



# **72nd Annual ISE Meeting, Jeju Island, Korea from 29th August to 3th September 2021**

## **Program of Oral presentations**



Monday 30 August 2021 - AM

p1 Plenary

Room : R01 - Tamna A (1500)

09:00 to 09:50

**Lo Gorton** (Department of Biochemistry and Structural Biology, Lund University, Lund, Sweden)

Connecting Bacterial Cells and Biological Membranes to Electrodes through Redox Polymers

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Won-Yong Lee; Saimon M. Silva

10:00 to 10:30 Keynote

**Pooi See Lee** (School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore)

Electroanalytical modulation and device applications of solution-processible electrochromic materials

10:30 to 10:45

**Emily Kerr** (Institute for Frontier Materials, Deakin University, Waurn Ponds, Australia), David Hayne, Lachlan Soulsby, Joseph Bawden, Steven Blom, Egan Doeven, Luke Henderson, Conor Hogan, Paul Francis

Enhanced, Internally Standardised Co-reactant Electrogenerated Chemiluminescence

10:45 to 11:00

**Laena D'Alton** (Chemistry and Physics, La Trobe University, Melbourne, Australia), Conor Hogan

Considerations and Strategies to Achieve Ultra-low Detection Limits Using Electrochemiluminescence

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Kai Yan** (School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, Wuhan, China)

Photo-Assisted Self-Powered Electrochemical Sensors for Pollutants Detection

11:30 to 11:45

**Xueming Dang** (School of Environmental Science and Technology, Dalian University of Technology, Dalian, China)

rGO-ZnIn<sub>2</sub>S<sub>4</sub> Functionalized Au-WO<sub>3</sub> IOPCs Z-scheme Heterojunction as An Efficient Strategy for Signal Amplification of Photoelectrochemical Assay

11:45 to 12:00

**Junko Kojima** (Business Incubation, Sysmex Corporation, Kobe, Japan), Kenichi Uchiyama, Yumi Yoshida

All-solid-state Ion-Selective Electrodes with Inorganic Insertion Material Paste Adding Solid Electrolyte

12:00 to 12:15

**Nicola Altenhuber** (Department of Electrical and Computer Engineering, Canterbury, Christchurch, New Zealand), Volker Nock, Alison J. Downard

An Aptamer Modified Sensor System to Measure Insulin

12:15 to 12:30

**Ricardo J. B. Leote** (Multifunctional Materials and Structures Laboratory, National Institute of Materials Physics, Magurele, Romania), Caroline G. Sanz, Anca Aldea, Madalina M. Barsan, Victor C. Diculescu  
Flexible Bio(sensors) for Point-of-Care Biomedical Applications

12:30 to 12:45

**Monika Figiela** (Chemical Technology, Poznan University of Technology, Poznań, Poland), Dawid Kasprzak

Non-enzymatic amperometric glucose sensor based on CuO-CS/C

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications

Room : R05 - Samda B (100)

Chairman : Feng Ru Fan; Sachio Yoshihara

10:00 to 10:15

**Ichiro Koiwa** (Department of Applied Chemistry,, College of Science and Engineering, Kanto Gakuin University, Yokohama, Japan), Asuka Hirata, Shuto Moriya, Natsumi Maeyama, Akira Morita, Jun Kawaguchi

Selective Electroless Nickel-Phosphorus Deposition on Resin Substrate by UV Irradiation

10:15 to 10:30

**Feng Ru Fan** (Department of Chemistry, Feng Ru Fan, Xiamen, China), Yang Zhao, Siying Huang, Zhong-Qun Tian

Thermally and Chemically Stable Silver Nanowires for Transparent Electrodes

10:30 to 10:45

**Sachio Yoshihara** (Department of Fundamental Engineering, School of Engineering, Utsunomiya University, 7-1-2 Yoto, Utsunomiya, Tochigi, Japan), Sachio Yoshihara, Reo Takizawa, Yoshifusa Ishikawa, Ken-ichiro Motoi, Tetsushi Oikawa

Application of Various Iron-Based Plated Electrodes Under Different Plating Conditions to Aqueous Type Metal-Air Battery

10:45 to 11:00

**Yao-Yin Lou** (College of chemistry and chemical engineering, Xiamen University, Xiamen, China), Chi Xiao, Jiayi Fang

Promoting Efficient Electrocatalytic Hydrodechlorination of Alachlor on Shape-Controlled Pd Nanocrystals of High-Index Facets

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Sopon Butcha** (Molecular Science and Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC), Rayong, Thailand), Veronique Lapeyre, Chularat Wattanakit, Alexander Kuhn

Self-Assembled Monolayer Functionalized Chiral-imprinted Platinum Electrodes for Highly Enantioselective Electrosynthesis

11:30 to 11:45

**Chularat Wattanakit** (School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC), Rayong, Thailand), Sopon Butcha, Sunpet Assavapanumat, Thittaya Yuthalekha, Veronique Lapeyre, Bhavana Gupta, Adeline Perro, Neso Sojic, Alexander Kuhn

Enantioselective Synthesis with Nanostructured Chiral Metal Surfaces

11:45 to 12:00

**Marisa Ketkaew** (Chemical and Biomolecular Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC), Rayong, Thailand), Marisa Ketkaew, Getnet Kassahun, Patrick Garrigue, Laurent Bouffier, Alexander Kuhn, Chularat Wattanakit, Dodzi Zigah

Scanning Electrochemical Microscopy Study of PtCe Gradient Film Prepared by Bipolar Electrochemistry for Electro-Oxidation Reaction

12:00 to 12:15

**Madagonda M. Vadiyar** (Department of Energy and Materials Engineering, Dongguk University, Seoul, Korea), Kyung-Wan Nam

Metal-Organic Frameworks Derived Nanoconfinements of Cobalt Nanoparticles-Nitrogen doped Graphene/CNT for Alkali Ion Batteries

12:15 to 12:30

**Rawdah Whba** (Chemical Sciences, Universiti Kebangsaan Malaysia, Bangi, Malaysia), Rawdah Whba, Mohd Sukor Su'ait, Lee Tian Khoon, Salmiah Ibrahim, Nor Sabirin Mohamed, Azizan Ahmad

Synthesis and Characterization of Acrylonitrile Grafted Epoxidized Natural Rubber (ACN-g-ENR) by in-situ UV Curing Technique as Solid Polymer Electrolytes for Lithium-ion Rechargeable Batteries

12:30 to 12:45

**Ting Wu** (School of Physical and Chemical Sciences, University of Canterbury, Christchurch, New Zealand), Paula Brooksby, Christopher Fitchett, Christelle Gautier, Tony Breton, Alison Downard

Real-time Absorption Spectroelectrochemistry of Iron Porphyrin Modified Glassy Carbon During Oxygen Reduction Reaction

s04 Bioelectrochemistry: from fundamentals to applications

Room : R09 - 301 (80)

Chairman : Taek Dong Chung; Edmond Magner; Xinxin Xiao

10:00 to 10:30 Keynote

**Yang Tian** (Department of Chemistry, East China Normal University, Shanghai, China)

Developing New Tools for Understanding the Processes of Oxidative Stress in the Brain

10:30 to 10:45

**Benoît Piro** (Chemistry - Lab. ITODYS, Université de Paris, PARIS, France), Nga Dau, Samia Mekhmoukhen, Giorgio Mattana, Vincent Noel, Thi Thu Vu

An Electrochemically-Equipped Dressing for Wound Monitoring

10:45 to 11:00

**Włodzimierz Kutner** (Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Marianna Gajda, Renata Rybakiewicz, Maciej Cieplak, Teresa Zolek, Dorota Maciejewska, Edyta Gilant, Piotr J. Rudzki, Katarzyna Grab, Andrzej Kutner, Pawel Borowicz, Krzysztof R. Noworyta

Aripiprazole Antipsychotic Drug Selective Determination with Extended-gate Field-effect Transistor (EG-FET) Chemosensor Using Molecularly Imprinted Polymer Transduction Unit

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Miguel Aller Pellitero** (Pharmacology and Molecular Sciences, Johns Hopkins University School of Medicine, Baltimore, USA), Netzahualcóyotl Arroyo Currás

Osmium-based Organometallic Complexes as Redox Reporters for the Fabrication of Electrochemical Aptamer-based Sensors

11:30 to 11:45

**Elena Suprun** (Laboratory of Bioelectrochemistry, Institute of Biomedical Chemistry, Moscow, Russia), Gulnaz Kutdusova, Svetlana Khmeleva, Sergey Radko

Deoxyribonucleic Acid Oxidation on Carbon Electrodes: Some Quantitative Aspects

11:45 to 12:00

**Fei Wu** (Institute of Chemistry, Chinese Academy of Sciences, Beijing, China), Ping Yu, Lanqun Mao  
Exploring Mediated Bioelectrocatalysis for Selective Biosensing

12:00 to 12:15

**Omer Yehezkeli** (Faculty of Biotechnology and Food Engineering, Technion, Haifa, Israel)  
Biotic/Abiotic Interfaced Systems for Biosensing and Enhanced (Bio)Catalysis

s05 New Electrochemical Approaches and Devices for Monitoring Diseases and Human Health

Room : R07 - 202 A + B (150)

Chairman : Haesik Yang

10:00 to 10:15 *Invited*

**I-Ming Hsing** (Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology, Hong Kong, China), Alan F. Rodríguez-Serrano, Xiao Lu, Xinyu Zhuang  
Synthetic Nucleic Acid Circuits for Small-Molecule Sensing and Point of Care Viral Testing

10:15 to 10:30

**David Williams** (School of Chemical Sciences, University of Auckland, Auckland, New Zealand), Bichen Zhu, Thomas Kerr-Philips, Zahraa Al Ghaus, Eddie Wai Chi Chan, David Barker, Clive Evans, Jadranka Travas-Sejdic

Mechanism of Ultra-High Sensitivity DNA Detection with Conducting Polymer-Modified Electrodes, and Prospects for Large-Scale Manufacture.

10:30 to 10:45 *Invited*

**Stefania Rapino** (Department of Chemistry, University of Bologna, Bologna, Italy), Maila Becconi, Simona De Zio, Francesco Falciani, Marco Malferrari

Cancer Metabolic Profile Detected by Scanning ElectroChemical Microscopy

10:45 to 11:00

**Benchaporn Lertanantawong** (Biomedical Engineering, Mahidol University, Salaya, Nakhon Pathom, Thailand), Thanyarat Chaibun, Jiratchaya Puenpa, Tatchanun Ngamdee, Nimaradee Boonapatcharoen, Pornpat Athamanolap, Anthony O'Mullane, Sompong Vongpunsawad, Yong Poovorawan, Su Yin Lee  
Ultrasensitive Electrochemical DNA Sensors for SARS-CoV-2 detection.

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Lanqun Mao** (College of Chemistry, Beijing Normal University, Beijing, China)

Tackling Challenges in Electrochemical Sensing for In Vivo Analysis

11:30 to 11:45

**Limin Zhang** (School of Chemistry and Molecular Engineering, East China Normal University, Shanghai, China)

In Vivo Electroanalysis of Electroinactive Species in Rat Brain

11:45 to 12:00

**Chunyan Qin** (Intelligent Polymer Research Institute, University of Wollongong, Wollongong, Australia), Zhilian Yue, Yunfeng Chao, Robert Forster, Fionn Maolmhuaidh, Xu-Feng Huang, Stephen Beirne, Gordon Wallace, Jun Chen

Bipolar Electroactive Conducting Polymers for Wireless Cell Stimulation

12:00 to 12:15

**Dorota Matyszczyńska** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), Michalina Zaborowska

The Influence of Drug Lipophilicity on the Interactions of Anthracyclines with Phospholipid Layers Treated as Simple Models of Biological Membranes.

*12:15 to 12:30*

**Susana Campuzano** (Analytical Chemistry, Faculty of Chemistry, Complutense University of Madrid, Madrid, Spain), Eloy Povedano, Ana A. Montero-Calle, Víctor Ruiz-Valdepeñas, Rebeca M. Torrente-

Rodríguez, Maria Gamella, María Pedrero, Rodrigo Barderas, Paloma Yáñez-Sedeño, José M. Pingarrón

Translational bioelectroanalytical tools bringing us closer to precision medicine

12:30 to 12:45

**Joanna Juhaniwicz-Debinska** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), Damian Dziubak, Kinga Burdach

The effect of ganglioside GM3 on human islet amyloid polypeptide (amylin) interactions with model lipid membranes

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies

Room : R02 - Halla A (270)

Chairman : Kyung Yoon Chung; Eungje Lee; Hikari Sakaebe

10:00 to 10:30 Keynote

**Eungje Lee** (Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, USA)

Materials Development towards Sustainable Li-Ion Batteries

10:30 to 10:45

**Francesca Soavi** (Department of Chemistry, Alma Mater Studiorum University of Bologna, Bologna, Italy), Federico Poli, Alessandro Brilloni, Giovanni Spina

Pullulan as green component for high potential Li-ion battery cathodes

10:45 to 11:00

**Laurien Merinda** (Graduate Applied Science and Technology, National Taiwan University of Science and Technology, Taipei, Taiwan), Fu-Ming Wang, Nae-Lih Wu

Monolayer Adsorption Effect on Layered Li(Ni<sub>0.8</sub>Co<sub>0.1</sub>Mn<sub>0.1</sub>)O<sub>2</sub> Cathode Materials for Lithium Ion Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Léa Mangani** (LEPMI, Grenoble INP, Grenoble, France)

Determination of the lithium diffusion coefficient in composite electrodes for Li-ion batteries by time-effective electrochemical methodologies

11:30 to 12:00 Keynote

**Juergen Janek** (Institute of Physical Chemistry, Justus Liebig University, Giessen, Germany)

Single crystalline vs. polycrystalline high capacity cathode materials in LIB and SSB

12:00 to 12:15

**Abir Ghosh** (Department of Chemical Engineering & Technology, Indian Institute of Technology (BHU), Varanasi, Varanasi, India), Jamie M. Foster, Gregory Offer, Monica Marinescu

Effect of Oxygen Evolution and Passivation Layer Growth on The Degradation of Ni-rich Cathodes (NMC811) in Li-ion Batteries

s07b Next-generation Batteries: Novel chemistry and design

Room : R11 - 303 (100)

Chairman : Tejs Vegge

10:00 to 10:30 Keynote

**Robert Dominko** (Department of Materials Chemistry, National institute of chemistry, Ljubljana, Slovenia), Sara Drvaric Talian, Nejc Pavlin, Miran Gaberscek

Sustainable protection layer for Li metal batteries

10:30 to 10:45

**Zhen Chen** (Helmholtz Institute of Ulm/Karlsruhe Institute of Technology, Helmholtz Institute of Ulm/Karlsruhe Institute of Technology, Ulm, Germany), Zhen Chen, Guk-Tae Kim, Jae-Kwang Kim, Maider Zarrabeitia, Matthias Kuenzel, Hai-Peng Liang, Dorin Geiger, Ute Kaiser, Stefano Passerini  
Highly Stable Quasi-Solid-State Lithium Metal Batteries with Designed Solid Electrolyte/Electrodes Interlayers

10:45 to 11:00

**Janika Wagner** (IAM - Electrochemical Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany), Michail Gerasimov, Fridolin Röder, Perla B. Balbuena, Ulrike Krewer  
Revealing the impact of chemistry on SEI formation on Li metal by multi-scale modelling

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Qiang Zhang** (Department of Chemical Engineering, Tsinghua University, Beijing, China)  
Emerging Energy Chemistry at Li metal and Electrolyte Interfaces

11:30 to 11:45

**Gunther Wittstock** (Chemistry Department, School of Mathematics and Science, Car von Ossietzky University of Oldenburg, Oldenburg, Germany), Bastian Krueger, Luis Balboa, Jan Frederik Dohmann, Peer Bärmann, Martin Winter, Peter Bieker, Tobias Placke  
Evolution of Solid Electrolyte Interphases as Seen by Scanning Electrochemical Microscopy

11:45 to 12:00

**Gustavo Hobold** (Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, USA), Betar Gallant  
Probing Electrolyte-Dependent Li<sup>+</sup> Transfer Through the Native Solid Electrolyte Interphase on Li

12:00 to 12:15

**Stefan Freunberger** (IST Austria, Institute of Science and Technology Austria, Klosterneuburg, Austria)  
Reaction mechanisms and phase evolution in main group redox chemistries

12:15 to 12:30

**Hsisheng Teng** (Chemical Engineering, National Cheng Kung University, Tainan, Taiwan), Hanh T. T. Nguyen, Dang H. Nguyen, Qin-Cheng Zhang  
All-Solid-State Polymer Electrolytes for High-Stability and Dendrite-Free Lithium-Metal Batteries

12:30 to 12:45

**Daniel Schroeder** (Institute of Energy and Process Systems Engineering (InES), TU Braunschweig, Braunschweig, Germany)  
Operando Insight and Physico-Chemical Modeling to Analyze Dendrite Growth in Metal-Oxygen Batteries

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Silvia Bodoardo

10:00 to 10:30 Keynote

**Kristina Edstrom** (Department of Chemistry - Angstrom Laboratory, Uppsala University, Uppsala, Sweden)  
Transformative approaches to accelerate battery research to invent the batteries of the future

10:30 to 10:45 Invited



**Seok Woo Lee** (School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore)

A saline water based battery for a smart contact lens

10:45 to 11:00

**Lucia Fagiolari** (Department of Applied Science and Technology, Politecnico di Torino, Turin, Italy), Daniele Versaci, Julia Amici, Carlotta Francia, Silvia Bodoardo, Federico Bella

An Exploratory Study of Electrode Materials Suitable for Potassium-based Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Maria Assunta Navarra** (Chemistry, Sapienza University of Rome, Rome, Italy), Ruggero Poiana, Akiko Tsurumaki, Ernestino Lufrano, Cataldo Simari, Isabella Nicotera

Safe Gel Polymer Electrolytes for High Voltage Lithium batteries

11:30 to 11:45

**Yoshitaka Tateyama** (GREEN, National Institute for Materials Science (NIMS), Tsukuba, Japan), Yong Youn, Kei Kubota, Shinichi Komaba

Nanometer-size Na Cluster Formation in Micropore of Hard Carbon as Origin of Higher-capacity Na-ion Battery: A DFT Study

11:45 to 12:00

**Nicola Boaretto** (CIC EnergiGUNE, Basque Research and Technology Alliance (BRTA), Vitoria-Gasteiz, Spain), Leire Meabe, Elias Lobato, Xabier Casas, Pierre Ranque, Itziar Aldalur, Frédéric Aguesse, Maria Martinez

Hybrid Ceramic-Polymer Electrolytes for High-Energy Lithium Metal Batteries

12:00 to 12:15

**Mario El Kazzi** (Energy and Environment, Paul scherrer Institute (PSI), Villigen, Switzerland), Xiaohan Wu, Marta Mirolo, Carlos A. F. Vaz, Petr Novák

(Electro-)Chemical and Electronic properties of LiCoO<sub>2</sub>-Li<sub>3</sub>PS<sub>4</sub> Interface Probed by Operando X-Ray Photoelectron Spectroscopy

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Bingjun Xu

10:00 to 10:15 *Invited*

**Wenzhen Li** (Chemical & Biological Engineering Department, Iowa State University, Ames, USA), Xiaotong Chadderdon, David Chadderdon, Hengzhou Liu

Electrocatalytic Conversion of Furanic Compounds for Production of Valuable Chemicals

10:15 to 10:30

**Patricia V B Santiago** (Institute of Chemistry, Unicamp, Campinas, Brazil), Swathi P. Raju, Karthik Akkirajuc, Yang Shao-Horn, Pablo S. Fernández

Understanding the role of A site substitution on perovskite oxides as electrocatalyst for the oxidation of small organic molecules

10:30 to 10:45

**Sukhwa Hong** (Division of Environmental Science and Engineering, Pohang university of Science and Technology, POSTECH, Pohang, Korea), Jiseon Kim, Kangwoo Cho

Direct Urea Oxidation and Oxygen Evolution Reaction on Electrodeposited Mixed NiFe (Hydr)oxide Electrocatalysts

10:45 to 11:00

**Jun Hyun Lim** (Energy Engineering Department, Dankook university, Cheonan-si, Korea), Juhee Ahn  
The effect of size controlled perfluorinated sulfonic acid ionomers via supercritical dispersion used as polymer electrolyte membrane for water electrolysis

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Tuan Linh Doan** (Graduate School of Energy Science and Technology, Chungnam National University, Daejeon, Korea), Han Eol Lee, Taekeun Kim  
Study the efficiency of IrO<sub>2</sub>/TiO<sub>2</sub> catalyst coated titanium porous transport layer (PTL) on the polymer electrolyte membrane water electrolysis (PEMWE) performance.

11:30 to 11:45

**Tamara Milicic** (Electrochemical Energy Conversion, Max Planck Institut for Dynamics of Complex Technical System, Magdeburg, Germany), Luka Zivkovic, Tanja Vidakovic-Koch  
Development of Macroscopic Dynamical Model of Proton Exchange Membrane Water Electrolyzer

11:45 to 12:00

**Choeun Kim** (Department of Mechanical and Information Engineering, University of Seoul, Seoul, Korea)  
Productivity Enhancement of an Automotive Proton Exchange Membrane Fuel Cell Stacks by Developing Exchangeable Unit Cell

12:00 to 12:15

**Jaewon Kirk** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea), Dong Gyun Kang, Hyangsoo Jeong, Hyuntae Sohn, Chang Won Yoon, Suk Woo Nam, Jonghee Han, Yongmin Kim  
Optimal Sizing of Key Components and Adaptive Energy/Power Management in Hydrogen Energy Storage System

12:15 to 12:30

**Hyungjun Lee** (Energy Engineering, Hanyang University, Seoul, Korea), Chanho Kim, Sungmin Kim, Hoyeon Jung, Heesung Yoon, Taeseup Song  
Boosting the Cathodic Activity of Solid Oxide Fuel Cells via Introducing Subcontinuous 2D La<sub>0.6</sub>Sr<sub>0.4</sub>CoO<sub>3</sub>-I' Nanosheet

12:30 to 12:45

**Sourabh Chougule** (Graduate School of Energy Science and Technology, Chungnam National University, Daejeon, Korea), Arokia Anto Jeffery, Jiho Min, Yunjin Kim, Keonwoo Ko, Namgee Jung  
Carbon shell encapsulated metal nanoparticles for selective electrochemical reactions in fuel cells

s11 Electrochemical Conversion of Carbon Dioxide and its Utilization

Room : R04 - Samda A (100)

Chairman : Jinqiu Zhang

10:00 to 10:30 Keynote

**Alexis Bell** (Department of Chemical and Biomolecular Engineering, University of California, Berkeley, USA)  
Design of Optimal Microenvironment for the Attainment of High Yields of C<sub>2</sub>+ Products via the Electrochemical Reduction of CO<sub>2</sub>

10:30 to 10:45

**Jinqiu Zhang** (School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin, China), Yilin Yao, Shiji Zhang, Yueping Xiong, Peixia Yang, Maozhong An

Sequential Copper Nanowires with Crystal Defects for Selective Electrochemical Reduction of CO<sub>2</sub> to C<sub>2</sub>H<sub>4</sub>

10:45 to 11:00

**Nick Daems** (Applied Electrochemistry and Catalysis (ELCAT), UAntwerpen, Wilrijk, Belgium), Daniel Choukroun, Pablo Merino, Gonzalo Santoro, Luis Vazquez, Clara Rettenmaier, Arno Bergmann, Lidia Martinez, Beatriz Roldan Cuenya, Jose Angel Martin Gago, Tom Breugelmans

Surfactant-free Cu nanoparticles with controllable oxidation state as electrocatalyst for the CO<sub>2</sub> reduction towards C<sub>2</sub> chemicals

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Minhua Shao** (Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology, Hong Kong, China), Shangqian Zhu

In Situ Infrared Spectroscopic Studies on CO<sub>2</sub> Electrochemical Reduction Reaction

11:30 to 11:45

**Hilmar Guzmán** (DISAT, Politecnico di Torino, Turin, Italy), Daniela Roldán, Federica Zammillo, Nunzio Russo, Simelys Hernández

Enhanced Electroreduction of CO<sub>2</sub> to C<sub>2</sub>+ Products on B-doped CuO Catalysts

11:45 to 12:00

**Simelys Hernandez** (Department of Applied Science and Technology (DISAT), Politecnico di Torino, Turin, Italy), Hilmar Guzman, Samir Bensaid, Nunzio Russo

Cost-Effective Nanostructures for Electrochemical CO<sub>2</sub> Conversion to Chemicals and Fuels

12:00 to 12:15

**Venkata-Siva-Rama-Krishna Tandava** (Advanced Materials for Energy, Catalonia Institute for Energy Research, Sant Adria de Besos, Spain), Sebastián Murcia López, Joan Ramón Morante

Optimizing Cu/CuOx/Carbon Black Supported Gas Diffusion Electrodes. A Systematic Electrocatalytic CO<sub>2</sub> Reduction Study enhancing Selectivity towards C<sub>2</sub> and C<sub>2</sub>+ Value-added Products.

12:15 to 12:30

**Mariana Monteiro** (Catalysis and Surface Chemistry, Leiden University, Leiden, Netherlands), Mariana Monteiro, Federico Dattila, Bellenod Hagedoorn, Rodrigo García-Muelas, Núria López, Marc Koper

The role of cations on CO<sub>2</sub> reduction and how their properties impact the reaction selectivity

12:30 to 12:45

**Lin Zhuang** (College of Chemistry and Molecular Sciences, Wuhan University, Wuhan, China), Nian Wu, Xing Wei, Zhenglei Yin

Chemical Field Coupled Electrocatalysis: A Selectivity Enhancing Strategy for CO<sub>2</sub> Conversion

s12 Corrosion and corrosion protection

Room : R12 - 401 (100)

Chairman : Beatriz Mingo; Monica Santamaria

10:00 to 10:30 *Keynote*

**Janine Mauzeroll** (Chemistry, McGill, Montreal, Canada)

surfaces of engineering alloys and complex architectures such as welds or fractured samples.

10:30 to 10:45

**Sachiko Ono** (Dept. Applied Chemistry, Kogakuin University - Hachioji Campus, Tokyo, Japan)

Structure Analysis of Anodic Alumina Film after Ni-Sealing

10:45 to 11:00

**Xiaole Han** (Graduate School of Engineering, Hokkaido University, Sapporo, Japan), Masatoshi Sakairi  
Effect of Chloride Salts on Hydrogen Permeation Behavior of Steel During Wet/Dry Corrosion

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Beatriz Mingo** (Department of Materials, The University of Manchester, Manchester, United Kingdom), Yue Guo, Rafael Leiva-Garcia, Allan Matthews, Aleksey Yerokhin  
Active Corrosion Protection of PEO Coatings On Magnesium Alloys

11:30 to 11:45

**Benny Wouters** (Electrochemical and Surface Engineering, Vrije Universiteit Brussel, Brussels, Belgium), Ehsan Jalilian, Negin Madelat, Raf Claessens, Guy Van Assche, Tom Hauffman, Herman Terryn, Annick Hubin  
Monitoring initial ion and water uptake of organic coatings using time-resolved instantaneous electrochemical impedance spectroscopy

11:45 to 12:00

**Andrea Zaffora** (Department of Engineering, University of Palermo, Palermo, Italy), Francesco Di Franco, Paola Vassallo, Monica Santamaria  
Double Step Electrochemical Process for the Deposition of Superhydrophobic Coatings to Improve Corrosion Resistance of AA5083 Alloy

12:00 to 12:15

**Ting Wu** (Institute of Surface Science, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany), Carsten Blawert, Maria Serdechnova, Polina Karlova, Gleb Dovzhenko, D. C. Florian Wieland, Stevan Stojadinovic, Rastko Vasilic, Kristina Mojsilovic, Mikhail L Zheludkevich  
Formation of Plasma Electrolytic Oxidation Coatings on Pure Niobium in Different Electrolytes

12:15 to 12:30

**Liana Anicai** (Center of Surface Science and Nanotechnology, University Politehnica of Bucharest, Bucharest, Romania), Aurora Petica, Adrian Cristian Manea, Oana Andreea Lazar, Teodor Visan  
Environmentally-Friendly Cerium-Based Conversion Coatings Obtained by Cathodic Electrodeposition in Deep Eutectic Solvents Formulations for Corrosion Protection of AA7075 Aluminium Alloys

12:30 to 12:45

**Nnaemeka Nnaji** (Chemistry, Rhodes University, Grahamstown, South Africa), Nnaemeka Nnaji, Njemuwa Nwaji, John Mack, Tebello Nyokong  
Ball-type phthalocyanines and reduced graphene oxide nanoparticles as separate and combined corrosion inhibitors of aluminium in HCl- Experimental and computational approaches

s14 Electrochemical Technology for Process Intensification and Sustainability

Room : R10 - 302 (80)

Chairman : Karine Groenen-Serrano; Fabio La Mantia

10:00 to 10:30 Keynote

**Karel Bouzek** (Department of Inorganic Technology, University of Chemistry and Technology Prague, Prague 6, Czech Republic), Monika Drakselová, Veronika Recková, Martin Prokop  
Gas Diffusion Layer Permeability and Its Impact on the PEM Fuel Cell Performance

10:30 to 11:00 Keynote

**John Weidner** (Chemical Engineering, University of Cincinnati, Cincinnati, USA)  
Solar-Hydrogen Production in a Hybrid-Sulfur Electrolyzer

11:00 to 11:15

Coffee Break

11:15 to 11:45 Keynote

**Fabio La Mantia** (Energy Storage and Energy Conversion Systems, University of Bremen, Bremen, Germany)

Electrochemical lithium recovery by means of electrochemical ion pumping: from materials to processes

11:45 to 12:00

**Luis Diaz Aldana** (Chemical Processing, Idaho National Laboratory, Idaho Falls, USA), Tedd Lister, Meng Shi, Eugene Engmann

Electrochemical Enabling Processes for the Recovery of Value and Critical Materials from End-of-Life Electronics

12:00 to 12:15

**Javier Llanos** (Department of Chemical Engineering, University of Castilla-la Mancha, Ciudad Real, Spain), Yelitza Delgado, Javier Llanos, Francisco Jesús Fernández

Modelization of Cu Recovery from Real Acid Mine Drainage with Coupled Energy Generation

12:15 to 12:30

**Liqing Qiao** (Chemistry, Xiamen University, xiamen, China)

Photoelectrochemical mechanical polishing of n-type gallium nitride semiconductor wafers

12:30 to 12:45

**Zahra Chaghazardi** (Mechanical, Industrial and Aerospace Engineering, Concordia University, montreal, Canada), Rolf Wüthrich

Effect of Electropolishing Parameters on Optical Properties of Titanium Parts

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Kei Murakoshi

10:00 to 10:30 Keynote

**Tianquan Lian** (Chemistry, Emory University, Atlanta, USA)

In situ VSFG Spectroscopic Probe of the Structures and Dynamics of Molecular Catalyst at Electrode/Liquid Interfaces

10:30 to 10:45

**Leon Jacobse** (Center for X-ray and Nano Science CXNS, Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany), Ralf Schuster, Xin Deng, Silvan Dolling, Tim Weber, Herbert Over, Jörg Libuda, Vedran Vonk, Andreas Stierle

Observing the Oxidation of Platinum under operando Electrochemical Conditions

10:45 to 11:00

**Marcel Risch** (NWG Gestaltung des Sauerstoffentwicklungsmechanismus, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany)

Epitaxial La<sub>0.6</sub>Sr<sub>0.4</sub>MnO<sub>3</sub> as a model electrode for oxygen electrocatalysis in aqueous electrolytes: peroxide yield, protocols and in situ X-ray absorption spectroscopy

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Victor Climent** (Institute of Electrochemistry, University of Alicante, Alicante, Spain), Valentin Briega-Martos, Francisco J. Sarabia, Enrique Herrero, Juan M. Feliu

Laser Heating and Interfacial Water Structure on Pt(111)/non-Adsorbing Electrolyte Interfaces: Influence of Cations

11:30 to 11:45

**Ahmed Elshatla** (Elelectrochemistry Dep., Institute of Physical and Theoretical Chemistry - Bonn Uni., Bonn, Germany), Manuel Landstorfer

Experimental and theoretical investigation of some aprotic solvents in contact Au(111) electrodes

11:45 to 12:00

**Carol Korzeniewski** (Department of Chemistry & Biochemistry, Texas Tech University, Lubbock, USA), Jiahe Xu, Eric M. Peterson, Jay P. Kitt, Shelley D. Minteer, Joel M. Harris

Confocal Raman Microscopy for In-Situ Studies of Transformations at Electrode-Electrolyte Interfaces

12:00 to 12:15

**Iuliia V. Voroshylova** (Chemistry and Biochemistry, University of Porto, Faculty of Sciences, Porto, Portugal), Heigo Ers, Volodymyr Kovega, Borja Docampo Alvarez, Piret Pikma, Vladislav Ivanistsev, M. Natália D.S. Cordeiro

Ionic Liquids-Metal Interface: Insights from MD Simulations

12:15 to 12:30

**Heigo Ers** (Institute of Chemistry, University of Tartu, Tartu, Estonia), Meeri Lembinen, Maksim Misin, Ari Paavo Seitsonen, Maxim Fedorov, Vladislav Ivanistsev

Dismantling the potential drop at the graphene-ionic liquid interface using DFT-MD simulations

12:30 to 12:45

**Nicolas Georg Hoermann** (Theory Department, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany), Karsten Reuter

Theoretical Description of non-Nernstian thermodynamic Cyclic Voltammograms

Monday 30 August 2021 - PM

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Christopher Brett; Rasa Pauliukaite

*16:00 to 16:30 Keynote*

**Damien Arrigan** (School of Molecular and Life Sciences, Curtin University, Perth, Australia)

Ion-transfer Sensing via Soft Interfaces

*16:30 to 16:45*

**Alan O'Riordan** (Nanotechnology Group, Tyndall National Institute - University College Cork, Cork, Ireland), Luiza Wasiewska, Kaye Burgess, Geraldine Duffy, Benjamin O'Connell, Ian Seymour, James Rohan, Pierre Lovera, Ivan O'Connell, Aidan Murphy

Remote Detection of Inorganic Species using Generator Collector Enabled In-Situ pH Control at Silicon Chip Substrates

*16:45 to 17:00*

**Konstantin Mikhelson** (Physical Chemistry, St.Petersburg State University, St.Petersburg, Russia), Elena Solovyeva, Valentina Keresten

The Paradox of the Non-constancy of the Bulk Resistance of Ionophore-based Ion-selective Membranes: The Origin and Possible Practical Applications

*17:00 to 17:15*

**Melania Loredana Onea** (Functional Nanostructures, National Institute of Materials Physics "Romana, Magurele, Romania), Adrian Enache, Elena Matei, Monica Enculescu, Ionut Enculescu

Bio-Sensing properties of Single ZnO nanowire Field Effect Transistor

*17:15 to 17:30*

**Simon Schumacher** (Technical Chemistry III, University Duisburg-Essen, Duisburg, Germany), Lukas Madauß, Tsvetan Tarnev, Swapnil Varhade, Emmanuel Batsa Tetteh, Marika Schleberger, Wolfgang Schuhmann, Corina Andronescu

Scanning Electrochemical Cell Microscopy – Investigation of the Hydrogen Evolution Reaction on Thin Film Dichalcogenides

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00 Invited*

**Guobao Xu** (State Key Laboratory of Electroanalytical Chemistry, Changchun Institute of Applied Chemistry, CAS, Changchun, China), Wenyue Gao, Kateryna Muzyka, Liming Qi, Xiangui Ma, Shuang Han, Fan Yuan, Baohua Lou, Christian Amatore

Development of Simple Devices for Electroanalysis and Electrochemiluminescent Analysis

*18:00 to 18:15*

**Fred Lisdar** (Biosystems Technology, Technical University Wildau, Wildau, Germany), Shuang Zhao, Marc Riedel, Zhao Yue, Wolfgang Parak

Exploiting metal/semiconductor hybrid particles to introduce visible light sensitivity for photoelectrochemical sensor application

*18:15 to 18:30*

**Valentina Pifferi** (Dipartimento di Chimica, Università degli Studi di Milano, Milan, Italy), Luigi Falciola, Alessandro Minguzzi, Alberto Vertova

Photorenewable Electrochemical Sensors for Real-Time Monitoring of Drinking Water Quality

*18:30 to 18:45*

**Sheila Hernandez** (Chemistry, Universidad de Burgos, Burgos, Spain), Martin Perez-Estebanez, William Cheuquepan, Aranzazu Heras, Alvaro Colina  
Simultaneous UV/Vis absorption and Raman spectroelectrochemistry: New experimental set-up for understanding Electrochemical Surface Oxidation Enhanced Raman Scattering phenomenon.

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications  
Room : R05 - Samda B (100)  
Chairman : Paolo Bollella; Alison Downard

*16:00 to 16:30 Keynote*

**Alison Downard** (School of Physical and Chemical Sciences, University of Canterbury, Christchurch, New Zealand), Liam Carroll, Joel Schuurman, Alexandra McNeill, Rodrigo Martinez Gazoni, Roger Reeves, Martin Allen  
Electrografted Aryl Layers: a Versatile Method for Tuning the Surface Electronic Properties of ZnO, SnO<sub>2</sub> and Ga<sub>2</sub>O<sub>3</sub>

*16:30 to 16:45*

**Roberto Bernasconi** (Dipartimento di Chimica, Materiali e Ingegneria Chimica, Politecnico di Milano, Milano, Italy), Negar Fouladvari, Salvador Pané, Luca Magagnin  
Drug Release Enhancement from Electrodeposited Polypyrrole Layers by Bipolar Electrochemistry

*16:45 to 17:00*

**Tevin Bissen** (Chemistry, North West University , Potchestroom , South Africa)  
Synthesis and evaluation of (NiZnxCry)O electrocatalysts for the oxygen evolution reaction

*17:00 to 17:15*

**Alexander Black** (School of Chemistry, University of Southampton, Southampton, United Kingdom), Philip Bartlett  
Characterisation and Application of Weakly Coordinating Solvents for the Electrodeposition of Semiconductors

*17:15 to 17:30*

**Paolo Bollella** (Chemistry, University of Bari, Bari, Italy), Zhong Guo, Selvakumar Edwardraja, Vasantha Krishna Kadambar, Kirill Alexandrov, Artem Melman, Evgeny Katz  
Self-powered molecule release systems activated with chemical signals processed through reconfigurable Implication or Inhibition Boolean logic gates

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00*

**Marta Choinska** (Department of Electrochemistry at the Nanoscale, J. Heyrovsky Institute of Physical Chemistry of the CAS, Prague, Czech Republic), Hana Dejmková, Jan Fischer, Ludek Míka, Tomá Navrátil  
Selected 3D printed materials in electrochemistry: their stability and influence on the various solutions and analytes

*18:00 to 18:15*

**Paolo Ciocci** (Laboratoire ITODYS, Université de Paris, Paris, France)  
Revealing the heterogeneities in electrochemical activity of indium tin oxide electrode via optical microscopy and SECM

*18:15 to 18:30*

**Joanna Dolinska** (Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Marcin Holdynski, Marcin Opallo  
When impurities are an opportunity for more efficient electrocatalysis



18:30 to 18:45

**Nick Duinslaeger** (Technology and Evaluation, Catalan Institute for Water Research (ICRA), Girona, Spain), Jelena Radjenovic  
Graphene Sponge Electrodes For Electrochemical Treatment of Perfluoroalkyl Substances (PFAS)

s04 Bioelectrochemistry: from fundamentals to applications

Room : R09 - 301 (80)

Chairman : Wlodzimierz Kutner; Christophe Leger

16:00 to 16:30 Keynote

**George Malliaras** (Department of Engineering, University of Cambridge, Cambridge, United Kingdom)  
Electronics on the Brain

16:45 to 17:00

**Damian Dziubak** (Biological and Chemical Research Centre, Faculty of Chemistry, , Warszawa, Poland), Slawomir Sek  
Membranolytic lipo-oligoureas- the new class of antimicrobial compounds

17:00 to 17:15

**Shuto Osaki** (Graduate School of Engineering, Osaka University, Suita, Japan), Shin-ichi Wakida, Eiichi Tamiya  
Effect of the surfactants for gold-linked electrochemical immunoassay

17:15 to 17:30

**Simon Guette-Marquet** (Laboratoire de Genie Chimique, Institut National Polytechnique de Toulouse, Toulouse, France), Christine Roques, Alain Bergel  
Electron Transfers Between Animal Cells and Polarized Electrodes

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Luiza Wasiewska** (Nanotechnology, Tyndal National Institute, Cork, Ireland), Geraldine Duffy, Catherine Burgess, Alan O'Riordan  
Development of Ultra-Sensitive, On-Chip Biosensor for Detection of stx1 Gene Using Interdigitated Microelectrodes Modified with Chitosan-Gold Composite.

18:00 to 18:15

**Zhang Wenrui** (College of Life Science and Technology, Xinjiang Unniversity, Urumqi, China), Chen Fei, Meng Fanxing, Wu Wanfeng, Shao Shuxuan, Duan Mengjiao, Zhang Minwei  
Construction and Application of Flexible Biosensor based on Au@PB NPs

18:15 to 18:30

**Saranya Thiruvottriyur Shanmugam** (Bioengineering, University of Antwerp, Antwerp, Belgium), Stanislav Trashin, Karolien De Wael  
Singlet Oxygen-Based Photoelectrochemical DNA Sensors

18:30 to 18:45

**Hum Lamichhane** (Molecular and Life Sciences, Curtin University, Perth, Australia), Terence Henares, Mark Hackett, Damien Arrigan  
Structural Changes in Insulin at a Soft Electrochemical Interface

s05 New Electrochemical Approaches and Devices for Monitoring Diseases and Human Health

Room : R07 - 202 A + B (150)

Chairman : Ilaria Palchetti

16:00 to 16:30 Keynote

**John A. Rogers** (, Northwestern University, , USA)  
Soft Microfluidic Analysis Systems for the Skin

16:30 to 16:45 Invited

**Wei Gao** (Medical Engineering, California Institute of Technology, Pasadena, USA)  
Skin-Interfaced Wearable Sweat Biosensors

16:45 to 17:00

**Francesca Mazzara** (Ingegneria, Università degli Studi di Palermo, Palermo, Italy), Chiara D'Agostino, Bernardo Patella, Alan O'Riordan, Giuseppe Aiello, Claudia Torino, Antonio Vilasi, Rosalinda Inguanta  
Sensors for the monitoring of analytes in the sweat

17:00 to 17:15

**Cecilia Cristea** (of Analytical Chemistry, Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania), Alexandra Canciu, Oana Hosu, Andreea Cernat, Mihaela Tertis  
Electrochemical Sensors as Tools for Pathogen Bacteria Detection

17:15 to 17:30

**Hadar Ben-Yoav** (Biomedical Engineering, Ben-Gurion University of the Negev, Beer Sheva, Israel), Matan Aroosh, Rajendra P. Shukla, Russell E. Ware, Alexander A. Vinks  
Intelligent Microelectrodes Array for Hydroxyurea Prediction in Blood

17:30 to 17:45

Coffee Break

17:45 to 18:00 Invited

**María Jesús Lobo-Castañón** (Química Física y Analítica, University of Oviedo, OVIEDO, Spain), Ramón Lorenzo-Gómez, Ana Díaz-Fernández, Paula Gómez-Meijide, Sofia Tellado-Arbesú, Rebeca Miranda-Castro, Noemi de-los-santos-Alvarez  
Aptamers against Cancer Biomarkers: Selection and Integration into Electrochemical Sensors

18:00 to 18:15

**Elena Ferapontova** (Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Aarhus, Denmark)  
Ultrasensitive and Specific Electroanalysis of a Breast Cancer Biomarker HER-2/neu Protein in Human Serum

18:15 to 18:30

**Kaylyn K. Leung** (Center for Bioengineering, University of California Santa Barbara, Santa Barbara, USA), Alex M. Downs, Gabriel Ortega, Kevin W. Plaxco  
Elucidating the Signal Drift Mechanisms with Electrochemical DNA sensors in Whole Blood

18:30 to 18:45

**Giulia Moro** (Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Venice, Italy), Jessica Ghirardo, Patrick Severin Sfragano, Alessandro Angelini, Ilaria Palchetti, Federico Polo  
Synthetic Receptor-based Biosensor for Human Urokinase-Type Plasminogen Activator (h-uPA): from Affinity Assays to Portable Platform Design

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies

Room : R02 - Halla A (270)

Chairman : Dominic Bresser; Gu Lin; Hikari Sakaebe

16:00 to 16:15

**Oliver Lohrberg** (Institute of Materials Science, TU Dresden, Dresden, Germany), Christian Heubner, Sebastian Maletti, Michael Schneider, Alexander Michaelis  
Li-Plating and Stripping in Anode-Free Li-ion Batteries: Insights from operando dilatometry

16:15 to 16:30

**Simon E. J. O'Kane** (Department of Mechanical Engineering, Imperial College London, London, United Kingdom), Simon E. J. O'Kane, Ian D. Campbell, Mohamed W. J. Marzook, Gregory J. Offer, Monica Marinescu

Modelling the physical origin of the differential voltage minimum associated with lithium plating in Li-ion batteries

16:30 to 16:45

**Tao Gao** (Chemical Engineering, University of Utah, SALT LAKE CITY, USA), Dimitrios Fraggedakis, Supratim Das, William Chueh, Ju Li, Martin Bazant

Understanding the interplay between Li insertion and Li plating in graphite anodes

16:45 to 17:00

**Caroline Keller** (IRIG-SyMMES, Université Grenoble-Alpes, Grenoble, France), Saravanan Karuppiah, Guilhem Paradol, Samuel Tardif, Claire Villeveille, Sandrine Lyonnard, Cédric Haon, Pascale Chenevier  
Custom Silicon Nanowires for Lithium-Ion Batteries

17:00 to 17:15

**Anshuman Chaupatnaik** (Materials Research Center (MRC), Indian Institute of Science (IISc), Bangalore, India), Prabeer Barpanda

Lead-based Perovskite Oxide Anodes for Rechargeable Batteries

17:15 to 17:30

**Chen Xuewen** (Materials Function and Design, Nagoya Institute of Technology, Nagoya, Japan), Song-Zhu Kure-Chu\*, Sung-Hyung Lee, Takashi Matsubara, Takehiko Hihara, Hitoshi Yashiro

Electrochemical characterization and Deterioration mechanism of TiO<sub>2</sub>-TiN/Sn-SnO<sub>2</sub> composite films for LIB anodes with high safety and large capacity

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Yoshiyasu Saito** (Research Institute for Energy Conservation, AIST, Tsukuba, Japan), Ken Okada  
In-Situ Heating XRD Measurement to Study Thermal Runaway of Lithium-ion Batteries

18:00 to 18:15

**Jeremy Dawkins** (Chemistry, McGill University, Montréal, Canada), Steen Schougaard, Janine Mauzeroll, Isaac Maartens, Marta Mirolo, Isabelle Beaulieu, Danny Chhin

Operando Observation of Li<sup>+</sup> in Li-ion Batteries

18:15 to 18:30

**Sebastian Maletti** (Institute of Materials Science, TU Dresden, Dresden, Germany), Christian Heubner, Christoph Lämmel, Michael Schneider, Roman Fedorov, Yair Ein-Eli, Alexander Michaelis

Single Particle Electrochemistry: Revealing Intrinsic Properties of Battery Materials

18:30 to 18:45

**Xinhua Zhu** (Department Materials and Chemistry, Vrije Universiteit Brussels, Ixelles, Belgium), Benny Wouters, Raf Claessens, Annick Hubin

State of Charge Identification of Lithium-ion Batteries by Operando EIS

s07b Next-generation Batteries: Novel chemistry and design

Room : R11 - 303 (100)

Chairman : Julia Amici

16:00 to 16:15

**Donald Dornbusch** (Materials Chemistry and Physics, NASA Glenn Research Center, Cleveland, USA), Vadim Lvovich, Rocco Viggiano, Frederick Dynys, John Connell, Yi Lin  
Practical considerations in designing Solid state Li-S cells for electric aviation

16:15 to 16:30

**Xizheng Liu** (Institute For New Energy Materials and Low-Carbon Technology, Tianjin University of Technology, Tianjin, China)  
Composite gel electrolytes formed in situ for stable ambient Li/Na-O<sub>2</sub> batteries

16:30 to 16:45

**Nao Nomura** (Department of Chemistry and Life Science, Yokohama National University, Yokohama, Japan), Shanglin Li, Jiali Liu, Kazuhide Ueno, Kaoru Dokko, Masayoshi Watanabe  
Higher Energy Density and Longer Life of Li-S Batteries

16:45 to 17:00

**Daniele Versaci** (DISAT, Politecnico di Torino, Torino, Italy), Melina Cozzarin, Julia Amici, Martin E. Zoloff Michoff, Carlotta Francia, Arnaldo Visintin, Ezequiel Leiva, Silvia Bodoardo  
C<sub>3</sub>N<sub>4</sub>-based double layer approach for enhancing Li-S battery performances

17:00 to 17:15

**Xinsheng Zhang** (Chemical Engineering, East China University of Science and Technology, Shanghai, China)  
Functional Separator Coating based on Porous Organic Polymers for advanced Lithium-Sulfur Batteries

17:15 to 17:30

**Svetlana Menkin** (Department of Chemistry, University of Cambridge, Cambridge, United Kingdom), Christopher A. O'Keefe, Anna B. Gunnarsdóttir, Sunita Dey, Federico Pesci, Zonghao Shen, Darren M. C. Ould, Ainara Aguadero, Dominic Wright, Clare P. Grey  
Interface dynamics and metal plating in lithium and sodium anode-free batteries

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Jiulin Wang** (Chemical Engineering, Shanghai Jiao Tong University, Shanghai, China), Huanhuan Yuan, Jiahang Chen  
Multifunctional Binder for S@pPAN cathode in Rechargeable Lithium Batteries

18:00 to 18:15

**Yongzhu Fu** (College of Chemistry, Zhengzhou University, Zhengzhou, China)  
Organosulfides as Cathode Materials for Rechargeable Li Batteries

18:15 to 18:30

**Christian Prehal** (Dept. of Information Technology and Electrical Engineering, ETH Zurich, Zurich, Switzerland), Heinz Amenitsch, Vanessa Wood, Stefan Freunberger  
Mechanisms of reversible active material electrodeposition in Li-O<sub>2</sub> batteries and beyond

18:30 to 18:45

**Fujun Li** (Chemistry, Nankai University, Tianjin, China), Zhuo Zhu, Qingliang Lv, Youxuan Ni, Shuo Zhao, Jun Chen  
Photo-involved Li-O<sub>2</sub> batteries and the reaction mechanism

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Kristina Edstrom

*16:00 to 16:30 Keynote*

**Tejs Vegge** (Department of Energy Conversion and Storage, Technical University of Denmark, Kgs. Lyngby, Denmark)

AI-accelerated discovery processes for next-generation battery materials

*16:30 to 16:45*

**Tomooki Hosaka** (Department of Applied Chemistry, Tokyo University of Science, Shinjuku-ku, Japan), Shinichi Komaba, Tatsuo Matsuyama, Taiga Fukabori, Ryoichi Tatara, Kei Kubota

Electrode Materials and Electrolytes for High-Voltage and High- Power K-Ion Batteries

*16:45 to 17:00*

**Martina Hegemann** (Physical and theoretical Chemistry Electrochemistry, University of Bonn, Bonn, Germany)

ORR and OER in Ca<sup>2+</sup> containing DMSO/Tetraglyme and DMSO/THF Electrolyte M. Hegemann, H. Baltruschat\* Rheinische Friedrich-Wilhelms Universität Bonn Abteilung Elektrochemie, Roemerstrasse 164, 53117 Bonn, Germany\* Baltruschat@uni-bonn.de

*17:00 to 17:15*

**Maren-Kathrin Heubach** (Institute of Electrochemistry, Ulm University, Ulm, Germany), Areeg Abdelrahman, Fabian M. Schuett, Maximilian U. Ceblin, Maximilian J. Eckl, Sven J. Zeller, Ludwig A. Kibler, Timo Jacob

Sodium Deposition from [MPPip][TFSI] on Au(111) - From Initial Nucleation to Cluster Growth

*17:15 to 17:30*

**Niklas Borchers** (Institute of Engineering Thermodynamics, German Aerospace Center (DLR), Ulm, Germany), Birger Horstmann

Model-Based Electrolyte Design for Rechargeable Zinc Ion Batteries

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00 Invited*

**Ezequiel Leiva** (Química Teórica y Computacional, Universidad Nacional de Córdoba, Córdoba, Argentina), Maximiliano Gavilán-Arriazu, Francisco Fernandez, Daniel Barraco

Kinetic Modeling of Lithium-ion Insertion in Prototypical Systems

*18:00 to 18:15*

**Christian Heubner** (Mobile Energy Storage Systems and Electrochemistry, Fraunhofer IKTS, Dresden, Germany), Tobias Lein, Björn Matthey, Sebastian Maletti, Michael Schneider, Alexander Michaelis

Electrochemical Alkali-Ion Exchange for Synthesis and Investigation of Novel Battery Materials

*18:15 to 18:30*

**Randy Jalem** (Green Research on Energy and Environmental Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan), Randy Jalem, Yoshitaka Tateyama

First-principles DFT study on the Na<sup>+</sup> Superionic Conductivity in Cation-Doped Na<sub>3</sub>SbS<sub>4</sub> Solid Electrolytes for All-Solid-State Batteries

s10b Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R06 - 201 A + B (150)

Chairman : Christian Durante

*16:00 to 16:15*

**Serhiy Cherevko** (Helmholtz-Institute Erlangen-Nuernberg for Renewable Energy, Forschungszentrum Juelich GmbH, Erlangen, Germany), Konrad Ehelebe, Julius Knöppel, Daniel Escalera-Lopez  
How to Test the Stability of Electrocatalysts?

16:15 to 16:30

**Fengmin Du** (Development Fuel Cells, BMW Group, Munich, Germany), Tuan Anh Dao, Andreas Bauer, Michael Obermaier, Thomas J. Schmidt, Alin Orfanidi  
Experimental and Simulative Investigations of Carbon Corrosion on the Performance Losses in PEMFCs

16:30 to 16:45

**Luka Pavko** (Department of materials chemistry, National institute of chemistry, Ljubljana, Slovenia), Luka Pavko, Matija Gatalo, Gregor Krizan, Janez Krizan, Bostjan Genorio, Francisco Ruiz-Zepeda, Angelja Kjara Surca, Nejc Hodnik, Miran Gaberscek  
Towards Ultimate Pt-alloy Electrocatalyst Carbon Support Stability in PEMFC Applications

16:45 to 17:00

**Raghuandan Sharma** (Department of Green Technology (IGT), University of Southern Denmark, Odense, Denmark), Shuang Ma Andersen  
Degradation mechanisms of electrochemical activity of Pt/C during the accelerated stress test focused on catalyst support corrosion

17:00 to 17:15

**Tina Djukic** (Department of Materials Chemistry, National Institute of Chemistry, Ljubljana, Slovenia), Léonard Jean Moriau, Martin Sala, Luka Pavko, Mitja Kostelec, Matija Gatalo, Nejc Hodnik  
Effect of Temperature on Metal Dissolution of Pt-based Oxygen Reduction Reaction Electrocatalysts for PEM Fuel Cells

17:15 to 17:30

**Daniel Escalera López** (Helmholtz-Institute Erlangen-Nürnberg for Renewable Energy, Forschungszentrum Jülich GmbH, Erlangen, Germany), Steffen Czioska, Janis Geppert, Alexey Boubnov, Philipp Röse, Erisa Saraci, Ulrike Krewer, Jan-Dierk Grunwaldt, Daniel Guay, Serhiy Cherevko  
The Stability of Cation-Substituted IrO<sub>2</sub> Catalysts Toward Water Splitting

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Matija Gatalo** (Department for materials chemistry, National Institute of Chemistry, Ljubljana, Slovenia), Leonard Jean-Moriau, Francisco Ruiz-Zepeda, Martin Aala, Luka Pavko, Marjan Bele, Nejc Hodnik, Miran Gaberscek  
Nano-engineering of High Performance Pt-alloy Intermetallics

18:00 to 18:15

**Kurt Mayer** (Inst. of Chemical Engineering and Environmental Technology, Graz University of Technology, Graz, Austria), Viktor Hacker  
Simulations and Experiments on Critical Operating Conditions with Total Harmonic Distortion

18:15 to 18:30

**Aktilek Akhmetova** (Department of Chemical and Materials Engineering, Nazarbayev University, Nur-Sultan, Kazakhstan), Xuemiao Pan, Yanwei Wang, Almagul Mentbayeva  
Chitosan-Based Anion Exchange Membranes for Fuel Cells Mechanically Enhanced with Polyacrylonitrile Nanofiber Network

18:30 to 18:45

**Nicolai Schmitt** (Ernst-Berl-Institute for Technical Chemistry, TU Darmstadt, Darmstadt, Germany), Bastian Etzold

Best practice for accurate determination of ORR catalyst activity in gas diffusion electrode half-cells

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Vincenzo Baglio

16:00 to 16:15 Invited

**Maria Escudero-Escribano** (Department of Chemistry, University of Copenhagen, Copenhagen, Denmark)

Novel Electrode Materials for Oxygen and Carbon Monoxide Electrocatalysis: Structure Sensitivity and Electrolyte Effects

16:15 to 16:30

**Carlota Bozal-Ginesta** (Chemistry, Imperial College London, London, United Kingdom), Reshma R. Rao, Camilo A. Mesa, Xinyi Liu, Sam Hillman, Ifan E.L. Stephens, James R. Durrant

Operando spectroelectrochemical analysis of active state kinetics in water-oxidation IrOx electrocatalysts

16:30 to 16:45

**Alexandra Iskortseva** (Department of Electrochemistry, MSU, Moscow, Russia), Eduard Levin, Victoria Nikitina

Kinetics of One-Step Electron Transfer Processes on Semiconducting Electrodeposited Transition Metal Oxides in Aqueous Solution

16:45 to 17:00

**Gerard Montserrat Siso** (Department of Physics, Chalmers University of Technology, Göteborg, Sweden), Björn Wickman

PdNi Thin Films for Hydrogen Oxidation Reaction and Oxygen Reduction Reaction in Alkaline Media

17:00 to 17:15

**David J. Fermin** (School of Chemistry, University of Bristol, Bristol, United Kingdom), Veronica Celorrio

Site Activity Enhancement via d-Orbital Overlap in Ru-Mn Pyrochlores Oxygen Electrocatalysts

17:15 to 17:30

**Dulce M. Morales** (NWG Gestaltung des Sauerstoffentwicklungsmechanismus, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany), Javier Villalobos, Mariya A. Kazakova, Marcel Risch

Impact of Nafion on the Oxidation State of Manganese Oxides Investigated by Electrochemical and X-Ray Absorption Spectroscopic Methods

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Nicolas Grimaldos-Osorio** (IRCELYON, University Claude Bernard Lyon 1, Villeurbanne, France), Nicolas Grimaldos-Osorio, Fabrizio Sordello, Monica Passananti, Philippe Vernoux, Angel Caravaca

From plastic-waste to hydrogen: A first electrochemical approach using a model molecule and pure PMMA

18:00 to 18:15

**Sotirios Mavrikis** (Engineering and Physical Sciences, University of Southampton, Southampton, United Kingdom), Ling Wang, Carlos Ponce de León

Electrochemical Synthesis of Hydrogen Peroxide via Water Oxidation using Boron Doped Diamond

18:15 to 18:30

**Kenji Sakamaki** (Dept. of Applied Chem. & Biochem., Fukushima College, National Institute of Technology, Iwaki-shi, Fukushima, Japan)

## Hydrogen Generation Derived from Water Dissociation (26)

18:30 to 18:45

**Mohamed A. Ghanem** (Chemistry Department, College of Science, King Saud University, Riyadh, Saudi Arabia), Abdullah M. Al-Mayouf, Prabhakarn Arunachalam, Mabrook S. Amer, Mark T. Weller  
Transition-metals oxyhalides electrocatalysts for boosting the electrochemical energy reactions

s11 Electrochemical Conversion of Carbon Dioxide and its Utilization

Room : R04 - Samda A (100)

Chairman : Wen-Bin Cai; Ruud Kortlever

16:00 to 16:15 Invited

**Plamen Atanassov** (Chemical & Biomolecular Engineering, University of California Irvine, Irvine, USA)  
Transition metal-Nitrogen-Carbon Catalysts for Electroreduction of Carbon Dioxide

16:15 to 16:30

**Xin Zong** (School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin, China), Jinqiu Zhang, Yueping Xiong  
Synergistic metal/CeO<sub>2</sub> nanofiber catalysts for efficient CO<sub>2</sub> electroreduction

16:30 to 16:45

**Akansha Goyal** (Leiden Institute of Chemistry, Leiden University, Leiden, Netherlands), Christoph J. Bondü, Matthias Graf, Marc Koper  
Quantitative understanding of mass transport effects for electrochemical CO<sub>2</sub> reduction reaction on Nano-porous gold catalysts

16:45 to 17:00

**Wen-Bin Cai** (Department of Chemistry, Fudan University, Shanghai, China), Hong Li, Xia-Guang Zhang  
Selective Reduction of CO<sub>2</sub> to CO on Spontaneously Sb-Modified Cu Electrode

17:00 to 17:15

**Philipp Röse** (IAM-Electrochemical Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany), Steffen Czioska, Christian Of, Leonie Wildersinn  
Investigation of the Electrocatalytic Reduction of CO<sub>2</sub> in Organic Electrolytes on Cu-Zn Nanoparticles

17:15 to 17:30

**Xin Wang** (College of chemistry, Zhengzhou University, Zhengzhou, China), Wen-Jin Yin, Yubing Si, Xiaoxiao Guo, Wei Guo, Yongzhu Fu  
Conversion of CO<sub>2</sub> to chemical feedstocks over bismuth nanosheets in situ grown on nitrogen-doped carbon

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Ruud Kortlever** (Process & Energy, Delft University of Technology, Delft, Netherlands)  
The Effect of Process Conditions on the Electrocatalytic CO<sub>2</sub> Reduction Reaction

18:00 to 18:15

**Stefan Popovic** (Department of Materials Chemistry, National Institute of Chemistry, Ljubljana, Slovenia), Marjan Bele, Nejc Hodnik  
Reconstruction of Copper Nanoparticles at Electrochemical CO<sub>2</sub> Reduction Reaction Conditions Occurs via Two-step Dissolution/Redeposition Mechanism: Identical Location Scanning Electron Microscopy (IL-SEM) Study



18:15 to 18:30

**Bruna Baggio** (Physics, University of Liverpool, Liverpool, United Kingdom), Paramaconi Rodriguez, Jack Beane, Adam Kolodziej, Christopher Lucas, Yvonne Grunder  
In Situ Surface X-ray Diffraction of Cu Single Crystal Electrodes in Neutral Phosphate Electrolyte

18:30 to 18:45

**André Dourado** (Facultät für Physik, TUM, Garching, Germany), Katharina Krischer  
CO<sub>2</sub> Reduction Reaction on Cu<sub>2</sub>O Electrodes: High Faradaic Currents at Low Overpotential Accompanied by Current Oscillations

s12 Corrosion and corrosion protection

Room : R12 - 401 (100)

Chairman : Achim Walter Hassel; Ricardo M. Souto

16:00 to 16:30 Keynote

**Marta Mohedano** (Chemical and Material Engineering, Universidad Complutense de Madrid, Madrid, Spain), Ana Santos-Coquillat, Enrique Martinez-Campos, Lara Moreno, Raul Arrabal, Endzhe Matykina  
Bioactive Plasma Electrolytic Oxidation Coatings for Corrosion Protection and Functionalization

16:30 to 16:45 Invited

**Jan Kollender** (Joining Technologies and Corrosion, Swiss Federal Laboratories for Materials Science, Dübendorf, Switzerland)  
Evaluation of electrochemical corrosion techniques on highly passive biomaterials using online ICP-MS

16:45 to 17:00

**Virginie Roche** (LEPMI, Univ. Grenoble Alpes, CNRS, Grenoble-INP, Saint Martin d'Herès, France), Jose Eduardo Berger, Gabriel H. Asato, Alberto Moreira Jorge Jr  
Corrosion behavior and mechanical properties of two equimolar compositions of high entropy

17:00 to 17:15

Coffee Break

17:15 to 17:30

**Achim Walter Hassel** (Institute of Chemical Technology of Inorganic Materials, Johannes Kepler University Linz, Linz, Austria), Cezarina Cela Mardare, Michael T. Woldemedhin, Andrei Ionut Mardare  
Niobium Titanium Alloys for Medical Applications- Composition, Microstructure, Passivity

17:30 to 17:45 Invited

**Santiago Fajardo** (Surface Engineering, Corrosion and Durability, National Centre for Metallurgical Research CENIM-CSIC, Madrid, Spain), Raul Reyes-Riverol  
Recent Advances in the Mechanism of Magnesium Dissolution and Anomalous Hydrogen Evolution

17:45 to 18:00

**Ricardo M. Souto** (Department of Chemistry, University of La Laguna, La Laguna, Spain), Dániel Filotás, Livia Nagy, Géza Nagy  
New Insights on the Influence of Aluminum on the Anomalous Hydrogen Evolution of Anodized Magnesium using SECM

18:00 to 18:15

**Abdelmoheiman Zakaria Benbouzid** (Laboratoire Interfaces et Systèmes Electrochimiques (LISE), Sorbonne Université, Paris, France), Oumaïma Gharbi, Mai T. T. Tran, Mireille Turmine, Vincent Vivier  
Understanding the pH Effect on the Magnesium Corrosion by means of Electrochemical Impedance Spectroscopy

18:15 to 18:30

**Jelena Bajat** (Department of Physical Chemistry and Electrochemistry, Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia), Mihael Bucko, Alexandre Bastos, Mário Ferreira  
Influence of water content in the electrolyte on the corrosion susceptibility of pure magnesium in ethaline

s14 Electrochemical Technology for Process Intensification and Sustainability

Room : R10 - 302 (80)

Chairman : Carlos A Martinez-Huitle

*16:00 to 16:30 Keynote*

**Karine Groenen Serrano** (Laboratoire de Genie Chimique, Universite Paul Sabatier, Toulouse, France)  
New insights into Peroxo-compounds Electrosynthesis for the Treatment of Recalcitrant Pollutants

*16:30 to 16:45 Invited*

**Elizabeth J. Biddinger** (Chemical Engineering, City College of New York, New York, USA), Andrew S. May, Steven M. Watt

Electrochemical Conversion of Furanics for Sustainable Chemicals and Fuels

*16:45 to 17:00*

**Bastian Mei** (Faculty of Science and Technology (TNW), University of Twente, Enschede, Netherlands), Kasper Wenderich, Arthur Ramos Flöering

Selective anodic water oxidation to hydrogen peroxide using boron-doped diamond electrodes

*17:00 to 17:15 Invited*

**Miguel Modestino** (Chemical and Biomolecular Engineering, New York University, Brooklyn, USA), Daniela Blanco

Process Intensification Approaches in Organic Electrosynthesis of Nylon Intermediates

*17:15 to 17:30*

**Jonathan Schalck** (Engineering, University of Antwerp, Wilrijk, Belgium), Jonas Hereijgers, Tom Breugelmans

Electrosynthesis of ethylene to ethylene oxide

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00*

**Florian Schwarz** (Electrochemical Reaction Engineering, RWTH Aachen University, Aachen, Germany), Anna K. Mechler

Electro-oxidation of Anhydrous Methanol to Formaldehyde

*18:00 to 18:15*

**Philippe Vernoux** (IRCELYON, CNRS, Villeurbanne, France), Philippe Vernoux, Benjamin Gilbert, Thomas Cavoue, Angel Caravaca, Stéphanie Bruyère, Sylvie Migot, Pauline Vilasi, David Horwat

Ethylene electrooxidation into ethylene oxide on nanostructured Ag/GDC electrocatalysts

*18:15 to 18:30 Invited*

**Onofrio Scialdone** (Dipartimento di Ingegneria, Università degli Studi di Palermo, Palermo, Italy)

Towards the electrochemical conversion of CO<sub>2</sub> to formic acid at an applicative scale: analysis of the situation

*18:30 to 18:45*

**Masahiro Kunimoto** (Department of Applied Chemistry, Waseda University, 3-4-1, Okubo, Shinjuku-ku, Tokyo, Japan), Shoji Hikaru, Keisuke Saito, Masahiro Yanagisawa, Takayuki Homma

In-situ Spectroscopic Analyses of Electrolyte Decomposition Reaction in Li Ion Battery using Plasmonic Sensor Element

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces  
Room : R08 - 203 (100)  
Chairman : Nuria Garcia-Araez; Beomgyun Jeong

*16:00 to 16:15 Invited*

**Yasufumi Takahashi** (NanoLSI, Kanazawa University, Kanazawa, Japan)  
Nanoscale electrochemical imaging for Visualising the Heterogeneous Catalytic Activity

*16:15 to 16:30*

**Minkyung Kang** (Department of Chemistry, University of Warwick, Coventry, United Kingdom),  
Cameron L. Bentley, J. Tyler Mefford, William Chueh, Patrick R. Unwin  
Nanoparticle Activities Across Length Scales: from Sub-single Entity to Ensembles

*16:30 to 16:45*

**Dmitry Momotenko** (Department of Chemistry, Carl von Ossietzky University of Oldenburg, Oldenburg, Germany)  
Single-Nanoparticle Thermometry with a Nanopipette

*16:45 to 17:00*

**Kun Jiang** (School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China)  
Titration of the Local Coordination Structure of Single-Atom Catalyst by Combined Spectroelectrochemical and Computational Approaches

*17:00 to 17:15*

**Andrea Russell** (School of Chemistry, University of Southampton, Southampton, United Kingdom),  
Haoliang Huang, Oliver Blackman, Veronica Celorrio  
Isolating the contributions of Sn and Sn oxides in the bifunctional behaviour of PtSn CO oxidation electrocatalysts

*17:15 to 17:30*

**Julia Kunze-Liebhäuser** (Institute of Physical Chemistry, University of Innsbruck, Innsbruck, Austria),  
Andrea Auer, Eva-Maria Wernig, Mie Andersen, Nicolas Hörmann, Karsten Reuter, Xing Ding,  
Aliaksandr Bandarenka  
Self-activation of copper electrodes during CO electro-oxidation in alkaline electrolyte

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00*

**Pablo Fernández** (Physical Chemistry, University of Campinas, Campinas, Brazil), Rafael Vicente,  
Heloisa Gomes, Itamar Neckel  
Perspectives in single nanoparticle studies in the Carna ba beamline at SIRIUS

*18:00 to 18:15*

**Rafael A. Vicente** (Physical Chemistry, State University of Campinas, Campinas, Brazil), Guilherme H. Oliveira, Ren  A. Nome, Pablo S. Fern ndez  
Low-frequency Stimulated Raman Spectroscopy Measurements at Electrochemical Interfaces under Different Applied Potentials

Tuesday 31 August 2021 - AM

p1 Plenary

Room : R01 - Tamna A (1500)

09:00 to 09:50

**Daniel Mandler** (Institute of Chemistry, Hebrew University of Jerusalem, Jerusalem, Israel)  
From Nano to Nano: Electrochemical Deposition using Nanomaterials as Building Blocks

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Wei-Ssu Liao; Guobao Xu

10:00 to 10:30 Keynote

**Jun-Jie Zhu** (Chemistry and Chemical Engineering, Nanjing University, NANJING, China), Cheng Ma  
Single-Particle Electrocatalysis and Single-Cell Analysis by Electrochemiluminescence Microscopy

10:30 to 10:45

**Debbie Silvester** (School of Molecular and Life Sciences, Curtin University, Perth, Australia), Simon Doblinger, Sarah Linden, Amber Nguyen  
Poly(Ionic Liquids) as Robust Electrochemical Gas Sensing Materials for the Sensing of Oxygen and Sulfur Dioxide

10:45 to 11:00

**Saimon M. Silva** (Biomedical Engineering, Swinburne University of Technology, Melbourne, Australia), George W. Greene, Dênio Emanuel Pires Souto, Will Gates, Jon Miller, Simon Moulton  
Low-cost sensors for on-spot detection of PFAS

11:00 to 11:15

Coffee Break

11:15 to 11:30 Invited

**Chuan Zhao** (School of Chemistry, The University of New South Wales, Sydney, Australia)  
Metal organic framework-based materials for electrochemistry: from catalysis to analysis

11:30 to 11:45

**Yi-Tao Long** (School of Chemistry and Chemical Engineering, Nanjing University, Nanjing University, China), Yi-Tao Long  
Nanopore Electrochemistry for Single-entity Measurements

11:45 to 12:00

**Tomoki Iwama** (Graduate School of Environmental Studies, Tohoku University, Sendai, Japan), Yuanyuan Guo, Syoma Handa, Kumi Y. Inoue, Tatsuo Yoshinobu, Fabien Sorin, Hitoshi Shiku  
Demonstration of magnified imaging using thermally tapered bipolar electrode array

12:00 to 12:15

**Fabrizio Poletti** (Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Modena, Italy), Barbara Zanfognini, Laura Favaretto, Emanuele Treossi, Manuela Melucci, Vincenzo Palermo, Chiara Zanardi  
Functionalized graphene oxide for continuous and simultaneous capillary flow sensing of biomarkers in sweat

12:15 to 12:30 Invited

**Omolola Esther Fayemi** (Chemistry, North West University, Mafikeng South Africa, Mafikeng, South Africa), Moeng Motitswe  
Electrochemical Detection of Pb and Cu in water at PAN/Au Modified Electrode

12:30 to 12:45

**Jordi Abellà** (Analytical and Applied Chemistry, Universitat Ramon Llull, Barcelona, Spain), Marc Nel-lo, Enric Lujan, Sergi Colominas

Development of a Sensor for Lithium Monitoring in Molten Pb-Li

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications

Room : R05 - Samda B (100)

Chairman : Zbigniew Stojek; Vessela Tsakova

10:00 to 10:15

**Ezer Castillo** (Department of Chemistry, Binghamton University, Binghamton, USA), Yunxiang Xie, Nikolay Dimitrov

Electrochemical Approach for the Synthesis of Alloy Materials Beyond Thermodynamic Limits: A Proof-of-Concept Study

10:15 to 10:30

**Luis F. Chazaro-Ruiz** (Division de Ciencias Ambientales, Instituto Potosino de Investigación Científica y Tecnológica, San Luis Potosí, Mexico), D. Ricardo Martínez-Vargas, Roxana Larios-Duran, Rene Rangel-Mendez

Activated Carbon Electrode Modified with Lanthanum(III) for Fluoride Electrosorption

10:30 to 10:45

**Jun Gao** (Physics, Engineering Physics and Astronomy, Queen's University, Kingston, Canada)

Fast Ion Transport Across a Planar Polymer/Polymer Interface in Bilayer Light-Emitting Electrochemical Cells

10:45 to 11:00

**Zbigniew Stojek** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), Marcin Karbarz, Klaudia Kaniewska

Micro and regular Pt electrodes modified with positively charged hydrogel layer. Analyte transport aspects

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Vessela Tsakova** (Institute of Physical Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria), Aneliya Nakova, Radoslav Ivanov, Caterina Czibula, Christian Teichert

PEDOT-Supported Pd Nanocatalysts – Oxidation of Formic Acid

11:30 to 11:45

**Eoghan Vaughan** (Micro and Nano Systems, Tyndall National Institute, University College Cork, Cork, Ireland)

Visible Laser Scribing Fabrication of Porous Graphitic Carbon Electrodes: Applications as a Disposable Biosensing and Gas-sensing Platform

11:45 to 12:00

**Li Shao** (Chemistry, University of Southampton, Southampton, United Kingdom), Andrew Hector, Philip Bartlett, Richard Beanland, Yasir Noori, Wenjian Zhang, Yisong Han

Templated electrodeposition of nanoscale materials

12:00 to 12:15

**Katarzyna Siuzdak** (Centre for Plasma and Laser Engineering, The Szwalski Institute of Fluid-Flow Machinery, Gdańsk, Poland), Paulina Rudzińska, Jakub Karczewski, Jacek Ryl, Adam Cenian, Katarzyna Grochowska

Rapid Thermal Treatment of Titania Nanotubes –Fast Track Towards Efficient Crystallization

12:15 to 12:30

**Nazym Tuleushova** (Institut Européen des Membranes, University of Montpellier, Montpellier, France), Hynd Remita, Ibrahim Abdellah, David Cornu, Yaovi Holade, Sophie Tingry  
Gold-based Nanocatalysts For Glycerol Electro-Oxidation

s03 Electrochemistry at Liquid/Liquid Interfaces: From Fundamental to Applications

Room : R06 - 201 A + B (150)

Chairman : Zhifeng Ding; Naoya Nishi

10:00 to 10:15 Invited

**Talia Jane Stockmann** (Chemistry, Memorial University of Newfoundland, St. John's, Canada), Reza Moshrefi, Siamak Khoshrou

Electrochemically induced Au nanoparticle formation at micro liquid/liquid interfaces

10:15 to 10:30

**Reza Moshrefi** (Chemistry, Memorial University of Newfoundland, St. John's, Canada), Reza Moshrefi, T. Jane Stockmann

Investigation of Nanocomposite Thin-film Formation at an Electrified Micro Liquid-liquid Interface Using Tetrachloroaurate and Dithiafulvenyl Functionalized Pyrene

10:30 to 10:45

**Naoya Nishi** (Energy and Hydrocarbon Chemistry, Kyoto University, Kyoto, Japan), Yohei Kuroyama, Tetsuo Sakka

A Water-Free ITIES: Ionic Liquid/Oil Interface for Base Metal Nanostructure Formation

10:45 to 11:00

**Kohji Maeda** (Faculty of Chemistry and Engineering, Kyoto Institute of Technology, Kyoto, Japan), Mayuko Suzuki, Takehito Hirose, Yumi Yoshida, Kohji Maeda

In Situ Observation of the Dispersed State of O/W Emulsions Based on Electrochemiluminescence

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Zhifeng Ding** (Chemistry, Univ of Western Ontario, LONDON, Canada)

From Voltabsorptometry at Liquid/Liquid Interfaces to Spooling Electrochemiluminescence Spectroscopy

11:30 to 11:45

**Hiroki Sakae** (Bioscience and Biotechnology, Fukui Prefectural University, Eiheiji-Town, Japan), Koji Takasuga, Takashi Yokoyama, Hirohisa Nagatani

Spectroelectrochemical study of ferritin-anionic fluorescent probe association at the 1,2-dichloroethane/water interface

11:45 to 12:00

**Rina Awata** (Chemistry and Biological Sciences, Graduate School of Arts and Sciences, Iwate University, Morioka, Japan), Md. Mijanur Rahman, Taisei Iwabuchi, Masato Saikawa, Yoshiki Kato,

Takumi Yoshida, Fumiyasu Takagi, Garavdorj Batnyagt, Byambasuren Delgertsetsega, Tatsuya Takeguchi  
Electrochemical Properties of Lithium-Air Batteries using Ionic Liquid Electrolytes with Different Side Chain

12:00 to 12:15

**Osamu Shirai** (Graduate School of Agriculture, Kyoto University, Kyoto, Japan), Yusuke Yamada, Yuki Kitazumi  
Salinity Gradient Power Generation Using Ion-permselective Organic Liquid Membranes

12:15 to 12:30

**Nasib Kalaei** (Molecular and Life Sciences, Curtin University, Perth, Australia), Mitsutoshi Ide, Masa-aki Haga, David G. Smith, Katrina A. Jolliffe, Damien Arrigan  
Exploring anion sensing by voltammetry at thin film electrodes mediated by lipophilic Ruthenium complexes

s04 Bioelectrochemistry: from fundamentals to applications

Room : R09 - 301 (80)

Chairman : Taek Dong Chung; Melinda David; Elisabeth Lojou

10:00 to 10:30 Keynote

**Shelley Minteer** (Chemistry, University of Utah, Salt Lake City, USA)  
Enzymatic Bioelectrocatalysis for Synthetic Organic Electrosynthesis

10:30 to 10:45

**Pawel Kryszinski** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), Aleksandra Stefanowska, Piotr Koprowski, Adam Szawczyk  
Mitochondrial Potassium Ion Channel ROMK2 Incorporated In the Model Lipid Membranes: Amperometric, Impedance Spectroscopy and Quartz Crystal Microbalance Studies

10:45 to 11:00

**Anna Lielpetere** (Analytical Chemistry Center for Electrochemical Sciences, Ruhr-University Bochum, Bochum, Germany), Jana Becker, Julian Szczesny, Felipe Conzuelo, Adrian Ruff, James Birrell, Wolfgang Lubitz, Wolfgang Schuhmann  
Wiring Hydrogenases with High Viologen Loading Polymer

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Shaheda Zannah** (Molecular and Life Sciences, Curtin University, Perth, Australia), Damien Arrigan  
Electrochemistry of catalase at a liquid|liquid micro-interface array

11:30 to 11:45

**Wassim Housseini** (LCPME, CNRS, Villers-L s-Nancy, France), Franois Lapique, Alain Walcarius, Neus Vil , Elisabeth Lojou, Nicolas Rouhier, Mathieu Etienne  
Comparative Study Between the Electrochemical and the Electroenzymatic Regeneration of the NADPH cofactor

11:45 to 12:00

**Leonardo Casta eda-Losada** (Chemistry, Ruhr-Universit t Bochum / Fraunhofer IGB, Straubing, Germany), David Adam, Nicole Paczia, Darren Buesen, Fabian Steffler, Volker Sieber, Tobias Erb, Michael Richter, Nicolas Plumer   
CO<sub>2</sub>-fixating Bioelectrocatalytic Cascades in Redox-Active Hydrogel for Stereoselective C-C Bond Formation via Reductive Carboxylation

12:00 to 12:15

**Hui Mun Man** (Bioenergetics and Protein Engineering, Aix-Marseille University, CNRS UMR 7281, Marseille, France), Hugo Le Guenno, Laurent Bouffier, Elisabeth Lojou, Anne de Poulpiquet  
Studying Enzymatic Catalysis by Fluorescence Microscopy – Electrochemistry Coupling (EC-CLSM)

12:15 to 12:30

**Manuel Lopez-Ortiz** (Nanoprobes and Nanoswitches, IBEC - Institute for Bioengineering of Catalonia, Barcelona, Spain), Ricardo Zamora-Brito, Marina InÀs Giannotti, Chen Hu, Roberta Croce, Pau Gorostiza  
Single Protein Pair Electron Transfer between Photosystem I Complex and Redox Partner Protein Plastocyanin

12:30 to 12:45

**Huaiguang Li** (Campus Straubing for Biotechnology and Sustainability, Technical University Munich, Straubing, Germany)  
Implementation of Oxygen-Sensitive Catalysts in Fuel-cells

s05 New Electrochemical Approaches and Devices for Monitoring Diseases and Human Health  
Room : R07 - 202 A + B (150)  
Chairman : Zong-Hong Lin

11:45 to 12:00

**Lucia Simona Ferraraccio** (Engineering-Nanotechnology, Swansea University, Swansea, United Kingdom), Paolo Bertocello  
Electrochemiluminescence (ECL) at enzymes-encapsulated in Alginate Hydrogels

12:00 to 12:15

**Jyoti Jyoti** (Group of Molecular Films Research, Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Renata Rybakiewicz, Teresa Zolek, Dorota Maciejewska, Andrzej Kutner, Krzysztof Noworyta, Włodzimierz Kutner  
Carbazole Derivatives Based Molecularly Imprinted Polymer Film for the Fabrication of Cilostazol Electrochemical Chemosensor

12:15 to 12:30

**Samia Mekhmoukhen** (Chemistry - Lab. ITODYS, Université de Paris, PARIS, France), Khalil Chennit, Giorgio Mattana, Benoit Piro, Vincent Noel  
Enzyme-free, Reference-less Transistor-based Biosensors for the Detection of Biological Analytes

12:30 to 12:45

**Kentaro Ito** (Graduate School of Environmental Studies, Tohoku University, Sendai, Japan), Kumi Y. Inoue, Kosuke Ino, Tomokazu Matsue, Hitoshi Shiku  
Ultrasensitive Immunoassay using Double Signal Amplification Strategies of Redox Cycling and Cascade Reaction

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies  
Room : R02 - Halla A (270)  
Chairman : Takefumi Okumura; Marshall Shroeder; Seung-Wan Song

10:00 to 10:30 Keynote

**Hong Li** (Renewable Energy Laboratory, Institute of Physics, CAS, Beijing, China), Jiase Lu, Rusong Chen, Xiqian Yu  
The Thermal Stability of SEI with in-situ Solidification Strategy

10:30 to 10:45

**Timo Stettner** (Center for Energy and Environmental Chemistry, Friedrich-Schiller-University, Jena, Germany), Gabriele Lingua, Marisa Falco, Claudio Gerbaldi, Andrea Balducci



## Protic Ionic Liquids as Electrolytes in Lithium Batteries

10:45 to 11:00

**Victoria Nikitina** (Center for Energy Science and Technology, Skolkovo Institute of Science and Technology, Moscow, Russia)

Rationalizing Hysteretic Effects in Phase-Transforming Metal-Ion Battery Materials Based on the Experimental Assessment of Nucleation and Growth Kinetics

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Takefumi Okumura** (Environmental System Research Department, , Hitachi, Japan), Jun Kawaji  
Thermally Durable Electrolyte for Lithium Ion Battery

11:30 to 11:45 *Invited*

**Marshall Schroeder** (Energy Sciences Division, DEVCOM Army Research Laboratory, Adelphi, USA), Judith Alvarado, Chengcheng Feng, Travis Pollard, Michael Ding, Jungwoo Lee, Thomas Wynn, Minghao Zhang, Xuefeng Wang, Shirley Meng, Oleg Borodin, Kang Xu

Leveraging Electrolyte Salt Chemistry and Concentration to Enable High Performance Lithium Batteries

11:45 to 12:00

**Jiyoung Ock** (Department of Chemistry and Biotechnology, Yokohama National University, Yokohama, Japan), Miki Fujishiro, Kazuhide Ueno, Masayoshi Watanabe

Polymer Gel Electrolyte Comprising Highly Concentrated Electrolyte and Poly(vinylidene fluoride-co-hexafluoropropylene)

12:00 to 12:15

**Carla S. Santos** (Analytische Chemie, Ruhr-Universität Bochum, Bochum, Germany), Aliaksandr Bandarenka, Edgar Ventosa, Wolfgang Schuhmann

Probing local ionic and electrical properties of SEI layers formed in Li-ion batteries using Scanning Electrochemical Microscopy.

12:15 to 12:30

**Anna Mangini** (Department of Applied Science and Technology, Politecnico di Torino, Turin, Italy), Mojtaba Alidoost, Daniele Versaci, Lucia Fagiolari, Julia Amici, Federico Bella, Carlotta Francia, Silvia Bodoardo

Li-ion Batteries with Silicon Anodes: Study of Innovative Electrolytes Based on Carbonates

12:30 to 12:45

**Philip Daubinger** (R&D Center Electromobility, Fraunhofer Institute for Silicate Research ISC, Würzburg, Germany), Mara Göttlinger, Lukas Gold, Sarah Hartmann, Guinevere A. Giffin

Pressure dependent aging mechanisms in lithium-ion cells

s07b Next-generation Batteries: Novel chemistry and design

Room : R11 - 303 (100)

10:00 to 10:15

**Seongki Ahn** (Department of New energy and Mining Engineering, Sangji University, Wonju, Korea), Yongwook Kim, Eunbyoul Lee, Kazuhiro Yamabuki, Natsuki Nakamura, Hitoshi Mikuriya, Toshiyuki Momma

Designing a high-loading S cathode by 3D structured Al current collector and polymer layer for practical application of Li-S batteries

10:15 to 10:30

**Taegyu Jang** (Chemistry, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea), Jin-Hyuk Kang, Sujung Kim, Minyoung Shim, Hye Ryung Byon

Investigating a nanometer-scaled surface roughness effect of the Li electrodeposition in 3-D patterned Cu current collector for Li-metal batteries

10:30 to 10:45

**Min Soo Jung** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Kyu Tae Lee

Modifying Cation Configuration to Achieve Na-O<sub>2</sub> Battery Favoring Solution-Mediated Mechanism

10:45 to 11:00

**Neema Karima** (Energy System Engineering, Soonchunhyang University, Asan, Korea), Chaelin Seo, , Nguyen Cuong, Kelvin Nyamtara, Nungu Israel, Wook Ahn

Sponge Sulfur @ ZIF 67 wrapped in rGO as cathode material for Lithium Sulfur Battery.

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Young Jun Kim** (SAINT, Sungkyunkwan University, Suwon, Korea)

Natural activation of CuO to CuCl<sub>2</sub> as a Cathode Material for Dual-Ion Lithium Metal Batteries

11:30 to 11:45

**Hongkyung Lee** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea)

Lithium/Electrolyte Interface Engineering Towards Practical Li-metal Batteries

11:45 to 12:00

**Maryam Nojabaee** (Electrochemical Energy Technology, German Aerospace Center(DLR), Stuttgart, Germany), Martina Gerle, Jessica Schettler, Marina Schwan, Norbert Wagner, Barbara Milow, Andreas Friedrich

Understanding the Parameters Influencing the Impedance Response of Sulfur-Carbon Composite Cathode in Lithium-Sulfur batteries

12:00 to 12:15

**Marketa Zukalova** (Electrochemical Materials, J. Heyrovsky Institute of Physical Chemistry CAS, Prague, Czech Republic), Monika Vinarcikova, Ladislav Kavan

Nanocrystalline TiO<sub>2</sub>/Carbon/Sulfur Composite Cathodes for Lithium-Sulfur Battery

12:15 to 12:30

**Zhuoliang Jiang** (College of Chemistry, Nankai University, Tianjin, China), Zhuoliang Jiang, Yaohui Huang, Fujun Li

Suppressing O<sub>2</sub> in Li-O<sub>2</sub> Batteries by Lowering Charge Voltage

12:30 to 12:45

**Wei Yu** (Advanced Institute for Materials Research, Tohoku University, Sendai, Japan), Rui Tang, Zheng-Ze Pan, Hirotomo Nishihara

Graphene Mesosponge Cathode with Few Edge Sites and High Surface Area for Lithium-Oxygen Batteries

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Andrea Balducci

10:00 to 10:30 *Keynote*

**Paloma Almodovar** (R&D, Albufera Energy Storage S.L, Madrid, Spain), David Giraldo, Inmaculada Alvarez-Serrano, María Luisa López, Joaquín Chacón

Al-air batteries: Progress, Challenges, and Perspectives

10:30 to 10:45

**Senthilkumar S.T.** (Electrochemical Processes Unit, IMDEA Energy, Madrid, Spain), Santiago E. Ibáñez, Paula Navalpotro, Rebeca Marcilla  
Development of membrane-free Zn-based redox flow battery using immiscible electrolytes

10:45 to 11:00

**Yonggang Wang** (Department of Chemistry, Fudan University, Shanghai, China)  
Organic Electrodes-based Rechargeable Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Hui Xia** (School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China)  
LiMnO<sub>2</sub> Cathode Stabilized by Interfacial Orbital Ordering

11:30 to 11:45

**Sonia Dsoke** (Helmholtz Institute Ulm and Institute for Applied materials, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany), Fatemehsadat Rahide, Eugen Zemlyanushin, Noha Sabi  
On the way toward non-corrosive electrolytes for aluminum batteries

11:45 to 12:00

**Jens Noack** (Applied Electrochemistry, Fraunhofer Institute for Chemical Technology, Pfinztal, Germany), Jens Noack, Mike Wernado, Jens Ortner, Karsten Pinkwart  
Properties of different Iron/Iron redox flow batteries with recombination cell

12:00 to 12:15

**Monalisa Chakraborty** (Advanced materials for energy area, Catalonia Institute for Energy Research (IREC), Barcelona, Spain), Sebastián Murcia-López, Joan Ramón Morante, Teresa Andreu  
Design optimization of low cost, highly efficient aqueous zinc-iodine flow battery

12:15 to 12:30

**Mikhail Vorotyntsev** (Electrochemistry, Frumkin Institute of Physical Chemistry and Electrochemistry, Moscow, Russia), Dmitry Konev, Alexander Midestov, Anatoly Antipov, Yury Tolmachev  
Halate Reduction Reaction as Cathodic Process for Power Sources

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers  
Room : R03 - Halla B (230)  
Chairman : Dong Young Chung

10:00 to 10:30 *Keynote*

**Shannon Boettcher** (Chemistry, Oregon Center for Electrochemistry, University of Oregon, Eugene, USA)  
Alkaline and Bipolar Membrane Electrolyzers

10:30 to 10:45

**In Kee Park** (Energy engineering, Dankook university, Cheonan-si, Korea), Ji Hyun Lee, Denis Duchesne, Lisa Chen, Chang Hyun Lee, Jay H. Lee  
Saline water electrolysis system with double-layered cation exchange membrane for low-energy consumption

10:45 to 11:00

**Natjanan Songserm** (Department of Chemistry, Kasetsart university, Bangkok, Thailand), Pongkarn Chakthranont, Chaiya Prasittichai  
Electrodeposited Fe-doped Nickel Oxyhydroxide Electrocatalysts for the Oxidation of 5-Hydroxymethylfurfural to 2,5-Furandicarboxylic acid

11:00 to 11:15  
Coffee Break

11:15 to 11:30  
**Zhenhua Yan** (College of Chemistry, Nankai University, Tianjin, China), Fangyi Cheng, Jun Chen  
Electrodeposition of (Hydro)oxides for electrochemical water splitting

11:30 to 11:45  
**Jaerim Kim** (Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea), Hyeonjung Jung, Sang-Mun Jung, Jinwoo Hwang, Noho Lee, Yong-Tae Kim, Jeong Woo Han, Jong Kyu Kim  
Tailoring Binding Abilities by Incorporating Oxophilic Transition Metals on 3D Nanostructured Ni Arrays for Accelerated Alkaline Hydrogen Evolution Reaction

11:45 to 12:00  
**Jiseon Kim** (Division of Environmental Science and Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea), Kangwoo Cho  
Self-supporting NiFe Oxalate from Accessible Chemical Treatment of NiFe Alloy Foam for Enhanced Urea Electrolysis and H<sub>2</sub> Production

12:00 to 12:15  
**Noho Lee** (Department of Materials Science and Engineering, POSTECH, Pohang, Korea)  
Microwave-Assisted Evolution of WO<sub>3</sub> and WS<sub>2</sub>/WO<sub>3</sub> Hierarchical Nanotrees For Hydrogen Evolution Reaction

12:15 to 12:30  
**Siraj Sultan** (School of Energy and Chemical Engineering, UNIST, Ulsan, Korea), Youngkook Kwon  
Atomic-Level Insights into the Modulation of CuRh Binding Energy for High-Performance Hydrogen Evolution Activity

12:30 to 12:45  
**Miha Nosan** (Department of Chemical Engineering and Technical Safety, Faculty of Chemistry and Chemical Technology, Ljubljana, Slovenia), Bostjan Genorio, Ioannis Katsounaros  
Oxygen Reduction Reaction Activity on Quasi-1D and 2D N-Doped Heat-Treated Graphene Oxide

s11 Electrochemical Conversion of Carbon Dioxide and its Utilization  
Room : R04 - Samda A (100)  
Chairman : Federico Calle-Vallejo; Boon Siang Yeo

11:15 to 11:30 *Invited*  
**Jens Norskov** (Physics, Technical University of Denmark, Lyngby, Denmark)  
Electrochemical ammonia synthesis

10:00 to 10:30 *Keynote*  
**Rich Masel** (CEO, Dioxide Materials, Boca Raton, USA), Zengcai Liu, Hongzhou Yang, Erick White, Michael Resch  
Poison Effects on Alkaline CO<sub>2</sub> Electrolyzers

10:30 to 10:45  
**Shofu Matsuda** (Department of Materials Science and Technology, Nagaoka University of Technology, Nagaoka, Japan), Yuta Yoshida, Minoru Umeda

## CO2 Electroreduction at Pt Black Catalyst in a Polymer Electrolyte Membrane Electrolyzer Cell

10:45 to 11:00

**Paula Sebastián Pascual** (Chemistry Department, University of Copenhagen, Copenhagen, Denmark),  
Amanda S. Petersen, Alexander Bagger, Jan Rossmeisl, María Escudero-Escribano  
Experimental assessment of the surface structure and electrolyte effects on CO electroreduction on Cu well defined surfaces

11:00 to 11:15

Coffee Break

11:30 to 11:45

**Enrico Verlato** (ICMATE, CNR- National Research Council of Italy, Padova, Italy), Ferdinand Hof,  
Miriam Moro, Marco Musiani, Francesco Paolucci, Giovanni Valenti  
Exploiting Carbon Supported Copper Nanoparticles and Ceria Composites Properties Toward Electrochemical CO2 Utilization

11:45 to 12:00

**Tiehuai Li** (Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology, Hong Kong, China), Minhua Shao  
Composition-dependent CO2 Electrochemical Reduction Selectivity and Durability on Cu<sub>3</sub>PdxN Nanocrystals

12:00 to 12:15

**Nivedita Sikdar** (Analytical Chemistry - Center for Electrochemical Sciences, Ruhr University Bochum, Bochum, Germany), João R. C. Junqueira, Stefan Dieckhöfer, Thomas Quast, Michael Braun, Yanfang

Song, Harshitha Barike Aiyappa, Sabine Seisel, Jonas Weidner, Denis Ohl, Corina Andronescu, Wolfgang Schuhmann  
Impact of hydrophobicity and local pH change on product selectivity in CO<sub>2</sub> electroreduction

12:15 to 12:30

**Oriol Gutierrez** (Applied Electrochemistry and Catalysis, University of Antwerp, Antwerp, Belgium), Nick Daems, Willem Offermans, Yuvraj Y. Birdja, Metin Bulut, Deepak Pant, Tom Breugelmans  
The Inhibition of the Proton Donor Ability of Bicarbonate Promotes the Electrochemical Conversion of CO<sub>2</sub> from Bicarbonate Solutions

12:30 to 12:45

**Wei Jie Teh** (Chemistry, National University of Singapore, Singapore, Singapore), Oriol Piqué, Qi Hang Low, Weihan Zhu, Boon Siang Yeo, Federico Calle-Vallejo  
Efficient electroreduction of formic acid to methanol using the Ti<sup>3+</sup> sites and oxygen vacancies of anodised titanium

s12 Corrosion and corrosion protection

Room : R12 - 401 (100)

Chairman : Xiaopeng Lu; Sungmo Moon; Mikhail Zheludkevich

10:00 to 10:30 Keynote

**Dawei Zhang** (National Materials Corrosion and Protection Data Center, University of Science and Technology Beijing, Beijing, China), Xiaogang Li  
Intelligent Corrosion Control based on Data-driven Approaches

10:30 to 10:45 Invited

**Yolanda Hedberg** (Chemistry, The University of Western Ontario, London, Canada)  
Corrosion of Metals and Alloys in Food Contact - an Update on Regulations and Research

10:45 to 11:00

**Krishnaveni Venkidusamy** (CERAR, University of South Australia, Adelaide, Australia)  
Under Deposit Microbial Corrosion: Exploring Electrical Microbial Interactions with conductive deposits

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Xiaopeng Lu** (Shenyang National Laboratory for Materials Science, Northeastern University, Shenyang, China), Yan Li, Tao Zhang, Fuhui Wang  
Unveiling the Inhibition Mechanism of SDS on Mg Alloy

11:30 to 11:45

**Li Li** (Graduate School of Engineering, Hokkaido University, Sapporo, Japan), Masatoshi Sakairi  
Effects of Zn<sup>2+</sup> on corrosion behavior of aluminum alloy and carbon steel in NaCl aqueous solutions

11:45 to 12:00

**Dongping Zhan** (Chemistry, Xiamen University, Xiamen, China), Lianhuan Han, Hantao Xu, Bingqian Du, Qinghui Meng, Yang Wang, Zhen Ma, Zhong-Qun Tian, Zhao-Wu Tian  
Electrochemical Nanoimprint Lithography By Controllable Corrosion

12:00 to 12:15

**Yaiza Gonzalez-Garcia** (Materials Science and Engineering, Delft University of Technology, Delft, Netherlands), A. Yilmaz, S. Kar, C. Ozkan, K. Traka, J. Sietsma  
The Effect of Microstructure on the Corrosion Behaviour of Low-Alloy Ferrous Alloys

s14 Electrochemical Technology for Process Intensification and Sustainability

Room : R10 - 302 (80)  
Chairman : Javier Llanos

10:00 to 10:15

**Roel Bisselink** (Biobased Chemistry and Technology & Food & Biobased Research, Wageningen University & Research, Wageningen, Netherlands), Jacco van Haveren, Harry Bitter  
Towards electrochemical process design for the production of valeric acid

10:15 to 10:30

**Claudio Cameselle** (Chemical Engineering, University of Vigo, Vigo, Spain), Susana Gouveia, Adrian Cabo, Claudio Cameselle  
Removal of Pesticides by Coupled Electro-Photochemical Oxidation

10:45 to 11:00

**Elisama Vieira Dos Santos** (School of Science and Technology, Federal University of Rio Grande do Norte, NATAL, Brazil), Karyn N. O. Silva, Karla C. F. Araújo, Djalma R. da Silva, Carlos A. Martínez-Huitle, Elisama Vieira Dos Santos  
Persulfate-soil washing: the green use of persulfate electrochemically generated with diamond electrodes for depolluting soils

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Carlos A Martinez-Huitle** (Institute of Chemistry, Federal University of Rio Grande do Norte, Natal, Brazil), Karla C de Freitas Araujo, Djalma R. da Silva, Elisama V. dos Santos, Carlos A Martinez-Huitle, Robert Bogdanowicz  
Diamond-Carbon nanoarchitectures as electrocatalytic material for environmental applications

11:30 to 11:45 *Invited*

**Ignasi Sires** (Departament de Química Física, Universitat de Barcelona, Barcelona, Spain)  
Strategies for Sustainability Promotion in Electrochemical Advanced Oxidation of Organic Pollutants in Water

11:45 to 12:00

**Minghua Zhou** (College of Environmental Science and Engineering, Nankai university, Tianjin, China)  
MOFs Derived Core-shell Catalysts for Antibiotics Degradation by Heterogeneous Electro-Fenton Process

12:00 to 12:15

**Miguel Herraiz-Carboné** (Department of Chemical Engineering, University of Castilla-La Mancha, Albacete, Spain), Miguel Herraiz-Carboné, Angela Moratalla, Salvador Cotillas, Engracia Lacasa, Ana Valladolid, Sonia Ruiz, Pablo Cañizares, Manuel A. Rodrigo, Cristina Sáez  
Removal of iodinated radiocontrast iopamidol in hospital urines by electrochemical technologies: electrolysis vs. electrocoagulation

12:15 to 12:30

**Jorge Vidal** (Química Inorgánica y Analítica, Universidad de Chile, Santiago, Chile), María Báez, Ricardo Salazar  
Combined use of the processes of electrokinetic washing and electrooxidation in the treatment of a soil contaminated with Chloridazon

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Sayoko Shironita

10:00 to 10:30 Keynote

**Hector Abruna** (Department of Chemistry and Chemical Biology, Cornell University, Ithaca, USA)  
Energy Conversion and Storage: Novel Materials and Operando Methods

10:30 to 10:45

**Shi-Gang Sun** (Chemistry, Xiamen University, Xiamen, China)  
Development of in-situ/operando spectroscopic methods for studies of electrochemical energy processes

10:45 to 11:00

**Yan Xia Chen** (Department of Chemical Physics, University of Science and Technology of China, Hefei, China), Meng Ke Zhang, Zhen Wei, Wei Chen, Jun Cai  
Mechanistic Implication of the pH Effect and H/D Kinetic Isotope Effect on HCOOH/HCOO<sup>-</sup> Oxidation at Pt Electrode

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Enrique Herrero** (Instituto de Electroquímica, Universidad de Alicante, Alicante, Spain), Adolfo Ferrer-Vilaplana, Valentín Briega-Martos  
Mechanistic Insights into the Methanol and Formic Acid Oxidation Reactions on Platinum: Similarities and Differences.

11:30 to 11:45

**Albert K. Engstfeld** (Institute of Electrochemistry, Ulm University, Ulm, Germany), Jens Klein, Sylvain Brimaud, R. Jürgen Behm  
Elucidating the Site-Specific Electrochemical and -catalytic Properties from UHV Prepared (Modified) Single Crystal Electrodes

11:45 to 12:00

**Huajie Ze** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China)  
Molecular Insight of the Critical Role of Ni in Pt-Based Nanocatalysts for Improving the Oxygen Reduction Reaction Probed Using an In Situ SERS Borrowing Strategy

12:00 to 12:15

**Charlotte Gallenkamp** (Theoretical Chemistry/Catalysts and Electrocatalysts, Technical University of Darmstadt, Darmstadt, Germany), Xenia Richter, Ulrike I. Kramm, Vera Krewald  
Using Density Functional Theory to Predict Spectroscopic Properties for FeNC Fuel Cell Catalyst Models

12:15 to 12:30

**Rebecca Pittkowski** (Department of Chemistry, University of Copenhagen, Copenhagen, Denmark), Spyridon Divanis, Mariana Klementova, Shahin Nikman, Harry Hoster, Sanjeev Mukerjee, Jan Rossmeisl, Petr Krtil  
Theoretical Conception and Synthetic Approach for Enhancing Oxygen Evolution in Prototypical LaNiO<sub>3</sub> Perovskite by Rational Ni Oxidation State Pinning



Tuesday 31 August 2021 - PM

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Valentina Pifferi; Alain Walcarius

*16:00 to 16:30 Keynote*

**Cameron Bentley** (School of Chemistry, Monash University, Clayton, Australia)

High-Resolution Electrochemical Imaging with a Mobile Meniscus Cell: Microscopic Structure and Activity in Molybdenum Sulfide Electrocatalysts

*16:30 to 16:45*

**Christopher Brett** (Department of Chemistry, CEMMPRE, University of Coimbra, Coimbra, Portugal),  
Wanderson Da Silva

Sensor and Biosensor Platforms with Polyphenazines Prepared in Ethaline Deep Eutectic Solvent

*16:45 to 17:00*

**Karolina Schwarzova-Peckova** (Department of Analytical Chemistry, Charles University, Faculty of Science, Prague 2, Czech Republic), Jan Klouda, Lenka Benesová, Kristýna Jelsíková, Karel Nesmerák,

Eva Bláhová, Jan Veselý, Pavel Kocovský, Viraj A. Bhosale, Monika Zajacová-Cechová, Jana Nádvořníková, Jana Skopalová  
Electrooxidation of Sterols and Bile Acids on Bare Electrode Materials: Mechanism and Utilization in Electroanalysis

17:00 to 17:15

**Slawomira Skrzypek** (Department of Inorganic and Analytical Chemistry, Faculty of Chemistry, University of Lodz, Lodz, Poland), Barbara Burnat, Andrzej Leniart  
Carbon-based ceramic electrodes as sensors for electroanalysis

17:15 to 17:30

**Lekhetho Mpeta** (Institute for Nanotechnology Innovation, Rhodes University , Eastern Cape, South Africa)  
Conjugation of Cobalt Phthalocyanines to Reduced Graphene Oxide via Click Chemistry for Enhanced Electrocatalysis

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Sabine Szunerits** (IEMN, University of Lille, Lille, France)  
Cardiac Troponin I Sensing on Graphene-coated Sensors: Effect on Surface Architecture

18:00 to 18:15

**Andreas Lesch** (Department of Industrial Chemistry, University of Bologna, Bologna, Italy), Sorour Darvishi, Horst Pick, Hubert H. Girault  
Investigation of the Electrochemical Surface Reactivity of E. coli Biofilms using Soft Probe Scanning Electrochemical Microscopy

18:15 to 18:30

**Mihaela Tertis** (Analytical Chemistry Department, Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania), Florina Maria Truta, Ana-Maria Dragan, Anca Florea, Andreea Cernat, Bogdan Feier, Karolien De Wael, Manel Del Valle, Cecilia Cristea  
Experimental Design and Nanomaterials-based Electrochemical Sensors for Accurate Detection of Illicit Drugs in Street and Environmental Samples

18:30 to 18:45

**Qiao Liu** (LCPME, Université de Lorraine, Nancy, France), Alain Walcarius, Liang Liu  
Electrochemical Stripping Analysis from Micro-Counter Electrode

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications  
Room : R05 - Samda B (100)  
Chairman : Renata Bilewicz; Luigi Falciola

16:00 to 16:30 *Keynote*

**Renata Bilewicz** (Chemistry, University of Warsaw, Warsaw, Poland), Dorota Matyszewska, Michalina Zaborowska, Damian Dziubak, Ewa Nazaruk, Aleksandra Buta  
Lipid Nanostructured Materials for Functionalized Electrode Surfaces

16:45 to 17:00

**Luigi Falciola** (Department of Chemistry, Università degli Studi di Milano, Milano, Italy), Valentina Pifferi, Silvia Comis, Livia Nicolucci, Mariangela Longhi, Luigi Falciola  
Effect of Sol Aging on Electrochemical Performances of Titania Nanoporous Surfaces for Analytical Applications

17:00 to 17:15

**Florence Geneste** (Institut des Sciences Chimiques de Rennes, University of Rennes 1, Rennes, France), Yaoyin Lou, Wenyan He, Enrico Verlato, Marco Musiani, Florence Fourcade, Abdeltif Amrane, Mathieu Pasturel, Odile Merdrignac-Conanec  
New Porous Electrode Materials for Electrocatalysis

17:15 to 17:30

**Clara Gohlke** (Electrochemical Reaction Engineering, RWTH Aachen University, Aachen, Germany), Anna Mechler  
Electrochemical Activation of Nickel Electrodes for the Oxygen Evolution Reaction (OER)

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Lena Harms** (Chemistry Department, Carl von Ossietzky University of Oldenburg, Oldenburg, Germany), Gunther Wittstock  
Multi-layer Thin Film Architectures of Metal Hexacyanometallates

18:00 to 18:15

**Julian Hengsteler** (Dept. of Information Technology and Electrical Engineering, ETH Zürich, Zürich, Switzerland), Barnik Mandal, Genevieve Lau, Tomaso Zambelli, Dmitry Momotenko  
Nanoscale Electrochemical 3D Printing

18:15 to 18:30

**Shujin Hou** (Department of Physics, Technical University of Munich, Garching, Germany), Weijin Li, Roland A. Fischer, Aliaksandr Bandarenka  
Structural Conversion of Surface-Mounted Metal-Organic Framework Heteromultilayers Enables a Record Mass Activity towards Oxygen Evolution Reaction

18:30 to 18:45

**Adriana Ispas** (Elektrochemie und Galvanotechnik, Technische Universität Ilmenau, Ilmenau, Germany), Andreas Waibel, Mathias Fritz, Andreas Bund  
On the Electrodeposition of Ni-Cr Alloys

s03 Electrochemistry at Liquid/Liquid Interfaces: From Fundamental to Applications

Room : R06 - 201 A + B (150)

Chairman : Robert Dryfe

16:00 to 16:30 Keynote

**Maria Cuartero** (Department of Chemistry, KTH Royal Institute of Technology, Stockholm, Sweden)  
Ion-selective Electrodes Based on Interconnected Ion-transfer and Charge-transfer Processes

16:30 to 16:45

**Lukasz Poltorak** (Faculty of Chemistry, University of Lodz, Lodz, Poland), Konrad Rudnicki, Paulina Borgul, Slawomira Skrzypek  
Sensing at the electrified liquid-liquid interfaces. From antibiotics to illicit drugs.

16:45 to 17:00

**Konrad Rudnicki** (Department of Inorganic and Analytical Chemistry, University of Lodz, Lodz, Poland), Karolina Sobczak, Paulina Borgul, Slawomira Skrzypek, Lukasz Poltorak  
Quantitative Determination of Quinine in Water Tonic Samples by Ion Transfer Voltammetry

17:00 to 17:15

**Daniel Alonso Gamero Quijano** (Chemical Sciences, University of Limerick, Limerick, Ireland), Shayon Bhattacharya, Grégoire Herzog, Tewfik Soulimane, Damien Thompson, Micheál D. Scanlon  
Electrocatalytic Behaviour of c-type Cytochromes at an Electrified Liquid-Liquid Interface

17:15 to 17:30

**Rona Ronen** (The Nancy & Stephen Grand Technion Energy Program, Technion, Haifa, Israel),  
Matthew Suss  
Multiphase Single Flow Batteries

17:30 to 17:45

Coffee Break

17:45 to 18:15 Keynote

**Robert Dryfe** (Chemistry, University of Manchester, Manchester, United Kingdom), Hussain Al-Nasser,  
Andinet Anyalem, Alexandra Jones  
D Materials at the Liquid-Liquid Interface

18:15 to 18:30

**Kamil Cywinski** (Department of Chemical Sciences, University of Limerick, Limerick, Ireland), Andrés  
Molina, Ivan Molina, Micheál Scanlon  
Photoelectrochemistry of Porphyrin Films Adsorbed at Polarized Soft Interfaces under Visible Light  
Illumination

18:30 to 18:45

**Ivan Robayo** (Chemical Sciences, University of Limerick, Limerick, Ireland), Andres Molina, Micheál  
Scanlon  
A Kinetic Model for Dynamic Photocurrent Responses obtained from Self-Assembled Porphyrin Films at  
Liquid-Liquid Interfaces

s04 Bioelectrochemistry: from fundamentals to applications

Room : R09 - 301 (80)

Chairman : Wassim Housseini; Omer Yehezkeli

16:00 to 16:15

**Christophe Leger** (Bioénergétique et Ingénierie des Protéines, CNRS, Aix Marseille Université,  
Marseille, France), Vincent Fourmond, Nicolas Plumeré  
Understanding and designing bidirectional and reversible molecular catalysts of redox reactions, under  
conditions of direct or mediated electron transfer

16:15 to 16:30

**Edmond Magner** (Department of Chemical Sciences, University of Limerick, Limerick, Ireland), Simin  
Arshi, Alessandro Serletti, Xinxin Xiao, Kim Shortall  
Electrochemical Immobilisation of Enzymes for Biocatalysis

16:30 to 16:45

**Fangyuan Zhao** (Analytical Chemistry, Faculty of Chemistry and Biochemistry, Ruhr University Bochum,  
Bochum, Germany), Felipe Conzuelo, Volker Hartmann, Panpan Wang, Adrian Ruff, Marc Nowaczyk,  
Wolfgang Schuhmann  
Photosystem I /Redox Polymer-Based Bioelectrodes as the Basis for Efficient Biophotovoltaic Devices

16:45 to 17:00

**Julia Alvarez-Malmagro** (Institute of Catalysis and Petrochemistry, CSIC, Madrid, Spain), Julia Alvarez-  
Malmagro, Ana R. Oliveira, Cristina Gutiérrez-Sánchez, Beatriz Villajos, Ines A. C. Pereira, Marisela  
Vélez, Marcos Pita, Antonio L. De Lacey  
Bioelectrocatalytic Activity of W-Formate Dehydrogenase Covalently Immobilized on Functionalized  
Gold and Graphite Electrodes

17:00 to 17:15

**Xinxin Xiao** (Department of Chemistry, University of Denmark, Lyngby, Denmark), Edmond Magner, Xiaomei Yan, Jens Ulstrup  
Direct electron transfer of enzymatic bioelectrochemistry on dealloyed nanoporous gold

17:15 to 17:30

**Melinda David** (Faculty of Medicine, Transilvania University of Brasov, Brasov, Romania), Adrian Serban, Adrian Enache, Monica Florescu  
Nanozyme-based Sensors and the Role of their Electrocatalytic Properties towards Specific Biomolecules

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Marco Malferrari** (Dept. of Chemistry, University of Bologna, Bologna, Italy), Ilaria Abdel Aziz, Gabriele Tullii, Maria Rosa Antognazza, Stefania Rapino  
Scanning Electrochemical Microscopy Reveals Modulation of Cellular Processes by Photostimulated Organic Semiconductor Films

18:00 to 18:30 Keynote

**Bo Zhang** (Chemistry, University of Washington, Seattle, USA), Zhuoyu Peng, Milomir Suvira  
Probing the Electrochemical Interface with Single-Molecule Fluorescence

s05 New Electrochemical Approaches and Devices for Monitoring Diseases and Human Health  
Room : R07 - 202 A + B (150)  
Chairman : Elena Ferapontova

16:00 to 16:30 Keynote

**Shana Kelley** (Chemistry, University of Toronto, Toronto, Canada)  
Building Electrochemical Biomolecular Sensors: Striving for Simplicity

16:30 to 16:45 Invited

**Hyongsok Tom Soh** (Electrical Engineering and Radiology, Stanford University, Stanford, USA)  
Continuous measurements of biomolecules in live subjects

16:45 to 17:00

**Min-Ah Oh** (Chemistry, Seoul National University, Seoul, Korea), Chang Il Shin, Taek Dong Chung  
Ion Transport-based Chemical Delivery Probe

17:00 to 17:15

**Sorour Darvishi** (Chemistry and chemical engineering, Swiss Federal Institute of Technology Lausanne (EPFL), Sion, Switzerland), Hubert Girault, Andreas Lesch, Horst Pick, Xiaoyun Li, Ping-Chih Ho, Sorour Darvishi  
Electrochemical Detection of Melanoma Biomarker in Tape-Collected Stratum Corneum

17:15 to 17:30

**Siphesihle Nxele** (Chemistry, Rhodes University, Grahamstown, South Africa), Tebello Nyokong  
The Development of a Simple, Novel Aptasensors using Quantum Dots-Phthalocyanine Nanoconjugates and an Aptamer for the Electrochemical Detection of Prostate Specific Antigen

17:30 to 17:45

Coffee Break

17:45 to 18:15 Keynote

**Koji Sode** (Joint Department of Biomedical Engineering, University of North Carolina at Chapel Hill, Chapel Hill, USA), Inyoung Lee, Shouhei Takamatsu, Jeffrey Dick

Open Circuit Potential Based Continuous Monitoring System Employing Direct Electron Transfer Type Enzymes

18:15 to 18:30

**Katarzyna Grochowska** (Centre for Plasma and Laser Engineering, The Szwalski Institute of Fluid-Flow Machinery, PAsci, Gdansk, Poland), Wiktor Lipińska, Adrian Olejnik, Katarzyna Siuzdak  
Laser-modified and Enzyme-based Glucose Sensor: Towards Non-invasive Device

18:30 to 18:45

**Bernardo Patella** (Department of Engineering, University of Palermo, Palermo, Italy), Serena Di Vincenzo, Maria Ferraro, Marco Buscetta, Elisabetta Pace, Chiara Cipollina, Giuseppe Aiello, Luciano Bollaci, Rosalinda Inguanta  
Electrochemical quantification of oxidative stress in airway epithelial cells

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies

Room : R02 - Halla A (270)

Chairman : Guoying Chen; Gu Lin; Christian Masquelier

16:00 to 16:30 Invited

**Marie-Liesse Doublet** (Institut Charles Gerhardt, CNRS & Univ Montpellier, Montpellier, France)  
Anionic Redox through the eyes of XAS Spectroscopy

16:30 to 16:45

**Matteo Bianchini** (BASF SE, BASF SE, Ludwigshafen, Germany), Alexander Schiele, Simon Schweidler, Sabrina Sicolo, Francois Fauth, Emmanuelle Suard, Sylvio Indris, Andrey Mazilkin, Peter Nagel, Stefan Schuppler, Michael Merz, Pascal Hartmann, Torsten Brezesinski, Jurgen Janek  
From LiNiO<sub>2</sub> to Li<sub>2</sub>NiO<sub>3</sub>: Synthesis, Structures and Electrochemical Mechanisms in Li-Rich Nickel Oxides

16:45 to 17:00 Invited

**Guoying Chen** (Energy Storage and Distributed Resources Division, Lawrence Berkeley National Laboratory, Berkeley, Berkeley, USA), Dongchang Chen, Juhyeon Ahn  
Cation-Disordered Lithium-Excess Rocksalt Cathodes

17:00 to 17:15

**Susanne J. Wachs** (Helmholtz Institute Erlangen-Nürnberg for Renewable Energy, Forschungszentrum Jülich GmbH, Erlangen, Germany), Christopher Behling, Johanna Ranninger, Jonas Möller, Karl J.J. Mayrhofer, Balazs Berkes  
Transition Metal Dissolution of a Ni-Rich Cathode Material – an Online Investigation

17:15 to 17:30

**Aleksandr Ivanishchev** (Institute of Chemistry, Saratov State University, Saratov, Russia), Irina Ivanishcheva, Sang-Cheol Nam, Junyoung Mun  
Surface modification of electroactive materials particles with titanium carbosilicide: structural and electrochemical study

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Alexey Volkov** (Department of Electrochemistry, Saint Petersburg State University, Saint Petersburg, Russia), Daria Meshcheva, Elena Tolstopjatova, Veniamin Kondratiev  
Electrochemical Performance of Hydrothermally Synthesized MoS<sub>2</sub> Nanospheres as Li-Ion Batteries Anodes

18:00 to 18:15

**Ankush Bhatia** (BATT-ion, ICMPE CNRS, Thiais, France), Jean Pierre Pereira-Ramos, Rita Baddour-Hadjean

Detailed Redox Mechanism and Self-Discharge Diagnostic of 4.9 V LiMn<sub>1.5</sub>Ni<sub>0.5</sub>O<sub>4</sub> Spinel Cathode revealed by Raman Spectroscopy

*18:15 to 18:30*

**Victoria Andrea Vasquez Salgado** (Materials Engineering, Universidad de Antioquia, Medellin, Colombia), Victoria Vásquez-Salgado, Alejandro Vásquez, Jorge Calderón-Gutierrez

Effect of V and Sn Doping on Highly Stable LiMnPO<sub>4</sub>/C Produced by Fast Microwave Synthesis

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Maria Assunta Navarra

*16:00 to 16:30 Keynote*

**Julia Amici** (DISAT, Politecnico di Torino, Torino, Italy), Cecilia Andrea Calderon, Daniele Versaci, Davide Dessantis, Andrea Marchisio, Roberto Colombo, Lucia Fagiolari, Anna Mangini, Maria Laura

Para, Simone Siccardi, Mojtaba Alidoost, Piera Diprima, Guillermina Luque, Daniel Baracco, Ezequiel Leiva, Federico Bella, Carlotta Francia, Silvia Bodoardo  
Composite solid electrolytes toward safer Lithium-metal cells

16:30 to 16:45

**Hong-Kang Tian** (International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Japan), Randy Jalem, Bo Gao, Yoshitaka Tateyama  
Electron and Ion Transfer across Interfaces of the NASICON-type LATP Solid Electrolyte with Electrodes in All-Solid-State Batteries

16:45 to 17:00

**Yuqi Li** (Institute of Physics, Chinese Academy of Sciences, University of Chinese Academy of Sciences, Beijing, China), Yaxiang Lu, Yong-Sheng Hu  
Ultralow-Concentration Electrolyte for Low-Cost Na-Ion Batteries with Wide-Working-Temperature-Range

17:00 to 17:15

**James Isaac** (LEPMI, Grenoble INP, Grenoble, France), Didier Devaux, Renaud Bouchet  
Ceramics Dispersed in Liquid Electrolytes: Predicting the Conductivity of Ceramic-in-Polymer Composite Electrolytes.

17:15 to 17:30

**Akiko Tsurumaki** (Department of Chemistry, Sapienza University of Rome, Rome, Italy), Giovanna Maresca, Naoki Suzuki, Koji Yoshida, Yuichi Aihara, Maria Assunta Navarra  
Sn/C Anode Materials for All-Solid-State Lithium Ion Batteries with Sulfide-Based Solid Electrolytes

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Laura del Carmen García Alcalde** (Instituto de Ciencia y tecnología del Carbono, Materiales, Consejo Superior de Investigaciones Científicas, Oviedo, Spain), Zoraida González, Daniel Barreda, Victoria García, Clara Blanco, Ricardo Santamaría  
Studying the influence of carbon felt modification during electrophoretic deposition with nanocarbons on their performance as electrodes for vanadium redox flow batteries.

18:00 to 18:15

**Hai-Peng Liang** (Helmholtz Institute Ulm (HIU), Karlsruhe Institute of Technology (KIT), Ulm, Germany), Hai-Peng Liang, Zhen Chen, Stefano Passerini, Dominic Bresser  
Single-ion conducting polymer electrolyte for high-energy Li/NMC622 batteries

18:15 to 18:30

**Liwei Chen** (Chemistry and Chemical Engineering, Shanghai Jiaotong University, Shanghai, China), Chenji Hu, Yanbin Shen  
Bulk Interface Superionic Conductors

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers  
Room : R03 - Halla B (230)  
Chairman : Maria Escudero-Escribano

16:00 to 16:30 Keynote

**Bingjun Xu** (College of Chemistry and Molecular Engineering, Peking University, Beijing, China)  
Understanding Electrocatalytic CO<sub>2</sub> and CO Reduction at the Molecular Level

16:30 to 17:00 Keynote

**Zhichuan J. Xu** (School of Materials Science and Engineering, NTU, Singapore, Singapore)



Pinning Effect Between Non-Ferromagnetic Catalyst Layer and Ferromagnetic Substrate in Promoting Water Oxidation Reaction

17:00 to 17:15

**Wen-Feng Lin** (Department of Chemical Engineering, Loughborough University, Loughborough, United Kingdom), Wen-Feng Lin, Yafeng Chen, Liang Hong, Adam Mckinley, Xiao Lin, Tian Sheng, Yawei Zhou, W. B. Cai, Z. Y. Zhou, S. G. Sun

New Understanding of Electrocatalysis for Direct Alcohol Fuel Cells via Combined Study of in-situ FTIR Spectroscopy and DFT Modelling

17:15 to 17:30

**José Luis Olloqui-Sariego** (Physical Chemistry, Universidad de Sevilla, Sevilla, Spain), Silvia Gutiérrez-Tarriño, Juan José Calvente, Guillermo Mínguez-Espallargas, Fernando Rey, Avelino Corma, Pascual Oña-Burgos

D-Cobalt-MOF based on Layered Nanosheets for Superior Electrocatalytic Water Oxidation in Neutral Media

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Petr Krtil** (Nanocatalysis, J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic), Serban Stamatina, Kateřina Minhová Macounová

Local Structure Control of Selectivity in Sea Water Electrolysis - Model Case of Ru-Ti-O Oxides

18:00 to 18:15

**María González Ingelmo** (Instituto de Ciencia y Tecnología del Carbono, Materiales, Consejo Superior de Investigaciones Científicas (CSIC), Oviedo, Spain), Clara Blanco, Ricardo Santamaría, Patricia Alvarez, Marcos Granda, Victoria Garcia

Nickel/graphene-based electrocatalysts via freeze casting processing for water splitting reaction

18:15 to 18:30

**Biagio Buccheri** (Dipartimento di Ingegneria, Università degli Studi di Palermo, Palermo, Italy), Fabrizio Ganci, Bernardo Patella, Giuseppe Aiello, Rosalinda Inguanta

Ni-Fe Alloy Nanostructured Cathodes and Anodes for both Alkaline Electrolyser and Seawater Electrolysis

18:30 to 18:45

**Krystian Lankauf** (Faculty of Electronics, Telecommunications and Informatics, Gdańsk University of Technology, Gdańsk, Poland), Karolina Górnicka, Jakub Karczewski, Piotr Jasinski, Sebastian Molin

Electrocatalytic Evaluation of Ternary MnCo<sub>2</sub>-xFexO<sub>4</sub> Spinel Oxides as Materials for Efficient Oxygen Evolution in Alkaline Media

s11 Electrochemical Conversion of Carbon Dioxide and its Utilization

Room : R04 - Samda A (100)

Chairman : Catia Arbizzani; Roman Latsuzbaia

16:00 to 16:15 Invited

**Nitish Govindarajan** (Fysik, Technical University of Denmark, Copenhagen, Denmark)

"pH effects" in electrochemical CO<sub>2</sub> reduction

16:15 to 16:30

**Qing Qin** (Analytical Chemistry, Ruhr University Bochum, Bochum, Germany), Wolfgang Schuhmann, Martin Oschatz

Rational design of porous carbon-based electrocatalysts for N<sub>2</sub> fixation through understanding of structure-property relationships

16:30 to 16:45

**Bethan J. V. Davies** (Department of Chemistry, Universitetsparken 5, Copenhagen, Denmark), Maria Escudero Escribano

Investigating Product Selectivity in Electrocatalytic Reactions with Focus on Dimethyl Carbonate Synthesis

16:45 to 17:00

**Catia Arbizzani** (Department of Chemistry Giacomo Ciamician, University of Bologna, Bologna, Italy), Giampaolo Lacarbonara, Sebastiano Chini, Sander Ratso, Ivar Kruusenberg

Graphitic carbon from CO<sub>2</sub> for sustainable Li ion battery anodes

17:00 to 17:15

**João R. C. Junqueira** (Analytical Chemistry - Center for Electrochemical Sciences, Ruhr-Universität Bochum, Bochum, Germany), Jonas Weidner, Nivedita Sikdar, Denis Ohl, Patrick Wilde, Wolfgang Schuhmann

Copper Chalcogen Electrocatalysts for Carbon Dioxide Reduction on Gas Diffusion Electrodes

17:15 to 17:30

**Roman Latsuzbaia** (Sustainable Process and Energy Systems, TNO, Delft, Netherlands), Susan Turk, Angel Alfonso Villanueva, Earl Goetheer

Scale up of electrochemical paired CO and Cl<sub>2</sub> production

17:30 to 17:45

**David McLaughlin** (Electrocatalytic Interface Engineering, Helmholtz-Institute Erlangen-Nuernberg for Renewable Energy, Erlangen, Germany), Markus Bierling, Simon Thiele

Multiscale Tomographic Reconstruction of a CO<sub>2</sub> Reduction Reaction Gas Diffusion Electrode

s12 Corrosion and corrosion protection

Room : R12 - 401 (100)

Chairman : Vincent Vivier; Mikhail Zheludkevich

16:15 to 16:30

**Philippe Marcus** (IRCP/Physical Chemistry of Surfaces, Chimie ParisTech-CNRS, Paris, France), Zuo Cheng Wang, Charly Carrière, Antoine Seyeux, Sandrine Zanna, Dimitri Mercier

Passive Films Characterization on NiCr and NiCrMo Alloys Using Advanced Surface Analytical Techniques

16:30 to 16:45

**Nadine Pebere** (INP-ENSIACET, CIRIMAT, Toulouse, France), Pierre Bonin, Nicolas Causse, Aurelien Roggero, Dominique Thierry, Nathalie Le Bozec

Effect of temperature on the water uptake and glass transition variations on coil-coated materials: Toward a better understanding of blistering mechanisms

16:45 to 17:00

**Deni Jero** (INP ENSIACET, CIRIMAT, Toulouse, France), Nadine Pébère, Nicolas Caussé, Marion Roy, Fabrice Chaussec, Amaury Buvignier

Linking Molecular Film Structure and Corrosion Protective Performance of Film Forming Amines on Carbon Steel Surfaces

17:00 to 17:15

**Francesco Di Franco** (Ingegneria, Università degli Studi di Palermo, Palermo, Italy), Giada Tranchida, Davide Pupillo, Giulio Ghersi, Paolo Cinà, Sannakaisa Virtanen, Monica Santamaria

Effect of E. coli Biofilm formation and removal on passive films on AISI 316L during fermentation processes

17:15 to 17:30

**Salvatore Daniele** (Molecular Sciences and Nanosystems, University Cà Foscari of Venice, Mestre-Venice, Italy), Margherita Donnici, Erika Ferrari, Delphine Neff, Salvatore Daniele  
Comparative Effects of the Green Inhibitor Decanoic Acid and the Traditional Benzotriazole in Protecting Corroded Copper Artworks in Simulated Acid Rain. An Approach Based on Scanning Electrochemical Microscopy

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Markus Valtiner** (Institute for Applied Physics, Vienna University of Technology, Vienna, Austria), Dominik Dowschak, Lukas Kalchgruber, Carina Brunnhofer, Hsiu-Wei Cheng  
Combining in-situ high resolution AFM and ICP-MS flow cell studies for characterizing localized corrosion

18:00 to 18:15

**Annica Wetzel** (6.2 Interfacial Processes and Corrosion, Bundesanstalt für Materialforschung, Berlin, Germany), Ozcan Ozlem, Witt Julia  
Corrosion Properties and Protective Oxide Film Characteristics of CrMnFeCoNi High Entropy Alloy and CrCoNi Medium Entropy Alloy

18:15 to 18:30 *Invited*

**Christopher L. Alexander** (Civil and Environmental Engineering, University of South Florida, Tampa, USA), Nelly Sofia Orozco, Maria Cardoso, Sachintha Wickramaarachchi  
On the Analysis of the Electrochemical Impedance Response of Corroding Steel in Concrete

18:30 to 18:45

**Mark Orazem** (Department of Chemical Engineering, University of Florida, Gainesville, USA), Ming Gao, Chen You, Arthur Dizon, Vincent Vivier  
Experimental Observation of Ohmic Impedance

16:00 to 16:15

**Vincent Vivier** (CNRS, Sorbonne University, Paris, France)  
On the impedance response of a passive electrode: what is the influence of the double layer capacitance

s14 Electrochemical Technology for Process Intensification and Sustainability

Room : R10 - 302 (80)

Chairman : Ana Sofia Fajardo

16:00 to 16:15

**Sergi Garcia-Segura** (School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, USA)  
Application of electrochemical water treatment technologies: Identifying challenges and niche market opportunities

16:15 to 16:30

**Rodrigo de Mello** (Department of Chemical Engineering, Universidad de Castilla-La Mancha, Ciudad Real, Spain), Artur de Jesus Motheo, Cristina Saez, Manuel Andres Rodrigo Rodrigo  
Combination of adsorption process with electrochemical oxidation for benzene removal

16:30 to 16:45

**Hugo Olvera-Vargas** (Institute for Renewable Energies, National Autonomous University of Mexico (UNAM), Temixco, Mexico), Olivier Lefebvre  
Electrochemical Treatment of the Polyfluorinated Pollutant GenX: Electro-Fenton vs Anodic Oxidation

16:45 to 17:00

**Ana Sofia Fajardo** (School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, USA), Aksana Atrashkevich, Paul Westerhoff, Carlos M. Sanchez-Sanchez, Sergi Garcia-Segura

May water matrix components limit real application of electrochemical reduction of nitrate?

17:00 to 17:15

**Andrea Nataly Arias Sanchez** (Chemical Engineering Department, Universidad de Castilla La Mancha, Ciudad Real, Spain), Manuel Andres Rodrigo Rodrigo, Justo Lobato

Removal of Benzene and Xylene from Gaseous Streams through Electro-scrubbing Process

17:15 to 17:30

**Christine Cachet-Vivier** (Institut de Chimie et des Materiaux Paris-Est, CNRS- University Paris Est Creteil, Thiais, France), Raihana Benyahia, Rebiai Lamia, Laure Latapie, Guillaume Hopsort, Karine

Serrano, Karine Loubiere, Theo Tzedakis, Sam Azimi, Vincent Rocher, Encarnacion Torralba-Penalver, Stephane Bastide

Quantification of urea electrolysis products in alkaline medium

s16 Mathematical modelling in electrochemistry - from molecular scale to the process design

Room : R11 - 303 (100)

Chairman : Hyungjun Kim

16:00 to 16:15

**Michael Busch** (Department of Chemistry and Materials Science, Aalto University, Esbo, Finland), Elisabet Ahlberg, Kari Laasonen

From Absolute Potentials to a Generalized Computational Standard Hydrogen Electrode for Aqueous and Non-aqueous Solvents

16:15 to 16:30

**Se-Jun Kim** (Department of Chemistry, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Stefan Ringe, Hyungjun Kim

Development and applications of solvated GW approximation for 2D catalysts

16:30 to 16:45

**Seung-Jae Shin** (Chemistry, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Donghyun Kim, Hyung-Kyu Lim, Stefan Ringe, Chang Hyuck Choi, Hyungjun Kim

Atomic Details of Electrical Double Layer: Mean-field QM/MM Study

16:45 to 17:00

**Taeho Jung** (Department of Engineering Science, Oxford University, Oxford, United Kingdom), Charles Monroe

Thermodynamic Factors for Nonelectroneutral Liquid Electrolytes with up to Two Neutral Solvents

17:00 to 17:15

**Luka A. Zivkovic** (Electrochemical Energy Conversion, Max Planck Institute, Magdeburg, Germany), Luka A. Zivkovic, Menka Petkovska, Tanja Vidakovic-Koch

Process Intensification of Oxygen Reduction Reaction Owing to Multi-Input Periodic Modulation: Rigorous Optimization Based on Computer-Aided Nonlinear Frequency Response Method

17:15 to 17:30

**Jörn Brauns** (Chemical and Electrochemical Process Engineering, Clausthal University of Technology, Clausthal-Zellerfeld, Germany), Thomas Turek

Dynamic Validation of an Alkaline Water Electrolysis Model by Fluctuating Operation

17:30 to 17:45

Coffee Break

17:45 to 18:15 *Keynote*

**Geoff Kelsall** (Chemical Engineering, Imperial College London, London, United Kingdom), Inyoung Jang, Nick Farandos, John Alexander

Predicting Optimal Geometries of 3D-Printed Solid Oxide Electrochemical Reactors

18:15 to 18:30

**Roman Kodym** (Department of Inorganic Technology, University of Chemistry and Technology, Prague, Czech Republic), Dimitrios K. Niakolas, Evangelia Ioannidou, Stelios Neophytides, Karel Bouzek

Lab-Scale Single-Cell Modelling of the High Temperature Solid Oxide Co-Electrolysis - A Kinetic Study

18:30 to 18:45

**Petr Vagner** (Numerical Mathematics and Scientific Computing, Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany), Vojtech Milos, Dan Budac, Michal Carda, Martin Paidar, Juergen Fuhrmann, Karel Bouzek

Generalized Nernst-Planck-Poisson model of solid oxide YSZ|LSM|O<sub>2</sub> electrode interface

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Kai Exner

*16:00 to 16:30 Keynote*

**Sang Hoon Joo** (Department of Chemistry, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea)

Revealing Selective Electrochemical Energy Conversion Reactions by Atomically Dispersed Catalysts with In Situ X-Ray Absorption Spectroscopy

*16:30 to 16:45 Invited*

**Hye Ryung Byon** (Chemistry, KAIST, Daejeon, Korea), Hyunjeong Oh, Hirona Yamagishi, Toshiaki Ohta

Interfacial reactions of LiCoO<sub>2</sub> positive electrodes in aqueous lithium-ion batteries

*16:45 to 17:00 Invited*

**Chang Hyuck Choi** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Haesol Kim

Effects of the EDL Nature on Electrochemical Pt Dissolution

*17:00 to 17:15 Invited*

**Andrew Gewirth** (Chemistry, University of Illinois, Urbana, USA)

Understanding and Controlling Electrochemistry for Electrolyzers and Batteries

*17:15 to 17:30 Invited*

**Hyungjun Kim** (Department of Chemistry, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Seung-Jae Shin, Chang Hyuck Choi, Donghyun Kim, Geunsu Bae

On the Atomic Origin of Camel-Shaped EDL Capacitance in Aqueous Electrolytes

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00 Invited*

**Jungwon Park** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea)

Liquid Phase TEM for Studying Catalysis and Electrochemistry of Nanomaterials

*18:00 to 18:15 Invited*

**Dong-Hwa Seo** (School of Energy and Chemical Engineering, UNIST, Ulsan, Korea)

First-Principles Study on the Reaction Mechanism in Lithium Electrode Materials

*18:15 to 18:30*

**Stefan Ringe** (Department of Energy Science & Engineering, DGIST, Daegu, Korea)

Computational catalyst design at electrified solid-liquid interfaces

Wednesday 1 September 2021 - AM

p1 Plenary

Room : R01 - Tamna A (1500)

09:00 to 09:50

**Hyuk Chang** (SDI R&D Center, Samsung SDI Co., Ltd, Suwon, Korea)

Ultimate Li ion battery and beyond

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Jong-In Hong; Joohoon Kim

10:00 to 10:15 *Invited*

**Mauro Bertotti** (Fundamental Chemistry, University of São Paulo, São Paulo, Brazil)

Enhancing Electrochemical Sensing Performance by Using Novel Platforms

10:15 to 10:30 *Invited*

**Wei-Ssu Liao** (Chemistry, National Taiwan University, Taipei, Taiwan), Chang-Ming Wang, Chia-Han Hsieh, Yi-Jie Tsai

Soft Materials for Portable Electrochemical Sensing Devices

10:30 to 10:45

**Tybur Q. Casuse Driovinto** (Civil, Construction & Environmental Engineering, University of New Mexico, Albuquerque, USA), Ruben Rizo, Ya-Peng Yu, Jose M. Cerrato, Fernando H. Garzon, Enrique Herrero, Juan M. Feliu

Well-oriented Au Single Crystal and Thin Film Electrodes for Electrochemical Detection of Trace Arsenite in Water

10:45 to 11:00

**Tianxiao Ma** (Chemistry, University of British Columbia, Vancouver, Canada), Dan Bizzotto

On the investigation of the influence of local packing density and underlying surface crystallography on the stability of thiolated DNA

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Kumi Y. Inoue** (Center for Basic Education, Faculty of Engineering, University of Yamanashi, Kofu, Japan), Mayo Komatsu, Tomoki Iwama, Tomokazu Matsue, Hitoshi Shiku

Dopamine imaging using cathodic electrochemiluminescence generated by co-reaction of ruthenium bipyridine complex and oxidized glutathione on closed bipolar electrode array

11:30 to 11:45

**Steven Linfield** (Department of Electrode Processes, Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Sylwester Gawinkowski, Wojciech Nogala

Using Fluorescence-Enabled Electrochemical Microscopy to investigate sub-detection limit charge transfer processes

11:45 to 12:00

**Jungwook Kwon** (Department of chemistry, Pusan National University, Busan, Korea), Haesik Yang  
Rapid and Sensitive Fungal Detection Based on Intracellular Enzyme Combined with Redox Cycling

12:00 to 12:15

**Ponnusamy Nandhakumar** (Department of Chemistry, Pusan National University, Busan, Korea)  
Metal Nanozyme with Ester Hydrolysis Activity and Its Use for Sensitive Biosensing

12:15 to 12:30

**Chang Heon Lee** (Chemistry, Seoul National University, Seoul, Korea), Sung Il Kim, Hae Yeon Lee  
Airborne Bacteria Monitoring by Wet-Cyclone-Assisted DC Impedance Microfluidic Cytometer

12:30 to 12:45

**Jihyeon Kim** (Department of Chemistry, Pusan National University, Pusan, Korea)  
Electrochemical DNA Detection Using Photoredox Catalysis Induced by Surface Plasmonic Field

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications

Room : R05 - Samda B (100)

Chairman : Hyun Ahn; Iwona A. Rutkowska

10:00 to 10:15 Invited

**Hyun Ahn** (Chemistry, Yonsei University, Seoul, Korea)  
Electrochemical Synthesis of Nanomaterials via Controlled Electrolysis of Aqueous Nanodroplets

10:15 to 10:30

**Ahn Hong Ju** (Surface Materials Division, Korea Institute of Materials Science(KIMS), Changwon, Korea), Kim Seil, Yoo Bung Uk, Lee Joo Yul  
Synthesis and Thermoelectric Characterization of Organic-Inorganic Nanocomposites

10:30 to 10:45

**Kamila Lepicka** (Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Piyush Sindhu Sharma, Pawel Borowicz, Gregory Francius, Alain Walcarius  
The privileged charge transfer and structural demands towards formation of 1D poly(NiSalen)s filaments inside mesoporous silica channels

10:45 to 11:00

**Marcin Jaskółowski** (Faculty of Chemistry, University of Warsaw, Warszawa, Poland), Agnieszka Wieckowska  
Comparison of gold-based dna monolayers composed of differently modified oligonucleotides

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Debananda Mohapatra** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea), Prof. Jae-Jin Shim  
Engineering MXene and Carbon Nano-onions for Clean Energy Production and Sensing

11:30 to 11:45

**Iwona A. Rutkowska** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), James A. Cox, Mikhail Vorotyntsev, Pawel J. Kulesza  
Redox Processes of Highly Inert Inorganic Oxo-Anions: Electrocatalytic Reduction of Arsenates(V) and Chlorates(V) in Acid Medium

11:45 to 12:00

**Seok Kim** (Division of Environmental Science and Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea), Seokhyun Choung, Woonghee Lee, Sungho Bae, Jeong Woo Han  
Tuning the Selectivity of Ozone Evolution Reaction by Heterojunction Anodes

s03 Electrochemistry at Liquid/Liquid Interfaces: From Fundamental to Applications

Room : R06 - 201 A + B (150)

Chairman : Hye Jin Lee; Hirohisa Nagatani



10:00 to 10:30 Keynote

**Hubert Girault** (LEPA, EPFL, Sion, Switzerland)

Liquid-liquid interfaces from understanding interfacial polarisation to controlling charge transfer reactions

10:30 to 10:45

**Hye Jin Lee** (Chemistry, Kyungpook National University, Daegu, Korea)

Voltammetric Ionized Drug Sensitive Sensors with Soft Interfaces

10:45 to 11:00

**Bren Mark Felisilda** (Institute of Physical Chemistry, Polish Academy of Sciences, Warszawa, Poland),  
Daniel Alonso Gamero Quijano, Micheál Scanlon, Martin Jönsson-Niedziółka

Interfacial PEDOT Polymerization using Fenton<sup>TM</sup>s reagent at soft electrified interfaces

11:00 to 11:15

Coffee Break

11:15 to 11:30 Invited

**Martin Jonsson-Niedziółka** (Department of Electrode Processes, Institute of Physical Chemistry Polish Academy of Sciences, Warsaw, Poland), Julia Maciejewska-Komorowska, Marta Podrazka, Emilia Witkowska Nery

Measuring PFAS using an electrochemical pen

11:30 to 11:45 Invited

**Robert M. Corn** (Department of Chemistry, University of California-Irvine, Irvine, USA), Yunshan Fan, Athena Bengston

Spectroelectrochemical Measurements of Single Metallic Nanoparticles and Nanorods at Interfaces and in Nanofluidic Channels

11:45 to 12:00

**Hirohisa Nagatani** (Faculty of Chemistry, Institute of Science and Engineering, Kanazawa University, Kanazawa, Japan)

Specific Aggregation Behavior of Water-Soluble AIEgens at Liquid|Liquid Interfaces

12:00 to 12:15

**Terumasa Omatsu** (Faculty of Molecular Chemistry and Engineering, Kyoto Institute of technology, kyoto-shi, Japan), Kisho Hori, Naoto Ishida, Kohji Maeda, Yumi Yoshida

Ionic Transport through a Bilayer Lipid Membrane Depending on the Ionic Concentration in the Membrane

12:15 to 12:30

**Yumi Yoshida** (Faculty of Molecular Chemistry and Engineering, Kyoto Institute of Technology, Kyoto, Japan), Terumasa Omatsu, Naoto Ishida, Kisho Hori, Kohji Maeda

Ionic Distribution in a Bilayer Lipid Membrane

s04 Bioelectrochemistry: from fundamentals to applications

Room : R09 - 301 (80)

Chairman : Seong Jung Kwon; Janice Limson

10:00 to 10:30 Keynote

**Carlo Santoro** (Department of Material Science, University of Milano Bicocca, Milan, Italy)

Microbial Electrochemical Systems: Improvements through Cathode Electrocatalysis and Supercapacitive Mode Operations

10:30 to 10:45

**Janice Limson** (Biotechnology Innovation Centre, Rhodes University, Makhanda, South Africa), Ronen Fogel, Jan Kruid, Molopo Lipali, Lwazikazi Madikiza, Lerato Mpofo, Galad Smith

Exploring Challenges and Opportunities in Remediation of Different Wastewaters using Microbial Fuel Cells

10:45 to 11:00

**Qun Yan** (School of Environmental and Civil Engineering, Qun Yan, Professor, Jiangnan University, Wuxi, China), Peng Zhou

Electrochemical insight into the activated algal biochar assisted hydrogenotrophic denitrification at biocathode using bioelectrochemical system (BES)

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Katharina M. Fromm** (Department of Chemistry, University of Fribourg, Fribourg, Switzerland), Maksym Karamash, Carlos Salgueiro, Bernd Giese

Extracellular electron transfer in *Geobacter sulfurreducens* – On Rates and Mechanism

11:30 to 11:45

**Giada Caniglia** (Institute of Analytical and Bioanalytical Chemistry, Ulm University, Ulm, Germany), Christine Kranz

Charge density of *Escherichia coli* biofilms studied with Scanning Probes Techniques

11:45 to 12:00

**Erin Gaffney** (Chemistry, University of Utah, Salt Lake City, USA), Shelley Minter

Mechanisms of an Electroactive and Halophilic Bacterium for Saline Microbial Electrochemistry

12:00 to 12:15

**Kayode Olaifa** (Chemical and Materials Engineering, Nazarbayev University, Nur-Sultan, Kazakhstan), Qing Yang, Obinna Ajunwa, Enrico Marsili

Repurposing fungicides against bacterial biofilms – biochemical and bioelectrochemical assessment

12:15 to 12:30

**Joanna Roginska** (LCPME, University of Lorraine/CNRS, Nancy, France), Michel Perdicakis, Marc Hebrant, Julien Tournebize, Cedric Charbaut, Christelle Despas, Mathieu Etienne

Nitrate Reduction on Microbial Electrochemical Snorkel

12:30 to 12:45

**Matteo Tucci** (Water Research Institute (IRSA), National Research Council (CNR), Rome, Italy), Alessandro Milani, Marco Resitano, Carolina Cruz Viggi, Federico Aulenta

Bioremediation of toluene-contaminated groundwater with the “bioelectric well”: insights into the electrogenic biodegradation mechanisms

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies

Room : R02 - Halla A (270)

Chairman : Dominic Bresser; Hyung-Seok Kim; Seung-Wan Song

10:00 to 10:15

**Christoph Roitzheim** (Institute of Energy and Climate Research (IEK-1), Forschungszentrum Juelich GmbH, Juelich, Germany), Liang Yin Kuo, Yoo Jung Sohn, Sören Möller, Martin Finsterbusch, Payam Kaghazchi, Olivier Guillon, Dina Fattakhova-Rohlfing

Simulation supported localization of boron in B-doped  $\text{Li}[\text{Ni}_{0.8}\text{Co}_{0.1}\text{Mn}_{0.1}]\text{O}_2$  as cathode material for Li-ion batteries

10:15 to 10:45 Keynote

**Yang-Kook Sun** (Department of Energy Engineering, Hangyang University, Seoul, Korea)

## Progress in High-Capacity Ni-Rich Cathode for Next-Generation Electric Vehicles

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Hyojung Yoon** (Battery R&D Center, LG Energy Solution, Daejeon, Korea), Soyoung Kim, Juri Kim, Eun Ju Lee, Su Yong Lee, Seokkoo Kim

(De)lithiation Behavior of Integrated Silicon Oxides and Graphite Anodes Under Fast Charging Conditions

11:30 to 11:45 *Invited*

**Hyung-Seok Kim** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Hyung-Seok Kim, Sunho Jeong

Hollow SiO<sub>x</sub> Encapsulated by rGO with High Capacity and Long-term Stability for LIB anode materials

11:45 to 12:00

**Seungcheol Myeong** (energy engineering, Hanyang University, seoul, Korea), Seho Sun, Dongsoo Lee, Jiwoon Kim, Taeseup Song

Improving Swelling Behavior by Controlling Microstructure of Lithium Ion Batteries

12:00 to 12:15 *Invited*

**Dominic Bresser** (Helmholtz Institute Ulm (HIU), Karlsruhe Institute of Technology (KIT), Ulm, Germany), Jakob Asenbauer, Yanjiao Ma, Adele Birrozzi, Tobias Eisenmann

Alternative Lithium-Ion Storage Mechanisms in Metal Oxides

12:15 to 12:30

**Tobias Eisenmann** (Helmholtz Institute Ulm, Karlsruhe institute of Technology (KIT), Ulm, Germany), Adele Birrozzi, Angelo Mullaliu, Jakob Asenbauer, Gabriele Giuli, Angela Trapananti, S. Javad Rezvani, Stefano Passerini, Dominic Bresser

Conversion/Alloying Anodes in Lithium-Ion Batteries - Unraveling the Impact of Transition Metal Dopants on Structure, SEI Formation and Electrochemical Performance via X-ray Absorption Spectroscopy

12:30 to 12:45

**Oleg Levin** (Institute of Chemistry, Saint Petersburg University, Saint Petersburg, Russia)

Switchable resistance conducting-polymer layer for Li-ion battery overcharge protection

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Sigita Trabesinger

10:00 to 10:30 *Keynote*

**Kostiantyn Kravchyk** (Department of Chemistry and Applied Biosciences, Laboratory of Inorganic Chemistry (LAC), Z<sup>A</sup>rich, Switzerland)

Electrochemistry of Aluminum-Graphite and Other Dual-Ion Batteries

10:30 to 10:45

**Masayoshi Watanabe** (Institute of Advanced Sciences, Yokohama National University, Yokohama, Japan)

Molten Solvates as Sparingly Solvating Electrolytes for High Energy Density Lithium Sulfur Batteries

10:45 to 11:00

**Gints Kucinskis** (Laboratory of Materials for Energy Harvesting and Storage, Institute of Solid State Physics, University of Latvia, Riga, Latvia), Inara Nesterova, Gunars Bajars

Synthesis and Electrochemical Performance of Na<sub>2</sub>FeP<sub>2</sub>O<sub>7</sub>/C Cathode for Sodium-Ion Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Min Li** (Industrial chemistry "Toso Montanari", University of Bologna, BOLOGNA, Italy), Angelo Mullaliu, Stefano Passerini, Marco Giorgetti

Titanium Activation in Prussian Blue Based Electrodes for Na-ion Batteries: A Synthesis and Electrochemical Study

11:30 to 11:45

**Bo Gao** (GREEN, National Institute for Materials Science, Tsukuba, Japan), Randy Jalem, Yoshitaka Tateyama

Surface-Dependent Stability of Interface between Garnet Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> and Li Metal in the All-Solid-State Battery: A First-Principles Study

11:45 to 12:00

**Peng Dai** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), Jingjing Fan, Chenguang Shi, Yanfen Wen, Ling Huang, Shi-gang Sun

Mitigating the P2-O2 phase transition of P2- Na<sub>0.67</sub>Ni<sub>0.33</sub>Mn<sub>0.67</sub>O<sub>2</sub> cathode by Lithium substitution for sodium-ion batteries

12:00 to 12:15

**Rolf Hempelmann** (Transfercentre Sustainable Electrochemistry, Saarland University and KIST Europe, Saarbruecken, Germany), Zhifeng Huang, Sangwon Kim, Ruiyong Chen

Effect of Molecular Structure and Coordinating Ions on the Solubility and Electrochemical Behavior of Quinone Derivatives for Aqueous Redox Flow Batteries

12:15 to 12:30

**Ivan Stosevski** (Chemical and Biological Engineering, University of British Columbia, Vancouver, Canada), Arman Bonakdarpour, Baizeng Fang, David Wilkinson

Rechargeable Near-Neutral Zinc-Manganese Oxide Batteries – New Insights into the Charge Storage Mechanism

s09 Understanding and application of fast storage processes (Supercapacitors & high power systems)

Room : R07 - 202 A + B (150)

Chairman : Woong Kim

10:00 to 10:30 Keynote

**Jeong Gon Son** (Soft Hybrid Materials Research Center, Korea Institute of Science & Technology, Seoul, Korea)

Nanostructured Graphene for Energy Storage with Mechanical Stretchability

10:30 to 10:45 Invited

**Sang-Jae Kim** (Mechatronics Engineering, Jeju National University, Jeju, Korea), Karthikeyan Krishnamoorthy, Parthiban Pazhamalai, Sindhuja Manoharan, Sang-Jae Kim

Energy Conversion and Storage Mechanism on Piezoelectric Driven Electrochemical Self-Charging Supercapacitor

10:45 to 11:00

**Jinwoo Park** (Materials Science and Engineering, Korea University, Seoul, Korea), Junyoung Lee, Woong Kim

Water-in-salt electrolyte based supercapacitors with AC-line filtering performance

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Qing Jin** (Materials Science and Engineering, Korea University, Seoul, Korea), Mahima Khandelwal, Jinwoo Park, Nayoung Ji, Woong Kim

Boron doped carbon-based aqueous electrochemical capacitor with high performance for AC line filtering

11:30 to 11:45

**Jae-Jin Shim** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea), Abewaw Eshetie, Van Quang Nguyen

Effect of Doping and Substitution on Energy Storage Performance of Supercapacitors

11:45 to 12:00

**Kein Kim** (Materials science and Engineering, Korea University, Seoul, Korea), Jinwoo Park, Woong Kim

Conducting polymer supercapacitor with ultra high frequency response for AC-line filtering™ through the Electric Double Layer Capacitance(EDLC)

12:00 to 12:15

**Corentin Querne** (NIMBE, CEA, Gif sur Yvette, France), Xavier Sallenave, Philippe Banet, Pierre-Henri Aubert, Mathieu Pinault

Combination of Thiophene-based Polymer and Vertically Aligned Carbon Nanotubes for n-doping based Negative Electrodes of Pseudocapacitors with High Energy and Power Densities

12:15 to 12:30 Invited

**Hiroto Nishihara** (Advanced Institute for Materials Research, Tohoku University, Sendai, Japan)

Atomically designed carbon materials for electrochemical applications

12:30 to 12:45

**Rui Tang** (Advanced Institute for Materials Research, Tohoku University, Sendai, Japan), Keita Nomura, Takashi Kyotani, Hiroto Nishihara

Enhancement of electric double-layer capacitance from the perspective of a three-dimensional graphene structure

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Chang Hyuck Choi

10:00 to 10:15

**Dong Young Chung** (Department of Chemistry, Gwangju Institute of Science and Technology, Gwangju, Korea)

Dynamic electrochemical interface in oxygen evolution reaction

10:15 to 10:30

**Arokia Anto Jeffery** (Graduate School of Energy Science and Technology, Chungnam national University, Daejeon, Korea), Jiho Min, Sourabh Chougule, Yunjin Kim, Keonwoo Ko, Namgee Jung

Edge-exposed WxMo1-xS2 nanosheets for hydrogen evolution reaction through precursor solution aging

10:30 to 10:45

**Seunggun Choi** (Department of Energy Engineering, Hanyang University, Seoul, Korea), Jiseok Kwon, Keemin Park, Seonghan Jo, Ungyu Paik

Active and Durable Metal Boride Oxygen Evolution Catalyst with Sandwich Structure on the Surface Formed by ALD

10:45 to 11:00

**Sung Ryul Choi** (Department of Nanotechnology and Advanced Materials Engineer, Sejong University, Seoul, Korea)

Multiple perovskite layered lanthanum nickelate Ruddlesden-Popper systems as highly active and durable bifunctional electrocatalysts for oxygen electrode reactions

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Juhee Ahn** (Energy Engineering Department, Dankook University, Chenon-si, Korea), Mobina Irshad Ali, Jun Hyun Lim, Yejun Park, In Kee Park, Denis Duchesne, Lisa Chen, Juyoung Kim, Chang Hyun Lee  
Perfluorinated Sulfonic Acid Ionomer-Poly(tetrafluoroethylene) Reinforced Membranes with Enhanced Chemical Resistance to Radicals for Polymer Electrolyte Membrane Fuel Cells

11:30 to 11:45

**Junu Bak** (Dept. of Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea), Jeonghoon Lim, Kihyun Shin, JeongHan Roh, Sang Jae Lee, Graeme Henkelman, EunAe Cho

Discovering the In as a Novel Dopant for PtNi Octahedral Nanoparticles Designed through Computational Dopant Screening for Superior ORR Catalytic Performance

11:45 to 12:00

**Jin Young Kim** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea)

Polymeric Composite Membrane: Research and Application for Polymer Electrolyte Water Electrolyzers and Fuel Cells

12:00 to 12:15

**Jong Gyeong Kim** (Graduate School of Energy Convergence, Gwangju Institute of Science and Technology, Gwangju, Korea), Sung Hoon Han

Effect of Pore Size Distribution of Nanoporous Fe-N-C Catalysts for Oxygen Reduction Reaction in Alkaline Medium

12:15 to 12:30

**Albert Sung Soo Lee** (Materials Architecturing Research Center, Korea Institute of Science and Technology, Seoul, Korea), Vladimir Atanasov, Yu Seung Kim

Synergistically Integrated Phosphonated Poly(pentafluorostyrene) for High Temperature Polymer Electrolyte Fuel Cells

12:30 to 12:45

**Jiho Min** (Graduate School of Energy Science and Technology, Chungnam National University, Daejeon, Korea), Arokia Anto Jeffery, Keonwoo Ko, Chougule Sourabh, Yunjin Kim

Development of a Pt-based core-shell nanocatalyst coated with a graphene layer to improve oxygen reduction activity and durability

s11 Electrochemical Conversion of Carbon Dioxide and its Utilization

Room : R04 - Samda A (100)

Chairman : Yun Jeong Hwang; Pawel J. Kulesza

10:00 to 10:30 Keynote

**Thomas Jaramillo** (Chemical Engineering, Stanford University, Stanford, USA)

Developing catalysts and design principles for CO<sub>2</sub> electro-reduction: From fundamentals to high performance systems

10:30 to 10:45

**Hoeun Seong** (Department of Chemistry, Yonsei University, Seoul, Korea), Vladimir Efremov, Jong Suk Yoo, Dongil Lee

Atom-Precise Metal Nanoclusters as a Powerful Platform for Identifying Active Sites for Electrochemical CO<sub>2</sub> Reduction

10:45 to 11:00

**Pawel J. Kulesza** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), Iwona A. Rutkowska, Anna Wadas, Ewelina Szaniawska

Development of Hybrid Metal-Oxide-Based Systems for Photoelectrochemical and Electrocatalytic CO<sub>2</sub> Reduction

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Yun Jeong Hwang** (Chemistry Department, Seoul National University, Seoul, Korea)

Understanding Nanocatalyst for Electrochemical Reduction Reaction of CO<sub>2</sub>

11:30 to 11:45

**Yusik Oh** (Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea), Hye Ryung Byon

Capping-ligand effect of copper nanoparticles for electrochemical reduction of carbon dioxide

11:45 to 12:00

**Dan Na** (School of Advanced Materials Engineering, Jeonbuk National University, Jeonju, Korea), Hyunwoo Jeong, Jiyeon Baek, Hyunsu Lim, Baeksang Yoon

Investigation of Li-CO<sub>2</sub> batteries with a ceramic LATP electrolyte

12:00 to 12:15

**Sanjana Chandrashekar** (Materials for Energy Conversion and Storage, TU Delft, Delft, Netherlands)

Cations - How Important Are They for the Electrochemical Reduction of CO<sub>2</sub>?

12:15 to 12:30

**Erdem IRtem** (Department of Chemical Engineering, Delft University of Technology, Delft, Netherlands), Floris van Dockum, Joost Middelkoop, Tom Burdyny

Effect of Intermediates in high-current CO<sub>2</sub> electrolysis using Copper Gas Diffusion Electrodes in a Flow-type Reactor

12:30 to 12:45

**Mengran Li** (Department of Chemical Engineering, Delft University of Technology, Delft, Netherlands), Tom Burdyny, Mohamed Nazmi Idros, Yuming Wu, Sahil Garg, Shuai Gao, Rijia Lin, Zhiheng Li, Lei Ge, Thomas Edward Rufford, Zhonghua Zhu, Geoff Wang

Effects of Dimensionality of Tin Oxide-Derived Catalysts on CO<sub>2</sub> Electrochemical Reduction by Using Gas Diffusion Electrode

s12 Corrosion and corrosion protection

Room : R12 - 401 (100)

Chairman : Sungmo Moon; Chan-Jin Park

10:00 to 10:30 Keynote

**Seong-Min Lee** (Gas Research Institute, Korea Gas Corp., Ansan, Korea)

Infrastructure Integrity and Corrosion Protection Technology in the Natural Gas Industry of Korea

10:30 to 10:45 Invited

**HeeJin Jang** (Department of Materials Science and Engineering, HeeJin Jang, professor, Chosun University, Gwangju, Korea), Hee-Soo Kim, Si-Jun Park, Seong-Moon Seo, Young-Soo Yoo, Hi-Won Jeong

The Effects of Alloying Elements on the High Temperature Oxidation Behavior of Ni-based Superalloys Studied by Design of Experiments (DOE) and Artificial Neural Network (ANN)

10:45 to 11:00 *Invited*

**Soo Yeol Lee** (Materials Science and Engineering, Chungnam National University, Daejeon, Korea),  
Min Ji Song, Woo Cheol Kim, Hyun Chul Kim, Jong Won Lim  
Experimental and Simulation Studies on Corrosion Failure Analysis in District Heating Facilities

11:00 to 11:15

**Sabrina Patricia Rosoiu** (Center of Surface Science and Nanotechnology, University Politehnica of Bucharest, Bucharest, Romania), Stefania Costovici, Geanina Mihai, Mirsajjad Mousavi, Yaiza Gonzalez-Garcia, Liana Anicai, Teodor Visan, Marius Enachescu  
Corrosion behavior of the ternary Sn-Cu-Ni lead free solders from deep eutectic solvents

11:15 to 11:30

**Shaukat Lone** (Institute of chemical technology of inorganic materials, Johannes kepler universität, linz, Austria), Shaukat Lone, Andrei Ionut Mardare, Cezarina Cela Mardare, Ivana Zirinski, Achim walter Hassel  
Comparison of Corrosion and Tribocorrosion Properties of Various Passive Biomaterials Under Bidirectional Sliding in Artificial Human Body Environment

s14 Electrochemical Technology for Process Intensification and Sustainability

Room : R10 - 302 (80)

Chairman : Youri Gendel; Sang Hoon Kim

10:00 to 10:15

**Hyuntae Bae** (Energy Engineering, Ulsan National Institute of Science and Technology, Ulsan, Korea)  
Electrochemical lithium recycling system toward renewable and sustainable energy technology

10:15 to 10:30 *Invited*

**Wooyul Kim** (Department of Chemical and Biological Engineering, Sookmyung Women's University, Seoul, Korea)  
Understanding Interfacial Electrocatalytic Process for CO<sub>2</sub> Reduction: Time-Resolved Infrared Spectroscopy

10:30 to 10:45

**Gun-hee Moon** (Extreme Materials Research Center, Korea Institute of Science and Technology (KIST), Seoul, Korea)  
Preparation of Active Metal Oxide Catalysts on Conductive Substrates Bypassing Multiple Energy Intensive Processes for Electrocatalytic Oxygen Evolution Reaction

10:45 to 11:00

**Jung-Je Woo** (Gwangju Bio/Energy R&D center, Korea Institute of Energy Research, Gwangju, Korea), Jiyong Ma, Geumui Noh, Jinju Song, Il-Chan Jang, Joonkyo Seo, Sunghun Choi  
Advanced Recycling Technology for Spent Li-ion Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Sumin Yoo** (Civil and Environmental Engineering, Daejeon, Korea), Ga-Yeong Kim, Seok Hwan Jeon, Jong-In Han  
CNT/Porous Porphyrin Polymer-based Electrode for Electrochemical Gold Recovery from Electronic Waste

11:30 to 11:45



**Youri Gendel** (Faculty of Civil and Environmental Engineering, The Technion-Israel Institute of Technology, Haifa, Israel), Yonatan Darom, Gidon Amikam, Erez B. Ruck  
Highly selective separation of copper from electronics industry wastewater by Pt/AC-catalyzed hydrogenation of Cu<sup>2+</sup> ions and oxygenation of zero-valent Cu particles.

11:45 to 12:00

**Faidzul Hakim Adnan** (Laboratoire Réactions et Génie des Procédés (LRGP), Université de Lorraine - CNRS, Nancy, France), Emmanuel Mousset, Marie-Noëlle Pons  
Influence of Electroprecipitation on Pharmaceutical Micropollutant Degradation in Simulated and Reclaimed Wastewater

s16 Mathematical modelling in electrochemistry - from molecular scale to the process design  
Room : R11 - 303 (100)  
Chairman : Francois Lapicque

10:00 to 10:30 Keynote

**Michael Eikerling** (IEK-13: Theory and Computation of Energy Materials, Forschungszentrum Jülich GmbH, Jülich, Germany), Jacob A. Spooner, Victor M. Fernández-Alvarez  
Ionomer in Catalyst Layers for PEM Fuel Cells - Insights from Theory and Computation

10:30 to 10:45

**Jasmin Kaur** (Physical Modelling and Diagnostics Division IEK-13, Forschungszentrum Juelich GmbH, Juelich, Germany), Jasmin Kaur, Thomas Kadyk, Michael Eikerling  
Physics-Based Impedance Model to Diagnose Pore-level Effects in PEFC Electrodes

10:45 to 11:00 Invited

**Miran Gaberscek** (Department of Materials Chemistry, National Institute of Chemistry, Ljubljana, Slovenia), Joze Moskon, Sara Drvaric Talian, Robert Dominko  
Physics-based transmission line modeling of electrochemical cell's impedance

11:00 to 11:15

Coffee Break

11:15 to 11:45 Keynote

**Ulrike Krewer** (Inst. for Applied Materials - Electrochemical Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany), Fridolin Roeder, Florian Baakes, Daniel Witt  
Modelling of Li-Ion Batteries - From Cradle to Grave

11:45 to 12:00

**Fridolin Röder** (Bavarian Center for Battery Technology (BayBatt), University of Bayreuth, Bayreuth, Germany), Oke Schmidt  
Complex structures of conductive networks in lithium-ion battery electrodes and their impact on uncertainty and degradation

12:00 to 12:15

**Somayeh Toghiani** (Institute for Applied Materials - Electrochemical Technologi, Karlsruhe Institute of Technology, Karlsruhe, Germany), Florian Baakes, Ulrike Krewer, Ningxin Zhang, Helmut Kühnelt  
Model-based Design of high energy density solid-state lithium-ion batteries

12:15 to 12:30

**Walter Cistjakov** (Institute of Energy and Process Systems Engineering, TU Braunschweig, Braunschweig, Germany), Johanna Hoppe, Fridolin Röder, Jinkwan Jung, Hee-Tak Kim, Ulrike Krewer  
Multi-Scale Modeling of Li<sub>2</sub>S Precipitation Process During Lithium-Sulfur Battery Discharge

12:30 to 12:45

**Wen Xu** (Institute of Surface Science, Helmholtz-Zentrum Hereon, Geesthacht, Germany)

A Mathematical Model for Modeling the Surface Evolution of Mg Anode during Discharge of Aqueous Mg-air Battery

12:45 to 13:00

**Carmen María Fernández-Marchante** (Chemical Engineering, University of Castilla-La Mancha, Ciudad Real, Spain), Florymar Escalona-Duran, Martín Muñoz-Morales, Justo Lobato, Carlos Alberto Martínez-Huitle, Manuel Andrés Rodrigo

Modelling electro-scrubbers for removal of VOCs

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Jongwoo Lim

10:00 to 10:15

**Jaewoon Lee** (Department of Mechanical Engineering, Kyunghee University, Yongin-si, Korea), Sung-Joon Park, Seung-Ho Yu, Duho Kim

Oxygen Redox in M-incorporated Na-based Binary Layered Oxides

10:15 to 10:30 *Invited*

**Marc Koper** (Leiden Institute of Chemistry, Leiden University, Leiden, Netherlands)

Electrolyte effects in CO<sub>2</sub> reduction and hydrogen evolution

10:30 to 10:45

**Piret Pikma** (Institute of Chemistry, Ravila 14A, Tartu, Estonia), Heigo Ers, Jaak Nerut

In situ STM and EIS study of Cd(0001)|EMImBF<sub>4</sub>+EMImI interface

10:45 to 11:15

**Peter Strasser** (Department of Chemistry, Technical University Berlin, Berlin, Germany)

Chemical Charge vs Electrode Potential – The Eum und Yang of Electrocatalysis

11:15 to 11:30

**Richard Haid** (Physics, Technical University of Munich, Garching, Germany), Regina Kluge, Thorsten Schmidt, Aliaksandr Bandarenka

Highly Resolved Imaging of Active Sites for Carbon-Based Electrocatalysis under Reaction Conditions

11:30 to 11:45

**Reshma Rao** (Chemistry, Imperial College London, London, United Kingdom), Alberto Bucci, Sacha Corby, Julio Lloret-Fillol, Ifan Stephens, James Durrant

Investigating the role of particle size and morphology on the water oxidation activity of nickel-based electrocatalysts using spectroelectrochemistry

11:45 to 12:00

**Katharina Krischer** (Physics Department, Technical University of Munich, Garching, Germany), Thomas Maier, Matthias Golibrzuch, Tina Angerer, Markus Becherer

Boosting of Hydrogen Evolution Reaction on Laterally Structured Metal/Semiconductor Electrodes

12:00 to 12:15

**Mathilde Bouvier** (Laboratoire de Physique de la matière condensée, Ecole Polytechnique, Palaiseau, France), Ivan Pacheco Bubi, Canrong Qiu, Tim Wiegmann, Finn Reikowski, Jochim Stettner, Olaf Magnussen, Fouad Maroun, Philippe Allongue

Operando SXR and XAS combined studies on cobalt oxides epitaxial films as model electrocatalysts for water splitting

12:30 to 12:45

**Kei Murakoshi** (Department of Chemistry, Hokkaido University, Sapporo, Japan), Hiro Minamimoto



Wednesday 1 September 2021 - PM

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Guy Denuault; Fred Lisdat

*16:00 to 16:30 Keynote*

**Frank Marken** (Department of Chemistry, University of Bath, Bath, United Kingdom)

Polymers of Intrinsic Microporosity in Electroanalytical Chemistry

*16:30 to 16:45*

**Yuanzhu Zhao** (Department of Chemistry, University of Bath, Bath, United Kingdom), Neil B. Mckeown, Mariolino Carta, Frank Marken

Indirect Photo-electrochemical Detection of Carbohydrates Mediated by Hydrogen and Enhanced by a Polymer of Intrinsic Microporosity

*16:45 to 17:00*

**Nako Nakatsuka** (Institute for Biomedical Engineering, ETH Zurich, Zurich, Switzerland), Denis Buckingham, Ufuk Ilgin, Alix Faillétaz, Krishna Vadodaria, Fred Gage, Dmitry Momotenko, Janos Vörös  
Aptamer-Modified Nanopipettes for Sensing Electrochemical Signal Transduction from Neurons

*17:00 to 17:15*

**Julius Gajdar** (LCPME, Université de Lorraine, Nancy, France), Gregoire Herzog, Elise Rotureau, Jose-Paulo Pinheiro, Pablo Fanjul Bolado, Laurent Akrou, Mathieu Etienne

Applications of electrochemical oxygen filter

*17:15 to 17:30*

**Melisa del Barrio** (Química Analítica y Análisis Instrumental, Universidad Autónoma de Madrid + CSIC, Madrid, Spain), Moumita Rana, Juan José Vilatela, Encarnación Lorenzo, Antonio L. De Lacey, Marcos Pita

Photoelectrocatalytic Detection of NADH on n-type Silicon Semiconductors Facilitated by Carbon Nanotube Fibers

*17:30 to 17:45*

Coffee Break

*17:45 to 18:00*

**Rosa Rego** (Chemistry, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal), Wasina Fins, Cristina Antunes, António Valente

Development of Electrochemical IoT Sensors: From Lab to Field

*18:00 to 18:15*

**Dionysios Soulis** (Chemistry, National and Kapodistrian University of Athens, Athens, Greece), Eleftheria Stavra, Varvara Pagali

Electrochemical paper-based devices entirely fabricated via programmable pen-on-paper plotting

*18:15 to 18:30*

**Eleonora Pargoletti** (Dipartimento di Chimica, Università degli Studi di Milano, Milan, Italy), Francesca Tessore, Gian Luca Chiarello, Giuseppe Cappelletti

Boosting the Oxide-based Chemoresistor Sensing Performances: the Role of Graphene Oxide and Porphyrins

*18:30 to 18:45*

**Alvaro Colina** (Chemistry, Universidad de Burgos, Burgos, Spain), Martin Perez-Estebanez, William Cheuquepan, Sheila Hernandez, Aranzazu Heras

Electrochemical Surface Oxidation-Enhanced Raman Scattering on Copper: A New Phenomenon for Analysis

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications

Room : R05 - Samda B (100)

Chairman : Liang Liu; Pascal Martin

16:00 to 16:15

**Erhan Karaca** (Chemistry, Hacettepe, Ankara, Turkey)

Schottky Contact of Nanostructured Bi<sub>2</sub>O<sub>3</sub> Deposited Electrochemically on Stainless Steel

16:15 to 16:30

**Karel Lacina** (CEITEC, Masaryk University, Brno, Czech Republic), Jakub Sopoušek, Jakub

V&#283;žník

Blocking the Nanopores - Concepts and Meditation about Electrochemical (Label-Free) Biosensing

16:30 to 16:45

**Quentin Lenne** (Rennes Institute of Chemical Sciences, Université Rennes 1, Rennes, France), Yann Leroux, Corinne Lagrost

Gold Nanoparticles Functionalized with Calix[4]arenes as Selective Catalysts for Oxygen Reduction Reaction (ORR)

16:45 to 17:00

**Amina Lissanedine** (Laboratoire Réactions et Génie des Procédés, Lorraine university, Nancy, France), Emmanuel Mousset, Faissal Aziz, Marie-noëlle Pons, Laila Mandi, Naaila Ouazzani

Key Criteria for Selective Electrosorption of Phenolic Compounds on a Novel Biosourced Material for Olive Mill Wastewater Treatment

17:00 to 17:15

**Liang Liu** (LCPME, CNRS-Université de Lorraine, Villers-les-Nancy, France), Mariela Alicia Brites Helú

Rational Shaping of Hydrogel by Electrodeposition under Fluid Mechanics for Electrochemical Writing on Complex Shaped Surfaces

17:15 to 17:30

**Pascal Martin** (Chemistry, University of Paris, Paris, France), Jean Christophe Lacroix, Mingyang Liu, Philippe Decorse, Sebastien Belynck

Formation of organic bi-layers by stepwise electrochemical reduction of diazonium compounds: Bottom-Up Approach

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Patrizia Romana Mussini** (Dipartimento di Chimica, Università degli Studi di Milano, Milano, Italy), Sara Grecchi, Serena Arnaboldi

Enantiomer discrimination in voltammetry in media of high structural order at the electrochemical interphase implemented with chirality

18:00 to 18:15

**Philani Mashazi** (Chemistry, Rhodes University, Makhanda, South Africa), Keamogeste Tshenkeng  
pH Sensitive Electrochemical Sensor for Catecholamine Detection and Screening of Ascorbic Acid

18:15 to 18:30

**Elisa Maruccia** (Department of Applied Science and Technology (DISAT), Politecnico di Torino, Torino, Italy), Elisa Maruccia, Mirtha A. O. LourenÃ§o, Tatiana Priamushko, Mattia Bartoli, Sergio Bocchini, Freddy Kleitz, Claudio Gerbaldi

Design of nitrogen-containing carbonaceous adsorbents for CO<sub>2</sub> capture and energy storage applications

18:30 to 18:45

**Alexander Nekrasov** (Russian Academy of Sciences, Frumkin Institute of Physical Chemistry and Electrochemistry, Moscow, Russia), Olga Iakobson, Oxana Gribkova

Raman Spectroelectrochemical monitoring of conducting polymer film growth on reflective metallic electrodes: effects due to double excitation of the electrode/film/solution interfaces

s03 Electrochemistry at Liquid/liquid Interfaces: From Fundamental to Applications

Room : R06 - 201 A + B (150)

Chairman : Marcin Opallo; Micheál D. Scanlon

16:00 to 16:30 Keynote

**Micheál D. Scanlon** (Chemical Sciences, Bernal Institute, University of Limerick, Limerick, Ireland), Alonso Gamero-Quijano, Rob Lehane, Nataly Rey-Muñoz, Nicolas Rojas-Sanabria, Angelika Holzinger  
Electrosynthesis of Conducting Polymer Thin Films at an Electrified Liquid/Liquid Interface

16:30 to 16:45 Invited

**Pekka Peljo** (Department of Mechanical and Materials Engineering, University of Turku, Turku, Finland), Haiqiang Deng, Daniel Mandler, Ali Tuna, Hubert Girault

Some New Directions in Electrochemistry at Liquid-Liquid Interfaces: Ionosomes and Biphasic Flow Batteries

16:45 to 17:00

**Damien Degoulange** (Chimie du Solide et Energie, College de France, Paris, France), Nicolas Dubouis, Alexis Grimaud

Thermodynamics vs. Kinetics: determination of ions activity coefficients in super-concentrated electrolytes forming liquid/liquid interfaces

17:00 to 17:15 Invited

**Pierre-Francois Brevet** (Institut Lumière Matière, University Claude Bernard Lyon 1, Villeurbanne, France), Fabien Rondepierre, Antonin Pardon, Lucile Sanchez, Julien Duboisset, Oriane Bonhomme, Emmanuel Benichou

Molecular Organization in Liquids: a Nonlinear Optical View

17:15 to 17:30 Invited

**Lasse Murtomäki** (Department of Chemistry and Materials Science, Aalto University, Aalto, Finland), Eemi Nieminen

Reduction of Copper at the ITIES Studied with SECM

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Rob Lehane** (Chemical Sciences, Bernal Institute, University of Limerick, Limerick, Ireland), Alonso Gamero-Quijano, Micheál D. Scanlon

Electrosynthesis of PEDOT Films at an Electrified Liquid-Liquid Interface

18:00 to 18:15

**Nataly Rey Munoz** (Department of Chemical Sciences, Bernal Institute, University of Limerick, Limerick, Ireland), Alonso Gamero Quijano, Angelika Holzinger, Micheál Scanlon

Electrosynthesis of Free-Standing Thin Films of Poly(3-hexylthiophene) at an Electrified Liquid-Liquid Interface

18:15 to 18:30

**Magdalena Kaliszczak** (LCPME, Université de Lorraine, CNRS, Nancy, France), Pierrick Durand, Emmanuel Wenger, Manuel Dossot, Franca Jones, Damien Arrigan, Gregoire Herzog  
Formation of caffeine: 1-hydroxy-2-naphthoic acid co-crystals at the polarized liquid-liquid interface

18:30 to 18:45

**Marcin Opallo** (Institute of Physical Chemistry, Polish Academy of Sciences, Warszawa, Poland), Justyna Kalisz, Wojciech Nogala, Wojciech Adamiak, Mateusz Gocyla, Hubert H. Girault  
The Solvent Effect on H<sub>2</sub>O<sub>2</sub> Generation at Room Temperature Ionic Liquid|Water Interface

s04 Bioelectrochemistry: from fundamentals to applications

Room : R09 - 301 (80)

Chairman : Taek Dong Chung; Erin Gaffney; Seong Jung Kwon; Elisabeth Lojou

16:00 to 16:30 Keynote

**Michael Mirkin** (Chemistry & Biochemistry, Queens College - CUNY, Flushing, USA), Rui Jia  
Electrochemical Resistive-Pulse Sensing of Extracellular Vesicles

16:30 to 16:45

**Taek Dong Chung** (Department of Chemistry, Seoul National University (SNU), Seoul, Korea), Eun Joong Kim, Joohee Jeon, Sun-heui Yoon, Min-Ah Oh, Wonkyung Cho, Ji Yong Kim, Chang Il Shin  
Protein-modified Electrodes for Specific Coupling with Pre-synaptic Neuronal Membrane

16:45 to 17:00

**Seong Jung Kwon** (Department of Chemistry, Konkuk University, Seoul, Korea)  
Observation and Analysis of Stochastic Single Nanoparticle Collisions on Ultramicroelectrode and Its Application to Biosensing Scheme

17:00 to 17:15

**Takumi Yanase** (Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology, Koganei, Japan), Kentaro Hiraka, Kohei Ito, Ryutarō Asano, Kazunori Ikebukuro, Wakako Tsugawa, Junko Okuda-Shimazaki, Koji Sode  
The Strategic Design of Direct Electron Transfer Type Enzymes for the Development of Innovative Biosensing Technologies

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies

Room : R02 - Halla A (270)

Chairman : Jianyu Huang; Jie Li; Christian Masquelier

16:00 to 16:15 Invited

**Jie Li** (Department of Energy, Politecnico di Milano, Milan, Italy), Xu Hou  
Design of the effective electrode-electrolyte interphase in high-voltage aqueous lithium ion batteries

16:15 to 16:30

**Daniel Witt** (Institute of Energy and Process Systems Engineering, TU Braunschweig, 38106, Germany), Daniel Witt, Florian Baakes, Fridolin Röder, Ulrike Krewer  
Physicochemical SEI Modeling for a Holistic Understanding of Lithium-Ion Battery Behavior

16:30 to 16:45

**Ander Orue** (Advanced Electrolytes and Cell integration, CICenergiGUNE, Vitoria-Gasteiz, Spain), Nuria Gómez, Montse Casas-Cabanas, Pedro López-Aranguren, Frédéric Aguesse  
Designing High Performance Positive/Negative Electrodes for Poly(ethylene)oxide-based Solid-State Batteries

16:45 to 17:00 Invited

**Gleb Yushin** (Materials Science and Engineering, Georgia Institute of Technology, Atlanta, USA)  
Conversion Materials and Solid Electrolytes for Next Generation Lithium-Ion Batteries

*17:00 to 17:15 Invited*

**Marnix Wagemaker** (Radiation Science and Technology, Delft University of Technology, Delft, Netherlands), Tammo Schwietert, Violetta Arszewska, Chuang Yu, Chao Wang, Niek J.J. De Klerk,



Jart Hageman, Thomas Hupfer, Ingo Kerkamm, Yaolin Xu, Eveline van der Maas, Erik M. Kelder, Alexandros Vasileiadis, Swapna Ganapathy  
Electrochemical stability of solid electrolytes

17:15 to 17:30

**Kefyalew Wagari Guji** (Applied Science, Graduate Institute of Applied Science and Technology, Taipei, Taiwan), Wen-Chen Chien  
Synthesis and Characteristic of Chelidonic Acid and Chelidamic Acid as Organic Anode Materials for Energy Storage

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Jianguo Huang** (Clean Nano Energy Center, Yanshan University, Qinhuangdao, China), Yongfu Tang, Liqiang Zhang  
In Situ TEM Nano Electrochemistry

18:00 to 18:15

**Ngoc-Anh Tran** (LEPMI, Grenoble Alpes University, Grenoble, France), Jean Claude Lepretre, Fannie Alloin  
A Novel Designed Electrolyte for Magnesium Batteries

18:15 to 18:30

**Sebastien Martinet** (DEHT, CEA-LITEN, Grenoble, France), Youcef Kerdja, Marion Chandesris  
Improvement of NMC Electrode Microstructure and Performances Combining Microscopy Imaging, Modeling and Design of Experiments

18:30 to 18:45

**Sahir Naqash** (IEK-1, Forschungszentrum JÄ¼lich GmbH, JÄ¼lich, Germany), Martin Finsterbusch, Dina Fattakhova-Rohlfing, Olivier Guillon  
Interfacial elemental mappings and corrosion study of garnet-based solid state battery via secondary ion mass spectroscopy.

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Federico Bella

16:00 to 16:30 *Keynote*

**Sigita Trabesinger** (Battery Electrodes and Cells, Paul Scherrer Institute, Villigen PSI, Switzerland), Leiting Zhang, Chrysi Tsolakidou, Sathiya Mariyappan, Jean-Marie Tarascon  
Tracking Gas Evolution in Na-ion Battery by Online Electrochemical Mass Spectrometry

16:30 to 16:45

**Yingli Wang** (College of Chemistry, Nankai University, Tianjin, China), Yingli Wang, Fangyi Cheng  
Formulating NaPF<sub>6</sub> and LiPF<sub>6</sub> electrolytes to build fluorinated hybrid interface for robust lithium metal anode

16:45 to 17:00

**Weihua Chen** (Green Catalysis Center, and College of Chemistry, Zhengzhou University, Zhengzhou, China), Weihua Chen, Keming Song, Yanhua Wan, Juan Shi  
Interface Engineering Enables High-performance Sodium Ion Battery

17:00 to 17:15

**Ranine El Hage** (LCPME, CNRS, Nancy, France), Charles Yendoube Sano Meyeme, Fabien Chauvet, Laurent Cassayre, Beatrice Biscans, Theo Tzedakis

Effect of Vanadium (IV) Sulfate Particles Present in the Posolyte on the Anodic Current of a Vanadium Redox Flow Battery

17:15 to 17:30

**Luigi Faggiano** (Dept. of Chemistry "Giacomo Ciamician", Alma Mater Studiorum - University of Bologna, Bologna, Italy), Giampaolo Lacarbonara, Stefania Rapino, Catia Arbizzani  
Electrochemical characterization of carbonaceous electrodes for Copper based redox flow battery

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Philippe Poizot** (IMN-CNRS, University of Nantes, Nantes, France), Alia Jouhara, Eric Quarez, Nicolas Dupré  
Electrochemically Driven Insertion of Ions in Organic Host Materials for Rechargeable Battery Applications

18:00 to 18:15

**Gabriele Lingua** (GAMELab, Department of Applied Science and Technology (DISAT), Politecnico of Turin, Turin, Italy), Marisa Falco, Petr S. Vlasov, Alexander S. Shaplov  
Innovative Single Ion Conducting Block Copolymers enabling high-voltage, all-solid-state lithium metal batteries

18:15 to 18:30

**Jilei Liu** (College of Materials Science and Engineering, Hunan University, Changsha, China)  
Unraveling the Potassium Storage Mechanism in Graphite Using Operando Spectroscopic Techniques

18:30 to 18:45

**Shuai Zhang** (Intelligent Polymer Research Institute, University of Wollongong, Wollongong, Australia), Yuqing Liu, Yuetong Zhou, Mark Buckingham, Leigh Aldous, Peter C Sherrell, Gordon G Wallace, Gregory Ryder, Shaikh Faisal, David L Officer, Stephen Beirne, Jun Chen  
Advanced Wearable Thermocells for Body Heat Harvesting

s09 Understanding and application of fast storage processes (Supercapacitors & high power systems)

Room : R07 - 202 A + B (150)

Chairman : Andrea Balducci; Woong Kim

16:00 to 16:30 *Keynote*

**Patrice Simon** (CIRIMAT Laboratory, Université Paul Sabatier Toulouse III, Toulouse, France)  
Fast storage processes: from double layer adsorption to high-rate redox reactions

16:30 to 16:45 *Invited*

**Veronica Augustyn** (Materials Science & Engineering, North Carolina State University, Raleigh, USA)  
Understanding the Role of Confinement on Electrochemical Capacitance: Implications for High Power Energy Storage

16:45 to 17:00

**Andrea Balducci** (Institute for Technical Chemistry & Environmental Chemistry, Friedrich-Schiller University Jena, Jena, Germany), Lars H. Heß, Natalia Fulik, Eike Brunner, Andrea Balducci  
Advanced in-situ techniques for the investigation of the electrode-electrolyte interphase in high voltage electrochemical capacitors

17:00 to 17:15

**Mariela Brites Helú** (LCPME, CNRS-Université de Lorraine, Villers-les-Nancy, France), Ranine El Hage, Vincent Feynerol, Mathieu Etienne, Liang Liu

In-situ Electrochemistry of Single Carbon Fiber on a Felt for Supercapacitors by Scanning Gel Electrochemical Microscopy

17:15 to 17:30

**Jakub Menzel** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Przemyslaw Galek, Paulina Bujewska, Scott Donne, Krzysztof Fic

New Insight into Ion Dynamics in Nanoporous Carbon Materials: an Application of the Step Potential Electrochemical Spectroscopy (SPECS) Technique and Electrochemical Dilatometry

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Adam Slesinski** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Sylwia Sroka, Elzbieta Frackowiak, Jakub Menzel, Krzysztof Fic

Operando monitoring of local pH value changes at carbon electrode surface in aqueous electrochemical capacitors

18:00 to 18:15

**Adrienne Allison** (Chemistry, Dalhousie University, Halifax, Canada), Heather Andreas

Utilizing Electrochemical Impedance Spectroscopy to Understand Pseudocapacitive Manganese Oxide and its Impact on Carbon-Based Substrates

18:15 to 18:30

**Paulina Bujewska** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Paulina Bujewska, Krzysztof Fic

Electrical Double-Layer Formation at Nanoporous Carbon Electrodes with Aqueous Electrolytes of various pH Monitored by Electrochemical Dilatometry

18:30 to 18:45

**Noemí Quintanal** (Grupo de Materiales Compuestos, Instituto de Ciencia y Tecnología del Carbono, Oviedo, Spain), Marta Sevilla, Clara Blanco, Ricardo Santamaría

Interactions between electrode surface and ionic liquids in carbon based supercapacitors

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Zhichuan J. Xu

16:00 to 16:30 Keynote

**Karl Mayrhofer** (Helmholtz-Institute Erlangen-Nürnberg, Forschungszentrum Jülich, Erlangen, Germany), Serhiy Cherevko, Ioannis Katsounaros, Balazs Berkes, Olga Kasian, Simon Geiger

Evaluation of Electrocatalyst Activity, Stability and Selectivity – Online Coupling of Analytical Techniques to Electrochemical Flow Cells

16:30 to 16:45

**Regina Kluge** (Department of Physics, ECS, Technical University of Munich, Garching, Germany), Richard Haid, Eleftherios Psaltis, Thorsten Schmidt, Aliaksandr Bandarenka

Assessment of Active Centers on Transition Metal Surfaces for the Oxygen Reduction and Evolution Reactions

16:45 to 17:00

**Ananrao Vijay Shirsath** (LRGP, University of Lorraine, Nancy, France), Caroline Bonnet, Stéphane Raël, François Lapicque

Characterization of hydration imbalance in polymer electrolyte membrane fuel cell due to ageing by application of electrochemical pressure impedance spectroscopy (EPIS)

17:00 to 17:15

**Rubén Rizo** (Institute of Electrochemistry, University of Alicante, Alicante, Spain), Enrique Herrero, Juan M. Feliu

New Insights into the Hydrogen Peroxide Reduction Reaction and its Comparison with the Oxygen Reduction Reaction in Alkaline Media on Well-defined Platinum Surfaces

17:15 to 17:30

**Johanna Schröder** (DCBP, University of Bern, Bern, Switzerland), Vladislav A. Mints, Aline Bornet, Etienne Berner, Mohammad Fathi Tovini, Jonathan Quinson, Gustav K. Wiberg, Francesco Bizzotto, Hany A. El-Sayed, Matthias Arenz

The gas diffusion electrode setup as straightforward testing device for proton exchange membrane water electrolyzer catalysts

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Mireya Carvela** (Chemical Engineering Department, University of Castilla-La Mancha, Ciudad Real, Spain), Ismael F. Mena, Carmen M. Fernandez-Marchante, Justo Lobato, Manuel A. Rodrigo

Electrochemically-assisted CO<sub>2</sub> Capture using Solar Photovoltaic Powering

18:00 to 18:15

**Sergio Diaz-Abad** (Chemical Engineering, University of Castilla La Mancha, Ciudad Real, Spain), Justo Lobato, Manuel A. Rodrigo

Titanium dioxide Polybenzimidazole membranes for Green Hydrogen production by the sulfur dioxide depolarized electrolysis at high temperature

18:15 to 18:30

**Michelle Browne** (Advanced Materials and BioEngineering Research Centre, Trinity College Dublin, Dublin, Ireland), Valeria Nicolosi

Transition Metal Oxide Catalysts for the Oxygen Evolution Reaction

18:30 to 18:45

**María Isabel Díez García** (Advanced Materials and Systems for Energy Area, Fundació Institut de Recerca de l'Energia de Catalunya, IREC, Barcelona, Spain), Guillem Montaña, Andreu Cabot, Joan Ramon Morante

Highly Active Co-Fe-P Nanoparticles Supported on Porous Substrates for the Oxygen Evolution Reaction

s11 Electrochemical Conversion of Carbon Dioxide and its Utilization

Room : R04 - Samda A (100)

Chairman : Thomas Burdyny; Youngkook Kwon

16:00 to 16:30 Keynote Invited

**Federico Calle-Vallejo** (Materials Science and Physical Chemistry, University of Barcelona, Barcelona, Spain)

Toward Accurate and Affordable Computational Models for the Electroreduction of CO<sub>2</sub>

16:30 to 16:45

**Siddhartha Subramanian** (Chemical Engineering, Delft University of Technology, Delft, Netherlands), Joost Middelkoop, Thomas Burdyny

Influence of mass transport and spatial CO<sub>2</sub> concentration on CO<sub>2</sub> electroreduction to CO in a membrane electrode assembly

16:45 to 17:00

**Kailun Yang** (Department of Chemical Engineering, Delft University of Technology, Delft, Netherlands),  
Recep Kas, Wilson A. Smith, Thomas Burdyny  
Carbon-based gas diffusion layer causes flooding during electrochemical CO<sub>2</sub> reduction

17:00 to 17:15

**Hugo-Pieter Iglesias van Montfort** (Chemical Engineering, Delft University of Technology, Delft, Netherlands), Thomas Burdyny  
Direct imaging of electrocatalytic activity using infrared sensing during water-splitting and CO<sub>2</sub> reduction

17:15 to 17:30

**Youngkook Kwon** (School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, Ulsan, Korea)  
Electric Field Engineering for Selective Electrochemical CO<sub>2</sub> Reduction

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Thomas Burdyny** (Chemical Engineering, Delft University of Technology, Delft, Netherlands), Kailun Yang, Siddhartha Subramanian  
Impact of spatial current density and flow variations on CO<sub>2</sub> reduction selectivity in flow cells at elevated current densities

18:00 to 18:15

**Seonjeong Cheon** (Civil and Environmental Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Dong-Yeon Kim, Youngkook Kwon  
Electrochemical System and Catalyst Development for Ammonia Production from Nitric Oxide

18:15 to 18:30

**Alexander Bagger** (Chemistry, University of Copenhagen, Copenhagen, Denmark)  
A unified view on the challenging N<sub>2</sub> reduction reaction and the likeliness of electrochemical CO<sub>2</sub> reduction reaction.

s16 Mathematical modelling in electrochemistry - from molecular scale to the process design

Room : R11 - 303 (100)

Chairman : Hyung Chul Ham

16:00 to 16:30 *Keynote*

**Karsten Reuter** (Theory Department, Fritz Haber Institute of the Max Planck Society, Berlin, Germany)  
Current Challenges in First-Principles based Modelling of Electrocatalysis

16:30 to 16:45

**Fanny Lambert** (Sciences, UPJV, Amiens, France), Yann Danten, Carlo Gatti, Christine Frayret  
Contribution of Density Functional Theory Modelling and Electronic Structure Investigations in the Quest for Optimal Sustainable Electrodes

16:45 to 17:00 *Invited*

**Jun Cheng** (Chemistry, Xiamen University, Xiamen, China)  
Chemical dynamics in catalysis and electrochemistry

17:00 to 17:15

**Lulu Zhang** (Department of Chemical Physics, University of Science and Technology of China, Hefei, China), Jun Cai, Yanxia Chen, Jun Huang  
Modelling Electrocatalytic Reactions with a Concerted Treatment of Multistep Electron Transfer Kinetics and Local Reaction Conditions

17:15 to 17:30

**Kai Exner** (Theoretical Inorganic Chemistry, University Duisburg-Essen, Essen, Germany)  
Re-Investigation of the Oxygen Evolution Reaction: Mathematical Modeling by a Binding-Energy Approach

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Man Fai Ng** (Materials Science & Chemistry Department, Institute of High Performance Computing, Singapore, Singapore), Daniel John Blackwood, Hongmei Jin, Teck Leong Tan  
DFT Modelling of Corrosion of Metals: Insight into the Oxygen Reduction Reaction on the Passive Layers

18:00 to 18:15 *Invited*

**Sudarshan Vijay** (Department of Physics, Technical University of Denmark, Lyngby, Denmark), Georg Kastlunger, Wen Ju, Peter Strasser, Karen Chan  
Unified Perspective of Methods to Model Electrochemical Barriers

18:15 to 18:30

**Jia-Xin Zhu** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), Jia-Bo Le, Marc Koper, Katharina Doblhoff-Dier, Jun Cheng  
Effects of Adsorbed OH on Pt(100)/Water Interfacial Structures and Potential

18:30 to 18:45

**Rüdiger Müller** (Thermodynamic Modeling and Analysis of Phase Transitions, Weierstrass Institute, Berlin, Germany), Manuel Landstorfer  
Modeling and simulation of concentration and field dependent susceptibility of liquid electrolytes

s19 Physicochemical and Mechanistic Aspects of Organic Electrosynthesis

Room : R12 - 401 (100)

Chairman : Amanda Garcia

16:00 to 16:30 *Keynote*

**Mahito Atohe** (Department of Chemistry and Life Science, Yokohama National University, Yokohama, Japan), Atshushi Fukazawa, Naoki Shida  
Organic Electrosynthetic Reactions Using a Proton-Exchange Membrane (PEM) Reactor

16:30 to 16:45 *Invited*

**Nicola Aust** (Chemical Synthesis Research, BASF SE , Ludwigshafen, Germany)  
Reductive Coupling in Industrial Organic Electrosynthesis

16:45 to 17:00

**Amanda Garcia** (HIMS, University of Amsterdam, Amsterdam, Netherlands)  
Insights into C-C coupling in CO<sub>2</sub> electroreduction towards C<sub>2</sub>+ products

17:00 to 17:15 *Invited*

**Robert Francke** (Electrochemistry & Catalysis, Leibniz Institute for Catalysis, Rostock, Germany), Timo Broese, Arend Roesel, Michal Májek  
Electrochemistry of Hypervalent Iodine Compounds

17:15 to 17:30 *Invited*

**Karthish Manthiram** (Chemical Engineering, Massachusetts Institute of Technology, Cambridge, USA)  
Electrocatalytic oxygen-atom transfer reactions

17:30 to 17:45

Coffee Break

*17:45 to 18:15 Keynote*

**Kevin Moeller** (Department of Chemistry, Washington University in St. Louis, St. Louis, USA)  
Playing on the Interface Between Organic Synthesis and Electrochemistry as a Means to Discover New Opportunities for Selectivity.

*18:15 to 18:30*

**Madara Darzina** (OSM group, Latvian Institute of Organic synthesis, Riga, Latvia), Anna Lielpetere, Aigars Jirgensons  
Electrosynthesis of  $\alpha,\beta$ -unsaturated esters from furfurylated ethylene glycols and amino alcohols

*18:30 to 18:45 Invited*

**Belen Batanero** (Organic and Inorganic Chemistry, University of Alcalá, Alcalá de Henares, Spain), Irene Quiros  
Electrosynthesis of Oxazol-2(3H)-Ones and Diaroylhydrazines from 1,2-Dicarbonyl Compounds and Arenediazonium Salts

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Kai Exner; Laurence Hardwick

*16:00 to 16:15 Invited*

**Jiajun Wang** (Institute of Advanced Chemical Power Sources, Harbin Institute of Technology, Harbin, China), Hanwen An  
Synchrotron X-ray Imaging of Battery Materials and Interfaces

*16:15 to 16:30 Invited*

**Wanli Yang** (Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, USA)  
Recent Advances in Soft X-Ray Spectroscopy for Studying Energy Storage Materials

*16:30 to 16:45*

**Rik Mom** (Leiden Institute of Chemistry, Leiden University, Leiden, Netherlands), Hassan Nagra, Nipon Deka, Lorenz Falling, Juan-Jesús Velasco-Vélez, Denis Bernsmeier, Ralph Krähnert, Axel Knop-Gericke  
Operando XPS and XAS on Electrocatalysts for Fuel Cells and Electrolyzers

*16:45 to 17:00*

**Dino Tonti** (ICMAB-CSIC, , Barcelona, Spain), Wenhai Wang, Alvaro Yamil Tesio, Mara Olivares-Marín, Andrea Sorrentino, Eva Pereiro  
Insights on the interface evolution of lithium-oxygen battery cathodes using in situ electrochemical impedance and energy-dependent soft x-ray transmission microscopy

*17:00 to 17:15*

**Andrea Sorrentino** (Mistral Beamline, Life Science Division, ALBA Synchrotron Light Source, Cerdanyola del Valles, Spain), Laura Simonelli, Arefehsadat Kazzazi, Nina Laszczynski, Agnese Birrozzi, Angelo Mullaliu, Eva Pereiro, Stefano Passerini, Marco Giorgetti, Dino Tonti  
Visualization of chemical heterogeneities on cathode materials using full field soft x-ray transmission microscopy

*17:15 to 17:30*

**Christina Toigo** (Giacomo Ciamician, University of Bologna, Bologna, Italy), Martin Frankenberger, Nicolas Billot, Claudia Pscherer, Benedikt Stumper, Fabian Distelrath, Jonathan Schubert, Karl-Heinz Pettinger, Catia Arbizzani  
Improved LTO Electrodes by Modified Current Collector Surfaces

17:30 to 17:45

Coffee Break

17:45 to 18:00 *Invited*

**Ivan T. Lucas** (Chemistry, Sorbonne Université - LISE laboratory - UMR 8235 CNRS, PARIS, France), Antonin Gajan, Constance Lecourt, Blanca Torres Bautista, Laure Fillaud, Julien Demeaux  
Solid Electrolyte Interphase Instability in Operating Lithium-ion Batteries Unraveled by Enhanced-Raman Spectroscopy

18:00 to 18:15 *Invited*

**Sayoko Shironita** (Department of Materials Science and Technology, Nagaoka University of Technology, Niigata, Japan), Masatoshi Osawa, Minoru Umeda  
Application of surface-enhanced infrared absorption spectroscopy (SEIRAS) to fundamental research on lithium-ion batteries

18:15 to 18:30 *Invited*

**Erik J. Berg** (Department of Chemistry - Angstrom Laboratory, Uppsala University, Uppsala, Sweden)  
Operando Characterization of Interphases in Rechargeable Batteries

18:30 to 18:45

**Da Zhou** (Department of Chemical Physics, University of Science and Technology of China, Hefei, China), Aimin Ge, Ken-ichi Inoue, Yanxia Chen, Shen Ye  
Probing the Formation Process and Surface Structures of Solid-Electrolyte Interphase by SFG Vibrational Spectroscopy

s25 General Session

Room : R10 - 302 (80)

Chairman : Hongkyung Lee; Hochun Lee

16:00 to 16:15

**Paolo Inaudi** (Drug Science and Technology, University of Turin, Turin, Italy), Ornella Abollino, Mery Malandrino, Federico Stilo, Agnese Giacomino  
Redox Profile as Marker for the Authentication of Vegetable Oil

16:15 to 16:30

**Robert Hillman** (School of Chemistry, University of Leicester, Leicester, United Kingdom), Chloe Davis, Federica Lisa, Sarah Rose  
Electrochemical Aspects of Latent Fingerprint Visualization on Metal Surfaces Using Galvanic Deposition

16:30 to 16:45

**Leigh Aldous** (Department of Chemistry, King's College London, London, United Kingdom), Mark Buckingham, Kristine Laws  
Why 'water-in-salt' and analogous systems are often ineffective in thermogalvanic heat-to-electricity systems

16:45 to 17:00

**Kevin Wearen** (Chemistry, Dundalk Institute of Technology, Dundalk, Ireland), Timothy McCormac  
An Investigation into the Catalytic Properties of a Conducting Polymer Hybrid film containing a Mn<sup>2+</sup> Sandwich-type Polyoxometalate

17:00 to 17:15

**Yaovi Holade** (IEM, European Institute of Membranes of Montpellier, Montpellier, France), Sophie Tingry  
Nanostructured Silver-Gold Cages Directly Grown on Gas Diffusion Electrodes for Highly Active and Selective Glycerol Electrooxidation



17:15 to 17:30

**Lucia Alvarado** (ENGINEERING OF MINES, METALLURGY AND GEOLOGY, UNIVERSITY OF GUANAJUATO, GUANAJUATO, Mexico), Martin Caudillo González, Guadalupe Vázquez Rodríguez, Juan Carlos Baltazar Vera

Transport of Hexavalente Chromium Through Ion Exchange Materials During an Electrodeionization Process

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Natalia Ormeño Cano** (Technologies and Evaluation, ICRA, Catalan Institute for Water Research, Girona, Spain), Jelena Radjenovic

Graphene-based electrodes for the electrochemical removal of antibiotics from water.

18:00 to 18:15

**Anna Segués Codina** (Technology and Evaluation, Catalan Institute of Water Research and University of Girona, GIRONA, Spain), Carles Borrego, Jelena Radjenovic

Chlorine-free disinfection of water using N-doped graphene-based sponge electrodes

18:15 to 18:30

**Thágor Moreira Klein** (Institute of Chemistry, Universidade Federal de Rio Grande do Sul (UFRGS), Porto Alegre, Brazil), Nathalie Ribeiro Wingert, Vladimir Lavayen, Jacqueline Arguello

Determination of lead (II) by anodic stripping voltammetry using a SPE/Au/2D-MoS<sub>2</sub>/AuNPs modified electrode

18:30 to 18:45

**Marcus Korb** (School of Molecular Sciences, The University of Western Australia, Perth, Australia)

Redoxchemistry of Ferrocenyl-Functionalized Half-sandwich Complexes

Thursday 2 September 2021 - AM

p1 Plenary

Room : R01 - Tamna A (1500)

09:00 to 09:50

**Christian Amatore** (Department of Chemistry, Ecole Normale Supérieure, CNRS and Xiamen University, Paris, France)

Oxygen and Nitrogen Activated Species and Oxidative Stress: Between our Best Survival Allies and Worst Foes

s01 Recent Developments in Analytical Electrochemistry: from Fundamentals to Devices

Room : R13 - 402 A+B (100)

Chairman : Sung Yul LIM; Steven Linfield

11:15 to 11:30

**Jong-In Hong** (Department of Chemistry, Seoul National University, Seoul, Korea), Taemin Kim, Kyoung-Rok Kim, Ik-Soo Shin

Reaction-Based Electrochemiluminescent Sensors for Selective Detection of Biochemical and Environmental Targets

11:30 to 11:45

**Bo Zhou** (School of Engineering and Materials Science, Queen Mary University of London, London, United Kingdom), Anirban Das, Karin A. Hing, Steffi Krause

Monitoring dynamic cellular responses using a photoelectrochemical imaging system with high spatiotemporal resolution

11:45 to 12:00

**Jooheon Kim** (Department of Chemistry, Kyung Hee University, Seoul, Korea), Taehoon Cho, Youngwon Ju, Jooheon Kim

Synthesis and Characterization of Dendrimer-Encapsulated Pt Nanoparticles for Their Application in Electroanalysis

12:00 to 12:15

**Myeungwoo Ryu** (Energy Engineering, Hanyang University, Seoul, Korea), Yongmin Jung, Seojin Park, Hojin Jeong, Taeseup Song

Stretchable and Transparent Paper for Printed Electronics Drawn by Conductive Ink

12:15 to 12:30

**Andrzej Krze#347;niak** (Department of Electrode Processes, Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Tomasz Gabler, Monika Janik, Martin Jönsson-Niedziółka, Mateusz Smietana

Electrochemistry in an optical fiber microcavity - a new approach to electrochemical processes in small volumes

12:30 to 12:45

**Woonghee Lee** (Division of Environmental Science and Engineering, Pohang University of Science and Technology, Pohang, Korea), Seok Kim, Kangwoo Cho

Selective Detection of Electrochemically Generated Ozone Using Scanning Electrochemical Microscopy

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications

Room : R05 - Samda B (100)

Chairman : Jaime Sanchez; Ma#322;gorzata Skorupa

10:00 to 10:15

**Karsten Voigt** (Institute of Materials Science, Technische Universität Dresden, Dresden, Germany), Christian Heubner, Michael Schneider, Alexander Michaelis

## Electrochemical Deposition of Metal/Metal Oxides Composites

10:15 to 10:30

**Luís C. Almeida** (Centro de Química Estrutural, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal), Rui D. Correia, Jorge P. Correia, Ana S. Viana

Electrosynthesis of Thick Bio-inspired Polydopamine Films - A Combined Electrochemical, Ellipsometric and Microgravimetric Study

10:30 to 10:45

**Gustavo Adrian Echeveste Salazar** (Laboratoire de Chimie Physique et Microbiologie pour les Mat, Université de Lorraine, Nancy, France), Ning Dang, Alain Walcarius, Liang Liu

Cross-linking of Electrodeposited Chitosan for Scanning Gel Electrochemical Microscopy (SGECM).

10:45 to 11:00

**Shibin Thomas** (Chemistry, University of Southampton, Southampton, United Kingdom), Philip Bartlett, Andrew Hector, Gillian Reid, William Levason, Danielle E Smith, Victoria K Greenacre, Yasir J Noori, Nema M Abdelazim, C. H. (Kees) de Groot

Non-aqueous Electrodeposition of Transition Metal Dichalcogenide Thin Films from Single Source Precursors

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Jaime Sanchez** (DEPARTMENT OF INDUSTRIAL AND MATERIAL SCIENCE, CHALMERS UNIVERSITY OF TECHNOLOGY, Göteborg, Sweden), Zhenyuan Xia, Johanna Xu, Jinhua Sun, Leif Asp, Vincenzo Palermo

Electrophoretic Coating of LiFePO<sub>4</sub>/Graphene Oxide on Carbon Fibers as Cathode Electrodes for Structural Li-ion Batteries in Automotive

11:30 to 11:45

**Alex Ricardo Silva Olaya** (Department of Chemistry, Carl von Ossietzky University of Oldenburg, Oldenburg, Germany), Birthe Zandersons, Gunther Wittstock

Effect of the residual silver on the electrochemical activity of Nanoporous gold towards methanol oxidation in alkaline media

11:45 to 12:00

**Małgorzata Skorupa** (Department of Physical Chemistry and Technology of Polymers, Silesian University of Technology, Gliwice, Poland), Katarzyna Krukiewicz

Biofunctionalization of Electrodes for Bioelectronic Applications

s06 Advanced lithium-ion batteries; from basics to cutting-edge technologies

Room : R02 - Halla A (270)

Chairman : Kyung Yoon Chung; Hochun Lee; Naoaki Yabuuchi

10:00 to 10:15 Invited

**Naoaki Yabuuchi** (Department of Chemistry and Life Science, Yokohama National University, Yokohama, Japan)

Li-excess Rocksalt-type High-capacity Positive Electrode Materials for Li-ion Batteries

10:15 to 10:30

**Hyeongseon Choi** (HIU Helmholtz-Institute Ulm, Karlsruhe Institute of Technology, Ulm, Germany)

Cobalt? – Not Needed in Lithium-Rich Layered Oxides as Next-Generation Cathodes for Lithium-Ion Batteries!

10:30 to 10:45

**Senthil Chenrayan** (Energy Engineering, Gyeongsang National University, Jinju, Korea)  
Unraveling the Interplay of Cation-disorder and Solid-state Redox Reaction in High-Entropy  $\text{Li}_{1+x}\text{M}'_x\text{M}''_{1-2x}\text{O}_2$  Li-ion Cathodes

10:45 to 11:00

**Annika Schuer** (Helmholtz-Institute Ulm, Helmholtz-Institute Ulm, Ulm, Germany), Matthias Kuenzel, Dominic Bresser, Stefano Passerini  
Determination of  $\text{Li}_2\text{CO}_3$  and  $\text{LiOH}$  in Lithium Transition Metal Oxides

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Hyukhee Cho** (Department of Mechanical Engineering, Gachon university, Gyeonggi-do, Korea)  
Conductive agent properties in electrode including Ni-rich NCM cathode for improving energy density

11:30 to 11:45

**Tae-Hee Kim** (Dept. of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Jaewook Shin, Saad A. Mohamed, Jihan Kim, HyeonMook Kang, YongJu Lee, GyuSeong Hwang, EunAe Cho  
Diffusion-Induced Dislocation as a Key Factor for Degradation of High-Ni Cathode Materials for Li-Ion Batteries

11:45 to 12:00

**Matthias Kuenzel** (Helmholtz Institute Ulm, Karlsruhe Institute of Technology, Ulm, Germany), Vidur Kumar, Arefeh Kazzazi, Dominic Bresser, Stefano Passerini  
Stabilized Interfaces in Sustainable High-Voltage Lithium-Batteries

12:00 to 12:15 Invited

**Hochun Lee** (Energy Science & Engineering, DGIST, Daegu, Korea), Seokbum Kang, Chang-eui Yang  
Crystalline Organic Electrolytes for Safe, Room-Temperature Operable Li and Na Batteries

12:15 to 12:30

**Lea Droguet** (Chaire de Chimie du solide et de l'energie, College de France, Paris, France), Olivier Fontaine, Gustavo Hobold, Betar Gallant, Jean-Marie Tarascon, Alexis Grimaud  
Instability of inorganic-based SEI in superconcentrated aqueous electrolyte

12:30 to 12:45

**Andrew Wang** (Engineering Science, University of Oxford, Oxford, United Kingdom), Samuel Greenbank, David Howey, Charles Monroe  
Macroscopic Effects of Preferential Electrolyte Co-solvation

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Paloma Almodovar

10:00 to 10:30 Keynote

**Sang-Young Lee** (Department of Chemical and Biomolecular Engineering, Yonsei University, Seoul, Korea)

Printed Artistic Power Sources for IoT Era

10:30 to 10:45

**Min Young Shin** (Nano Technology and Advanced Materials Engineering, Sejong University, Seoul, Korea), Natalia Voronina, Hee Jae Kim, Seung Taek Myung  
Effects of Ni Doping on Oxygen Redox Based Layered Cathode Materials for Sodium Ion Batteries

10:45 to 11:00

**Guanchen Li** (Department of Engineering Science, University of Oxford, Oxford, United Kingdom), Charles Monroe  
Lithium-Ion Transport Near the Interface Between a Solid Electrode and a Fully Ionic Liquid Electrolyte

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Hyojun Lim** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea)  
Heterointerface Design of Hierarchical MoS<sub>2</sub>/ Silicon Oxycarbide Anode for Sodium-Ion Storage

11:30 to 11:45

**Moony Na** (Chemistry, KAIST, Daejeon, Korea)  
Associations of Zn<sup>2+</sup> and H<sup>+</sup> during Energy Storage Process with Molecular Electrodes for Aqueous Zn-ion Batteries

11:45 to 12:00

**Long Nguyen** (Future Convergence Technology, Soonchunhyang university, Asan-si, Korea), SooHyeon Sin  
Nb/Al- Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> composite solid polymer electrolyte for all-solid-state lithium batteries

12:00 to 12:15

**Sunwook Kim** (Mechanical Engineering, Gachon university, Seongnam, Korea), Kyoungmin Min  
Y-doped P2-type Na<sub>0.67</sub>Ni<sub>0.33</sub>Mn<sub>0.67</sub>O<sub>2</sub>: A sodium-ion battery cathode with fast charging and enhanced cyclic performance

12:15 to 12:30

**Syam Kandula** (Soft Hybrid Materials Research Center, Korea Institute of Science and Technology (KIST), Seoul, Korea)  
Synthesis of FeS<sub>2</sub>@C Nanoboxes Encapsulated in rGO/SWCNT Network as an Effective Anode Material for Na-ion Batteries

12:30 to 12:45

**Kwan Woo Nam** (Department of Chemical Engineering and Materials Science, Ewha Womans University, Seoul, Korea)  
Hydration Effects and Emerging Materials for Divalent Batteries

s09 Understanding and application of fast storage processes (Supercapacitors & high power systems)  
Room : R07 - 202 A + B (150)  
Chairman : Sung-Kon Kim; Wataru Sugimoto

10:00 to 10:30 Keynote

**Soshi Shiraishi** (Graduate School of Science and Technology, Gunma University, Kiryu, Japan)  
New Developments in Electrochemical Capacitors Using Classic Carbon Materials

10:30 to 10:45

**Elzbieta Frackowiak** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Adam Slesinski, Justyna Piwek, Krzysztof Fic, Alen Vizintin, Blaz Tratnik, Maria Bernechea, Robert Dominko, Elzbieta Frackowiak  
High Frequency Response of Nitrogen-rich Carbon Electrodes in Aqueous Electrochemical Capacitor

10:45 to 11:00

**Lorenzo Migliorini** (Physics Department, University of Milan, Milano, Italy), Paolo Milani  
Supersonic cluster beam deposition of green micro-supercapacitors on biodegradable materials

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Malinee Niamlaem** (-, Institut Charles Gerhardt-UMR 5253, University of Montpellier, Montpellier, France), Yachao Zhu, Dodzi Zigah, Olivier Fontaine

Cavity Microelectrode loaded with Activated Carbon for Highly Scan Rate Supercapacitors

11:30 to 11:45

**Minju Thomas** (Department of Chemistry and chemical Technology (CTC), University of Calabria, Rende, Italy), Francesco Lufrano, Isabella Nicotera

Rapid Synthesis of Ordered Mesoporous Carbon and Application in Batteries and Supercapacitors

11:45 to 12:00

**Daisuke Takimoto** (Department of Chemistr, University of the Ryukyus, Nishihara, Japan), Keisuke Suzuki, Sho Hideshima, Wataru Sugimoto

Unusual redox behavior of quinone-derivative in the micropore of activated carbon

12:00 to 12:15

**Miranda Ndipingwi** (Chemistry, University of the Western Cape, Cape town, South Africa), Chinwe Ikpo, Precious Ekwere, Christopher Nolly, Emmanuel Iwuoha

Vanadia-Hydroxylated Graphene Nanohybrids as High Specific Energy Electrodes for Asymmetric Supercapacitors

12:15 to 12:30

**Seyed Esmaeil Mohammadi Pourhosseuni** (Chemistry, Poznan university of thecnology, Poznan, Poland), Paula Ratajczak, Annika Bothe, Andrea Balducci, François Beguin

Electrochemical performance of EDLCs in organic electrolyte with various electrode binders

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Sang Hoon Joo

10:00 to 10:15

**Yao Yang** (Department of Chemistry and Chemical Biology, Cornell University, Ithaca, USA), Héctor Abruña

Operando X-ray Spectroscopy of Synergistic Co&#8722;Mn Spinel Oxides as Oxygen Reduction Electrocatalysts in Alkaline Fuel Cells

10:15 to 10:30

**Yun Wu** (Department of Materials Science and Engineering, Guangdong University of Petrochemical Technology, Maoming, China), Azhagamuthu Muthukrishnan, Shinsuke Nagata, Yuta Naba

Quantification of kinetic rate constants of oxygen reduction reaction pathways over Pt-free electrocatalysts

10:30 to 10:45

**Fatma Abdelghafar** (School of Molecular and Life Sciences, Curtin University, Benetly, Australia)

Exploiting cobalt boride nanoflakes as bifunctional electrocatalysts for overall water splitting

10:45 to 11:00

**Qinglan Zhao** (Department of Chemical and Biological Engineering, Hong Kong University of Science and Technology, Hong Kong, China), Minhua Shao

High-Rate and Sustainable Production of Hydrogen Peroxide on Co-N-C Single-Atom Electrocatalysts in Simulated Seawater

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Zidong Wei** (School of Chemistry and Chemical Engineering, Chongqing University, Chongqing, China)  
Electrochemical Catalysis from the Mesoscale Perspective

11:30 to 11:45

**Xiaojing Cheng** (Institute of Fuel Cells, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China), Junliang Zhang  
New insight into the interplay between carbon support morphology and oxygen transport behavior in CCLs of PEMFCs

11:45 to 12:00

**Ricardo A. Escalona-Villalpando** (División de Investigación y Posgrado, Facultad de Ingeniería, Universidad Autónoma de Queretaro, Queretaro, Mexico)  
Increase in the Performance of a Microfluidic Glucose Biofuel Cell Connected in Series/Parallel Configurations

12:00 to 12:15

**Deli Wang** (School of Chemistry & Chemical Engineering, Huazhong University of Science & Technology, , China), Tonghui Zhao, Mingxing Gong, Tao Shen  
Electrocatalysis on Structure Ordered Intermetallics

12:15 to 12:30

**Wei Chen** (Department of Chemical Physics, University of Science and Technology of China, Hefei, China), Yan-Xia Chen  
pH effect of ORR and its implication on ORR mechanism

12:30 to 12:45

**Jiaye Chen** (School of Mathematics and Physics, University of Science and Technology Beijing, Beijing, Beijing, China)  
Revisiting Ir/TiO<sub>2</sub> catalyst to maximize iridium utilization for Oxygen Evolution Reaction

s15 Anodization and Its Applications in Environmental and Energy Research

Room : R04 - Samda A (100)

Chairman : Kiyoun Lee

10:00 to 10:30 Keynote

**Sungmo Moon** (Surface Materials Division, Korea Institute of Materials Science, Changwon, Korea)  
Plasma Electrolytic Oxidation of Metals

10:30 to 11:00 Keynote

**Junghoon Lee Lee** (Metallurgical Engineering, Pukyong National University, Busan, Korea), Jei-Pil Wang, Donghyun Kim, Hyunsik Kim  
Multifunctional Surface of Oil-Impregnated Nanoporous Anodic Oxide of Metals

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Juseok Kim** (Surface Materials Division, Korea Institute of Materials Science, Changwon, Korea), Heon-Cheol Shin, Sungmo Moon  
PEO Films Formed on Inner Surface of AA7050 Tube by Electrolyte Spray Method

11:30 to 11:45

**Duyoung Kwon** (Surface Materials Division, Korea Institute of Materials Science, Changwon-si, Korea),  
Sungmo Moon, Pungkeun Song  
Effect of Pretreatment on PEO Film Formation Behavior of AZ91 Mg Alloy

*11:45 to 12:00 Invited*

**Liaoyong Wen** (School of Engineering, Westlake University, Hangzhou, China)  
Unconventional AAO template guided binary nanostructuring and its emerging applications

*12:00 to 12:15*

**Hien Pham Van** (Surface Materials Division, Korea Institute of Materials Science, Changwon, Korea),  
Sungmo Moon, Sungmo Moon  
Effect of Electrolyte Composition on Dielectric Breakdown of Anodic Oxide Film on Pure Aluminum

*12:15 to 12:30*

**Jaewon Lee** (Department of Advanced Science and Technology Convergence, Kyungpook National University, Sangju, Korea), Kiyong Lee, Sanghyeon Moon  
Photoelectrochemical properties according to the morphology and oxygen vacancy of anodic TiO<sub>2</sub> nanostructures

s18 Bringing Biomolecules and Electrodes together: Understanding Electron Transport in Life  
Room : R11 - 303 (100)  
Chairman : Yang-Rae Kim; Haesik Yang

*10:00 to 10:30 Keynote*

**Stuart Lindsay** (Center for Single Molecule Biophysics, Arizona State University, Tempe, USA)  
Protein Electronics

*10:30 to 10:45 Invited*

**Haesik Yang** (Department of Chemistry, Pusan National University, Busan, Korea)  
Indium Tin Oxide Electrodes for Selective Electron Transfer between an Electrode and an Enzyme

*10:45 to 11:00*

**Yang-Rae Kim** (Department of Chemistry, Kwangwoon University, Seoul, Korea)  
Tunable Electrochemical Grafting of Diazonium for Bioconjugation

*11:00 to 11:15*

Coffee Break

*11:15 to 11:30 Invited*

**Magdalena Hromadova** (Electrochemistry at the Nanoscale, J. Heyrovsky Institute of Physical Chemistry of the CAS, Prague, Czech Republic)  
Quantum Interference Effect in Single Molecule Junctions Containing Parallel Aliphatic Bridges

*11:30 to 11:45*

**Lubomir Pospisil** (Electrochemistry at nano scale, J. Heyrovsky Inst. of Physical Chemistry, Prague, Czech Republic)  
Pyridine Terminated Molecular Rods: Conformational Flexibility and Electron Transfer

*11:45 to 12:00*

**Junyang Liu** (Chemical and Biochemical Engineering, Xiamen University, Xiamen, China), Dahai Zhou, Ping Duan, Yu Zhou, Qian-Chong Zhang, Zhong-Ning Chen, Wenjing Hong  
Single-molecule Electrical Measurement in Strong Polar Solvent Environment using Dielectric Layer Coated Tip

*12:00 to 12:15*



**Yang Yang** (Pen-Tung Sah Institute of Micro-Nano Science and Technology, Xiamen University, Xiamen, China), Shiqiang Zhao, Yuling Zou, Yang Yang, Colin Lambert, Wenjing Hong  
Cross-Plane Transport through Single-Molecule Van Der Waals Heterojunctions

12:15 to 12:30 *Invited*

**Albert C. Aragonès** (Molecular Spectroscopy Department, Max Planck Institute for Polymer Research, Mainz, Germany), Katrin F. Domke  
Electrochemical-gated Plasmonic molecular traps

12:30 to 12:45

**Nicolas Plumeré** (Campus Straubing for biotechnology and sustainability, Technical University Munich, Straubing, Germany)  
Protecting Hydrogenases for Energy Conversion

s19 Physicochemical and Mechanistic Aspects of Organic Electrosynthesis

Room : R12 - 401 (100)

Chairman : Hai-Chao Xu

10:00 to 10:30 *Keynote Invited*

**Christopher Sandford** (Department of Chemistry, Institut Català d'Investigació Química, Tarragona, Spain), Tyler Ball, Lydia Fries, David Hickey, Tianhua Tang, Matthew Sigman, Shelley Minter  
Developing Global Models to Predict Mechanisms in Organometallic Electrocatalysis

10:30 to 10:45

**Hai-Chao Xu** (Chemistry, Xiamen University, XIAMEN, China)  
Electrochemically Driven Radical Reactions: From Molecular Electrocatalysis to Molecular Photoelectrocatalysis

10:45 to 11:00

**Jan Svoboda** (Molecular electrochemistry and catalysis, J. Heyrovsky Institute of Physical Chemistry of the CAS, Prague, Czech Republic), Ludmila Simkova, Jiri Ludvik  
Electrophotocatalytic reduction of aryl halides by selected flavin derivatives

11:00 to 11:15

Coffee Break

11:15 to 11:30 *Invited*

**Carlos Frontana** (Dirección de Ciencia, CIDETEQ SC, Pedro Escobedo, Mexico), Jorge Antonio Rodriguez-Nunez, Georgina Armendariz-Vidales  
Have substituents become chemically negligible? Electron-transfer entropy changes in o-nitrobenzyl alcohol derivatives

11:30 to 11:45

**De-Yin Wu** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), Hang Shi, Christian Amatore, Zhong-Qun Tian  
Electrochemical Reduction, Electrocatalytic Effect, and Surface-Enhanced Raman Spectral Chemical Enhancements of Benzyl Chloride at Silver Cathodes

11:45 to 12:00

**Karolína Salvadori** (Molecular Electrochemistry and Catalysis, J. Heyrovský Institute of Physical Chemistry of the CAS, Prague, Czech Republic), Ludmila Simkova, Pavel Matejka, Petra Curínová, Jirí Ludvík  
Electrochemical investigation of ureido-sulfonamidic receptors, supramolecular structures for binding phosphates.

12:00 to 12:15

**Ji Yong Kim** (Chemistry, Seoul National University, Seoul, Korea), Samuel Jaeho Shin, Sun-Heui Yoon, Sang Hyun Lee, Taek Dong Chung

Thin-layer Electrode Microchip for Accurate Determination of n in Electrochemical Organic Reactions

12:15 to 12:30

**Jirí Ludvík** (Molecular electrochemistry and catalysis, J. Heyrovský institute, Praha 8, Czech Republic), Lucie Koláčná, Tomáš Tobrman, Alan Liska

Pentasubstituted Phospholes with Extended pi-Conjugated Arm for Organic Electronics

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Ivan T. Lucas

10:00 to 10:15 Invited

**Beatriz Roldan Cuenya** (Department of Interface Science, Fritz Haber Institute of the Max Planck Society, Berlin, Germany)

Operando Structural and Chemical Evolution of Nanostructured Electrocatalysts

10:15 to 10:30 Invited

**Nuria Garcia-Araez** (Chemistry, University of Southampton, Southampton, United Kingdom), J. Padmanabhan Vivek, Niamh Ryall

Operando pressure measurements of Li-ion battery materials

10:30 to 10:45

**Alex Neale** (Stephenson Institute of Renewable Energy, University of Liverpool, Liverpool, United Kingdom), David Costa Milan, Filipe Braga, Igor Sazanovich, Laurence Hardwick

Operando Kerr Gated Raman Spectroscopic Investigations of Lithium-ion Intercalation Processes

10:45 to 11:00 Invited

**Rui Wen** (CAS Key Lab of Molecular Nanostructure and Nanotechnology, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China)

In Situ AFM Investigations of the Electrochemical Interfaces in Lithium Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30 Invited

**Shuji Nakanishi** (Research Center for Solar Energy Chemistry, 1-3 Machikaneyama, Toyonaka, Japan)

Combined analysis using on-line DEMS, EIS and Nano-SIMS for discharge/charge reactions in aprotic Li-O<sub>2</sub> batteries

11:30 to 11:45

**Heng-Liang Wu** (Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan)

Electrochemical FTIR Spectroscopy Studies of Electrochemical CO<sub>2</sub> Reduction on Cu Electrodes

11:45 to 12:00

**Laurence Hardwick** (Chemistry, University of Liverpool, Liverpool, United Kingdom), Julia Fernandez Vidal, Thomas Galloway, Gary Attard

Electrochemical and spectroscopic investigations of O<sub>2</sub> adsorption on Pt single crystal electrodes in non-aqueous alkali metal ion electrolytes

12:00 to 12:15

**Tatsuo Horiba** (Material and Life Science, Seikei University, Musashino, Japan)

LiBr-coated air electrodes for lithium-air batteries

12:15 to 12:30

**Ken-ichi Inoue** (Department of Chemistry, Tohoku University, Sendai, Japan), Shiori Shinozaki, Aimin Ge, Shen Ye

Quantitative Evaluation of Singlet Oxygen in Lithium-Oxygen Battery

s21 Electrochemical Solar Energy Conversion and Storage: from Fundamentals to Applications

Room : R09 - 301 (80)

Chairman : David J. Fermin; Hyunwoong Park; Yuyin Tong

10:00 to 10:30 Keynote

**Kazuhiro Takanabe** (Department of Chemical System Engineering, The University of Tokyo, Tokyo, Japan)

Nanomembrane Decoration on Electrocatalyst Enables Selective Hydrogen or Oxygen Evolution Applicable to Photocatalytic Overall Water Splitting

10:30 to 10:45 Invited

**Wonyong Choi** (Division of Environ. Sci. Eng., Pohang Univ. of Sci. Technol. (POSTECH), Pohang, Korea), Tae Hwa Jeon

Photoelectrochemical Production of H<sub>2</sub>O<sub>2</sub> as a Solar Chemical

10:45 to 11:00

**Hyo Eun Kim** (Energy Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea), Youn Jeong Jang

Photoelectrochemical Nitrate Reduction to Ammonia on Ordered Silicon Nanowire Photocathodes

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Yuankai Li** (School of Chemical Engineering, Sungkyunkwan University (SKKU), Suwon, Korea), Jung Kyu Kim

Facile Surface Treatment in WO<sub>3</sub> for High Enhancement of Photoelectrochemical Water Oxidation

11:30 to 11:45

**Hyunwoong Park** (School of Energy Engineering, Kyungpook National University, Daegu, Korea), Tae Hwa Jeon, Wonyong Choi

Unrecognized Role of Ag(I) Ions Working as a Hole Transfer Mediator in Photoelectrochemical Water Oxidation on WO<sub>3</sub> Film

11:45 to 12:00

**Hafiz Ghulam Abbas** (Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea)

Arsenic Carbide Allotropes Prediction: An Efficient Platform for Hole-Conductions, Optical and Photoelectrocatalysis Applications

s24 Electrochemistry, Looking Back Looking Forward: Personal Perspectives

Room : R06 - 201 A + B (150)

Chairman : Taek Dong Chung; woonsup shin

10:00 to 10:30 Keynote

**Wolfgang Schuhmann** (Analytical Chemistry - Center for Electrochemical Sciences, Ruhr University Bochum, Bochum, Germany)

From solar energy conversion via biosensors and nanoelectrochemistry to electrocatalysis

10:30 to 11:00 Keynote

**Philip Bartlett** (Chemistry, University of Southampton, Southampton, United Kingdom)

Looking in the rearview mirror - a personal perspective

11:00 to 11:15

Coffee Break

11:15 to 11:45 Keynote

**Christopher Brett** (Department of Chemistry, CEMMPRE, University of Coimbra, Coimbra, Portugal)

Reflections on Electrochemistry and ISE: from the Past to the Future

11:45 to 12:15 Keynote

**Juan M. Feliu** (Institute of Electrochemistry, University of Alicante, Alicante, Spain)

Memories of ISE

12:15 to 12:45 Keynote

**Plamen Atanassov** (Chemical & Biomolecular Engineering, University of California Irvine, Irvine, USA)

Looking through the Books of Papers: Traces of the Past that Chart the Future

s25 General Session

Room : R10 - 302 (80)

Chairman : Byung-Kwon Kim; Seong Jung Kwon

10:00 to 10:15

**Eunji Kwak** (Intelligent Energy and Industry, Chung-Ang University, Seoul, Korea), Jun-hyeong Kim

Different Thermal Runaway Pathways Depending on The Design of Lithium-ion Batteries

10:15 to 10:30

**Geunsu Bae** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Haesol Kim, Chang Hyuck Choi

A Comprehensive Method for Quantification of Active Site Density and Turnover Frequency: from Single-Atom Metal to Nanoparticle Electrocatalysts

10:30 to 10:45

**Haesol Kim** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwang-ju, Korea), Chang Hyuck Choi

Identification of single-atom Ni site active towards electrochemical CO<sub>2</sub> conversion to CO

10:45 to 11:00

**Sang Gu Ji** (Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Chang Hyuck Choi

Significance of evaluating intrinsic activity of electrocatalysts

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Jun-Hyeong Kim** (Intelligent Energy and Industry, Chung-Ang University, Seoul, Korea), Eunji Kwak, Ki-Yong Oh

Degradation assessment and prognosis for lithium-ion batteries through a multi-states Markov chain model

11:30 to 11:45

**Jung-Eun Cha** (Fuel Cell Research & Demonstration Center, , Buan, Korea), Young-Woo Choi, Won Bae Kim, Min Ho Seo

On determination of the ion transport numbers for cation exchange membranes by using single-junction electrodes

11:45 to 12:00

**Gerardo Salinas** (Bordeaux INP, University of Bordeaux, Pessac, France), Alice L. Dauphin, Ileana-Alexandra Pavel, Camille Colin, Silvia Voci, Elena Villani, Adeline Perro, Stéphane Arbault, Laurent Bouffier, Neso Sojic, Alexander Kuhn

Self-propelled electrochemical light emitting systems: from chemo-electronic to chemiluminescent swimmers

12:00 to 12:15

**Kim Degn Jensen** (Department of chemistry, University of Copenhagen, kbh Ø, Denmark), Kim Degn Jensen, Alexander Bagger, Amanda Schramm Petersen, Hao Wan, Jan Rossmeisl, María Escudero-Escribano

Electrolyte Influence on Single Crystal Voltammograms

12:15 to 12:30

**Yi-Cheng Shih** (Institute of Biomedical engineering, National YangMingChiaoTung, HsinChu, Taiwan), Lung Yi Chen, Yi-Pei Li, Tzu-En Lin

The Study of the Antioxidants in Red Wine by CuO Nanoparticles Modified Electrode

12:30 to 12:45

**Chih-Ning Tsai** (Institute of Biomedical Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan), Lung-Yi Chen, Yi-Pei Li, Tzu-En Lin

Quality prediction of red wine using machine learning algorithms and cyclic voltammetry

Thursday 2 September 2021 - PM

s02 Functional Surfaces and Electrochemically Active Materials: Preparation and Applications

Room : R05 - Samda B (100)

Chairman : Wojciech Nogala; Lidija Rafailovic

16:00 to 16:15

**Reitumetse Nkhahle** (Chemistry, Rhodes University, Makhanda, South Africa), Tebello Nyokong  
A Comparative Study on Symmetrical and Asymmetrical Cardanol-based Cobalt Phthalocyanines

16:15 to 16:30

**Wojciech Nogala** (Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Anita Cymann-Sachajdak, Joanna Celej, Zuzanna Zarach, Jakub Kalecki, Bhavana Gupta, Steven Linfield, Piyush S. Sharma, Monika Wilamowska-Zawlocka, Wojciech Nogala  
Heterogeneous Activity Distribution on ITO and FTO Electrodes

16:30 to 16:45

**Krzysztof Noworyta** (Research Group of Functional Polymers, Institute of Physical Chemistry Polish Academy of Sciences, Warsaw, Poland), Jyoti Yadav, Renata Rybakiewicz-Sekita, Evgenia Dmitrieva, Teresa Zolek, Dorota Maciejewska, Włodzimierz Kutner  
Mechanistic Aspects of the Electrochemical Polymerization of the Selected Carbazole-based Monomers

16:45 to 17:00

**Lien Pacquets** (faculty of applied engineering, university of Antwerp, Wilrijk, Belgium), Daniel Choukroun, Nick Daems, Sara Bals, Tom Breugelmans  
Tuning Cu@Ag core-shell nanoparticles for the conversion of CO<sub>2</sub> towards CO

17:00 to 17:15

**Suganya Pitchai Muthusamy** (Applied science, Dundalk Institute of Technology, Dundalk, Ireland), Indherjith Sakthinathan, Tadaharu Ueda  
Electrochemical studies of Dawson type Polyoxometalate [(n-C<sub>3</sub>H<sub>7</sub>)<sub>4</sub>N]<sub>2</sub>S<sub>2</sub>W<sub>18</sub>O<sub>62</sub> /Ag-nanoparticle hybrid thin films formed by layer-by-layer deposition

17:15 to 17:30

**Jonathan Quinson** (Chemistry, University of Copenhagen, Copenhagen, Denmark), Francesco Bizzotto, Masanori Inaba, Maria Escudero-Escribano, Matthias Arenz  
Surfactant-free syntheses for improved electrocatalysts studies and design

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Lidija Rafailovic** (Functional Interfaces and Surfaces, CEST, Center of Electrochemical Surface Technology, Wiener Neustadt, Austria), Jana Bischoff, Larisa Balc, Carmen Vladu, Huaping Sheng, Christoph Gammer  
Electrospun PAN nanofibers on Al foil surface functionalized by Ag nanodendrites

18:00 to 18:15

**Kubra Saka** (Department of Electrical and Electronics Engineering, Hacettepe University, Ankara, Turkey), Tolga Akca, Kadir Pekmez, Dincer Gokcen  
Electroless Deposition of Copper on PLA-based Filament

18:15 to 18:30

**Indherjith Sakthinathan** (Applied Science, Dundalk Institute of Technology, Dundalk, Ireland), Timothy McCormac

Layer by Layer construction of Nano architecture by Polyoxometalates and Conducting Polymer:  
Enhanced electrochemical Hydrogen Evolution Reaction

18:30 to 18:45

**Sweety Ann Samuel** (Chemistry, Carl von Ossietzky University of Oldenburg, Lower Saxony, Germany), Gunther Wittstock

Diazonium based bilayer matrix for size selective recognition of nanoparticles

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Ezequiel Leiva

16:00 to 16:15

**Bernhard Gollas** (Institute for Chemistry and Technology of Materials, Graz University of Technology, Graz, Austria), Sandra Steiner, Philipp Materna, David Moser, Gerald Kothleitner, Martin Sterrer, Attila Csik

Electrochemical Behavior of Aluminium Anodes in Secondary Batteries with a Chloroaluminate Deep Eutectic Electrolyte

16:15 to 16:30

**Dirk Henkensmeier** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Yongchai Kwon, Kobra Azizi, Hans Aage Hjuler

PBI based Membranes for Redox Flow Batteries

16:30 to 16:45

**Sunky Park** (Solids Chemistry and Materials Science, University of Picardy Jules Verne, Amiens, France), Jean-Noël Chotard, Dany Carlier, Iona Moog, Mathieu Duttine, Antonella Iadecola, François Fauth, Laurence Croguennec, Christian Masquelier

Sodium Insertion/Extraction Mechanism and Evolution of Local Environments in Fe/V-mixed NASICON Positive Electrode Materials for Na-ion Batteries

16:45 to 17:00

**Minjeong Shin** (School of Chemistry and Energy, Sungshin Women's University, Seoul, Korea), Andrew Gewirth

High Performance All-Solid-State Li-S Battery Enabled by Interfacial Modification

17:00 to 17:15

**Natalia Voronina** (Department of NanoTechnology and Advanced Materials Engineer, Sejong University, Seoul, Korea), Seung-Taek Myung

A New Approach to Stable Cationic and Anionic Redox Activity in O3-Layered Cathode for Sodium-Ion Batteries

17:15 to 17:30

**Cedrik Wiberg** (Department of Mechanical and Materials Engineering, University of Turku, Turku, Finland), Mahdi Moghaddam, Silver Sepp, Pekka Peljo

Experimental Studies of Solid Boosters in Aqueous Organic Redox Flow Batteries

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Ruijie Ye** (Institute of Energy and Climate Research (IEK-1), Forschungszentrum Juelich GmbH, Juelich, Germany), Martin Ihrig, Martin Finsterbusch, Egbert Figgemeier

Sustainable Fabrication of Garnet-Based Solid-State Lithium Battery

18:00 to 18:15

**Jun Ho Yu** (Nanotechnology and Advanced Materials Engineering, Sejong University, Seoul, Korea),  
Chang-Heum Jo, Hee-Jae Kim, Seung-Taek Myung  
Promising Sodium Storage of Bismuthinite by Conversion Chemistry

18:15 to 18:30

**Xaver Lamprecht** (Physics, Chair of Energy Conversion and Storage, Technische Universitaet Muenchen (TUM), Munich, Garching, Germany), Rohit Ranganathan Gaddam, Aliaksandr Bandarenka  
Mechanistic Insights into Ultra-Fast Charging Aqueous Sodium Ion Batteries Based on Electrodeposited Prussian Blue Analogues

s09 Understanding and application of fast storage processes (Supercapacitors & high power systems)  
Room : R07 - 202 A + B (150)  
Chairman : Sonia Dsoke; Sung-Kon Kim

16:00 to 16:30 Keynote

**Yury Gogotsi** (Department of Materials Science and Engineering, Drexel University, Philadelphia, USA),  
Tyler S. Mathis, Xuehang Wang  
Charge storage in two-dimensional transition metal carbides (MXenes)

16:30 to 16:45 Invited

**Thierry Brousse** (Institut des Materiaux Jean Rouxel (IMN), Universite de Nantes, CNRS, Nantes, France), Etienne Le Calvez, Kevin Robert, Marielle Huve, Maya Marinova, Pascal Roussel, Laurent Fugere, Dimitri Yarekha, Olivier Crosnier, Camille Douard, Christophe Lethien  
Investigating the effects of implanted ions on the electrochemical behavior of vanadium nitride pseudocapacitive thin film electrode

16:45 to 17:00

**Wataru Sugimoto** (Research Initiative for Supra-Materials (RISM), Shinshu University, Ueda, Japan),  
Kana Ito, Sho Hideshima  
Charge Storage Mechanism of MnO<sub>2</sub> in Neutral Electrolyte – A rotating disk electrode study

17:00 to 17:15

**Mário Almeida** (Departamento de Engenharia Química - DEQ, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, , Lisboa, Portugal), A. A. Más, T. M. Silva, M.F. Montemor  
From manganese oxide to manganese sulphide: synthesis and its effect on electrochemical energy storage performance

17:15 to 17:30

**Julio Cesar Espinosa-angeles** (Institut des Materiaux Jean Rouxel, University of Nantes, Nantes, France), Olivier Crosnier, Eric Quarez, Douard Camille, Thierry Brousse  
Electrochemical study of tungsten bronzes AxWO<sub>3</sub> (A = Li, Na, and K) as electrode materials for fast energy storage devices

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Jianren Wang** (LCPME, University of Lorraine-CNRS, Nancy, France), Neus Vilà, Alain Walcarius  
Redox-Active Vertically-Aligned Mesoporous Silica Thin Films as Transparent Surfaces for Energy Storage Applications

18:00 to 18:15

**Eshagh Noormohammadi** (Department of Chemistry “Giacomo Ciamician”, University of Bologna, Bologna, Italy), Eshagh Noormohammadi, Federico Poli, Sohrab Sanjabi, Francesca Soavi  
Electrodeposition of Cobalt-Copper mixed oxides decorated with metal ion doped conductive polymers for supercapacitor electrodes



18:15 to 18:30

**Catarina Alves** (Chemical Engineering Department, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal), Jorge Correia, Fátima Montemor

Synthesis of manganese oxide birnessite: the effect of cations on the pseudocapacitive behaviour of  $\gamma$ -MnO<sub>2</sub>

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

16:00 to 16:15

**Dominik Wielend** (Institute of Physical Chemistry, Johannes Kepler University Linz, Linz, Austria), Hannah Rabl, Serpil Tekoglu, Hathaichanok Seelajaroen, Helmut Neugebauer, Nikolas Heitzmann, Dogukan Hazar Apaydin, Markus Clark Scharber, Niyazi Serdar Sariciftci

The study of oxygen reduction reactions with carbon based electrode materials: problems and solutions using rotating electrodes

16:15 to 16:30

**Lucia Mazzapioda** (Chemistry, Sapienza, University of Rome, Rome, Italy), Gabriele Moscatelli, Carmelo Lo Vecchio, Vincenzo Baglio, Maria Assunta Navarra

Enhancing Oxygen Reduction Reaction Catalytic Activity using Non-stoichiometric Metal Oxide Particles as Cathode Component in PEM Fuel Cells

16:30 to 16:45

**Hongxin Ge** (PERSEE, MINES ParisTech, PSL University, Sophia Antipolis, France), Sandrine Berthon-Fabry, Frédéric Jaouen, Frédéric Marillard, Kavita Kumar, Nicolas Bibent, Laetita Dubau

Fe-N-Carbon Aerogel Catalysts with Enhanced Mass Transfer Property in Proton Exchange Membrane Fuel Cells

16:45 to 17:00

**Armin Hrnjic** (Department of Materials Chemistry D10, Hajdrihova 19, Ljubljana, Slovenia), Armin Hrnjic, Ana-Rebeka Kamsek, Andraz Pavlisic, Francisco Ruiz-Zapeda, Matija Gatalo, Leonard Moriau, Primoz Jovanovic, Nejc Hodnik

Atomic-scale Structure-Stability Characterization of Pt-Co/C Nanocatalyst for Oxygen Reduction Reaction Using Modified Floating Electrode Identical Location Transmission Electron Microscope Methodology

17:00 to 17:15

**Vincenzo Baglio** (CNR, Istituto di Tecnologie Avanzate per l'Energia (ITAE), Messina, Italy), Carmelo Lo Vecchio, Antonino Salvatore Arico, Henry Romero, Mikaela Dicome, Barr Zulevi, Alexey Serov

Performance and Durability of Commercial Platinum Group Metal-Free Cathodic Electrocatalysts in Direct Methanol Fuel Cells

17:15 to 17:30

**Marco Mazzucato** (Chemical Science, University of Padova, Padova, Italy), Tomasz Kosmala, Gaetano Granozzi, Christian Durante

Synergistic Effect of Sn(Phen)Cl<sub>2</sub> and Fe(Phen)<sub>3</sub>Cl<sub>2</sub> Precursors on Fe-N<sub>x</sub> Site Formation and Activity in Fe-N-C Catalyst for ORR

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Sabita Bhandari** (Electrochemical Reaction Engineering, Aachener Verfahrenstechnik, Aachen, Germany), Dongyoon Shin, Marc F. Tesch, Shannon A. Bonke, Frederic Jaouen, Sonia Chabbra, Christoph Pratsch, Alexander Schnegg, Anna K. Mechler

The Role of Platinum Species in the Stabilization of FeNC catalysts for PEM Fuel Cells

18:00 to 18:15

**Francesc Valls Mascaró** (Chemistry, Leiden University, Leiden, Netherlands), Jon Bjarke Valbaek Mygind, Marc T. M. Koper, Marcel J. Rost  
Decreasing Catalyst Degradation: Platinum Stability for Fuel Cell Operation

18:30 to 18:45

**Olga A. Krysiak** (Analytical Chemistry, Centre for Electrochemical Sciences, Ruhr University Bochum, Bochum, Germany), Tobias Loeffler, Simon Schumacher, Alan Savan, Corina Andronescu, Alfred Ludwig, Wolfgang Schuhmann  
High-throughput electrochemical characterization of thin-film complex solid solutions electrocatalysts

s15 Anodization and Its Applications in Environmental and Energy Research  
Room : R04 - Samda A (100)  
Chairman : Junghoon Lee

16:00 to 16:30 Keynote

**Patrik Schmuki** (Mat Sci, University of Erlangen-Nuremberg, Erlangen, Germany)  
Formation of TiO<sub>2</sub> Nanotubes and Other Self-Organized Oxide Structures

16:30 to 16:45 Invited

**Jan Macak** (Center of Materials and Nanotechnologies, University of Pardubice, Pardubice, Czech Republic), Hanna Sopha, Raul Zazpe  
Anodic TiO<sub>2</sub> Nanotube Layers: Efficient Photocatalyst and Catalyst Support

16:45 to 17:00

**Ivana Zrinski** (Institute of Chemical Technology of Inorganic Materials, Johannes Kepler University Linz, 4040, Austria), Jan Philipp Kollender, Cezarina Cela Mardare, Achim Walter Hassel, Andrei Ionut Mardare  
Compositional dependent intrinsic defect engineered anodic memristors in wide spread hafnium-tantalum combinatorial library

17:00 to 17:15

**Song-Zhu Kure-Chu** (Materials Function and Design, Nagoya Institute of Technology, Nagoya, Japan), Hikaru Kaai, Xuewen Chen, Yukihiisa Moriguchi, Takashi Matsubara, Takehiko Hihara, Hitoshi Yashiro  
Fabrication and Electrochemical Characterization of TiO<sub>2</sub>-TiN/MoO<sub>x</sub> Composite Films on Ti as High-Performance LIB Anodes

17:15 to 17:30

**Hanna Sopha** (Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic), Jan M. Macak  
New Protocols for the Synthesis of Anodic TiO<sub>2</sub> Nanotube Layers

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Nnamdi Nwahara** (Chemistry, Institute for Nanotechnology Innovation, Rhodes University, Makhanda, South Africa), Omotayo Adeniyi, Philani Mashazi, Tebello Nyokong  
Ternary Heterojunction Assisted Photoelectrocatalytic Degradation of Orange G using Visible Light Responsive TiO<sub>2</sub> - Graphene Oxide Nanosheets - Zn Phthalocyanine

18:00 to 18:15 Invited

**Monica Santamaria** (Dipartimento di Ingegneria, Università degli Studi di Palermo, Palermo, Italy), Andrea Zaffora, Francesco Di Franco, Ilia Valov, Hiroki Habazaki

Role of electrochemical doping on the solid state properties of anodic films on valve metals and valve metal alloys

18:15 to 18:30

**Ana Sofia Gasco Owens** (Chimie et Physique des Solides et des Surfaces (CP2S), Université de Lorraine, CNRS, IJL, Nancy, France), Delphine Veys-Renaux, Emmanuel Rocca  
Cathodic Behavior of Anodic Aluminum Oxide in Sulfuric Acid

s17 Molecular Electroanalysis

Room : R13 - 402 A+B (100)

Chairman : Luigi Falciola

16:00 to 16:15 Invited

**Cyrille Costentin** (Departement de Chimie Moleculaire, Université de Paris et Université Grenoble Alpes, Grenoble, France)

Deciphering Mechanisms of Molecular Catalysis of Electrochemical Reactions and Electrophotocatalysis using Cyclic Voltammetry.

16:00 to 16:30 Keynote

**Alain Walcarius** (LCPME, CNRS - Lorraine University, Villers-les-Nancy, France), Tauqir Nasir, Cheryl Karman, Deomila Basnig, Himanshu Maheshwari, Grégoire Herzog, Neus Vilà, Christelle Despas  
Silica nanochannel membranes for electroanalysis

16:30 to 16:45 Invited

**Eric Bakker** (Department of Inorganic and Analytical Chemistry, University of Geneva, Geneva, Switzerland), Canwei Mao, Kye Robinson, Yoshiki Soda

Thin Membrane Ion Transfer Voltammetry to Probe Ion Interactions

16:45 to 17:00 Invited

**Chiara Zanardi** (Chemical and Geological Sciences, University of Modena and Reggio Emilia, Modena, Italy), Barbara Zanfognini, Laura Pigani, Alessandro Kovtun, Andrea Candini, Andrea Liscio, Laura Favaretto, Manuela Melucci, Vincenzo Palermo, Chiara Zanardi

Role of oxidized functional groups in the electrocatalytic properties of carbon-based nanomaterials

17:00 to 17:15

**Abhishek Kumar** (Chemistry, Institute of Molecular Chemistry, Burgundy University, Dijon, France), Marcel Bouvet, Mauro Bertotti, Rita Meunier-Prest

Interplay of mass transport and surface porosity in nanoporous gold in EC1 reactions: Case of ascorbic acid electrooxidation

17:15 to 17:30

**Sara Grecchi** (Chemistry, Università degli Studi di Milano, Milano, Italy), Serena Arnaboldi, Elisa Emanuele, Tiziana Benincori, Roberto Cirilli, Heinrich Lang, Lorenzo Guazzelli, Francesca Fontana, Simona Rizzo, Patrizia R. Mussini

Wide-scope Enantiodiscrimination at Chiral Electrochemical Interphases: Highlighting structure effects on Probe-Selector Interactions

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Alan Liska** (Department of Molecular Electrochemistry and Catalysis, J. Heyrovsky Institute of Physical Chemistry of the CAS, v.v, Praha, Czech Republic), Philipp Frühwirt, Michael Haas, Jirí Ludvík, Georg Gescheidt-Demner

Voltammetric Behaviour of Polyacylgermanes and Related Compounds

18:00 to 18:15

**Vincenzo Scarano** (Dept. of Basic and Applied Sciences for Engineering, Sapienza University of Rome, Rome, Italy), Francesca D'Anna, Daniele Rocco, Marta Feroci, Salvatore Marullo, Leonardo Mattiello  
Anodic Dimerization and Solvatochromic behavior of Donor-Acceptor Oligothiophenes

18:15 to 18:30

**Monika Charazka** (Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Kamila Lepicka, Jakub Kalecki, Wojciech Lisowski, Piyush Sindhu Sharma  
Ni(OH)<sub>2</sub> Type Nanoparticles Derived from Ni Salen Polymers: Is There Any Effect of the Polymeric Matrix Structure on the Electrocatalytic Performance?

s18 Bringing Biomolecules and Electrodes together: Understanding Electron Transport in Life

Room : R11 - 303 (100)

Chairman : Ismael Diez Perez

16:00 to 16:30 Keynote

**David Cahen** (Faculty of Chemistry, Weizmann Institute of Science, Rehovot, Israel)  
Proteins as Bio-Electronic Materials

16:30 to 16:45 Invited

**Julea Butt** (School of Chemistry, University of East Anglia, Norwich, United Kingdom)  
Biomolecular Wires from Electric Bacteria

16:45 to 17:00

**Zdenek Futera** (Faculty of Science, University of South Bohemia, Ceske Budejovice, Czech Republic)  
Electric Field Effects on Adsorption Structure of Biomolecules on Gold Electrodes

17:00 to 17:30 Keynote

**Richard Nichols** (Department of Chemistry, University of Liverpool, Liverpool, United Kingdom), Andrea Vezzoli, Edmund Leary, Nicola Kay, Samantha Catarelli, Richard Brooke, Nicolo Ferri, Simon Higgins, Walther Schwarzacher, Jens Ulstrup  
Charge Transfer at the Single Molecule Level with Metal and Semiconductor Electrodes

17:30 to 17:45

Coffee Break

17:45 to 18:15 Keynote

**Jens Ulstrup** (Department of Chemistry, Technical University of Denmark, Kgs. Lyngby, Denmark), Christian Engelbrekt, Dmitrii Glukhov, Yueqi Li, Renat R. Nazmutdinov, Shokirbek Shermukhamedov, Zixiao Wang, Xinxin Xiao, Jiawei Yan, Xiaomei Yan, Tamara Zinkicheva  
Single-entity complex molecular and biomolecular electrochemistry

18:15 to 18:30

**Inco Planje** (Department of Chemistry, King's College London, London, United Kingdom), Stephanie Board, Jhanelle White, Tracy Ha, Ismael Díez-Pérez  
Copper-copper electronic communication within a bioengineered azurin dimer mutant

18:30 to 18:45 Invited

**Christian Nijhuis** (Molecules and Materials, University of Twente, Enschede, Netherlands)  
Multi-Functional Molecular Switches in Solid-State Tunnel Junctions

s19 Physicochemical and Mechanistic Aspects of Organic Electrosynthesis

Room : R12 - 401 (100)

Chairman : Hyun Ahn

16:00 to 16:15

**Anna Wuttig** (Chemistry, University of California, Berkeley, Berkeley, USA)  
Controlled Single Electron Transfer via Metal-Ligand Cooperativity Drives Divergent Nickel Electro catalyzed Radical Pathways

16:15 to 16:30

**Rajkumar Devasenathipathy** (chemistry, Xiamen University, Xiamen, China)  
Plasmonic Photoelectrochemical Reactions of Para-Aminobenzoic acid on Nanostructured Gold Electrodes

16:30 to 16:45

**Tána Sebechlebská** (Department of Physical and Theoretical Chemistry, Faculty of Natural Sciences Comenius University in Bratislav, Bratislava, Slovakia), Magdalena Hromadova, Viliam Kolivoska  
Electrochemical Properties of Composite Electrodes – Experiment vs Computational Modeling

16:45 to 17:00

**Ann Cathrin Brix** (Analytical Chemistry - Center for Electrochemical Sciences, Ruhr University Bochum, Bochum, Germany), Steffen Cychy, Martin Muhler, Wolfgang Schuhmann  
Evaluation of non-noble metal-based electrocatalysts for biomass waste stream valorisation by means of in-situ ATR-FTIR spectro-electrochemistry

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Ivan T. Lucas

16:00 to 16:15

**Shangqian Zhu** (Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology, Hong Kong, China)  
A Surface-Enhanced Infrared Absorption Spectroscopic Study of pH-Dependent H and H<sub>2</sub>O Binding Energies on Pt surfaces

16:15 to 16:30

**Marcel Rost** (Huygens-Kamerlingh Onnes Laboratory, Leiden Institute of Physics - Leiden University, Leiden, Netherlands), Leon Jacobse, Francesc Valls Mascaro, Jon Bjarke Valbaek Mygind, Marc Koper  
Pt(111) Oxidation: Spoke Wheels or Spook Wheels

16:30 to 16:45

**Helmut Baltruschat** (Institute of Physical and Theoretical Chemistry, University of Bonn, Bonn, Germany), Inhee Park  
Atomic-scale friction study: Underpotential deposition (UPD) of silver on I-modified Au(111) in aprotic electrolyte

16:45 to 17:00

**Louis Godeffroy** (ITODYS, Université de Paris, Paris, France), Louis Godeffroy, Paolo Ciocci, Anaclet Nsabimana, Mathias Miranda Vieira, Catherine Combellas, Jean-Marc Noël, Jean-François Lemineur, Frédéric Kanoufi  
Deciphering competitive routes for nanoparticle electrodeposition by operando optical monitoring

17:00 to 17:15

**Tanja Geng** (Institute of Electrochemistry, University of Ulm, Ulm, Germany), Sven Zeller, Maximilian U. Cebelin, Ludwig A. Kibler, Timo Jacob  
Electrochemical Deposition of Cu onto Au(111) from Deep Eutectic Solvents

17:15 to 17:30

**Christian Durante** (Chemical Sciences Department, Università degli Studi di Padova, Padova, Italy), Alessandro Facchin

Inverted activity for oxygen reduction reaction between Pt and Fe single-site catalyst: an EC-STM investigation on metal octaethylporphyrins

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Katsuyoshi Ikeda** (Department of Physical Science and Engineering, Nagoya Institute of Technology, Nagoya, Japan)

In-Situ SERS Observation of Low-frequency Vibrations of Plasmon-Driven Chemical Transformations

18:00 to 18:15

**William Cheuquepan** (Analytical Chemistry, University of Burgos, Burgos, Spain), Martin Perez-Estebanez, Sheila Hernandez, Aranzazu Heras, Alvaro Colina

Understanding the interface of Cu and Ag surface in the Electrochemical Surface Oxidation Enhanced Raman Scattering

18:15 to 18:30

**Martin Perez-Estebanez** (Analytical chemistry, Universidad de Burgos, Burgos, Spain), William Cheuquepan, Sheila Hernandez, Jose Vicente Cuevas, Aranzazu Heras, Alvaro Colina

Raman Spectroelectrochemistry Study of Drugs: An EC-SOERS Approach.

18:30 to 18:45

**Johannes M. Hermann** (Institute of Electrochemistry, Ulm University, Ulm, Germany), Mohamed M. Elnagar, Timo Jacob, Ludwig A. Kibler

Application of Cathodically Facetted Gold Electrodes in SER-Spectroscopy

s21 Electrochemical Solar Energy Conversion and Storage: from Fundamentals to Applications

Room : R09 - 301 (80)

Chairman : David J. Fermin; Hyunwoong Park

16:00 to 16:30 Keynote

**Sophia Haussener** (Mechanical Engineering, EPFL, Lausanne, Switzerland)

Modeling, Experimentation and Design for Photo-Electrochemical Devices and Systems

16:30 to 16:45 Invited

**Anna Hankin** (Chemical Engineering, Imperial College London, London, United Kingdom), Brian Tam, Andreas Kafizas, John Alexander, Flurin Eisner, Jenny Nelson

Combined Model of Light and Dark Currents at Semiconductor | Liquid Interfaces

16:45 to 17:00 Invited

**Devendra Tiwari** (Department of Mathematics, Physics & Electrical Engineering, Northumbria University, Newcastle upon Tyne, United Kingdom), Xin Sun, David Fermin

Solution-processed GaFeO<sub>3</sub> photoanodes and BiFeO<sub>3</sub> photocathodes for solar water-splitting

17:00 to 17:15 Invited

**Salvador Eslava** (Chemical Engineering, Imperial College London, London, United Kingdom), Miriam Regue, Ibbi Y. Ahmet, Prince Saurabh Bassi, Andrew L. Johnson, Sebastian Fiechter, Roel van de Krol, Fatwa F. Abdi

Zn doping of Fe<sub>2</sub>TiO<sub>5</sub> Pseudobrookite-Based Photoanodes for improved charge separation and injection efficiencies

17:15 to 17:30

**Shiva Mohajernia** (Department of Materials Science, University of erlangen-nuremberg, Erlangen, Germany), Sina Hejazi, Patrik Schmuki

Single-Atom Photocatalysis: Surface-Defect Engineered TiO<sub>2</sub> Anatase as a Tunable Platform for Hosting Co-catalysts atoms

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Mark Symes** (School of Chemistry, University of Glasgow, Glasgow, United Kingdom)  
Decoupled Electrolysis for Solar Energy Conversion

s24 Electrochemistry, Looking Back Looking Forward: Personal Perspectives

Room : R06 - 201 A + B (150)

Chairman : Taek Dong Chung; woonsup shin

16:00 to 16:30 Keynote

**Zhong-Qun Tian** (Department of Chemistry, Xiamen University, Xiamen, China), Zhong-Qun Tian, Ren Hu, Jun Cheng

My Path with the ISE and Outlook of Electrochemistry

16:30 to 17:00 Keynote

**Tetsuya Osaka** (Research Organization for Nano & Life Innovation, Waseda University, Shinjuku-ku, Japan), Norihiro Togasaki

Prospective View of Battery Energy Systems for Carbon Neutral- Role of Electrochemists -

17:00 to 17:30 Keynote

**Chongmok Lee** (Department of Chemistry & Nanoscience, Ewha Womans University, Seoul, Korea)  
'Electrochemistry That I Know' plus 'Electrochemistry and I'

17:30 to 17:45

Coffee Break

17:45 to 18:15 Keynote

**Woonsup Shin** (Chemistry, Sogang University, Seoul, Korea)

Electrochemistry, My Favorite to Understand Science and Technolgy

18:15 to 18:45 Keynote

**Hasuck Kim** (Department of Energy Science and Engineering, DGIST, Daegu, Korea)

Electrochemistry and ISE-My memories

s25 General Session

Room : R10 - 302 (80)

Chairman : Kyuwon Kim; Jun Hui Park

16:00 to 16:15

**Julie Indiana Phillips** (Molecular and Life sciences, Curtin University, Bentley, Australia), Debbie Silvester, Shinya Azuma, Tadaharu Ueda

Electrochemical Behaviour of a Polyoxometalate in a Range of Ionic Liquids

16:15 to 16:30

**Katharina Mairhofer** (Institute of Chemical Technologies and Analytics, Vienna University of Technology, Vienna, Austria)

A New Design for an Inverted Rotating Disk Electrode Set-Up using Magnetic Coupling

16:30 to 16:45

**Sarah Linden** (Molecular and Life Sciences, Curtin University, Perth, Australia), Damien Arrigan, Alexandra Yeung

## Student Engagement During an Experiment on the Bioelectrochemistry of Cytochrome c

16:45 to 17:00

**Supriya Bhaskaran** (Institute of process engineering, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany), Nicole Vorhauer-Huget, Vikranth Kumar Surasani, Evangelos Tsotsas, Tanja Vidakovic-Koch

Study of the Invasion Patterns in Anodic PTL of Water Electrolyser using Lattice Boltzmann Simulations

17:00 to 17:15

**Giulia Marcandalli** (Leiden Institute of Chemistry, Leiden University, Leiden, Netherlands), Mariana Monteiro, Marc Koper

Electrolyte Buffering species as Oxygen Donor in Electrooxidation Reactions

17:15 to 17:30

**Fangchen Zhen** (Department of Chemistry, University of Rennes, Rennes, France), Corinne Lagrost, Ludovic Paquin, Philippe Hapiot

Electrochemistry Behavior and Electron Transfer Kinetics of Redox Couples (Ferrocene, Ferrocyanide and Quinones) in A Deep Eutectic Solvent

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Aleksandr Bashkatov** (Institute of Fluid Dynamics, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Dresden, Germany), Syed Sahil Hossain, Xuegeng Yang, Gerd Mutschke, Kerstin Eckert

Dynamics of H<sub>2</sub> Bubbles Growing at Microelectrodes

18:00 to 18:15

**Liam Carroll** (School of Physical and Chemical Sciences, University of Canterbury, Christchurch, New Zealand), Caixia Hou, Rodrigo Martinez-Gazoni, Roger Reeves, Martin Allen, Alison Downard

Investigating the Electronic Effects of Surface Modifications On  $\alpha$ -Gallium Oxide Using Synchrotron XPS and Schottky Diode Fabrication

18:15 to 18:30

**Elodie Rousset** (School of Molecular Sciences, University of Western Australia, Perth, Australia), Matteo Piccardo, Robert W. Gable, Massimiliano Massi, Lorenzo Sorace, Alessandro Soncini, Colette Boskovic

Probing Ligand to Metal Charge Transfers in Europium Complexes with Redox-active Ligands

18:30 to 18:45

**Yan B. Vogel** (School of Molecular and Life Sciences, Curtin University, Bentley, Australia), Simone Ciampi

Stationary Bubbles as Redox-Active Entities



Friday 3 September 2021 - AM

p1 Plenary

Room : R01 - Tamna A (1500)

09:00 to 09:50

**Katherine Ayers** (Technology, Nel Hydrogen US, Wallingford, USA)

Development of Large Scale Electrolysis for Energy Applications

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

Chairman : Guanchen Li

10:00 to 10:30 Keynote

**Hee-Tak Kim** (Chemical and Biomolecular Engineering, KAIST, Daejeon, Korea)

Dendrite-free Zn electrodeposition enabled by interfacial engineering for aqueous Zn-based batteries

10:30 to 10:45

**Yong Min Lee** (Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea)

Digital Twin-Driven Structural and Electrochemical Modeling for All-Solid-State Batteries

10:45 to 11:00

**Mukarram Ali** (Next Generation Battery Research Center, Korea Electro-technology Research Institute (KERI), Changwon-si, Korea), Ji-Hyun Yu, You-Jin Lee, Hae-Young Choi, Gumjae Park, Yoon-Cheol Ha  
A Solvent-Exchange Approach Towards Scalable Liquid-Phase Synthesis of Sulfide Solid Electrolytes for All-Solid-State Batteries

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Jeong Keun Ko** (Department of Nano-Technology and Advanced Materials Enginee, Sejong university, Seoul, Korea), Jae Hyeon Jo, Seung Taek Myung

Bi<sub>2</sub>Te<sub>3</sub> carbon composite anode material for Potassium-Ion Batteries

11:30 to 11:45

**Yongku Kang** (Advanced Materials Division, Korea Research Institute of Chemical Technology, Daejeon, Korea), Tien Manh Nguyen, Jungdon Suk

Ni-Rich Layered Li[Ni<sub>x</sub>Co<sub>y</sub>Mn<sub>1-x-y</sub>]O<sub>2</sub> as Cathode Materials for Poly(ethylene oxide)-Based Lithium Polymer Batteries

11:45 to 12:00

**Sojung Koo** (Department of Mechanical Engineering, Kyung Hee University, Yongin-si, Korea), Geon-Hee Yoon, Seung-Ho Yu, Duho Kim

Realizing Reversible Oxygen Redox in Mn-based Sodium Layered Oxides with Improved Cycle stability

12:00 to 12:15

**Tahir Sattar** (Next Generation Battery Research Center, Korea Electrotechnology Research Institute, Changwon, Korea), Bong Soo Jin, Hyun Soo Kim

Enhancing the electrochemical performance of Ni-rich LiNi<sub>0.91</sub>Co<sub>0.06</sub>Mn<sub>0.03</sub>O<sub>2</sub> cathode material by combining Ca doping and phosphate coating for lithium ion batteries

12:15 to 12:30

**Vikram Singh** (Chemistry, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Jaewook Kim, Bora Kang, Joonhee Moon, Sujung Kim, Woo Yoon Kim, Hye Ryung Byon

Azo-integrated Covalent Organic Frameworks as Electrodes for Lithium-ion Batteries

s08 Challenges in Battery Technologies for Advanced and Next-generation Electric Vehicles and Grid Storage

Room : R02 - Halla A (270)

Chairman : Jin-Hong Kim

*10:00 to 10:30 Keynote*

**Sang Cheol Nam** (Cathode materials research group, Research Institute of Industrial Science and Technology, Incheon, Korea), Oh min Kwon, Ji Woong Moon

All-Solid-State Lithium Ion Batteries with Garnet based Oxide and Argpyrodite Sulfide Solid Electrolytes

*10:30 to 10:45 Invited*

**Brian Kim** (R&D Center, CIS Co., Ltd., Daegu, Korea)

Introduction of Business and Technology Strategies of CIS in Battery Industry

*10:45 to 11:00 Invited*

**Duck ki Yoon** (Research Institute, JeongKwan Display Co.,Ltd, Asan-si, Korea)

Inorganic Solid Electrolyte Commercialization Technology and Research on Its Application

*11:00 to 11:15*

Coffee Break

*11:15 to 11:30 Invited*

**Jin-Hong Kim** (Battery Materials Research Center, Research Institute of Industrial Science & Technology (RIST), Pohang, Korea), Hong-Yeul Bae

Development of Ultra-thin Lithium Anode using Electrodeposition Process and Feasibility Study for Drone Application

*11:30 to 11:45 Invited*

**Chang Hoon Lee** (Battery R&D, LG Energy Solution, Seoul, Korea)

Developing and Designing Commercially Viable Li-S Batteries

*11:45 to 12:00 Invited*

**Jin Hyeok Choi** (New & Renewable Energy Laboratory, Korea Electric Power Corporation Research Institute, Daejeon, Korea), Jeongho Lim, Kwangyong Park, Sungeun Lee

Development of the battery technologies for grid storage in KEPCO

s09 Understanding and application of fast storage processes (Supercapacitors & high power systems)

Room : R07 - 202 A + B (150)

Chairman : Krzysztof Fic; Hyung-Seok Kim

*10:00 to 10:30 Keynote*

**Jinping Liu** (SCCELS, Wuhan University of Technology, Wuhan, China)

Integrated thin-film (quasi-)solid-state hybrid supercapacitors

*10:30 to 10:45 Invited*

**Andrea Lamberti** (Department of Applied Science and Technology, Politecnico di Torino, Turin, Italy)

Laser-Induced Graphene as Active Materials for Flexible and Stretchable Micro-Supercapacitors

*10:45 to 11:00*

**Federico Poli** (Department of Chemistry, Alma Mater Studiorum University of Bologna, Bologna, Italy), Carlo Santoro, Ncholu Manyala, Francesca Soavi

Green supercapacitors for MFCs

*11:00 to 11:15*

Coffee Break

11:15 to 11:30

**Thibaud Guillemain** (Institut des Matériaux de Nantes, CNRS, Nantes, France)

All-solid 3D micro-supercapacitors based on MnO<sub>2</sub> and ionogel

11:30 to 11:45

**Heather Andreas** (Department of Chemistry, Dalhousie University, Halifax, Canada), Felicia Licht, Mallory Davis, Adrienne Allison, Jamie Stark

Modeling the Effects of Charge Redistribution and Faradaic Reactions on Electrochemical Capacitor

Figures of Merit

11:45 to 12:00

**Chi-Chang Hu** (Department of Chemical Engineering, National Tsing Hua University, Hsin-Chu city, Taiwan), Jui-Yu Pai, Cheng-Ta Hsieh, Hao-Yu Ku, Laurence Hardwick

Electrospun Polyimide-copolymer Separators Designed for Electrical Double-Layer Capacitors and Lithium-ion Cells

12:00 to 12:15

**Riccardo Neri** (Dept. of Electrical Electronic and Information Engineering, Alma Mater Studiorum University of Bologna, BOLOGNA, Italy), Francesca Soavi, Federico Poli, Giovanni Emanuele Spina, Michele Zannoni, Chiara Gualandi, Riccardo Neri, Davide Fabiani

Electrospun piezo-supercapacitors: a strategy to design autonomous device

12:15 to 12:30

**Dawid Kasprzak** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Maciej Galinski

Chitin and chitin-cellulose composite hydrogels prepared by IL-based process as the novel electrolytes for electrochemical capacitors

12:30 to 12:45

**Emmanuel Pameté Yambou** (Faculty of Chemical Technology, Poznan University of Technology, Poznan, Poland), Emmanuel Pameté Yambou, Zhuanpei Wang, François Béguin

An all solid-state electrical double-layer capacitor operating down to -40 °C with the help of an ionogel electrolyte and a hierarchical micro-mesoporous carbon

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Jonghyun Jang

10:00 to 10:15 *Invited*

**Iryna Zenyuk** (Chemical and Biomolecular Engineering Department, University of California Irvine, Irvine, USA), Kaustubh Khedekar, Andrea Perego, Yongzhen Qi, Arezoo Avid, Prantik Saha

Interplay between Activity and Durability for Polymer Electrolyte Fuel Cells with Low Pt Loading

10:15 to 10:30

**Andrea Angulo** (Chemical and Biomolecular Engineering, New York University, Brooklyn, USA), Miguel Modestino

Understanding the Interactions Between Bubble Dynamics and Electrochemical Energy Losses in Flow Electrolyzers

10:30 to 10:45

**Federico Tasca** (Química de los Materiales, Universidad de Santiago de Chile, Santiago, Chile), Walter Orellana, Jose Zagal

In Search of the Most Active MN<sub>4</sub> Catalyst for the Oxygen Reduction Reaction. The Case for Perfluorinated and Octa(cyano) Fe Phthalocyanine

10:45 to 11:00 Invited

**Yuyan Shao** (Energy and Environment, Pacific Northwest National Laboratory, Richland, USA), Yuyan Shao, Xiaohong Xie

Atomically Dispersed M-N-C Electrocatalysts for Oxygen Reduction: Understanding Durability and Its Improvement

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Maria I. Leon** (Departamento de Ingenieria Geomatica e Hidraulica, Universidad de Guanajuato, Guanajuato, Mexico), Jonathan Valentin, Tatiana Romero, Tzayam Perez, Jose L. Nava

A simulation study of the effect of the combined anode and cathode flow fields for the water management in an anion-exchange membrane fuel cell

11:30 to 11:45

**Linjun Li** (Department of Hydrogen Energy Systems, Kyushu University, Fukuoka City, Japan), Takahiro Karimata, Akari Hayashi, Hironori Nakajima, Kohei Ito

Evaluation of boiling effect on oxygen evolution reaction by three electrodes cell

11:45 to 12:00

**Chunmei Tang** (Graduate School of Chemical Sciences and Engineering, Hokkaido University, Sapporo, Japan), Sho Kitano, Hiroki Habazaki, Yoshitaka Aoki

Effects of Anode Functional Layer on Performances of Protonic Solid Oxide Steam Electrolyzers

12:00 to 12:15

**Phimanh Ngo** (Department of Hydrogen Energy Systems, Kyushu University, Fukuoka, Japan), Takahiro Karimata, Akari Hayashi, Hironori Nakajima, Kohei Ito

Diagnostic on the failure of polymer electrolyte membrane to the relative humidity cycle

12:15 to 12:30

**Huaneng Su** (Institute for Energy Research, Jiangsu University, Zhenjiang, China), Weiqi Zhang, Qian Xu

Development of High Performance and Durable Gas Diffusion Electrodes for HT-PEMFC

12:30 to 12:45

**Fei Xiao** (Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology, Hong Kong, China), Minhua Shao

Solid-State Synthesis of Highly Dispersed Nitrogen-Coordinated Single Iron Atom Electrocatalysts for Proton Exchange Membrane Fuel cells

s15 Anodization and Its Applications in Environmental and Energy Research

Room : R04 - Samda A (100)

Chairman : Jinsub Choi

10:45 to 11:00

**Ramesh Poonchi Sivasankaran** (Department of Chemistry Education, Chonnam National University, Gwangju, Korea)

TiO<sub>2</sub> NTs/r-GO/Cu-TCNQ array Photoanode for Efficient and Stable Photoelectrochemical Water Splitting

10:00 to 10:15

**Giovanni Zangari** (Materials Science and Engineering, University of Virginia, Charlottesville, USA), Marcel Mibus

Electrowetting-on-Dielectric Systems Based on Anodized Metal Oxides

10:15 to 10:45 Keynote

**Hidetaka Asoh** (Department of Applied Chemistry, Kogakuin University, Tokyo, Japan)  
Anodization of Aluminum: From Alumite to Ordered Nanostructures

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Masato Hino** (Material Function and Design, Nagoya Institute of Technology, Nagoya, Japan), Song-Zhu Kure-Chu\*, Xuwen Chen, Yukihisa Moriguchi, Hisashi Sato  
Fabrication of Ni-W(Ox)-based Alloy Films with Ultra-High Hardness on Titanium by Anodization and Electrodeposition

11:30 to 11:45 Invited

**Kazuhiro Fukami** (Department of Materials Science and Engineering, Kyoto University, Kyoto, Japan)  
Helical Nanostructure Formation in Electrochemical Reactions Achieved by Confinement of Spatiotemporal Patterns in Nanoscale Environments

11:45 to 12:00 Invited

**Hiroaki Tsuchiya** (Graduate School of Engineering, Osaka University, 2-1 Yamada-oka, Suita, Osaka, Japan)  
Anodic Nanotube Coating of Biomedical Ti Alloys

s17 Molecular Electroanalysis

Room : R13 - 402 A+B (100)

Chairman : Olivier Buriez

10:15 to 10:30 Invited

**Osamu Niwa** (Advanced Science Research Laboratory, Saitama Institute of Technology, Fukaya, Japan), Shunsuke Shiba, Saki Ohta, Kazuya Ohtani, Shota Takahashi, Tomoyuki Kamata, Dai Kato  
Electrochemical Performances of Nitrogen-Containing Carbon Film Electrodes

10:30 to 10:45

**Maryam Abdinejad** (Faculty of Applied Sciences, dept. of Chemical Engineering, TU Delft/Materials for Energy Conversion and Storage (MECS), Delft, Netherlands), Prof Tom Burdyny  
Enhanced Electroreduction of Carbon Dioxide via electrografting of a p-phenylenediamine to a Ag electrode

10:45 to 11:00

**Yulin Zhou** (UMR 7177 CNRS, Université de Strasbourg, Strasbourg, France)  
Differential Electrochemical Mass Spectrometry studies of nitrite reduction catalyzed by Keggin W and Mo-based polyoxometalates and silver

11:00 to 11:15

Coffee Break

11:15 to 11:30 Invited

**Philippe Hapiot** (Institut des Sciences Chimiques de Rennes, CNRS - Université de Rennes 1, Rennes, France), Mian-Gang Li, Shuai Liu, Corinne Lagrost, Jia-Wei Yann, Bing-Wei Mao  
Charge Transfer Kinetics in Room Temperature Ionic Liquid. Solvent Reorganization and Electrode/Ionic Interface.

11:30 to 11:45

**Alexander Oleinick** (PASTEUR, CNRS, ENS - PSL Univ., Sorbonne Univ., Paris, France), Giovanni Pireddu, Irina Svir, Christian Amatore, Alexander Oleinick

Interactive Competition Between Individual Diffusion Layers at Nano-/Microscopic Random Arrays of Band and Disk Electrodes

11:45 to 12:00

**Dongil Lee** (Department of Chemistry, Yonsei University, Seoul, Korea), Yongsung Jo, Hoeun Seong, Woojun Choi

Atomically Precise Metal Nanoclusters as Model Catalysts for Achieving Efficient Electrocatalysis

12:00 to 12:15

**Gyeongho Kim** (Department of Chemistry, Pusan National University, Busan, Korea)

Simple Electrochemical Method for Investigating the Dissolution Behavior of Layers Deposited by Atomic Layer Deposition

12:15 to 12:30 *Invited*

**Won-Yong Lee** (Chemistry, Yonsei University, Seoul, Korea), Daeho Jeong

Electrochemical impedance glycosensor for ultrasensitive detection of carbohydrate and carbohydrate-binding proteins

12:30 to 12:45

**Aman Bhatia** (Department of Chemistry, Pusan National University, Busan, Korea)

Fast Silver Deposition Induced by Enzymatic Reduction for Ultrasensitive Detection of Parathyroid Hormone

s18 Bringing Biomolecules and Electrodes together: Understanding Electron Transport in Life

Room : R11 - 303 (100)

Chairman : Renata Bilewicz

10:00 to 10:30 *Keynote*

**Justin Gooding** (School of Chemistry, The University of New South Wales, Sydney, Australia), Sanjun Fan, Yanfang Wu, James Webb, Ying Yang, Yuanqing Ma, Richard Tilley, Katharina Gaus

Single Molecule Electrochemistry: From electrochemically modulating single molecule fluorescence to detecting single proteins

10:30 to 10:45 *Invited*

**Joshua Hihath** (Electrical and Computer Engineering, University of California, Davis, Davis, USA), Hyunhak Jeong, Lucas Domulevicz

Combined Junction Enhanced Raman and Conductance Spectroscopies on a Single-Molecule

10:45 to 11:00 *Invited*

**Wenjing Hong** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China)

Electric field catalyzed chemical reaction and assembly process at single-molecule level

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Andrea Vezzoli** (Department of Chemistry, University of Liverpool, Liverpool, United Kingdom), Chuanli Wu, Xiaohang Qiao, Craig Robertson, Simon Higgins, Richard Nichols

Chemically Soldered Polyoxometalates as Electrochemical Single-Molecule Devices

s20 Recent Development in Spectroscopy, Microscopy and Theory for Atomic/Molecular Level

Understanding of Electrochemical Interfaces

Room : R08 - 203 (100)

Chairman : Beomgyun Jeong; Kei Murakoshi

10:00 to 10:15

**Jesse Dondapati** (Chemistry, University of Guelph, Guelph, Canada), Aicheng Chen  
UV-vis spectroscopic and quantitative structure-property relationship studies of photoelectrochemical oxidation of phenolic compounds at nanoporous TiO<sub>2</sub>

10:15 to 10:30

**Peter S. Toth** (Department of Physical Chemistry and Materials Science, University of Szeged, Szeged, Hungary), Gabor Szabo, Csaba Janaky

Photoelectrochemical properties of transition metal dichalcogenides in the function of structural features

10:30 to 10:45

**Stijn Mertens** (Department of Chemistry, Lancaster University, Lancaster, United Kingdom)

Ambient Bistable Single Dipole Switching in a Molecular Monolayer

10:45 to 11:00

**Masnun Naher** (School of Molecular Sciences, The University of Western Australia, Perth, Australia), Elena Gorenskaia, Kelly L. Turner, Andrea Vezzoli, Richard J. Nichols, Paul J. Low

Design and Synthesis of Radical Based Metal Complexes as Molecular Wires

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Parvin Safari** (Molecular Sciences, University of Western Australia, Perth, Australia), Simon Guckel, Josef Gluyas, Martin Kaupp, Paul J. Low

Substituent control over the Electronic Character of Diethynylaryl-Bridged Mixed-valence Complexes

11:30 to 11:45

**Jianping Xiao** (State Key Laboratory of Catalysis, Dalian Institute of Chemical Physics, CAS, Dalian, China)

Direct Electrochemical Ammonia Synthesis from Nitric Oxide

s21 Electrochemical Solar Energy Conversion and Storage: from Fundamentals to Applications

Room : R09 - 301 (80)

Chairman : Hafiz Abbas; Jeong Hun Kim; Yuyin Tong

10:00 to 10:30 Keynote

**Weitao Liu** (Physics Department, Fudan University, Shanghai, China)

Lattice vibrations at charged oxide water interface probed by sum-frequency spectroscopy

10:30 to 10:45

**Yi Rao** (Department of Chemistry and Biochemistry, Utah State University, Logan, USA), Tong Zhang, Yuqin Qian, Yi Rao

Structures and Dynamics of GaP Photo-electrode Surfaces by Time-Resolved Electronic Sum Frequency Generation

10:45 to 11:00

**Tong Zhu** (Mechanical Engineering, Beijing Institute of Technology, Beijing, China)

Exciton Transport Mechanisms and Charge Carrier Dynamics Directly Visualized by Ultrafast Microscopy

11:00 to 11:15

Coffee Break

11:15 to 11:30

**Shanlin Pan** (Department of Chemistry and Biochemistry, , Tuscaloosa, USA)

Advanced Scanning Electrochemical and Spectroelectrochemical Methods for Analyzing Surfaces of Catalytic Electrode Materials

11:30 to 11:45

**Nianxing Wang** (Chemistry and Chemical Engineering, Qilu University of Technology, Jinan, China), Mengyu Fu, Pingping Su, Huanjin Jiang, Mengxue Lu, Fujiao Cui, Tianduo Li, Pia Damlin, Carita Kvarnström, Nianxing Wang  
Polyviologen Based Hybrid Films for Photocatalysis Applications

11:45 to 12:00

**Federico Bella** (Department of Applied Science and Technology, Politecnico di Torino, Torino, Italy), Lucia Fagiolari, Matteo Bonomo, Simone Galliano, Guido Viscardi, Claudia Barolo  
Water-based solar cells: electrochemical behavior of state-of-art electrodes and electrolytes

s22 Molecular Electrochemical Switches, Pumps, and Machines  
Room : R05 - Samda B (100)  
Chairman : Frank Marken; Jeong-Yun Sun

11:15 to 11:45 Keynote

**Unyong Jeong** (Materials Science and Engineering, Pohang University of Science and Engineering (POSTECH), Pohang, Korea)  
Skin-Inspired Artificial Multimodal Ion Electronic Skin (IE-Skin)

11:45 to 12:00

**Hyeong Jun Kim** (Chemical and Biomolecular Engineering, Sogang University, Seoul, Korea)  
Ionoelastomer Heterojunctions Between Polymer Networks of Fixed Anions and Cations

12:00 to 12:15

**Jeong-Yun Sun** (Materials Science and Engineering, Seoul National University, Seoul, Korea)  
Ion-to-Ion Amplification through an Open Junction Ionic Diode

12:15 to 12:30

**Serena Arnaboldi** (Chimica, Università degli Studi di Milano, Milano, Italy), Gerardo Salinas, Aleksandar Karajic, Bhavana Gupta, Patrick Garrigue, Tiziana Benincori, Roberto Cirilli, Sabrina Bichon, Sébastien Gounel, Nicolas Mano, Alexander Kuhn  
Unconventional Electrochemical Approaches for the Direct Readout of Chiral Information

12:30 to 12:45

**Alexander Kuhn** (Institute of Molecular Sciences, University Bordeaux, Pessac, France), Bhavana Gupta, Ambrose Melvin, Lin Zhang, Bertrand Goudeau, Patrick Garrigue, Stephane Reculosa, Laurent Bouffier  
Hybrid Electroactive Polymers for Wireless Actuation and Pumping

s23 Electrochemistry Knowledge transfer: from academy to Startup Company and Industries  
Room : R06 - 201 A + B (150)  
Chairman : Jae Ho Shin ; Chang Hyun Lee

10:00 to 10:30 Keynote

**Youngjae Kang** (Blood Glucose R&D Center, i-sens, Inc, Seoul, Korea)  
CGMS: Current Status and Future Perspective

10:30 to 10:45

**Chang Hyun Lee** (Energy Engineering Department, Dankook University, Cheonan, Korea), Juhee Ahn, Jun Hyun Lim, In Kee Park  
Size Engineering of Perfluorinated Ionomers via Supercritical Fluid Dispersion and Its Electrochemical Applications

10:45 to 11:00



**Alessandro Minguzzi** (Dipartimento di Chimica, Università degli Studi di Milano, Milano, Italy), Alberto Vertova, Sandra Rondinini, Aniello Cammarano, Luigi Nicolais  
Our experience in the co-development of microelectrodes for wearable biosensing

*11:00 to 11:15*

Coffee Break

*11:15 to 11:45 Keynote*

**Stefano Saguatti** (Product management, Manz Italy SRL, Sasso Marconi, Italy), Luca Di Silvio  
EBA250 The European Batteries R-I Ecosystem

*11:45 to 12:00*

**Sergio Brutti** (Chemistry, University of Rome La Sapienza, Rome, Italy), Sergio Brutti, Eliana Quartarone, Francesca Soavi, Claudio Gerbaldi, Vincenzo Baglio, Piercarlo Mustarelli  
Gisel - Italian group for electrochemical energy storage

*12:00 to 12:15*

**André Mão de Ferro** (Management, , Lisbon, Portugal)  
Electrochemical Spin-off - a C2C-NewCap experience

*12:15 to 12:30*

**Alessandro Brilloni** (Dep. Of Chemistry "G. Ciamician", , Bologna, Italy), Federico Poli, Francesca De Giorgio, Francesca Soavi  
New High-Energy Semi-Solid Lithium/Oxygen Flow Battery: from research to spinoff company

*12:30 to 12:45*

**Luca Magagnin** (Chimica, Materiali e Ing. Chimica Giulio Natta, Politecnico di Milano, Milano, Italy)  
Harnessing the early stage research discoveries to startups

Friday 3 September 2021 - PM

s07 Next-generation Batteries: Novel chemistry and design

Room : R01 - Tamna A (1500)

16:00 to 16:15

**Vincent Feynerol** (LCPME, CNRS, Villers-l'Évêque-Nancy, France), Ranine El Hage, Mariela Brites Helú, Liang Liu, Mathieu Etienne

Determination of Charge Transfer Kinetics for Fast Redox Couples on Porous Carbon Felts by Electrochemical Impedance Spectroscopy

16:15 to 16:30

**Hiroyuki Ueda** (Institute for Frontier Materials (IFM), Deakin University, Burwood, Australia), Robert Kerr, Fuminori Mizuno, Maria Forsyth, Patrick C. Howlett

Incorporation of An Organic Ionic Plastic Crystal in Anode for All-solid-state Lithium-ion Batteries

16:30 to 16:45

**Almagul Mentbayeva** (Chemical and Material Engineering, National Laboratory Astana, Nur-Sultan, Kazakhstan), Aktilek Akhmetova, Zhumabay Bakenov

Temperature-Responsive Polymer Nanocomposite Membrane Aqueous Energy Storage Systems

16:45 to 17:00

**Jelena Popovic** (Physical Chemistry of Solids, Max Planck Institute for Solid State Research, Stuttgart, Germany)

Solid electrolyte interphase on Li/Na metal anodes in contact with liquid electrolytes

17:00 to 17:15

**Darya Snihirova** (Electrochemistry and Big Data Department, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany), Linqian Wang, Min Deng, Bahram Vaghefinazari, Daniel Hoeche, Sviatlana V. Lamaka, Mikhail L. Zheludkevich

Performance Improvement of Aqueous Mg-air Battery by Electrolyte Additive Effective for Versatile Anode Material

17:15 to 17:30

**Linqian Wang** (Institute of Surface Science, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany), Darya Snihirova, Min Deng, Cheng Wang, Daniel Höche, Sviatlana Lamaka, Mikhail Zheludkevich

Clarifying the Working Mechanism of Indium Chloride as Electrolyte Additive for Mg-Air Battery

s08 Challenges in Battery Technologies for Advanced and Next-generation Electric Vehicles and Grid Storage

Room : R02 - Halla A (270)

16:00 to 16:30 Keynote

**Kyeongjae Cho** (Materials Science and Engineering, UT Dallas, Richardson, USA), Patrick Conlin, Matthew Bergschneider, Taesoon Hwang, Hyungjun Kim, Maenghyo Cho

Roles of Materials Design in Battery Technology Innovations

16:30 to 16:45 Invited

**Bing joe Hwang** (Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan)

Decoupling Interfacial Reactions at Anode and Cathode of Lithium Metal Batteries

16:45 to 17:00 Invited

**Robson Monteiro** (GXPB, CBMM, Araxa, Brazil), Rogerio Ribas

Niobium – A Transformative Element for the Development of Advanced Lithium-Ion Battery Materials

17:00 to 17:15 Invited

**Ya You** (International School of Materials Science and Engineering, Wuhan University of Technology, Wuhan, China)

The Air Sensitivity of Layered Transition Metal Oxide Cathode Materials for Li/Na-Ion Batteries: Principles and Strategies

s09 Understanding and application of fast storage processes (Supercapacitors & high power systems)

Room : R07 - 202 A + B (150)

Chairman : Andrea Balducci; Hyung-Seok Kim

16:00 to 16:15

**Krzysztof Fic** (Institute of Chemistry and Technical Electrochemistry, Poznań, University of Technology, Poznan, Poland), Adam Mackowiak, Pawel Jezowski, Yukiko Matsui, Kazunari Soeda, Masashi Ishikawa  
Novel Concept for Hybrid Li-ion Capacitor

16:15 to 16:30

**Binson Babu** (Center for Energy and Environmental Chemistry Jena (CEEC), Friedrich-Schiller-University Jena, Jena, Germany), Christof Neumann, Marcel Enke, Alexandra Lex Balducci, Andrey Turchanin, Ulrich S Schubert, Andrea Balducci  
Investigation of the Aging and Self-discharge Processes in High Voltage Lithium-ion Capacitor containing Liquid and Gel-polymer Electrolytes

16:30 to 16:45

**Maria Arnaiz** (Centre for Cooperative Research on Alternative Energies, CICenergiGUNE (BRTA), Vitoria-Gasteiz, Spain), Devaraj Shanmukaraj, Daniel Carriazo, Dhruvajyoti Bhattacharjya, Aitor Villaverde, Michel Armand, Jon Ajouria  
A low-cost pre-metallation strategy enabling ultrafast and stable metal ion capacitors

16:45 to 17:00 Invited

**Paula Ratajczak** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Paula Ratajczak, Andrés Parejo-Tovar, S.E.M. Pourhosseini, François Béguin  
Detailed Analysis of Factors Contributing to Degradation of Carbon-based Electrochemical Capacitors

17:00 to 17:15

**Agnieszka Chojnacka** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznań, Poland), Xuexue Pan, François Béguin  
The advantages of Na<sub>2</sub>C<sub>4</sub>O<sub>4</sub> as presodiation material for the anode of sodium-ion systems

17:15 to 17:30

**Qamar Abbas** (ICTM, Graz University of Technology, Graz University of Technology, Stremayrgasse 9/2, 8010 Graz, Graz, Austria), Horst Schraner, Harald Fitzek, Bernhard Gollas, Qamar Abbas  
Reversibility of the iodide/iodine redox reaction controlling the electrochemical performance of aqueous hybrid supercapacitors

17:30 to 17:45

Coffee Break

17:45 to 18:00 Invited

**Dominic Rochefort** (Chemistry, Université de Montréal, Montréal, Canada)  
What Role for Unconventional Electrolytes in the Development of Supercapacitors?

18:00 to 18:15

**Annika Bothe** (Center for Energy and Environmental Chemistry (CEEC), Friedrich-Schiller University Jena, Jena, Germany), S.E.M Pourhosseini, Paula Ratajczak, François Béguin, Andrea Balducci  
Adiponitrile-based Electrolyte for Electrical Double Layer Capacitors: advantages and limits

18:15 to 18:30

**Lukas Köps** (Institute of Technical Chemistry and Environmental Chemistry, Friedrich-Schiller-University Jena, Jena, Germany), Andrea Balducci

Realization of high-voltage EDLCs stable at high temperatures based on dimethylpyrrolidinium tetrafluoroborate

s10 Electrochemical systems for energy conversion: Fuel Cells and Electrolyzers

Room : R03 - Halla B (230)

Chairman : Jinwoo Lee

16:00 to 16:15

**Javier Villalobos** (Nachwuchsgruppe Gestaltung des Sauerstoffentwicklungsmechani, Helmholtz-Zentrum Berlin, Berlin, Germany), Diego Gonzalez-Flores, Mavis Montero, Roberto Urcuyo, David Sanchez, Gabriela Fernandez, Marcel Risch

Key role of the electrolyte to enhance electrochemical restructuring of Co-based catalysts as an activation for oxygen evolution

16:15 to 16:30

**Sylwia Pawłowska** (Faculty of Electronics, Telecommunications and Informatics, Gdańsk University of Technology, Gdańsk, Poland), Krystian Lankauf, Patryk Blaszcak, Jakub Karczewski, Karolina Górnicka, Grzegorz Cempura, Piotr Jasinski, Sebastian Molin

Effect of MnCo<sub>2</sub>O<sub>4</sub> Particles Ball-Milling Process to Increasing of Electrocatalytic Activity for OER

16:30 to 16:45

**Jian Zhang** (Analytical Chemistry Center for Electrochemical Sciences, Ruhr University Bochum, Bochum, Germany), Wenhui He, Harshitha Barike Aiyappa, Thomas Quast, Stefan Dieckhofer, Denis Ohl, Joao R. C. Junqueira, Yen-Ting Chen, Justus Masa, Wolfgang Schuhmann

Hollow CeO<sub>2</sub>@Co<sub>2</sub>N Nanosheets Derived from Co-ZIF-L for Boosting the Oxygen Evolution Reaction

16:45 to 17:00

**Inyoung Jang** (Department of Chemical Engineering, Imperial College London, London, United Kingdom), Nick Farandos, John Alexander, Geoff Kelsall

Fabrication of 3D NiO-YSZ Structures for Enhanced Performance of Solid Oxide Fuel Cells and Electrolysers

17:00 to 17:15

**J.W. (Willem) Haverkort** (Process & Energy (3mE), Delft University of Technology, Delft, Netherlands)

Gas-evolving flow-through electrode design and experiments

17:15 to 17:30

**Lifeng Liu** (Clean Energy, International Iberian Nanotechnology Laboratory, Braga, Portugal)

Bipolar membrane enabled asymmetric water electrolysis based on PGM-free bifunctional metal phosphide electrocatalysts

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Liang Wu** (Institute for Future Transport and Cities, Coventry University, Coventry, United Kingdom), Egle Latvyte, Peter Vale, John Graves

Green Hydrogen Produced From Anion Exchange Membrane Ammonia Electrolysis

18:00 to 18:15

**Felix Lohmann-Richters** (Electrochemical Process Engineering (IEK-14), Forschungszentrum Juelich,, Juelich, Germany), Leon Buegers, Stefanie Renz, Martin Mueller, Marcelo Carmo

Membrane Development for Efficient Alkaline Electrolysis at Intermediate Temperature

18:15 to 18:30

**Aviral Rajora** (Process and Energy, Delft University of Technology, Delft, Netherlands), J. W. (Willem) Haverkort

An analytical multiphase model for diffusion layers in electrolyzers and fuel cells

18:30 to 18:45

**Alaa Faid** (Materials Science and Engineering, Norwegian University of Science and Technology, Trondheim, Norway), Svein Sunde

Scaling up NiMoB catalyst for 2 KW anion exchange membrane electrolyzer stack

s15 Anodization and Its Applications in Environmental and Energy Research

Room : R04 - Samda A (100)

Chairman : Yongtae Kim

16:00 to 16:30 Keynote

**Gabriel Loget** (Rennes Institute of Chemical Sciences, CNRS, Rennes, France), Bruno Fabre, Kiseok Oh

Electrochemical preparation of silicon anodes for solar water splitting

16:30 to 16:45 Invited

**Hans Kleemann** (Dresden Integrated Center for Applied Photophysics, Technische Universität Dresden, Dresden, Germany)

High-Frequency Vertical Organic Transistors with Anodized Base Electrode

16:45 to 17:00

**Evelyn Artmann** (Institute of Electrochemistry, University of Ulm, Ulm, Germany), Lukas Forschner, Vincent P. Menezes, Mohamed Elnagar, Ludwig A. Kibler, Timo Jacob, Albert K. Engstfeld

Electrode stability at high voltages in alkaline electrolyte

17:00 to 17:15 Invited

**Alexander Mozalev** (CEITEC - Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic), Kirill Kamnev, Marcela Sepulveda, Maria Bendova, Zdenek Pytlíček  
Dielectric/electrical Properties of Novel ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> Nanocomposite Films Prepared via the Anodizing of Al/Zr Metal Layers

17:15 to 17:30

**Hiroki Habazaki** (Faculty of Engineering, Hokkaido University, Sapporo, Japan)

Fabrication of Highly Active OER Electrocatalysts from Nanoporous Fluoride Precursors Formed by Anodizing

s17 Molecular Electroanalysis

Room : R13 - 402 A+B (100)

Chairman : Guobao Xu

16:00 to 16:30 Keynote

**Bin Ren** (Department of Chemistry, Xiamen University, Xiamen, China)

Electrochemical Raman spectroscopy for in-situ and operando studies at limits of time and spatial resolution and sensitivity

16:30 to 17:00 Keynote

**Francesco Paolucci** (Department of Chemistry, Alma Mater Studiorum - University of Bologna, Bologna, Italy), Giovanni Valenti, Alessandra Zanuti, Andrea Fiorani, Sara Rebecani, Massimo Marcaccio, Stefania Rapino

Insights into the Mechanism of Coreactant Electrochemiluminescence Empower its Analytical Strength

17:00 to 17:15

**Giovanni Valenti** (Chemistry, University of Bologna, Bologna, Italy), Andrea Fiorani, Dongni Han, Dechen Jiang, Danjun Fang, Francesco Paolucci, Neso Sojic  
Spatially Resolved Electrochemiluminescence Through Chemical Lens

17:15 to 17:30

**Alessandra Zanut** (Chemical and Biomolecular Engineering, NYU Tandon School of Engineering, New York, USA), Francesco Palomba, Matilde Rossi Scota, Sara Rebecca, Massimo Marcaccio, Damiano Genovese, Enrico Rampazzo, Giovanni Valenti, Francesco Paolucci, Luca Prodi  
Controlling Dye-Doped Silica Nanoparticles behavior for Enhancing Electrochemiluminescence Performance

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Olivier Buriez** (Ecole Normale Supérieure, CNRS, Paris, France), Martina Ciskova, Laurent Cattiaux, Justine Pandard, Manon Guille-Collignon, Frederic Lemaitre, Jerome Delacotte, Jean-Maurice Mallet, Eric Labbe  
Fluorescence Switches of the Redox-Responsive Rhodamine 101 Probe

18:00 to 18:15

**Andrea Fiorani** (Department of Chemistry, Keio University, Yokohama, Japan), Kohei Sakanoue, Irkham Irkham, Giovanni Valenti, Francesco Paolucci, Yasuaki Einaga  
Electrogenerated Chemiluminescence at Boron-doped Diamond

18:15 to 18:30

**Sara Rebecani** (Department of chemistry, University of Bologna, Bologna, Italy), Francesca Arcudi, Luka Dordevic, Michele Cacioppo, Alessandra Zanut, Giovanni Valenti, Francesco Paolucci, Maurizio Prato  
Lighting up the Electrochemiluminescence of Carbon Dots through Pre- and Post-Synthetic Design

s21 Electrochemical Solar Energy Conversion and Storage: from Fundamentals to Applications

Room : R09 - 301 (80)

Chairman : Hafiz Abbas; Wonyong Choi; David J. Fermin; Weitao Liu

16:00 to 16:15

**Jeong Hun Kim** (Energy & Chemical Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea), Jin Hyun Kim  
Low Temperature Thermite Reduction on Metal Oxide Photoanode for Enhanced Photoelectrochemical Water Splitting: A Case Study on ZnFe<sub>2</sub>O<sub>4</sub>

16:15 to 16:30

**Ozlem Budak** (Chemical Engineering, Marmara University Engineering Faculty, Istanbul, Turkey), Ozlem Budak, Ozlem Uguz, Aleyna Nur Basey, Atif Koca  
Photoelectrochemical Performance of RGO-CdS<sub>0.2</sub>Se<sub>0.8</sub> Photoelectrodes Prepared by One-step Electrodeposition Method

16:30 to 16:45

**Wouter Maijenburg** (ZIK SiLi-nano, MLU Halle-Wittenberg, Halle (Saale), Germany), Titus Lindenberg, Denis Eberhart, Robert Naumann  
Metal oxide nanowires and nanofibers for solar water splitting

16:45 to 17:00 *Invited*

**Heinz Frei** (Molecular Biophysics and Integrated Bioimaging Division, Lawrence Berkeley National Laboratory, Berkeley, USA), Hongna Zhang, Won Jun Jo

Nanoscale Integration of CO<sub>2</sub> Photoreduction by H<sub>2</sub>O under Ultrathin Membrane Separation

17:00 to 17:15

**Ozlem Uguz** (Chemical Engineering, Marmara University, Istanbul, Turkey), Ozlem Uguz, Ozlem Budak, Aleyna Nur Basey, Atif Koca

Studies on the Photoelectrochemical Performance of Mo, Ni and Cu Decorated RGO-CdS<sub>0.2</sub>Se<sub>0.8</sub> Photoelectrodes Fabricated by Electrodeposition Method

17:15 to 17:30

**Chengkai Xia** (School of Chemical Engineering, Sungkyumkwan University (SKKU), Suwon, Korea), Jung Kyu Kim

Highly Activated Iron Phosphate Over-layer for Enhancing Photoelectrochemical Ammonia Degradation

17:30 to 17:45

Coffee Break

17:45 to 18:00

**Ingrid Sequeda** (Chemistry, Universidad Industrial de Santander, Floridablanca, Colombia), Angel M. Meléndez

CO<sub>2</sub> Photoconversion on Cu<sub>2</sub>O Controlled by Copper Vacancies

s22 Molecular Electrochemical Switches, Pumps, and Machines

Room : R05 - Samda B (100)

Chairman : Frank Marken

16:00 to 16:30 Keynote

**Carmen Domene** (Chemistry, University of Bath, Bath, United Kingdom)

Seeking Inspiration from Biology: A Glimpse into Ion Channels, Transporters and the Electrical Properties of Cell Membranes

16:30 to 16:45

**Takamasa Sagara** (Graduate School of Engineering, Nagasaki University, Nagasaki, Japan), Bo Wang, Rintaro Morishita, Hironobu Tahara

Study on Redox Deformation and Electrochemistry of Viologen-Pendant Polymer Hydrogel for Quick Actuation

16:45 to 17:00

**Elena Gorenskaia** (School of Molecular Science, The university of western Australia , Perth, Austria), Masnun Naher, Kelly L. Turner, Andrea Vezzoli, Paul J. Low

Influence of Anchor Groups and Aromaticity on Single-Molecular Conductance of Oligo(phenyleneethynylene)

17:00 to 17:15

**Arkadiusz Grempla** (Biological and Chemical Research Centre, University of Warsaw, Warsaw, Poland), Imen Hnid, Amina Khettabi, Xiaonan Sun, Jean Christophe Lacroix, Frederic Lafolet, Saioa Cobo, Slawomir Sek

Photomodulation and Rectification in Bis(terpyridine) Dithienylethene Coordination Molecular Wires

17:15 to 17:30

**Klaus Mathwig** (OnePlanet Research Center, Imec Netherlands / OnePlanet Research Center, Wageningen, Netherlands)

Ion Transport and Switching in Microhole Ionomer Diodes

17:30 to 17:45

Coffee Break

*17:45 to 18:15 Keynote*

**Yi-Lun Ying** (School of Chemistry and Chemical Engineering, Nanjing University, Nanjing, China),  
Zheng-Li Hu, Yi-Tao Long

A Time-Resolved Single-Molecule Machine with a Nanopore

*18:15 to 18:30*

**Varshini J. Kumar** (School of Molecular Sciences, University of Western Australia, Perth, Australia),  
Saman Naghibi, Sara Sangtarash, Hatef Sadeghi, Andrea Vezzoli, Jian-Zhong Wu, Richard J. Nichols,  
Paul J. Low

Organic Radicals for Molecular Electronics: From Mixed Valence systems to Molecular Junctions





# **72nd Annual ISE Meeting, Jeju Island, Korea from 29th August to 3th September 2021**

## **Program of Poster presentations**



## Analytical applications

s01-001

**Giampaolo Lacarbonara** (Department of Chemistry, University of Bologna, Bologna, Italy), Luigi Faggiano, Catia Arbizzani

Copper Chloro-Complexes Stability and Dynamics for High Performance Aqueous Redox Flow Batteries

s01-002

**Jun Hui Park** (Chemistry, Chungbuk National University, Cheong-ju, Korea)

In Situ Monitoring of Collision and Recollision Events of Single Attoliter Droplets

s01-003

**Sawa Sasaki** (Faculty of Chemistry and Engineering, Kyoto Institute of Technology, Kyoto, Sakyo, Japan), Ayuka Onishi, Yumi Yoshida, Kohji Maeda

Determination of As(III) and As(V) by Stripping Voltammetry Using Deposition of Insoluble Silver Salt on a Silver Electrode

## Diagnostic (environmental, medical)

s01-004

**Ahyeon Ma** (Department of Chemistry and Chemistry Institute for Function, Pusan National University, Busan, Korea)

Photochemical Formation of Pt Nanoparticles on Semiconductor Co<sub>3</sub>O<sub>4</sub> Nanocubes for Selective Detection of Acetone at the ppb Level

## Electroanalysis

s01-005

**Je Hyun Bae** (Graduate School of Analytical Science and Technology (GRAST), Chungnam National University, Daejeon, Korea), Taek Dong Chung

Size Effect of Redox Species using Nanoporous Platinum

s01-006

**Nastaran Ghaffari** (Chemistry, University of the Western Cape, Cape Town, South Africa), Keagan Pokpas, Priscilla G Baker, Emmanuel I Iwuoha, Nazeem Jahed

Electrochemically Reduced Graphene Oxide Pencil-Graphite in situ Plated Bismuth- Mercury-film Electrode for the Determination of Gallium and Indium by Anodic Stripping Voltammetry

s01-007

**Wonhee Kim** (Graduate School of Energy Convergence, Gwangju Institute of Science and Technology, Gwangju, Korea), Daeun Jang

The Electrochemical Impedance Spectroscopy Study of NCM 532 Symmetric Cell Depending on Electrolyte

s01-008

**Laura Pigani** (Department of Chemical and Geological Science, University of Modena and Reggio Emilia, Modena, Italy), Alessandro Monari, Giorgia Foca, Alessandro Ulrici, Gabriele Bevini, Barbara Zanfognini, Chiara Zanardi

Development of amperometric sensors for the determination of cannabinoids in real matrices

s01-009

**Fabian Schmitt** (Ernst-Berl-Institut f. Technische und Makromolekulare Chemie, TU Darmstadt, Darmstadt, Germany), Tizian Venter, Markus Biesalski, Bastian J.M. Etzold  
Ionic Liquids Combining Heavy Metal Extraction and Temperature Induced Phase Separation for Use in Electrochemical Sensing

s01-010

**Sladana Strmecki Kos** (Division for Marine and Environmental Research, Ruder Boskovic Institute, Zagreb, Croatia), Sladana Strmecki Kos, Iva Despoja, Abra Penezic, Saranda Bakija Alempijevic, Sanja Frka  
Copper Speciation by Anodic Stripping Voltammetry in the Surface Layers of the Oligotrophic Sea Influenced by Atmospheric Deposition

### **Electrocatalysis**

s01-011

**Hyeonwoo Yeo** (School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Juho Lee, Yong-Hoon Kim, Min Jong Noh  
High Catalytic Activities from Atomically Precise Non-Noble Metal Clusters Stabilized between Nitrogenated Holey Graphenes: A first-principles study

### **Electrochemical sensors and biosensors**

s01-012

**Jordi Abellà** (Analytical and Applied Chemistry, Universitat Ramon Llull, Barcelona, Spain), Antonio Hinojo, Enric Lujan, Sergi Colominas  
Analytical Characterization of High Temperature Hydrogen Sensors Based on BaCe<sub>0.6</sub>Zr<sub>0.3</sub>Y<sub>0.1</sub>O<sub>3-Î±</sub> Solid-state Electrolyte

s01-013

**Eleni Anna Economou** (Materials Science, University Of Patras, Rio, Greece), Panagiotis Kasaris, Georgios Papathanidis, Eleni Anna Economou, Emmanuel Topoglidis  
Modified Graphite/SiO<sub>2</sub> Film electrodes for the Electrochemical Sensing of Dopamine, Ascorbic Acid and Uric Acid

s01-014

**Alexandra Elsakova** (Institute of Technology, University of Tartu, Tartu, Estonia), Ali Jafarov, Mark Merzlikin  
Examination of carbon fibre microcylinder as an electrode for electrochemical sensing

s01-015

**Seil Kim** (Electrochemistry department, Korea Institute of Materials Science, Changwon-si, Korea), Hong Ju Ahn, Hyun-Min Jeong, Bung Uk Yoo, Kyu-Hwan Lee, Joo-Yul Lee  
Thermoelectric Materials for Hydrogen Sensor Application

s01-016

**Dieudonne Tanue Nde** (chemistry, kyungpook national university, Daegu, Korea)  
Electrochemical Detection of Aqueous Ammonia using Metal-Polyelectrolyte Nanocomposite Electrodes

s01-017

**Keagan Pokpas** (Chemistry, University of the Western Cape, Cape Town, South Africa), Nathaniel Larm, Gary Baker, Emmanuel Iwuoha, Nazeem Jahed  
Electroanalytical, stripping voltammetric determination of metal ions at Room-temperature Gold Nanoparticle, Ionic liquid enhanced Microfluidic Paper-based Electroanalytical Devices (ÎµPEDs)

s01-018

**Junsu Seong** (Photonics and Nanoelectronics, Hanyang university, Ansan, Korea)

Triboelectric and Piezoelectric Double Effects Tactile Sensor using BaTiO<sub>3</sub>/PDMS Nanocomposite Film for E-skin

s01-019

**Wei-Li Shih** (Biomechatronics Engineering, National Taiwan University, Taipei City, Taiwan)  
Phosphate Sensing with PEDOT by Differential Pulse Voltammetry

s01-020

**Daniel Silgado** (Facultad de Ciencias B asicas, Universidad Santiago de Cali, Colombia, Colombia),  
Claudia P. Granja-Banguera, Jimmy A. Morales-Morales, Erika Mendez-Albores, William A. Aperador-  
Chaparro, Jairo A G mez-Cuaspu   
Copper-cobalt ferrites as a promising electrocatalyst for the determination of acetaminophen in  
pharmaceutical samples

s01-021

**Slawomira Skrzypek** (Department of Inorganic and Analytical Chemistry, Faculty of Chemistry,  
University of Lodz, Lodz, Poland), Pawel Krzyczmonik, Karol Platek, Aleksandra Kesy  
Layers of conductive composites and selected polysaccharides with immobilized enzymes for  
electroanalytical applications.

s01-022

**Qianyu Wang** (Chemistry, Royal Institute of Technology, Stockholm, Sweden), Qianyu Wang, Gaston  
Crespo, Maria Cuartero  
Electrochemical Biosensor for Glycine Detection in Biofluids

### **Ion-selective electrodes**

s01-023

**Yujie Liu** (Chemistry, KTH Royal Institute of Technology, Stockholm, Sweden), Yujie Liu, Gaston  
Crespo, Maria Cuartero  
Ionophore-assisted Ion-transfers in Ultrathin Membrane Coupled to ARedox Conducting Polymer

s01-024

**Jiheon Park** (Chemistry, Kwangwoon University, Seoul, Korea), Seongjun Hong, Seonghyun Hong,  
Yang-Rae Kim  
Development of Electrochemical Sensors for Selective Detection of Soil Nutrients

s01-025

**Yi-Min Wu** (Department of Biomechatronics Engineering, National Taiwan University, Taipei, Taiwan)  
Effects of galvanostatic control on the detection limit of a PEDOT-based solid-contact ion-selective  
electrode

### **Modified electrodes**

s01-026

**Dan Bizzotto** (Chemistry, University of British Columbia, Vancouver, Canada), Daniel Jun, Sylvester  
Zhang, Adrian Grzedowski, Amita Mahey, J. Thomas Beatty  
Correlating structural assemblies of photosynthetic reaction centres on a gold electrode and the  
photocurrent - potential response

s01-027

**Mihaela Tertis** (Analytical Chemistry Department, Iuliu Hatieganu University of Medicine and Pharmacy,  
Cluj-Napoca, Romania), Ana-Maria Dragan, Florina Maria Truta, Radu Oprean, Karolien De Wael, Ede  
Bodoki, Cecilia Cristea  
Development of a Graphene-based Sensor for the Detection of 4-Chloroethcathinone using  
Electrochemical Fingerprinting and Experimental Design

## Selective receptors

s01-028

**Aleksandra Tobolska** (Chair of Medical Biotechnology, Faculty of Chemistry, Warsaw University of Technology, Warsaw, Poland), Nina E. Wezynfeld, Urszula E. Wawrzyniak, Wojciech Bal, Wojciech Wróblewski

Redox-active Cu(II) complex of N-truncated Amyloid- $\beta^2$  peptide bearing a His-2 binding motif as a potential phosphate receptor

## Selectivity, sensitivity, reliability, durability

s01-029

**Yongjun Song** (Photonics and Nanoelectronics, Hanyang university, Ansan, Korea), Dawoon Lee  
Stable and Stretchable Ionic Gel Polymer Electrolyte for Sensor

s01-030

**Song Yi Yeon** (Chemistry, Seoul national university, Seoul, Korea), Taek Dong Chung, Jihun Rho, Yunju Kim

A facile approach to enhance sensitivity for in situ and disposable ion sensing platform

## Single-entity electrochemistry

s01-031

**Byung-Kwon Kim** (Dept. of Chemistry & Nanoscience, Ewha Womans University, Seoul, Korea), Jungeun Lee

Electrochemical Single Particle Collision Analysis of Emulsions and Cells

### analytical applications

s02-001

**Seung Joo Jang** (Department of Chemistry, Soonchunhyang University, Asan, Korea), Tae Hyun Kim, Yu Jin Cho

Electrochemical Fabrication of Poly(3,4-Ethylenedioxythiophene)/ Graphene Quantum Dots-modified Electrode for Simultaneous Detection of Dopamine, Ascorbic Acid, and Uric Acid

s02-002

**Da Eun Oh** (Department of Chemistry, Soonchunhyang University, Asan-si, Korea), Tae Hyun Kim  
Simultaneous and Individual Detection for Seven Biochemical Species using PtNP/rGO Nanocomposite Electrode

### conjugated and redox-active polymers

s02-003

**Myoung Won Lee** (Chemistry, , Seoul, Korea), Hyun Seo Ahn  
Electrochemical Synthesis of PEDOT:PF6 Nanoparticles in Organic Droplets

s02-004

**Alexander Nekrasov** (Russian Academy of Sciences, Frumkin Institute of Physical Chemistry and Electrochemistry, Moscow, Russia), Kirill Birin, Natalia Nekrasova, Stepan Korobkov, Oxana Gribkova, Alexey Aleksandrov, Alexey Tameev  
Electrochemical Copolymerization of Pyrrole and 5,15-Diaryl-Porphyrins and characterization of the films obtained

s02-005

**Mikhail Vorotyntsev** (Department of Functional Materials for Chemical Energy Sourc, Institute of problems of chemical physics of RAS, Chernogolovka, Russia), Olga Istakova, Mikhail Vorotyntsev  
Surprising Redox and Conductivity Properties of "Activated" Polypyrrole Films Deposited from Dilute Monomer Solution

### Detection and characterization of nanomaterials

s02-006

**Elvira Gomez** (Ciencia de Materials i QuÀmica FÀ-sica, University of Barcelona, Barcelona, Spain), Albert Serrà, Paula Sebastián  
Electrochemical assessment of active area of cobalt deposited in DES

s02-007

**Byeong-Cheol Kang** (Electronic Materials Engineering, Kwangwoon University, Seoul, Korea), Jun-Young Jeon  
Hybrid nanocomposites for non-enzymatic electrochemical biosensors

### electroactive composites

s02-008

**Mengyu Fu** (School of chemistry and chemical engineering, Qilu University of Technology, Jinan, China), Pingping Su, Huanjin Jiang, Xiaoxia Liu, Xinyue Yang, Qian Zhang, Nianxing Wang  
Electrochemical Synthesis and Characterization of Viologen Based Hybrid Films

s02-009

**Veniamin Kondratiev** (Electrochemistry Department, St.Petersburg State University, St.Petersburg, Russia)

Spectroelectrochemical Study of Properties of Electrodeposited Poly-3,4-ethylenedioxythiophene - Tungsten Oxide Composite Films

### **Electrochemical capacitors**

s02-010

**Geon Hae Lim** (Energy materials center, Korea Institute of Ceramic Engineering & Technology, Jinju, Korea), Mi Jang

Lignin-rich residue of larch-derived activated carbon

### **electrochemically active materials**

s02-011

**Dominika Czerwinska-Główka** (Silesian University of Technology, University, Gliwice, Poland), Magdalena Skonieczna, Sebastian Student, Wioletta Przystas, Ewa Zablocka-Godlewska, Beata Cwalina, Katarzyna Krukiewicz

The influence of surface morphology of poly(3,4-ethylenedioxythiophene) on the adhesion and development of bacteria and neural cells

s02-012

**Kim Hyun-Yup** (Material science, POSTECH, POHANG, Korea), Park Shin-Ae, Shim Kyubin, Kim Kyu-Su

Enhanced Activity for Oxygen Evolution Reaction of Nanoporous IrNi thin film Formed by Electrochemical Selective Etching process

s02-013

**Gabrijela Radic** (Faculty of Chemical Engineering and Technology, University of Zagreb, Zagreb, Croatia), Klara Perovic, Tayebah Sharifi, Hrvoje Kusic, Marijana Kraljic Rokovic

Influence of the Pharmaceutical Adsorption on the Electrochemical Response of Photocatalysts

s02-014

**Libuse Trnkova** (Department of Chemistry, Masaryk University, Faculty of Science, Brno, Czech Republic), Iveta Triskova, Jakub Veznik, Mikita Bandarenka, Zdenek Farka

The Impact of Pore Water on Electron Transfer Processes at a Polymer Pencil Graphite Electrode

### **Modified electrodes**

s02-015

**Mandana Azmi** (Department of Chemistry, Lancaster University, Lancaster, United Kingdom), Abdullah Talari, Lorna Ashton, Stijn Mertens

A Detailed Study of Covalent Gold Grafting Using Scanning Probe, Raman and Electrochemical Techniques

s02-016

**Sangha Baek** (Chemical Engineering, SKKU(Sung Kyun Kwan University), Suwon, Korea), Jae Min Park, Ho Seok Park

Advanced Zinc Metal Anode By Chemical Coating With An Oxidized Black Phosphorous

s02-017

**Aine Brady** (Physical Chemistry, Dundalk Institute of Technology, Louth, Ireland)

Cyclic Voltammetry of PEDOTdodecylbenzenesulfonate Layers

s02-018

**Ashiq Fakier** (Chemistry, University of the Western Cape, Cape Town, South Africa), Candice Franke

## Carbon dot - polythionine nanocomposite sensor for the remediation of antibiotics in water

s02-019

**Monika Figiela** (Chemical Technology, Poznan University of Technology, Poznań, Poland), Dawid Kasprzak

Electrocatalytic properties of glassy carbon electrodes modified with CuO/Ni(OH)<sub>2</sub> - CS

s02-020

**Jung Eun Hyun** (Electrical energy control R&D center, Korea Automotiev Technology Institute, Cheonan si, Korea)

Analysis of electrochemical behavior of anode electrode for three dimensional current collector

s02-021

**Eduardo do Nascimento** (CCNH, UFABC, Santo Andre, Brazil), Wendel Andrade Alves  
Synergetic Effects of Silk Fibroin and Nickel-Cobalt Hydroxide Nanoparticles in Electrochemical Processes

## **Nanomaterials and nanostructures**

s02-022

**Justina Gaidukevic** (Department of Nanoengineering, Center for Physical Sciences and Technology, Vilnius, Lithuania), Rasa Pauliukaite

A Label-free Hydrogen Peroxide Sensor Based on a Glassy Carbon Electrode Modified with Nitrogen-doped Graphene

s02-023

**Ajeong Jo** (Nano Hybrid Technology Research Center, Korea Electrotechnology Research Institute, Changwon, Korea), Juhee Kim, Hee Jin Jeong, Seon Hee Seo, Seung Yol Jeong, Geon-Woong Lee, Kang-Jun Baeg, Joong Tark Han, Jong Hwan Park

Water-based, Oxidized Single-Walled Carbon Nanotube Pastes and Gels for Printing Electrochemical Energy Storage Devices

s02-024

**Woosuk Kang** (School of chemical engineering and materials science, Chung-Ang university, Seoul, Korea), Changshin Jo

Development of Cathode Materials for Aqueous Zinc Ion Battery

s02-025

**Abhishek Kumar** (Chemistry, Institute of Molecular Chemistry, Burgundy University, Dijon, France), Rita Meunier-Prest, Charles Devillers, Marcel Bouvet

Electropolymerization of metal porphine for application in organic heterojunction sensors to detect redox gases

s02-026

**Andreas Lesch** (Department of Industrial Chemistry, University of Bologna, Bologna, Italy), Hubert H. Girault, Domenica Tonelli

Combined Inkjet Printing and Light-induced Synthesis of Metal Nanoparticles for the Large-scale Production of Electrochemical Sensors

s02-027

**Minhong Lim** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea), Youngseong Jo, Dahee Jin, Yong Min Lee, Hongkyung Lee

A Comparative Study on the Electrochemical Performance of Colloidal Electrolyte by Silica Surface Functional group

s02-028



**Janine Mauzeroll** (Chemistry, McGill University, Montreal, Canada)

Ferrocene-containing Amphiphiles: Versatile Redox-responsive Building Blocks of Functional Materials and Probes of Membrane Dynamics

s02-029

**In-Hyeok Park** (Graduate School of Analytical Science and Technology (GRAST), Chungnam National University, Daejeon, Korea), Kian Ping Loh

Self-Powered Photodetector using Two-Dimensional Ferroelectric Dion-Jacobson Organic-Inorganic Hybrid Perovskites

s02-030

**Joon Ho Park** (Department of Chemistry, Yonsei University, Seoul, Korea), Hyun Seo Ahn  
Electrochemical Synthesis of Core-Shell Nanoparticles by Seed-Mediated Selective Deposition

s02-031

**Hanna Sopha** (Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic), Raul Zazpe, Siowwoon Ng, Jan M. Macak

Anodic TiO<sub>2</sub> Nanotube Layers as Platforms for Efficient Gas Sensors

s02-032

**Yanjie Wang** (Department of Chemistry, Xiamen University, Xiamen, China), Jianing Dong, Zi-Ang Nan, Kai Luo, Fengru Fan, Zhong-Qun Tian

A Facile and Rapid Template-free Method for Preparing Hollow Sodium Chloride Crystals

s02-033

**Alessandra Zanut** (Chemical and Biomolecular engineering, NYU Tandon School of Engineering, New York, USA), Xiangyu Liu, Marcus Weck, Xiaorui Zheng, Giuseppe Maria de Peppo, Elisa Riedo

Sub 15-nm resolution fabrication of bone replicas through Thermochemical Scanning Probe Lithography for inducing MSCs differentiation

## **nanostructures electrodes**

s02-034

**Hyeonjeong Kim** (Division of Environmental Science and Engineering, Pohang University of Science and Technology, Pohang, Korea), Eunju Hwang

Self-Doped Nb<sub>2</sub>O<sub>5</sub> Nanotube arrays for Photoelectrochemical Water Treatment

s02-035

**Myeong Gyu Kim** (School of Advanced Materials and Chemical Engineering, Daegu Catholic University, Gyeongsan, Korea), Hyeon Jeong Hong

Electrocatalytic oxygen evolution reaction (OER) activity depending on microstructure in Co<sub>3</sub>O<sub>4</sub> nanoparticles

s02-036

**Kwangsoo Kim** (Platform Technology Laboratory, Korea Institute of Energy Research, Daejeon, Korea), Hyun-Seok Cho, Chang-Hee Kim, Jong Hyeok Park, Byung-Hyun Kim

Unraveling Selective Leaching Mechanism Depending on Ni-Al Compositions and Its Effect on Hydrogen Evolution Reactions: A Density Functional Theory Study

s02-037

**Thomas L. Maier** (Department of Physics, Technical University of Munich, Garching, Germany), Tina Angerer, Matthias Golibrzuch, Markus Becherer, Katharina Krischer

Hydrogen Evolution Reaction on Laterally Nanostructured Metal/Silicon Nitride Electrodes

s02-038

**Katarzyna Siuzdak** (The Centre for Plasma and Laser Engineering, The Szewalski Institute of Fluid-Flow Machinery, Gdańsk, Poland), Lukasz Macewicz, Robert Bogdanowicz, Katarzyna Grochowska

Preparation and characterization of black arsenic phosphorus-modified TiO<sub>2</sub> nanotubes

## Porous electrodes

s02-039

**Albena Aleksandrova** (Lead-Acid Batteries Department, Institute of Electrochemistry and Energy Systems - BAS, Sofia, Bulgaria)

Evaluation of Separators Influence on Charge Acceptance of Negative Plates of Lead Batteries

s02-040

**Elvira Gomez** (Ciencia de Materials i Química Física, University of Barcelona, Barcelona, Spain), Albert Serra

Efficient hydrogenation of levulinic acid to  $\gamma$ -valerolactone by electrodeposited Ni-rich Ni-Pt mesoporous nanowires

s02-041

**Min-Yeong Kim** (Surface Materials Division, Korea Institute of Materials Science, Changwon si, Korea), Kyu Hwan Lee, Yoon-Bo Shim

Conducting Polymer-Reduced Graphene Oxide Composite for the Electrochemical Detection of Bisphenol A and Hydrogen Peroxide

s02-042

**Maria Matrakova** (Lead acid battery, Institute of Electrochemistry and Energy Systems, Sofia, Bulgaria), Albena Aleksandrova, Plamen Nikolov

Investigating the effect of added natural substances to the positive electrode on the cycling performance of automotive lead batteries

## Surface modification

s02-043

**Daniel Crisan** (Laboratory of Multifunctional Materials and Structures, National Institute of Materials Physics, Magurele, Romania), Victor C. Diculescu, Teodor A. Enache

Hydrazide-based Materials for Carbonyl Detection in Oxidized Proteins.

s02-044

**Arturo Estrada-Vargas** (Departamento de Estudios del Agua y de la Energía, Universidad de Guadalajara, Tonalá, Mexico), Ricardo Javier Ortiz-Pérez, Víctor Hugo Romero, Edith Xio Mara García  
Potential Pulse Assisted Adsorption of Carminic Acid Dye in TiO<sub>2</sub> Nanoparticles

s02-045

**Meihua Hong** (Energy and Chemical Engineering, Incheon National University, Incheon, Korea), Van-Chuong Ho, Subin Lee, Seung-Ho Yu

Dynamic Interfacial behavior of LiCoO<sub>2</sub> under Various Potential with Lithium Bis(oxalato)borate for Lithium Ion Batteries

s02-046

**Seonghun Jeong** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Jun Hwa Park, So Young Park, Jineun Kim, Kyu Tae Lee, Yeong Don Park

Electrolyte-Phobic Molecular Monolayer for Ni-rich Cathode Powder: Solution for Microcrack Failure in Lithium Ion Batteries

s02-047

**Jaeik Kim** (Energy Engineering, Hanyang University, Seoul, Korea), Jeongheon Kim, Insung Hwang, Taeseup Song  
Copper Nitride Nanowires Coated Li Metal with Homogeneous Li Plating for Li Metal Batteries

s02-048

**Subin Lee** (Energy and Chemical engineering, Incheon National University, Incheon, Korea), Seonghun Jeong, Suhyun Lee  
Synergetic Effect of Lithium impurity and additive combination on Cathode Electrolyte Interphase film; Using Lithium Difluorobis(oxalato)phosphate on Ni-rich Layered Oxide for Lithium Ion Battery

s02-049

**Jiwoong Oh** (School of chemical engineering and materials science, Chung-Ang university, Seoul, Korea), Changshin Jo  
Surface coating for high nickel cathode in lithium ion battery

s02-050

**Eva Oswald** (Institute of Analytical and Bioanalytical Chemistry, Ulm University, Ulm, Germany), Julian Kund, Anna-Laurine Gaus, Max von Delius, Maria Küllmer, Andrey Turchanin, Robert Leiter, Ute Kaiser, Martin Lämmle, Sven Rau, Christine Kranz  
Localized surface modification and screening experiments of molecular cobalt catalysts towards photocatalytic hydrogen evolution reaction

s02-051

**Bihong So** (Energy and Chemical engineering, Incheon National University, Incheon, Korea), Seonghun Jeong  
High performance lithium metal electrode via surface highly conductive polymer coating

s02-052

**Alexey Volkov** (Department of Electrochemistry, Saint Petersburg State University, Saint Petersburg, Russia), Svetlana Eliseeva, Linjunyao Wang, Mikhail Kamenskii, Veniamin Kondratiev  
Effect of PEDOT Layers on The Electrodeposition/Stripping of Zinc

### **Thin films and monolayers**

s02-053

**Heigo Ers** (Institute of Chemistry, University of Tartu, Tartu, Estonia), Vladislav Ivanistsev, Piret Pikma  
Predicting the orientation and structure of self-assembled monolayer on electrode's surface using machine learning algorithms

s02-054

**Tae-Youb Kim** (Reality Devices Research Division, Electronics and Telecommunications Research Institute, Daejeon, Korea)  
Colored mirror switchable device using Reversible Electrodeposition

s02-055

**Ryosuke Ogoma** (Koiwa Lab., Department of Applied Chemistry, College of Science and Engineering, Kanto Gakuin University, Yokohama, Japan), Shota Kamiyama, Teruyasu Kaeriyama, Ichiro Koiwa  
Preparation of Molybdenum Thin Film by Electroplating Method by Using Calcium Chloride as a Solvent

s02-056

**Jongdeok Park** (Energy and Materials Engineering, Dongguk University, Seoul, Korea), Sang Jung Ahn  
Effects of size similarity on surface morphology of graphene oxide Langmuir-Blodgett film

s02-057

**Ryohko Sasano** (Koiwa Lab., Department of Applied Material and Life Science, Graduate School of Engineering, Kanto Gakuin University, Yokohama, Japan), Ichiro Koiwa

Effect of Small Amount Adding Tetramethylammonium Chloride on Surface Condition of Electroplated Aluminum Films from Using Solvents

### Charge transfer at soft interfaces

s03-001

**Paulina Borgul** (Department of Inorganic and Analytical Chemistry, University of Lodz, Łódź, Poland), Patrycja Pawlak, Konrad Rudnicki, Andrzej Leniart, Pawel Krzyczmonik, Slawomira Skrzypek, Lukasz Póltorak

Polarized liquid/liquid interface supported by polyamide tape membranes for ephedrine detection

s03-002

**Kamil Cywinski** (Department of Chemical Sciences, University of Limerick, Limerick, Ireland), Andrés Molina, Micheál Scanlon

Photoconversion at an Electrified Liquid-Liquid Interface Functionalised with Porphyrin-Sensitised TiO<sub>2</sub> Nanoparticle Films

s03-003

**Karolina Kowalewska** (Department of Inorganic and Analytical Chemistry, University of Lodz / Faculty of Chemistry, Lodz, Poland), Magdalena Karpinska, Karolina Sipa, Katarzyna Kaczmarek, Slawomira Skrzypek, Lukasz Póltorak

Modification of Nylon-6.6 with Silver Nanoparticles at Polarized Liquid - Liquid Interface

s03-004

**Kai Luo** (Department of Chemical Engineering, Department of Chemistr, ?????, ???, China)

Spontaneous formation of gold nanoparticles and hydrogen peroxide via charged microdroplet of chloroauric acid

s03-005

**Ryuto Mashita** (Graduate School of Natural Science and Technology, Kanazawa University, Kanazawa, Japan), Yoshio Nishiyama, Hirohisa Nagatani

Spectroelectrochemical Analysis of Mitoxantrone across a Biomimetic Liquid|Liquid Interface

s03-006

**Nataly Rey Munoz** (Department of Chemical Sciences, Bernal Institute, University of Limerick, Limerick, Ireland), Alonso Gamero Quijano, Ivan Robayo Molina, Micheal Scanlon

Closed Bipolar Electrochemistry in a 4-Electrode Configuration: An Ideal Complimentary Methodology to Probe Electropolymerisation at Liquid-Liquid Interfaces

s03-007

**Ivan Robayo** (Chemical Sciences, University of Limerick, Limerick, Ireland)

Engineering Self-Assembled Porphyrin Nanostructures at the Liquid-Liquid Interface for Solar Energy Conversion

s03-008

**Micheál D. Scanlon** (Chemical Sciences, Bernal Institute, University of Limerick, Limerick, Ireland), Andrés F. Molina-Osorio, Sho Yamamoto, Alonso Gamero-Quijano, Alonso Gamero-Quijano, Iván Robayo-Molina, Hirohisa Nagatani

Electrochemically Reversible H-J Interconversion of a Floating Film of Porphyrin Nanostructures at an Electrified Liquid-Liquid Interface

s03-009

**Karolina Sobczak** (Department of Inorganic and Analytical Chemistry,, University of Lodz, Łódź, Poland), Konrad Rudnicki, Slawomira Skrzypek, Lukasz Poltorak

Electrochemical Determination of Ephedrine at the Polarized Liquid-Liquid Interface

s03-010

**Kohei Uematsu** (Department of Bioscience and Biotechnology, Fukui Prefectural University, Eiheiji, Japan), Yuka Matsubara, Hajime Katano, Toshiyuki Osakai  
Ion Transfer Voltammetry at Fluorous Ether | Water Interfaces

s03-011

**Jia-Qiang Yang** (Department of Chemistry, Xiamen University, Xiamen, China), Lei Jin, Wei-Qing Li, Fang-Zu Yang, Zhong-Qun Tian, Dongping Zhan  
Inhibiting Sulfite Dimerization on a Polarized Gold Electrode Surface

### **Electrochemical sensors**

s03-012

**Jingjing Li** (Chemistry, Kyungpook National University, Daegu, Korea), Yunpei Si, Yae Eun Park, Jung-Seok Choi, Sung Mi Jung, Ji Eun Lee  
Electrochemical Sensing Platform with Bionanomaterials for Serotonin

s03-013

**Nives Novosel** (Division for Marine and Environmental Research, Rudjer Boskovic Institute, Zagreb, Croatia)  
How to Utilize Structural Features of the Algal Cells for Electrochemical Differentiation at the Liquid-Liquid Interfaces?

s03-014

**Vytautas Zutautas** (Department of Nanoengineering, Center for Physical Sciences and Technology (FTMC), Vilnius, Lithuania), Rasa Pauliukaite  
pH Detection Using Poly(Folic Acid) and Chitosan Modified Electrode

### **Ionic liquids in batteries and fuel cells**

s03-015

**Muhammad Salman** (Chemistry, Kyungpook National University, Daegu, Korea)  
Synthesis and Characterization of Imidazolium Based Ionic Liquids as an Electrolyte Application

### **Nanomaterials fabrication**

s03-016

**Athira Kuruly Rajan** (Electrochemistry Research Group, Applied Sciences, Dundalk Institute of Technology, Dundalk, Ireland), Indherjith Sakthinathan, Anna Proust  
Electrochemical studies of Preyssler type Polyoxometalate: Its hybrid film on Glassy carbon and Gold electrode

s03-017

**Nobuaki Oyamada** (Department of Chemistry, Faculty of Science, Hokkaido University, Sapporo, Japan), Hiro Minamoto, Kei Murakoshi  
Optical Molecular Condensation at Metal-Solution Interface under Electrochemical Potential Control

s03-018

**Nicolas Rojas-Sanabria** (Department of Chemical Sciences, Bernal Institute, University of Limerick, Limerick, Ireland), Alonso Gamero-Quijano, Angelika Holzinger, Micheál D. Scanlon  
Synthesis and Electrokinetic Performance of PEDOT and p-ProDOT Gold Nanocomposites Films for Determination of Dopamine

## Bioelectrocatalysis

s04-001

**Serah Choi** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Hyeryeong Lee, Stacy Simai Reginald, In Seop Chang  
Enzyme-coupled Electrochemical Regeneration of NADH by Diaphorase

s04-002

**Linda Gonzalez-Gutierrez** (Science direction, energy group, CIDETEQ, Queretaro, Mexico), Fatima Angeles-Estrella, Omar Castelo-Gonzalez  
Carbon cloth activation for textile wastewater bioelectrochemical treatment

s04-003

**YeBeen Kim** (chemistry, Pusan National University, Busan, South Korea, Korea), Shamim Ahmed Hira, Kyeong Mun Park, Kang Hyun Park  
NO<sub>2</sub>-functionalized metal-organic framework incorporating bimetallic alloy nanoparticles as a sensor for efficient electrochemical detection of dopamine

s04-004

**Stacy Reginald** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Hyeryeong Lee, Minji Kim, Serah Choi, Basit Sharif, In Seop Chang  
Solid-binding Peptide Fusion at the Exposed N- and C-terminus of a Catalytic L-subunit of CO Dehydrogenase (CODH) Facilitates Direct Electron Transfer at Enzyme-Electrode Interface

s04-005

**Xiaomei Yan** (Department of Chemistry, Technical University of Denmark, Copenhagen, Denmark), Jing Tang, Su Ma, David Ackland Tanner, Roland Ludwig, Jens Ulstrup, Xinxin Xiao  
Enhanced Direct Electron Transfer of Cellobiose Dehydrogenase on Three-Dimensional Graphene Modified Carbon Electrodes

## Bioenergetics

s04-006

**Renata Bilewicz** (Faculty of Chemistry, University of Warsaw, Warsaw, Poland), Michal Kizling, Maciej Dzwonek, Agnieszka Wieckowska, Krzysztof Stolarczyk  
Performance of an Enzymatic Supercapacitor in Oxygen-Saturated Sucrose Solution Operating in the Self-Charging/Discharging Mode

s04-007

**Shuwei Li** (Applied chemical engineering, Pusan National University, Pusan, Korea), Minsoo Kim, Da Seul Kong  
Novel bioelectrosynthesis of polyhydroxybutyrate (PHB) from CO<sub>2</sub> using Rhodobacter sphaeroides in bioelectrochemical system

## Biofuel cell

s04-008

**Kyuhwan Hyun** (Center for Hydrogen<sup>Å</sup>-Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Joon-Young Lee, Hee-Young Park, Jong Hyun Jang  
Effect of the protection layer formed by cross-linked gelatin on the stability and performance of glucose and oxygen fuel cells

s04-009

**Yongwon Jeon** (Department of Bioscience and Biotechnology, Konkuk University, Seoul, Korea), Changhoon Kim, Jun Hyun Kim, Sunghyun Kim  
Prevention of Voltage Reversal in Stacked Microbial Fuel Cells using Carbon Fiber Brush Anode

s04-010

**Himanshu Khandelwal** (Applied chemical Engineering, Pusan National University, Pusan, Korea), Sakuntala Mutyala, Minsoo Kim, Shuwei Li, Young Eun Song  
Tungsten Nanoparticle based isolation of Pseudomonas aeruginosa species for improved electrochemical process in a microbial fuel cell

s04-011

**Minsoo Kim** (Applied Chemical Engineering, Pusan National University, Pusan, Korea), Shuwei Li, Young Eun Song, Soo-Yong Park, Ildoo Chung  
Polydopamine/polypyrrole graphite felt synergistic interactions enhanced power density in microbial fuel cell

s04-012

**Jun Hyun Kim** (Department of Bioscience and Biotechnology, Konkuk University, Seoul, Korea), Yongwon Jeon  
A Microbial Electrolysis Cell for The Treatment of Wastewater from Alcoholic Beverage Factory.

s04-013

**Eunseo Kim** (Applied chemical engineering, Pusan National University, PUSAN, Korea), Minsoo Kim, Shuwei Li  
Improvement of productivity for acetate using a modification of cathode (PPY/Nafion-GF) in Microbial electrosynthesis system

s04-014

**Hyeongjae Kim** (Department of Bioscience and Biotechnology, Konkuk university, Seoul, Korea), Yongwon Jeon, Sunghyun Kim  
Effect of Phosphate Buffer Saline Concentrations In The Microbial Electrolysis Cell Performance

s04-015

**Fred Lisdat** (Biosystems Technology, Technical University Wildau, Wildau, Germany), Marc Riedel, Soraya Höfs, Sascha Morlock  
Two photoactive electrodes combined with biocatalysts for the construction of a high voltage tandem biofuel cell

## **Biosensing**

s04-016

**Eleazar Castañeda Morales** (Laboratorio de electroquímica y corrosión, Instituto Politécnico Nacional, Ciudad de México, Mexico), Lifang Chen, Arturo Manzo Robledo  
Direct electrochemistry of glucose oxidase immobilized on reduced graphene oxide/nafion for electro-oxidation of glucose

s04-017

**Cecilia Cristea** (Department of Analytical Chemistry, Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania), Gheorghe Melinte, Magdolna Casian, Wolfgang Schuhmann, Oana Hosu  
Assessment of Food Contaminants at Gold-Chip Biosensors

s04-018



**Ali Jafarov** (Institute of Technology, University of Tartu, Tartu, Estonia), Alexandra Elsakova, Mark Merzlikin

Three-dimensional printing of electrochemical cells for biosensing on flexible carbon electrodes

s04-019

**Jakub Veznik** (Department of Chemistry, Masaryk University, Brno, Czech Republic), Jakub Sopousek, Libuse Trnkova, Karel Lacina

Two Versus Three Electrode Setups for Impedance Biosensors: Concerns Regarding Stability

## **Biosensor**

s04-020

**Julia Alvarez-Malmagro** (Institute of Catalysis and Petrochemistry, CSIC, Madrid, Spain), Julia Alvarez-Malmagro, Francisco Prieto Dapena, ZhangFei Su, Estrella Drago, Manuela Rueda, Jacek Lipkowski

Mixed Monolayer of a Cytidine-Nucleolipid and a Phospholipid: a potential system for Molecular Recognition of Complementary Nucleobases

s04-021

**Yuandong Liu** (School of Chemistry and Molecular Engineering, East China Normal University, Shanghai, China)

Long-term tracking and dynamically quantifying of reversible changes of extracellular Ca<sup>2+</sup> in multiple brain regions of freely moving animals

s04-022

**Yinjie Qian** (School of Chemistry and Molecular Engineering, East China Normal University, Shanghai, China)

Rigid Molecular Wires Regulate Nano Interface for Long-term Simultaneously Monitoring of Dopamine and Uric Acid in Rat Brain with Parkinson's Disease

s04-023

**Matias Regiart** (Institute of Chemistry, Universidade de Sao Paulo, Sao Paulo, Brazil), Mauro Bertotti, Eliana Fernandes, Ana Ledo, Christopher Brett, Rui M. Barbosa

Nanostructured Microelectrode Based Enzymatic Biosensors for Monitoring Neurometabolic Markers in the Brain

s04-024

**Sofiiia Tvorynska** (Department of Analytical Chemistry, Charles University, Prague, Czech Republic), Sofiiia Tvorynska, Jirí Barek, Bohdan Josypcuk

Investigation of Flow Amperometric Biosensor Based on Two Enzymatic Mini-Reactors for Determination of Acetylcholine

## **Electron transfer**

s04-025

**Jinheung Kim** (Chemistry, Ewha Womans, Seoul, Korea)

Electrochemical Oxidation of Guanines of Oligonucleotides on Carbon Nanomaterials

## **Nanoelectrochemistry**

s04-026

**Hyeryeong Lee** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Buk-gu, Korea), Stacy Simai Reginald, Basit Sharif, In Seop Chang  
High Resolution Patterning of Gold Binding Peptide Fused Glucose Dehydrogenase Gamma-Alpha Complex (GDH<sup>GA</sup>) on Nanopatterned Electrode Surface Fabricated via E-beam Lithography

## Bioelectrochemistry

s05-001

**Ilaria Palchetti** (Department of Chemistry "Ugo Schiff", University of Florence, Sesto Fiorentino, Italy),  
Francesco Tadini-Buoninsegni

A Bioelectrochemical Approach for Monitoring Drug Interactions with Membrane Transporters

## Electrochemical biosensors

s05-002

**Hyunju Cho** (Department of ICT Environment Health System, Graduate School, Soonchunhyang University, Asan, Korea), Tae Hyun Kim, Su Bin Yang

Label-free Assay of Protein Kinase A Activity and Inhibition with Cys-Kemptide-modified Gold Electrode

s05-003

**Rimsha Binte Jamal** (Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Aarhus, Denmark), Elena E. Ferapontova

Ultrasensitive Electrocatalytic Detection of Escherichia coli at DNA- Modified Gold Screen-Printed Electrodes

s05-004

**Samia Mekhmoukhen** (Laboratoire ITODYS, Université de Paris , Paris, France), Giorgio Mattana, Benoit Piro, Vincent Noël

Enzyme-free, Reference-less Transistor-based Biosensors for the Detection of Biological Analytes

s05-005

**Yunpei Si** (Chemistry, Kyungpook National University, Daegu, Korea), Yae Eun Park, Ji Eun Lee

Electrochemical Detection of Dopamine Using Carbon Nanocomposites Modified Carbon Electrode

s05-006

**Chia-Liang Sun** (Dept. of Chem. and Mater. Eng., Chang Gung University, Taoyuan, Taiwan), Cheng-Hsuan Lin

Synthesis of Graphene Oxide Nanoribbons for Visible Light-enhanced Detection of Melatonin

s05-007

**Toni Vitasovic** (Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Aarhus, Denmark), Elena Ferapontova

Compensation of DNA surface charge by Zn<sup>2+</sup> and Mg<sup>2+</sup> ions: Electron Transfer from a Gold Electrode to Methylene Blue linked dsDNA

## Electrochemiluminescence

s05-008

**Sheng-Yuan Deng** (School of Environmental and Biological Engineering, Nanjing University of Science and Technology, Nanjing, China), Ying Wan

Electrochemiluminescence-Repurposed Abiological Protein

## Micro- and nanoelectrodes for in vivo analysis

s05-009

**Eliana Fernandes** (Faculty of Pharmacy, University of Coimbra, Coimbra, Portugal), Matias Regiart, André T. Vicente, Cândida Dias, Ana Ledo, Rui M. Barbosa

Microelectrode Biosensors for Real-Time Monitoring Lactate Trafficking in the Extracellular Space of Brain Tissue

**Wearable healthcare devices**

s05-010

**Bernardo Patella** (Department of Engineering, University of Palermo, Palermo, Italy), Francesco Lopresti, Maria Giuseppina Bruno, Giuseppe Aiello, Maïwenn Kersaudy-Kerhoas, Luigi Botta, Alan O'Riordan, Vincenzo La Carrubba, Rosalinda Inguanta

Electrochemical sweat chloride quantification coupled with poly-lactic acid microfluidics

## Analysis techniques

s06-001

**Mazhar Abbas** (Electrical Engineering, Chungnam National University, Daejeon, Korea), Jonghoon Kim  
Data driven decoupling of double-layer capacitance impact from diffusion impact for enhanced battery modeling

s06-002

**Seungwoo Byun** (Energy Science and Engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Youngjoon Roh, Kwang Man Kim, Myung-Hyun Ryou  
Understanding the adhesion properties of polymeric binders in LIB composite electrodes by liquid electrolyte impregnation

s06-003

**Marcel Roy Domalanta** (Department of Chemical Engineering, University of the Philippines Diliman, Quezon City, Philippines), Julie Anne del Rosario  
An Electrochemical-Thermal Coupled Thermal Runaway Multiphysics Model for Lithium Polymer Battery

s06-004

**Hyewon Jeong** (Electrical Engineering, Chungnam National University, Daejeon, Korea), Seungyun Han, Jonghoon Kim  
Estimation of internal temperature of 70Ah pouch lithium-ion battery based on EIS test under local heating condition

s06-005

**Deokhun Kang** (Electrical Engineering, Chungnam National University, Daejeon, Korea), Jonghoon Kim  
Estimation method of lithium-ion battery health and temperature using incremental capacity analysis

s06-006

**Jehyoung Koo** (Western Seoul Center, Korea Basic Science Institute, Seoul, Korea)  
Analysis on Electrode Material Behaviour in Lithium-Ion Batteries via in-situ SEM

s06-007

**Federico Poli** (Department of Chemistry "Giacomo Ciamician", Alma Mater Studiorum University of Bologna, Bologna, Italy), Jose Ramon Herrera, Clara Santato, Fabio Cicoira, Francesca Soavi  
Electronic properties of lithium-ion materials by an ion gate transistor set-up

## Anodes

s06-008

**Basit Ali** (Department of Energy and Materials Engineering, Dongguk University, Seoul, Korea)  
Ge-doped  $\text{Li}_4\text{Ti}_5\text{-xGe}_x\text{O}_{12}$  ( $x = 0.05$ ) as a fast-charging, long-life bi-functional anode material for lithium- and sodium-ion batteries

s06-009

**Shiraz Cherb** (School of Chemistry, Tel-Aviv University, Tel-Aviv, Israel), Diana Golodnitsky  
Development of 3D Metal-Silicide Anodes for Lithium-Ion Batteries

s06-010

**Sungho Choi** (Chemistry, Pohang University of Science and Technology, Pohang, Korea), Taehyung Kim, Jaegeon Ryu, Byeong-Su Kim, Soojin Park

Integrated Organic Material-Binder Enabled by Surficial Amide Linkage for Stable and Fast Organic Lithium-Ion Batteries

s06-011

**Cu Dang Van** (Applied Chemistry, Kyung Hee University, Yongin, Korea), Thuy Luong Thi Thu, Khu Le Van, Min Hyung Lee

Electrochemical Performance Of Rice Husk-Derived Activated Carbon As Anode Material For Lithium Ion Batteries

s06-012

**Ji-Yong Eom** (Energy Materials R&D Center, Korea Automotive Technology Institute, Cheonan-si, Chungnam, Korea), Jong-Min Kim, Seong-In Kim

Electrochemical performance of lithium salt of carboxymethyl cellulose as an aqueous binder in anode for lithium-ion batteries

s06-013

**Tao Gao** (Chemical Engineering, Massachusetts Institute of Technology, Cambridge, USA), Dimitrios Fraggedakis, Supratim Das, William Chueh, Ju Li, Martin Bazant

Understanding the interplay between Li insertion and Li plating in graphite anodes

s06-014

**Gyeong Rae Gim** (Chemical Engineering and Biotechnology, Korea Polytechnic University, Hwaseong-si, Korea)

Enhanced Interface Stability of Bi-layered Silicon Monoxide and Graphite Negative Electrode for Lithium-ion Batteries

s06-015

**Mingyeong Gu** (Energy Engineering, Konkuk university, Gwangjingu, Korea), Hyeongwoo Kim, Wonchang Choi

Synthesis of TiNb<sub>2</sub>O<sub>7</sub>/Graphene Oxide Composite as a Superior Anode Material Based on Polydopamine Coating for Lithium Ion Battery

s06-016

**Youngjin Ham** (Department of Materials Science and Engineering, KAIST, Daejeon, Korea), Il-Doo Kim, Paul Braun, Seokwoo Jeon

Ordered 3D Polyimide/Nickel Nanohybrids for Lithium-Ion Storage

s06-017

**Daseul Han** (Energy Materials Engineering, Dongguk University, Jung-gu, Korea), Sooyeon Hwang, Seong-Min Bak, Kyung-Wan Nam

Controlled synthesis of MoO<sub>x</sub>/CNTs nanocomposites and Li-storage mechanism as anode materials for lithium-ion batteries

s06-018

**Eun Kwnag Jang** (Department of Materials Science and Chemical Engineering, Hanyang University, Ansan, Korea), Jinhyeok Ahn

Micro-2D Si/SiO<sub>x</sub> alternating veneer-like microparticles composite anode for high-capacity lithium-ion battery

s06-019

**Minjun Je** (Advanced Materials Science, Pohang University of Science and Technology (POSTECH), Pohang, Korea), Jaegwon Ryu, Wooyeong Choi, Soojin Park

Salt-mediated extraction of nanoscale Si building blocks: composite anode for Li-ion full battery with high energy density

s06-020

**Hyeon ji Jeon** (Advanced Batteries Research Center, Korea Electronics Technology Institute, Seongnam, Korea), Hyun sun Lee, Je-Nam Lee, Hyukjae Lee, Ji-Sang Yu  
A Study on the Electrochemical Properties of Graphite Anodes by conducting agent for the Improvement of Electrical Conductivity

s06-021

**Hyang Sun Jeon** (Department of Chemical Engineering and Biotechnology, Korea Polytechnic University, Siheung-si, Korea)  
High-performance Non-uniform Graphite/SiO Composite Electrode with Cluster Structure for Lithium-ion Batteries

s06-022

**Jieun Kang** (Chemistry, Pohang University of Science & Technology (POSTECH), Pohang, Korea), Jaegeon Ryu, Hyunji Kim, Hyunwoo Bark, Soojin Park, Hyunjung Lee  
Dual Buffering Inverse Design of Three-Dimensional Graphene-Supported Sn-TiO<sub>2</sub> Anodes for Durable Lithium-Ion Batteries

s06-023

**Hyunwoo Kim** (Department of Energy Science, Sungkyunkwan University, Suwon-si, Korea), Minji Kim, Sunhyun Hwang, Jiyeon Kim  
Polymorphic Effects on Electrochemical Performance of Conversion-type Based MnO<sub>2</sub> Anode Materials for Next-generation Li Batteries

s06-024

**Yunjung Kim** (Material science and engineering, Kookmin University, Seoul, Korea), Jae-Hun Kim  
Synthesis and electrochemical properties of porous Sn<sub>2</sub>Nb<sub>2</sub>O<sub>7</sub>-graphene oxide composite anode materials for Li-ion batteries

s06-025

**Tae Hun Kim** (Biochemical engineering, Korea Polytechnic University, Siheung-si, Korea)  
Enhanced Cycle Performance of Ni<sub>x</sub>Cu<sub>y</sub>-Coated Micro-sized Silicon Negative Electrode Materials Using Electroless Plating

s06-026

**Yun Sik Kim** (Energy engineering, Konkuk university, Seoul, Korea), Hae Ri Lee, Han-Ik Joh  
Coating effect of nitrogen-doped carbon quantum dots on cobalt disulfide-embedded porous carbon frameworks for advanced lithium-ion batteries.

s06-027

**Lanlee Lee** (SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University, Suwon, Korea), Soo Min Hwang, Young-Jun Kim  
Graphene-coated SiO<sub>x</sub>/Graphite Anode for Practical Applications in Lithium Ion Batteries

s06-028

**Hae ri Lee** (Energy engineering, Konkuk university, Seoul, Korea), Yun-sik Kim, Han-ik Joh  
Sheet size effect of annealed graphene oxide on the lithiation behavior for a high-capacity anode material of Li-ion batteries

s06-029

**Junwon Lee** (Advanced materials engineering, Kyung Hee university, Yongin, Korea), Seongmin Park  
Functionality of MoS<sub>2</sub> Decorated Graphite Anode for Lithium Ion Batteries

s06-030

**Dušan Mladenović**; (Electrochemistry, University of Belgrade - Faculty of physical chemistry, Belgrade, Serbia), Miloš Milović; Biljana Sljukic, Slavko Mentus, Milica Vujkovic

Sodium-vanadium oxide/carbon as next-gen anode material for alkaline-ion aqueous rechargeable batteries

s06-031

**Vedikuyilazhagan Muniraj** (Department of Chemistry, Pusan National University, Busan, Korea)  
D-Network-Structured Conducting Polymer and Silicon Composite for a Binder-free Anode for Li-ion Batteries

s06-032

**Kelvin Jenerali Nyamtara** (Energy Systems Engineering, Soonchunhyang University, Asan-si, Korea),  
Pham Tuan Kiet, Yeon Ji Choi, Neema Karima, Nungu Israel Nungu, Wook Ahn  
Si-Pitch Nano Composite Anode Material for High- Performance Li-ion Battery

s06-033

**Jeongeun Park** (Energy Engineering, Konkuk university, Gwangjingu, Korea), Jihye Jang, Wonchang Choi  
The Si/SiOC Composite Materials by Surfactant Utilization as an Anode Materials for Lithium-Ion Battery and its Electrochemical Performances

s06-034

**Yu-Yeon Park** (Chemical engineering, Soongsil University, Seoul, Korea), Sang-Hyun Moon, Sung-Beom Kim, Ji-hwan Kim, Jae-Hoon Shin, Jae-Sung Jang, Seong-Nam Lee, Kyung-Won Park  
Facile synthesis of Germanium/Carbon composite using coffee waste as a reductant and carbon source for lithium-ion batteries

s06-035

**Hyungeun Seo** (Material science and engineering, Kookmin university, Seoul, Korea), Jae-Hun Kim  
Synthesis and Electrochemical Characteristics of Silicon-Based Porous Composite Material for Lithium Secondary Battery Anode

s06-036

**Duck-Hyeon Seo** (Energy & Mechanical Engineering, Gyeongsang national university, Tongyeong, Korea), Jun-Seok Lee, Sang-Du Yun, Seong-Min Woo, Jeong-Hyeon Yang, Jung-Pil Noh  
Electrochemical properties of Sn/TiNi multilayer electrodes for Li-ion thin film battery

s06-037

**Eunjeong Seok** (Department of Energy Engineering, Konkuk University, Gwangjingu, Korea), Hyojun Lim, Wonchang Choi  
The Free Carbon Domain Control of SiOC by Employing Additives to Silicone Oil Precursor and its Electrochemical Performances as Anode Materials in Lithium-Ion Batteries

s06-038

**Seohyeon Yeo** (School of chemical engineering, Yeungnam university, Gyeongsan, Korea), Dongkyu Son, Yuhyeon Lee, Gibaek Lee, Jinhyuk Baek  
Ultra-Fast Charging in Lithium-Ion Batteries using Zeolitic Lithium Titanate as Anode Material with High performance

s06-039

**Eunjung Yoon** (School of Chemical Engineering, Yeungnam University, Gyeongsan-si, Korea), Jihye Lee, Taeho Yoon  
Surface coating effect on crack inhibition in Silicon thin film electrode for Lithium Ion Batteries

**Battery cell, module, pack**

s06-040

**Tai-Jong Jung** (Department of Electro-Functionality Materials Engineering, University of Science and Technology, Chanwon, Korea), Hyobin Lee, Sun Ho Park, Jihun Song, Chil-Hoon Doh, Seong-Wook Eom, Ji-Hyun Yu, Yong Min Lee, Yoon-Cheol Ha  
Analysis of Long-Term Degradation and Heat Generation Behaviors of NCA/Graphite 18650 Lithium-ion Cells for Grid Energy Storage Applications

## Cathodes

s06-041

**Evgenii Beletskii** (Electrochemistry, St.Petersburg state university, St.Petersburg, Russia)  
Methyl-substituted NiSalen-type polymer layer for overcharge protection of lithium-ion batteries

s06-042

**Ji-Eun Cheon** (Chemical engineering, , Busan, Korea), Su-Min Heo  
Electrochemical Characteristics of Ni-rich Cathode Materials with Surface Modified Multi-Structure at High-rate Charging

s06-043

**Ji-Eun Cheon** (Chemical engineering, Donga-A University, Busan, Korea), Su-Min Heo  
Electrochemical Characteristics of Surface Modified Ni-rich Cathode Materials under the High-rate Charging Condition

s06-044

**Dongkyu Choi** (School of Nano Convergence Technology, Hallym University, Chuncheon, Korea), Seonguk Lim, Taekyun Jeong, Dongwook Han  
High-capacity/High-stability Mn/Ti Binary Cathode Oxides with Layered Structure for Lithium-ion Batteries

s06-045

**Yong-Jeong Choi** (Energy Materials Engineering, Dongguk University, Jung-gu, Korea), Kyung-Wan Nam  
Investigation of zirconium doping effect on the performance improvement of nickel-rich  $\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Mn}_{0.1}\text{O}_2$

s06-046

**Roberto Colombo** (DISAT, Politecnico di Torino, Torino, Italy), Daniele Versaci, Julia Amici, Federico Bella, Carlotta Francia, Silvia Bodoardo, Nadia Garino  
Innovative hybrid high voltage electrodes based on LMNO/LFP materials for lithium ion batteries

s06-047

**Kuan-Zong Fung** (Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan), Shu-Yi Tsai, Li-Fu Chang, Kenneth Fung, Chia-Chin Chang  
Investigation of Oxide Cathodes for Li Ion Batteries Viewing From Charge Compensation and Dopant Precursors

s06-048

**Eunbi Go** (Chemical Engineering and Biotechnology, Korea Polytechnic University, Sangidaehak-ro, Siheung-si, Gyeonggi-do, Korea)  
 $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  Symmetric Lithium-ion Full Cell using Different Redox Centers

s06-049

**Su-Min Heo** (Chemical Engineering, Dong-A University, Busan, Korea), Ji-Eun Cheon  
Design of Positive Electrode Material by adopting MSSP to Enhance Charging Characteristics

s06-050

**Su-Min Heo** (Chemical Engineering, Dong-A University, Busan, Korea), Ji-Eun Cheon



## Enhancement of Charging Characteristics of Ni-rich NCM by applying MSSP Design

s06-051

**Gyuseong Hwang** (Materials science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea), TaeHee Kim, Daehee Lee, Hyeonmuk Kang, Yongju Lee, EunAe Cho  
A Study on Improvement in Electrochemical Properties of Li-excess Layered Oxide Cathode Materials for Li ion Batteries by Controlling the Primary Particle Size

s06-052

**Aleksandr Ivanishchev** (Institute of Chemistry, Saratov State University, Saratov, Russia), Arseni Ushakov, Irina Ivanishcheva, Alexei Korzhakov, Kirill Rybakov, Semen Makhov, Ambesh Dixit  
Structural and Electrochemical Characterization of Lithium and Transition Metals Polyanionic Compounds

s06-053

**Hyun-Woo Jeong** (Department of Chemical Engineering, Dong-A University, Busan, Korea)  
The Characteristics of Sub-micron Spinel LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Synthesized under Various Processing Parameters

s06-054

**Peixin Jiao** (Chemistry, Nankai University, Tianjin, China), Kai Zhang  
A Novel O<sub>2</sub>-Type Li-Rich Cathode Material with a Ribbon Superstructure for Long Life Lithium-Ion Batteries

s06-055

**Dae-Seong Kim** (Advanced Batteries Research Center, Korea Electronics Technology Institute, Seongnam, Korea), Cheon-Ju Kang, Je-Nam Lee, Young-Jun Kim, Ji-Sang Yu  
Electrochemical Properties of Sulfur Cathode by the Improvement of Electric Conductivity through Complex Conducting Agent

s06-056

**Hyung Gi Kim** (Advanced Materials Engineering, Kyonggi University, Suwon-Si, Korea), Yong Joon Park  
Electrochemical surface modification for lithia-based cathode

s06-057

**Shin-Yeong Kim** (Chemical and biological engineering, Seoul national university, Seoul, Korea)  
Insights on High-Voltage and High-Temperature Electrochemical Performance and Phase Transition Behavior of Doped LiNi<sub>1/3</sub>Co<sub>1/3</sub>Mn<sub>1/3</sub>O<sub>2</sub>

s06-058

**Sung-Beom Kim** (Department of Chemical Engineering, Soongsil University, Seoul, Korea), Sang-Hyun Moon, Deok-Hye Park, Ji-Hwan Kim, Jae-Sung Jang, Jae-Hoon Shin, Seong-Nam Lee, Yu-Yeon Park, Kyung-Won Park  
F-doped High-Ni Cathode with Improved Electrochemical Performance

s06-059

**Tae Hun Kim** (Biochemical engineering, Korea Polytechnic University, Siheung-si, Korea)  
Novel Electrode Manufacturing Process through Phase Inversion for High-Performance Electrodes in Lithium-ion Batteries

s06-060

**Madhusudana Koratikere Srinivasa** (Department of Chemistry, Pusan National University, Busan, Korea)  
Synthesis and Electrochemical Analysis of Multivalent Ion-doped LiCoO<sub>2</sub> Cathodes for Lithium-Ion Batteries

s06-061

**Na-Young Kwon** (Chemical engineering, Dong-A University, Busan, Korea), Min-Hee Lee  
Improved Interfacial Stability of Ni-rich NCM by Surface Modification

s06-062

**Bogyong Lee** (Department of Energy and Materials Engineering, Dongguk university, Seoul, Korea),  
Kyung-wan Nam  
LiNi<sub>0.9</sub>Co<sub>0.1</sub>O<sub>2</sub> cathode material prepared by molten salt method for Li ion batteries

s06-063

**Jihye Lee** (School of Chemical Engineering, Yeungnam University, Gyeongsan-si, Korea), Eunjeong  
Yoon, Taeho Yoon  
Understanding the corrosion behavior of Al current collector in LiPF<sub>6</sub>-containing electrolyte

s06-064

**Seong-Nam Lee** (Chemical engineering, Soongsil University, Seoul, Korea), Ji-Hwan Kim, Jae-Sung  
Jang, Sang-Hyun Moon, Sung-Beom Kim, Jae-Hoon Shin, Yu-Yeon Park, Kyung-Won Park  
Performance improvement of shape-controlled LiMn<sub>2</sub>O<sub>4</sub> cathode in lithium-ion batteries

s06-065

**Tobias Liebmann** (Institute of Materials Science, TU Dresden, Dresden, Germany), Christian Heubner,  
Karsten Voigt, Michael Schneider, Alexander Michaelis  
Understanding Electrochemical Kinetics and Thermodynamics of Blended Electrodes for Li-ion Batteries

s06-066

**Jong-Heon Lim** (Department of Energy Engineering, Dankook University, Cheonan, Korea), Min-Kyu  
Song, Jung-Dae Kim, MinHo Yang, Jae-won Lee  
Formation of LiF-embedded Carbon Layer on Lithium Cobalt Oxide through Encapsulation with  
Exfoliated Carbon Monofluoride

s06-067

**Jiuding Liu** (College of Chemistry, Nankai University, Tianjin, China), Jiuding Liu, Yudong Zhang,  
Junxiang Liu, Jinhan Li, Xiaoguang Qiu, Fangyi Cheng  
In-situ Li<sub>3</sub>PO<sub>4</sub> Coating of Li-Rich Mn-Based Cathode Materials for Lithium-ion Batteries

s06-068

**Hiroki Nara** (Research Organization for Nano & Life Innovation, Waseda University, Tokyo, Japan),  
Munenori Hirata, Masahiro Shikano, Takeshi Miyazaki, Hikari Sakaebe, Toshiyuki Momma, Tetsuya  
Osaka  
Electrochemical Impedance Spectroscopy Analysis of V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub> Glass Additive for FeF<sub>3</sub> Cathode for  
Lithium-ion Battery

s06-069

**Nungu Israel Nungu** (Energy Systems Engineering, Soonchunhyang University, Asan-si, Korea), Kelvin  
Nyamtara, Neema Karima, Sung Hoon Kim, Wook Ahn  
Synthesis of LiNi<sub>0.8</sub>Mn<sub>0.1</sub>Co<sub>0.1</sub>O<sub>2</sub> By Combustion Method as Higher Performance Cathode Material  
for Next Generation Lithium-Ion Batteries.

s06-070

**Maria Laura Para** (Department of Applied Science and Technology, Politecnico di Torino, TORINO,  
Italy), Andrea Querio, Mojtaba Alidoost, Mohsen Shiea, Antonio Buffo, Gianluca Boccardo, Antonello  
Barresi, Silvia Bodoardo, Daniele Marchisio  
Influence of the Mixing and Synthesis Conditions of the Precursors of the NMC<sub>811</sub> cathodes on their  
Electrochemical Performance

s06-071

**Hyunyoung Park** (Department of Energy Science, Sungkyunkwan University, Suwon, Korea), Jaeyoung Kim, Janwhan Seok, Sangbin Park, Munhyeok Choi, Won-Sub Yoon  
Stabilizing Effect of Titanium doping on High Voltage Lattice Distortion in Lithium Vanadium Phosphate Cathodes for Li-ion Batteries

s06-072

**Seongwon Park** (Department of Energy and Materials Engineering, Dongguk University, Seoul, Korea)  
Investigation of Ti doping effects on high-nickel  $\text{LiNi}_{0.9}\text{Co}_{0.1}\text{O}_2$  cathodes

s06-073

**Yoo Seong Tae** (Chemical Engineering and Biotechnology, Korea polytechnic University, Gyeonggi-do, Korea)  
Enhanced Electrochemical Performance of LMO/NMC Composite Positive Electrode with Bilayer Structure

s06-074

**Chul-Yong Shin** (Chemical Engineering, Dong-A University, Busan, Korea), Woo-Seok Choi  
Effect of Stabilization of Transition Metal Layer Structure by Doping of Tetravalent Metal Ions on Electrochemical Performance of Li-rich Layered Oxides

s06-075

**Jeong-Min Shin** (SKKU Advanced Institute of Nano Technology, Sungkyunkwan University, Suwon-si, Korea), Jeong-Min Shin, Jung-Hun Lee, Soo Min Hwang, Young-Jun Kim  
Dry electrode process with CNT coated Ni-rich cathode material for lithium-ion battery

s06-076

**Seong-Ju Sim** (Next Generation Battery Research Center, Korea Electrotechnology Research Institute, Changwon, Korea), Bong-Soo Jin  
Improvement of Electrochemical performance by  $\text{LiSrPO}_4$  coating on  $\text{LiNi}_{0.90}\text{Co}_{0.05}\text{Mn}_{0.05}\text{O}_2$  cathodes for Lithium-ion batteries

s06-077

**Jung-Hoon Song** (Cathode Research Group, RIST, Incheon, Korea), Suhyun Lee, Sang Cheol Nam, Sang Hyuk Lee, Hye-Won Park, Jung-Hoon Song  
Low Temperature Operation of Taylor Couette Reactor for the Preparation of High Nickel NCM Cathode Precursor

s06-078

**Fanglin Wu** (Helmholtz Institute Ulm, Karlsruhe Institute of Technology, Ulm, Germany), Matthias Kuenzel, Guktae Kim, Stefano Passerini  
Mitigating Capacity and Voltage Decay of Cobalt-Free Lithium-Rich Layered Oxide Cathodes Using Ionic Liquid Electrolytes

s06-079

**Sangho Yoon** (Department of mechanical engineering, Kyunghee University, Yongin-si, Korea), Sojung Koo, Duho Kim  
Correlating cationic ions and anisotropic lattice variation in Ni-rich layered oxides for Li-ion batteries

s06-080

**Yuhan Zhang** (College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan, China)  
High-performance lithium-rich cathode realized by oxygen defects regulation during a non-isothermal sintering process.

**Electrolytes**

s06-081

**Jinhyeok Ahn** (Materials Science and Chemical Engineering, Hanyang university, Ansan, Korea), Jinsol Im

Dual-protection on both Electrode via a Novel Sulfite-type Additive for the Stable Cycling of the High-voltage Lithium Metal Batteries

s06-082

**Kihun An** (Chemical engineering & Applied chemistry, , Daejeon, Korea), Yen Hai Thi Tran, Sehyun Kwak, Seung-Wan Song

Improvement of High-Rate Performance of High-Voltage Nickel-rich Cathode-based Lithium-ion Battery via Designed Electrolyte

s06-083

**Graziano Di Donato** (Department of Chemistry, La Sapienza University of Rome, Rome, Italy), Giovanna Maresca, Akiko Tsurumaki, Pier Giorgio Schiavi, Francesca Pagnanelli, Maria Assunta Navarra

Safe Ionic Liquid-based Electrolytes Coupled with Carbonaceous Anodic Materials for Lithium-ion Batteries

s06-084

**Xiaoli Dong** (Department of Chemistry, Fudan University, 200438, China), Yongyao Xia

All-Climate Energy Storage Systems

s06-085

**Wuliang Feng** (Department of Chemistry and Shanghai Key Laboratory of Molec, Fudan University, Shanghai, China), Yonggang Wang, Yongyao Xia

Studies on Physical Stability of Electrolyte/Electrode Interface in All Solid-state Battery

s06-086

**Cheolhee Han** (Department of Energy Science and Engineering, DGIST, Daegu, Korea), Hochun Lee, Jungwoo Oh, Chulhaeng Lee

Dinitrile as A Film Forming Additive for High-Voltage Lithium Ion Battery

s06-087

**Martin Ihrig** (Institute of Energy and Climate Research, Forschungszentrum Juelich GmbH, Juelich, Germany), Martin Finsterbusch, Olivier Guillon

Sintering of Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> solid electrolyte by ultrafast high temperature method

s06-088

**Tae Hyeon Kim** (Advanced Batteries Research Center, Korea Electronics Technology Institute , Seongnam-Si, Korea), Sung Soo Park, Min Soo Kang, Hyun-seung Kim, Goojin Jeong

Interfacial Engineering via Individual moiety designed electrolyte additive for quick charge-able lithium-ion batteries

s06-089

**Sehyun Kwak** (Chemical engineering and applied chemistry, , Daejeon, Korea), Kihun An, Seung-Wan Song

Enhanced Safety and Anodic Stability of New Nonflammable Electrolyte for a Use in High-voltage Nickel-rich Cathode-based Full-cell

s06-090

**Sang-Young Lee** (Department of Chemical and Biomolecular Engineering, Yonsei University, Seoul, Korea)

Single-Ion Conducting Soft Electrolytes for Solid-State Lithium Metal Batteries

s06-091

**Chul-Ho Lee** (Next Generation Battery Research Center, Korea Electrotechnology Research Institute, changwon, Korea), Sang-Min Lee

Enhanced air stability of argyrodite-type Li<sub>6</sub>PS<sub>5</sub>Cl solid electrolyte modified by phosphorus-free solid electrolyte

s06-092

**Hyeonghun Park** (Graduate School of Energy Convergence, Gwangju Institute of Science and Technology, Buk-gu, Gwangju, Korea), Geumyong Park, Seokho Suh, Jihun Kim, Hyeong-Jin Kim

The effect of diphenyl diselenide as a bi-functional additive for high voltage LiNi<sub>0.8</sub>Mn<sub>0.1</sub>Co<sub>0.1</sub>O<sub>2</sub>/graphite battery

s06-093

**Jong Won Park** (Energy Science and Engineering, DGIST, Daegu, Korea), Kyunggu Kim, Doh Hee Park, Hochun Lee

A dual functional additive that outperforms commercial Li salt for LiNi<sub>0.8</sub>Co<sub>0.1</sub>Mn<sub>0.1</sub>O<sub>2</sub>/Graphite lithium-ion batteries

s06-094

**Ryoma Sasaki** (School of Materials and Chemical Technology, University, Meguro-ku, Japan), Makoto Moriya, Yuki Watanabe, Kazunori Nishio, Taro Hitosugi, Yoshitaka Tateyama

Unravelling the Fast Li-ion Conduction Mechanism in a Succinonitrile-Based Molecular Crystal: A Molecular Dynamics Study

s06-095

**Chunyang Xia** (Chemical Engineering, University of Seoul, Seoul, Korea), Yongeun Kim, Sugyeong Kim, Jiwon Kwon, Hajin Jo, Cheolsoo Jung

Electrolyte Design for Improving the High-Voltage Performance of Lithium-ion Batteries and Inhibiting the Irreversible Damage at Low-Temperatures

s06-096

**Neelam Yadav** (Laboratory of Reactivity and Chemistry of Solids (LRCS), University of Picardie Jules Verne, Amiens, France), Mickael Bolmont, Arash Jamali, Carine Davosine, Mathieu Morcrette

Investigating the impact of physical parameters of solid electrolyte on cyclability of Sulfide based all solid-state batteries via in-situ SEM

s06-097

**Neelam Yadav** (Laboratory of Reactivity and Chemistry of Solids (LRCS), University of Picardie Jules Verne, Amiens, France), Neelam Yadav, Mickael Bolmont, Arash Jamali, Carine Davosine, Mathieu Morcrette

Investigating the importance/impact of physical parameters of solid electrolyte on cyclability of Sulfide based all solid-state batteries via in-situ SEM

s06-098

**Qiang Zhang** (Department of Chemical Engineering, Tsinghua University, Beijing, China), Chong Yan, Lili Jiang, Yu-Xing Yao, Yang Lu, Jia-Qi Huang

Nucleation and Growth Mechanism of Anion-Derived Solid Electrolyte Interphase

## **Energy storage system(ESS)**

s06-099

**Ranine El Hage** (LCPME, CNRS, Nancy, France), Liang Liu, Alain Fontaine, Vivien Nouri, Antoine Bourgois, Mathieu Etienne

Studies for the Improvement of the Power Density of a Redox Flow Battery Using a New Generation of Bipolar Plates

s06-100

**Mahdi Moghaddam** (Mechanical and Materials Engineering, University of Turku, Turku, Finland), Cedrik Wiberg, Silver Sepp, Pekka Peljo  
Theoretical Considerations for Thermodynamics and an Introduction to Kinetic Evaluations of Solid Boosters in Redox Flow Batteries

s06-101

**Angulakshmi Natarajan** (Materials Engineering and Convergence Technology, Gyeongsang National University, JINJU-SI, Korea), Xueying Li, Yuanzheng Sun, Manuel Sephan Arul, Jou-Hyeon Ahn  
SELF-DISCHARGE STUDIES OF LITHIUMSULFUR CELLS ENCOMPASSING PERMSELECTIVE MEMBRANES

s06-102

**Christina Zugschwert** (Technology Center Energy, University of Applied Sciences Landshut, Ruhstorf an der Rott, Germany), Karl-Heinz Pettinger  
Enabling redox flow batteries for grid stabilization by hybridization with supercapacitors

### Fast charging

s06-103

**Hyuntae Lee** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea), Yewon Shin, Seungwon Yang, Hyobin Lee, Yong Min Lee  
Building a Charging Protocol for Fast-chargeable Li-ion Batteries

### Interfaces/interphases

s06-104

**Martin Ihrig** (Institute of Energy and Climate Research, Forschungszentrum Juelich GmbH, Juelich, Germany), Martin Finsterbusch, Dina Fattakhova-Rohlfing, Olivier Guillon  
Degradation processes in garnet-based composite cathodes for all solid-state Li batteries

s06-105

**Minsang Jo** (Department of Energy Science and Engineering, DGIST, Dalseong-gun, Korea), Jeong Woo Oh, Chul Haeng Lee, Hochun Lee  
Electronic Insulating Properties of Solid Electrolyte Interphase on Graphite/SiO Composite Electrodes

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**Leon Katzenmeier** (Physics, Technical University Munich, Garching, Germany), Aliaksandr Bandarenka  
The Nature of Space Charge in Solid Electrolytes.

s06-107

**Eunbi Kim** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Mingony Kim, Seung-Ho Yu  
Improved Electrochemical Performance of Ni-rich Layered Cathode for Lithium-ion Batteries by Metal Oxide Coating

s06-108

**Seong Jun Park** (Chemical Engineering and Applied Chemistry, Chungnam National University, Daejeon, Korea), Kihun An, Ho-young Park, Kye Ung Lee, Hyojin Kim, Junyun Lee, Seung-Wan Song  
Nickel-rich Battery Cathode Coated with Functional Binder for Improved High-Voltage Performance

s06-109

**Yen Hai Thi Tran** (Department Chemical Engineering & Applied Chemistry, Chungnam National University, Daejeon, Korea), Jisoo Han  
The SEI Stabilization Approach for Lithium-Plating free High-Voltage Full-cells under Subzero-temperature

## Li Metal Batteries

s06-110

**Ji Hoon Ahn** (Materials science and engineering, Kangwon National University, CHUNCHEON, Korea)  
Lithiophilic Porous Graphene-Based Composite for Dendrite - Free Lithium - Metal Anodes

s06-111

**Ji-Wan Kim** (Chemical engineering, Hanyang univ., Seoul, Korea), Hyun-Sik Woo, Bo-Hyung Lee, Myung-Keun Oh, Dong-Won Kim  
Analysis of self-discharge behavior of the cell employing dimethoxyethane-based electrolyte with localized high concentration

s06-112

**Sebastian P. Kühn** (IEK-12: Helmholtz-Institute Muenster (HI MS), Forschungszentrum Juelich GmbH, Muenster, Germany), Martin Winter, Isidora Cekic-Laskovic  
Uncontaminated Solid Electrolyte Interphase on Lithium Metal Electrodes: Design Principles and Characteristics

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**Seung Hun Lee** (Energy storage research center, Korea institute of Science and Technology(KIST), Seoul, Korea), Eun Ji Jang, Byung Kwon Lee, Woong Kim, Won Il Cho  
Alumina Sources as an Artificial Solid-Electrolyte Interphases for Li-Metal Batteries

s06-114

**Yu Hsing Lin** (Chemical Engineering, National Cheng Kung University, Tainan, Taiwan), Hsisheng Teng  
Onsite Coagulation Gel Electrolyte with Dual-Salt System for Lithium Batteries

s06-115

**Joonhyeok Park** (Department of Energy Engineering, Hanyang University, Seoul, Korea), Gyeonghui Yoon, Donghwan Kim, Ungyu Paik  
Nanostructured Li<sub>2</sub>Se on Lithium Metal Anode as An Artificial Protective Layer for All Solid-State Lithium Metal Batteries

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**Morihiro Saito** (Department of Materials and Life Science, Seikei University, Musashino-shi, Japan), Kazuki Koyama, Ryuto Sato, Tatsuo Horiba, Hiromi Otsuka, Yoshimi Kubo  
Investigation on Li Surface Protection by LiNO<sub>3</sub>-based Electrolyte and Influence by External Factors at Li-O<sub>2</sub> Battery Anode

s06-117

**Ramesh Subramani** (Chemical Engineering, National Cheng Kung University, Tainan, Taiwan), Hsisheng Teng  
Design of Networked Solid-State Polymer as an Artificial SEI and Solid Polymer Electrolyte for Lithium Metal Batteries

## Li-air, Li-sulfur, Li metal battery

s06-118

**Yang-kyu Park** (Energy engineering, Dankook Univ., Cheonan-si, Korea), Jae-won Lee  
Dendrite-free Lithium Deposition Induced by Polymer/Ceramic Composite Layer for Efficient Lithium Metal Batteries

## Li-Ion Batteries

s06-119

**Sang-Eun Bak** (Department of Bionano Technology, Bionano Intelligence Education&Research center, Hanyang univ, Ansan-si, Korea), Jin Ho Bang  
Nanostructured TiNbO<sub>4</sub> for Lithium-Ion Battery Anode Material

s06-120

**Ramkumar Balasubramaniam** (School of Chemical Engineering, Chonnam National University, Gwangju, Korea), Jae-Chang Seol, Seon-yeong Lee, Seo-jun Lee, Ui-Rim Son, Je-Gwang Ryu  
Composite solid electrolyte for solid state battery: The role of filler particle size

s06-121

**Sungyool Bong** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Jin Won Kim, Jaeyoung Lee  
Recycled graphite from the Spent Lithium-Ion Batteries for Highly Stable Lithium-Sulfur batteries

s06-122

**Woo-Seok Choi** (Chemical Engineering, Dong-A University, Busan, Korea), Nak-Kyun Sung  
Effect of Boron Doping on the Li-rich Layered Oxides for Li-ion Batteries

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**Woowon Chung** (Bionano Technology, Hanyang University, Ansan, Korea)  
A Compromise between Amorphous and Crystalline Nature: Implications for the Lithium-Ion Battery Performance of TiNb<sub>2</sub>O<sub>7</sub>

s06-124

**Seungwoo Lee** (Energy Engineering, Hanyang University, Seoul, Korea), Donghyeok Kim, Ganggyu Lee, Taeseup Song  
Stable Cycling Enabled by Silicon/Graphite Composite Anodes for Lithium Ion Batteries

s06-125

**Hansol Lim** (Department of Bionano Technology, Hanyang University, Ansan, Korea)  
Memory Effect in Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>

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**Andrea Marchisio** (DISAT, Politecnico di Torino, Turin, Italy), Alessio Verna, Carlotta Francia, Silvia Bodoardo  
Direct metals deposition on commercial cell separators for 2D sensors development

s06-127

**Joonha Moon** (Chemistry, Gyeongsang National University, Jinju, Korea)  
Colloidal Synthesis of Bi<sub>2</sub>S<sub>3</sub>@rGO composite materials as anode for lithium-ion batteries

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**Hye-Jin Park** (Next Generation Battery Research Center, KERI(Korea Electrotechnology Research Institute), Changwon-si, Korea), Seong-Ju Sim, Bong-Soo Jin, Hyun-Soo Kim  
Preparation and its electrochemical performances of single crystal NCA active materials for lithium ion batteries.

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**Minh Nhat Pham** (Chemical Engineering Department, National Cheng Kung University, Tainan, Taiwan), Hsisheng Teng  
Cross-linked Polymer Electrolyte with Enhanced Lithium Salt Dissociation Ability for All-Solid-State Battery

s06-130

**Kihoon Ryu** (Department of Bionano Technology, Hanyang university, Ansan-si, Korea), Jin Ho Bang  
Enhancing the Electrochemical Stability of LiNiO<sub>2</sub> by Introducing Hafnium



s06-131

**Hyun-Jin Shin** (Center for Energy Storage Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Tae Hyun Kim, Saleem Abbas, Jinhan Cho  
The Free-Standing SnO<sub>2</sub> Electrode with Electrical Conducting Layer via a Plasma-Activated Nitrogen Doping Technique for High Performance Lithium-Ion Batteries

s06-132

**Leandro Souza Domingues** (Departamento de Engenharia Metalúrgica e de Materiais, Universidade São Paulo, São Paulo, Brazil), Vitor Leite Martins, Roberto Manuel Torresi, Vincent Vivier, Mireille Turmine, Hercílio Gomes de Melo  
Effect of Nitrogen-based Ionic Liquids on the Electrochemical Intercalation of Lithium-ions on Graphite Anode for Li-ion Batteries

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**Kim SunSik** (Energy Engineering, Gyeongsang National University, Jinju, Korea)  
D Nanostructured CNT based SnO<sub>2</sub> anode for high performance Li-ion Battery

### Materials design and modeling

s06-134

**Audrey Bedoch** (Materials Engineering Department, UFSCar, São Carlos, Brazil), Guilherme Yuuki Koga, Ricardo Pereira Nogueira, Guilherme Zepon  
On the electrochemical hydrogenation of Nb: An insight into the effect of hydrogen absorption on the kinetics of the hydrogen evolution reaction

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**Marta Cazorla Sout** (Materials and Chemistry, Vrije Universiteit Brussel, Brussels, Belgium), Xinhua Zhu, Mesfin Haile Mamme, Stefano D'Ercole, Philippe Vereecken, Annick Hubin  
Investigating the Mechanical Stability of Cobalt-free Oxide Thin Film Electrodes upon Cycling

s06-136

**Hyobin Lee** (Energy science and engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Seungwon Jung, Jihun Song, Joonam Park, Yong Min Lee  
Advancing Methodology for Calculating an Electrochemically Active Surface Area of Composite Electrodes Using Digital Twin Technology

### Na-Ion Batteries and other Post-Li Chemistries

s06-137

**Yichao Cai** (Chemistry, Nankai University, Tianjin, China), Yong Lu, Qiu Zhang, Youxuan Ni, Zhenhua Yan, Kai Zhang, Jun Chen  
High Performance K-CO<sub>2</sub> Batteries with KSn Anode and a Carboxyl-Containing Carbon Nanotube Cathode Catalyst

s06-138

**Gerald Dueck** (Institute of Energy and Climate Research (IEK-1), Forschungszentrum Jülich GmbH, Jülich, Germany), Sahir Naqash, Martin Finsterbusch, Olivier Guillon, Dina Fattakhova-Rohlfing  
Co-sintered NaSiCON and Na<sub>0.67</sub>[Ni<sub>0.1</sub>Fe<sub>0.1</sub>Mn<sub>0.8</sub>]O<sub>2</sub> as potential composite cathode for sodium batteries

s06-139

**Michael Ruby Raj** (School of chemical engineering, Yeungnam university, gyeongsan, Korea), Yuhyeon Lee, Jisu Kim, Gibaek Lee  
Perylene-based Aromatic Carbonyl Composite as Cathode Materials for High-capacity Aluminum Organic Batteries

s06-140

**Elena Sánchez Ahijón** (Inorganic chemistry, Complutense University of Madrid, Madrid, Spain), Adrián Gómez Herrero

Titanate With Trydimite Structure as Anode for Potassium-Ion Batteries

### **olid-State Electrolytes**

s06-141

**Seung-Bo Hong** (Chemical engineering, Hanyang University, Korea, Seoul, Korea), Young-Jun Lee, Si-Eun Lee, Hui-Tae Sim, Dong-Won Kim

Cycling Performance of the Sulfide-Based All-Solid-State Lithium Batteries with Composite Cathode Employing Noble Binder

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**Seong Jun Jo** (materials science and engineering, kangwon national university, chuncheon, Korea)

Ga-doped  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_7$  (LGLZO) synthesis by microwave-assisted hydrothermal method

s06-143

**Young-Jun Lee** (Chemical engineering, Hanyang University, Seoul, Korea), Seung-Bo Hong, Si-Eun Lee, Hui-Tae Sim, Dong-Won Kim

Selection of a Proper Solvent for Making the Positive Electrode in Sulfide-based All-Solid-State Lithium Battery

### **Organic and Aqueous Liquid Electrolytes**

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**Woo-Hyuk Lee** (Advanced material science and engineering, Sungkyunkwan university, Suwon-si, Korea)

Alkali lignin as green additives for aluminum-air batteries

### **Reaction mechanism**

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**Changki Choi** (Electrical Engineering, Chungnam National University, Daejeon, Korea), Seungyun Han, Pyeongyeon Lee, Jonghoon Kim

A study on temperature estimation through impedance change analysis according to aging of lithium-ion battery

s06-146

**Woosung Choi** (Department of Energy Science, Sungkyunkwan University, Suwon-Si, Korea), Dongin Kim

Feasibility of Lithium Storage on Inactive Transition Metal by Nano-size Effects

s06-147

**Woo Jeong Kwon** (Chemistry, Pusan National University, Busan, Korea)

On the Realization of Mixed Potential Phenomena in a Pseudo-Two-Dimensional Model

### **Separators**

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**Gogwon Choe** (Materials Science and Engineering, POSTECH, Pohang, Korea), Jihwan Choi, Yongtae Kim

Enhanced rate capability due to highly active  $\text{Ta}_2\text{O}_5$  catalysts for lithium sulfur batteries

s06-149

**Jooyoung Jang** (School of Chemical Engineering and Material Science, Chung-Ang University, Seoul, Korea), Changshin Jo  
A Functional Separator Using Biopolymer Inducing Uniform Distributions of Li-ions for Next-generation Battery

s06-150

**Youngkwon Kim** (Advanced Batteries Research Center, Korea Electronics Technology Institute, Seongnam-si, Korea), Jihyun Park, Kyusoon Shin, Ji-Sang Yu  
A nonwoven polyimide/siloxane composite separator with improved thermal and electrochemical properties for lithium ion battery

s06-151

**Je-Nam Lee** (Advanced Batteries Research Center, Korea Electronics Technology Institute, Seongnam, Korea), Si-Yeol Jeon, Sang-Gil Woo, Ji-Sang Yu  
Analytical methods of cross-linked separator for the enhancing thermal safety

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**Ahn Yun-Hyung** (Energy Storage Materials Center, Energy & Environment Divis, Korea Institute of Ceramic Engineering and Technology, Jinju-si, Korea)  
Separator Coated with Boehmite Particles for Safety Enhanced Lithium-ion Batteries

## Li-air, Li-sulfur, Li metal battery

s07b-001

**Akylbek Adi** (Department of Chemical Science and Engineering, Tokyo Institute of Technology, Tokyo, Japan), Izumi Taniguchi

Spray Pyrolysis Synthesis of C/Fe<sub>3</sub>O<sub>4</sub> Microsheets and Their Application as Effective Polysulfide Immobilizer in Li-S batteries

s07b-002

**Hyeongguk An** (Department of Energy Science & Engineering, Daegu Gyeongbuk Institute & Technology, Daegu, Korea), Youngjoon Roh, Youngseong Jo, Yong Min Lee, Hongkyung Lee  
Separator Dependency on Lithium-Metal Battery Cycling under Practical Conditions

s07b-003

**Hikari Asano** (Department of Chemistry and Life Science, Yokohama National University, Yokohama, Japan), Taisho Seita, Jiali Liu, Kazuhide Ueno, Kaoru Dokko, Masayoshi Watanabe  
Performance of Lithium Sulfur Batteries Consisting of Li<sub>2</sub>S/Carbon Composite Cathode

s07b-004

**Junyoung Choi** (Chemical Convergence Materials, University of Science and Technology, Daejeon, Korea)  
Conductive inorganic/organic hybrid protective layer for stable lithium metal anodes fabricated via transfer-printing methods

s07b-005

**Roberto Colombo** (DISAT, Politecnico di Torino, Torino, Italy), Daniele Versaci, Julia Amici, Silvia Bodoardo, Carlotta Francia  
A double-layered sulfur cathode exploiting the effect of high entropy oxides synthesized by microwave irradiation for excellent performances of lithium-sulfur batteries

s07b-006

**Davide Dessantis** (DISAT, Politecnico di Torino, Torino, Italy), Mojtaba Alidoost, Julia Amici, Carlotta Francia, Silvia Bodoardo  
Optimization of lithium air-battery: modelling and experimental validation

s07b-007

**Gwang Hyeon Eom** (Advanced materials engineering, Kyung Hee university, Yongin, Korea), Joo Hyeong Suh  
Disordered Porous Carbon Host for Reversible Metallic Li Storage

s07b-008

**Jiwon Han** (Energy Science and Engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Byoung-June Lee, Dohwan Kim, Dahee Jin, Jong-Sung Yu, Yong Min Lee  
Micro-Pattern Effect on Cycle Performance and Dendrite Growth in Li-S Battery

s07b-009

**Fuchao Han** (College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan, China)  
CoSe<sub>2</sub> Nanocomposites as Efficient Redox Catalysts for High Performance Lithium Sulfur Batteries

s07b-010

**Jae-Sung Jang** (Republic of Korea, Soongsil University, Seoul, Korea), Kyung-Won Park, Sang-Hyun Moon, Deok-Hye Park, Ji-Hwan Kim, Woo-Jun Park, Hak-Joo Lee, Jae-Hoon Shin, Sung-Beom Kim, Seong-Nam Lee

Improved Performance of Li-air Batteries Using Redox Polymeric Catalyst

s07b-011

**Yunseo Jeoun** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Seoung-Jun Kim, Yung-Eun Sung

Lithium Polysulfide Transfer Effect by Sulfur Phase in Lithium Sulfur Batteries

s07b-012

**Dahee Jin** (Energy Science & Engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Youngjoon Roh, Myung-Hyun Ryou, Hongkyung Lee

Stable Cycling of Ultrathin Li-metal Enabled by Nitrate-Preplanted Li Powder Composite

s07b-013

**Youngseong Jo** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea), Dahee Jin, Minhong Lim, Yong Min Lee

Structural and Chemical Evolutions of Solid-Electrolyte Interphase in Lithium Metal Batteries under Lean Electrolyte Conditions

s07b-014

**Yongseong Jo** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea), Dahee Jin, Minhong Lim, Yong Min Lee

Structural and Chemical Evolutions of Solid-Electrolyte Interphase in Lithium Metal Batteries under Lean Electrolyte Conditions

s07b-015

**Lee Junho** (Material Science and Engineering, Kangwon National University, Chuncheon, Korea)

Nanoporous graphene-based flexible interlayer for lithium-sulfur batteries

s07b-016

**Dongyoon Kang** (Energy Science and Engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Dahee Jin, Cyril Bubun Dzakpasu, Eunsae Kim, Youngjoon Roh, Myung-Hyun Ryou, Yong Min Lee

A Study on the Electrochemical Performance Improvement of Lithium Metal Powder Electrode by Addition of AgNO<sub>3</sub>

s07b-017

**Hyeonmuk Kang** (Materials Science and Engineering, Korea Advance Institute of Science and Technology, Daejeon, Korea), Jaewook Shin, Tae-Hee Kim, Yongju Lee, DaeHee Lee, EunAe Cho

Metal Organic Framework Derived Magnesium Oxide/Carbon Interlayer for High Utilization of Polysulfide in Lithium Sulfur Batteries

s07b-018

**Tomas Kazda** (Department of Electrical and Electronic Technology, Brno University of Technology, Brno, Czech Republic), Petr Rehak, David Skoda, Kamil Jasso, Pavel Cudek

Influence of the active interlayers to the properties of the Li-S batteries

s07b-019

**JiHwan Kim** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea)

Improving the performance of Li-S battery by facile electrochemical impregnation of Sulfur in Mesoporous Carbon

s07b-020

**Jin Won Kim** (School of Earth Science and Environmental Engineering, Gwangju Institute of Science and Technology (GIST), Gwangju, Korea), Sungyool Sungyool Bong, Jaeyoung Lee  
Enabling A Quasi-Solid State Conversion Reaction by Optimizing the Electrified Interfaces of Cathode for High Stable Lithium-Sulfur batteries

s07b-021

**Kookhan Kim** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Yung-Eun Sung  
Understanding the Role of Cobalt Sulfide Catalysts and Carbon Interlayer of Cathode in Li-S Batteries

s07b-022

**Dae Kyom Kim** (Advanced Materials Division, Korea Research Institute of Chemical Technology, Daejeon, Korea), Jin Seul Byun  
Biomass Derived N-doped Porous Carbon Composites for High-Performance Lithium-Sulfur Batteries

s07b-023

**Sungho Kim** (chemistry, Pohang University of Science and Technology, pohang, Korea), Jaegeon Ryu, Soojin Park  
Vinyl-Integrated In Situ Crosslinked Composite Gel Electrolytes for Stable Lithium Metal Anodes

s07b-024

**Na-Young Kwon** (Chemical engineering, Donga-A University, Busan, Korea), Min-Hee Lee  
Surface Modification for Interfacial Stability of Ni-rich Cathode Materials

s07b-025

**Hye Min Kwon** (Smart Fab Technology, Sungkyunkwan University, Suwon, Korea), Sungeun Kim, Yongsik Kim, HyungMo Jeong  
Suppressing dendrite lithium growth via lignin derived functional materials

s07b-026

**Bomee Kwon** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Kyu Tae Lee  
Electrochemically Reactive Material Based Protective Layer for Suppressing Dendrite Growth of Lithium Metal Batteries

s07b-027

**Je-Nam Lee** (Advanced Batteries Research Center, Korea Electronics Technology Institute, Seongnam, Korea), Doe Hee Park, Mingyu Lee, Jinhoh Jeong, Sang-Gil Woo, Hongkyung Lee, Ji-Sang Yu  
Impacts of external pressure distribution on stable cycling of pouch-type lithium metal batteries

s07b-028

**Min Hee Lee** (chemical engineering, Dong-A University, Busan, Korea), Na Young Kwon  
The Side Reaction between Ether-based Electrolytes and Ni-rich NCM Positive Electrodes in the Li-metal Battery

s07b-029

**Jeong Mun Lee** (Mechanical Engineering, Sungkyunkwan Univ., Suwon, Korea), Hyung Mo Jeong  
Three-dimensional lithiophilic materials for high-current density performance lithium-metal batteries

s07b-030

**Jeonghyeop Lee** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Kyu Tae Lee  
Enhanced Performance of Lithium Metal Battery via Surface Area Gradient 3D Framework

s07b-031

**Ezequiel Leiva** (Instituto de Física Enrique Gaviola (IFEG-CONICET), Universidad Nacional de Córdoba, Córdoba, Argentina), Francisco Garcia-Soriano, Guillermina Luque, German Lener, Victoria Bracamonte, Guillermo Stutz, Sergio Ceppi, Ezequiel Leiva  
Spectroscopic studies of cathode/electrolyte interface of Li-S batteries

s07b-032

**Jiande Lin** (Department of Chemistry, Xiamen University, Xiamen, China), De-Yin Wu, Zhong-Qun Tian  
First-Principle Investigation of Anchoring Behaviors of La<sub>2</sub>O<sub>3</sub> for Sodium Polysulfides

s07b-033

**Qingliang Lv** (College of Chemistry, Nankai University, Tianjin, China), Qingliang Lv, Zhuo Zhu, Shuo Zhao, Liubin Wang, Qing Zhao, Fujun Li, Lynden A Archer, Jun Chen  
Semiconducting metal-organic polymer nanosheets for photo-involved Li-O<sub>2</sub> battery under visible light

s07b-034

**Hitoshi Mikuriya** (Research Organization for Nano and Life Innovation, Waseda University, Shinjuku-ku, Japan), Seongki Ahn, Eri Kojima, Yongwook Kim, Eunbyoul Lee, Kazuhiro Yamabuki, Natsuki Nakamura, Toshiyuki Momma, Tetsuya Osaka  
Development of long life or high capacity Li-S batteries by designing amount of loading sulfur cathode by 2D or 3D structured Al current collector and sulfonic acid polymer layer

s07b-035

**Sang-Hyun Moon** (chemical engineering, soongsil university, seoul, Korea), Ji-Hwan Kim, Jae-Sung Jang, Jae-Hoon Shin, Sung-Beom Kim, Seong-Nam Lee, Yu-Yeon Park  
Fabrication of 1T-MoS<sub>2</sub>/CNF interlayer for lithium sulfur batteries

s07b-036

**San Moon** (Energy Materials Research Center, Korea Research Institute of Chemical Technology, Daejeon, Korea)  
Ex-situ Raman spectroscopic studies of carbon coated sulfur nanowires

s07b-037

**Alex Neale** (Stephenson Institute of Renewable Energy, University of Liverpool, Liverpool, United Kingdom), Ryan Sharpe, Stephen Yeandel, Chih-Han Yen, Konstantin Luzyanin, Pooja Goddard, Enrico Petrucco, Laurence Hardwick  
Formulation Strategies for Solvent-Ionic Liquid Blend Electrolytes for Stable Li Metal Cycling Within Li-O<sub>2</sub> Batteries

s07b-038

**Kiho Nishioka** (Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Japan), Shuji Nakanishi  
Reactive interfaces in an aprotic Li-O<sub>2</sub> battery identified by isotopic depth-profiling analyses

s07b-039

**Mi Young Oh** (New & Renewable Energy Division, Jeonbuk Technopark, Jeollabuk-do, Korea), Jung Hyun Kim, Young Wook Lee, Tae Ho Shin  
Enhancing bi-functional catalytic activity of nanostructured La(Sr)Fe(Co)O<sub>3-δ</sub> @Pd as an efficient electrocatalyst for rechargeable Li-O<sub>2</sub> batteries

s07b-040

**Eleonora Pargoletti** (Dipartimento di Chimica, Università degli Studi di Milano, Milan, Italy), Aberto Vertova, Mariangela Longhi, Giuseppina Cerrato, Alessandro Minguzzi, Giuseppe Cappelletti  
Electrocatalytic Doped-MnO<sub>2</sub> for Lithium-Air Batteries

s07b-041

**Jun-Woo Park** (Next-Generation Battery Research Center, Korea Electrotechnology Research Institute, Chang-won, Korea), Jun-Woo Park  
The high energy density flexible Li-Sulfur battery

s07b-042

**Shaik Mahammad Rafi** (Division of Advanced Materials Engineering, Kongju National University, Cheonan, Korea)

Suppression of dendritic lithium growth in lithium metal through hybridization with halloysite and PVDF-HFP

s07b-043

**Hong Rim Shin** (Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Engineering, Daegu, Korea), Jonghyeok Yun, Min-Sik Park, Jong-Won Lee

Role of Atomically Dispersed Silver for Guiding Confined Growth of Lithium Metal in Porous Carbon Frameworks

s07b-044

**Jae-Hoon Shin** (Chemical engineering, Soongsil University, Seoul, Korea), Yu-Yeon Park, Seong-Nam Lee, Sung-Beom Kim, Jae-Sung Jang, Ji-Hwan Kim, Deok-Hye Park, Sang-Hyun Moon, Kyung-Won Park

Ni-Pd/N-doped carbon composite as interlayer for lithium sulfur battery

s07b-045

**Simone Siccardi** (DISAT, Politecnico di Torino, Torino, Italy), Julia Amici, Carlotta Francia, Silvia Bodoardo

Self-Healing Polymers for Lithium Metal Batteries

s07b-046

**Woo Hyeong Sim** (Department of Mechanical Engineering, Smart Fab. Technology, Sungkyunkwan University, Suwon, Korea), Woo Hyeong Sim, Seung Pil Oh, Hyung Mo Jeong

Enabling the Dendrite-Free Li Deposition Using Ordered Lithium Ion Control Sites for Lithium Metal Anodes

s07b-047

**Shuai Tang** (Department of chemistry, Zhengzhou University, Zhengzhou, China)

Synergetic Effect of Organosulfur Compounds and Nanosized Membrane for Greatly Suppressed Shuttle Effect

s07b-048

**Guy Verbist** (Dept of Materials and Corrosion PTX/G/M, Shell Global Solutions Int. B.V., Amsterdam, Netherlands), Amar Deep Pathak, Indranil Rudra, Christina Christova, Alexey Deyko, Joice Klitzke, Xiaochao Wu

Novel sulfur-containing organosilane compounds for cathode in Li-S batteries

s07b-049

**Wei-Wei Wang** (Department of Chemistry, Xiamen University, Xiamen, China), Wei-Wei Wang, Yu Gu, Hao Yan, Kai-Xuan Li, Jia-Wei Yan, Bing-Wei Mao

Exploration of Lithium Nucleation and Growth by In-situ Atomic Force Microscope

s07b-050

**Eric Winter** (Electrochemistry Laboratory, Paul Scherrer Institut, Villigen PSI, Switzerland), Thomas Justus Schmidt, Sigita Trabesinger

Impact of Electrode Edge Protection on the Performance of Lithium Metal Batteries

s07b-051



**Hao Yan** (Department of Chemistry, Xiamen University, Xiamen, China), Weiwei Wang, Yu Gu, Kaixuan Li, Jiawei Yan, Bingwei Mao  
In-situ Atomic Force Microscopy Study on Morphology and Mechanism of Oxygen Electrode for Lithium-Oxygen Batteries

s07b-052

**Chang-eui Yang** (DGIST, University, DAEGU, Korea), Hochun Lee  
A sulfone-based gel polymer electrolyte for high energy density and dendrite-free lithium metal batteries

s07b-053

**Wei Yu** (Advanced Institute for Materials Research, Tohoku University, Sendai, Japan), Rui Tang, Zheng-Ze Pan, Hiroto Nishihara  
Graphene Mesosponge Cathode with Few Edge Sites and High Surface Area for Lithium-Oxygen Batteries

s07b-054

**Jonghyeok Yun** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea), Hong Rim Shin, Min-Sik Park, Hyon Chol Kang  
Metallic Li Storage in 3D Carbon Frameworks Promoted by a Lithiophilic Nanolayer on Current Collectors

## Al- or Zn-air batteries

s07-001

**Vincenzo Baglio** (CNR, Istituto di Tecnologie Avanzate per l'Energia (ITAE), Messina, Italy), Concetta Busacca, Alessandra Di Blasi, Orazio Di Blasi, Esterina Modica, Mariarita Girolamo, Antonino Salvatore Arico, Vincenzo Antonucci, Maria Jesus Lazaro, Cinthia Alegre

Oxygen Electrodes based on Electrospun MnCo<sub>2</sub>O<sub>4</sub> Supported on Carbon Nanofibers for Alkaline Metal-Air Batteries

s07-002

**Jeong Hoo Hong** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Sun Jun Kim, Ju Hyeong Kim, Yun Chan Kang

Synthesis of Three-Dimensional (3D) Metal Oxide/CNT Hybrid Microspheres Prepared by Spray Pyrolysis and Hydrothermal Method for Metal-Air Batteries

s07-003

**Ju Hyeong Kim** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Gi Dae Park, Areum Lee, Sun Jun Kim, Yun Chan Kang

Synthesis of Multiple Transition Metal Hydroxide Sulfide-Porous Carbon Nanotemplate Composite and Its Electrocatalytic Properties for Oxygen Evolution Reaction

s07-004

**Humera Khatoon Siddiqui** (Department of Materials and Earth Sciences, Technical University of Darmstadt, Darmstadt, Germany), Aamir Iqbal Waidha, Sabine Kanbach, Markus Kübler, Jasnamol Pezhumkattil Palakkal, Steffen Haller, Oliver Clemens, Lambert Alff, Ulrike I. Kramm

Influence of Fe content on its bifunctional activity in LaFe<sub>x</sub>Co<sub>1-x</sub>O<sub>3- $\delta$</sub>  for zinc air batteries

## Cathodes

s07-005

**Nangyeong Kim** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea), Dongkyu Son, Yuhyeon Lee, Gibaek Lee

Investigating Novel Metal Vanadate Nanostructures as a cathode material for Aqueous Aluminum Ion Batteries

s07-006

**Jisu Kim** (School of chemical engineering, Yeungnam university, gyeongsan, Korea), Yuhyeon Lee, Dongkyu Son, Gibaek Lee

Properties of NiCo<sub>2</sub>S<sub>4</sub>/C Hybrid Composite as a Cathode Material with High-Performance in Aluminum Ion Batteries

## Electrochemical capacitors

s07-007

**Taehun Kang** (Chemical engineering, Sungkyunkwan University, Suwon, Korea), Ho Seok Park

Synthesis of 3D Black phosphorus/Reduced Graphene oxide composite for Li-ion capacitor

s07-008

**Seokgyu Ryu** (Energy engineering, Kyungpook University, Daegu, Korea), Eunhwan Kim, Jeeyoung Yoo  
Fabrication of high-capacity, high-reliability super capacitors by optimizing the electrode and electrolyte of the anthraquinone

## Electrolytes

s07-009

**Jiyeon Baek** (School of Advanced Materials Engineering, Jeonbuk National University, Jeonju, Korea), Hyunwoo Jeong, Hyunsu Lim, Baeksang Yoon, Dan Na

Evaluation of the properties of ceramic solid electrolyte for lithium-ion batteries

s07-010

**Alessandro Brilloni** (Dep. Of Chemistry "G. Ciamician", University of Bologna, Bologna, Italy), Giovanni Emanuele Spina, Michele Rizzotti, Francesco Marchesini, Giovanni Battista Appetecchi, Francesca Soavi

Cycling stability of Li-metal anodes in new ionic liquids solutions

s07-011

**Youngkyu Choi** (energy engineering, kyungpook national university, daegu, Korea), Juyeon Han, Sangsu Lee, Jeeyoung Yoo

All-solid-state supercapacitor based on UV curable ionogel electrolyte

s07-012

**Jung Woo Hong** (Chemical Engineering, SKKU(Sung Kyun Kwan University), Suwon, Korea), Harpalsinh H. Rana, Jung Hee Park, Ho Seok Park

Dextrin-Based Double Networked Polymer Electrolytes For Sodium Energy Storage Devices

s07-013

**Hyeonwoo Jeong** (School of Advanced Materials Engineering, Jeonbuk National University, Jeonju, Korea), Jiyeon Baek, Dan Na, Baeksang Yoon, Hyunsu Lim

Synthesis and characterization of the NASICON type solid electrolyte LASTP for all solid batteries

s07-014

**Sukhyung Lee** (Energy science engineering, DGIST, Daegu, Korea), Bonhyeop Koo, Seokbum Kang, Hongkyung Lee

Hydrofluoroether-assisted Dilution of Na-ion Concentrated Ionic Liquid Electrolyte for Safe, Stable Cycling of High-Voltage Na-metal Batteries.

s07-015

**Jong Jun Lee** (Department of Energy Science and Engineering, DGIST, Daegu, Korea), Dohwan Kim, Kang Taek Lee, Yong Min Lee

Enhanced surface interaction of CeO<sub>2</sub> by Zr doping for fast Li<sup>+</sup> ion-conducting composite solid electrolyte

s07-016

**Minhong Lim** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea), Youngseong Jo, Dahee Jin, Yong Min Lee, Hongkyung Lee

A Comparative Study on the Electrochemical Performance of Colloidal Electrolyte by Silica Surface Functional group

s07-017

**Yongsun Park** (Cathode materials development group, Research Institute of industrial Science and Technology, Incheon, Korea), Ohmin Kwon, Yeongsang Kim, Sehoon Jung, Sangchul Nam

Improvement of air-stability of argyrodite-based solid electrolyte by applying Li<sub>2</sub>SO<sub>4</sub> as an additive

s07-018

**Thuy Duong Pham** (Department of Chemistry, Kunsan National University, Gunsan, Korea), Kyung-Koo Lee, Hieu Dinh Nguyen, Junam Kim

New Weakly Solvating Electrolyte Enable High-Energy Lithium Metal Batteries for Electric Vehicle Applications

s07-019

**Harim Seo** (Energy Engineering, Kyungpook National University, 80, Daehak-ro Buk-gu, Daegu, Korea),  
Yaerin Lee, Jeeyoung Yoo

Conceptual Li-ion Transport Mechanism in Ceramic-Ionic Liquid Composite Electrolytes by Simulation Modelling

s07-020

**Yuvaraj Subramanian** (Department of Chemistry, University of Ulsan, Ulsan, Korea), Hakmin Kim,  
Geumji Jang, Gyusik Kim

Liquid-phase synthesis of Li-ion argyrodites solid electrolyte for Li-ion solid state batteries

s07-021

**Qiu Zhang** (College of Chemistry, Nankai university, Tianjin, China), Yilin Ma, Zhenhua Yan, Kai Zhang,  
Jun Chen

Ultralow Temperature Aqueous Batteries Enabled by Moderate Concentration ZnCl<sub>2</sub> Electrolyte

### **Flexible, micro-, printed batteies**

s07-022

**Ji-Won Jung** (School of Materials Science and Engineering, University of Ulsan, Ulsan, Korea), Jong  
Heon Kim, Su-Ho Cho, Soon-Gil Yoon, Il-Doo Kim, Hyun-Suk Kim

Rational design of electrode-electrolyte interfaces in thin-film all-solid-state Li-metal batteries

s07-023

**Jun-seok Lee** (Energy & Mechanical Engineering, Gyeongsang national university, Tongyeonghaean,  
Korea), Duck-Hyeon Seo, Sang-Du Yun, Seong-Min Woo, Jeong-Hyeon Yang, Jung-Pil Noh

Free-standing LTO/Buckypaper electrodes for flexible lithium-ion batteries

### **Hybrid systems**

s07-024

**Juyeon Han** (Energy engineering, Kyungpook National University, Daegu, Korea), Wonwoo Choi,  
Jeeyoung Yoo

A highly fast charging system integrating all-solid-state supercapacitor and perovskite solar cell

s07-025

**Veniamin Kondratiev** (Electrochemistry Department, St.Petersburg State University, St.Petersburg,  
Russia)

Influence of Deposition Method on the MnO<sub>2</sub> Electrochemical Performance in Zinc Ion Aqueous Systems

### **Large scale batteries**

s07-026

**Muhammad Faizan** (Department of Energy Materials Engineering, Dongguk University, Seoul, Korea)  
Phase Engineered TMS<sub>2</sub> as an Anode Material for Lithium-ion Batteries (TM=Transition Metal)

s07-027

**Van-Chuong Ho** (Department of Energy and Chemical Engineering, Incheon National University,  
Incheon, Korea), Meihua Hong, Subin Lee, Si Hyoung Oh

A binder-free cathode of bivalence manganese oxide for high-performance aqueous zinc ion batteries

s07-028

**Jianhang Huang** (Department of Chemistry, Fudan University, Shanghai, China), Yonggang Wang,  
Yongyao Xia

## Long-life Mn-Pb aqueous battery with MnO<sub>2</sub>/Mn<sup>2+</sup> deposition/dissolution mechanism

s07-029

**Ucheol Kim** (Energy Science and Engineering, DGIST(Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Yong Min Lee, Youngjoon Roh, Seungwoo Byun  
Binder-Free Coated Separator through RF-Sputtering Process

s07-030

**Hyeonseok Moon** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Jingyu Park, Kyu Tae Lee  
Direct Proof of the Reversible Reaction Mechanism of Aqueous Zn-MnO<sub>2</sub> Batteries

s07-031

**Youngjoon Roh** (Energy Science and Engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Dahee Jin, Eunsae Kim, Seungwoo Byun, Myung-Hyun Ryou, Yong Min Lee

A coated separator with a cross-linked ceramic layer with enhanced thermal stability and adhesion properties for high safety lithium-ion batteries

s07-032

**Gyuwon Seo** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Jaeyun Ha, Jihyeon Park, Moonsu Kim, Jaewon Lee, Eunoak Park, Sungyool Bong, Kiyong Lee, Soon Jong Kwon, Seung-pil Moon, Jinsub Choi, Jaeyoung Lee  
Identifying Degradation Modes of Lithium-Ion Battery using High C-rate IC-DV Analysis

## **Li Metal Batteries**

s07-033

**Mihye Wu** (Advanced Materials Division, Korea Research Institute of Chemical Technology, Daejeon, Korea), Ju Ye Kim, Sungho Choi, Jungdon Suk, Hee-Tae Jung  
Wrinkled Cu Current Collector with Uniform Facet Distribution for Dendrite-free Lithium-metal Batteries

## **Long-term performance**

s07-034

**Cheol Bak** (Energy Science and Engineering, DGIST(Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Dohwan Kim, Seungwoo Byeon  
Analysis on Mechanical Electrochemical Properties of Composite Electrode Containing Carbon Nanotube Additive for Lithium-ion Batteries

s07-035

**Uijin Chang** (School of materials science & engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), KwangSup Eom  
Electrochemical Improvement in Metal Sulfide Materials as High-Performance Electrodes for Next-Generation Lithium-Ion Batteries

s07-036

**Min Ji Kim** (Energy storage materials, Korea Institute of Ceramic Engineering and Technology, JinJu-si, Korea), Sung Eun Wang, Jin Woong Lee, Dea soo Jung  
Synthesis of graphite/silicon-pitch composite anode via mechanofusion for high energy density LIB

s07-037

**Seokho Suh** (Graduate School of Energy Convergence, Gwangju Institute of Science and Technology, Gwanju, Korea), Daeun Jang, Hocheol Yoon, Jihun Kim, Hyunsu Kim, Juyeon Baek  
Improving Electrochemical Performance of Graphite Anodes for Lithium-ion Batteries by 3-Dimensionalization of Electrodes

s07-038

**Daniele Versaci** (DISAT, Politecnico di Torino, Torino, Italy), Alberto Costanzo, Julia Amici, Silvia Maria Ronchetti, Barbara Onida, Carlotta Francia, Silvia Bodoardo

SnO<sub>2</sub> NPs directly grown on commercial carbon black as lithium-ion battery anodes for long cycling performance

s07-039

**Sung Eun Wang** (Energy storage materials, Korea Institute of Ceramic Engineering and Technology, Jinju-si, Korea), Jin Woong Lee, Min Ji Kim, Dae Soo Jung

Core-shell Sn@SiOC NPs synthesized via spray pyrolysis for high energy density LIBs

### Modeling studies

s07-040

**Seungwon Jung** (Energy science and engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Joonam Park, Jihun Song, Yong Min Lee

Key parameter analysis on all-solid-state electrode with conductive binder system

s07-041

**Suhwan Kim** (Energy Science and Engineering, DGIST (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea), Jihun Song, Dahee Jin, Yong Min Lee

Electrochemical-Thermal Model for Internal Short Circuit Analysis in a Lithium-Ion Battery Cell

s07-042

**Jihun Song** (Department of energy science and engineering, DGIST, Deagu, Korea), Seungwon Jung, Hyobin Lee, Suhwan Kim, Yong Min Lee

Analysis and Design of a Single Secondary Particle using a Simulation Model

### Na-ion batteries

s07-043

**Muhammad Akbar** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Ghulam Ali

Boosting the Electrochemical Performance of O<sub>3</sub> type-Na<sub>0.85</sub>Fe<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>2</sub> Cathode by Mg doping for Na ion Batteries

s07-044

**Binson Babu** (Center for Energy and Environmental Chemistry Jena (CEEC), Friedrich-Schiller-University Jena, Jena, Germany), Shaijumon M M

Understanding How Degree of Crystallinity Affect Electrochemical Behavior of Sodium-Ion in Brown TiO<sub>2</sub> Nanotubes

s07-045

**Marisa Falco** (Department of Applied Science and Technology, Politecnico di Torino, Torino, Italy), Arianna Massaro, Ana Belen Muñoz-Garcia, Matteo Destro, Gabriele Lingua, Elisa Maruccia, Giuseppina Meligrana, Michele Pavone, Claudio Gerbaldi

Easily processable electrodes/electrolytes for Na-ion batteries

s07-046

**Bala Krishnan Ganesan** (Chemical Engineering, Chonnam National University, Gwangju, Korea), Ui-Rim Son, Seo-Jun Lee, Megala Moorthy

Study of increase in Na stoichiometry of disordered rock salt type Na<sub>x</sub>Mn<sub>1-x</sub>O<sub>2</sub> Na-rich Cathode material for high capacity and Superior stability

s07-047

**Marcel Häring** (Institute for Applied Materials, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany), Nicole Bohn, Holger Geßwein, Joachim R. Binder  
Synthesis of hierarchically structured Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>/C-Composites as high performance cathode materials for SIB

s07-048

**Mobinul Islam** (Department of Energy and Materials Engineering, Dongguk University, Seoul, Korea), Mobinul Islam, Muhammad Akbar, Daseul Han, Basit Ali, Yong Jong Choi, Ji-Young Kim, Hun-Gi Jung, Kyung Yoon Chung, Duho Kim, Kyung-Wan Nam  
Vacancy Induced Anionic Redox Reaction of a P2-Type Layered Cathode with Suppressed Phase Transition

s07-049

**Hyebin Jeong** (School of Chemical Engineering and Material Science, Chung-Ang University, Seoul, Korea), Changshin Jo  
Facile Synthetic Methods of High-quality Prussian Blue Analogue Cathodes for Next-generation Batteries

s07-050

**Seokbum Kang** (Energy Science and Engineering, DGIST, Daegu, Korea), Chang-eui Yang, Boosik Jeon, Bonhyeop Koo, Seung-Tae Hong, Hochun Lee  
A crystalline Organic Electrolyte for Safe, Room-Temperature Operable All-Solid-State Sodium Batteries

s07-051

**Minjun Kim** (Department of Energy Engineering, Konkuk University, Gwangjin-gu, Korea), Hyeongwoo Kim, Wonchang Choi  
Improving the Electrochemical Stability of Sodium Nickel Manganese Oxide Cathodes by Combination of the Mg<sub>1-x</sub>Ni<sub>x</sub>O Protective Layer Coating and Mg Surface Doping

s07-052

**Jin Koo Kim** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Areum Lee, Min Kim, Yun Chan Kang  
Unveiling the Effect of Pore Structure of Carbon Host on Sodiation Mechanism of Se Cathode

s07-053

**Min-Young Kim** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Jae-Ho Park, Seung-Ho Yu  
Enhanced Electrochemical Performance of NaNi<sub>0.6</sub>Co<sub>0.2</sub>Mn<sub>0.2</sub>O<sub>2</sub> as Cathode Material for Sodium-ion Batteries by Sodium Tungstate Coating

s07-054

**Sohee Kim** (Energy Materials Research Center, Korea Research Institute of Chemical Technology, Daejeon, Korea), Kyu Tae Lee  
Cross-linked and Single Ion Conducting Protective Layer for Stable Sodium Metal Electrodes

s07-055

**Dohyeong Kwon** (Department of Mechanical Engineering, Kyung Hee University, Yongin, Korea), Chanwoo Koo, Seungho Yu  
Extending Biphasic-Induced Oxygen Redox Capacity in Ni-Mn Binary Oxides via V Substitution

s07-056

**Seunghak Lee** (Department of Energy engineering, Konkuk university, Gwangjingu, Korea), Dowon Kim, Wonchang Choi  
Incorporation of Divinylbenzene Additive for the Synthesis of Sb/SiOC Composite Materials as an anode material in Sodium-ion batteries

s07-057

**Suyeon Lee** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea),  
Haemin Jeong, Kyu Tae Lee  
Air Exposure-derived Failure Mechanism of Cathode Materials for Na-ion Batteries

s07-058

**Seonguk Lim** (School of Nano Convergence Technology, Hallym University, Chuncheon, Korea),  
Dongkyu Choi, Taekyun Jeong, Dongwook Han  
Facile Sodium-ion Transfer through Artificial Surface Layer of Prussian Blue as Cathode Materials for Sodium-ion Batteries

s07-059

**Bowen Liu** (School of Chemistry, University of Southampton, Southampton, United Kingdom), Andrew Hector, Richard Wills  
Thermal Dependence of Hard Carbon Performance in Sodium Half-cells

s07-060

**Iqra Moez** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Hun-Gi Jung, Hee-Dae Lim  
Direct-Contact Method: A Simple Pre-sodiation Route for Electrodes to Improve Energy Density of Sodium-ion Batteries.

s07-061

**Megala Moorthy** (Department of Chemical Engineering, Chonnam National University, Gwangju, Korea), Bala Krishnan Ganesan, Seo-Jun Lee, Ui-Rim Son, Yun-Sung Lee  
Building an Artificial Composite Metal Alloy Layer for Stabilized Sodium Metal Anodes

s07-062

**Jin-Sung Park** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Gi Dae Park, Dae Hyun Kim, Sun Jun Kim, Yun Chan Kang  
Investigation of Polyanionic Anode Material (Metal Selenite) for Sodium-Ion Batteries

s07-063

**Jae-Ho Park** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Min-Young Kim, Woo Young Yoon  
Cr-doped Na<sub>0.44</sub>MnO<sub>2</sub> as a High-Rate Cathode Material for Sodium-ion Batteries

s07-064

**Samia Said** (Electrochemical Innovation Lab, Chemical Engineering, UCL, London, United Kingdom), Zhenyu Zhang, Eva Aw, Christopher A. Howard, Thomas S. Miller  
Understanding the Interfacial Phenomena of 2D and 1D Nanomaterials as High Capacity Anodes with in-situ/Operando Microscopy and Spectroscopy

s07-065

**Marius Schmidt** (Institute for Applied Materials, Karlsruhe Institute of Technology, Karlsruhe, Germany), Nicole Bohn, Joachim Binder  
Synthesis, investigation of material properties and electrochemical performance of hierarchically structured Na<sub>0.6</sub>Al<sub>0.11</sub>Ni<sub>0.22</sub>Mn<sub>0.66</sub>O<sub>2</sub> as post-lithium cathode material

s07-066

**Davit Tediashvili** (Chemical engineering and technology, Center for physical sciences and technology, Vilnius, Lithuania)  
Rotating ring-disc electrode study of Mn-based material operation and degradation as aqueous Na-ion battery cathodes

s07-067



**Nguyen Thi Huyen** (Photonics and Nanoelectronics, Hanyang University, Ansan, Korea), U Hyeok Choi, Jaekyun Kim  
Super Stability Micro-supercapacitor-based on High Conductivity All-Solid-State Sodium Ionic Composite Gel Polymer Electrolyte

s07-068

**Thomas Wakelin** (Chemistry, University of Southampton, Southampton, United Kingdom), Andrea Russell  
EQCM Studies of the Ion Storage by Electrodeposited Prussian Blue and Analogues in Aqueous Electrolytes

s07-069

**Qianchen Wang** (School of Materials Science & Engineering, Beijing Institute of Technology, Beijing, China), Hongcai Gao, Jingbo Li, Haibo Jin  
Experimental and theoretical investigation of V- and Mn-based NASICON-structured cathode materials for sodium-ion batteries

s07-070

**Jialin Wang** (College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan, China)  
Sodium vacancy driven O<sub>3</sub>-Na<sub>0.9</sub>Fe<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>2</sub> cathode for sodium-ion batteries

s07-071

**Zhonghan Wu** (Chemistry, Nankai University, Tianjin, China), Kai Zhang, Fangyi Cheng  
Enhanced Cycling Performance of P2-Type Na<sub>0.7</sub>Mg<sub>0.15</sub>Mn<sub>0.85</sub>O<sub>2</sub> Cathode Materials via Cerium Modification

s07-072

**Su Hyun Yang** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Areum Lee, Min Kim, Yun Chan Kang  
Design and Synthesis of Multicomponent Transition Metal Sulfides@Hollow Carbon Nanostructures for Use as Anode in Sodium-Ion Batteries

s07-073

**Zhuangzhuang Zhao** (College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan, China)  
Achieving an efficient AlPO<sub>4</sub> layer for the surface modification of transition metal oxides cathodes for sodium-ion batteries

## **Na-Ion Batteries and other Post-Li Chemistries**

s07-074

**Oliver Blackman** (Chemistry, University of Southampton, Southampton, United Kingdom), Andrea Russell  
Effects of oxygen on the electrochemistry of Prussian Blue and analogues as sodium ion electrodes

## **Redox Flow Batteries**

s07-075

**Seongmo Ahn** (Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea), Jin Hyeok Jang, Jung Min Joo  
Pyridinium Based Redox-Active Electrolyte for Non-aqueous Organic Redox Flow Batteries

s07-076

**Suhyuk Choi** (Chemistry, Yonsei University, Seoul, Korea), Hyun Seo Ahn

Potential Tunable Trinuclear Ru<sub>2</sub>M (M=Ru, Ni, Co, Cr) oxo Coordination Complexes for High Voltage Non-aqueous Redox Flow Batteries

s07-077

**Dan Iulian Durneata** (Electrochemistry, University of Saarland, Saarbruecken, Germany), Rolf Hempelmann

Development of a state of the charge sensor for Vanadium Redox Flow Battery (VRFB) based on a spectrometric method

s07-078

**Rolf Hempelmann** (Transfercentre Sustainable Electrochemistry, Saarland University and KIST Europe, Saarbruecken, Germany), Francesco Arena

Rebalancing of Vanadium Redox Flow Battery using Organic Additives for the Catholyte

s07-079

**Muhammad Mara Ikhsan** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea), Saleem Abbas, Heung Yong Ha, Kobra Azizi, Hans Aage Hjuler, Dirk Henkensmeier

Highly Proton-Selective meta-Polybenzimidazole-Based Membranes for Vanadium Redox Flow Batteries

s07-080

**Pekka Peljo** (Department of Mechanical and Materials Engineering, University of Turku, Turku, Finland), Gabriel Gonzalez, Andrea Hamza, Adám Madarász, Flóra Németh, Imre Papai, Anton Nechaev, Petri Pihko

Computer Aided Design for Next Generation Flow Batteries: Computational Screening of Redox Active Molecules

s07-081

**Justyna Piwek** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Justyna Piwek, Elzbieta Frackowiak

Alkali Metal Salt Treatment for Improvement of VRFB Felt Electrodes

s07-082

**Hai Zhang** (SKKU Advanced Institute of Nano Technology, Sungkyunkwan University, Suwon-si, Korea), Jong Min Yun, Soo Min Hwang, Young-Jun Kim

Effects of PVDF Binder on the Electrochemical Performance of Flexible Graphite Bipolar Plates for Vanadium Redox Flow Batteries

### **Solid-state batteries**

s07-083

**Chang-Min Cho** (Next Generation Battery Research Center, Korea Electrotechnology Research Institute(KERI), Changwon-si, Korea), Sang-Min Lee, Jun-Ho Park

Development of size-controlled Li<sub>6</sub>PS<sub>5</sub>Cl solid electrolyte by dissolution-precipitation method for all-solid-state lithium-ion batteries

s07-084

**IK-Hyeon Choi** (Next-Generation Battery Research Center, Korea Electrotechnology Research Institute, Changwon, Korea), Jun-Woo Park

Efficient infiltration process of solution-based LPSCI solid electrolytes for achieving high energy density All-Solid-State Battery

s07-085

**IK-Hyeon Choi** (Next-Generation Battery Research Center, Korea Electrotechnology Research Institute, Changwon, Korea)

Efficient infiltration process of solution-based LPSCI solid electrolytes for achieving high energy density All-Solid-State Battery

s07-086

**Yu Gu** (Department of Chemistry, Xiamen University, Xiamen, China), Yu Gu, Hao Yan, Wei-Wei Wang, Yong Hui, Jun-Hao Wang, Jia-Wei Yan, Bing-Wei Mao

A High-Performance Gel Polymer Electrolyte Based on Ionic Liquids for Solid-State Lithium Metal Batteries

s07-087

**Dahee Hwang** (Smart energy nano photonics R&D group, Korea Institute of Industrial Technology , Gwangju, Korea), Kookjin Heo, Youngwoong Song, Jongkwon Lee, Juyoung Chae, Minyoung Kim  
Cathode material composed of  $\text{La}_2(\text{Ni}_{0.5}\text{Li}_{0.5})\text{O}_4$  nanoparticles and amorphous solid electrolyte layer for all-solid-state batteries

s07-088

**YooRim Jang** (Advanced Batteries Research Center, Korea Electronics Technology Institute (KETI), Seongnam-Si, Korea), Hyun Baek, Eunsoo Kim, Kern-Ho Park, Woosuk Cho, Goojin Jeong  
Sheet type all solid state batteries with sulfide solid electrolyte

s07-089

**Wooyoung Jeong** (Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and technology (DGIST), Daegu, Korea)  
Mitigating the Degradation of  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$  Solid Electrolytes in  $\text{H}_2\text{O}/\text{CO}_2$  via Microstructural Engineering

s07-090

**Jiwon Jeong** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Hyeon-Ji Shin, Eun Seong Kim, Jun Tae Kim, Hun-Gi Jung, Woo Young Yoon  
Manufacturing of Sulfide-based Pouch-type Full-cell by Casting Process Applied to Solid Electrolyte and Electrode Layers

s07-091

**Byeongsun Jun** (Bionano Technology, Hanyang University, Ansan-si, Korea), Ji Hoon Kim, Sang Uck Lee

Theoretical Studies on the Argyrodite  $\text{Li}_6\text{xP}_1\text{-xSixS}_5\text{Cl}$  Inorganic Solid Electrolyte for All-solid-state Li-ion battery

s07-092

**Sora Kang** (Advanced Batteries Research Center, Korea Electronics Technology Institute, Seongnam, Korea), Kern-Ho Park, Kyungsu Kim, Goojin Jeong, Ji-Sang Yu, Young-Jun Kim  
Morphological Design Factors of Cathode Materials for All-Solid-state Batteries

s07-093

**Juhyun Kim** (Advanced Batteries Research Center, Korea Electronics Technology Institute (KETI), Seongnam-si, Korea), Subin Lee, KyungSu Kim, Woosuk Cho, Jisang Yu  
Hf-substituted  $\text{Li}_3\text{YCl}_6$  Chloride Solid Electrolytes for All-Solid-State Li Batteries

s07-094

**Sungkyung Kim** (Advanced Batteries Research Center, Korea Electronics Technology Institute , Seongnam, Korea), Kern-Ho Park, Kyungsu Kim, Woosuk Cho  
Fabrication of thin sulfide-based solid electrolyte membrane and pouch-type lithium metal solid state battery including the same

s07-095

**Min-Jeong Kim** (Advanced Batteries Research Center, Korea Electronics Technology Institute (KETI), Seongnam-si, Korea), KyungSu Kim, Woosuk Cho, Goojin Jeong  
Liquid-Aid Synthesis of Argyrodite-Type Solid Electrolyte by Using Esters

s07-096

**Ji-Hwan Kim** (Chemical engineering, Soongsil University, Seoul, Korea), Jae-Sung Jang, Sang-Hyun Moon, Deok-Hye Park, Sung-Beom Kim, Jae-Hoon Shin, Seong-Nam Lee, Yu-Yeon Park, Kyung-Won Park  
LLZO/PVdF-HFP Hybrid Solid Electrolyte for All Solid-State Li-based Batteries

s07-097

**Mingony Kim** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Jae-Ho Park, Hun-Gi Jung, Eunbyoul Lee  
Effects of Succinonitrile on Bulk and Micro Structure of Ni-rich Cathode for All-Solid-State Lithium-ion Batteries

s07-098

**Eun Seong Kim** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Jiwon Jeong, Jae-Ho Park  
Enhanced Cycle Stability of  $\text{Li}[\text{Ni}_{0.5}\text{Co}_{0.2}\text{Mn}_{0.3}]\text{O}_2$  via Grain Boundary Modification for All-Solid-State Batteries

s07-099

**Ohmin Kwon** (Cathode materials development group, Research Institute of industrial Science and Technology, Incheon, Korea), Yongsun Park, Youngsang Kim, Sehoon Jung, Sangchul Nam  
Development of air-stable sulfide-based solid electrolyte using oxide-based ionic conductive materials

s07-100

**Jun Su Lee** (Advanced Materials Engineering, Kyonggi University, Suwon-si, Korea), Yong Joon Park  
Surface modification on  $\text{LiNi}_{0.82}\text{Co}_{0.12}\text{Mn}_{0.06}\text{O}_2$  cathode using  $\text{LiNbO}_3$  and  $\text{LiTaO}_3$  for all-solid-state batteries

s07-101

**Gwi-Hak Lee** (Department of Materials Science and Engineering, Chonnam National University, Gwangju, Korea), Gwi-Hak Lee, Chan-Jin Park  
An Advanced Composite Solid Electrolyte Comprising Poly(Propylene Carbonate) and Mesoporous Silica Nanoparticles for All-Solid-State Lithium-Ion Batteries

s07-102

**Jae Seok Nam** (SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, Suwon, Korea), Weerawat Toaran, Seok Hee Lee, Hannah Jo, Soo Min Hwang, Young-Jun Kim  
Study on ionic carrier transport behavior during electrochemical reaction in single type NCA for all solid-state batteries

s07-103

**An-Giang Nguyen** (Department of Materials Science and Engineering, Chonnam National University, Gwangju, Korea), Gwi-Hak Lee, Chan-Jin Park  
Novel Design of Anode-Free All-Solid-State Batteries with High Energy Density

s07-104

**Jinkyu Park** (Advanced Materials, Advanced Materials Division, University of Science and technology (UST), KRICT, Daejeon, Korea), Joon Ha Chang  
Study on hybrid electrolytes for high-voltage all-solid-state lithium battery

s07-105

**Rajesh Rajagopal** (Chemistry, University of Ulsan, Ulsan, Korea), Ji-Un Cho, Su-jeong Park, Han-ji Jeon

Synthesis of Sulfur Doped Li<sub>3</sub>OBr “ Type Antiperovskite Solid Electrolyte for All Solid-State Lithium Battery Applications

s07-106

**Yuya Sakka** (Applied Chemistry, Ritsumeikan University, Kusatsu, Japan), Takuma Uno, Takeshi Shimizu, Yuki Orikasa  
X-ray Computed Tomography Study on NCM Cathode of All-Solid-State Batteries

s07-107

**Yusuke Sakurai** (Applied Chemistry, Ritsumeikan University, Kusatsu, Japan), Koji Kandori, Takeshi Shimizu, Yuki Orikasa  
Direct Observation of Ag Dendrite Growth in Glass Electrolyte Using X-Ray Tomography of All-Solid-State Battery

s07-108

**Hyeju Shin** (Ulsan Advanced Energy Technology R&D Center, Korea Institute of Energy Research, Ulsan, Korea), Tae-Hee Kim  
An Oxide-Based Hybrid Solid State Battery with Improved Interface Resistance by Gel Polymer Electrolyte

s07-109

**Hyeon-Ji Shin** (Center for Energy Storage Research, Korea Institute of Science and Technology, Seoul, Korea), Hun-Gi Jung  
The factors of performance deterioration for NCM composite cathode in sulfide based all-solid-state battery

s07-110

**Youngwoong Song** (Smart Energy and Nano Photonics R&D Group, Korea Institute of Industrial Technology(KITECH), gwang-ju, Korea)  
Evaluation of electrochemical properties of composite solid electrolyte sheet manufactured according to LLZO particle size

s07-111

**Eun-Seo Won** (Energy Science & Engineering, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Daegu, Korea), Wooyoung Jeong, Kyu-Nam Jung, Jong-Won Lee  
Microstructural Engineering of Hybrid Solid Electrolyte/Electrode Assemblies toward High-Performance Solid-State Batteries

s07-112

**Mariya Yamagishi** (Life Sciences, Ritsumeikan University, Shiga, Japan), Shintaro Tachibana, Takeshi Shimizu, Yuki Orikasa  
Mixed-Anion Effects on Lithium-Ion Conductivity of Chloride-Based Solid Electrolyte

s07-113

**Da Hye Yoon** (Advanced Materials Engineering, Kyonggi University, Suwon-Si, Korea), Yong Joon Park  
Surface modification of cathode using LiBOB for sulfide-based all-solid-state batteries

**Specialty batteries**

s07-114

**Justine Marie Abarro** (Department of Chemical Engineering, University of the Philippines Diliman, Quezon City, Philippines), Julie Anne del Rosario  
Biodegradable Primary Batteries for Transient Electronics

s07-115

**Jae Hun Choi** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Min Kim, Hee Sung Shin, Yun Chan Kang  
Synthesis of Highly Porous 2D Metal Chalcogenide Composite Using Salt-Templated Strategies and Their Electrochemical Properties

s07-116

**Hanul Choi** (Materials Research Division, Research Institute of Industrial Science and Technology, Pohang, Korea), Seungmi Lee, Yoon-Cheol Park, Ohmin Kwon, Choongmo Yang, Guosheng Li  
Effect of Ni to NaCl Ratio of Cathode Materials on the Electrochemical Performance of Na-NiCl<sub>2</sub> Battery at a Lower Temperature of 200 Degree Celcius

s07-117

**Eunbin Jang** (Energy engineering, Kyungpook University, Daegu, Korea), Jeeyoung Yoo  
The Electrode Material for Easier Intercalation of Potassium Ion

s07-118

**Gun Jang** (Chemical Engineering, Sungkyunkwan University, Suwon, Korea)  
Hierarchical structure vanadium oxides derived from MOF for Zinc-Ion batteries

s07-119

**Dohwan Kim** (Energy Science & Engineering, DGIST, Daegu, Korea), Cheol Bak, Seungwon Jung, Seoungwoo Byun, Jeong-Hun Song, Yong Min Lee  
Architectural Design of Multi-layered Thick Electrodes with Different Particle Sizes of Ni-rich Cathode Materials for Lithium-ion Batteries

s07-120

**Nayeon Kim** (Energy Science and Engineering, DGIST (Deagu Gyeongbuk Institute of Science and Technology), Deagu, Korea), Dahee Jin, Seoungwoo Byun, Yong Min Lee  
Effect of ceramic additives in LiNi<sub>1/3</sub>Mn<sub>1/3</sub>Co<sub>1/3</sub>O<sub>2</sub> electrodes for high-voltage performance of lithium-ion batteries

s07-121

**Eunhwan Kim** (energy engineering, Kyung Pook national university, Daegu, Korea), Jeeyoung Yoo  
Effect of 3D network current collector for anode-free Li ion battery

s07-122

**John Lampkin** (Chemistry, University of Southampton, Southampton, United Kingdom), He Li, Rinaldo Raccichini, Nuria Garcia-Araez  
Critical Evaluation of Ion Transport Limitations and Electrolyte Degradation in Aluminium-Sulfur Batteries

s07-123

**Seungmi Lee** (Materials Research Division, Research Institute of Industrial Science and Technology, Pohang, Korea), Hanul Choi, In-Cheol Park, Jiwoong Moon, Choongmo Yang, Yoon-Cheol Park, Younki Lee, Keeyoung Jung  
A thin beta"-Al<sub>2</sub>O<sub>3</sub> solid electrolyte using an interconnected YSZ framework for intermediate temperature liquid Na metal batteries

s07-124

**Min-Geun Oh** (Chemical Engineering & Applied Chemistry, Chungnam National University, Daejeon, Korea), Van-Kien Hoang, Gyeong Jun Chung, Seung-Wan Song  
Reversible Magnesium Storage of Magnesium Silicide as a New Anode Material for Mg-ion Batteries

s07-125

**Gi Dae Park** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Dae Hyun Kim, Hee Sung Shin, Yun Chan Kang

Synthesis of Nanostructured Metal Telluride and Investigation of Their Electrochemical Properties in Alkali-Ion Batteries

s07-126

**Rakesh Verma** (Department of Materials Science and Engineering, Chonnam National University, Gwangju, Korea), Chae-Eun Moon, Chan-Jin Park

SnSe@C Nanocomposite as an Anode Material with High Capacity and Long Cycle Life for K-Ion Batteries

## Challenges in Battery Technologies for Advanced and Next-generation Electric Vehicles and Grid Storage

### Li-Ion Batteries

s08-001

**Juyeon Park** (Electrochemistry Group, National Physical Laboratory, Hampton, United Kingdom), Jarred Olson, Nina Meddings, Pierre Kubiak, Andy Wain, Edmund J.F. Dickinson, Xuekun Lu, Gareth Hinds  
Metrology for Battery R&D at the National Physical Laboratory



Understanding and application of fast storage processes (Supercapacitors & high power systems)

### capacitive and pseudocapacitive materials

s09-001

**Anjali Achazhiyath Edathil** (DTU Nanolab, Technical University of Denmark, Kongens Lyngby, Denmark), Babak Rezaei, Kristoffer Almdal, Stephan Sylvest Keller?

Nano-engineered s-IPN Hydrogel-based Carbon Aerogel as Advanced Electrodes for Binder-free Supercapacitors

s09-002

**Omobosedede Fashedemi** (Physics, Technische Universität München, Garching, Germany), Kenneth Ozoemena

Directly grown Copper oxide nanorods -carbon nanotube (CNT) hybrids from Copper substrates as pseudocapacitors

s09-003

**James W. Gittins** (Department of Chemistry, University of Cambridge, Cambridge, United Kingdom), Chloe J. Balhatchet, Yuan Chen, Cheng Liu, David G. Madden, Sylvia Britto, David Fairen-Jimenez, SiÈfn E. Dutton, Alexander C. Forse

Insights Into the Electric Double-Layer Capacitance of the Two-Dimensional Electrically Conductive Metal-Organic Framework Cu<sub>3</sub>(HHTP)<sub>2</sub>

s09-004

**Erhan Karaca** (Chemistry, Hacettepe, Ankara, Turkey)

Electropreparation of Nanosized MnO<sub>2</sub> Doped Polypyrrole-Polycarbazole Coating on Flexible Stainless-Steel Gauze for Supercapacitor Application

s09-005

**Yejin Kim** (Chemistry, Kwangwoon university, Seoul, Korea), Seongjun Hong, In Tae Kim, Yang-Rae Kim

Electropolymerization of Thiazoles Bearing Thiophene and Selenophene as New Monomers and Its Applications for Supercapacitors

s09-006

**Philipp Röse** (IAM-Electrochemical Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany), Sami ur Rahman, Mit Surati, Anwar ul Haq Ali Shah, Ulrike Krewer, Salma Bilal

-D Porous Polyaniline Nanofibers Coated on Anchored on Carbon Fiber Electrodes for High-Performance Supercapacitors

s09-007

**Antony Thiruppathi** (Chemistry, Electrochemical Technology Centre, University of Guelph, Guelph, Canada), Michael Salverda, Emmanuel Boateng, Aicheng Chen

Development of Three-Dimensional Graphene-Based Nanomaterials for Advanced Energy Storage Applications

s09-008

**Maciej Tobis** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Maciej Tobis, Elzbieta Frackowiak

Carbon/ReS<sub>2</sub> Composite as an Electrochemical Capacitor Electrode operating in aqueous and organic electrolytes

### Electrochemical capacitors

s09-009

**Ganesh Dhakal** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Gyeongbuk, Korea), Debananda Mohapatra, Young-Il Kim, Jae-Jin Shim  
Natural lotus calyx biowaste-derived activated carbon for high-performance supercapacitor electrodes and the effects of electrolytes

s09-010

**Masoud Foroutan Koudahi** (Faculty of Chemical Technology, Poznan University of Technology, poznan, Poland), Elzbieta Frackowiak  
Nanotextured Carbon/VS<sub>2</sub> Composites as the Hybrid Electrodes in Electrochemical Capacitors

s09-011

**Przemyslaw Galek** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Przemyslaw Galek, Jabub Menzel, Scott Donne, Krzysztof Fic  
Electrochemically Active Surface Area of Activated Carbon Electrodes Determined with the Step Potential Electrochemical Spectroscopy

s09-012

**Min Guk Gu** (Chemical Engineering, Jeonbuk National University, Jeonju-si, Korea), Minsu Kim, Dong Wook Lee, Byoung Gak Kim, Sung-Kon Kim  
Enhanced-Performance Micro-supercapacitor Electrodes with Laser-induced Micropores of Fluorine-based Polyimide Films

s09-013

**Su Hyeon Jang** (Material Science and Engineering, Kangwon National University, Chuncheon, Korea)  
Controlled pore size of activated carbon synthesized from coal pitch for supercapacitors

s09-014

**Su-Jin Jang** (Korea Institute of Ceramic Engineering and Technology, Energy storage system, Jinju-si, Korea), Jeong Han Lee  
The capacitance properties of activated carbon decorated by carbon dots for electrochemical capacitors

s09-015

**Ju Eun Jung** (Department of Materials Science and Engineering, Korea University, Seoul, Korea), Nam Dong Kim, Woong Kim  
N-doped graphene supercapacitor for AC line filtering

s09-016

**Ji Won KIM** (School of Chemical Engineering, Jeonbuk National University, Jeonju-si, Jeollabuk-do, Korea), Sung-Kon Kim, Joobee Shin  
Self-power pack combining inverted organic solar cell and solid-state supercapacitor

s09-017

**Dawid Kasprzak** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Maciej Galinski  
High electrochemically stable cellulose gel electrolyte for a supercapacitor

s09-018

**Abebaw Eshetie Kidie** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Gyeongbuk, Korea)  
Synthesis of MXene@Nickel-Cobalt Layered Double Hydroxide Heterostructure for High Performance Supercapacitor Application

s09-019

**Hyunjun Kim** (School of Chemical Engineering, Jeonbuk National University, 567 Baekje-daero, Korea), Joobee Shin, Junwoo Jeon, Jong-Chan Lee, Byoung GaK Kim, Sung-Kon Kim

Hierarchy porous carbon electrodes created by a Tröger's base polymers for electrochemical capacitors

s09-020

**Pado Kim** (School of Semiconductor and Chemical Engineering, Jeonbuk National University, Jeonju-si, Korea), Sung-Kon Kim

Injection of highly ion-conductive gel polymer electrolytes into MWCNT electrodes for energy storages

s09-021

**Juyeon Kim** (Energy Storage Materials Center, Korea Institute of Ceramic Engineering and Technology, JinJu, Korea), Seo Hui Kang, Min Ju O

Ionic Liquid-Derived Nitrogen-Doped Activated Carbon for Supercapacitors

s09-022

**Jun Su Kim** (Chemical engineering, Sungkyunkwan University, Suwon, Korea), Jeong hee Park, Hong Jae Jeong, Rana Harpalsinh, Ho Seok Park

Sodium Ion Hybrid Capacitor in Poly-Acrylic Acid with Vinyl Silica Nano Particle Gel Electrolyte

s09-023

**Yongun Kim** (Department of Chemical Engineering, University of Seoul, Seoul, Korea), Chunyang Xia, Hajin Jo, Jiwon Kwon, Sugyeong Kim, Cheolsoo Jung

Increase on ESR of Supercapacitor on High Temperature Storage

s09-024

**Yuhyeon Lee** (Chemical engineering, , Gyeongsan, Korea), Dongkyu Son, Seohyeon Yeo, Gibaek Lee

Highly Conductive Carbon Nanofibers as Anode with Superior Rate Capability and Long Cycle Life in Potassium Ion Hybrid Capacitors

s09-025

**Woocheol Lee** (Department of Material Science and Engineering, Kangwon National University, Chuncheon, Korea)

A novel Quaternary Ammonium Salt for a high energy density supercapacitor

s09-026

**Dawoon Lee** (Department of Nanoelectronics & Photonics, Hanyang University, ERICA, Ansan, Korea), U Hyeok Choi, Jaekyun Kim

Hierarchical Nano-canyon Structured Ionic-gel Polymer Electrolyte via Tuning Morphological Characteristics for High Performance Microsupercapacitor Arrays

s09-027

**Antonio Moya** (Physics, University of Jaen, Jaen, Spain), Diego Olmedilla

Measuring Charge Stored in Electric Double Layer Capacitors from Potentiostatic Discharge through Resistors

s09-028

**Emmanuel Pameté Yambou** (Faculty of Chemical Technology, Poznan University of Technology, Poznan, Poland), Emmanuel Pameté Yambou, Barbara Górska, François Béguin

Electrical double-layer capacitors performing at low temperature with help of carbons with tuned porous texture and ionic liquid mixtures

s09-029

**Andrés Camilo Parejo-Tovar** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Zhuanpei Wang, François Béguin, Paula Ratajczak

Simulation and Experimental Studies on Imidazolium-based Ionic Liquids as Electrolytes for Electrochemical Capacitors

s09-030

**Gaeun Park** (Department of Photonics and Nanoelectronics, Hanyang University, ERICA, Ansan, Korea), Dawoon Lee  
Ultra-stable and Highly Conductive Ionic Gel Polymer Electrolyte for In-planar Microsupercapacitor Arrays

s09-031

**Justyna Piwek** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznan, Poland), Justyna Piwek, Anetta Platek-Mielczarek, Elzbieta Frackowiak, Krzysztof Fic  
Improving the Lifetime of Carbon Electrodes in Nitrate-based Electrolyte

s09-032

**Noemí Quintanal** (Grupo de Materiales Compuestos, Instituto de Ciencia y Tecnología del Carbono, Oviedo, Spain), Marta Sevilla, Clara Blanco, Ricardo Santamaría  
Influence of carbon structure on ionic liquids based supercapacitors performance

s09-033

**Bokome Shaku** (Chemistry, University of the Witwatersrand, Johannesburg, South Africa)  
Synthesis and Application of Activated Carbon from Marula Husk Waste in Supercapacitors

s09-034

**Won So** (School of Chemical Engineering, , Suwon, Korea), Won Tae Hong, Mi-Kyung Han, Uk Sim, Jung Kyu Kim  
Enhancing Cu<sub>2</sub>FeSnS<sub>4</sub> Supercapacitor Performance with Solvent-mediated Morphology Control

s09-035

**Eunho Song** (Chemical engineering, Konkuk university, Seoul, Korea), Sanhyuk Cho  
Improved Performance of EDLC by Adding Carbonized ZIF Additives into PVA Gel Polymer Electrolyte

s09-036

**Sylwia Sroka** (Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, Poznań, Poland), Przemyslaw Galek, Anetta Platek-Mielczarek, Jakub Menzel, Krzysztof Fic  
Point of Zero Charge - Meaning and Determination with the Electrochemical Quartz Crystal Microbalance

s09-037

**Antonia Stoyanova** (Electrochemical power sources, Institute of Electrochemistry and Energy Systems - BAS, Sofia, Bulgaria), Borislava Mladenova, Svetlana Veleva, Toma Stankulov, Francesco Lufrano, Ana Arenillas  
Carbon xerogels and manganese oxide materials for high performance hybrid solid-state supercapacitor

s09-038

**Soomin Suh** (Materials Science and Engineering, Korea university, Seoul, Korea), Junyoung Lee, Jinwoo Park, Woong Kim  
Correlation of salt concentration of aqueous electrolyte with the properties of ultrafast supercapacitors.

s09-039

**Hoai Van T. Nguyen** (Department of Chemistry, Kunsan National University, Gunsan-si, Korea), Kyung-Koo Lee, Junam Kim  
Intrinsically safe EDLCs with nonflammable trimethyl phosphate solvent

## **Electrochemical interfaces**

s09-040

**Keyvan Malaie** (Chemistry, NONE, Shiraz, Iran (Islamic Republic of)), Zahra Heydari  
The Confused Electrochemical Data of Materials On Nickel Foam In Alkaline Solution

## Energy conversion

s09-041

**Young-Hoon Lee** (school of chemical and biological engineering, Seoul National University, Seoul, Korea)

Color-Switchable Electrochromic cobalt hydroxide/nickel hydroxide Nanofilms for Multifunctional Smart Windows

s09-042

**Hae Yong Shin** (Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea), Sang-Mun Jung, Jaesub Kwon, Jinhyeon Lee, Kyubin Shim, Doil Park  
Direct Conversion of Low-Grade Waste Heat into Electricity Using Cu-Based Thermoelectrochemical Cells

## Functional materials

s09-043

**Victor Vanpeene** (X-ray Nano-probe, European Synchrotron Radiation Facility, Grenoble, France), Julie Villanova, Tobias Schulli, Jakub Drnec, Ennio Capria

TEESMAT an open innovation test bed for electrochemical devices: Example of nano-tomography as characterization tool for battery analysis

## hybrid devices

s09-044

**Zhiwei Li** (College of Material Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing, China), Yinghong Xu, Xiaogang Zhang

Rational Design of Molybdenum Nitride Quantum Dots in Nitrogen-Doped Carbon Framework for Lithium-Ion Hybrid Capacitors

s09-045

**Sha Li** (Department of Chemistry, Xiamen University, Xiamen, China), Jiande Lin, Xiangyang Guo, Bingwei Mao, Fuxiang Zhang, Deyin Wu, Zhongqun Tian, Li Zhang

Reversible Li<sup>+</sup> Intercalation Pseudocapacitance in 3D Metal-Organic Framework for High Energy and Ultrafast Li-Ion Hybrid Electrochemical Capacitors

## Electrocatalysis

s10-001

**Nurudeen Adebare** (CHEMICAL SCIENCE, UNIVERSITY OF THE WESTERN CAPE, SOUTH AFRICA., CAPE TOWN, South Africa)

Investigation of PtRu and PtRu(X) nanoparticles prepared by microwave assisted modified polyol method for direct methanol fuel cell application.

s10-002

**Hyo Eun Bae** (Department of Energy and Chemical Engineering, Incheon National University, Incheon, Korea), Yeong Eun Choi, Luong Thien Quang, Dohyeon Lee

High durable palladium catalyst applied to oxygen reduction reaction

s10-003

**Xing Chen** (College of Chemistry and Chemical Engineering, Xiamen, Xiamen, China)

Unveiling the Size Effect of Pt-on-Au Nanostructures Towards CO and Methanol Electrooxidation by In-Situ Electrochemical SERS

s10-004

**Seong Chan Cho** (Applied Chemistry, Hanyang University, Ansan, Korea), Chi Ho Lee, Sang Uck Lee

Theoretical Insights into the Possibility as a Single Atom Catalyst of Pt-TiC for the Hydrogen Evolution Reaction

s10-005

**Sunki Chung** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), HyungKuk Ju, Jaeyoung Lee

Surface proton assisted electrochemical NH<sub>3</sub> synthesis using CoMo heterobimetal embedded CNF catalysts

s10-006

**Jesse Dondapati** (Chemistry, University of Guelph, Guelph, Canada), Antony Thirupathi, Allison Salverda

IrO<sub>2</sub>-Ta<sub>2</sub>O<sub>5</sub>/Ti as an alternative counter electrode to Pt in acidic media

s10-007

**Jia-Ning Dong** (Department of Chemistry, Xiamen University, Xiamen, China), Yan-Jie Wang, Qiao-Rong Jiang, Zi-Ang Nan, Feng-Ru Fan, Zhong-Qun Tian

Charged droplets-driven fast formation of nickel-iron (oxy)hydroxide with rich oxygen defects for boosting overall water splitting

s10-008

**María Isabel Díez García** (Advanced Materials and Systems for Energy Area, Fundació Institut de Recerca de l'Energia de Catalunya, IREC, Barcelona, Spain), Sebastián Murcia López, Joan Ramon Morante

FeP Deposited on 3D Substrates as Highly Efficient Cathodes for the Hydrogen Evolution Reaction

s10-009

**Bastian JM Etzold** (Chemistry, Technical University of Darmstadt, Darmstadt, Germany), Kai Brunnengräber, Michael George, Katharina Jeschonek, Gui-Rong Zhang

TEM Characterization of Ionic Liquid modified Fuel Cell Catalysts

s10-010

**Park Gwan Gyu** (Energy Engineering, Konkuk University, Seoul, Korea), Joh Han-Ik  
MoxSy cluster coupled with carbon nanotube as a whole pH range electrocatalyst for hydrogen evolution reaction

s10-011

**Jaeyun Ha** (Department of Chemistry and Chemical Engineering, Inha University, Incheon, Korea), Moonsu Kim, Yong-Tae Kim, Jinsub Choi  
Self-templating synthesis of nickel-iron hydroxide for highly efficient oxygen evolution reaction

s10-012

**Injoon Jang** (Center for Hydrogen  $\ddagger$  Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Sehyun Lee, Dong Wook Lee  
Plasma-assisted synthesis of PtCoV ternary alloy nanoparticles for efficient oxygen reduction reaction

s10-013

**Shrine Maria Nithya Jeghan** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea), Dongkyu Son, Nangyeong Kim, Gibaek Lee  
Cu-Co Based 3D g-C<sub>3</sub>N<sub>4</sub> Hybrid Composite for Efficient Bifunctional Photo and Electrocatalytic Overall Water Splitting

s10-014

**Jae Ryeol Jeong** (Applied Chemistry, Kyung Hee University, Yongin, Korea), Min Hyung Lee  
Enhanced performance Water Oxidation Catalysts based on Layered Clay and Organometallic Compounds Hybrids

s10-015

**Haishun Jiang** (Ministry of Education, College of Chemistry, Fuzhou University, Fuzhou, China), Jing Tang  
Improvement of electrocatalytic hydrogen/oxygen evolution performance of transition metals by local optimization

s10-016

**Aleksandar Jovanovic** (Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia), Sanjin Gutic, Igor Pasti  
One-Step Electrochemical Synthesis of Ni@rGO Composites with High Electrocatalytic Activity towards Hydrogen Evolution in Alkaline Media

s10-017

**Sinwoo Kang** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Kahyun Ham, Hyung-Kyu Lim, Jaeyoung Lee  
Dischargeable Nickel Matrix Charges Iron Species for Oxygen Evolution Electrocatalysis

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**Seung-Yeon Kang** (Material Science and Engineering, POSTECH, Pohang, Korea), Sang-Mun Jung, Wen Guo, Kyubin Shim, Hye Su Kang  
Increasing the activity efficiency of electrochemical CO<sub>2</sub> reduction through charge transfer and sp-Band Filling in a Thin Layer of Au on Ag

s10-019

**Kyung-Hwan Kim** (School of Advanced Materials and Chemical Engineering, Daegu Catholic University, Gyeongsan, Korea)  
CoFe<sub>2</sub>O<sub>4</sub> electrocatalysts prepared by MOD solution processing for highly efficient oxygen evolution reaction

s10-020

**Geul Han Kim** (Department of Energy & Electronic Materials, Korea Institute of Materials Science (KIMS), Changwon, Korea), Sung-Mook Choi, Juchan Yang  
High-efficiency anion exchange membrane water electrolyzer via improved conductivity of transition metal oxide electrocatalyst

s10-021

**Young-Woo Kim** (Materials Science and Engineering, POSTECH, Pohang, Korea), Shin-Ae Park  
Adjusting relationships among activity, stability and conductivity of nanoporous core-shell iridium/iridium oxide catalysts for oxygen evolution reaction in acidic media

s10-022

**Dongwon Kim** (Center for Hydrogen-Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea), Bora Seo, Yuanzhe Piao  
Mo-doped CoP with Optimized Hydrophilicity for High-Performance Water Splitting

s10-023

**Taehui Kwon** (Chemistry & Nanoscience, Ewha Womans University, Seoul, Korea), Areum Yu, Chongmok Lee, Youngmi Lee  
Bimetallic Au-Ru Alloy Nanofibers as Efficient Bifunctional Electrocatalyst for Acidic Water Splitting

s10-024

**Chae-Yeon Kwon** (Department of Energy & Electronic Materials, Korea Institute of Materials Science (KIMS), Changwon, Korea), Sung Mook Choi  
Composition control of copper cobalt oxide as anode for anion exchange membrane water electrolyzer

s10-025

**Jaesub Kwon** (Materials Science and Engineering, POSTECH, Pohang, Korea), Sang-Mun Jung, Jinhyeon Lee, Kyu-Su Kim, Yong-Tae Kim  
Cost-efficient nickel-based thermo-electrochemical cells for utilizing low-grade thermal energy

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**Ha Jin Lee** (Applied chemistry, Hanyang University, Ansan, Korea), Sang Uck Lee, Chi Ho Lee  
Theoretical Investigations into the HER activity of the FeOOH

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**Seongbeom Lee** (Chemical and biological engineering, Seoul national university, Seoul, Korea), Heejong Shin, Yung-Eun Sung  
Efficient Electrochemical Oxygen Reduction to Hydrogen Peroxide through Pore Modification of ZIF-8 Derived Carbon as Single-atom Catalysts Support

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**KwangHo Lee** (Dept. of Materials Science and Engineering, Korea Advanced Institute of Science and Engineering, Daejeon, Korea), Junu Bak, SangJae Lee, JeongHan Roh  
Intermetallic PtZn Oxygen Reduction Reaction Catalysts supported on MOF-derived carbon for Enhanced Stability

s10-029

**Jongmin Lee** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Ji Mun Yoo, Yung-Eun Sung  
Boosted Oxygen Reduction Reaction by Tailoring Electronic Structures of Pt Nanocrystals Supported on N-functionalized Carbon

s10-030

**Sujeong Lee** (Chemistry, Yonsei university, Seoul, Korea), Sojin Oh, Moonhyun Oh  
Conductive Two-Dimensional Metal-Organic Framework and Its Electrochemical Oxygen Reduction Activity



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**Gihyun Lee** (Chemistry, Yonsei University, Seoul, Korea), Sujeong Lee, Moonhyun Oh  
Atypical Hybrid MOFs, Carbon-Based Catalysts, and Their Electrochemical Oxygen Reduction Activities

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**Dohyeon Lee** (Department of Energy and Chemical Engineering, Incheon National University, Incheon, Korea), Youngkwnag Kim, Huynh Thi Bich Ngoc, Seungmin Lee  
A study on the carbon shell thickness of catalyst through gas control during heat treatment.

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**Youngrok Lee** (Bioscience and Biotechnology, Konkuk University, Seoul, Korea)  
An electrochemical system that uses solar energy to produce hydrogen by cyanobacteria

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**Eunjik Lee** (Fuel Cell Laboratory, Korea Institute of Energy Research (KIER), Daejeon, Korea)  
Sonochemical preparation of core-shell PdCo@Pt nanoparticle and investigation of post heat-treatment effect for various gas atmospheres

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**Seon-Yeong Lee** (carbon convergence materials laboratory, Konkuk university, Seoul, Korea), Han-Wool Jang, Han-Ik Joh  
Strategy for improving the number of active sites of Fe-N-C catalyst and its electrochemical performances in alkaline media

s10-036

**Ho Yoon Lee** (Department of Chemistry and Chemical Engineering, Inha University, Incheon, Korea), Seung-hoon Kim  
Atomistic Modeling of Cobalt-Transition Metal Double Atom Catalysts for the Oxygen Evolution Reaction: A DFT Study

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**ByungJo Lee** (Material Science and Engineering, POSTECH, Pohang, Korea)  
Harvesting low-grade waste heat to electrical power using a thermo-electrochemical cell based on a titanium carbide electrode

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**Taejung Lim** (School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, Ulsan, Korea)  
Atomically Dispersed Pt<sup>δ</sup>N<sub>4</sub> Sites for the Selective Chlorine Evolution Reaction

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**June Sung Lim** (Chemical Engineering, UNIST, Ulsan, Korea), Jinwoo Woo, Du San Baek, Young Jin Sa, Sang Hoon Joo  
Designing Highly Active Carbon-based Materials for Electrocatalytic H<sub>2</sub>O<sub>2</sub> Production via Active Site Identification

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**Su-yeong Lim** (Green Materials and Processes R&D Group, Korea Institute of Industrial Technology, Ulsan, Korea), Sun-I Kim, Duck Hyun Lee, Taehyo Kim  
The Effect of Synthesis Process Conditions of Pt Electrocatalyst for Polymer Electrolyte Membrane Fuel Cell

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**Young Jin Lim** (material science and engineering, postech, pohang, Korea)

Low-hysteresis Manganese Hexacyanoferrate (MnHCF) Aqueous Battery for Low-grade Thermal Energy Harvesting

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**Lifeng Liu** (Clean Energy, International Iberian Nanotechnology Laboratory, Braga, Portugal)  
Strong coupling of IrRu nanoclusters to tellurium and MOF-derived carbon support for efficient and stable oxygen evolution in acidic/neutral media

s10-043

**Anja Lončar** (Department of Materials Chemistry, National Institute of Chemistry, Ljubljana, Slovenia), Daniel Escalera-López, Francisco Ruiz-Zepeda, Armin Hrnjič, Primož Jovanovič, Marjan Bele, Serhiy Cherevko, Nejc Hodnik  
Mixed Ir-Cu nanoparticles as a strategy to maximize Ir utilization towards the oxygen evolution reaction in acidic media

s10-044

**Daniel Eldrei Loresca** (Department of Chemical Engineering, University of the Philippines Diliman, Quezon City, Philippines), Julie Anne del Rosario  
Waste biomass-derived N-doped carbon material as electrocatalyst support for Co<sub>3</sub>O<sub>4</sub> nanoparticles in oxygen reduction reaction (ORR)

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**Quang Luong** (Department of Energy and Chemical Engineering, Incheon National University, Incheon, Korea), Yeongeun Choi, Seungmin Lee, Huynh Thi Bich Ngoc  
Employing a polymer layer as encapsulating agent for preparing nickel nanoparticles with core-shell structure for urea electro-oxidation

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**Marco Mazzucato** (Chemical Science, University of Padova, Padova, Italy), Christian Durante  
How Determinant Is The Iron Precursor Ligand In Fe-N-C Single-Site Formation And Activity For Oxygen Reduction Reaction?

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**Mariana Monteiro** (Catalysis and Surface Chemistry, Leiden University, Leiden, Netherlands), Mariana Monteiro, Matthew Philips, Klaas Jan Schouten, Marc Koper  
Energy efficient CO<sub>2</sub> reduction to CO on gold gas diffusion electrodes in acidic media

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**Geumbi Na** (School of Chemical & Biological Engineering, Seoul National University, Seoul, Korea), Yung-Eun Sung  
Atomically Dispersed Platinum-Ruthenium Bimetal Catalysts for Enhanced Hydrogen Reaction Performance

s10-049

**Antanas Nacys** (Department of Catalysis, Center for Physical Sciences and Technology, Vilnius, Lithuania), Dijana Simkunaite, Daina Upskuviene, Aldona Balciunaite, Ausrine Zabielaite, Vitalija Jasulaitiene, Loreta Tamasauskaite-Tamasiunaite, Eugenijus Norkus  
Platinum-Nickel Layers Deposited on Nickel Foam as Catalysts for Formic Acid Oxidation in an Alkaline Medium

s10-050

**Sojin Oh** (Chemistry, Yonsei University, Seoul, Korea), Sujeong Lee, Moonhyun Oh  
Co- and N-doped Porous Carbon Catalyst for Oxygen Reduction Reaction (ORR) Made from Hybrid MOF (ZIF-L@ZIF-67)

s10-051

**Yoonsu Park** (School of Integrative Engineering, Chung-Ang University, Seoul, Korea), Hoyoung Kim, Taegyeom Lee, Soo-Kil Kim, Don-Hyung Ha  
Facile Fabrication of High-Performance Hydrogen Evolution Reaction Electrodes with Iron Phosphide Nanoparticle Catalysts through Electrophoretic Deposition

s10-052

**Hee-Young Park** (Center for hydrogen and fuel cell research, Korea Institute of Science and Technology, Seoul, Korea), Hee-Young Park, Sung Won Kim, Hyun Joo Park, Sung Jong Yoo  
Development of Hollow PdCu<sub>2</sub>@Pt core@shell nanoparticles with ordered intermetallic cores for highly stably oxygen reduction reaction electrocatalysts

s10-053

**Seongjoo Park** (Fuel Cell Laboratory, Korea Institute of Energy Research (KIER), Daejeon, Korea)  
Facile synthesis of palladium nanoparticles for oxygen reduction reaction in polymer electrolyte membrane fuel cells

s10-054

**Akideji Jerome Sabejeje** (Chemical Sciences, University of the Western Cape, Cape Town, South Africa), Lindiwe Khotseng  
Effects of Hybrid Support Materials on Electrocatalysts for Direct Methanol Fuel Cell.

s10-055

**Hamza Saleem** (Chemical Engineering, PKNU, Busan, Korea)  
Electrochemical Synthesis of Nanostructured Metal-Organic Frameworks for the Efficient Oxygen Evolution Reaction

s10-056

**Jun Ho Seok** (Applied chemistry, Hanyang university, Ansan, Korea), Chi Ho Lee, Sang Uck Lee  
Synergistic Effect Between Doping and Strain to Graphene for the Hydrogen Evolution Reaction

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**Jae Hun Seol** (Applied Chemistry, , Ansan, Korea), Chi Ho Lee, Sang Uck Lee  
Theoretical Investigations on the Metal-Insulator Transition Property of HxWO<sub>3</sub>: From Thermodynamic To Kinetic Analysis

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**Joongpyo Shim** (Nano & Chemical Engineering, Kunsan National University, Gunsan, Korea), Masud Rana, Gyungse Park, Ho-Jung Sun, Hyung-Ryul Rim, Hong-Ki Lee  
Characterization on cell performance for electrode and operation parameters in anion exchange membrane-unitized regenerative fuel cells

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**Jaehyuk Shim** (School of Chemical & Biological Engineering, Seoul National University, Seoul, Korea), Mi-Ju Kim  
Development of non-precious metal catalyst for oxygen reduction reaction using modified-NH<sub>2</sub>-MIL-88B

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**Cheol-Hwan Shin** (Energy Science and Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea), Kyeong-Jin Lee, Jong-Sung Yu  
High Performance Binder-Free Fe@Ni Hydroxides on Nickel Foam Prepared in Piranha Solution for the Oxygen Evolution Reaction

s10-061

**Heejong Shin** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Yung-Eun Sung  
Reaction Mechanism with Regulating Metal-oxo Intermediates for Highly Active Oxygen Electrocatalysts

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**Jihyeok Song** (Department of Energy and Chemical Engineering, Incheon National University, Incheon, Korea), Hyo Eun Bae, Youngkwang Kim, Dohyeon Lee  
Facile synthesis of carbon shell encapsulated PtCo alloy catalyst

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**Kyungbeen Yeom** (School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea)  
Efficient Electrochemical Oxygen Reduction to Hydrogen Peroxide Production from Transition Metal-Nitrogen-Carbon Catalyst

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**Hye Yeon Yoo** (Applied Chemistry, Kyung Hee University, Yongin, Korea), Min Hyung Lee  
Improved water splitting catalyst : self-assembled NiFe LDH@rGO

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**Ki Ro Yoon** (Advanced Textile R&D Department, , Ansan, Korea)  
Hierarchically Assembled Cobalt Oxynitride and N-Doped Carbon Nanofiber Hybrids for Efficient Bifunctional Oxygen Electrocatalysis

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**Vladimir Zhulikov** (Laboratory of surface layer structure, Institute of Physical Chemistry and Electrochemistry RAS , Moscow, Russia), Boris Podlovchenko, Vitaly Kuznetsov  
Electrocatalytic Properties of PdMo Alloys Obtained by Electrodeposition from Acetate Electrolytes

### **Electrocatalyst**

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**Yoona Kim** (Department of Materials Science and Engineering, POSTECH, Pohang, Korea), Wen Guo, Kyubin Shim, Yong-Tae Kim  
Active Nanoporous Silver Catalyst for Enhancing CO<sub>2</sub> Electroreduction to CO

### **Electrodeposition**

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**Hyanjoo Park** (Center for Hydrogen<sub>2</sub> Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Hee-Young Park, Jong Hyun Jang, Soo-Kil Kim  
Fabrication of Cathode Catalysts for High-temperature Polymer Electrolyte Membrane Fuel Cells

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**Voronova Anastasiia** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea), Bora Seo, Hee-Young Park, Hyun S. Park  
Effect of catholyte feed method and anode binder content in alkaline anion exchange membrane water electrolysis

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**Kahyun Ham** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Jaeyoung Lee  
Evidences for Improved Oxygen Evolution Reaction Activity of  $\gamma$ -MnO<sub>2</sub> by Cation Exchange

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**J.W. (Willem) Haverkort** (Process & Energy (3mE), Delft University of Technology, Delft, Netherlands)  
A limiting current and electro-osmotic flows in alkaline water electrolysis

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**Jian Hou** (Department of Energy Engineering, Dankook University, Cheonan, Korea), Jun Hyun Lim  
The Importance of Measuring Anion Conductivity in Polymer Electrolyte Membranes for Alkaline Water Electrolysis Application

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**Jin Pyo Hwang** (Energy engineering, Dankook university, Chunan-si, Korea), Jun Hyun Lim  
Anion-Conducting Perfluorinated Membranes for Alkaline water electrolysis system

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**Jahowa Islam** (Hydrogen Research Department, Korea Institute of Energy Research , Daejeon, Korea), Sang-Kyung Kim, Thanh Thien Phan, Mizanur Rahman, Min-Joong Kim, Hyun-Seok Cho, Won-Chul Cho, Chang-Hee Kim, Changsoo Lee, Jae Hun Lee  
Activity and Durability Improvement of Iridium Electrocatalyst for OER by Tuning Reduction Temperature in NaBH<sub>4</sub> Reduction Method

s10-075

**Sun Young Kang** (School of Chemical & Biological Engineering, Seoul National University, Seoul, Korea), Ji Eun Park, Yong-Hun Cho, Yung-Eun Sung  
Anion-Exchange membrane water electrolysis with outstanding performance

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**Min-Ha Kim** (Chimical Engineering, Soongsil University, Seoul, Korea), Deok-Hye Park, Woo-Jun Lee, Hak-Joo Lee, Jeong-Hyeon Byeon, Kyung-Won Park  
Enhanced Oxygen Evolution Reaction Performance of Copper Cobalt Oxide Catalyst Prepared by Hard Template Method

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**Kyu-Su Kim** (Department of Material Science and Engineering, Pohang University of Science and Technology, Pohang, Korea), Shin-Ae Park, Hyun Dong Jung, Sang-Mun Jung, Young Hoon Moon, Seoin Back, Yong-Tae Kim  
Three-dimensionally Interconnected Nanoporous IrRe Thin Film Prepared by Selective Etching of Re for Oxygen Evolution Reaction

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**Junghwan Kim** (Materials Science and Technology, POSTECH, Pohang, Korea), Wen Guo, Kyubin Shim, Yong-Tae Kim  
Ag Layer Deposited on Zn by Physical Vapor Deposition with Enhanced CO Selectivity for Electrochemical CO<sub>2</sub> Reduction

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**Anand Kumar** (Department of Chemical Engineering, Qatar University, Doha, Qatar)  
Synthesis of NiCo/S-doped C<sub>3</sub>N<sub>4</sub> as an effective water-splitting catalyst

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**Hak-Joo Lee** (Chemical engineering, Soongsil University, Seoul, Korea), Deok-Hye Park, Woo-Jun Lee, Min-Ha Kim, Jung-Hyeon Byeon, Kyung-Won Park  
Electrochemical properties of Iridium doped Nickel Cobalt oxide solid solution inverse spinel structure catalyst for enhanced oxygen evolution reaction

s10-081

**Michelle Sophie Lemcke** (Chemical Conversion Processes, Fraunhofer Institute for Microstructure of Materials and Sys, Halle (Saale), Germany), Nadine Menzel  
Investigation and Evaluation of Different Preparation Methods of Membrane Electrode Assemblies for Anion Exchange Membrane Electrolysis

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**Robin Möller-Gulland** (Chemical Engineering, Delft University of Technology, Delft, Netherlands), Fokko Mulder  
Indirectly 3d-printed flow-through electrodes for alkaline electrolysis and hybrid battery electrodes

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**Malikah Najibah** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea), Ekaterina Tsoy, Yongfang Chen, Qingfeng Li, Chulsung Bae, Jaromír Hnát, Karel Bouzek, Dirk Henkensmeier  
PBI Nanofiber Mat-Reinforced Anion Exchange Membranes with Covalently Linked Interfaces for Use in Water Electrolysers

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**Ji Eun Park** (Department of Energy and Materials Engineering, Dongguk University, Seoul, Korea)  
Development of hydrocarbon-based membrane and ionomer for high-performance proton-exchange membrane water electrolysis

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**Jong-Hyeok Park** (Department of Civil, Environmental & Biomedical Engineering, Sangmyung University, Cheonan, Korea)  
Ionomer Dispersions for Improved Performance and Durability of Catalyst Layers for Hydrogen Evolution Reaction

s10-086

**Deok-Hye Park** (Chemical Engineering, Soongsil Univ., Seoul, Korea), Min-Ha Kim, Hak-Joo Lee, Woo-Jun Lee, Jeong-Hyeon Byeon, Kyung-Won Park  
Mesoporous Ni-Ir Oxide Electrocatalysts for Enhanced Oxygen Evolution Reaction

s10-087

**Mizanur Rahman** (Advanced Energy and System Engineering, University of Science and Technology, Daejeon, Korea), Thanh Thien Phan, Jahowa Islam, Sang-Kyung Kim, Chang-Hee Kim, Won-Chul Cho, Hyun-Seok Cho, Min-Joong Kim, Changsoo Lee, Jae Hun Lee  
Effect of Wind Power Profile on the Durability of Proton Exchange Membrane Water Electrolyzer

s10-088

**Aviral Rajora** (Process and Energy, Delft University of Technology, Delft, Netherlands), J. W. (Willem) Haverkort  
An Analytical Multiphase Model for Membraneless Alkaline Water Electrolysers

s10-089

**Bora Seo** (Center for Hydrogen and Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Hyunjoo Lee, Jong Hyun Jang  
Electrochemical C–H Bond Oxidation for Production of High-Value Chemicals

s10-090

**Muhammad Luthfi Akbar Trisno** (Energy and Environment Technology, University of Science and Technology, Seoul, Korea), Su Jin Lee, Fatemeh Sanaz Razmjooei, Syed-Asif Ansar, Artur Michalak, Hyun S. Park, Dirk Henkensmeier  
Polybenzimidazole Membranes with An Ionic Conductivity of 500 mS cm<sup>-1</sup> and An Alkaline Water Electrolysis Performance of 1.9 A cm<sup>-2</sup> @ 1.8 V

s10-091

**Kyeong-Rim Yeo** (School of Integrative Engineering, Chung-Ang University, Seoul, Korea), Kyung Ji Choi, Hotae Bang, Dinh Son Tran, Soo-Kil Kim

Highly Durable Oxygen Evolution Reaction Catalysts for Efficient Proton Exchange Membrane Water Electrolyzer

**Fuel Cell**

s10-092

**Chi-Yeong Ahn** (Alternative Fuel and Power System Research Center, Korea Research Institute of Ships & Ocean Engineering(KRISO), Daejeon, Korea), Sun Young Kang, Hyuck Jae Choi, Ok-Hee Kim, Yung-Eun Sung, Yong-Hun Cho

Effect of Additive for Durable Anode on Reversal Potential Resulting from Fuel Starvation under Fuel Cell Operating Conditions

s10-093

**Sooan Bae** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Jihyeon Park, Yuna Hwang, Jin-Soo Park, Beomgyun Jeong

Amphiphilic Non-noble ORR Catalyst for Advanced Power Performance of Alkaline Hydrazine Fuel Cells

s10-094

**Su-Jeong Bak** (Green Materials & Processes R&D Group, Korea Institute of Industrial Technology, Ulsan, Korea), Sun-I Kim, Taehyo Kim, Duck Hyun Lee

Size Dependent Graphene for the Support of Highly Efficient Oxygen Reduction Reaction Catalyst in Polymer Electrolyte Membrane Fuel Cell

s10-095

**Won-Young Choi** (Fuel Cell Research and Demonstration Center, Korea Institute of Energy Research, Buan, Korea), Hyunguk Choi, Seo Won Choia, Myeong Hwa Lee, Young Je Park, Dong-Jun Seo, Tae-Young Kim, Young-Gi Yoon, Sung-Chul Yi

PFSA ionomer immobilized onto N-doped CB as electrolyte of PEFC electrode for enhancing ORR kinetics and O<sub>2</sub> transportation

s10-096

**Seo Won Choi** (Fuel Cell Research and Demonstration Center, Korea Institute of Energy Research, Buan, Korea), Hyunguk Choi, Won Young Choi, Myeong Hwa Lee, Young Je Park, Young Gi Yoon, Chanho Park

Impact of PFSA ionomer Re-agglomeration in the PEFC Electrode during the Post-deposition Drying Process of ESD method

s10-097

**Segu Jang** (Department of Mechanical and Information Engineering, University Of Seoul, Seoul, Korea), Choeun Kim

Experimental performance evaluation and analysis according to the flow direction and the combinations of PEMFC using an expanded metal mesh flow path for the cathode

s10-098

**Dasol Jin** (Department of Chemistry & Nanoscience, Ewha Womans University, Seoul, Korea), Youngmi Lee, Myung Hwa Kim, Chongmok Lee

Single Spinel-induced Bimetallic Alloy MxRh<sub>1-x</sub> (M= Co and Ni) Nanofibers as pH-independent Hydrogen Evolution Reaction Catalysts

s10-099

**Sang-Mun Jung** (Materials Science and Engineering, POSTECH, Pohang, Korea), Su-Won Yun, Jun-Hyuk Kim, Sang-Hoon You, Yong-Tae Kim

Selective electrocatalysis imparted by metal-insulator transition for durability enhancement of automotive fuel cells

s10-100

**Jeawoo Jung** (Center for Hydrogen-Fuel Cell Research, Korea Institute of Science and Technology, Seoul, Korea), Hyun S. Park, Hyoung-Juhn Kim, Sung Jong Yoo, Jin Young Kim, So Young Lee, Hee-Young Park

Effect of the Electrode Condition with Carbon-supported PtCo/C on the Durability of Polymer Electrolyte Membrane Fuel Cells

s10-101

**Yunjin Kim** (Graduate School of Energy Science and Technology (GEST), Chungnam National University, Daejeon, Korea), Arokia Anto Jeffery, Sourabh Chougule, Jiho Min, Keonwoo Ko, Namgee Jung

A study on the electrochemical property of graphene-based hybrid catalyst for anion exchange membrane fuel cells.

s10-102

**Keonwoo Ko** (Graduate School of Energy Science and Technology (GEST), Chungnam National University (CNU), Daejeon, Korea), Jiho Min, Arokia Anto Jeffery, Sourabh Chougule, Yunjin Kim, Namgee Jung\*

Development of low Pt-based catalyst coated with carbon shell to improve hydrogen oxidation reaction activity and durability

s10-103

**Ha-Young Lee** (Energy Science and Engineering, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Daegu, Korea), Jong-Sung Yu

A New PtMg Alloy with Enhanced Electrocatalytic Performance for Oxygen Reduction Reaction

s10-104

**Youjin Lee** (School of Earth Science and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Kahyun Ham, Dongyoon Shin, Jaeyoung Lee

Reinforcing the Durability of PtCo/C Catalyst by Including Dissolved Co<sup>2+</sup> Capturing Layer in PEMFC Cathode

s10-105

**Woo-Jun Lee** (Chemical engineering, Soongsil University, Seoul, Korea), Deok-Hye Park, Hak-Joo Lee, Min-Ha Kim, Jeong-Hyeon Byeon, Kyung-Won Park

Pt-Nb<sub>2</sub>O<sub>5</sub>/C Oxygen Reduction Reaction Catalyst for Proton Exchange Membrane Fuel Cells

s10-106

**Milica Marceta Kaninski** (Department of electrochemistry, Institute of General and Physical Chemistry, Beograd, Serbia)

Comparison of Pt and Pd Anode Catalysts on Nanosized Ru-SnO<sub>2</sub> for Ethanol Oxidation in Fuel Cell Applications

s10-107

**Dušan Mladenović**; (Electrochemistry, University of Belgrade - Faculty of physical chemistry, Belgrade, Serbia), Elif Dačić, Diogo M.F. Santos, Ayse B. Yurtcan, Biljana Sljukić

Design and characterization of PtM/graphene nanoplatelets (M=Ni, Fe, Cu) as bifunctional electrocatalysts for unitized regenerative fuel cells

s10-108

**Keun-Hwan Oh** (Hydrogen Fuel Cell R&D Center, Korea Automotive Technology Institute, Cheonan, Korea), Seung Eul Yoo, Youngmo Goo, Myoung Hwan Kim, Ji Young Park, Sun Ho Yoon, Do Hwan Kim

Enhanced Durability of Bipolar Plate for Polymer Electrolyte Fuel Cells by Formation of Metal Ion Complexes

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**Jong-Hyeok Park** (Department of Civil, Environmental & Biomedical Engineering, Sangmyung University, Cheonan, Korea), Beom-Seok Kim  
Effect of Ionomer Dispersions with Various Side Chain Lengths on the Performance of Porous Catalyst Layers in PEMFC

s10-110

**SungBin Park** (School of chemical and biological engineering, Seoul National University, Seoul, Korea), Ji Eun Park, Yung-Eun Sung  
Electrodeposited IrRuOx electrode for oxygen evolution in acidic and alkaline media

s10-111

**Subin Park** (Center for Hydrogen  $\hat{\pm}$  Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Wonchan Hwang, Yung-Eun Sung  
Sulfate Anion Mediated Synthesis of Concave Fe-N-C Electrocatalyst for High-Performance Proton Exchange Membrane Fuel Cells with Enhanced Mass-Transport

s10-112

**Hee-Young Park** (Center for hydrogen and fuel cell research, Korea Institute of Science and Technology, Seoul, Korea), Hee-Young Park, Jeawoo Jung, Ohsup Kim, Bongho Lee, Kyuhwan Hyun, Jong Hyun Jang  
Double metal mesh flow field for improved mass transport in polymer electrolyte membrane fuel cells

s10-113

**Kristina Radinovic** (Electrochemistry, University of Belgrade-Faculty of Physical Chemistry, Belgrade, Serbia), Dusan Mladenovic, Jadranka Milikic, Diogo M.F. Santos, Biljana Sljukić  
Catalytic Performance of AuAg/rGO Electrodes for Oxygen Reduction Reaction in Alkaline Medium

s10-114

**Michaela Roschger** (Institute of Chemical Engineering & Environmental Technology, Graz University of Technology, Graz, Austria), Sigrid Wolf, Hacker Viktor  
Performance of Carbon Supported Ternary PdNiBi Nanocatalysts in Alkaline Direct Ethanol Fuel Cells

s10-115

**Ludwe Sikeyi** (Chemistry, University of the Witwatersrand, Johannesburg, South Africa), Nobanathi Maxakato, Neil Coville, Manoko Maubane-Nkadimeng  
Microwave assisted synthesis of nitrogen doped and oxygen functionalized carbon nano onions supported palladium nanoparticles as hybrid anodic electrocatalysts for direct alkaline ethanol fuel cells

s10-116

**Yongsug Tak** (Chemical engineering, Inha university, Incheon, Korea), Gibaek Lee  
Highly durable and efficient Nb-doped TiO<sub>2</sub> and carbon nanotube hybrid support for PEMFC cathode

s10-117

**Loreta Tamasauskaite-Tamasiunaite** (Department of Catalysis, Center for Physical Sciences and Technology, Vilnius, Lithuania), Aldona Balciunaite, Daina Upskuviene, Vitalija Jasulaitiene, Audrius

Drabavicius, Aleksandrs Volperts, Galina Dobele, Aivars Zhurinsh, Yu-Chuan Lin, Yu-Wen Chen, Eugenijus Norkus  
Copper Nanoparticles Modified Wood-Based Carbon Materials as Catalysts for Oxygen Reduction

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**Sigrid Wolf** (Institute of Chemical Engineering & Environmental Technology, Graz University of Technology, Graz, Austria), Michaela Roschger, Selestina Gorgieva, Bostjan Genorio, Viktor Hacker  
Nitrogen-doped Reduced Graphene Oxide based Membrane Electrode Assemblies for the Direct Alkaline Ethanol Fuel Cells

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**Yun Wu** (Department of Materials Science and Engineering, Guangdong University of Petrochemical Technology, Maoming, China), Azhagumuthu Muthukrishnan, Shinsuke Nagata  
Kinetic rate constant evaluations of oxygen reduction reaction pathways over Pt-free electrocatalysts

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**Sang-Hoon You** (Materials Science and Engineering, Pohang University of Science and Technology, Pohang, Korea), Sang-Moon Jung  
The unitized regenerative fuel cell (URFC) is a useful electrochemical energy conversion/storage device, in which catalysts for the dual-function as oxygen reduction reaction (ORR) and oxygen evolution reaction (OER) electrodes must be operative over a wide range of potentials. Herein, we report a highly active and stable bifunctional electrocatalyst, a three-dimensionally interconnected nanoporous PtIr thin film (np-PtIr) for URFC, which was prepared by an electrochemical selective leaching of

### **In situ techniques**

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**Wei Chen** (Department of Chemical Physics, University of Science and Technology of China, Hefei, China), Fan He, Yan-Xia Chen  
Methodology issues in Studying Electrocatalytic Reaction Kinetics by Differential Electrochemical Mass Spectrometry

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**Albert Mufundirwa** (Research Center for Synchrotron Light Applications, Kyushu University, Fukuoka, Japan), Takeharu Sugiyama, Bretislav Smid, Akari Hayashi, Stephen, Matthew Lyth  
Monitoring the Development of ORR Active Sites for Fe-N-C Catalysts Using HT In-situ Techniques

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**Thanh Thien Phan** (Hydrogen Research Department, Korea Institute of Energy Research, Daejeon, Korea), Mizanur Rahman, Jahowa Islam, Sang-Kyung Kim, Chang-Hee Kim, Won-Chul Cho, Hyun-Seok Cho, Min-Joong Kim, Chang-Soo Lee, Jae-Hun Lee  
Prediction of Membrane Degradation in PEM Water Electrolyzer by Measuring OCV

### **Solid oxide fuel cell**

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**Kuan-Zong Fung** (Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan), Shu-Yi Tsai, Jih-Yu Tang, Ting-You Chang  
Importance of Mixed-Conducting Oxides for High-Temperature Fuel Cells Applications

## Durability

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**Han Yeong Kim** (Energy Engineering, Konkuk University, Seoul, Korea)

Sequential degradation mechanism of electrocatalysts in polymer electrolyte membrane fuel cells via accelerated durability test

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**Thanh Thien Phan** (Hydrogen Research Department, Korea Institute of Energy Research, Daejeon, Korea), Mizanur Rahman, Jahowa Islam, Sang-Kyung Kim, Chang-Hee Kim, Won-Chul Cho, Hyun-Seok Cho, Min-Joong Kim, Chang-Soo Lee, Jae-Hun Lee

The Effect of Membrane Thickness on PEM Water Electrolysis Performance and Durability at High Current Density

## Polymer electrolyte fuel cell (PEMFC and AEMFC)

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**Mahamuda Akter** (Department of Civil, Environmental & Biomedical Engineering, Sangmyung University, Cheonan, Korea), Yuna Hwang

Effect of Annealing on the Mechanical Properties of Recast Perfluorinated Sulfonic Acid Membranes

s10b-004

**Jeong-Hyeon Byeon** (Chemical Engineering, Soongsil University, Seoul, Korea), Deok-Hye Park, Woo-Jun Lee, Hak-Joo Lee, Min-Ha Kim, Kyung-Won Park

Pt-Ni/C cathode catalyst synthesized by galvanic displacement reaction for oxygen reduction reaction

s10b-005

**Hyeonjin Cha** (Mechanical Engineering, Soongsil University, Seoul, Korea), Obeen Kwon, Heesoo Choi, Jaeyeon Kim, Hyeok Kim, Hongnyoung Yoo, Taehyun Park

Effects of Removal of the Cathode Bipolar Plate on Humidity and Performance of a Polymer Electrolyte Membrane Fuel Cell

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**Jung-goo Choi** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea)

AI-assisted Proton Exchange Membrane Fuel Cell Modeling with Artificial Neural Network

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**Hyunguk Choi** (Fuel Cell Research and Demonstration Center, Korea Institute of Energy Research, Buan, Korea), Won Young Choi, Seo Won Choi, Myeong Hwa Lee, Young Je Park, Young Gi Yoon, Sung-Chul Yi

Improve operando stability of the PEFC electrode fabricated via modified decal transfer method based on binary-solvent-mixture plasticizer

s10b-008

**Heesoo Choi** (Mechanical Engineering, Soongsil University, Seoul, Korea), Jaeyeon Kim, Obeen Kwon, Hyeonjin Cha, Hyeok Kim, Hongnyoung Yoo, Taehyun Park

Performance Enhancement by Frequent Flooding in Polymer Electrolyte Membrane Fuel Cells

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**Maximilian Grandi** (Institute of Chemical Engineering and Environmental Technology, Graz University of Technology, Graz, Austria), Kurt Meyer, Viktor Hacker

Empirical equivalent circuit modelling of low frequency impedance spectroscopy signals for proton exchange membrane fuel cells

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**Do-Hyung Kim** (Graduate School of Energy Convergence, Gwangju Institute of Science and Technology, Gwangju, Korea), Hyeon-Seung Jung, Chanho Pak

Impedance analysis by the distribution of relaxation times of gas diffusion electrodes for high temperature polymer electrolyte membrane fuel cells

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**Heesu Kim** (Advanced Green Energy Lab., Korea Construction Equipment Technology Institute, Gunsan-si, Korea), Sanggyun Park, Jooyeong Jeong, Myunggeun Park, Joonsuk Kim, Jaeduk Kim, Hanseong Yoo, Wonjoon Jin

Development of the Energy Recovery System for 2 ton Electric Excavator

s10b-012

**Sungmin Kim** (Fuel cell laboratory, Korea Institute of Energy Research(KIER), Daejeon, Korea), Beomjun Pak, Soohwan Lee, Seunghee Woo, Yun Sik Kang, Seok-Hee Park, Namgee Jung

MEA development methodology in consideration of non-uniformity of operating condition in large-area bipolar plate

s10b-013

**Myeong Hwa Lee** (Fuel Cell Research and Demonstration Center, Korea Institute of Energy Research, Buan, Korea), Won Young Choi, Hyunguk Choi, Seo Won Choi, Young Je Park, Young Gi Yoon, Pil Kim

Suppression of the catalyst poisoning by perfluorinated sulfonic-acid ionomer via introduction high surface area carbon supports

s10b-014

**Eungjun Lee** (Center for Hydrogen  $\hat{+}$  Fuel Cell Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Yung-Eun Sung

Ex-situ study: Synthesis of PtNi bowl hollow shape for oxygen reduction reaction catalyst by sonochemistry

s10b-015

**Seon-Ho Lee** (Renewable Energy Engineering, University of Science & Technology (UST), Daejeon, Korea), Ahmad Zulfikri Taning, Seunghee Woo, Yun Sik Kang, Seok-Hee Park

Controlling the microstructure of catalyst layers through PEMFC ink formulation

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**Young Je Park** (Fuel Cell Research and Demonstration Center, Future Energy Research Division, Korea Institute of Energy R, Buan, Korea), Won Young Choi, Hyunguk Choi, Seo Won Choi, Myeong Hwa Lee, Sukkee Um

Accurate estimation on the effective transport parameters in PEFC gas diffusion layer via mercury intrusion porosimetry-assisted segmentation method in X-ray CT

s10b-017

**JeongHan Roh** (Dept. of Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea), SangJae Lee, Jing Liu, Junu Bak

Microwave-induced Pt Single-atom Sites for Low-loading Pt Electrocatalysts for Highly-efficient Oxygen Reduction Reaction

s10b-018

**Dongkyu Son** (school of chemical engineering, Yeungnam university, gyeongsan, Korea), Yuhyeon Lee, Nangyeong Kim, Hongjung Kim, Gibaek Lee

Transition Metal-Nitrogen-Carbon Nanofiber Catalysts with Enhanced Oxygen Reduction Reaction in PEM Fuel Cells

s10b-019

**Ki Ro Yoon** (Advanced Textile R&D Department, Korea Institute of Industrial Technology, Ansan, Korea), Chang Kyu Hwang

Design of Vertically Aligned Architecture in a PTFE Nanofiber Reinforced Composite Membrane for PEM Fuel Cells

**Beyond CO<sub>2</sub> (i.e. N<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, C<sub>x</sub>H<sub>y</sub>O<sub>z</sub> conversion)**

s11-001

**Chang Hyuck Choi** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea)

Selective Electrochemical Reduction of Nitric Oxide to Hydroxylamine by Atomically Dispersed Iron Catalyst

**Carbon dioxide utilization**

s11-002

**Vimanshu Chanda** (Technical Chemistry III ? Faculty of Chemistry, Universität Duisburg-Essen, Duisburg, Germany)

A novel CuO<sub>x</sub>/Cu-N-C electrocatalyst-based gas diffusion electrode for the selective electro-reduction of CO<sub>2</sub>

s11-003

**Hansaem Choi** (School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea)

Mechanistic Study for Electrochemical Carbon Dioxide Reduction to Oxalate

s11-004

**Minjun Choi** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea)

Combined Electrolytic Conversion Process of NH<sub>3</sub> and CO<sub>2</sub> to value-added chemicals

s11-005

**Nandalal Girichandran** (Process and Energy department, Delft University of Technology, Delft, Netherlands), Isabell Bagemihl, Volkert van Steijn, Ruud van Ommen, Ruud Kortlever

Electrochemical CO<sub>2</sub> reduction in a zero gap electrolyzer using Taylor (two phase) flow

s11-006

**Niamh A. Hartley** (Department of Chemistry, University of Cambridge, Cambridge, United Kingdom), Suzi M. Pugh, Adam Jaffe, Alexander C. Forse

Exploring Quinone-Functionalized Carbon Electrodes for Electrochemical Carbon Capture

s11-007

**Yongsung Jo** (Department of Chemistry, Yonsei University, Seoul, Korea), Hoeun Seong, Dongil Lee

Atom-precise Bimetallic Nanoclusters for Element Specific CO<sub>2</sub> Electrolysis to CO

s11-008

**Yunjung Kim** (Chemistry, Sogang university, Seoul, Korea), Suji Jang, Mijung Park, Jihye Seo, Woonsup Shin\*

Electrochemical conversion of carbon dioxide to oxalate and oxalic acid

s11-009

**Jaewon Kim** (Energy Convergence Research, Korea Institute of Science and Technology (KIST), Seoul, Korea), Saleem Abbas, Ki Bong Lee

Comparison of Various Electrode Fabrication Methods for use in electrolyzers producing HCl and NaOH from brine

s11-010

**Anand Kumar** (Department of Chemical Engineering, Qatar University, Doha, Qatar)  
Electrocatalytic reduction of CO<sub>2</sub> on graphitic carbon nitride based nanomaterials

s11-011

**Paolo Lamagni** (Energy Storage and Energy Harvesting, IREC, Sant Adrià del Besòs, Barcelona, Spain), Martí Biset-Peiró, Teresa Andreu, Jacopo Catalano  
Catalyst Development for Electrocatalytic CO<sub>2</sub> Reduction Without Supporting Salts

s11-012

**Hojeong Lee** (School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, UNIST, Ulsan, Korea), Siraj Sultan  
Alloying Copper Catalyst for Enhanced Activity and Selectivity toward Ethylene from Electrochemical CO<sub>2</sub> Reduction.

s11-013

**Hiroki Yamamoto** (Graduate School of Engineering Science, Osaka university, Toyonaka, Japan), Shintaro Kato, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya  
Development of Artificial Carbonic Anhydrases for the Application to CO<sub>2</sub> Electrolysis

## **Electrocatalyst**

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**Alessia Fortunati** (DISAT, Politecnico di Torino, Torino, Italy), Maria Jose Rubio, Boyan Iliev, Nunzio Russo, Simelys Hernandez  
IONIC LIQUIDS FOR CAPTURE AND ELECTROCHEMICAL CONVERSION OF CO<sub>2</sub>

s11-015

**Shilong Fu** (Process & Energy, Delft University of Technology, Delft, Netherlands), Marilia Pupo, Ming Li, Simone Asperti, Wiebren De Jong, Ruud Kortlever  
N-doped Porous Carbon Derived from Biomass for Electrocatalytic CO<sub>2</sub> Reduction: The Effect of Different Activators

s11-016

**Yun Hyewon** (The Research Institute of Basic Sciences, Seoul National University, Seoul, Korea)  
Understanding Stability and Activity of Ag nanoparticles in CO<sub>2</sub> reduction reaction through Identical-Location Transmission Electron Microscopy

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**Asato Inoue** (Graduate School of Engineering Science, Osaka University, Toyonaka, Japan), Kosei Tsuchida, Kaito Nagita, Takashi Harada, Shuji Nakanishi, Kazuhide Kamiya  
Efficient Electrochemical Reduction of gaseous CO<sub>2</sub> by Microporous Polymer/Cu Nanoparticles Hybrid

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**Junghwan Jang** (Chemical and biological engineering, Seoul National University, Seoul, Korea), Yung-Eun Sung  
The Influence of Doping Various Metals on Oxide-Derived Cu Catalysts by Using MOF Template

s11-019

**Shin Joon Kang** (Department of mechanical engineering, Sunkyunkwan university, Suwon, Korea), Mun Kyung Kim, Han Saem Choi, Chang Yoon Kim, Young Kook Kwon, Hyung Mo Jeong  
Suppressed Hydrogen Evolution Reaction by Growing Zr-based MOF on Cu film with Presence of Impurity for CO<sub>2</sub> Electrochemical Reduction

s11-020

**Mun Kyoung Kim** (Department of Mechanical Engineering, Smart Fab. Technology, Sungkyunkwan University, Suwon, Korea), Mun Kyoung Kim, Jeongmun Lee, Youngkook Kwon, Hyung Mo Jeong

## Electrochemically Tuned Tin Oxide Nanoparticles for Enhanced Carbon Dioxide Reduction Reaction

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**Dong Jin Kim** (Department of Material Science and Engineering, Korea Institute of Science and Technology, Korea university, Seoul, Korea), Yun Jeong Hwang, Woong Kim  
Utilization of atomically dispersed Ni-N/C catalyst under low CO<sub>2</sub> partial pressure feedstock in zero-gap electrolyzer

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**Yun Ji Lim** (Department of chemistry, pusan national university, pusan, Korea)  
PolyDADMAC modified gold nanoparticles for highly effective electrochemical CO<sub>2</sub> reduction reaction

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**Miriam Moro** (Chemistry "G. Ciamician", University of Bologna, Bologna, Italy), Giovanni Valenti, Tiziano Montini, Lucia Nasi, Michele Melchionna, Giovanni Bertoni, Marcella Bonchio, Paolo Fornasiero, Francesco Paolucci, Maurizio Prato  
Carbon Nanostructures decorated with Cerium Oxide as selective electrocatalysts for CO<sub>2</sub> reduction

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**Youxuan Ni** (college of chemistry, Nankai university, Tianjin, China), Licheng Miao, Jiaqi Wang, Junxiang Liu, Mingjian Yuan, Jun Chen  
Pore Size Effect of Graphyne Supports on CO<sub>2</sub> Electrocatalytic Performance of Cu Single Atoms

s11-025

**Rohini Subhash Kanase** (Interdisciplinary program of photonics engineering, Chonnam national university, Buk-gu, Korea)  
Sulfide based Cu Electrocatalyst for Electrochemical CO<sub>2</sub> Reduction Reaction

### **Electrochemical methods**

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**Joo Yeon Kim** (Chemistry, Yonsei University , Seoul, Korea), Hyun Seo Ahn  
Electrodeposited CuAgHg Multimetallic Thin Films for Improved CO<sub>2</sub> Conversion: the Dramatic Impact of Hg Incorporation on Product Selectivity

s11-027

**Daniël van den Berg** (Process & Energy, Delft University of Technology, Delft, Netherlands), Ruud Kortlever  
Rapid Quantification of CO<sub>2</sub> Reduction Products in Real-Time using Mass Spectrometry

### **Electrolyte**

s11-028

**Sanjana Chandrashekar** (Materials for Energy Conversion and Storage, TU Delft, Delft, Netherlands)  
Cations - How Important Are They for the Electrochemical Reduction of CO<sub>2</sub>?

### **In-situ techniques**

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**Ningyu Chen** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China)  
Probing the reconstruction of bimetallic core-shell catalyst during CO<sub>2</sub> electroreduction by in-situ Raman Spectroelectrochemistry

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**Tian-Wen Jiang** (Department of Chemistry, Fudan University, Shanghai, China), Kun Jiang, Wen-Bin Cai



## Electrochemical CO<sub>2</sub> Reduction on Pd and Pd-B Electrodes: a Spectrometric Study

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**Yu Zhao** (Department of Chemistry, Xiamen University, Xiamen 361000, China), Nataraju Bodapp  
In situ tracking electrochemical CO<sub>2</sub> reduction reaction intermediates on Cu(111) and polycrystal Cu surfaces by Raman spectroscopy

### **Theory and modeling**

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**Kamal Asghar** (Energy Science and Engineering, DGIST, Daegu, Korea), R.V. Adith, Joshua Wicks, Edward Sergent  
Mechanistic Insights from Multi-scale Modeling About The Electrochemical Reduction of CO<sub>2</sub> on Copper.

s11-033

**Dongyup Shin** (Chemistry, Korea Advanced Institute of Science and Technology, Daejeon, Korea)  
Ni-N-C CO<sub>2</sub> Reduction Reaction Electrocatalyst Proposal through Applied Potential Simulation

## Corrosion Mechanisms

s12-001

**Kyungbin Ahn** (Department of Advanced Materials Science and Engineering, Chosun University, Gwangju, Korea)

Corrosion Behavior of Additively Manufactured Ti-6Al-4V Alloy in Artificial Saliva with Fluoride

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**Gahyun Choi** (material science and engineering, Chungnam University, Daejeon, Korea), Min Ji Song, Woo Cheol Kim, Moonhee Lee, Soo Yeol Lee, Bong Yong Song

Study on Degradation of Coating Material of the Air Vent Exposed to Hydrolyzed Insulator

s12-003

**Maren-Kathrin Heubach** (Institute of Electrochemistry, Ulm University, Ulm, Germany), Fabian M. Schuett, Areeg Abdelrahman, Ludwig A. Kibler, Timo Jacob

Initial Stages of Cathodic Corrosion of Au(111) in [MPPip][TFSI] in Dependence of Water Content

s12-004

**Juhee Lee** (Department of Advanced Materials Science and Engineering, Chosun University, Gwangju, Korea)

Effects of laser shock peening on the passive behavior of Titanium and Ti-6Al-4V alloys in pH 10 buffer solution

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**Min Ji Song** (Materials science and engineering, Chungnam National University, Daejeon, Korea), Gahyun Choi, Woo Cheol Kim, Munhee Lee, Bong Yong Song, Soo Yeol Lee

Evaluation of the Corrosion Effects of Landfill Gas Boiler in Sulfur and Water/Steam Environments

s12-006

**Hantao Xu** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), Lianhuan Han, Dongping Zhan

A New strategy for Electrochemical Nanoimprint Lithography

## Electrocatalysis

s12-007

**Jaeik Kwak** (Material Science and Engineering, POSTECH, Pohang, Korea), Shin-Ae Park, Kyu-Su Kim, Yongtae Kim

Iridium oxide black synthesis via electrochemical etching process for Oxygen evolution reaction

## Electrochemical processing

s12-008

**Jinwon Bae** (Materials Engineering, 76 Hanggongdaehak-ro, Deogyang-gu, Goyang, Korea), Minjun Yi, Jinri Lee, Jonghyun Seo

Changes in the Oxide Film of Titanium Electrodes with Cleaning Solutions of Various pH

s12-009

**Baodan Zhang** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), Lianhuan Han, Zhong-Qun Tian, Dongping Zhan

Underpotential Deposition of Lead on Gold Nanoelectrode

## Environmentally friendly process design

s12-010

**Bianca Werneck** (Department of Chemistry, Sapienza Università di Roma, Rome, Italy), Akiko Tsurumaki, Maria Assunta Navarra

Development of Hydrogels for Copper Corrosion Cleaning

## Protective Coatings

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**Mihael Bucko** (Military Academy, University of Defence, Belgrade, Serbia), Marija Riđičević, Jovanka Kovacina, Milorad Tomic, Jelena Bajat

Improving Hardness of Electrodeposited Zn-Mn Alloy Coatings by Incorporated Al<sub>2</sub>O<sub>3</sub> Ceramic Particles

s12-012

**Hien Pham Van** (Surface Materials Division, Korea Institute of Materials Science, Changwon, Korea), Sungmo Moon

Enhanced Corrosion Protection of AA2024 by Sealing Treatments of Anodic Oxide Film

s12-013

**Marija Ridjovic** (Department of Physical Chemistry and Electrochemistry, University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia), Marija Ridjovic, Asier Salicio-Paz, Eva Garcia-Lecina, Ljiljana Zivkovic, Jelena Bajat

CeO<sub>2</sub> sol as Efficient Dopant in Electrodeposition of Zn-Co-CeO<sub>2</sub> Alloy Coating with Self-healing Property

s12-014

**Claudio Zanca** (Department of Engineering, University of Palermo, Palermo, Italy), Sonia Carbone, Bernardo Patella, Francesco Lopresti, Valerio Brucato, Francesco Carfi Pavia, Vincenzo La Carrubba, Rosalinda Inguanta

Galvanic deposition of Chitosan-AgNPs as antibacterial coating

## Electrochemical processing

s14-001

**Jinkyoo Koo** (SKKU Advance Institute of Nanotechnology (SAINT), Sungkyunkwan University, Suwon, Korea), Hyeongjun Choi, Jae kwon Seo, Jaewoo Lee, Soo Min Hwang, Young-Jun Kim  
Optimization of carbon black contents in NCA cathode for fast charging of LIBs.

s14-002

**Thao Thi Le** (Extreme Materials Research Center, Korea Institute of Science and Technology, Seoul, Korea), Gun-Hee Moon, Sang Hoon Kim  
Mesoporous sulfur-modified oxide coated stainless steel mesh cathode for phenol degradation

## Environmentally friendly process design

s14-003

**Claudio Cameselle** (Chemical Engineering, University of Vigo, Vigo, Spain), Adrian Cabo, Susana Gouveia, Claudio Cameselle  
Analysis, Monitoring and Recovery of Phosphorus in Wastewater

s14-004

**Younghyun Cho** (Department of Energy Systems, Soonchunhyang University, Asan-si, Korea), Nguyen Anh Thu Tran, Tran Minh Khoi, Hye Bin Jung  
Improved desalination performance of flow- and fixed-capacitive deionization using redox-active quinone

s14-005

**Miguel Herraiz-Carboné** (Department of Chemical Engineering, University of Castilla-La Mancha, Albacete, Spain), Miguel Herraiz-Carboné, Angela Moratalla, Víctor Pertegal, Salvador Cotillas, Engracia Lacasa, Caridad Sainz de Baranda, Eva Riquelme, Pablo Cañizares, Manuel A. Rodrigo, Cristina Sáez  
Electrochemical technology as a key tool to reduce the hazardousness of hospital urines

s14-006

**Hugo Olvera-Vargas** (Institute for Renewable Energies, National Autonomous University of Mexico (UNAM), Temixco, Mexico), Jennifer Dubuc, Zuxin Wang, Lucie Coudert, Carmen M. Neculita, Olivier Lefebvre  
Electro-Fenton Potential to Treat Inorganic-polluted Wastewater: Degradation of Thiosalts in Mine Water

s14-007

**Jihyeon Park** (Gwangju Institute of Science and Technology, , Gwangju, Korea)  
Improved capacitive deionization performance using activated carbon with Ni/Mn deposition

s14-008

**Jihyeon Park** (Gwanju Institute of Science and Techonolgy, , Gwanju, Korea), Anne Therse J. Angeles, Sungyool Bong  
Improved capacitive deionization performance using activated carbon with Ni/Mn deposition

## Mechanisms of action or transformation

s14-009

**Sojung Park** (chemical and biological engineering, Sookmyung Women's University, Seoul, Korea)  
Investigation of the active site and intermediates on peroxide-selective carbon catalyst for selective electrochemical Oxygen Reduction Reaction

## New methods and approaches

s14-010

**Taiyo Fukui** (Department of Science and Technology, Hirosaki University, Hirosaki, Japan), Ryoya Tokuyoshi, Kiyoto Shin-mura, Yuta Shindo, Kazuya Sasaki  
Lithium-6 Isotope Enrichment by Electrodialysis with Lithium-Ion Solid Electrolyte  $\text{La}_{0.57}\text{Li}_{0.29}\text{TiO}_3$  that Controls Temperature and Potential Profile

s14-011

**Nuria Garcia-Araez** (Chemistry, University of Southampton, Southampton, United Kingdom), Sara Perez Rodriguez  
Sustainable lithium production using battery materials and redox agents

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**Kiyoto Shin-mura** (Graduate School of Science and Technology, Hirosaki University, Hirosaki, Japan), Ryoya Tokuyoshi, Yuta Shindo, Taiyo Fukui, Kazuya Sasaki  
Effect of Applied Voltage of Two-Power Three-Electrode Electrodialysis using Lithium-Ion Electrolyte  $\text{La}_{0.57}\text{Li}_{0.29}\text{TiO}_3$

s14-013

**Yuta Shindo** (Department of Science and Technology, Hirosaki University, Hirosaki, Japan), Kiyoto Shin-mura, Ryoya Tokuyoshi, Taiyo Fukui, Kazuya Sasaki  
Demonstration of Lithium Recovery from Lithium Chloride Aqueous Solution by Electrodialysis using Lithium-Ion Solid Electrolyte  $\text{Li}_{0.29}\text{La}_{0.57}\text{TiO}_3$  and Investigation of the Effect of Sodium-Ion

s14-014

**Ryoya Tokuyoshi** (Graduate School of Science and Technology, Hirosaki University, Hirosaki, Japan), Kiyoto Shin-mura, Yuta Shindo, Taiyo Fukui, Kazuya Sasaki  
Temperature Effect on Lithium Isotope Separation Coefficient by Electrodialysis using  $\text{La}_{0.57}\text{Li}_{0.29}\text{TiO}_3$  Electrolyte

## Porous electrode and cell design

s14-015

**Hong beom Kim** (SKKU Institute of Nano Technology, SUNGKYUNKWAN UNIVERSITY, suwon, Korea), Jin Kyo Koo, Weerawat Toaran, Jae kwon Seo, Su-Ho Jung, Soo min Hwang, Young-Jun Kim  
Enhancing the Li-ion cell performance of thick NCA electrodes by using graphene coated Al current collector

## Process Intensification

s14-016

**Jinwon Bae** (Materials Engineering, Korea Aerospace University, Goyang, Korea), Jongseok Kim, Minjun Yi, Jinri Lee  
Changes in the Oxide Film of Titanium Electrodes with Cleaning Solutions of Various pH

## Recycled batteries performance

s14-017

**Mincheol Beak** (Energy resource engineering, Sejong university, seoul, Korea), Jangho Park, Seongdeock Jeong, Sanghyuk Park, Kyungjung Kwon  
The regeneration of layered cathode materials from spent Li-ion batteries: Elucidating its electrochemical and structural properties

s14-018

**Ko Gyeongbin** (Department of Energy & Mineral Resources Engineering, Sejong university, Seoul, Korea), Kim Wooseok, Beak Mincheol, Park Sanghyuk, Kwon Kyungjung  
Investigation of the structural and electrochemical properties of Na and Al co-doped Li[Ni<sub>0.8</sub>Mn<sub>0.1</sub>Co<sub>0.1</sub>]O<sub>2</sub> cathode material from the aspect of sustainable recycling from spent Li-ion batteries

s14-019

**Seongdeock Jeong** (Department of Energy & Mineral Engineering, Sejong university, Seoul, Korea), Sanghyuk Park, Jangho Park, Mincheol Beak, Kyungjung Kwon  
Structural and electrochemical properties of residual Zn in the resynthesis of Li[Ni<sub>0.9</sub>Mn<sub>0.05</sub>Co<sub>0.05</sub>]O<sub>2</sub> cathode active material

s14-020

**Wooseok Kim** (Department of Energy & Mineral Resources Engineering, Sejong University , 05006, Korea), Gyeongbin Ko, Sanghyuk Park, Kyungjung Kwon  
The effects of Fe/Al co-modified Ni-rich Li[Ni<sub>1-x-y</sub>Co<sub>x</sub>Mn<sub>y</sub>]O<sub>2</sub> cathode active materials on lithium-ion battery performance

s14-021

**Jimin Lee** (Department of Energy & Mineral Resources Engineering, Sejong University, Seoul, Korea), Seongdeock Jeong, Sanghyuk Park, Jangho Park, Mincheol Beak, Kyungjung Kwon  
The effects of Cl as impurity in the resynthesized Li[Ni<sub>0.9</sub>Co<sub>0.05</sub>Mn<sub>0.05</sub>]O<sub>2</sub> cathode material on lithium-ion battery performance

s14-022

**Jangho Park** (Department of Energy & Mineral Resources Engineering, Sejong University, seoul, Korea), Mincheol Baek, Seongdeock Jeong, Sanghyuk Park, Kyungjung Kwon  
Investigation of the effect of incorporated PF<sub>6</sub><sup>-</sup> in layered cathode active materials on Li-ion battery performance with respect to different synthesis methods

## **Recycling of batteries, e-waste and graphite**

s14-023

**Luca Magagnin** (Chimica, Materiali e Ing. Chimica Giulio Natta, Politecnico di Milano, Milano, Italy), Alessandra Accogli, Ruggiero Pesce, Gabriele Panzeri  
Magnetic Fluid Assisted Electro-Leaching for Metal Recovery

s14-024

**Francesca Soavi** (Department of Chemistry, Alma Mater Studiorum University of Bologna, BOLOGNA, Italy), Alessandro Brilloni, Federico Poli, Giovanni Emanuele Spina, Elena Guidi, Chiara Samorì, Eliana Quartarone  
Deep eutectic solvents and water soluble binders: a green strategy to recycle lithium-ion battery cathodes

## **Sustainability**

s14-025

**Javier Llanos** (Department of Chemical Engineering, University of Castilla-la Mancha, Ciudad Real, Spain), Yelitza Delgado, Francisco Jesús Fernández, Javier Llanos  
An Old Technique with a Promising Future: Recent Advances in the Use of Electrodeposition for Metal Recovery

## Analytical and bioanalytical applications

s15-001

**Yun Do Kim** (Dept. of Nanoscience, University of Science and Technology, Daejeon, Korea)  
Gradient of Space Charge Distribution in Barrier Oxide Layer of Porous Anodic Aluminum Oxide

## Anodization

s15-002

**Wonyoung Choi** (chemical engineering, Inha University, incheon-si, Korea), Wonjoon Song, Jaeyun Ha, Moonsu Kim, Yong-Tae Kim, Jinsub Choi  
Anodic dissolution for in-situ formation of rGO-FeOOH complex used in lithium-ion batteries

s15-003

**Pran Krisna Das** (Advanced Chemicals and Engineering, Chonnam National University, Gwangju, Korea)  
Highly Efficient and Stable gâ€C3N4 Decorated Ta3N5 Nanotube for Solar Water Oxidation

s15-004

**Moonsu Kim** (Department of Chemistry and Chemical Engineering, Inha University, Incheon, Korea), Jaeyun Ha, Nahyun Shin, Yong-Tae Kim, Jinsub Choi  
Electrochemical surface modification of stainless steel type-304 as an effective electrode for water splitting application

s15-005

**Yong-Tae Kim** (Department of Chemistry and Chemical Engineering, Inha University, Incheon, Korea), Bumgi Heo, Jinsub Choi  
Binder-free 10-micrometer-thick anodic TiO<sub>2</sub> nanotube arrays decorated with MoO<sub>3</sub> as anode electrode of lithium ion battery

s15-006

**Taewan Kim** (Department of Advanced Science and Technology Convergence, Kyungpook National University, Sangju, Korea), Kiyong Lee  
Formation of Anodic Al Oxide Nanofibers on Al3104 Alloy Substrate

s15-007

**Sanghyeon Moon** (Department of Advanced Science and Technology Convergence, Kyungpook National University, Sangju, Korea), Wonjoo Lee, Kiyong Lee  
Detection of 2,4,6-Trinitrotoluene in Aqueous Solution Using Highly Ordered One-dimensional Titanium Dioxide Nanotube Arrays

s15-008

**Sanghyeon Moon** (Department of Advanced Science and Technology Convergence, Kyungpook National University, Sangju, Korea), Wonjoo Lee, Kiyong Lee  
Controlling Geometric Design of Anodic 1D TiO<sub>2</sub> Nanotube Arrays for Detecting the Electrochemical Reduction of 2,4,6-Trinitrotoluene

s15-009

**Nahyun Shin** (Chemical engineering, Inha University, Incheon, Korea), Moonsu Kim, Jaeyun Ha, Garam Lee, Yong-Tae Kim, Jinsub Choi  
SnO<sub>2</sub>@PANi Composite Fabricated on Anodized TiO<sub>2</sub> Nanotube Arrays as a Binder-free Anode for Lithium Ion Batteries

## **Beyond CO<sub>2</sub> (i.e. N<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, C<sub>x</sub>H<sub>y</sub>O<sub>z</sub> conversion)**

s15-010

**Doyoung Lee** (School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, UNIST, Ulsan, Korea), Youngkook Kwon  
Electrocatalytic Oxidation of Glycerol on Platinum Supported by Two-Dimension Titanium Carbide

## **Metal Oxides**

s15-011

**Kamakshaiah Charyulu Devarayapalli** (School of Nano & Materials Science and Engineering, Kyungpook National University, Sangju Campus, Korea)  
Porous g-C<sub>3</sub>N<sub>4</sub> based nanostructure as an electrode for asymmetric supercapacitor device

s15-012

**Kamakshaiah Charyulu Devarayapalli** (School of Nano & Materials Science and Engineering, Kyungpook National University, Sangju Campus, Korea)  
Template-free synthesis of CTAB modified g-C<sub>3</sub>N<sub>4</sub> nanosheets coupled with V<sub>2</sub>O<sub>5</sub> nanoribbons as an electrode for asymmetric supercapacitor device

s15-013

**Jaewon Lee** (Department of Advanced Science and Technology Convergence, Kyungpook National University, Sangju, Korea), Kiyoung Lee  
Formation of Ni<sub>2</sub>S<sub>3</sub> / NiO Heterostructures to enhance water electrolysis performance

s15-014

**Jinhee Lee** (Department of chemical engineering, Inha univ., Incheon, Korea), Kyungmin Lim, Min Heo, Yong-Tae Kim, Jinsub Choi  
Removal of microplastics in wastewater via electrocoagulation and recycling of Fe<sub>3</sub>O<sub>4</sub>-C composite as anode material for lithium ion batteries

s15-015

**María José Muñoz-Portero** (ISIRYM, Universitat Politècnica de València, Valencia, Spain), Pedro José Navarro-Gázquez, Encarna Blasco-Tamarit, Rita Sánchez-Tovar, José García-Antón  
New Method to Synthesize TiO<sub>2</sub>/ZnO Hybrid Nanosponges

s15-016

**María José Muñoz-Portero** (ISIRYM, Universitat Politècnica de València, Valencia, Spain), Ramón Manuel Fernández-Domene, Carlos Miguel-Ramón, José García-Antón  
Elimination of trimethoprim antibiotic by photoelectrocatalysis using photoanodes based on WO<sub>3</sub> nanostructures

s15-017

**Eunoak Park** (Department of Convergence & Fusion System Engineering, Kyungpook National University, Sangju, Korea), Kiyoung Lee  
Enhancement of Photocatalytic Performance of (1 0 1) Facet Single Crystalline TiO<sub>2</sub>-Modified WO<sub>3</sub>/BiVO<sub>4</sub> Heterojunction

s15-018

**Eunoak Park** (Department of Convergence & Fusion System Engineering, , Sangju, Korea), Kiyoung Lee  
Photocatalytic Performance of Single Crystalline Anatase TiO<sub>2</sub> onto WO<sub>3</sub>/BiVO<sub>4</sub> Heterojunction

## **Nanotubes**



s15-019

**Vinicius Del Colle** (Chemistry, Federal University of Alagoas, Arapiraca, Brazil)

Electro and Photoelectrooxidation of Tetracycline Hydrochloride on self-doped Titanium Dioxide Nanotubes modified by Platinum

## **(Bio)sensors**

s16-001

**Alan O'Riordan** (Nanotechnology Group, Tyndall National Institute - University College Cork, Cork, Ireland), Benjamin O'Sullivan, Ian Seymour, James Rohan, Pierre Lovera

Finite Element Model of In-Situ pH Control at Silicon Chip Substrates Using Generator Collector Interdigitated Microelectrodes

## **Confined space reaction**

s16-002

**Alexander Oleinick** (PASTEUR, CNRS, ENS - PSL Univ., Sorbonne Univ., Paris, France), Wei Wang, Cheng Liu, Alexander Oleinick, Lianhuan Han, Matthew M. Sartin, Irina Svir, Christian Amatore, Dongping Zhan, Zhong-Qun Tian

Quantifying the Surface Diffusion of Oxygen Adspecies on Gold by Nanoelectrode Voltammetry

## **Doping and defects**

s16-003

**Yoshua Moore** (Electrobiotechnology, TUM Campus Straubing for Biotechnology and Sustainability, Straubing, Germany), Darren Buesen, Huaiguang Li, Xiaolong Chen, Jenny Zhang, Nicolas Plumeré

An Electroanalytical Approach to Measure the Pore Size Distribution of Inverse Opal Electrodes

s16-004

**Yoonsu Shim** (Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea), Chan-Woo Lee

Insight of Transition Metal-Doped NASICON-type Electrodes for Sodium Ion Battery from a Theoretical Investigation

## **Electrochemical process design and optimization**

s16-005

**Carmen Tenholt** (Sustainable Energy Technology, Helmholtz-Zentrum Hereon, Geesthacht, Germany), Thomas Klassen, Mauricio Schieda

Computation and Experiment Based Efficiency Optimization of PEC Cell Upscaling

## **Energy storage**

s16-006

**Zhiqiang Chen** (Fundamental Electrochemistry (IEK-9), Forschungszentrum Jülich, juelich, Germany), Zhiqiang Chen, Dmitri L. Danilov, Rüdiger-A. Eichel, Peter H.L. Notten

Overpotential Modelling of Graphite-based Li-ion batteries

## **Intercalation and heterostructures**

s16-007

**Sangram Keshari Mohanty** (Chemistry, Pusan National University, Busan, Korea), Jinhong Kim

Enhancing Computational Efficiency using Typical Descriptors of Batteries for Ionic Intercalation and Solid-State Diffusion

## **Modelling of electrochemical processes on a molecular level**

s16-008

**Johanna Hoppe** (Institute of Energy and Process Systems Engineering, TU Braunschweig, Braunschweig, Germany), Walter Cistjakov, Fridolin Röder, Jinkwan Jung, Hee-Tak Kim, Ulrike Krewer  
Kinetic Monte Carlo simulation on the impact of electrolyte on Li<sub>2</sub>S crystal growth

### **Multiscale modelling for electrochemical process understanding**

s16-009

**Franziska Kilchert** (Helmholtz Institute Ulm (HIU), German Aerospace Center (DLR), Ulm, Germany), Birger Horstmann, Arnulf Latz  
Modelling of Lithium Ion Batteries with Silicon Anode and Ionic Liquid Electrolyte

s16-010

**Minho Kim** (Chemistry, Korean Advanced Institute of Science and Technology (KAIST), Daejeon, Korea), Seung-Jae Shin, Hyungjun Kim  
Multiscale Simulation for the Understanding H<sup>+</sup>, OH<sup>-</sup> Ions at the Electrode-Electrolyte Interface: Structure and Local pH

s16-011

**Jihyeon Park** (School of Earth Sciences and Environmental Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea)  
Improvement of alkaline liquid fuel cell operating performance through artificial intelligence modelling

s16-012

**Esther Kezia Simanjuntak** (Computational Electrochemistry, German Aerospace Center (DLR), Stuttgart, Germany), Timo Danner, Peiwen Wang, Michael R. Buchmeiser, Arnulf Latz  
A Novel Modeling Approach for Metal-SPAN Batteries

## Chiral electroanalysis

s17-001

**Serena Arnaboldi** (Chimica, Università degli Studi di Milano, Milano, Italy), Alessandro Tucci, Sara Grecchi, Francesco Orsini, Patrizia Mussini  
Optimizing the Electrodeposition Protocol of Enantioselective Inherently Chiral Electrode Surfaces: a Multi-Technique Investigation

s17-002

**Salvatore Daniele** (Molecular Science and Nanosystems, University Cà Foscari of Venice, Mestre-Venezia, Italy), Giulia Lunardi, Sara Pessotto, Sara Grecchi, Serena Arnaboldi, Patrizia R. Mussini, Tiziana Benincori, Salvatore Daniele  
Preparation and Characterization of Inherently Chiral Gold Microelectrodes for Voltammetric Sensing

s17-003

**Sara Grecchi** (Chemistry, Università degli Studi di Milano, Milano, Italy), Andrea Resinelli, Tiziana Benincori, Roberto Cirilli, Mariangela Longhi, Patrizia R. Mussini  
Inherently Chiral 2,2'-biindole Oligomer Films for the Enantioselection of Chiral Active Pharmaceutical Ingredients, including a Real Matrix.

s17-004

**Patrizia Romana Mussini** (Dipartimento di Chimica, Università degli Studi di Milano, Milano, Italy), Sara Grecchi, Luigi Falciola, Valentina Pifferi, Nicolò Centanni, Giorgio Tomboni, Laura Santagostini  
Electroanalysis of chiral polyphenols catechin and epicatechin: diastereoisomer features on different electrode materials and strategies for enantiomer discrimination

## Complex electroactive molecules and molecular materials

s17-005

**Honggyu Seong** (Chemistry, Gyeongsang National University, Jinju, Korea)  
Colloidal Template Synthesis of MoS<sub>2</sub>@carbon nanospheres for the detection of hydrogen peroxide

## Electroanalysis and molecular electron transfer processes

s17-006

**Jie Luo** (Department of Chemical Sciences, University of Padova, Padova, Italy)  
Electrochemical Study of The Effect of Aluminum Ions on The Stability and Performance of Cu-Based Catalysts in Atom Transfer Radical Polymerization in Water

## Innovative molecular media (ionic liquids, DES...)

s17-007

**Kosuke Ishii** (Engineering, Kyoto university, Kyoto, Japan), Naoya Nishi  
Potential dependence of the ionic layer structure at the ionic liquid|water interface: a molecular dynamics simulation study

## Nanostructured electrodes

s17-008

**Donghoon Lim** (Chemistry, Yonsei University, Seoul, Korea), Hyun Seo Ahn  
Electrochemical Window Contraction of Confined Water



### **Bioelectrochemical systems**

s18-001

**Tracy Ha** (Chemistry, King's College London, London, United Kingdom), Jhanelle White, Sarina Dhanoya

Charge Transport and Electrochemistry of Immobilised Ferritin on Self-Assembled Monolayers

s18-002

**Jiro Hatano** (Graduate School of Engineering Science, Osaka University, Toyonaka, Japan), Shoko Kusama, Kenya Tanaka, Ginga Shimakawa, Shuji Nakanishi

A correlation between light and dark currents generated by cyanobacteria *Synechocystis* sp. PCC6803

s18-003

**Junghyun Yoo** (chemistry, Kwangwoon University, Seoul, Korea), Kook-Hyun Jang, Yang-Rae Kim

Development of a Continuous Glucose Monitoring Sensor Using a New Redox Mediator

### **Nano/Micro-structured electrodes**

s18-004

**Kook-Hyun Jang** (Chemistry, Kwangwoon university, Seoul, Korea), Yang-Rae Kim

Fabrication of Nanopipette-Based Nanoelectrodes through Liquid/Liquid Interfacial Reactions for Nanoelectrochemistry

s18-005

**Kumin Kang** (Photonics and Nanoelectronics, Hanyang University, Ansan, Korea), Quang Trung Le, Jaekyun Kim

Low Cost and Highly Efficient Silicon Microwires based FET Gas Sensor

### **Nanoelectrochemistry**

s18-006

**Ja Seok Lee** (Chemistry, Kwangwoon University, Seoul, Korea), Jae Hyouk Choi, Yang-Rae Kim

Ordered Three-Dimensional Nickel (Oxy)hydroxide Nanocup Arrays for Field-Driven Electrocatalysis

### **Single-entity electrochemistry**

s18-007

**Jungeun Lee** (Dept. of Chemistry, Dept. of Chemistry & Nanoscience, Sookmyung Women's University, Ewha Womans University, Seoul, Korea), Seungwoo Hong, Byung-Kwon Kim

Serotonin in Human Platelets Analysis Method Based on Single-Entity Electrochemistry

### **Electrochemical characterization of parent molecules**

s19-001

**Jirí Ludvík** (Molecular electrochemistry and catalysis, J. Heyrovský institute, Praha 8, Czech Republic), Lucie Kolářová, Peter Polák, Marek Cubiák, Tomáš Tobrman

Tetrasubstituted Double Bond as a Core for Organic Electronics – an Electrochemical Study

### **Electrochemical characterization of parent molecules, intermediates and products**

s19-002

**Ludmila Simkova** (Molecular electrochemistry and catalysis, J. Heyrovsky Institute of Physical Chemistry of the CAS, Prague, Czech Republic), Karol Luspai, Jiri Klima, Jiri Ludvik

Electrochemical Study of Cibalackrot Derivatives Potential Chromophores for Singlet Fission

### **Electrochemistry**

s19-003

**Pim Broersen** (Heterogeneous Catalysis and Sustainable Chemistry, University of Amsterdam, Amsterdam, Netherlands)

C-N Bond Forming Reactions through Aminyl Radicals

### **Electronic effects in the Interfacial structure and structure-reactivity relationships**

s19-004

**Tomas Mikysek** (Department of Analytical Chemistry, University of Pardubice, Pardubice, Czech Republic), Milan Sys, Miroslav Novak

The Role of Deposition and Structure in Biomimetic Activity of Selected Copper Complexes

### **Heterogeneous (electro)catalysis**

s19-005

**Michael Braun** (Technical Chemistry III, University of Duisburg-Essen, Duisburg, Germany), Piyush Kumar, Gereon Behrendt, Patricia Dimitri, Moritz Krebs, Steffen Cychy, Ann Cathrin Brix, Wolfgang Schuhmann, Martin Muhler, Malte Behrens, Corina Andronescu

Electrooxidation of Alcohols on Mixed Copper Cobalt Hydroxycarbonates

s19-006

**Mengyang Li** (Department of Chemistry, School of Science, Tianjin University, Tianjin, China), Cuibo Liu, Huizhi Li, Bin Zhang\*

Electrocatalytic Hydrogenation of N-Heterocycles Using Water as the Hydrogen Source

### **Organic electrosynthesis**

s19-007

**Olga Aglamazova** (Chemistry department, Lomonosov Moscow State University, Moscow, Russia), Alexey Bogdanov, Vera Kudakina, Dmitry Dulov, Vyacheslav Sentyurin, Tatiana Magdesieva

Electrochemical Cyclopropanation of Michael Acceptors

s19-008

**Yulia Budnikova** (Electrochemical Synthesis Lab., A.E.Arbusov Institute of Organic and Physical Chemistry, KSC, Kazan, Russia)

Metalla-electrocatalyzed C-H Activation. Mechanistic Pathways Through Radical or High-valent Organometallic Intermediates

s19-009

**Zhenghao Chen** (Chemical Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan), Elena Villani, Naoki Shida, Ikuyoshi Tomita, Shinsuke Inagi  
Study on AC Bipolar Electrosynthesis of Conducting Polymer Fibers in Electrolytic Solutions with High Ionic Concentration

s19-010

**Xiaodan Chong** (Department of Chemistry, School of Science, Tianjin University, Tianjin, China), Bin Zhang, Shuoshuo Guo, Cuibo Liu  
Potential-Tuned Selective Electrosynthesis of Azoxy-, Azo- and Amino Aromatics over a CoP Nanosheet Cathode

s19-011

**Connor Deacon-Price** (Heterogeneous Catalysis and Sustainable Chemistry, Van 't Hoff Institute for Molecular Sciences, Amsterdam, Netherlands), Gadi Rothenberg, Amanda Garcia  
Electroorganic C-C Coupling over Copper Nanoparticles in Nonaqueous Solutions

s19-012

**Shuhe Han** (Department of Chemistry, School of Science,, Tianjin University, Tianjin, China), Shuhe Han, Yanmei Shi, Bin Zhang  
Synthesis of CoS<sub>2</sub> and CoS<sub>2-x</sub> Nanocapsules for Electrocatalytic Selective Transfer Hydrogenation of Cinnamaldehydes with Water

s19-013

**Tomoki Hirohata** (Chemical Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan), Naoki Shida, Tomoki Ogoshi, Ikuyoshi Tomita, Shinsuke Inagi  
Electrochemical Assembly of Pillar[6]arene with Controlled Morphology through the Host-guest Interaction

s19-014

**Yaqian Zhou** (Chemical Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan), Naoki Shida, Yuki Koizumi, Kaoru Endo, Ikuyoshi Tomita, Shinsuke Inagi  
Templated Bipolar Electropolymerization Assisted by Electrophoretic Effect to Prepare Robust Polymer Nanowires

**Reaction mechanisms**

s19-015

**Elena Villani** (Department of Chemical Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan), Yanyun Zhang, Naoki Shida, Ikuyoshi Tomita, Shinsuke Inagi  
Luminol Electrochemiluminescence Imaging on Wireless Conducting Polymer Film Structures



### Density functional theory

s20-001

**Oskar Cheong** (Theory and Computation of Energy Materials (IEK-13), Forschungszentrum Juelich, Juelich, Germany), Michael H. Eikerling, Piotr M. Kowalski  
A combined DFT/CMD study of water structure and adsorption of solvated HCOO on Pb(100) surface

s20-002

**Gwanghyeon Choi** (Department of mechanical engineering, Kyunghee University, Yongin-si, Korea)  
Oxygen Redox Selectivity in Alkali-Metal-Rich Layered Oxides via Boron Doping

s20-003

**Ana Dobrota** (Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia), Ana Dobrota, Tanja Djokic, Igor Pasti  
What is the State of Single Atom Catalysts under Electrochemical Conditions – DFT Study of SACs Embedded in Graphene Lattice?

s20-004

**SangEon Park** (Department of Mechanical Engineering, Kyunghee University, Yongin-si, Korea), Gwanghyun Choi, Sojung Koo, Jeawoon Lee, Dohyeong Kwon  
Deciphering Intrinsic Origin of Nonhysteretic Capacity in Conventional Superstructure-type Layered Na Oxides

### Electrochemical double layer

s20-005

**Shuai Liu** (Dept. Chem. College of Chem.&Chem.Eng., Xiamen University, Xiamen, China), Shuai Liu, Kaixuan Li, Jiedu Wu, Yu Peng, Zhuo Tan, Bingwei Mao, Jiawei Yan  
Probing Electrochemical Adsorption of Water on Au(111) in Ionic Liquids - A Combined in situ Atomic Force Microscopy and Impedance Study

### Electron microscopy

s20-006

**Hayoung Park** (School of chemical and biological engineering, Seoul national university, Seoul, Korea), Hyeokjun Park  
In situ Probing Reaction Heterogeneity During Solid-State Synthesis of Ni-rich Layered Oxide

### In-situ and in-operando microscopy and spectroscopy

s20-007

**Beomgyun Jeong** (Research Center for Materials Analysis, Korea Basic Science Institute, Daejeon, Korea), Soan Bae, Geonhwa Kim, Dongwoo Kim, Geunsu Bae, Chang Hyuck Choi, Ki-jeong Kim  
In situ XPS and SXAS Study on Gas Adsorption on Fe-N-C Catalyst for Oxygen Reduction

s20-008

**Koki Kannari** (Department of Chemistry, Tohoku University, Sendai, Japan), Aimin Ge, Ken-ichi Inoue, Shen Ye  
Oxygen Reactions in Highly Concentrated Electrolytes Studied by in Situ Surface-Enhanced Raman Spectroscopy

s20-009

**Ji-Young Kim** (Advanced Analysis Center, Korea Institute of Science and Technology, Seoul, Korea), JiWon Jeong, Dong Won Chun, Kyung Yoon Chung  
In-situ Raman spectroscopy of all-solid-state battery materials

s20-010

**Sungin Kim** (Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Jimin Kwag  
Reproducible Real-Time Imaging Method for Degradation Process of Fuel Cell Catalysts Using in situ TEM

s20-011

**Zhixuan Lu** (Department of Chemistry, Xiamen University, Xiamen 361005, China, Xiamen, China)  
Probing the Intercalation of K Ion into Prussian Blue by In-situ Raman Spectroelectrochemistry

s20-012

**Jiawei Yan** (Chemistry Department, Xiamen University, Xiamen, China)  
Electrochemical Impedance Spectroscopy and Raman Spectroscopy Studies on Electrochemical Interface between Au(111) electrode and Ethaline Deep Eutectic Solvent

### **Interface structure and dynamics**

s20-013

**YiMiao Zhang** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), DeYin Wu  
Theoretical Model and Calculation on Plasmonic Hot Electron Transfer at Silver Electrodes of Nanostructures

### **Molecular dynamics simulations**

s20-014

**Abdullah Bin Faheem** (Department of Chemistry, Kunsan National University, Gunsan-si, Korea), Kyung-Koo Lee  
Automated Parameterization of Polarizable Force Fields for Molten Salts via Genetic Algorithms

s20-015

**Iuliia V. Voroshylova** (Departamento de Chemistry and Biochemistry, University of Porto, Faculty of Sciences, Porto, Portugal), Heigo Ers, Borja Docampo Alvarez, Piret Pikma, Vladislav Ivanistsev, M. Natália D.S. Cordeiro  
Capacitance Hysteresis in MD Simulations of BMImPF6|Au(111) Interface

### **Precision measurements and advanced characterization**

s20-016

**Hyung Taek Kim** (Advanced Photonics Research Institute, Gwangju Institute of Science and Technology, Gwangju, Korea)  
Development of real-time hyperspectral microscopy for in-situ material surface inspection

s20-017

**Piotr Ozga** (Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Cracow, Poland), Zbigniew Swiatek, Janusz Pstrus, Arkadiusz Zydek  
Electrodeposition of Tin Layers from Citrate Solution on Copper Substrate Covered by CVD Graphene:  $\mu$ -RS, AFM, SEM and XRD Characterization

s20-018

**Mizuki Tanaka** (Graduate School of Engineering Science, Osaka University, Toyonaka, Japan), Kiho Nishioka, Shuji Nakanishi  
Decomposition characteristics of discharge products in an aprotic Li-O<sub>2</sub> battery with Br<sup>-</sup>/Br<sub>3</sub><sup>-</sup> redox mediator

## Reaction mechanisms

s20-019

**Tzu-Yao Hsu** (Physicochimie des Électrolytes et Nanosystèmes Interfaciaux, Sorbonne Université, Paris, France), Guillaume Jeanmairet  
High-speed Modelling of Electron Transfer Reactions by Pressure Corrected Molecular Density Functional Theory

s20-020

**Igor Pasti** (Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia), Aleksandra Miladinovic, Ana Dobrota  
Kinetic Monte Carlo Modelling of Complex Electrocatalytic Interfaces for Hydrogen Evolution Reaction

## Reactivity initiated by electron transfer

s20-021

**Cheolwoo Park** (Chemical and Biological Engineering, R&D Center, Sookmyung Women's University, SN Co., Ltd, Seoul, Ansan, Korea), Wooyul Kim  
Revealing the original role of the TiO<sub>2</sub> overlayer on WO<sub>3</sub> photoanode by time resolved operando spectroscopy

## Spectroscopy

s20-022

**Bonhyeop Koo** (Department of Energy Science and Engineering, DGIST, DAEGU, Korea), Bonhyeop Koo, Hochun Lee  
Spectroscopic studies of solution structure change in Li-doped ionic liquid electrolytes triggered by non-solvating diluent

## Synchrotron and neutron techniques

s20-023

**Leon Jacobse** (Center for X-ray and Nano Science CXNS, Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany), Ralf Schuster, Xin Deng, Silvan Dolling, Tim Weber, Herbert Over, Olaf Brummel, Jörg Libuda, Vedran Vonk, Andreas Stierle  
Advanced Instrumentation for in situ and operando Characterization of Electrocatalytic Systems at DESY NanoLab

s20-024

**Marianne van der Merwe** (Interface Design, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany), Raul Garcia-Diez, Enggar Wibowo, Mauricio Arce, Catalina Jimenez, Michael J. Sear, Pip C.J. Clark, Marco Favaro, David E. Starr, Mihaela Gorgoi, Regan G. Wilks, Marcus Bär  
Probing the mechanisms underlying the dissolution of highly active iridium oxide-based OER electrocatalysts

### dynamic photoelectrochemistry

s21-001

**Julian Kund** (Institute of Analytical and Bioanalytical Chemistry, University Ulm, Ulm, Germany), Gregor Neusser, Trentin Ivan, Jan Kruse, Carsten Streb, Felix Schacher, Christine Kranz

In-situ oxygen measurements at WOC-embedded block-copolymer-membranes via SECM

s21-002

**Xiangyue Liu** (college of chemistry, Fuzhou university, Fuzhou, China)

Synthesis of Defect-Engineered Ti-MOF for photo-electrochemical oxidation of alcohols

s21-003

**Hui Ma** (School of Chemistry and Chemical Engineering, Nanjing University, Nanjing, China), Yi-Tao Long

Photoelectrochemical Study on Electron Transfer Process of Individual Dye-tagged Quantum Dots for Water Splitting

s21-004

**Giovanni Zangari** (Department of Materials Science and Engineering, University of Virginia, Charlottesville, USA), Yin Xu

Electrodeposited Ni-Fe-Co Films on Au or GaAs for Efficient (Photo)electrochemical Water Oxidation

### hybrid photoactive systems

s21-005

**Sanghyuk Cho** (Chemical Engineering, Konkuk University, Seoul, Korea), Eunho Song

Electrode and Electrolyte Performance Enhancement of Quasi Solid Dye Sensitized Solar Cell by Utilizing Carbonized Polyvinylidene Dichloride

s21-006

**Wiktor Lipiński** (Centre for Plasma and Laser Engineering, The Szwedowski Institute of Fluid-Flow Machinery, PAN, Gdańsk, Poland), Katarzyna Grochowska, Jakub Karczewski, Jacek Ryl, Katarzyna Siuzdak

Fabrication of gold-copper nanostructures by means of rapid thermal annealing - morphology, optical and photoelectrochemical properties

s21-007

**Guangxia Piao** (School of Energy Engineering, Kyungpook National University, Daegu, Korea), Dong Suk Han

Ion-Enhanced Conversion of CO<sub>2</sub> into Formate on Porous Dendritic Bismuth Electrodes with High Efficiency and Durability

### plasmonic effects

s21-008

**Takahiro Hayashi** (Graduate School of Chemical Sciences and Engineering, Hokkaido University, Sapporo, Japan), Takahiro Hayashi, Shunpei Oikawa, Hiro Minamimoto, Kei Murakoshi

Observation of Electrochemically Tuned Strong Coupling States between Molecular Excitons and 2D Lattice Plasmons

### Semiconductor electrodes

s21-009

**Conchi Ania** (CEMHTI site HT, CNRS , Orléans, France), Zakariae MQaddem, Jesus Iniesta  
Photoelectrochemical properties of nanostructured carbons as photonic conversion layers in TiO<sub>2</sub> anodes for dye sensitized solar cells

s21-010

**Woo Jin Byun** (Energy and Chemical Engineering, UNIST, Ulsan, Korea), Jae Sung Lee  
Synthesis of polymeric carbon nitrides and its application for photoelectrochemical cell

s21-011

**Seung Yo Choi** (School of Energy Engineering, Kyungpook National University, Daegu, Korea), Sun Hee Yoon  
Standalone photoconversion of CO<sub>2</sub> using Ti and TiO<sub>x</sub>-sandwiched heterojunction photocatalyst of CuO and CuFeO<sub>2</sub> films

s21-012

**Ye Eun Jo** (Chemical Engineering, Kumoh National Institute of Technology, Gumi, Korea), In Ui Kim, Ye Ri Gwon, Yeong Min Shin, Sung Ki Cho  
Direct reduction of SiO<sub>2</sub> Nanoparticle to Solar Si in molten salt

s21-013

**Maliha Parvin** (Chemical Engineering and Technology, Center for Physical Sciences and Technology, Vilnius, Lithuania), Milda Petrulėvičienė, Maliha Parvin, Diana Vistorskaja, Irena Savickaja, Asta Grigucevičienė, Jurga Juodkazyte  
Investigation of Photoelectrochemical Performance of Mo-doped Bismuth Vanadate Films

s21-014

**Sukanya Ramaraj** (Chemistry, Chonnam National University, Gwangju, Korea)  
Synthesis of Perovskite-Type ANbO<sub>2</sub>N (A=Ca, Sr, and Ba) from A<sub>5</sub>Nb<sub>4</sub>O<sub>15</sub>: A Comparative Study for Photoelectrochemical Water Splitting

s21-015

**Tam Thi Thanh Tran** (Chemistry, Chonnam National University, Gwangju, Korea)  
Visible-Light-Driven Water Splitting Using a Perovskite-Type LaNbO<sub>2</sub>N<sub>2</sub> Photocatalyst

### **semiconductor/electrolyte interface**

s21-016

**Maheswari Arunachalam** (chemistry education, Chonnam national university, Buk-Gu, Korea)  
Cocatalysts Supported  $\alpha$ -Ga<sub>2</sub>O<sub>3</sub>/GaN Photoanode for Highly Stable Solar Water Splitting

s21-017

**Jin Gi Kwak** (Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Yung-Eun Sung  
Solar cells are evaluated as one of the most potent renewable energies that can replace conventional fossil fuels. Recently, among researches to improve the low efficiency of solar cells, research on Quantum Dot Solar Cell (QDSC) is in the spotlight. This is because the band gap can be easily adjusted

and there is the potential for high efficiency in theory. Although copper sulfide is mainly used as the counter electrode of QDSC, there are disadvantages that it is easy to contaminate the refe

s21-018

**Hieu Nguyen** (Chemistry, Kunsan National University, Gunsan, Korea), Junam Kim, Kyung-Koo Lee  
Rational design of the electrolyte systems for the photochromic device

s21-019

**Maliha Parvin** (Chemical Engineering and Technology, Center for Physical Sciences and Technology, Vilnius, Lithuania), Milda Petruleviciene, Irena Savickaja, Benjaminas Sebekas, Arnas Naujokaitis, Vidas Pakstas, Renata Karpicz, Jurga Juodkazyte  
Investigation of Charge Transfer Kinetics of Sol-Gel Prepared WO<sub>3</sub> Photoanode in Different Electrolytes

## **solar fuels**

s21-020

**Unbeom Baeck** (School of Chemical Engineering, Sungkyumkwan University (SKKU), Suwon, Korea), Chengang Pei, Jung Kyu Kim  
Increasing Photoelectrochemical Performance by Core - Shell Gold nanoparticles@Carbon Quantum Dot Structures

s21-021

**Nguyen Duong Nguyen** (School of Chemical Engineering, Sungkyumkwan University (SKKU), Suwon, Korea), Kim Cuong Phu Thi, Phuong Pham Thi, Jung Kyu Kim  
MXene@Carbon Core-Shell Nanodots as High-Performance Catalyst for Solar-Driven Overall Water Splitting

s21-022

**Hyo Jin Gwon** (Chemistry, Yonsei university, Seoul, Korea), Hyun Seo Ahn  
Photoelectron Extraction via Inserted Carbon nanotube in Photosynthetic Cells and Analysis by Scanning Electrochemical Microscopy (SECM)

s21-023

**Nils Heppe** (Chemistry, TU Darmstadt, Darmstadt, Germany), Charlotte Gallenkamp, Wolfram Jaegermann, Vera Krewald, Ulrike I. Kramm  
Influence of electron density on the hydrogen evolution reaction of porphyrin based model catalysts

s21-024

**Hyeong Cheol Kang** (Energy and Materials Engineering, Dongguk University, Seoul, Korea), Saerona Kim, Kicheon Yoo, Gyu Leem  
Solar-Driven oxidative cleavage of Lignin by using Organic Photo-catalysts

s21-025

**Jaekyum Kim** (School of Chemical Engineering, Sungkyumkwan University (SKKU), Suwon, Korea), Jung Kyu Kim  
Enhancing Photoelectrochemical Hydrogen Peroxide Production by Incorporating Amorphous Titanyl Phosphate Overlayer

s21-026

**Pannan Kyesmen** (Department of Physics, University of Pretoria, Pretoria, South Africa), Nolwazi Nombona, Mmantsae Diale  
Nanostructured  $\hat{I}\pm$ -Fe<sub>2</sub>O<sub>3</sub>/CuO Heterostructure for Improvement of Photoelectrochemical Water Splitting

s21-027

**Shiva Mohajernia** (Material Science, University of Erlangen-Nuremberg, Erlangen, Germany), Ning Liu, Sina Hejazi, Patrik Schmuki

Photocatalytic synthesis of graphene oxide from graphite and in-situ self-assembly of a visible light photocatalyst

s21-028

**Zi-Ang Nan** (Department of Chemical Engineering, Xiamen University, Xiamen, China), Yong Hui, Liang Chen, Qi Liu, Wen-Han Zhang, Qing-Peng Luo, Bing-Wei Mao, Zhong-Qun Tian

New Guanidinium-doped Perovskite-like Phase Reveals the Effect of Doping Methods on the Stability of Organic-inorganic Hybrid Perovskite

s21-029

**Seung Hun Roh** (School of Chemical Engineering, Sungkyumkwan University (SKKU), Suwon, Korea), Jung Kyu Kim

Au Nanoparticle Pattern Array for Boosting Photoelectrochemical Water Oxidation

## ELECTROCHEMICAL MATERIALS SCIENCE

s22-001

**kyeongSeok Lee** (Department of R & D (Material development team), Korea Carbon Industry Promotion Agency, jeon-ju, Korea)

A New Hybrid Process of Fabrication of Acetylene Black : Thermal Cracking combined with Plasma Process

### ionic diodes

s22-002

**Zhongkai Li** (Department of Chemistry, University of Bath, Bath, United Kingdom), Lina Wang, Richard Malpass-Evans, Mariolino Carta, Neil B. McKeown, Frank Marken

Ionic Diode and Pump Phenomena Modified by Hydrogen Bonding in an Intrinsically Microporous Polyamine (PIM-EA-TB)

## MOLECULAR ELECTROCHEMISTRY

s22-003

**Jae Woong Jang** (Organic Material Science and Engineering, Pusan national university, pusan, Korea)  
Synthesis and electrochemical property of phosphorus(V)-octahexylthio phthalocyanines

s22-004

**Vikneshvaran Sekar** (Organic Material Science and Engineering, Pusan national university, pusan, Korea), SungWook Yoon

Electrochromic and NIR-II Absorption Properties of Heptamethine Pyrylium Dyes

### Molecular switch

s22-005

**Balamurugan Gopal** (Organic Material Science and Engineering, Pusan National University, Pusan, Korea), Jong Seung Park

Effect of Anion-Pi Bonding on the Electrochromism of Perhalogenated Zinc(II)-Phthalocyanine

## PHYSICAL ELECTROCHEMISTRY

s22-006

**De-Yin Wu** (College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China), Si-Yuan Guan, Zhuan-Yun Cai, Zhong-Qun Tian

Adsorption, Stretching and Breaking Processes in Single-Molecule Conductance of para-Benzenedimethanethiol in Gold Nanogaps: A DFT-NEGF Theoretical Study



**Knowledge transfer**

s23-001

**Aizhan Rakhmanova** (Chemical and Materials Engineering, Nazarbayev University, Nur-Sultan, Kazakhstan), Nurbol Tolganbek, Baktiyar Soltabayev, Zhumabay Bakenov, Sandugash Kalybekkyzy, Almagul Mentbayeva

Fabrication and Optimization of Nanostructured ZnO Particles by Electrospinning Technique

## Applications

s25-001

**Mohamed Abdelsalam** (School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea), Youngsoo Kim

Hastiness and Enhancement of NaBH<sub>4</sub> Hydrolysis Using Ag/CoFe<sub>2</sub>O<sub>4</sub>-CNTs Nanocomposite as a Magnetically Recyclable Catalyst for Hydrogen Production: Reaction kinetics and Mechanism

s25-002

**Bo-Rong Chen** (Chemical and Materials Engineering, National Yunlin University of Science and Technology, Yunlin, Taiwan), Shang-Jung Tsai

Application of Hydrophobic 3D Graphene Nanocomposites for Low Concentration Nitric Oxide Breathing Sensor

s25-003

**Gi-Sang Choi** (Photonics and Nanoelectronics, Hanyang University, Ansan, Korea), Seohyun Maeng, Hansol Kim, Ki-Ha Hong, Jaekyun Kim

High-responsivity phototransistor based-on shear coated large grain boundary RbCsFAPbI<sub>3</sub> Perovskite/IGZO heterostructure

s25-004

**Ericson Escobedo** (Division of Environmental Science and Engineering, Pohang University of Science and Technology, Pohang, Korea), Jin-Ah Oh, Kangwoo Cho, Yoon-Seok Chang

Removal of micropollutants and transformation products in municipal and livestock wastewaters by electrochemical advanced oxidation processes: An assessment using LC-HRMS based non-targeted analysis

s25-005

**Lei Jin** (State Key Laboratory of Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen, Fujian, China), Zhao-Yun Wang, Jia-Qiang Yang, Wei-Qing Li, Fang-Zu Yang, Zhong-Qun Tian, Dongping Zhan

-(2-Pyridylazo)-2-naphthol as a Potential Leveler for Through-Hole Copper Electroplating

s25-006

**Il-Young Jo** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Hye-Bin Noh, Dong-Ju Lee, Minju Choi, Bon-Cheol Ku\*, Myung-Han Yoon\*

Fabrication of Core-shell Structured CNT/PEDOT:PSS Micro-yarns for Energy Storage Devices

s25-007

**Seongyoon Kim** (School of Mathematics and Computing, Yonsei University, Seoul, Korea), Yun Young Choi, Jung-II Choi

State of Health Forecasting of Lithium-Ion Batteries Using Variational Long Short-Term Memory Trained with Transfer Learning

s25-008

**Da-Young Lee** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Hye-Min Shin, Myung-Han Yoon\*

Crystallized Poly(3,4-ethylenedioxythiophene):polystyrenesulfonate-Platinum Nanoparticles Composite for Electrochemical Catalyst

s25-009

**Hye-Min Shin** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Da-Young Lee, Myung-Han Yoon\*  
Solution Based Passivation Layer on Large-Scale Silicon Electrode for Photoanode

#### **Double-layer structure, water-in-salt, interface, etc.**

s25-010

**Hyeonwoong Hwang** (Department of Materials Science and Engineering, POSTECH, Pohang, Korea)  
Metal Oxide-Based Gas Sensor with Asymmetric Back-to-back Schottky Contacts for Enhancing Sensitivity and Selectivity

s25-011

**Jaecil Park** (School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, Korea), Jongyoon Kim, Myung-Han Yoon, Dong Wook Lee, Seung Joon Yoo  
Exploring Low Temperature Performance of Water-in-Salt Electrolyte based Supercapacitors

#### **Electrochemical engineering, new methods or technologies**

s25-012

**Luisa Marcela Caudillo** (Department of Engineering of Mines, Metallurgy and Geology,, University of Guanajuato, Guanajuato, Mexico), Juan Carlos Baltazar Vera, Martin Caudillo Gonzalez, Lucia Alvarado Montalvo  
Hexavalent Chromium Transport Study in a Galvanic Separation System

s25-013

**Jinho Ha** (School of Mathematics and Computing, Yonsei University, Seoul, Korea), Yun Young Choi, Youngkwon Kim, Je-Nam Lee, Jung-II Choi  
Hydrodynamic Network Model for Redox Flow Batteries with Flow Field Design

s25-014

**Jihyung Han** (Jeju Global Research Center, Korea Institute of Energy Research, Jeju, Korea)  
Over-limiting Current and Control of Dendritic Growth by Surface Conduction in Macroporous membrane

s25-015

**Jinho Jeong** (Energy System Engineering, Chung-Ang University, Seoul,, Korea), Eunji Kwak, Jun-hyeong Kim  
Compressive Stress Management of A Lithium-ion Battery with Low Frequency Pressure Control

s25-016

**Hangsoon Jung** (School of Mathematics and Computing, Yonsei University, Seoul, Korea), Seongyoon Kim, Yun Young Choi, Jung-II Choi  
CNN-based Prediction of Knee-point in Capacity Degradation of Li-Ion Batteries

s25-017

**Wei-Qing Li** (State Key Laboratory of Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen, China), Lei Jin, Jia-Qiang Yang, Zhao-Yun Wang, Fang-Zu Yang, Zhong-Qun Tian, Dongping Zhan  
Effects of Ethylenediamine in a Promising Citrate-based Multi-Coordinated Copper Electronic Electroplating of Through-Holes

s25-018

**Kyosuke Murata** (Graduate School of Science and Engineering, Kansai University, Suita, Japan), Takuya Yorioka, Takeshi Ito, Shoso Shingubara, Tomohiro Shimizu  
Effect of concentration ratio of the etching solution on preparation of vertical Si holes using metal assisted chemical etching

#### **Electrochemistry**

s25-019

**Maria Ehrenburg** (Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Moscow, Russia), Oleg Zaytsev, Elena Molodkina, Alexander Rudnev  
Electrodeposition of Copper on Pt and Au Single Crystals from Deep Eutectic Solvents

s25-020

**Maria Ehrenburg** (Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Moscow, Russia), Elena Molodkina, Alexander Rudnev  
New Insights into the Redox Behavior of Adsorbed NO on Pt(111) and Vicinal Surfaces Containing Monoatomic (111) and (100) Steps

s25-021

**Laura Fuentes-Rodriguez** (Institut de Ciència de Materials de Barcelona, CSIC, Bellaterra, Spain), Libertat Abad, Eulalia Pujades Otero, Dino Tonti, Nieves Casan-Pastor  
Effects of discrete immersed conducting pieces and induced dipoles in electrochemical cells: Dramatic lowering of impedance due to physico-chemical mediated percolation and bipolar electrochemistry

s25-022

**Yonggoon Jeon** (Department of Chemical and Biological Engineering, Seoul National University, Seoul, Korea), Ha young Park, Woojun Chung, Sung-In Kim  
Investigation of Li plating dynamics depending on electrolytes using liquid-cell transmission electron microscopy

s25-023

**Byungmook Kim** (Department of Energy Systems Research, Ajou University, Suwon, Korea), Dongcheul Lee, Seohee Kang  
Modeling the Performance Degradation of Lithium-Ion Battery Considering the Combined Effects of Cyclable Lithium Loss and Electrolyte Depletion

s25-024

**Ki Jun Kim** (chemistry, Konkuk University, Seoul, Kyrgyzstan), Seong Jung Kwon  
Study on Ag or Pt Single Nanoparticle's Current Signal by Collision Changing Depending on Applying Potential.

s25-025

**Do Hyeong Kwon** (Engineering of Functional Materials, Kangwon National University, Samcheok, Korea), Nam Gyu Im, Hoang Thai Bao Ngo  
Studying of electrocatalysis surface conditions on rotating disk electrode for oxygen reduction reactions

s25-026

**Woonghee Lee** (Division of Environmental Science and Engineering, Pohang University of Science and Technology, Pohang, Korea), Minuk Joo, Kangwoo Cho  
Electrochemical Characterization of Pt<sub>x</sub>Ti<sub>1-x</sub>O<sub>2</sub> and Pt/TiO<sub>2</sub> Electrode for Chlorine Evolution Reaction

s25-027

**Dongcheul Lee** (Department of Energy Systems Research, Ajou University, Suwon, Korea), Byungmook Kim, Seohee Kang  
Development of Fast Charge Algorithm to Prevent Lithium Plating in an Electric Vehicle Lithium-Ion Battery

s25-028

**Thágor Moreira Klein** (Institute of Chemistry, Universidade Federal de Rio Grande do Sul (UFRGS), Porto Alegre, Brazil), Vladimir Lavayen, Jacqueline Arguello  
Preparation and characterization of SPE/Au/MoS<sub>2</sub> modified electrode by electrodeposition technique

s25-029

**Yoshiharu Mukouyama** (Division of Science, College of Science and Engineering, Tokyo Denki University, Hatoyama, Japan), Terumasa Kuge, Yuri Sakurada  
Potential Oscillation during Hydrogen Evolution Reaction in Acidic Solutions

s25-030

**Michel Perdicakis** (LCPME, UMR 7564, Université de Lorraine - CNRS, VILLERS-LES-NANCY, France), Bouchra Benzakour, Bernadette Lomaglio  
Migrational Effects on the Limiting Currents of Electroactive Ions in the Absence of a Supporting Electrolyte. A Semi-Empirical Approach

s25-031

**Alexander Rudnev** (Frumkin Institute of Physical chemistry and Electrochemistry, Russian academy of sciences, Moscow, Russia), Elena Molodkina, Maria Ehrenburg  
Electrodeposition of Lanthanides in [BMP][DCA]+H<sub>2</sub>O Solutions

s25-032

**Alexander Rudnev** (Frumkin Institute of Physical chemistry and Electrochemistry, Russian academy of sciences, Moscow, Russia), Elena Molodkina, Maria Ehrenburg  
Induced Electrodeposition of Nd-Fe in a Dicyanamide Ionic Liquid: Water Effect

s25-033

**Yuri Sakurada** (Division of Science, College of Science and Engineering, Tokyo Denki University, Hatoyama, Japan), Shuji Nakanishi, Yoshiharu Mukouyama  
Two Types of Oscillations (Named Oscillations H and K) Induced by pH Increase at Electrode Surface in "H<sub>2</sub>O<sub>2</sub>-H<sub>2</sub>SO<sub>4</sub>-Pt Electrode" System

s25-034

**Vyacheslav Sentyurin** (Organic Chemistry, Lomonosov Moscow State University, Moscow, Russia)  
Molecular Design of New Types of Stable Diaryl Nitroxides: Computational, Voltammetric and In-cell Testing

s25-035

**Lina Wang** (Department of Chemistry, University of Bath, Bath, United Kingdom), Richard Malpass-Evans, Mariolino Carta, Neil B. McKeown, Frank Marken  
Hydrogen-Bonded Catechin and Quercetin in an Intrinsically Microporous Polyamine (PIM-EA-TB): Accumulation and Electrochemical Reactivity

## Engineering

s25-036

**Ji-Hyeon Lee** (Department of Green Chemical Engineering, Sangmyung University, Cheonan, Korea), Hyeon-Jung Park, Moon-Sung Kang  
Ion-exchange membranes modified by poly(phenylene oxide) containing zwitterion groups

s25-037

**Hyeon-Bee Song** (Department of Green Chemical Engineering, Sangmyung University, Cheonan, Korea), Ji-Min Lee, Moon-Sung Kang  
Development of thin bipolar membranes for electrochemical LiOH production

## Fundamentals

s25-038

**Vinicius Del Colle** (Chemistry, Federal University of Alagoas, Arapiraca, Brazil)  
Oscillatory Electro-oxidation of Glycerol Onto Pt Stepped Surfaces - Pt(S)[n(111 x 111)]

s25-039

**Arturo-de-Jesus Garcia-Mendoza** (Chemistry, Universidad Nacional Autonoma de Mexico, Cuautitlan Izcalli, Mexico), Jorge Ruvalcaba-Juarez, Arturo-de-Jesus Garcia-Mendoza

A detailed study on the behavior of common reference electrodes in aqueous solution for their eventual construction and use in room temperature ionic liquids.

### Physical chemistry

s25-040

**Gerd Mutschke** (Institute of Fluid Dynamics, HZDR, Dresden, Germany), Syed Sahil Hossain, Aleksandr Bashkatov, Xuegeng Yang, Kerstin Eckert

Thermocapillary Effects at Gas Bubbles Growing at Electrodes

s25-041

**Yang Yang** (Pen-Tung Sah Institute of Micro-Nano Science and Technology, Xiamen University, Xiamen, China), Biao-Feng Zeng, Chao Zhan, Gan Wang, Chun-An Huo, Yang Yang, Wenjing Hong, Zhong-Qun Tian

Study on the Single-Molecule Trapping by Employing the Plasmonic Optical Tweezers

s25-042

**Xiao Yuan-hui** (College of Chemistry and Chemical Engineering, Xiamen university, Xiamen, China), Wu De-Yin

Chlorine and Chlorine-Water Co-adsorption on Au(111) Surfaces

### Techniques improvement, new applications

s25-043

**Na Young Kang** (Materials Science and Engineering, Hongik University, Seoul, Korea)

Electroplating of Fe-Ni Invar Alloy for High-Resolution Fine Metal Mask

s25-044

**Soobin Lee** (Photonics and Nanoelectronics, Hanyang University, Ansan-si, Korea), Jinwoo Park, Jeonghyoung Lee, Youngwook Shin, Jaekyun Kim

Transfer of GaN Nanowire Light Emitting Diodes(LEDs) by Polymer Encapsulation and Vertical Assembly with Si Backplane