysis in the Aqueous Solution.....	4310
<i>Hisazaki Kazuma, Takahiro Maruyama, Takahiro Saida</i>	
Development of a Robust Electrochemical Ammonia Electrolysis Protocol Using in Operando Quantitative Analysis.....	4312
<i>Jeongwon Kim</i>	
Development of Durable Pt/CoWO ₄ Nanofiber Catalyst-Support Hybrid Material Using Ex-Solution for Zn-Air Batteries.....	4313
<i>Chang Ho Lee, Caroline Sunyoung Lee, Ki Ro Yoon</i>	
Computational Design of Durable and Selective Double Atom Catalysts Toward the Electrochemical NH ₃ Production: Role of Carbon Defects.....	4315
<i>Hyunju Lee, Junghyeon Han, Hyung Chul Ham</i>	
Generating Predictive Chemical Kinetic Models for Quaternary Ammonium Monomers Chemical Degradation in Anion Exchange Membrane.....	4316
<i>Lilach Naamat, Michal Keslin, Alon Grinberg Dana</i>	
High-Speed AFM Observation of Electrolytic Nanobubbles Formation on HOPG.....	4319
<i>Ryuto Ohashi, Hisayoshi Matsushima, Mikito Ueda</i>	
Development of Hydrophilic Oxide/Polymer Composite Membranes for Polymer Electrolyte Fuel Cells Operating at Wide Temperature Range.....	4321
<i>Ryuji Ohno, Tetsuro Tano, Katsuyoshi Kakinuma</i>	
Nuclear Magnetic Resonance Chemical Shift As Highly Explainable Chemical Structure Fingerprints for Anion Exchange Membrane Polymers.....	4323
<i>Yin Kan Phua, Tsuyohiko Fujigaya, Koichiro Kato</i>	

Novel Designs for 7-Layer Membrane Electrode Assembly in PEM Fuel Cells: A Systematic Investigation of Mass Transport and Charge Transfer Processes in PEM Fuel Cells	4326
<i>Sepehr Saadat, Florian Wilhelm, Thomas Cavoue, Fabrice Micoud, Joël Pauchet, Joachim Scholta, Markus Hölzle</i>	
Deuterium Enrichment by PEM Water Electrolysis with Electrolyte Circulation	4327
<i>Ibuki Sato, Hisayoshi Matsushima, Mikito Ueda</i>	
Operando 3D-Monitoring of the Oxygen Partial Pressure ($p(\text{O}_2)$) within a Polymer Electrolyte Membrane Fuel Cell (PEMFC) during Cell Operations at Higher Temperatures.....	4329
<i>Christopher Leon Schreiber, Junji Inukai</i>	
Operando Neutron Imaging of Water Distribution inside Running Anion-Exchange Membrane Fuel Cell	4332
<i>Yuto Shirase, Teppei Kawamoto, Hiromichi Nishiyama, Hirotoshi Hayashida, Kenji Miyatake, Junji Inukai</i>	
Preparation and Evaluation of Nafion/CeO ₂ Composite Electrolyte Membranes for Polymer Electrolyte Fuel Cells	4335
<i>Kazuki Shudo, Makoto Uchida, Katsuyoshi Kakinuma</i>	
Enhanced Synergistic Effect by Facile Tuning of Nickel Doping on Cobalt Phosphide as Electrochemical Catalysts for Hydrogen Evolution Reaction in Alkaline Water Electrolysis.....	4337
<i>Jun Seok Sim, Wan Sik Kim, Asiya Mohaseen Tamboli, Bong Hyun Kim, Young Han Jung, Chang Hee Kim</i>	
Hydrogenation, without H _{2(g)}	4338
<i>Jessica F. Sperry, Curtis P. Berlinguette</i>	
Investigation of Manufacturing Process Related Structure and Performance of the Fuel Cell Electrode Thanks to Small Angle Neutron Scattering	4339
<i>Martha Stando, Arnaud Morin, Gerard Gebel, Lionel Porcar, Stephane Cotte, Jakub Drnec</i>	
Performance and Durability of Membrane-Electrode Assemblies Using Non-Precious Metal Catalyst and a Hydrocarbon-Based Electrolyte for Anion Exchange Membrane Water Electrolysis.....	4341
<i>Sayaka Takahashi, Toshio Iwataki, Tetsuro Tano, Takayuki Asakawa, Katsuyoshi Kakinuma, Kenji Miyatake, Makoto Uchida</i>	
Chemical States of Water in Anion Exchange Membrane for Fuel Cells Using Raman and Coherent Anti-Stokes Raman Spectroscopies.....	4343
<i>Solomon Wekesa Wakolo, Hiromichi Nishiyama, Kenji Miyatake, Junji Inukai</i>	
Understanding the Role of Cracks in Active Oxygen Species Formation during Oxygen Evolution Reaction.....	4345
<i>Sihong Wang, Fang Song</i>	
Micro-Regulate Ionomer Distribution to Increase Pt Utilization for PEMFC	4346
<i>Zengyin Wen, Jiantao Fan, Hui Li</i>	
Altering the Interfacial Microenvironment of the Photocatalytic System for Boosted H ₂ O ₂ Generation from Biomass Waste	4348
<i>Ruiqin Xia, Zhengxiao Guo</i>	
Using an Electrochemical Deblocking Step in ASO Synthesis to Produce Quicker and Higher Yields of Oligonucleotides	4349
<i>Austin Rockaitis, Daniel Kissel</i>	
Dark-Field Microscopy of Au@Ag Core Shell Nanoparticles during Electrochemical Conversion Reactions	4350
<i>Lars Fabian Braemer, Kevin Wanner, Kristina Tschulik</i>	
Lanthanide Vanadate: An Efficient and Stable Oxygen Evolution Reaction Catalyst for Enhanced Water-Splitting Applications	4352
<i>Youness El Issmaeli, Amina Lahrichi, Shankara S. Kalanur, Sadesh Kumar Natarajan, Bruno Georges Pollet</i>	
Nanoscale Photoelectrochemical Mapping of Two-Dimensional Electrodes	4353
<i>Septia Kholimatussadiyah, Mohammad Qorbani, Kuei-Hsien Chen, Li-Chyong Chen</i>	

Non-Metals Chelated by Redox Active Chelators as Electrocatalysts for Hydrogen Evolution Reaction (HER).....	4354
<i>Sachin Kumar, Zeev Gross</i>	
(General Student Poster Award Winner, 2nd Place) Enhanced Oxygen Evolution Reaction Performance through Alkaline-Earth Metal Doped Fe-Rich Nano Dry-Petals: A Cost-Effective and Eco-Friendly Electrocatalyst Approach.....	4356
<i>Amina Lahrichi, Youness El Issmaeli, Shankara S. Kalanur, Sadesh Kumar Natarajan, Bruno Georges Pollet</i>	
Proton Permeable, Oxygen Blocking, Ultrathin Al ₂ O ₃ Layers for Electrocatalytic Applications.....	4357
<i>Dalia Leon, Minh Nguyen, Willem Looman, Christoph Baeumer, Guido Mul, Georgios Katsoukis</i>	
Electrolyte Flow through Porous Carbon Electrodes Under Compression in the Hydrogen-Bromine Redox Flow Battery.....	4359
<i>David Ochoa Fajardo</i>	
Promotion of Sulfur Vacancies and Mn Substitution in Few-Layered Molybdenum Disulfide Towards Superior Hydrogen Evolution in Acid	4360
<i>Mouna Rafei, Alexis Piñeiro, Xiuyu Wu, Dimitrios Perivoliotis, Thomas Wågberg, Eduardo Gracia-Espino</i>	
Electrochemistry of and Electrocatalysis by Low-Symmetry N ₄ Macrocycles	4362
<i>Arik Raslin, Zeev Gross</i>	
Electrochemical CO ₂ and CO Reduction with Size-Selected Nanoparticles	4364
<i>Esperanza Sedano Varo</i>	
A Guide for the Electrochemical Stability of Thiolate Self-Assembled Monolayers on Gold in Various Electrolytes.....	4365
<i>Abdur-Rahman Siddiqui, Armando Carboney Santiago, Kristin Martin, Jeanne N'Diaye, Joaquin Rodriguez Lopez</i>	
(General Student Poster Award Winner, 1st Place) Accelerated Estimation of Chemical and Sensory Liquid Attributes Using an AI-Assisted Electrochemical Electronic Tongue.....	4367
<i>Gianmarco Gabrieli</i>	
Electrochemical Monitoring of Super-Engineering Polymer Depolymerization: A Rapid and Simple Approach	4369
<i>Jee Woo Kim, Byung-Kwon Kim</i>	
Recycled UHT Milk Carton Cellulose Substrate for Colorimetric and Electrochemical Sensor of Lactate	4370
<i>Wisarttra Phamonpon, Nadtinan Promphet, Sarute Ummartyotin, Nadnudda Rodthongkum</i>	
A Disposable Sensor for Rapid Histamine Detection in Fish Using Molecularly Imprinted Carbon Paste Electrode	4371
<i>Hina Sakurai, Aaryashree, Yasuo Yoshimi</i>	

Z02-ELECTROCHEMISTRY IN SPACE 3

Z02 - Electrochemistry in Space 1

Multi-Purpose Structure-Integrated Zinc-Polyiodide Hybrid Flow Battery As Sustainable Energy Storage System for Extraterrestrial Environments	4373
<i>Jan Girschik, Milan Selle, Markus Gläßer, Jens Burfeind, Anna Grevé</i>	
(Invited) Gravitational Level Effects on Electrochemical Interfacial Phenomena	4374
<i>Yasuhiro Fukunaka</i>	
Robust and Autonomous Space Weather Charge Mitigation Coatings.....	4375
<i>Rajeswaran Radhakrishnan, Santosh Hanamant Vijapur, Danny Liu, Timothy Hall, Maria Inman, Stephen Snyder, J R Dennison, Matthew Robertson</i>	

Hybrid Reactor by the Combination of Water Electrolyzer with Methanation Reactor Targeting the Space and Terrestrial Applications	4376
<i>Yoshitsugu Sone, Asuka Shima, Omar Samuel Mendoza-Hernandez, Hironori Nakajima, Hiroshige Matsumoto, Mitsuhiro Inoue, Takayuki Abe</i>	
Deuterium Enrichment by PEM Water Electrolysis Using Water Circulation.....	4378
<i>Ibuki Sato, Hisayoshi Matsushima, Mikito Ueda</i>	

Z02 - Electrochemistry in Space 2

(Invited) Case Studies for in-Space Electrochemical Operations	4380
<i>Timothy Hall, Dan Wang, Danny Liu, Andrew Moran, Santosh Hanamant Vijapur, Santosh R More, Holly Garich, Rajeswaran Radhakrishnan, Stephen Snyder, Maria Inman, Earl Jennings Taylor</i>	
Electrochemical Peroxide Generation for in Situ Disinfection.....	4381
<i>Santosh Hanamant Vijapur, Timothy Hall, E. Jennings Taylor, Dan Wang, Santosh R More, Danny Liu, Stephen Snyder</i>	
Impact of Stack Temperature on Solid Oxide Electrolysis System Operation for Lunar Production of Hydrogen and Oxygen Propellants.....	4382
<i>David Dickson, Christopher Dreyer, Greg Jackson</i>	
A Robust Fuel Cell Operating on Lunar Water Derived Fuels	4383
<i>Sebastian Rohde, Bernhard Gollas, Aidan Cowley</i>	

Z03-YOUNG RESEARCHERS IN EUROPE: A SPECIAL SYMPOSIUM AND WORKSHOP

Z03 - Lithium Ion Batteries 1

(Invited) How, Where and Why Do and Should We Publish Our Findings?	4384
<i>Patrik Johansson</i>	

Z03 - Lithium Ion Batteries 2

(Invited) Operando Approaches for Observing Reactions at Buried Electrochemical Interfaces.....	4385
<i>Robert S. Weatherup</i>	

Z03 - Electrolysis

(Invited) Electrochemistry Happens at the Interface	4386
<i>Christoph Baeumer</i>	

Z03 - Lithium Ion Batteries 3

(Invited) Multifunctional Plasma-Enabled Low Dimensional Nanoarchitectures: From Synthesis to Devices	4388
<i>Ana Borrás</i>	

Z03 - Solid State Materials and Devices

(Invited) Some Observations on the History of Electrochemistry in Europe	4390
<i>Noel Buckley</i>	

Z03 - Fuel Cells

(Invited) TiO ₂ Single Nanotubes Decorated with Fe ₃ O ₄ Nanoparticles for Photocatalytical Environmental Applications	4391
<i>Lina Marcela Sepúlveda Sepúlveda, Ivan Saldan, Hanna Sopha, Jan M. Macak</i>	

Author Index