



## WELCOME TO BELI24

It is a great pleasure for the **Organizing Committee of the International Symposium on Beyond Li-Ion Batteries 2024 - BeLI24** to welcome you to Padova, Italy. This event brings together scientists involved in research and technological activities focused on materials and devices for electrochemical energy storage.

In Padova, a city that represents one of the most significant centers of classical and humanistic culture, lies one of the oldest universities in the world, established in 1222.

Galileo Galilei lived and taught in this city for eighteen years (1592-1610). Around 1600, Padova became the birthplace of the well-known inductive experimental method, which, in the following centuries, played a crucial role in advancing all fields of science and laid the groundwork for the propulsion of modern technology and lifestyle.

BeLI-24 will be inaugurated by

**Prof. Dr. Sir Stanley Whittingham**  
(Binghamton University)

**Nobel Laureate in Chemistry 2019 “for the development of lithium-ion batteries”**

BeLI24 is a **world-class meeting** designed to convene the **international scientific community** in Padova, focusing on both **the fundamental and applied aspects of materials for beyond Li-ion batteries**. This includes materials for solid-state and high-voltage batteries, lithium metal batteries, and batteries utilizing chemistries that do not rely on lithium ions. Such materials primarily include anodes, cathodes, and electrolytes, along with other components like dopants and materials for battery casing. BeLI24 also emphasizes both experimental and theoretical/computational aspects, exploring mechanisms of charge migration, interactions and reactions at various electrochemical interfaces, and the cyclability and performance of batteries. Additionally, the symposium will examine the safety and circular economy of beyond Li-ion batteries, encompassing disassembly, recovery/recycling, and life-cycle assessment of materials and components. Finally, BeLI24 will pay particular attention to the scientific and technological aspects of redox flow batteries.

On this basis, it is our great pleasure to welcome you to Padova to actively participate in BeLI24, as we aim to advance, renew, and stimulate the frontiers of this crucial field of science and technology for the future.

### **The Conference Chairmen**

**Prof. Vito Di Noto**, *Department of Industrial Engineering, University of Padua, Italy*

**Prof. John Muldoon**, *Toyota Research Institute of North America, USA*

**Prof. Walter van Schalkwijk**, *University of Washington, USA*

**Prof. Yang Shao-Horn**, *Massachusetts Institute of Technology, USA*

**Prof. Karim Zaghib**, *Concordia University, CAN*

# **Scientific program**

DAILY PROGRAM

## General Daily Program

### Sunday 1<sup>st</sup> September

REGISTRATION.....	11:00
POSTER SET-UP.....	11:00 – 15:00
<i>Welcome Coffee</i> .....	15:00
OPENING CEREMONY.....	15:00
WELCOME PARTY.....	19:00

### Monday 2<sup>nd</sup> September

REGISTRATION.....	7:30
POSTER SET-UP ( <i>no lunch time</i> ).....	7:45 – 17:00
SESSION 1: T1.....	8:00 – 10:05
<i>Coffee Break</i> .....	10:05 – 10:35
SESSION 2: T1.....	10:35 – 12:20
<i>Lunch</i> .....	12:20 – 14:00
SESSION 3: T2.....	14:00 – 15:45
<i>Coffee Break</i> .....	15:45 – 16:15
<i>EIT RawMaterials Refresh Station</i>	
SESSION 4: T2.....	16:15 – 18:45
POSTER SESSION.....	19:00 – 20:30
<i>EIT RawMaterials Drinks Reception</i>	

### Tuesday 3<sup>rd</sup> September

REGISTRATION.....	7:30
POSTER SET-UP ( <i>no lunch time</i> ).....	7:45 – 17:00
SESSION 1: T3.....	8:00 – 10:05
<i>Coffee Break</i> .....	10:05 – 10:35
SESSION 2: T3.....	10:35 – 12:15
<i>Lunch</i> .....	12:15 – 14:00
SESSION 3: T3.....	14:00 – 16:05
<i>Coffee Break</i> .....	16:05 – 16:35
SESSION 4: T4.....	16:35 – 18:50
CONCERT.....	21:00
<i>"Sala dei Giganti" (G)</i>	

### Wednesday 4<sup>th</sup> September

REGISTRATION.....	7:30
POSTER SET-UP.....	7:45 – 13:00
SESSION 1: T5.....	8:00 – 10:00
<i>Coffee Break</i> .....	10:00 – 10:30
SESSION 2: T5.....	10:30 – 12:45
<i>Lunch</i> .....	13:00 – 14:00
EXCURSION.....	14:15
GALA DINNER.....	20:00
<i>"Villa Foscari Rossini"</i>	
<i>Departure by bus at 19.30 from HN Hotel</i>	

### Thursday 5<sup>th</sup> September

REGISTRATION.....	7:30
POSTER SET-UP ( <i>No lunch time</i> ).....	7:45 – 17:00
SESSION 1: T6.....	8:00 – 10:00
<i>Coffee Break</i> .....	10:00 – 10:30
SESSION 2: T6/T7.....	10:30 – 12:15
<i>Lunch</i> .....	12:15 – 14:00
SESSION 3: T7.....	14:00 – 15:50
<i>Coffee Break</i> .....	15:50 – 16:20
SESSION 4: T7.....	16:20 – 18:40
POSTER SESSION.....	18:40 – 20:30

### Friday 6<sup>th</sup> September

SESSION 1: T8.....	8:00 – 10:15
<i>Coffee Break</i> .....	10:15 – 10:45
SESSION 2: T9.....	10:45 – 13:05
CLOSING CEREMONY.....	13:05

# SUNDAY September 01, 2024

## OPENING Ceremony

**15:00**     **Welcome and Opening Remarks – Fiera**

**16:00**     **PL     Plenary Lecture**

**Li Batteries: 50 Years Old and the Future Challenges for an American Based Industry**

Stanley Whittingham (Binghamton University, Binghamton, USA)

**16:45**     **K0-01**

**Beyond lithium: what can be made solid-state?**

Michael Armand (CIC energiGUNE, Vitoria-Gasteiz, Álava, Spain)

**17:10**     **K0-02**

**The Li Battery, the Controlled Bomb**

Juergen Garche (Ulm University, Ulm, Germany)

**17:35**     **K0-03**

**Sustainability in the Lithium-ion Battery Industry**

Walter van Schalkwijk (University of Washington, Seattle, USA)

**18:00**     **I0-01**

**New cryo-EM tools for studying dynamic interfaces in battery materials**

Yuzhang Li (University of California, Los Angeles, USA)

**19:00**     **Welcome Party**

# MONDAY September 02, 2024

## Session 1: T1 - ADVANCED ANODES AND CATHODES

**Chairmen:** Johnson Christopher (*Argonne National Laboratory*)  
Waugh John (*Toyota Research Institute of North America*)

**08:00**                      **K1-01**  
**Tailoring Microstructure and Surface of Ni-Rich Cathodes for High-Performance Electric Vehicle Batteries**  
*Yang-Kook Sun (Hanyang University, South Korea)*

**08:25**                      **I1-01**  
**Tuning the properties of inorganic anodes and cathodes for Na-ion batteries**  
*Philipp Adelhelm (Humboldt-University Berlin, Berlin, Germany)*

**08:45**                      **O1-01**  
**Investigating the Concurrent Influence of Electrolyte System and Sulfurized Polyacrylonitrile Cathode Microstructure on Electrochemical Performance of Lithium-Sulfur Batteries**  
*Maryam Nojabae (Institute of Engineering, Stuttgart, Germany), Martina Gerle, Robin Moschner, Peter Michalowski, K. Andreas Friedrich*

**09:00**                      **O1-02**  
**Localized S-Li<sub>2</sub>S Conversion With Accelerated Kinetics Mediated By Mixed Conductive Shell For High-Performance Solid-State Lithium-Sulfur Battery**  
*Minkang Wang (Zhejiang University, Hangzhou, China), Jiangping Tu*

**09:15**                      **I1-02**  
**Rechargeable battery with S-confined porous C cathode and Li metal anode**  
*Masashi Ishikawa (Kansai University, Osaka, Japan), Yukiko Matsui*

**09:35**                      **O1-04**  
**Quantum View of Li-ion High Mobility at Carbon-Coated Cathode Interfaces**  
*Bernardo Barbiellini (LUT-University, Lappeenranta, Finland), Gioele Pagot, Vito Di Noto, Keti Vezzù, Valerio Toso, Alberto Caruso, Meiyang Zheng, Xin Li, Rafael Ferragut*

**09:50**                      **O1-05**  
**Spray Drying Synthesis of Single Crystal LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> with Enhanced Electrochemical Performance**  
*Daniele Callegari (University of Pavia, Pavia, Italy), Mauro Coduri, Umberto Anselmi Tamburini, and Eliana Quartarone*

**10:05 – 10:35**                      **Coffee Break**

## Session 2: T1 – ADVANCED ANODES AND CATHODES

**Chairmen:** Sun Yang-Kook (*Hanyang University*)  
Adelhelm Philipp (*Humboldt-University Berlin*)

**10:35**                      **K1-02**

### **Studies of Lithium-Oxygen Battery Systems**

Shi-Gang Sun (*Xiamen University, Xiamen, China*), Jun-Tao Li, Ling Huang, Li-Bin Chen, Xiao-Hong Wu, Zhen-Gang Li

**11:00**                      **I1-03**

### **Advanced Electrode Materials and Electrolytes for Sodium-ion Batteries**

Christopher S. Johnson (*Argonne National Laboratory, USA*), Anton Tomich, Neelam Sunariwal, Jordí Cabana, Zhengcheng (John) Zhang, Qian Liu, Eungje Lee, Yuzi Liu, Jihyeon Gim

**11:20**                      **O1-06**

### **Zn<sup>2+</sup>-substituted NaAlCl<sub>4</sub> and Al<sup>3+</sup>-substituted Na<sub>2</sub>ZnCl<sub>4</sub> with enhanced sodium ionic conductivity for solid state batteries**

Matteo Bianchini (*University of Bayreuth, Bayreuth, Germany*), Hao Guo, Michael Häfner, Helen Grüninger

**11:35**                      **O1-07**

### **Controlled interlayer chemistry tunes Zn<sup>2+</sup>/H<sub>2</sub>O co-intercalation reactions in bi-layered vanadium oxides**

Haocheng Guo (*Helmholtz Institute Ulm (HIU), Ulm, Germany*), Simon Fleischmann

**11:50**                      **O1-08**

### **Artificial cathode electrolyte interphase for improved performance of high-voltage cathodes**

Diana Golodnitsky (*Tel Aviv University, Tel Aviv, Israel*), Inbar Ankonina

**12:05-14:00**                      **Lunch**

## Session 3: T2 - SAFETY, SUSTAINABILITY AND CIRCULAR ECONOMY

**Chairmen:** Onori Simona (*Stanford University*)  
Bates Alex (*Sandia National Laboratories*)

**14:00**                      **K2-01**

### **Fundamentals of Li-Battery Thermal Failure**

Xuning Feng (*Tsinghua University, Beijing, China*)

**14:25**                      **I2-01**

### **Brine to Battery: Electrolytic Production of Li-metal Electrodes**

Donald R. Sadoway (*Pure Lithium Corp., Boston, USA*), Emilie Bodoïn, Lincoln Miara

**14:45**                      **O2-01**

**On the use of Recycled PVB from Laminated Glass Construction Waste as Binder and Polymer Electrolyte for Next-gen Sustainable Batteries**

*Hamideh Darjazi* (Politecnico di Torino, Torino, Italy), *Alessandro Piovano*, *Silvia Porporato*, *Matteo Gastaldi*, *Giuseppina Meligrana*, *Giuseppe Antonio Elia*, *Claudio Gerbaldi*

**15:00**                      **O2-02**

**Sustainable production of bamboo-based carbons for anode lithium battery**

*Omar Ginoble Pandoli* (Pontifícia Universidade Católica, Rio de Janeiro, Brazil), *Mario Barbosa Nogueira Junior*, *Layne O.L. Gontijo*, *Sidnei Paciornik*, *Druval Santos de As*, *Letizia Savio*, *Roberto Spotorno*

**15:15**                      **O2-03**

**Bio-based polymer-carbon composite flexible current collectors for sustainable electrochemical energy storage devices**

*Chiara Mongiovi* (Istituto per i Processi Chimico Fisici – CNR, Bari, Italy), *Alberto Perrotta*, *Rossella Labarile*, *Matteo Grattieri*, *Massimo Trotta*, *Paolo Stufano*

**15:30**                      **O2-04**

**Valorization of Holm Oak waste for the preparation of sustainable Hard Carbon and Lignin Binder for Sodium-Ion Batteries**

*Francesco Nobili* (University of Camerino, Camerino, Italy), *Luca Bottoni*, *Hamideh Darjazi*, *Leonardo Sbrascini*, *Antunes Staffolani*, *Leonardo Balducci*, *Genny Pastore*

**15:45-16:15**                      **Coffee Break**

**EIT RAWMATERIALS DRINKS RECEPTION**

## **Session 4: T2 - SAFETY, SUSTAINABILITY AND CIRCULAR ECONOMY**

**Chairman:** *Feng Xuning* (Tsinghua University)  
*Nobili Francesco* (Università di Camerino)

**16:15**                      **K2-02**

**The Race to Secure Europe's Sustainable Energy Future**

*Roland Gauß* (EIT RawMaterials, Berlin, Germany)

**16:40**                      **O2-05**

**Production and electrochemical test of high-capacity eco-anodes derived from a silicon-rich organic waste**

*Paolo Piccardo* (Università di Genova, Genova, Italy), *Hanxin Mei*, *Roberto Spotorno*, *Mario Barbosa Nogueira Junior*, *Omar Ginoble Pandoli*, *Alessandro Cingolani*

**16:55**                      **O2-06**

**Biomass-based Battery Components For Safe, Stable, And Sustainable Lithium-ion Batteries**

*Akiko Tsurumaki* (Sapienza University of Rome, Rome, Italy), *Corrado Zamparelli*, *Valentina Liberti*, *Chiara Dal Bosco*, *Tecla Gasperi*, *Alessandra Gentili*, *Maria Assunta Navarra*

**17:10**                      **O2-07**

**Electrochemical perspectives for Li-ion battery recycling**

*Stefanie Arnold* (INM - Leibniz Institute for New Materials, Saarbrücken, Germany), *Lei Wang, Volker Presser*

**17:25**                      **I2-02**

**Second-life Batteries: Towards a BMS<sub>2</sub> Design Framework**

*Simona Onori* (Stanford University, Stanford, USA), *Muhammad Aadil Khan, Xiaofan Cui, Ratnesh Sharma, Surinder Singh*

**17:45**                      **O2-08**

**Development of Sustainable Processes for LIBs Recycling**

*Antunes Staffolani* (Alma Mater University of Bologna, Bologna, Italy), *Andrea Trebbi, Aishabibi Ashir, Federico Mascetti, Chiara Samori, Alessandro G. Rombolà, Simone D'Agostino, Ncholu Manyala, Francesca Soavi*

**18:00**                      **O2-09**

**Exploring Safety in Sodium-ion Battery Technology: Safer Than Lithium-ion?**

*Alex M. Bates* (Sandia National Laboratories, Albuquerque, USA), *Lorraine Torres-Castro, Jill Langendorf, Nathan Johnson, Jessica Kustas, Mark Rodriguez, Chaz Rich*

**18:15**                      **O2-10**

**Safety Assessment on Fresh and Cyclic Aged Commercial Cylindrical 18650 Sodium Cells**

*Ijaz Ul Mohsin* (Karlsruhe Institute of Technology, Karlsruhe, Germany), *Carlos Ziebert*

**18:30**                      **O2-11**

**Early Insights, Safer Outcomes - Advancing Battery Safety from the Ground Up**

*Lorraine Torres-Castro* (Sandia National Laboratories, Albuquerque, USA), *Alex M. Bates, Nathan B. Johnson*

**18:45**                      **Poster Session I**

**EIT RAWMATERIALS DRINKS RECEPTION**



# TUESDAY September 03, 2024

## Session 1: T3 - ALTERNATIVES TO LITHIUM

**Chairmen:** Palacin M. Rosa (*ICMAB-CSIC*)

Vittadello Michele (*Medgar Evers College of CUNY*)

**8:00 K3-01**

**From polymer electrolytes to calcium-conducting Ionomers: a route towards reversible calcium batteries?**

*J.-Y. Sanchez (LEPMI, Grenoble, France), J. Solier, R. San Roman Gallego Casilda, C.S. Martinez-Cisneros, A. Varež, C. Iojoiu*

**08:25 I3-01**

**Recent Results and Progress with Multivalent Batteries**

*Maximilian Fichtner (Helmholtz-Institute Ulm (HIU), Ulm, Germany)*

**08:45 O3-01**

**Nanostructured Electrodes for Rechargeable Zinc-air Batteries**

*Francesco Biscaglia (University of Salento, Lecce, Italy), Marco Milanese, Claudio Mele, Alessio Mattia Gesualdo, Sabrina Di Masi, Giuseppe Gigli, Arturo De Risi, Luisa De Marco*

**09:00 O3-02**

**Towards a Rechargeable Zinc-Air Battery: Optimizing Bifunctional Air Cathode Composition, Manufacturing, Performance and Durability**

*Alessandro Brega (Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Ulm, Germany), Lorenzo Camilletti, Sylvain Brinaud*

**09:15 I3-02**

**Polymer Binder Materials with High Density Functional Groups for Sodium Ion Secondary Batteries**

*Noriyoshi Matsumi (Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan), Amarshi Patra*

**09:35 O3-03**

**Novel Zinc-Anode Rechargeable Battery Using Carbons For Positive Electrode**

*Masaaki Yoshikawa (Kyoto University, Kyoto, Japan), Hiroyuki Fujimoto, Zempachi Ogumi, Takeshi Abe*

**09:50 O3-04**

**Calcium-zinc alloys as anodes for rechargeable non-aqueous calcium-ion batteries at room temperature**

*Andrea Ceppetelli (Università di Roma La Sapienza, Roma, Italia), Mikael Beaudhuin, Bernard Fraisse, Laure Monconduit, Sergio Brutti, Lorenzo Stievano*

**10:05-10:35 Coffee Break**

## **Session 2: T3 - ALTERNATIVES TO LITHIUM**

**Chairmen:** Matsumi Noriyoshi (*Japan Advanced Institute of Science and Technology*)  
Fichtner Maximilian (*Helmholtz-Institute Ulm (HIU)*)

**10:35 I3-03**

**Ca<sup>2+</sup> and Na<sup>+</sup> electrochemical intercalation in Fe[Fe(CN)<sub>6</sub>]<sub>1-y</sub> Berlin Green**

*M. Rosa Palacin (Institut de Ciència de Materials de Barcelona, Catalonia, Spain), Alejandro Ramo-Irurre, Ashley P. Black*

**10:55 O3-05**

**Highly porous carbon-based aerogel as an efficient air electrode for Aluminum-air battery**

*Bharti Rani (Indian Institute of Technology Jodhpur, Rajasthan, India), Ambesh Dixit*

**11:10 I3-04**

**Sodium Ion-Conducting Electrolytes based on Chloroaluminate Ionic Liquids and δ-NaCl**

*Michele Vittadello (Medgar Evers College of the City University of New York (CUNY), New York, USA), Sumit Kumar, Rajesh Raghupath, Ketì Vezzù, Mounesha N. Garaga, Xiaoping Zhu, Steve Greenbaum, Vito Di Noto*

**11:30 O3-06**

**High Voltage Cu-based Transition Metal Layered Oxide as cathode of Na-ion batteries**

*Rémy Lecordier (CIC energiGUNE, Vitoria-Gasteiz, Spain), Damien Saurel, Jon Serrano, Marcus Fehse, Amaia Saracibar*

**11:45 O3-07**

**Enabling alloying metals as anode materials for Sodium-ion batteries by understanding the effect of metal oxide content on the cycling stability**

*Martins Obialor (Dalhousie University, Halifax, Canada), Matthew Garayt, Libin Zhang, Jeff Dahn, Michael Metzger*

**12:00 O3-08**

**Calcium Conductivity Mechanisms in Novel Ionic Liquid-based Electrolytes**

*Gioele Pagot (University of Padua, Padua, Italy), Raul San Roman, Ketì Vezzù, Enrico Negro, Vito Di Noto*

**12:15 - 14:00**

***Lunch***

## Session 3: T7 – ELECTROLYTES AND INTERFACES

### T3 – ALTERNATIVES TO LITHIUM

**Chairmen:** Paddison Stephen (*University of Tennessee*)  
Navarra Maria Assunta (*Sapienza University of Rome*)

**14:00 K7-01**  
**Pathways towards High-Performance Solid-State Lithium-Ion Batteries**  
*Xin Guo (Huazhong University of Science and Technology, Wuhan, China)*

**14:25 I3-05**  
**Renewable Energy and Storage Technologies**  
*Robert A. Mantz (OUSD(R&E), Washington DC 20301, USA)*

**14:45 O3-09**  
**Metal-Organic Frameworks for anode-less rechargeable Na-ion batteries**  
*A. Patriarchi (University of Camerino, Camerino, Italy), L. Sbrascini, S. Xhafa, A. Tombesi, M.Á. Muñoz-Márquez*

**15:00 O3-10**  
**Zinc Seeded Aluminum Current Collectors For Anodeless Sodium Metal Batteries Prepared By Cheap And Simple Electroless Deposition**  
*Cléo T. G. V. M. T. Pires (University of Bologna, Bologna, Italy), Giampaolo Lacarbonara, Catia Arbizzani*

**15:15 I3-06**  
**Stable Hydroborate Solid-State Lithium Battery with High-Voltage NMC811 Cathode**  
*Corsin Battaglia (Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland), Hugo Braun, Ryo Asakura, Arndt Remhof*

**15:35 O3-11**  
**Alloying composite anodes for all-solid-state lithium-ion batteries**  
*Maria Assunta Navarra (University of Rome, Rome, Italy), Akiko Tsurumaki, Giovanna Maresca, Naoki Suzuki, Yuichi Aihara*

**15:50 O3-12**  
**Solid polymer electrolytes based on single-ion conductor membranes for next-generation batteries**  
*Isabella Nicotera (University of Calabria, Rende, Italy), Cataldo Simari, Maryam Nojabae, Brigitta Stevert, Sergio Brutti*

**16:05-16:35 Coffee Break**

## Session 4: T4 – COMPUTATIONAL MODELLING

### T1 – ADVANCED ANODES AND CATHODES

**Chairmen:** Mustarelli Piercarlo (*University of Milano-Bicocca*)

Battaglia Corsin (*Swiss Federal Institute of Materials Science and Technology*)

**16:35 K4-01**

**Multivalent Ion Clustering and Transport in Ternary Systems: Copolymer/Ionic Liquid/Salt**

*Stephen J. Paddison (University of Tennessee, Knoxville, USA), Zhenghao Zhu*

**17:00 O4-01**

**Multiscale Multiphysics Modelling Approach and Simulation for Halide Electrolyte-Based Lithium Metal Batteries**

*Sara Abada (IFPEN, Solaize, France), Andrey Golov, Claudio Gavagnin, Cerun Alex Varkey, Nicolas Guy, Nadege Brusselle Dupend, Alexander Ryzhov, Helmut Kuehnelt, Martin Petit, Javier Carrasco*

**17:15 O4-02**

**Molecular-level Heterogeneity and Local Symmetry in Deep Eutectic Electrolytes**

*Mirna Alhanash (Chalmers University of Technology, Göteborg, Sweden), Carolina Cruz, Patrik Johansson*

**17:30 O4-03**

**Ionic Liquid Electrolytes for Lithium-Metal Batteries: High-Throughput Screening and Machine Learning Modeling**

*Damla Eroglu (Bogazici University, Istanbul, Turkey), Aysegul Kilic, Omar Abdelaty, Muhammad Zeeshan, Alper Uzun, Ramazan Yildirim*

**17:45 I4-01**

**Advancing Battery Technology: Harnessing Oscillatory Dynamics in Ferroelectric Topological Insulator Electrolytes**

*Maria Helena Braga (University of Porto, Porto, Portugal)*

**18:05 O4-04**

**Advance Reactive Force Field for ion transport investigation in Solid Electrolyte Interface**

*Paolo De Angelis (Politecnico di Torino, Torino, Italy), Francesco Mambretti, Umberto Raucci, Roberta Cappabianca, Matteo Fasano, Pietro Asinari, Eliodoro Chiavazzo, Michele Parrinello*

**18:20 O4-05**

**Unification Of Intercalation Electrode Storage And Supercapacitive Storage**

*Chuanlian Xiao (Max Planck Institute for Solid State Research, Stuttgart, Germany), Hongguang Wang, Robert Usiskin, Peter van Aken, Joachim Maier*

**18:35 O1-03**

**Giving it a plasma touch: Sulfur powder treatment and lithium metal passivation by atmospheric pressure plasma to enhance the cycle life of lithium-sulfur battery**

*Vijay Rangasamy (VITO, Mol, Belgium), Annick Vanhulsel*

**21:00 Concert at “SALA DEI GIGANTI”**

# WEDNESDAY September 03, 2024

## Session 1: T5 - ADVANCED METHODS

**Chairmen:** Wagemaker Marnix (*Delft University of Technology*)  
Mukerjee Sanjeev (*Northeastern University*)

**08:00 K5-01**

**Recent NMR Investigations of Novel Electrolytes for BeLi**

*Steve Greenbaum* (*Hunter College of the City University of New York, New York, USA*)

**08:25 I5-01**

**Elucidating Electrochemical Reaction Mechanisms in Emerging Battery Chemistries by Solid-State NMR Spectroscopy**

*Robert J. Messinger* (*Hunter College of the City University of New York, New York, USA*), *Loeth E. Robinson, Teresa Schoetz, Ankur L. Jadhav, Leo W. Gordon, Erik J. Brandon, John-Paul Jones, Simon Jones, William C. West*

**08:45 O5-01**

**Graphene Stack Interfaces In Li-Ion Cathodes: High Mobility Unveiled By Positron Quantum Probing**

*Meiyang Zheng* (*Politecnico di Milano, Como, Italy*), *Jan Kuriplach, Iija Makkonen, Rafael Ferragut, Vito Di Noto, Gioele Pagot, Ekaterina Laakso, Bernardo Barbiellini*

**09:00 O5-02**

**Metrology and defect detection of battery electrodes via air-coupled ultrasonic transmission**

*Wesley Chang* (*Drexel University, Chestnut St. Philadelphia, USA*), *Andre Tayamen*

**09:15 O5-03**

**Post-mortem analysis of MnHCF-based cathode materials via synchrotron-based 2D X-ray fluorescence technique**

*Mariam Maisuradze* (*University of Bologna, Bologna, Italy*), *Min Li, Ilaria Carlomagno, Giuliana Aquilanti, Marco Giorgetti*

**09:30 O5-04**

**Operando tracking of phase transitions and redox reactions of layered cathode materials in Na-ion batteries**

*Yanan Sun* (*Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (HZB), Berlin, German*), *Philipp Adelhelm*

**09:45 O5-05**

**In situ Raman Spectroelectrochemistry for Battery Electrode-Electrolyte Interface Investigation**

*Zuzana Vlčková Živcová* (*Czech Academy of Sciences, Prague, Czech Republic*), *Martin Müller, Andy Taylor, Jiří Červenka, Antonín Fejfar, Ladislav Kavan, Otakar Frank*

**10:00-10:30**

**Coffee Break**

## Session 2: T6 – SOLID STATE BATTERIES

### T5 – ADVANCED METHODS

**Chairmen:** Greenbaum Steve (*Hunter College of the City University of New York*)  
Messinger Robert J. (*The City College of New York*)

**10:30**

**K6-01**

**Design of solid electrolytes, role of disorder in the Li-ion conductivity and beneficial solid electrolyte redox in the electrochemical stability**

*Marnix Wagemaker (Delft University of Technology, Delft, The Netherlands), Zhu Chen, Wenxuan Zhao, Victor Landgraf, Mengfu Tu, Joris de Leeuw, Anastasia Lavrinenko, Hanan Al-Kutubi, Yunan Zhou, Xuelong Wang, Hao Guo, Shuiping Gong, Zhengpeng Yao, Fangting Wu, Jianling Wang, Xuedong Bai, Baohua Li, Jürgen Janek, Ajay Gautam, Theo Famprakis, Alexandros Vasileiadis, Qidi Wang, Chenglong Zhao, Lars Bannenberg, Swapna Ganapathy*

**10:55**

**O5-06**

**Investigation of Electrolyte Wetting via Non-Destructive Ultrasound**

*Samuel H. Amsterdam (Drexel University, Philadelphia, United States), Wesley Chang*

**11:10**

**O5-07**

**Diagnosing Electrolyte Degradation in Lithium-Oxygen Batteries**

*Kieran D. Jones (University of Nottingham, Nottingham, UK), Darren A. Walsh, Graham N. Newton, Hon Wai Lam, Peter G. Bruce, Lee R. Johnson*

**11:25**

**O5-08**

**Mechanistic Underpinnings of Polysulfide formation and evolution of interfacial SEI layer during Li-S interaction: effect of catalysts and electrolyte additives**

*Sanjeev Mukerjee (Northeastern University, Boston, USA), Huidong Dai*

**11:40**

**I5-02**

**Link between microstructure and electrochemical performance of solid state batteries**

*Claire Villevieille (Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP, LEPMI, Grenoble, France)*

**12:00**

**O5-09**

**Electrolyte Pre-Degradation Monitored by In-situ Electron Paramagnetic Resonance**

*Radostina Stoyanova (Bulgarian Academy of Sciences, Sofia, Bulgaria), Rositsa Kukeva, Mariya Kalapsazova, Hristo Rashev, Georgi Vassilev, Alia Tadjer*

**12:15**

**O5-10**

**Charge–discharge performances and mechanisms of Zn-ion batteries with  $\beta$ -MnO<sub>2</sub>,  $\gamma$ -MnO<sub>2</sub>, and Mn<sub>2</sub>O<sub>3</sub> positive electrodes**

*Hiroyuki Fujimoto (Kyoto University, Kyoto, Japan), Masaki Okada, Masaaki Yoshikawa, Keiji Shimoda, So Fujinami, Masayuki Morita, Zempachi Ogumi, Takeshi Abe*

**12:30**

**O5-11**

**Effect of Innovative Carbon Additives in Positive Active Mass of AGM Lead Acid Battery on Dynamic Charge Acceptance**

*M. Cattelan (University of Padova, Padova, Italy), G. Daniel, M. Mazzucato, N. Milani, D. Fabris, S. Cazzanti, C. Durante*

**12:45**

***Lunch***

**14:15**

**Excursion**

**19:30**

**Departure by bus from NH Hotel**

**20:00**

**Gala Dinner at Villa Foscari Rossi**

# THURSDAY September 04, 2024

## Session 1: T1 - ADVANCED ANODES AND CATHODES

### T6 - SOLID STATE BATTERIES

**Chairmen:** Muldoon John (Toyota Research Institute of North America)  
Nanda Jagjit (SLAC National Laboratory and Stanford University)

**08:00 K1-03**

**The rechargeable lithium-oxygen battery - the cathode challenge**

*Peter G. Bruce (University of Oxford, Oxford, UK), Lee Johnson, Xiangwen Gao, Sunyik Ahn, Max Jenkins, Daniel Dewar, Ceren Zor, Chloe Chau*

**08:25 I6-01**

**Materials Development and Their Integration for High Energy and Long Cycle Life Solid-State Li Metal Batteries**

*Haegyem Kim (Lawrence Berkeley National Laboratory, Berkeley, USA)*

**08:45 O6-01**

**Multilayered solid-state hybrid electrolyte based on LAGP-polyetheramine system for enhanced lithium metal compatibility and stability**

*Nicolò Albanelli (University of Bologna, Bologna, Italy), Giampaolo Lacarbonara, Catia Arbizzani*

**09:00 O6-02**

**What determines two or four electron reduction in the aprotic lithium-oxygen battery containing water**

*Lee R. Johnson (University of Nottingham, Nottingham, U.K.), Peter G. Bruce, Darren Walsh, Graham Newton, Conrad Holc, Jack Jorden, Rory McNulty*

**09:15 O6-03**

**Elevating Cycle Stability and Reaction Kinetics in Ni-Rich Cathodes through Tailored Bulk and Interface Chemistry for Sulfide-Based All-Solid-State Lithium Batteries**

*Chunxi Lin (Zhejiang University, Hangzhou, China), Yu Liu, Han Su, Yu Zhong, Xiuli Wang, Changdong Gu, Jiangping Tu*

**09:30 O6-04**

**Understanding Li dendrite induced failure in ceramic solid electrolytes**

*Dominic L.R. Melvin (University of Oxford, Oxford, UK), Ziyang Ning, Guanchen Li, T. James Marrow, Charles Monroe, Peter G. Bruce*

**09:45 O6-05**

**Traps And Pitfalls In Characterizing All-Solid-State Battery Chemistries**

*Artur Tron (AIT Austrian Institute of Technology GmbH, Vienna, Austria), Alexander Beutl, Ander Orue, Pedro López-Aranguren, Andrea Itziar Pitillas Martinez, Maria Helena Braga, Ville Kekkonen*

**10:00-10:30 Coffee Break**



## Session 2: T6 – SOLID STATE BATTERIES

### T7 – ELECTROLYTES AND INTERFACES

**Chairmen:** Zaghib Karim (Concordia University)  
Venkataraman Thangadurai (University of Calgary)

**10:30 K6-02**  
**Garnet-type and Silicate-type Solid Electrolytes for Solid State Metal Batteries**  
*Venkataraman Thangadurai (University of Calgary, Alberta, Canada)*

**10:55 O6-06**  
**Mg(BH<sub>4</sub>)<sub>2</sub>(CH<sub>3</sub>NH<sub>2</sub>BH<sub>3</sub>)<sub>2</sub>@MgO as solid state electrolyte for Mg-batteries**  
*Asya Mazzucco (University of Turin, Turin, Italy), Niccolò Tricceri, Lorenzo Lamacchia, Mauro Francesco Sgroi, Marcello Baricco, Yaroslav Filinchuk*

**11:10 O6-09**  
**Na<sub>3-x</sub>Sb<sub>1-x</sub>W<sub>x</sub>S<sub>4</sub>: unveiling the relationship between polymorphisms and ionic conductivity**  
*Marco Ravalli (University of Pavia, Pavia, Italy), Mehdi Soleimanzade, Marco Scavini, Serena Chiara Tarantino, Mariano Radaelli, Cristina Tealdi*

**11:25 I7-01**  
**Recent Progress and Challenges in Sulfide and Halide Based Electrolytes for All Solid-State Batteries**  
*Jagjit Nanda (SLAC National Laboratory and Stanford University, Stanford, USA)*

**11:45 O7-01**  
**Hybrid Electrolytes for Safe and Efficient Sodium-Ion Batteries**  
*Sajjad Ghiyami (University of Salento, Lecce, Italy), Sonia Bagheri, Claudio Mele*

**12:00 O7-02**  
**Advanced Hybrid Polymer/Ceramic PEO-SnF<sub>2</sub> Protective Mechanism for Sodium Metal Anodes**  
*Chuan-Fu Lin (The Catholic University of America, Washington DC, USA), Roya Damircheli, Binh Hoang*

**12:15 – 14:00 Lunch**

## Session 3: T7 – ELECTROLYTES AND INTERFACES

**Chairmen:** van Schalkwijk Walter University of Washington  
Zawodzinski Tom University of Tennessee

**14:00 I7-02**  
**Effect of SEI on Dissolution and Growth of Lithium Whiskers**  
*Birger Horstmann (Helmholtz-Institute Ulm, Ulm, Germany), Martin Werres, Arnulf Latz*

- 14:20**                      **O7-03**  
**High capacity and rate capability application of SIB using azo functional polymeric binders**  
*Bharat Srimitra Mantripragada* (Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan), Noriyoshi Matsumi
- 14:35**                      **O7-04**  
**Systematic optimization of thermoplastic-based electrolytes for structural batteries**  
*Alexander Beutl* (AIT Austrian Institute of Technology GmbH, Vienna, Austria), Susan Montes, Martin Krammer, Mintao Wan, Dominic Bresser
- 14:50**                      **O7-05**  
**Advancing Battery Technology: Sustainable Synthesis of Gel Polymer Electrolytes from Solid-State Alternatives**  
*Rozita Sadeghzadeh* (Université de Montréal, Montreal, Canada), David Lepage, Arnaud Prébé, Gabrielle Foran, David Aymé-Perrot2, Mickael Dollé
- 15:05**                      **O7-06**  
**The Restrained Li/Gel Polymer Electrolyte Interface Deterioration Enabled By The Synergetic Effect Of Ultra-Lithiophilic Interphase And Interfacial Coupling Skeleton**  
*Jiaqi Zhu* (Zhejiang University, Hangzhou, China), Han Su, Xiao Han, Daozhen Zhang, Jingru Li, Yu Zhong, Xinhui Xia, Xiuli Wang, Jiangping Tu
- 15:20**                      **O7-07**  
**Development of an eco-friendly by-layer gel-polymer electrolyte for rechargeable Zinc-Air batteries**  
*Matteo Milanese* (Polytechnic of Torino, Turin, Italy), Hamideh Darjazi, Giuseppina Meligrana, Claudio Gerbaldi, Giuseppe Antonio Elia
- 15:35**                      **O7-08**  
**The role of NH<sub>4</sub>PF<sub>6</sub> additive in promoting N-rich SEI and surface modification for stable rechargeable batteries**  
*Catia Arbizzani* (University of Bologna, Bologna, Italy), Giampaolo Lacarbonara, Matthew Sadd, Josef Rizell, Luca Bargnesi, Aleksandar Matic
- 15:50 – 16:20**                      **Coffee Break**

## Session 4: T7 – ELECTROLYTES AND INTERFACES

**Chairmen:** Horstmann Birger (*Helmholtz-Institute Ulm*)  
Arbizzani Catia (*University of Bologna*)

- 16:20**                      **I7-03**  
**Sustainable polysalt and its multifunctional role in Li/Na metal solid-state polymer batteries**  
*Shanmukaraj Devaraj* (CIC energiGUNE, Vitoria-Gasteiz, Spain), Hicham-Ben Youcef, Pierre Ranque, Nicola Boaretto, Michel Armand

- 16:40**                      **O7-09**  
**Nitro Additives to Stabilize the Lithium Solid-electrolyte Interphase in Lithium Sulfur Batteries**  
*Graham N. Newton* (University of Nottingham, Nottingham, UK), Darren A. Walsh, Lee R. Johnson, Alex J. Kibler
- 16:55**                      **O7-10**  
**Effect of the preparation conditions of electrospun spinel-type high-entropy (Mn,Fe,Co,Ni,Zn) oxide nanofibers on lithium storage performance**  
*Saveria Santangelo* (Mediterranean University of Reggio Calabria, Reggio Calabria, Italy), Claudia Triolo, Mariam Maisuradze, Yanchen Liu, Min Li, Gioele Pagot, Alessandro Ponti, Vito Di Noto, Nicola Pinna, Marco Giorgetti
- 17:10**                      **O7-11**  
**Stable cycling of graphite in an ionic liquid electrolyte based on the polymerizable imidazolium cation**  
*T. Kakibe* (University of Hyogo, Hyogo, Japan), D. Hirai, S. Matsuda, T. Nakamura, and H. Kishi
- 17:25**                      **O7-12**  
**Deciphering the Critical Role of Interstitial Volume in Glassy Sulfide Superionic Conductors**  
*Han Su* (Zhejiang University, Hangzhou, China), Jiangping Tu
- 17:40**                      **O7-13**  
**Non-Corrosive Aluminium Battery Electrolytes via Anhydrous Salts**  
*Tomooki Hosaka* (Chalmers University of Technology, Gothenburg, Sweden), Patrik Johansson
- 17:55**                      **O7-14**  
**Unravelling The Mechanism Of Mg Stripping And Plating In Simple Salt-Glyme Electrolytes**  
*Darren A. Walsh* (University of Nottingham, Nottingham, UK)
- 18:10**                      **O7-15**  
**Determining the Reaction Route in Quasi-Solid-State Lithium Sulfur Batteries**  
*Jack W. Jordan* (University of Nottingham, Nottingham, UK), Margaret A. Smith, Darren A. Walsh, Graham N. Newton, Lee R. Johnson
- 18:25**                      **O1-03**  
**Penta-Coordinated Fe Phthalocyanine Bifunctional Electrocatalyst for Metal-Air Batteries**  
*Federico Tasca* (Universidad de Santiago de Chile, Santiago, Chile), Cesar Zuñiga, Nicolás Troncoso, Walter Orellana, Gabriel Abarca, Andrea Zitolo
- 18:40**                      **Poster Session: Wine & Cheese**

# FRIDAY September 05, 2024

## Session 1: T8 - LITHIUM METAL BATTERIES

**Chairmen:** Kulesza Pawel University of Warsaw  
Wang Wei Pacific Northwest National Laboratory

**08:00 I8-01**

**Faceted lithium crystal seeds: formation and function**

*Ping Liu (University of California, San Diego, USA), Zeyu Hui, Zhaohui Wu, Emma Hopkins*

**08:20 I8-02**

**Interplays of Composition and Function at the Interphases of Lithium Metal Anodes**

*Betar M. Gallant (Massachusetts Institute of Technology, Cambridge, USA)*

**08:40 O8-01**

**Fluorine-substituted halide solid electrolyte with enhanced stability towards lithium metal**

*Priya Ganesan (Helmholtz Institute Ulm (HIU), Ulm, Germany), Mervyn Soans, Musa Ali Cambaz, Ramon Zimmermanns, Ritambhara Gond, Stefan Fuchs, Yang Hu, Sebastian Baumgart, Mohsen Sotoudeh, Dominik Stepien, Helge Sören Stein, Axel Gross, Dominic Bresser, Alberto Varzi, Maximilian Fichtner*

**08:55 O8-02**

**Novel Fluorine-Free Single-Ion Conducting Polymer Electrolyte for Lithium Metal Batteries**

*Leo Gräber (Helmholtz Institute Ulm (HIU), Ulm, Germany), Dominic Bresser*

**09:10 O8-03**

**Understanding and Minimizing Capacity Losses in Li-Metal Batteries**

*Roy Marrache (Tel Aviv University, Tel Aviv, Israel), Tzach Mukra, Lina Faktorovich-Simon and Emanuel Peled*

**09:25 I8-03**

**Spatially Resolved EELS Analysis of Surface Species on Metallic Lithium for the Development of the Next Generation Batteries**

*Michel L. Trudeau (Concordia University, Montreal, Quebec, Canada), Frederic Voisard, Rene Veillette, Karim Zaghbi, Raynald Gauvin*

**09:45 O8-04**

**Understanding Peculiarities of Li-metal Anode Cycling**

*Sigita Trabesinger (Paul Scherrer Institute Villigen PSI, Switzerland), Eric Winter, Mohammed Srout, Juliette Billaud, David McNulty*

**10:00 O8-05**

**Highly Conductive Hybrid Ionogel Electrolytes With Ceramic-Rich Matrix For Ambient Temperature Lithium Batteries**

*Giuseppe Antonio Elia (Politecnico di Torino, Turin, Italy), Ying Zhang, Claudio Gerbaldi*

**10:15-10:45 Coffee Break**

## Session 2: T9 – REDOX FLOW BATTERIES

**Chairmen:** Trudeau Michel L. (*Concordia University*)  
Gallant Betar (*Massachusetts Institute of Technology*)

**10:45 K9-01**

**Way Beyond Lithium: ‘Open’ Battery Concepts**

Tom Zawodzinski (*University of Tennessee, Knoxville, USA*)

**11:10 I9-01**

**Proton Activity and Pathway in Aqueous Organic Redox Flow Battery Electrolyte**

Wei Wang (*Pacific Northwest National Laboratory, Richland, WA, USA*)

**11:30 O9-01**

**Investigating Microemulsion Structure and Properties for Electrochemical Application Development**

Adam E. Imel (*University of Tennessee-Oak Ridge Innovation Institute, Knoxville, USA*), Brian Barth, Muhammad Zulqarnain Arif, Mark Dadmun, Damilola Ojediji, Manolis Doxastakis, Thomas A. Zawodzinski

**11:45 O9-02**

**Progress and Challenges in Membrane-free Redox Flow Batteries**

Xiaohong Li (*University of Exeter, Cornwall, UK*)

**12:00 I9-02**

**Optimization and Evaluation of Utility of Highly Concentrated Iodine/Iodide Electrolytes for Redox Flow Batteries**

P.J. Kulesza (*University of Warsaw, Warsaw, Poland*), I.A. Rutkowska, J. Lubera, V. Di Noto, E. Negro, K. Vezzù

**12:20 O9-03**

**Stability Enhancement of Viologen Derivatives for Redox Flow Batteries by Molecular Engineering**

Rubén Rubio-Presa (*Universidad de Burgos, Burgos, Spain*), L. Lubián, Roberto Sanz, Edgar Ventosa

**12:35 O9-04**

**Diagnosis of Charge Propagation Dynamics in Polytungstate Hybrid Electrolytes for Application in Redox Flow Batteries**

Iwona A. Rutkowska (*University of Warsaw, Warsaw, Poland*), Claudia Janiszewska, Keti Vezzù, Enrico Negro, Vito Di Noto, Pawel J. Kulesza

**12:50 O9-05**

**Diradicaloid Redox Mediators for Li-O<sub>2</sub> Batteries**

Davide Mesto (*Università degli Studi di Bari “Aldo Moro”, Bari, Italy*), Francesca Soavi, Alessandro Brilloni, Angela Punzi, Davide Blasi, Gianluca Maria Farinola

**13:05 Closing Ceremony**

# **Scientific program**

## **Poster Sessions**

# Poster Session 1 (PS1)

## T1: ADVANCED ANODES AND CATHODES

P1-01	Canini Mattia	P1-12	Mados Edi
P1-02	Capkova Dominika	P1-13	Panja Soutam
P1-03	Cioffi Andrea	P1-14	Park Seong-Eun
P1-04	De Marco Luisa	P1-15	Pullano Tobia
P1-05	Diolaiti Valentina	P1-16	Rangasamy Vijay
P1-06	Gerle Martina	P1-17	Soto Fernando
P1-07	Guchok Olga	P1-18	Vengarithody Rishikesh
P1-08	Javaregowda Bharathkumar	P1-19	Walczak Katarzyna
P1-09	Kim Chaekyung	P1-20	Zhecheva Ekaterina
P1-10	Lee Je-Nam	P1-21	Zhu Liping
P1-11	Lee Je-Nam	P1-22	Gentile Andrea

## T2: SAFETY, SUSTAINABILITY AND CIRCULAR ECONOMY

P2-01	Cingolani Alessandro	P2-05	Scaramuzzo Francesca Anna
P2-02	De Giorgio Francesca	P2-06	Trovò Andrea
P2-03	Huang Zijie	P2-07	Zanoni Camilla
P2-04	Hyun Jungeun	P2-08	Zhang Mengqi

## T5: ADVANCED METHODS

P5-01	Battaglia Corsin	P5-06	Lamacchia Lorenzo
P5-02	Camilletti Lorenzo	P5-07	Ryu Ji-Hyun
P5-03	D'Aiuto Gabriele	P5-08	Sinani Ariela
P5-04	Fanciullini Luca	P5-09	Skarjan Leon
P5-05	Kothalawala Veenavee Nipunika		

## T6: SOLID STATE BATTERIES

P6-01	Arouca Maia Beatriz	P6-03	Gomes Beatriz
P6-02	Garcia-Calvo Oihane	P6-04	Hamamoto Koichi

## T9: REDOX FLOW BATTERIES

P9-01	Kim Changseong	P9-03	Lee Seungjin
P9-02	Kim Suyeon	P9-04	Yun Deokhee

# MONDAY September 02, 2024

## T1: ADVANCED ANODES AND CATHODES

### **P1-01**

**Solid-state vs. Spray-drying synthesis for Mg-doped  $\text{P2-Na}_{0.67}\text{Fe}_{0.5}\text{Mn}_{0.5}\text{O}_2$  as cathode material for Sodium-Ion Batteries**

Mattia Canini (University of Pavia, Pavia, Italy), Daniele Callegari, Samuele Santarelli, Matteo Bianchini, Eliana Quartarone

### **P1-02**

**Si/Graphite Anode Integration for High Energy Li-ion Batteries**

Dominika Capkova (University of Limerick, Limerick, Ireland), Susan Sananes-Israel, Hugh Geaney, Kevin M. Ryan

### **P1-03**

**Influence of different synthetic routes in the structure and properties of lithium rich materials with high content of nickel for lithium ion batteries**

Andrea Cioffi (Sapienza University of Rome, Rome, Italy), Arcangelo Celeste, Laura Silvestri, Sergio Brutti

### **P1-04**

**Hybrid nanostructured systems for sustainable batteries**

Luisa De Marco (CNR NANOTEC, Lecce, Italy), Giuseppe Mianulli, Sabrina Di Masi, Simone Bruno

### **P1-05**

**Revolutionizing Lithium-Ion Battery Technology: An Innovative Porous Germanium Anode Design**

Valentina Diolaiti (Università di Ferrara, Ferrara, Italy), Alfredo Andreoli, Marco Ricci, Valerio Sperati, Giulio Mangherini, Remo Zaccaria Proietti, Donato Vincenzi

### **P1-06**

**Sulfurized Polyacrylonitrile (SPAN) Cathodes in Lithium-Sulfur Batteries: Investigating the Influence of the Cathode Microstructure on the Electrochemical Performance**

Martina Gerle (German Aerospace Center (DLR), Stuttgart, Germany), Robin Moschner, Peter Michalowski, K. Andreas Friedrich, Maryam Nojabae

### **P1-07**

**One-shot Extruded Ionogel Polymer Electrolytes for Flexible Lithium and Sodium-ion batteries**

Olga Gucho (Tel Aviv University, Tel Aviv, Israel), Gilat Ardel, Hadar Nakar, Anna Greenbaum, Yuri Feldman, Diana Golodnitsky



## **P1-08**

### **Synergistic Effect of Lactam and Pyridine Nitrogens on Polysulfide Chemisorption and Electrocatalysis in Lithium Sulfur Batteries**

Bharathkumar H. Javaregowda (CSIR-National Chemical Laboratory, Pune, India), Radhakisan Kargude, Sarika Birajdar, Bhavana R. Shivankar, Sailaja Krishnamurty, Lathe A. Jones, Rachel A. Caruso, Kothandam Krishnamoorthy

## **P1-09**

### **Poly(2,2,6,6-tetramethylpiperidine-N-oxyl-4-vinyl ether)-impregnated carbon nanotube cluster for high-properties organic battery**

Chaekyung Kim (Cheongju University, Cheongju, Republic of Korea), Jae-Kwang Kim

## **P1-10**

### **Investigation of the Eco-friendly Cathode Fabrication with Fluorine-free Binder**

Je-Nam Lee (Korea Electronics Technology Institute (KETI), Gyeonggi do, South Korea), So-Young Nam, Sang-Gil Woo, Ji-Sang Yu

## **P1-11**

### **Investigation of the effect on the cutting process on the dry process cathode fabrication**

Je-Nam Lee (Korea Electronics Technology Institute (KETI), Gyeonggi do, South Korea), Byungjun Choi, Sang-Gil Woo, Ji-Sang Yu

## **P1-12**

### **LFP cathode/current collector microfiber-meshes with bi-and interlayered architectures for Li-ion battery**

Edi Mados (Tel Aviv University, Tel Aviv/Israel), Inbar Atar, Yuval Gratz, Mai Israeli, Olga Kondrova, Victor Fourman, Dov Sherman, Diana Golodnitsky, Amit Sitt

## **P1-13**

### **Potassium Tin Chloride ( $K_2SnCl_6$ ) electrodes: Unveiling the Potential of Chloride Ion Batteries through the Anionic Shuttle Mechanism**

Soutam Panja (Helmholtz Institute Ulm for Electrochemical Energy Storage (HIU), Ulm, Germany), Yidong Miao, Johannes Döhn, Jaehoon Choi, Simon Fleischmann, Shivaraju Guddehalli Chandrappa, Thomas Diemant, Axel Groß, Guruprakash Karkera, Maximilian Fichtner

## **P1-14**

### **A New Ternary Co-Free LNO Cathodes for Electric Vehicle Batteries**

Seong-Eun Park (Hanyang University, Seoul, South Korea), Yang-Kook Sun

## **P1-15**

### **Carbon coated LiMPO<sub>4</sub> olivine cathode for high energy applications**

Tobia Pullano (University of Padua, Padua, Italy), Gioele Pagot, Vito Di Noto

## **P1-16**

### **Exploration of polyanionic orthosilicate $Na_2FeSiO_4$ as cathode material for sodium-ion batteries: Solvothermal synthesis and electrochemical properties**

Vijay Shankar Rangasamy (Department of Physics and Astronomy, KU Leuven, Belgium), Savitha Thayumanasundaram, Jean-Pierre Locquet

### **P1-17**

**Optimizing Wet SEI Layer Stability in Lithium/Sodium-Ion Batteries: Insights from Ab-initio Molecular Dynamics and Machine Learning Analysis of Salt Concentration Effects**

*Fernando A. Soto (The Penn State University- Penn State Greater Allegheny, McKeesport, USA)*

### **P1-18**

**Improving the cycling performance of Co,Ni free Sodium layered oxide cathode with phosphate based surface coating**

*Rishikesh Vengarathody (Helmholtz Institute Ulm (HIU), Ulm, Germany) Renuka Remesh, Thomas Diemant, Prabeer Barpanda, Maximilian Fichtner*

### **P1-19**

**The relationship between the morphology and electrochemical properties of Li- and Mn-rich NMC cathode materials for Li-ion batteries**

*Katarzyna Walczak (AGH University of Science and Technology, Krakow, Poland), Justyna Płotek, Boyang Fu, Andrzej Kulka*

### **P1-20**

**How to stabilize the oxygen redox activity in oxide electrodes?**

*Ekaterina Zhecheva (Bulgarian Academy of Sciences, Sofia, Bulgaria), Rositsa Kukeva, Mariya Kalapsazova, Martin Nedyalkov, Radostina Stoyanova*

### **P1-21**

**Excellent stability and high efficiency for FTO/glass-encapsulated halide perovskite photoanodes**

*Liping Zhu (Zhejiang University, Hangzhou, China), Nan Jiang*

### **P1-22**

**Anode-less Electrodes for Lithium Metal Batteries**

*Andrea Gentile (Sapienza University of Rome, Rome, Italy), Margherita Moreno, Nicholas Carboni, Maria Lucia Pace, Antonio Santagata, Sergio Brutti*

## **T2: SAFETY, SUSTAINABILITY AND CIRCULAR ECONOMY**

### **P2-01**

#### **Green Recycling of lithium-ion batteries**

*Alessandro Cingolani (Università di Genova (UNIGE), Genova, Italy), Hanxin Mei, Roberto Spotorno, Paolo Piccardo*

### **P2-02**

#### **Mining tailings as secondary raw materials for the development of manganese-based oxides for green electrochemical energy storage and conversion systems**

*Francesca De Giorgio (Consiglio Nazionale delle Ricerche, Istituto per lo Studio dei Materiali Nanostrutturati (CNR-ISMN), Bologna, Italy), Alberto Riminucci, Manju Singh, Chiara Dionigi, Lorenzo Squillantini, Marco Natali, Giampiero Ruani, Daniela Caschera, Alessio Mezzi, Marco Agostini, Lorenzo Angeletti, Sergio Brutti, Simone Quaranta*

### **P2-03**

#### **Unveiling the formation and evolution of LiH in commercial lithium-ion batteries**

*Zijie Huang (The Chinese University of Hong Kong, Hong Kong SAR, China), Yi-Chun Lu*

### **P2-04**

#### **Research on Recycling Waste Lithium-ion Batteries and Waste Graphite via Acid Treatment**

*Jungeun Hyun (Korea Automotive Technology Institute, Cheonan-si Chungnam, Republic of Korea), Dongkyu Son, Wonjin Park*

### **P2-05**

#### **C-based materials for supercapacitors from agricultural wastes**

*Francesca A. Scaramuzzo (Sapienza University of Rome, Rome, Italy), Pierfrancesco Atanasio, Rubia Zampiva, Mauro Pasquali*

### **P2-06**

#### **Techno-economic assessment of future flow batteries based on real device/market parameters**

*Andrea Trovò (University of Padua, Padua, Italy), Nicola Poli, Giacomo Marini, Massimo Guarnieri*

### **P2-07**

#### **Solvometallurgical approach for the recovery of valuable metals from black mass in the recycling of EoL batteries**

*Camilla Zanoni (University of Pavia, Pavia, Italy), Daniele Callegari, Daniele Merli, Eliana Quartarone*

### **P2-08**

#### **Study On Thermal Runaway And Gas Generation Characteristics Of Lithium Metal Battery**

*Mengqi Zhang (China Agricultural University, Beijing, China), Xuning Feng, Chengshan Xu, Huaibin Wang, Chenyu Zhang, Fachao Jiang*

## T5: ADVANCED METHODS

### **P5-01**

**Towards autonomous robotic battery materials research & innovation – the Aurora platform**

Corsin Battaglia (Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland), Enea Svaluto-Ferro, Edan Bainglass, Nukorn Plainplan, Graham Kimbell, Benjamin Kunz, Maximilian Becker, David Reber, Ruben-Simon Kühnel, Peter Kraus, Loris Ercole, Francisco F. Ramirez, Giovanni Pizzi, Nicola Marzari, Yuhui Hou, Stefano Di Leone, Andrew Paterson, Dominique Sauter, Emmanouil Tzirakis, Jos de Keijzer, Amira Abou-Hamdan, Michael Schneider

### **P5-02**

**Electrochemical impedance spectroscopy on bifunctional air cathodes for rechargeable Zinc-air batteries: Insights into electrode performance and failure mechanisms**

Lorenzo Camilletti (Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Ulm, Germany), Alessandro Brega, Sylvain Brimaud

### **P5-03**

**Fluorescence micro-spectroscopy applied to Lithium-Oxygen Batteries**

Gabriele D'Aiuto (University of Rome La Sapienza, Rome, Italy), Sergio Brutti, Francesco Vitucci

### **P5-04**

**Mössbauer Spectroscopy Insights into GeFe<sub>2</sub>O<sub>4</sub> as a Potential Anode for Lithium and Sodium Ion Batteries**

Luca Fanciullini (University of Florence, Sesto Fiorentino, Italy), Marco Ambrosetti, Marco Lantieri, Alberto Cini, Maria Cristina Mozzati, Maria Fittipaldi, Marcella Bini

### **P5-05**

**Determining the effects of Tungsten Doping on Lithium Nickel Oxide via Compton Scattering**

Veenavee Nipunika Kothalawala (LUT University, Lappeenranta, Finland), Kosuke Suzuki, Xin Li, Bernardo Barbiellini, Johannes Nokelainen, Ilja Makkonen, Rafael Ferragut, Pekka Tynjälä, Petteri Laine, Juho Välikangas, Tao Hu, Ulla Lassi, Kodai Takano, Naruki Tsuji, Yosuke Amada, Assa Aravindh Sasikala Devi, Matti Alatalo, Yoshiharu Sakurai, Hiroshi Sakurai, Mohammad Babar, Venkatasubramanian Vishwanathan, Hasnain Hafiz, Arun Bansil

### **P5-06**

**Do It Yourself: prototyping a cell for ion conductivity measurements in liquids**

Lorenzo Lamacchia (University of Turin, Turin, Italy), Asya Mazzucco, Niccolò Tricerri, Mauro Francesco Sgroi, Yaroslav Filinchuk, Marcello Baricco

### **P5-07**

**Capacity Fading Mechanism in Ni-rich Cathode Particle Interior**

Ji-Hyun Ryu (Hanyang University, Seoul, South Korea), Yang-Kook Sun

### **P5-08**

**Exploring discharge dynamics' influence on anode-free lithium metal battery performance**

Ariela Sinani (Drexel University, Philadelphia, USA), Wesley Chang

## **P5-09**

**Isotope-based characterization of silicon negative electrode interface by online electrochemical mass spectrometry**

*Leon Skarjan (Paul Scherrer Institute, Villigen PSI, Switzerland), Pierre Boillat, Thomas J. Schmidt, Sigita Trabesinger*

## **T6: SOLID STATE BATTERIES**

### **P6-01**

**All solid-state coaxial battery: a complementary way to harvest and store energy**

*Beatriz Arouca Maia (University of Porto, Porto, Portugal), A. Nuno Guerreiro, Natália Magalhães, Eunice Cunha, Raquel Miriam Santos, Maria Helena Braga*

### **P6-02**

**Design, manufacturing and scale-up of composite cathodes for high performance solid state batteries**

*Oihane Garcia-Calvo (CIDETEC, Donostia-San Sebastian, Spain), Monica Cobos, Izaskun Combarro, Nicola Boaretto, María Martínez-Ibañez, Gerome Godillot, Idoia Urdampilleta, Andriy Kvasha*

### **P6-03**

**NMC955 cathode for all-solid-state lithium batteries: PVDF-free synthesis production**

*Beatriz Moura Gomes (University of Porto, Porto, Portugal), Manuela C. Baptista, Ander Orue, Sylwia Terlicka, Carlos Fonseca, Jasmin Smajic, Bhattacharjya Dhrubajyoti, Ville Kekkonen, Willar Vonk, Artur Tron, Andy Schena, Anwar Ahniyaz, M. Helena Braga*

### **P6-04**

**Basic studies of continuous cold sintering process using a heated roll press for mass production of all-solid-state batteries**

*Koichi Hamamoto (National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan), Hiroki Itasaka, Kyuichi Yasui, Zheng Liu*

## **T9: REDOX FLOW BATTERIES**

### **P9-01**

**Impact of supporting-electrolyte composition on the performance of aqueous iron-vanadium redox flow battery**

*Changseong Kim (Dongguk University-Seoul, Korea), Gyungmin Hwang, Joonhyeon Jeon*

### **P9-02**

**Effect of a cetyltrimethylammonium bromide as bromine complexing agent on the performance of zinc-bromine redox flow batteries**

*Suyeon Kim (University-Seoul, Seoul, Republic of Korea), Seungjin Lee, Deokhee Yun, Joonhyeon Jeon*

### **P9-03**

**An efficient and versatile naphthalene diimide-based redox species with two sulfonic-acid functional groups**

*Seungjin Lee (Dongguk University-Seoul, Seoul, Republic of Korea), Jaehyun Jung, Suyeon Kim, Joonhyeon Jeon*

### **P9-04**

**Capacity retention analysis in all vanadium redox flow batteries**

*Deokhee Yun (Dongguk University-Seoul, Seoul, Korea), Doeun Kim, Changseop Kim, Chaerin Yoon, Soyeon Park, Gyoyoon Koo, Joonhyeon Jeon*

## Poster Session 2 (PS2)

### T3: ALTERNATIVES TO LITHIUM

P3-01	Desta Gidey Bahre	P3-05	San Roman Gallego Casilda Raul
P3-02	Faktorovich Lina	P3-06	Wildersinn Leonie
P3-03	Fujimoto Hiroyuki	P3-07	Yadav Jitendra Kumar
P3-04	Kimura Kento	P3-08	Zhu Liping

### T4: COMPUTATIONAL MODELLING

P4-01	Alam Khorsed	P4-04	Sedlařík Marek
P4-02	Alghamdi Nada	P4-05	Wang Shuailong
P4-03	Ghiyami Sajjad		

### T7: ELECTROLYTES AND INTERFACES

P7-01	Assa Tamir	P7-07	Pedroso Rúben
P7-02	Balzat Lucas	P7-08	Ramasamy Hari Vignesh
P7-03	Liuro Peluso Letizia	P7-09	Rangasamy Vijay Shankar
P7-04	Lin Xiaodong	P7-10	Santangelo Saveria
P7-05	Mustarelli Piercarlo	P7-11	Tariq Fatima
P7-06	Palluzzi Matteo	P7-12	Wu Quan

### T8: LITHIUM METAL BATTERIES

P8-01	Boudjelida Soufiane	P8-03	Srout Mohammed
P8-02	Patnaik Sai Gourang		

### T9: REDOX FLOW BATTERIES

P9-05	Bordignon Davide	P9-07	Di Masi Sabrina
P9-06	Capodarca Francesco		

**THURSDAY September 05, 2024**

**T3: ALTERNATIVES TO LITHIUM**

**P3-01**

**Studies and Tests in Sodium Salts Secondary Batteries of Solid-State Electrolyte Materials**

*Gidey Bahre Desta (University of Padua, Padua, Italy), Gioele Pagot, Ketì Vezzù, Enrico Negro, Vito Di Noto*

**P3-02**

**Sodium Metal Deposition and Stripping in Carbonate Electrolytes**

*Lina Faktorovich (Tel Aviv University, Tel Aviv, Israel), Roy Marrache, Tamir Assa, Emanuel Peled*

**P3-03**

**Charge–discharge performances and mechanisms of Zn-ion batteries with  $\beta$ -MnO<sub>2</sub>,  $\gamma$ -MnO<sub>2</sub>, and Mn<sub>2</sub>O<sub>3</sub> positive electrodes**

*Hiroyuki Fujimoto (Kyoto University, Kyoto, Japan), Masaki Okada, Masaaki Yoshikawa, Keiji Shimoda, So Fujinami, Masayuki Morita, Zempachi Ogumi, Takeshi Abe*

**P3-04**

**TEMPO-Oxidized Cellulose Nanofiber Hydrogel Electrolytes for Zinc Rechargeable Batteries**

*Kento Kimura (Tokyo University of Agriculture and Technology, Tokyo, Japan), Vittorio Marangon, Taiga Fukuda, Mana Suzuki, Jusef Hassoun, Yoichi Tominaga*

**P3-05**

**Study of secondary Magnesium batteries prototypes based on Ionic Liquid Electrolytes with highly disordered Mg salt**

*Raul San Roman (University of Padova, Padova, Italy), Ketì Vezzù, Gioele Pagot, Vito Di Noto*

**P3-06**

**Manufacturer Discrepancies in Potassium Metal: Impact on Battery Performance and Detection of Sodium Traces**

*Leonie Wildersinn (Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, Germany), Fabian Jeschull*

**P3-07**

**2D graphitic carbon nitride as the efficient cathode material for the non-aqueous rechargeable Iron-ion battery under an ambient environment**

*Jitendra Kumar Yadav (Indian Institute of Technology Jodhpur, India), Ambesh Dixit*

**P3-08**

**Potassophilic skeleton achieving highly stable potassium metal anode**

*Liping Zhu (Zhejiang University, Hangzhou, China), Jiaheng Zhang*



## T4: COMPUTATIONAL MODELLING

### **P4-01**

**Theoretical study on high entropy oxyfluoride cathodes for sodium-ion batteries**

*Khorsed Alam (Bar-Ilan University, Ramat Gan, Israel), Dan Thomas Major*

### **P4-02**

**Construction And metrological Validation Of Digital Models (Digital Twins) For Materials And Energy Storage Devices**

*Nada Alghamdi (Politecnico di Torino, Turin, Italy), Paolo De Angelis, Matteo Fasano, Pietro Asinari, Eliodoro Chiavazzo*

### **P4-03**

**Empowering Sustainability: Regulation 2023/1542 and the Future of Battery Waste Management in the EU**

*Sajjad Ghivami (University of Salento, Lecce, Italy), Fabrizio Marrone, Giuseppe Esposito Corcione, Claudio Mele*

### **P4-04**

**Comparative analysis of SVR and ANFIS methods for estimating SOH in lithium-ion batteries**

*Marek Sedlářík (Brno University of Technology, Brno, Czech Republic), Dominika Capkova, Tomáš Kazda, Petr Vyroubal*

### **P4-05**

**Quantum chemical investigation of multi-redox states in organic conjugated redox ladder type polymers for electrochemical energy storage systems**

*Shuailong Wang (University of Bologna, Bologna, Italy), Daniele Fazzi, Fabrizia Negri*

## T 7: ELECTROLYTES AND INTERFACES

### **P7-01**

**The Effects Of FEC On Sodium Plating Efficiency And SEI Formation In PC Based Electrolytes**

*Tamir C. Assa (Tel Aviv University, Tel Aviv, Israel), Emanuel Peled*

### **P7-02**

**Structure And Ionic Conductivity In The Pseudo-Binary System  $\text{Li}_4\text{SiS}_4 - \text{Li}_4\text{SnS}_4$**

*Lucas G. Balzat (Max Planck Institute for Solid State Research, Stuttgart, Germany), Sascha Dums, Igor Moudrakowski, Armin Schulz, and Bettina V. Lotsch*

### **P7-03**

**Tackling the effect of additives in Lithium-sulfur battery technology**

*Letizia Lirò Peluso (University of Nottingham, Nottingham, United Kingdom)*

## **P7-04**

### **A Novel Carbonate Solvent Based Electrolyte for High-Voltage Lithium-Based Batteries**

*Xiaodong Lin* (Université catholique de Louvain, Louvain-la-Neuve, Belgium), *Xiaozhe Zhang, Pan Xu, Jianing Duan, Quanfeng Dong, Alexandru Vlad*

## **P7-05**

### **PVDF-HFP Based, Quasi-Solid Nanocomposite Electrolytes for Lithium Metal Batteries**

*Piercarlo Mustarelli* (University of Milano Bicocca, Milan, Italy), *Eleonora Carena, Lorenzo Mezzomo, Nicholas Vallana, Nicole Ceribelli, Giovanni Di Liberto, Silvia Mostoni, Chiara Ferrara, Michele Mauri, Roberto Lorenzi, Livia Giordano, Riccardo Ruffo,*

## **P7-06**

### **Greener approaches to produce ionic liquids tailored for a new application in high-voltage lithium-ion batteries**

*Matteo Palluzzi* (Sapienza University of Rome, Rome, Italy), *Akiko Tsurumaki, Aleksander Matic, Paola D'Angelo, Maria Assunta Navarra*

## **P7-07**

### **Beyond conventional Lithium-ion Battery separators**

*Rúben Pedrosa* (CeNTI - Centre for Nanotechnology and Smart Materials, Portugal), *Liliana Truta, Sónia Alves, David Esteves, José Gonçalves*

## **P7-08**

### **Deciphering the electrode/electrolyte interface reaction of high voltage $\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Mn}_{0.1}\text{O}_2/\text{Li}_6\text{PS}_5\text{Cl}$ solid-state batteries**

*Hari Vignesh Ramasamy* (Paul Scherrer Institute, Villigen PSI – Switzerland), *Carlos Antonio Fernandes Vaz, Valerie Siller, Barthelémy Lelotte, Robin Norbert Wullich, Kumar Yalamanchili, Helmut Rudigier, Mario El Kazzi*

## **P7-09**

### **Organic-Inorganic Hybrid Solid Polymer Electrolytes based on Poly(ethylene oxide) and $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7}(\text{PO}_4)_3$ for Solid-state Batteries**

*Vijay Shankar Rangasamy* (KU Leuven, Leuven, Belgium), *Savitha Thayumanasundaram, Jean-Pierre Locquet*

## **P7-10**

### **Effect of the preparation conditions of electrospun spinel-type high-entropy (Mn, Fe, Co, Ni, Zn) oxide nanofibers on lithium storage performance**

*Saveria Santangelo* (Mediterranean University of Reggio Calabria, Reggio Calabria, Italy), *Claudia Triolo, Mariam Maisuradze, Yanchen Liu, Min Li, Gioele Pagot, Alessandro Ponti, Vito Di Noto, Nicola Pinna, Marco Giorgetti*

## **P7-11**

### **Systematic assembly of reactive metal interphases**

*Fatima Tariq* (Drexel University, Philadelphia, USA), *Wesley Chang*

## **P7-12**

### **Dual-Anions Ionic Liquid Electrolyte Enabled High-Temperature Lithium-Metal Batteries**

*Quan Wu* (Chalmers University of Technology, Gothenburg, Sweden), *Shizhao Xiong, Aleksandar Matic*

## T8: LITHIUM METAL BATTERIES

### **P8-01**

**Flexible Synthesis of Tin-Based Bimetallic Electrocatalysts on Carbon Supports for Sustainable and Low-Cost Metal–Air Batteries**

*Soufiane Boudjelida (Univeristy of Padua, Padua, Italy), Pietro Mattana, Enrico Negro, Vito Di Noto*

### **P8-02**

**Li thin films by electrodeposition**

*Sai Gourang Patnaik (ImecLeuven, Belgium), Farzad Rouzafzay, Philippe Vereecken*

### **P8-03**

**Thin lithium metal anode and artificial SEI coatings enabled by PVD methods**

*Mohammed Srouf (Centre Suisse d'Électronique et de Microtechnique (CSEM), Switzerland), Nicolas Rospars, Chengyin Fu, Andrea Ingenito*

## T9: REDOX FLOW BATTERIES

### **P9-05**

**Understanding Shunt Current In Flow Batteries: A Multiphysics Approach To Analysis And Mitigation**

*Davide Bordignon (University of Padua, Padua, Italy), Andrea Trovò, Massimo Guarnieri*

### **P9-06**

**Biochar as sustainable component of Vanadium redox flow batteries**

*Francesco Capodarca (University of Bologna, Bologna, Italy), Sara El Yamani, Antonio Primante, Andrea Contin, Francesca Soavi*

### **P9-07**

**New sustainable carbonaceous material derived from residue cork powder for semi-solid redox flow batteries**

*Sabrina Di Masi (National Research Council, Institute of Nanotechnology (CNR-NANOTEC), Lecce, Italy), Martina Scaramuzzo, Clara Piccirillo, Francesca De Giorgio, Alessandro Brilloni, Francesca Soavi, Luisa De Marco*