



## 24th International Conference on Solid State Ionics (SSI24)

London, United Kingdom, 2024 July 14th - 19th

Conference Chairs: John Kilner and Stephen Skinner

### Conference Program

July 14th - Day 1 (Sunday)	
10:00 - 17:00	<b>Tutorials - See the program on the "Tutorials" tab</b>
18:00 - 20:00	<b>Welcome Reception at the QEII</b>
July 15th - Day 2 (Monday)	
07:30 - 08:30	<b>Registration</b>
08:30 - 08:50	<b>Opening Session: Prof. Yildiz and Baroness Brown. Room: Fleming</b>
	<b>Plenary Session 1. Room: Fleming</b> Chair: John Kilner
08:50 - 09:40 Fleming-T1	<u>Roger De Souza</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University, 52074 Aachen, Germany</i> ) Look Both Ways Before Crossing: Views from the Intersection of Experiment and Simulation
09:40 - 10:00	<b>Session Change</b>
	<b>2A1 Lithium Conductors. Room: Fleming</b> Chair: Alex Morata
10:00 - 10:30 Fleming-K1	<u>H. Martin R. Wilkening</u> ( <i>Institute for Chemistry and Technology of Materials, NAWI, Graz University of Technology, Graz, Austria</i> ) NMR at cryogenic temperatures to study lithium ion dynamics in electrolytes with ultrafast charge carriers
10:30 - 10:45 Fleming-O1	<u>Arianna Pesce</u> ( <i>Center for Cooperative Research on Alternative Energies (CIC energiGUNE), Basque Research and Technology Alliance (BRTA), Parque Tecnológico de Álava, Albert Einstein, 48, 01510, Vitoria-Gasteiz, Spain</i> ), Nico Zamperlin, Ander Orue, Pedro López-Aranguren Exploring the Interfacial Dynamics and Ion Transport of Sulfide Electrolytes in Solid-State Batteries
	<b>2A2 Anion Conductors. Room: Westminster</b> Chair: Stephen Skinner
10:00 - 10:30 Westminster-K1	<u>John Irvine</u> ( <i>School of Chemistry, University of St Andrews, St Andrews, Fife KY16 9ST, UK</i> ), Shuoshuo Zhang Manipulating Short Range Order/Disorder in Scandia Zirconias to Optimise Ionic Conductivity and its Stability
10:30 - 10:45 Westminster-O1	<u>Ahmad Shaur</u> ( <i>MESA+ Institute for Nanotechnology, University of Twente, Enschede 7500 AE, The Netherlands</i> ), Henny J.M. Bouwmeester Impact of defect interactions on the electrical conductivity of gadolinium-doped ceria
	<b>2A3 Protonic Conductors. Room: St.James</b> Chair: Kang Taek Lee
10:00 - 10:30 St.James-K1	<u>Sandrine Ricote</u> ( <i>Colorado School of Mines</i> ), Huayang Zhu, Robert Kee Recent Progress and Challenges in Protonic Ceramic Electrolysis Cells
10:30 - 10:45 St.James-O1	<u>Melanie Anstiss</u> ( <i>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</i> ), Maximilian Weiss, Matthias Weil, Alexander K. Opitz Proton Uptake in Perovskite Structures: Insights from In-situ Techniques on BaFe <sub>0.8</sub> Y <sub>0.2</sub> O <sub>3-δ</sub>
	<b>2A4 Advanced Techniques. Room: Moore</b> Chair: Monica Burriel
10:00 - 10:30 Moore-K1	<u>Ryan O'Hayre</u> ( <i>Colorado School of Mines</i> ), Jake Huang, Neal Sullivan, Andriy Zakutayev Electrochemistry Meets Big Data: Multi-Dimensional Electrochemical "Mapping" of Fuel Cells and Batteries Enabled by Rapid Acquisition and Analysis of >20,000 Impedance Measurements via a Novel Hybrid Electrochemical Impedance Spectroscopy (HEIS) Method.
10:30 - 10:45 Moore-O1	<u>Janis K. Eckhardt</u> ( <i>Institute of Theoretical Physics, Justus Liebig University, Heinrich-Buff-Ring 16, 35392 Giessen, Germany</i> ), Till Fuchs, Simon Burkhardt, Peter J. Klar, Jürgen Janek, Christian Heiliger Challenges in the Impedance Analysis of Solid-State Systems - Current Constriction at the Li LLZO Interface
	<b>2A5 Batteries. Room: Abbey</b> Chair: Nuria Garcia-Araez
10:00 - 10:30 Abbey-K1	<u>Wolfgang Zeier</u> ( <i>University of Muenster</i> ) Pressure effects and transport limitations solid-state battery composites
10:30 - 10:45 Abbey-O1	<u>Ruijie Zheng</u> ( <i>School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo 152-8552, Japan.</i> ), Shigeru Kobayashi, Yuki Watanabe, Jun Deng, Ryo Nakayama, Kazunori Nishio, Ryota Shimizu, Makoto Moriya, Taro Hitosugi 5 V-class All-solid-state Battery Operation Using Li(FSA)(SN) <sub>2</sub> Molecular Crystal Solid Electrolyte
	<b>2A6 Solid Oxide Cells. Room: Gielgud</b> Chair: Alodia Orera
10:00 - 10:30 Gielgud-K1	<u>Peter Vang Hendriksen</u> ( <i>Department of Energy Conversion and Storage, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark</i> ), Peyman Khajavi, Henrik Lund Frandsen, Shu Wang, Morten Phan Klitkou, Mohamad Khoshkalam, Veronica Humlebæk Jensen, Sade Ahmed Sheik Mohammed Aw-Ali, Javier Zamudio Garcia, Anke Hagen, Bhaskar Reddy Sudireddy SOEC materials; opportunities and challenges
10:30 - 10:45 Gielgud-O1	<u>Bowen Li</u> ( <i>Department of Energy Conversion and Storage, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark</i> ), Anders Bogh Jacobsen, Peter Blennow, Ming Chen Impact of Si and Al impurities on the degradation of Ni/YSZ fuel electrode supported solid oxide electrolysis cells
10:45 - 11:15	<b>Coffee Break</b>



<p><b>3A1 Lithium Conductors. Room: Fleming</b> Chair: H. Martin R. Wilkening</p>	
11:15 - 11:35 Fleming-I1	<u>Alex Morata</u> ( <i>Catalonia Institute for Energy Research (IREC), Sant Adrià de Besos, 08930, Barcelona, Spain.</i> ), Juan Carlos Gonzalez-Rosillo, Fernanda Monteiro, Francesco Chiabrera, Apostolos Panagiotopoulos, David Diercks, Ainara Aguadero, John Kilner, Albert Tarancon Improving the Interfaces in Ceramic Thin-film Solid State Li Ion Batteries: Materials Exploration and Devices
11:35 - 11:50 Fleming-O1	<u>Shogo Miyoshi</u> ( <i>National Institute for Materials Science (NIMS)</i> ), Yoshihiko Nishihara, Fumihiko Ichihara, Takahisa Ohno, Kazutaka Mitsuishi, Naoaki Kuwata, Takuya Masuda, Kazunori Takada Effect of Cobalt-substitution on Phase Relation and Sinterability of Lithium-ion Conductor Based on Lithium Titanium Orthophosphate
11:50 - 12:05 Fleming-O2	<u>Subhash Chandra</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, United States</i> ), Iradwikanari Waluyo, Adrian Hunt, Joshua T. Wright, Cole D. Fincher, Yet-Ming Chiang, Carlo U. Segre, Bilge Yıldız Electrochemically induced local structure change impedes Li-ion mobility in garnet-type lithium solid-electrolyte
12:05 - 12:20 Fleming-O3	<u>Pedram Ghorbanzade</u> ( <i>Centre for Cooperative Research on Alternative Energies (CIC energiGUNE), Basque Research and Technology Alliance (BRTA), Alava Technology Park, Albert Einstein 48, Vitoria-Gasteiz 01510, Spain</i> ), Juan Miguel López del Amo Application of solid-state NMR in the design and characterization of LLZO-based polymer Composite electrolytes
<p><b>3A2 Anion Conductors. Room: Westminster</b> Chair: John Irvine</p>	
11:15 - 11:35 Westminster-I1	Lucia Corti, Dinu Iuga, Amrit Venkatesh, Ivan Hung, Zhehong Gan, John B. Claridge, Matthew J. Rosseinsky, <u>Frédéric Blanc</u> ( <i>Department of Chemistry, University of Liverpool, UK</i> ) Oxide Ion Diffusion Mechanism in Melilite and other Phases
11:35 - 11:50 Westminster-O1	<u>Kevin Huang</u> ( <i>University of South Carolina, US</i> ) Fast Ion Conductors Based on Cubic Perovskite Structure
11:50 - 12:05 Westminster-O2	<u>Carsten Korte</u> ( <i>Institute of Energy- and Climate Research (IEK-14), Forschungszentrum Jülich, DE</i> ), Christian Rodenbücher, Dominik Wrana, Benedykt Jany, Adam Kruk, Franciszek Krok Electrochemically Driven Redox Phenomena in Oxide Ion Conducting Solid Electrolytes
12:05 - 12:20 Westminster-O3	<u>Dennis Kemp</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University</i> ), Roger A. De Souza One Stone, Two Birds: Using High Electric Fields to Enhance the Mobility and the Concentration of Point Defects in Ion-Conducting Solids
<p><b>3A3 Protonic Conductors. Room: St.James</b> Chair: Sandrine Ricote</p>	
11:15 - 11:35 St.James-I1	<u>Kang Taek Lee</u> ( <i>Korea Advanced Institute of Science and Technology (KAIST), South Korea</i> ) Innovative Approaches and Enhanced Materials for Protonic Ceramic Electrochemical Cells
11:35 - 11:50 St.James-O1	<u>Stine Roen</u> ( <i>University of Oslo (UiO)</i> ), Truls Norby, Ragnar Strandbakke, Jonathan M. Polfus Electrochemical Characterization of Ba <sub>0.95</sub> La <sub>0.05</sub> (Fe <sub>1-x</sub> Y <sub>x</sub> Ni <sub>x</sub> Zn <sub>1-x</sub> )O <sub>3-δ</sub> as Steam Electrode in Proton Ceramic Electrochemical Cells
11:50 - 12:05 St.James-O2	<u>Jónína Björg Guðmundsdóttir</u> ( <i>University of Oslo (UiO)</i> ), Einar Vøllestad, Reidar Haugrud, Jonathan Polfus Oxygen Exchange Kinetics of BaGd <sub>0.3</sub> La <sub>0.7</sub> Co <sub>2</sub> O <sub>6-d</sub> Air/Steam Electrode for Proton Ceramic Electrochemical Cells
12:05 - 12:20 St.James-O3	<u>Natalia Stankiewicz</u> ( <i>Polymat, University of the Basque Country UPV/EHU, 20018 Donostia-San Sebastian, Spain</i> ), Leon Focks, Mengyang Cui, Francisco Bonilla, Ivan Bobrikov, Gillian Goward, Irune Villaluenga The Effect of Non-conducting Polymers on the Transport Properties of Hybrid Electrolytes
<p><b>3A4 Advanced Techniques. Room: Moore</b> Chair: Ryan O'Hayre</p>	
11:15 - 11:35 Moore-I1	<u>Monica BURRIEL</u> ( <i>Université Grenoble Alpes, CNRS, Grenoble INP, LMGP, Grenoble, France</i> ) Isotope Exchange Raman Spectroscopy (IERS): A powerful and versatile technique to measure oxygen-ion transport kinetics in situ
11:35 - 11:50 Moore-O1	<u>Zhongtao Ma</u> ( <i>Department of Energy Conversion and Storage, Technical University of Denmark (DTU)</i> ), Christodoulos Chatzichristodoulou, Kristian Speranza Mølhav, Søren Bredmose Simonsen Electrochemical ETEM impedance study on solid oxide cells
11:50 - 12:05 Moore-O2	<u>Stanislaus Breitwieser</u> ( <i>TU Wien</i> ), Andreas Nennung, Jürgen Fleig Combined coulometry and XPS measurements for linking bulk to surface defect chemistry in mixed conductors
12:05 - 12:20 Moore-O3	<u>Kirsten Rath</u> ( <i>Institute of Chemical Technologies and Analytics, Technische Universität Wien, 1060 Vienna, Austria</i> ), Christian Melcher, Paul W. Hoffrogge, Daniel Schneider, Britta Nestler, Alexander K. Opitz Beyond the Surface: Probing the Dynamics of Fluorite-Based Solid Oxide Electrolysis Cathodes Through Advanced Multi-Analytical Techniques
<p><b>3A5 Batteries. Room: Abbey</b> Chair: Wolfgang Zeier</p>	
11:15 - 11:35 Abbey-I1	<u>Nuria Garcia-Araez</u> ( <i>UNIVERSITY OF SOUTHAMPTON</i> ) Safer Batteries Enabled by Shutdown Ceramics and by Functional Additives for Combining Solid and Liquid Electrolytes
11:35 - 11:50 Abbey-O1	<u>Svetlana Menkin</u> ( <i>Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, CB2 1EW, Cambridge, UK</i> ), Jana B. Fritzsche, Rebecca Larnier, James Simon, Clare P. Grey Soft Short Circuit-based Degradation of Lithium, Sodium and Zinc Metal Batteries
11:50 - 12:05 Abbey-O2	<u>Yasmine Benabed</u> ( <i>Hydro-Quebec</i> ), Gabrielle Foran, Steeve Rousselot, Mickaël Dollé Solving the Li <sub>7</sub> La <sub>3</sub> Zr <sub>2</sub> O <sub>12</sub> Electrochemical Stability Window Puzzle
12:05 - 12:20 Abbey-O3	Hyejeong Hyun, Hyejung Yoon, Subin Choi, Juri Kim, Tom Regier, Zachary Arthur, SeokKoo Kim, <u>Jongwoo Lim</u> ( <i>Seoul National University, Seoul, South Korea</i> ) Paradoxical role of structural degradation of nickel-rich layered oxides in capacity retention upon storage of lithium-ion batteries
<p><b>3A6 Solid Oxide Cells. Room: Gielgud</b> Chair: Peter Vang Hendriksen</p>	
11:15 - 11:35 Gielgud-I1	Miguel Angel Laguna-Bercero, Angel Larrea, Miguel Angel Morales-Zapata, <u>Alodia Orera</u> ( <i>Instituto de Nanociencia y Materiales de Aragón (INMA), CSIC-Universidad de Zaragoza, 50009 Zaragoza, Spain</i> ) Solid Oxide Microtubular Cells for the Production of Green Fuels



11:35 - 11:50 Gielgud-01	<u>Soomin Choi</u> ( <i>Gwangju institute of science and technology</i> ), Janghyun Lim, Gyeong Duk Nam, Gahyeon Lee, Young-il Kwon, Hyeon Jin Lee, John T.S. Irvine, Tae Ho Shin, Jongsup Hong, Jong Hoon Joo Investigation of Thermo-mechanical Stability in High Temperature Solid Oxide Electrochemical Cell
11:50 - 12:05 Gielgud-02	<u>Rinlee Butch Cervera</u> ( <i>University of the Philippines Diliman</i> ) Electrode Thin Film and Electrolyte Materials Development and Electrochemical Performance for Intermediate-Temperature Reversible Solid Oxide Electrochemical Cells
12:05 - 12:20 Gielgud-03	<u>Keiji Yashiro</u> ( <i>Faculty of Materials for Energy, Shimane University</i> ), Nanako Bisaka, Takashi Sato, Riyan Achmad Budiman, Mina Yamaguchi, Tatsuya Kawada Microstructure Evolution Analysis on Ni/YSZ Fuel Electrode using Cross-Sectional Model Cells
<b>4A1 Lithium Conductors. Room: Fleming</b> Chair: Ainara Aguadero	
14:00 - 14:30 Fleming-K1	<u>Stefan ADAMS</u> ( <i>Department of Materials Science and Engineering, National University of Singapore</i> ) Compressible Light-Weight Ion-conducting Solids for Durable High Energy Density Batteries
14:30 - 14:50 Fleming-I1	<u>Wakako Araki</u> ( <i>Tokyo Institute of Technology</i> ), Kiminori Saito, Miao Wembo, Yoshio Arai Deformation and Diffusion Mechanisms of Li-La-Ti-O with Ordered Microstructures Under Mechanical Stress
14:50 - 15:05 Fleming-O1	<u>Pierre Lannelongue</u> ( <i>Center for Cooperative Research on Alternative Energies (CIC energiGUNE), Basque Research and Technology Alliance (BRTA), Parque Tecnológico de Álava, Albert Einstein, 48, 01510, Vitoria-Gasteiz, Spain</i> ), Simon Lindberg, Andrey Golov, Elena Gonzalo, Thomas Marchandier, Artur Tron, Javier Carrasco, Pedro Lopez-Aranguren Halide Electrolytes for Solid-State Batteries: Investigating Ionic Transport and Interface Dynamics
15:05 - 15:20 Fleming-O2	<u>Grace Wei</u> ( <i>Department of Materials Science and Engineering, University of California, Berkeley, CA, 94720, USA</i> ), Kyujung Jun, Gerbrand Ceder Ultrafast Lithium-ion Diffusion in Oxyhalides
15:20 - 15:35 Fleming-O3	<u>Marnix Wagemaker</u> ( <i>Storage of Electrochemical Energy, Department of Radiation Science and Technology, Faculty of Applied Sciences, Delft University of Technology, Mekelweg 15, 2929JB, Delft, The Netherlands</i> ), Zhu Chen, Qidi Wang, Eveline van der Maas, Swapna Ganapathy, Wenxuan Zhao, Theodoris Famprikis, Chenglong Zhao, Victor Landgraf, Lars Bannenberg, Baohua Li, Janek Jurgen Designing halide solid electrolytes
<b>4A2 Anion Conductors. Room: Westminster</b> Chair: Isaac Abrahams	
14:00 - 14:30 Westminster-K1	<u>Susana Garcia-Martin</u> ( <i>Complutense University of Madrid</i> ) Understanding electrochemical properties of materials by imaging their crystal structure
14:30 - 14:50 Westminster-I1	<u>Nini Pryds</u> ( <i>Department of Energy Conversion and Storage, Technical University of Denmark (DTU)</i> ) Engineering of oxide heterostructures with symmetry-breaking
14:50 - 15:05 Westminster-O1	<u>Thomas Defferriere</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology</i> ), Baoming Wang, Julian P. Klein, Frances M. Ross, Harry L. Tuller Methods for Studying Ionic Transport and Transfer Across Interfaces in Bilayer Metal Oxide Stacks
15:05 - 15:20 Westminster-O2	<u>Julius K. Dinter</u> ( <i>Center of Materials Research, JLU Gießen</i> ), Juri Becker, Anja Henss, Matthias T. Elm Electrochemical Characterization of CeO <sub>2</sub> /YSZ Multilayer Systems with Well-defined Interfaces
15:20 - 15:35 Westminster-O3	<u>Daniele Vivona</u> ( <i>MIT - Massachusetts Institute of Technology, Department of Mechanical Engineering</i> ), Kiarash Gordiz, Randall Meyer, Sumathy Raman, Yang Shao-Horn Superior Designs of Solid-State Ionic Conductors by engineering Local Environments
<b>4A3 Protonic Conductors. Room: St.James</b> Chair: Leonard KWATI	
14:00 - 14:30 St.James-K1	<u>Chris Ling</u> ( <i>School of Chemistry, The University of Sydney, NSW 2006, Australia</i> ), Frederick Marlton, Alex Brown Synergistic hydration-distortion and ionic conduction mechanisms in barium-group(V) oxides
14:30 - 14:50 St.James-I1	<u>Shanwen Tao</u> ( <i>School of Engineering, University of Warwick, Coventry CV4 7AL, UK</i> ), Peimiao Zou Fast low temperature ceramic mixed OH <sup>-</sup> /H <sup>+</sup> ionic conductors for electrochemical devices
14:50 - 15:05 St.James-O1	<u>Hitoshi Takamura</u> ( <i>Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai 980-8579, Japan</i> ), Mei Asakura, Yuta Tsujino, Akihiro Ishii, Itaru Oikawa, Kohei Kato, Shota Takemura, Shingo Ide Defect Chemistry and Transport Properties of Anion-Doped Ba-Zr-Based Proton Conductors
15:05 - 15:20 St.James-O2	<u>OMAR RAHMOUNI</u> ( <i>Université Paris-Saclay, CentraleSupélec, CNRS, Laboratoire SPMS, 91190, Gif-sur-Yvette, France</i> ), Caroline Pirovano, Giulio Cordaro, Victor Duffort, Martine Trentesaux, Nicolas Nuns, Guilhem Dezanneau, Rose-noelle Vannier Oxygen diffusion and water incorporation in Ba(Ce,Sn,Zr)0.8Y0.1Yb0.1O2.8 PCFC electrolyte
<b>4A4 Advanced Techniques. Room: Moore</b> Chair: Koji Amezawa	
14:00 - 14:30 Moore-K1	<u>Ifan Stephens</u> ( <i>Imperial College London, Department of Materials, London, London, SW7 2AZ, UK</i> ) Translating concepts from electrocatalysis to battery science and back
14:30 - 14:50 Moore-I1	<u>Clement Nicollet</u> ( <i>Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, F-44000 Nantes, France</i> ) A Method to Measure Oxygen Surface Exchange Kinetics on Porous Mixed Conducting Oxides with Simple Determination of Microstructure Parameters.
14:50 - 15:05 Moore-O1	<u>Juan Carlos Gonzalez-Rosillo</u> ( <i>Catalonia Institute for Energy Research (IREC), Sant Adrià de Besos, 08930, Barcelona, Spain.</i> ), Beatrice Laurenti, Francesco Chiabrera, Alex Morata, Albert Tarancón Tip-Enhanced Raman Spectroscopy for Nanometric Chemical Insights and Operando Characterization of Battery Materials
15:05 - 15:20 Moore-O2	TRAN THI HUYEN TRAN, THUY LINH PHAM, JEEHOON KIM, EUI-CHOL SHIN, CHEOL-WOO AHN, DONG-SOO PARK, NAMSOO SHIN, JAEKOOK KIM, <u>JONG-SOOK LEE</u> ( <i>Chonnam National University, South Korea</i> ) Physics-based Impedance Modeling of Polycrystalline Solid Electrolytes Assisted by Data Science Tools: Application to Li <sub>7</sub> La <sub>3</sub> Zr <sub>2</sub> O <sub>12</sub>
15:20 - 15:35 Moore-O3	<u>Matthias T. Elm</u> ( <i>Institute of Physical Chemistry, RWTH Aachen</i> ), Janis K. Eckhardt, Christian Heiliger Correction Factor to Account for the Regular Pore Structure of Mesoporous Oxides for a Reliable Determination of the Electrical Conductivity from Impedance Spectroscopy
<b>4A5 Batteries. Room: Abbey</b> Chair: Magda Titirici	



14:00 - 14:30 Abbey-K1	<u>Eric Wachsmann</u> ( <i>University of Maryland</i> ) Achieving Extreme High Ion-Current Densities in Tailored Materials, Structures, and Interfaces
14:30 - 14:50 Abbey-I1	<u>Antonio Bertei</u> ( <i>Department of Civil and Industrial Engineering, University of Pisa, Largo Lucio Lazzarino 2, IT 56122, Pisa, Italy</i> ), Marco Lagnoni, Xuekun Lu Phase-separating Active Materials in Lithium-ion Batteries: Implications for Fast-charging and Material Characterisation
14:50 - 15:05 Abbey-O1	<u>Kun Joong Kim</u> ( <i>Department of Chemistry, Technical University of Munich, Chair of Solid-State Electrolyte Chemistry, Germany</i> ), Steffen Weinmann, Hana Gobena, Jennifer Rupp Processing oxide lithium metal batteries with thin electrolyte
15:05 - 15:20 Abbey-O2	<u>Stephen Dongmin Kang</u> ( <i>Department of Materials Science &amp; Engineering, Seoul National University, Seoul, Korea</i> ) Why battery electrodes never seem to yield reliable GITT measurements
15:20 - 15:35 Abbey-O3	<u>James Simon</u> ( <i>University of Cambridge</i> ), Andras Kozak, Veronika Sedajova, Svetlana Menkin, Stuart Clarke, Clare Grey Investigation of interface stability of aqueous zinc metal batteries using scanning electrochemical microscopy
<b>4A6 Solid Oxide Cells. Room: Gielgud</b> Chair: Scott Barnett	
14:00 - 14:30 Gielgud-K1	<u>Anne Hauch</u> ( <i>Topsoe A/S, Haldor Topsoe Allé 1, DK-2800 Kgs Lyngby, Denmark</i> ) Solid Oxide Electrolysis Cell Technology – Solid State Devices for Efficient Green Hydrogen Production
14:30 - 14:50 Gielgud-I1	<u>marie-laure fontaine</u> ( <i>SINTEF AS</i> ), einar vøllestad, Ragnar Strandbakke, Elena Stefan, christelle denonville, Didrik Småbråten Innovative cells and stacks for hydrogen production
14:50 - 15:05 Gielgud-O1	<u>TAKAYUKI NAKAO</u> ( <i>Energy Technology Laboratories, Osaka Gas Co</i> ), SHUICHI INOUE Interface Design Development for High Performance of SOFC/SOEC Contact Layers between Interconnects and Solid Oxide Cells
15:05 - 15:20 Gielgud-O2	<u>Einar Vollestad</u> ( <i>SINTEF Industry, Sustainable Energy Technology, Oslo, Norway</i> ) Principles and Potential of Pressurized Steam Electrolysis using Proton Ceramic Electrolysers
15:20 - 15:35 Gielgud-O3	Imanol Quina, Laura Almar, David Catalán-Martínez, Andrea Dos Santos, Amir Masoud Dayaghi, Truls Norby, Agustín Martínez, Jose Manuel Serra, <u>Sonia Escolástico</u> ( <i>Instituto de Tecnología Química (Universitat Politècnica de València—Consejo Superior de Investigaciones Científicas), Valencia, Spain</i> ) Hydrocarbon production by CO <sub>2</sub> electro-catalytic reduction in a pressurized protonic electrochemical membrane reactor
15:35 - 16:05	<b>Coffee Break</b>
<b>5A1 Lithium Conductors. Room: Fleming</b> Chair: Stefan ADAMS	
16:05 - 16:35 Fleming-K1	<u>Ainara Aquadero</u> ( <i>Department of Materials, Imperial College London, South Kensington Campus, London, SW7 2AZ, U.K.</i> ), Raul Artal, Ricardo Jimenez, Cristina Garcia, Kit Baker, Ieuan Seymour Solid electrolytes bulk and interfaces analysis to improve all-solid-state batteries performance
16:35 - 16:50 Fleming-O1	<u>Oskar Thompson</u> ( <i>Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP*, LEPMI, 38000 Grenoble, France</i> ), Adrien Faucier-Magnan, Gavin Vaughan, Vittoria Pschedda, Laura H Henry, Sylvie le Floch, Claire Villeveuille Investigating the Morphology of Thiophosphate Based Electrolytes Using Synchrotron X-Ray Tomography Techniques
16:50 - 17:05 Fleming-O2	<u>Zachary Warren</u> ( <i>Instituto de Cerámica y Vidrio (CSIC)</i> ), Jadra Mosa, Mario Aparicio, Nataly Carolina Rosero-Navarro Solution processing Li <sub>2</sub> S-P <sub>2</sub> S <sub>5</sub> glass-ceramic solid-state electrolyte in ethyl mercaptan
17:05 - 17:20 Fleming-O3	<u>Gwangseok Oh</u> ( <i>Posco holdings, N.EX.T Hub</i> ), Seungduk Seo, Ohmin Kwon, Sangchul Nam Development of air-stable sulfide-based solid electrolyte using oxide-based ionic conductive materials
17:20 - 17:35 Fleming-O4	Kosuke Kawai, Yuki Nomura, Masaki Fujita, Hirokazu Kitaura, Eiji Hosono, Hiroshi Nakajima, Hirofumi Tsukasaka, Shigeo Mori, Akitoshi Hayashi, Naoaki Yabuuchi, Kazuo Yamamoto, <u>Masashi Okubo</u> ( <i>Waseda University</i> ) MXenes for all 'strain-free' solid-state batteries
<b>5A2 Anion Conductors. Room: Westminster</b> Chair: Nini Pryds	
16:05 - 16:35 Westminster-K1	<u>Isaac Abrahams</u> ( <i>School of Physical and Chemical Sciences, Queen Mary University of London</i> ) Unravelling Local Structure in Oxide-Ion Conducting Fluorites
16:35 - 16:50 Westminster-O1	<u>Giuditta Perversi</u> ( <i>Maastricht University</i> ), Niels Schreiner, Angela Angelodimou The road to high-entropy: sequential doping study of Ba <sub>2</sub> In <sub>2</sub> O <sub>5</sub>
16:50 - 17:05 Westminster-O2	<u>Sophie Bauer</u> ( <i>Department of Materials- and Geo-Sciences, Technische Universität Darmstadt, Darmstadt, Germany</i> ), Till Frömling The Drastic Effect of A-Site Non-Stoichiometry on the Cation Diffusion and Core-Shell Formation in NBT-Based Ceramics
17:05 - 17:20 Westminster-O3	<u>Mina Yamauchi</u> ( <i>Graduate School of Environmental Studies, Tohoku University</i> ), Masaki Kurata, Ryosuke Iwata, Shogo Fuwa, Riyan Achmad Budiman, Keiji Yashiro, Tatsuya Kawada High-Temperature Photo-Response in Gd-Doped CeO <sub>2</sub>
<b>5A3 Protonic Conductors. Room: St.James</b> Chair: Chris Ling	
16:05 - 16:35 St.James-K1	Wilhelm Albert Meulenber, Jürgen Malzbender, Julia Wolter, Wendelin Deibert, Olivier Guillon, <u>Jose Manuel Serra</u> ( <i>Instituto de Tecnología Química (Universitat Politècnica de València- Agencia Estatal Consejo Superior de Investigaciones Científicas)</i> ), Candela Segarra, Laura Almar, Sonia Escolástico, Wenyu Zhou Ba(Zr,Ce,Y)O <sub>3-δ</sub> proton-conducting materials: manufacture, performance and stability
16:35 - 16:50 St.James-O1	<u>Wen YANG</u> ( <i>Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research (IEK-14)</i> ), Christian Rodenbücher, Jiangshui Luo, Carsten Korte A solid proton conductor realized by the encapsulation of ionic liquids in the metal-organic framework ZIF-8
16:50 - 17:05 St.James-O2	<u>Kehan Huang</u> ( <i>Faculty of Engineering, Department of Materials, Imperial College, London</i> ), Yidong Han, Stephen Skinner Exploring the Protonic Conduction in W- and Mo-substituted LaNbO <sub>4</sub> Materials at Reducing Conditions
17:05 - 17:20 St.James-O3	<u>Giulio Cordaro</u> ( <i>Université Paris-Saclay, CentraleSupélec, CNRS, Lab. SPMS, Gif-sur-Yvette 91190, France</i> ), Juande Sirvent, Omar Rahmouni, Federico Baiutti, Dominique Thiaudière, Alex Morata, Albert Tarancón, Guilhem Dezanneau Structural and Chemical Study of Electrolytes for Protonic Ceramic Cells Using a High-Throughput Approach
<b>5A4 Advanced Techniques. Room: Moore</b> Chair: Ifan Stephens	



16:05 - 16:35 Moore-K1	<u>Koji Amezawa</u> ( <i>Tohoku University</i> ), Masaharu Yanagi, Yuta Kimura, Takashi Nakamura, Hirokazu Katsui, Oki Sekizawa, Kiyofumi Nitta, Yasutoshi Iriyama, Tatsuya Kawada Direct Observation of Chemical Potential Distribution in Solid State Ionics Devices by Using Operando Micro X-Ray Absorption Fine Structure Measurements
16:35 - 16:50 Moore-O1	<u>Christian Melcher</u> ( <i>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</i> ), Andreas Nanning, Florian Schrenk, Kirsten Rath, Christoph Rameshan, Alexander Karl Opitz Exploring Metal-Support Interactions in Solid Oxide Electrolysis Cathodes by in-situ Surface Analytics
16:50 - 17:05 Moore-O2	<u>Francesco Chiabrera</u> ( <i>Catalonia Institute for Energy Research (IREC), Sant Adrià de Besos, 08930, Barcelona, Spain.</i> ), Paul Nizet, Yunqing Tang, Nerea Alayo, Philipp Langner, Federico Baiutti, Alex Morata, Albert Tarancón Optoionic Impedance Spectroscopy (OIS) for In-situ Investigation of Ion Insertion in Mixed Ionic-Electronic Conductors
17:05 - 17:20 Moore-O3	<u>Julian Taubmann</u> ( <i>Department of Energy Conversion and Storage, Technical University of Denmark (DTU)</i> ), Christodoulos Chatzichristodoulou, Henrik Lund Frandsen Fundamental Insights into the Degradation of Nickel/Yttria Stabilised Zirconia Fuel Electrodes of Solid Oxide Cells by Model Electrode Testing
17:20 - 17:35 Moore-O4	<u>Yen-Po Liu</u> ( <i>Peter Grünberg Institute, Electronic Materials (PGI-7), Forschungszentrum Jülich GmbH, 52425 Jülich, Germany</i> ), Moritz L. Weber, Dylan Jennings, Felix Gunkel, Regina Dittman Phase-separated nanostructures of Ni:STO studied using low temperature Scanning Tunneling Microscopy and Spectroscopy
<b>5A5 Batteries. Room: Abbey</b> Chair: Eric Wachsman	
16:05 - 16:35 Abbey-K1	<u>Maqda Titirici</u> ( <i>Department of Chemical Engineering, Imperial College London, London, SW7 2AZ, UK</i> ) Beyond Li: Na, K and Al based batteries-progress, challenges and prospects
16:35 - 16:50 Abbey-O1	<u>Daiana Ferreira</u> ( <i>Catalonia Institute for Energy Research (IREC), Sant Adrià de Besos, 08930, Barcelona, Spain.</i> ), Antonio Gianfranco Sabato, Marc Nuñez Eroles, Alex Morata, Marc Torrell, Albert Tarancón Advanced manufacturing processes of NASICON-based all-solid-state lithium-metal batteries
16:50 - 17:05 Abbey-O2	<u>Artur Tron</u> ( <i>AIT Austrian Institute of Technology GmbH, Center for Low-Emission Transport, Battery Technologies, Giefinggasse 2, 1210 Vienna, Austria</i> ), Alexander Beutl, Ander Orue, Pedro López-Aranguren, Andrea Itziar Pitillas Martinez, Maria Helena Braga, Ville Kekkonen Round-robin test of sulfide-based solid-state battery assembly in coin-type cell configuration
17:05 - 17:20 Abbey-O3	<u>Oliver Clemens</u> ( <i>University of Stuttgart, Institute for Material Science, Stuttgart</i> ), Hong Chen, Tommi Aalto, Vanita Vanita Pushing to the Limits - Effect of Uniaxial Stack Pressure on the Performance of All-Solid-State Fluoride-Ion-Batteries
17:20 - 17:35 Abbey-O4	Ana De La Fuente Duran, Nicholas Siemons, Adam Marks, Tyler Mefford, Alberto Salleo, <u>William Chueh</u> ( <i>Department of Materials Science and Engineering, Stanford University, Stanford, CA, USA</i> ) Effects of electrolyte composition on the electrochemistry of organic mixed conducting polymers
<b>5A6 Solid Oxide Cells. Room: Gielgud</b> Chair: Anne Hauch	
16:05 - 16:35 Gielgud-K1	<u>Scott Barnett</u> ( <i>Northwestern University</i> ), Qian Zhang, Pattiya Pibulchinda, Dalton Cox, Katsuyo Thornton, Peter Voorhees Microstructural Evolution of Ni-YSZ Electrodes During Solid Oxide Electrolysis Operation
16:35 - 16:50 Gielgud-O1	<u>Kuan-Ting Wu</u> ( <i>International Institute for Carbon-neutral Energy Research (WPI-I2CNER), Kyushu University</i> ), Tatsumi Ishihara Designing Highly Active Electrode by Infiltration Technique for Co-electrolysis of CO <sub>2</sub> and H <sub>2</sub> O
16:50 - 17:05 Gielgud-O2	<u>ARMELLE RINGUEDE</u> ( <i>Institut de Recherche de Chimie Paris, CNRS UMR 8247, Chimie ParisTech</i> ), André GRISHIN, Simon HUBERT, Valerie ALBIN, Michel CASSIR, Virginie LAIR Transport Mechanisms in Composite Electrolyte for Hybrid Cells
17:05 - 17:20 Gielgud-O3	<u>Sang Eun Lee</u> ( <i>Dankook University</i> ), Preethi Sudarsan, Hee Jung Park Electrochemical Characteristics of Metal Supported Solid Oxide Fuel Cells with a Buffer Layer Fabricated Using Ultrafine GDC Particles
17:20 - 17:35 Gielgud-O4	<u>Piotr Winiarz</u> ( <i>AGH University of Krakow, Faculty of Energy and Fuels, Al. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Kun Wang, Konrad Swierczek, Kun Zheng Negative thermal expansion coefficient materials utilization to enhance the performance of electrospun oxygen electrodes for Solid Oxide Cells
18:00 - 19:30	<b>Poster Session</b>



July 16th - Day 3 (Tuesday)	
07:30 - 08:30	<b>Registration</b>
<b>Plenary Session 2. Room: Fleming</b> Chair: Clare Grey	
08:30 - 09:20 Fleming-T1	<u>Y. Shirley Meng</u> ( <i>Division of Chemical Sciences and Engineering, Argonne National Laboratory</i> ) The Solid State Renaissance - Science Frontiers at A Glance
09:20 - 09:30	<b>SSI Journal Announcement. Room: Fleming</b>
09:30 - 09:45	<b>Session Change</b>
<b>2B1 Lithium Electrodes. Room: Fleming</b> Chair: Yiyang Li	
09:45 - 10:15 Fleming-K1	<u>Arumugam Manthiram</u> ( <i>The University of Texas at Austin</i> ) Pushing the Limits of High-nickel Layered Oxide Cathodes in Lithium-ion Batteries
10:15 - 10:35 Fleming-I1	<u>Francois WEILL</u> ( <i>CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB UMR 5026, F-33600 Pessac, France</i> ), Gozde ONEY, Jacob OLCHOWKA, Arnaud DEMORTIERE, Laurence CROGUENNEC Influence of Local Order on Electrochemical Properties of High Voltage Spinel LiNi <sub>0.5</sub> Mn <sub>1.5</sub> O <sub>4</sub>
10:35 - 10:50 Fleming-O1	<u>Adrien Fauchier Magnan</u> ( <i>Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP, LEPMI, 38000 Grenoble, France</i> ), Léa Mangani, Lucas Trassart, Sylvain Franger, Claire Villeveille Understanding the Mixed Ionic Conduction in Composite Electrode (NCM/LPSCI) for All Solid-State Batteries
<b>2B2 Anion Conductors. Room: Westminster</b> Chair: Kotaro Fujii	
09:45 - 10:15 Westminster-K1	<u>PETER CROZIER</u> ( <i>School for Engineering of Matter, Transport and Energy, Arizona State University</i> ) Towards Visualization of Atomic-Level Transport in Ion Conductors: Characterizing Structural Dynamics with Advanced Electron Microscopy and Data Science
10:15 - 10:35 Westminster-I1	<u>Konrad Świerczek</u> ( <i>AGH University of Krakow, Faculty of Energy and Fuels, Department of Hydrogen Energy, al. A. Mickiewicza 30, 30-059 Krakow, Poland</i> ) New complex perovskites and related oxides for electrochemical applications
10:35 - 10:50 Westminster-O1	Juliusz Dąbrowa, <u>Jan Adamczyk</u> ( <i>AGH University of Krakow, Faculty of Materials Science and Ceramics, Poland</i> ), Karolina Bar, Klaudia Zielińska, Marek Zajusz, Maria Szymczak, Margarita Nowakowska, Andrzej Mikuła, Konrad Świerczek Beyond the high entropy approach - highly functional, Sr-free, multicomponent cathodes for solid oxide fuel cells
<b>2B3 Protonic Materials. Room: St.James</b> Chair: Chuancheng Duan	
09:45 - 10:15 St.James-K1	<u>Nicola Perry</u> ( <i>University of Illinois Urbana-Champaign</i> ) Toward Descriptors for Near-Zero-Chemical-Strain Perovskites
10:15 - 10:35 St.James-I1	<u>Werner Sitte</u> ( <i>Chair of Physical Chemistry, Montanuniversitaet Leoben, Franz-Josef-Strasse 18, A-8700 Leoben, Austria</i> ), Christina Nader, Andreas Egger, Edith Bucher, Judith Lammer, Werner Grogger, Rotraut Merkle, Joachim Maier Phase Composition, Cation Distribution and Proton Uptake of Self-Generated Ba(Ce,Fe,In) <sub>3</sub> O <sub>7-δ</sub> Composites
10:35 - 10:50 St.James-O1	<u>Tomohiro Ishiyama</u> ( <i>National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan</i> ), Hiroko Arai, Hiroki Nagashima, Hiroyuki Miyamura, Kenji Koga, Aditya Sharma, Takuya Yamaguchi, Takahisa Omata Cermet-supported type phosphate glass electrolyte electrochemical cell for energy conversion devices
<b>2B4 In-situ/In-Operando Techniques. Room: Moore</b> Chair: Catalina Elena Jiménez	
09:45 - 10:15 Moore-K1	<u>Cortney Kreller</u> ( <i>Los Alamos National Laboratory, Los Alamos, NM 87545, USA</i> ), Benjamin Derby, James Valdez, Wang Yongqiang, Franziska Schmidt, Tinsley Benhaddouch, Blas Uberuaga In situ Characterization of Radiation-Induced Transport in Complex Oxides
10:15 - 10:30 Moore-O1	<u>Stefan Kucharski</u> ( <i>Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research</i> ), Yoo Jung Sohn, Christian Lenser, Olivier Guillon, Norbert H. Menzler Operando X-ray Diffraction and Spectroscopy of Solid Oxide Electrolyser Cells
10:30 - 10:45 Moore-O2	<u>William Bowman</u> ( <i>Department of Materials Science and Engineering, University of California, Irvine, Irvine, CA United States 92617</i> ), Jenny Martinez, Jenna Wardini In situ transmission electron microscopy of phase transformations in solid state ionic materials for carbon capture sorbents and solid oxide cells
<b>2B5 Exsolution/ Surfaces. Room: Abbey</b> Chair: Sivaprakash Sengodan	
09:45 - 10:15 Abbey-K1	<u>Alexander K. Opitz</u> ( <i>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</i> ) Small Tweaks with Big Impact: Manipulating Catalytic Activity of Mixed Conducting Electrodes by Surface Chemistry Modification
10:15 - 10:35 Abbey-I1	<u>Moritz L. Weber</u> ( <i>Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, California 94720, United States</i> ), Dylan Jennings, Břetislav Šmíd, Sarah Fearn, Andrea Cavallaro, Alexander Gutsche, Lisa Heymann, Jia Guo, Liam Yasin, Samuel J. Cooper, Stephen J. Skinner, Regina Dittmann, Ainara Aguadero, Slavomir Nemšák, Christian Lenser, Felix Gunkel Space charge effects on the reaction kinetics of metal exsolution and the coalescence of exsolved nanoparticles
10:35 - 10:50 Abbey-O1	<u>Alexander Bonkowski</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University, 52074 Aachen, Germany</i> ), Roger A. De Souza A single model for the thermodynamics and kinetics of nanoparticle exsolution from perovskite-oxides
<b>2B6 Materials Discovery/ High Entropy Materials. Room: Gielgud</b> Chair: Miriam Botros	
09:45 - 10:15 Gielgud-K1	<u>Matthew Rosseinsky</u> ( <i>University of Liverpool</i> ) Digital Routes to Inorganic Materials - A New Pathway for Ion Transport in Solids



10:15 - 10:35 Gielgud-I1	Yue Shui, Yinchun Shi, Lei Zhu, Zhen Huang, <u>Na Ni</u> ( <i>School of Mechanical Engineering, Shanghai Jiao Tong University, 800 Dongchuan Rd, 200240, China</i> ) Structural Disorder, Sintering and Electrochemical Properties of High Entropy ABO <sub>3</sub> Solid Oxide Cell Air Electrode Materials
10:35 - 10:50 Gielgud-O1	<u>Florian Strauss</u> ( <i>Institute of Nanotechnology, Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany</i> ), Shango Li, Jing Lin, Mareen Schaller, Sylvio Indris, Xin Zhang, Torsten Brezesinski, Ce-Wen Nan, Shuo Wang Tuning Ionic Conductivity in High Entropy Lithium Argyrodite Solid Electrolytes
10:50 - 11:20	<b>Coffee Break</b>
	<b>3B1 Lithium Electrodes. Room: Fleming</b> Chair: Arumugam Manthiram
11:20 - 11:40 Fleming-I1	<u>Yiyang Li</u> ( <i>University of Michigan</i> ) Quantifying Lithium Transport in Individual Battery Particles
11:40 - 11:55 Fleming-O1	<u>Yuta Kimura</u> ( <i>Tohoku University</i> ), Mai Tanaka, Su Huang, Takashi Nakamura, Nozomu Ishiguro, Oki Sekizawa, Kiyofumi Nitta, Tomoya Uruga, Kingo Ariyoshi, Tomonari Takeuchi, Toyoki Okumura, Mizuki Tada, Yoshiharu Uchimoto, Koji Amezawa 3D Operando Tracking of Electrochemical Reactions in an Active Material Particle Ensemble in Solid-State Battery Electrodes
11:55 - 12:10 Fleming-O2	<u>Masatsugu Oishi</u> ( <i>Tokushima University</i> ), Raku Hamamoto, Satoshi Hiroi, Koji Ohara Functions of low crystallinity in Li-rich layered oxide electrode evaluated by pair distribution function analysis
	<b>3B2 Anion Conductors. Room: Westminster</b> Chair: PETER CROZIER
11:20 - 11:40 Westminster-I1	<u>Kotaro Fujii</u> ( <i>Tokyo Institute of Technology</i> ), Masatomo Yashima Exploration and structure science of novel oxide-ion and proton conductors
11:40 - 11:55 Westminster-O1	<u>Daive Chinello</u> ( <i>Department of Chemical Sciences, University of Padova, via Marzolo 1, 35131 Padova, Italy</i> ), Antonella Glisenti Tailoring B-site doping in molybdenum-based double perovskites: implications on thermo- and electro-catalytic activity
11:55 - 12:10 Westminster-O2	<u>Fanlin Zeng</u> ( <i>Institute of Energy and Climate Research, Materials Synthesis and Processing (IEK-1), Forschungszentrum Jülich GmbH, 52425 Jülich, Germany</i> ), Wendelin Deibert, Wilhelm Albert Meulenber, Stefan Baumann Promoting the performance of doped alkaline earth titanates as mixed ionic and electronic conductors for thermal water splitting
12:10 - 12:25 Westminster-O3	<u>Julien Riviere</u> ( <i>UMR 8181 -UCCS- Unité de catalyse et de chimie du solide, Equipe chimie du solide. Univ. Lille, CNRS, Centrale Lille Institut, Univ. Artois. F-59000, Lille, France.</i> ), Aurélie Rolle, Victor Duffort, Rose-Noelle Vannier Ca <sub>2</sub> Fe <sub>2-x</sub> (Co,Mn) <sub>x</sub> O <sub>5+δ</sub> as possible La-Free air electrodes for Solid oxide electrolyser cell
12:25 - 12:35 Westminster-S1	<u>Vernon Smith</u> ( <i>Bruker Corporation</i> ) Bruker AXS X-ray diffraction solutions for the advanced characterization of solid state ionics – from atoms to devices
	<b>3B3 Protonic Materials. Room: St.James</b> Chair: Nicola Perry
11:20 - 11:40 St.James-I1	<u>Chuan Cheng Duan</u> ( <i>Kansas State University</i> ), Fan Liu, Liyang Fang, Zixian Wang Approaches to reducing the operating temperature of protonic ceramic electrochemical cells
11:40 - 11:55 St.James-O1	<u>Dongyeon Kim</u> ( <i>Department of Mechanical Engineering, KAIST, Daejeon, Republic of Korea</i> ), Jun Hyuk Kim, Sejong Ahn, Kang Taek Lee, WooChul Jung Advanced Oxygen Electrodes for Protonic Ceramic Electrochemical Cells: The Role of Ta-Stabilized BaCoO <sub>3-δ</sub>
11:55 - 12:10 St.James-O2	<u>Zhongwei Yue</u> ( <i>Foshan Xianhu Laboratory</i> ), San Ping Jiang MECHANISMS of GENERATION and EVOLUTION of the PCFC OXYGEN ELECTRODE/ELECTROLYTE INTERFACE
	<b>3B4 In-situ, In-Operando Techniques. Room: Moore</b> Chair: Cortney Kreller
11:20 - 11:40 Moore-I1	<u>Catalina E. Jimenez</u> ( <i>Helmholtz-Zentrum Berlin für Materialien und Energie, 12489 Berlin, Germany</i> ), Mauricio D. Arce, Rosario Suarez Anzorena, Mariano Santaya, Lucia M. Toscani, Emilia A. Carbonio, Raul Garcia Diez, Marianne van der Merwe, R. Enggar Wibowo, Mauro Melone, Nadia Gamba, Virginia Pérez Dieste, Ignacio J. Villar García, Daniel Töbrens, Shah Zareen, Lucas Bodenstein Dresler, Andrés López García, Wilson Quevedo Garzón, Dirk Wallacher, Nico Grimm, Regan G. Wilks, Axel Knop-Gericke, Susana A. Larrondo, Horacio E. Troiani, Liliana V. Moggi, Marcus Bär Insights by Advanced Synchrotron-Based Methods at the Solid/Gas Interface of Electrode Materials for Solid Oxide Cells
11:40 - 11:55 Moore-O1	<u>Savita Chaoudhary</u> ( <i>Institute of Material Science, TU Darmstadt, 64287 Darmstadt (Germany)</i> ), Pengcheng Hu, Binxiang Huang, Kim Alexander Creutz, Yue Liu, Gero Pickel, Vinit Agarwalla, Alexander Frebel, Andreas Klein Operando XPS studies of electrodes and electrolyte/electrode interfaces of solid oxide electrochemical cells
11:55 - 12:10 Moore-O2	<u>Andreas Nennig</u> ( <i>TU Wien</i> ), Alexander Opitz, Matthäus Siebenhofer, Christoph Riedl, Raffael Rameshan, Christoph Rameshan, Jürgen Fleig What can In-situ XPS Tell us About Reaction Mechanisms on Solid Oxide Cell Electrodes?
12:10 - 12:25 Moore-O3	<u>Arim Seong</u> ( <i>Department of Materials Exhibition Road, Imperial College London, London, SW7 2AZ, UK</i> ), Santanu Ray, Robert Leah, Subhasish Mukerjee, Stephen Skinner Understanding the evolution of chemistry and microstructure of functional ceramic interfaces under solid oxide cell operation
	<b>3B5 Exsolution/ Surfaces. Room: Abbey</b> Chair: Alexander Opitz
11:20 - 11:40 Abbey-I1	<u>Sivaprakash Sengodan</u> ( <i>Khalifa University</i> ) Unlocking High-Performance SOFC Anodes: Pd <sub>3</sub> Mn Alloy Exsolution from PrBaMn <sub>2</sub> O <sub>5+δ</sub>
11:40 - 11:55 Abbey-O1	<u>Bianca Dißmann</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University, 52074 Aachen, Germany</i> ), Jonathan M. Polfus, Andreas Rosnes, Roger A. De Souza Diffusion of Nickel upon Exsolution from La <sub>0.5</sub> Sr <sub>1.5</sub> Ti <sub>1-x</sub> Ni <sub>x</sub> O <sub>3-δ</sub> Studied by DFT Simulations and Thermogravimetry
11:55 - 12:10 Abbey-O2	<u>Princess Inangha</u> ( <i>Faculty of Engineering, Department of Materials, Imperial College, London</i> ) Visualizing the Size Evolution of Exsolved Nanoparticles by In-situ X-ray Scattering
12:10 - 12:25 Abbey-O3	<u>Dylan Jennings</u> ( <i>Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research, Materials Synthesis and Processing (IEK-1), 52425 Jülich, Germany</i> ), Moritz L. Weber, Yen-Po Liu, Ansgar Meise, Moritz Kindelmann, Ivar Reimanis, Hiroaki Matsumoto, Pengfei Cao, Regina Dittman, Joachim Mayer, Felix Gunkel, Wolfgang Rheinheimer Disparate Behavior in Exsolved Nanoparticles: The Influence of Embedded Nanostructures on Nanoparticle Dynamics



<p><b>3B6 Materials Discovery/ High Entropy Materials. Room: Gielgud</b> Chair: Matthew Rosseinsky</p>	
11:20 - 11:40 Gielgud-I1	<p><u>Yang Xu</u> (<i>University College London, London.</i>) Incorporating K-ions in the Cathode Materials for Sodium-Ion Batteries</p>
11:40 - 11:55 Gielgud-O1	<p>Yanyan Cui, Yushu Tang, Jing Lin, Junbo Wang, Simon Schweidler, Torsten Brezesinski, <u>Miriam Botros</u> (<i>Institute of Nanotechnology, Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany</i>) Photonic Surface Coating of High-Entropy Oxides on NCM Particles</p>
11:55 - 12:10 Gielgud-O2	<p><u>Jing Lin</u> (<i>Battery and Electrochemistry Laboratory, Institute of Nanotechnology, Karlsruhe Institute of Technology</i>), Mareen Schaller, Sylvio Indris, Jürgen Janek, Aleksandr Kondrakov, Torsten Brezesinski, Florian Strauss Multicationic Substituted High-Entropy Lithium Argyrodite Superionic Conductors</p>
12:10 - 12:25 Gielgud-O3	<p><u>Alexandros Vasileiadis</u> (<i>Storage of Electrochemical Energy, Department of Radiation Science and Technology, Faculty of Applied Sciences, Delft University of Technology, Mekelweg 15, 2929JB, Delft, The Netherlands</i>), James A. Quirk, Anastasia K. Lavrinenko, Theodosios Famprikis, Jouke R. Heringa, James A. Dawson, Marnix Wagemaker, Victor Landgraf, Pedro B. Groszewicz Unveiling the Role of Structural Disorder in Argyrodite Solid Electrolytes for Enhanced Li-ion Conductivity</p>
12:35 - 14:00	<p><b>Lunch Break</b></p>
<p><b>4B1 Lithium Electrodes. Room: Fleming</b> Chair: Kisuk Kang</p>	
14:00 - 14:30 Fleming-K1	<p><u>Montse Casas Cabanas</u> (<i>Center for Cooperative Research on Alternative Energies (CIC energiGUNE), Basque Research and Technology Alliance (BRTA)</i>), Marcus Fehse, Iciar Monterrubio, Nahom Enkubahri Asres, Juan Miguel López del amo, Marine Reynaud Crystal Chemistry Insights into LiM<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> (M = Ni, Fe) Spinels and Influence on Electrochemical Performance</p>
14:30 - 14:50 Fleming-I1	<p><u>Robert House</u> (<i>Department of Materials, University of Oxford; Oxford, UK</i>), John-Joseph Marie, Miguel Perez-Osorio, Gregory Rees, Mikkel Juulsholt, Jun Chen, Peter Bruce Oxygen-redox Chemistry in High Energy Density Battery Cathodes</p>
14:50 - 15:05 Fleming-O1	<p><u>Iliia Tertov</u> (<i>Institut de Chimie de la Matière Condensée de Bordeaux, CNRS, France</i>), Emmanuelle Suard, Laurence Croguennec, Christian Masquelier, Thomas Hansen, François Fauth, Pierre-Etienne Cabelguen Exploring Ni/Mn Ordering in LNMO via Comprehensive Neutron and X-ray Diffraction Study</p>
15:05 - 15:20 Fleming-O2	<p><u>Sou Taminato</u> (<i>Mie University</i>), Ryosuke Goto, Daisuke Mori, Nobuyuki Imanishi Synthesis and Lithium (De-)intercalation Properties of Li<sub>5+x</sub>Fe<sub>1-x</sub>Mn<sub>x</sub>O<sub>4</sub> with Anti-fluorite Type Structure for Lithium Battery Cathode</p>
<p><b>4B2 Anion Conductors. Room: Westminster</b> Chair: Tatsumi Ishihara</p>	
14:00 - 14:30 Westminster-K1	<p><u>Brent Melot</u> (<i>Departments of Chemistry, Chemical Engineering, and Materials Science, University of Southern California, Los Angeles, CA, USA</i>) Looking Beyond Alkali Metal Intercalation for Energy Storage</p>
14:30 - 14:50 Westminster-I1	<p>Briséis Mercadier, Samuel Coles, Mathieu Duttine, Christophe Legein, Monique Body, Olaf Borkiewicz, Oleg Lebedev, <u>Benjamin Morgan</u> (<i>Department of Chemistry, University of Bath, Claverton Down, Bath BA2 7AY, United Kingdom</i>), Christian Masquelier, Damien Dambournet Dynamic Lone Pairs and Fluoride-Ion Disorder in Cubic-BaSnF<sub>4</sub></p>
14:50 - 15:05 Westminster-O1	<p><u>Stephen Hull</u> (<i>The ISIS Facility, STFC Rutherford Appleton Laboratory, Chilton, Didcot, Oxfordshire, OX11 0QX, U.K.</i>), Gabriel Perez, Helen Playford, Robbie Shaw Fluoride-ion Conductors for Future Solid State Batteries</p>
15:05 - 15:20 Westminster-O2	<p><u>Arunkumar Dorai</u> (<i>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai 980-8577, Japan</i>), Miwa Murakami, Atsushi Mineshige, Reiji Takekawa, Kiyonori Takegoshi, Takahisa Omata, Junichi Kawamura Fluoride ion conduction mechanism Ba<sub>1-x</sub>Sn<sub>x</sub>F<sub>4</sub> solid electrolyte studied using 19F PFG-NMR</p>
15:20 - 15:35 Westminster-O3	<p><u>Chenchaao Zhong</u> (<i>Department of Applied Chemistry, Ritsumeikan University, Japan</i>), Shintaro Tachibana, Tailei Xu, Yu Shintomi, Keiji Shimoda, Takashi Saito, Takashi Kamiyama, Shogo Kawaguchi, Yuki Orikasa F- Conduction in Fluorosulphide La<sub>2</sub>SrF<sub>4</sub>S<sub>2</sub> and Cation-anion Engineering for Conductivity Enhancement</p>
<p><b>4B3 Protonic Materials. Room: St.James</b> Chair: TRULS NORBY</p>	
14:00 - 14:30 St.James-K1	<p><u>Tatsuya Kawada</u> (<i>Graduate School of Environmental Studies, Tohoku University, Japan</i>), Taisei Segami, Ryuta Sato, Soichiro Ebata, Satoshi Watanabe, Riyan Budiman, Mina Yamaguchi, Keji Yashiro, Koji Amezawa Stress Distribution in Proton Conducting Oxide under Fuel Cell Operation Conditions</p>
14:30 - 14:45 St.James-O1	<p><u>Yong-Yun Hsiau</u> (<i>University of Illinois Urbana-Champaign</i>), Yea-Shine Lee, Liz Griffin, Roberto dos Reis, Bernadette Cladek, Vinayak David, Katharine Page, Nicola Perry Growth, Structure, and Kinetics of Triple-conducting Vertically Aligned Nanocomposites</p>
14:45 - 15:00 St.James-O2	<p><u>Moritz Kindelmann</u> (<i>Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research</i>), Sonia Escolastico, Laura Almar, Julian Ebert, Dylan Jennings, Wolfgang Rheinheimer, Martin Bram, Jose Serra, Joachim Mayer, Olivier Guillon Acceptor dopant segregation controls the conductivity of barium zirconate based proton conductors</p>
15:00 - 15:15 St.James-O3	<p><u>Toshiaki Matsui</u> (<i>Kyoto University</i>), Takashi Ozeki, Nahoko Sugioka, Kazunari Miyazaki, Sadahiro Nagasaka, Hiroki Muroyama, Koichi Eguchi, Kenichi Imagawa, Yoshimi Okada Intermediate-temperature proton conductivity of Li<sup>+</sup>/H<sup>+</sup> ion-exchanged material (Li,H)<sub>3.5</sub>Zn<sub>0.25</sub>GeO<sub>4</sub></p>
<p><b>4B4 In-situ/in-Operando Techniques. Room: Moore</b></p>	
14:00 - 14:30 Moore-K1	<p><u>William Chueh</u> (<i>Department of Materials Science &amp; Engineering, Stanford University</i>) Oxygen Transport in Lithium Layered Oxides</p>
14:30 - 14:50 Moore-I1	<p><u>Neil Dasgupta</u> (<i>University of Michigan</i>) Operando Visualization of Solid-State Batteries: From Metal Anodes to Composite Cathodes</p>
14:50 - 15:05 Moore-O1	<p><u>Jongwoo Lim</u> (<i>Seoul National University, Seoul, South Korea</i>) lithium insertion dynamics at multi-length-scale</p>
15:05 - 15:20 Moore-O2	<p><u>Sivakumaran Sukumaran</u> (<i>Department of Materials, Imperial College London, South Kensington Campus, London, SW7 2AZ, U.K.</i>), Sarah Fearn, Stephen Skinner In situ TOF-SIMS Investigation of the Dynamic Metallic Anode Solid-Electrolyte Interface in Solid-State Sodium-ion Batteries</p>





15:20 - 15:35 Moore-O3	Valerie Siller, Barthélémy Lelotte Lelotte, Robin Wullich, Marta Mirolo, Laura Hölltschi, Vincent Pelé, Christian Jordy, Carlos A. F. Vaz, Camelia Borca, Thomas Huthwelker, Petr Novák, <u>Mario El Kazzi</u> ( <i>Electrochemistry Laboratory, Paul Scherrer Institute, Forschungstrasse 111, 5232 Villigen PSI, Switzerland</i> ) Operando XPS/XAS/XPEEM: Exploiting Complementary Techniques to Probe the Interfaces in All-Solid-State Batteries
<b>4B5 Exsolution/ Surfaces. Room: Abbey</b> Chair: Ilan Riess	
14:00 - 14:30 Abbey-K1	<u>WooChul Jung</u> ( <i>Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea.</i> ) An Ideal Surface Reveals How Active It Is and Why It Degrades: Atomically Flat SrTi <sub>0.5</sub> Fe <sub>0.5</sub> O <sub>3-δ</sub> Model Thin Film - a Case Study
14:30 - 14:50 Abbey-I1	<u>Simone Mascotto</u> ( <i>Institute of Integrated Natural Science, University of Koblenz, Germany</i> ), Filippo Colombo, Anastasios Tsiotsias, DongHwan Oh, Maria Goula, WooChul Jung Switchable catalysts realized via exsolution
14:50 - 15:05 Abbey-O1	<u>Jakub Lach</u> ( <i>Department of Hydrogen Energy, Faculty of Energy and Fuels, AGH University of Krakow, al. A. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Kun Zheng, Alicja Klimkowicz, Michał Gogacz, Cristian Radu, Jie Luo, Damian Kaufmann, Paweł Czaja, Yihan Ling Tuning nanofibrous electrode materials (Sm/Nd) <sub>0.9</sub> Ba <sub>0.9</sub> Mn <sub>1.8</sub> -xFexNi <sub>0.1</sub> Co <sub>0.1</sub> O <sub>6-δ</sub> with in situ Exsolved Nanocatalysts for Symmetrical Solid Oxide Cells
15:05 - 15:20 Abbey-O2	<u>Alfonso J. Carrillo</u> ( <i>Instituto de Tecnología Química, UPV-CSIC, Av. de los Naranjos s/n, 46022 Valencia, Spain</i> ), Andrés López-García, Sonia Remiro-Buenamañana, Dragos Neagu, Jose Manuel Serra Compositional optimization of multicomponent metallic nanoparticles via high-pressure exsolution from double perovskite electrodes
15:20 - 15:35 Abbey-O3	<u>Jonathan Cavazzani</u> ( <i>Department of Chemical Sciences, University of Padova, Via F. Marzolo 1, 35131, Padova, Italy</i> ), Antonella Glisenti Exsolution of NiFe alloy from titanates/ferrites-based perovskite for Solid Oxide Fuel Cells running on ammonia as alternative fuel
<b>4B6 Materials Discovery/ High Entropy Materials. Room: Gielgud</b> Chair: Kosova Kreka	
14:00 - 14:30 Gielgud-K1	Anatoly Frenkel, Yue Qi, Ellen Wachtel, David Ehre, <u>Igor Lubomirsky</u> ( <i>Dept. of Molecular Chemistry and Materials Science, Weizmann Institute of Science, Rehovot, 7610015, Israel</i> ) Electrostriction in Ionic Conductors: Origin and Implications
14:30 - 14:50 Gielgud-I1	<u>Aleksandra Mielewczyk-Gryń</u> ( <i>Institute of Nanotechnology and Materials Engineering, Faculty of Applied Physics and Mathematics, and Advanced Materials Centre, Gdańsk University of Technology, Narutowicza 11/12, 80-233 Gdańsk, Poland</i> ), Daniel Jaworski, Arkadiusz Dawczak, Sebastian Wachowski, Tadeusz Miruszewski, Tamilarasan Subramani, Hanna Kavaliuk, Alexandra Navrotsky, Maria Gazda High Entropy Oxides a buzz word or a new opening for proton conducting ceramics
14:50 - 15:05 Gielgud-O1	<u>Seemun Oh</u> ( <i>Department of Mechanical Engineering, KAIST, Daejeon, Republic of Korea</i> ), Dongyeon Kim, Hyeonggeun Kim, Kang Taek Lee Designing Highly Stable and Catalytic Oxygen Electrodes for Protonic Ceramic Electrochemical Cells Using High-Entropy Materials
15:05 - 15:20 Gielgud-O2	<u>Sebastian Wachowski</u> ( <i>Institute of Nanotechnology and Materials Engineering, Faculty of Applied Physics and Mathematics, and Advanced Materials Centre, Gdańsk University of Technology, Narutowicza 11/12, 80-233 Gdańsk, Poland</i> ), Hanna Kavaliuk, Iga Szpunar, Aleksandra Mielewczyk-Gryń, Tadeusz Miruszewski, Ragnar Strandbakke, Maria Balaguer Mixed protonic-electronic conductivity in barium lanthanide cobaltites: from simple perovskites to high entropy materials.
15:35 - 16:05	<b>Coffee Break</b>
<b>5B1 Lithium Electrodes. Room: Fleming</b> Chair: Montse Casas Cabanas	
16:05 - 16:35 Fleming-K1	<u>Kisuk Kang</u> ( <i>Center for Nanoparticle Research, Institute of Basic Science, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 151-742, Republic of Korea</i> ) A series of new Li-excess layered transition metal oxide with high energy density and no voltage fades
16:35 - 16:50 Fleming-O1	<u>Chia-Chin Chen</u> ( <i>Department of Chemical Engineering, National Taiwan University, Taipei 10617, Taiwan</i> ) Mixed Ion-Electron Transport in Composite Battery Electrodes
16:50 - 17:05 Fleming-O2	<u>Hirotađa Gamo</u> ( <i>National Institute of Advanced Industrial Science and Technology (AIST), Kansai Center</i> ), Hikaru Sano, Tetsu Kiyobayashi, Zyun Siroma, Yasushi Maeda Understanding Mechanism of Microscopic Conduction in Cathode Composites for All-Solid-State Batteries via Scanning Spreading Resistance Microscopy
17:05 - 17:20 Fleming-O3	<u>Sabrina Socolo</u> ( <i>Technical University, Darmstadt</i> ), Marcel Sadowski, Kilian Vettori, Matteo Bianchini, Juergen Janek, Karsten Albe Off-Stoichiometry, Vacancy Trapping, and Pseudo-irreversible First-Cycle Capacity in LiNiO <sub>2</sub>
17:20 - 17:35 Fleming-O4	<u>Takashi Nakamura</u> ( <i>Tohoku University</i> ), Yuta Kimura, Koji Amezawa, Juergen Janek Anion Defect Engineering for Spinel-Type Cathode LiMn <sub>2</sub> O <sub>4</sub>
17:35 - 17:50 Fleming-O5	<u>Chun-Yen Yang</u> ( <i>National Taiwan University, Taiwan</i> ), Chia-Chin Chen Anomalous lithium storage in self-activated metal-organic frameworks driven by structural transformation
<b>5B2 Anion Conductors. Room: Westminster</b> Chair: Brent Melot	
16:05 - 16:35 Westminster-K1	<u>Tatsumi Ishihara</u> ( <i>Kyushu University, International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Japan</i> ), Maksymilian Kluczny, Song Juntae, Watanabe Motonori Mixed anion conductivity in PbB <sub>2</sub> iO <sub>2</sub> Cl doped with Ca and Ga
16:35 - 16:50 Westminster-O1	<u>Kanghee Jo</u> ( <i>Pusan National University</i> ), Taeheun Lim, Jiseung Ryu, Ryan O'Hayre, Heesoo Lee Surface charge transfer in oxygen reduction reaction of A-site doped PrBaCo <sub>1.9</sub> Cu <sub>0.1</sub> O <sub>5+δ</sub> for IT-SOFC
16:50 - 17:05 Westminster-O2	<u>Rosario Suarez Anzorena</u> ( <i>Dept. Interface Design, Helmholtz-Zentrum für Materialien und Energie GmbH (HZB), Albert-Einstein-Straße 15, 12489 Berlin, Germany</i> ), Catalina E. Jiménez, Lucia M. Toscani, Mauro Melone, Virginia Pérez-Dieste, Ignacio J. Villar-García, Daniel Töbrens, Shah Zareen, Lucas Bodenstein-Dresler, Andrés López-García, Wilson Quevedo Garzon, Matthijs van Spronsen, Raul Garcia-Diez, Dirk Wallacher, Nico Grimm, Regan G. Wilks, Susana A. Larrondo, Marcus Bär Ni-Fe/CeO <sub>2</sub> -based Electrodes for Intermediate Temperature Solid Oxide Cells
17:05 - 17:20 Westminster-O3	<u>Alejandro Natoli</u> ( <i>Universidad San Pablo-CEU, CEU Universities, Facultad de Farmacia, Departamento de Química y Bioquímica, Urbanización Montepríncipe, Boadilla del Monte, Madrid, E-28668, Spain.</i> ), Ulises Amador, Susana García-Martín, Flaviano García-Alvarado SrFe <sub>1-x</sub> Sb <sub>x</sub> O <sub>3-δ</sub> AS POTENTIAL AIR ELECTRODE FOR SOLID OXIDE ELECTROLYZER CELLS
17:20 - 17:35 Westminster-O4	<u>Juan Bisquert</u> ( <i>Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castellò, Spain</i> ) Hysteresis processes in ionic, electronic and biological devices



17:35 - 17:50 Westminster-05	<u>Christian Rodenbücher</u> ( <i>Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research (IEK-14)</i> ), Gustav Bihlmayer, Kristof Szot, Carsten Korte Influence of Dislocations on the Redox Processes in Strontium Titanate
<b>5B3 Protonic Materials. Room: St.James</b> Chair: Tatsuya Kawada	
16:05 - 16:35 St.James-K1	<u>TRULS NORBY</u> ( <i>Department of Chemistry, Centre for Materials Science and Nanotechnology, University of Oslo</i> ) Mechanisms and Polarisation of Electrodes for Proton Ceramic Electrochemical Cells
16:35 - 16:50 St.James-01	<u>Or Ben Zion</u> ( <i>Dept. of Molecular Chemistry and Materials Science, Weizmann Institute of Science, Rehovot, 7610015, Israel</i> ), Tahel Malka, David Ehre, Igor Lubomirsky, Isaac Abrahams Effect of hydration on electrical and electromechanical properties of lanthanum-cerium oxides
16:50 - 17:05 St.James-02	<u>Heejung W. Chung</u> ( <i>Massachusetts Institute of Technology (MIT), Department of Materials Science and Engineering (DMSE)</i> ), Pjotr Žgung, Ju Li, Bilge Yıldız Quantified oxygen sublattice flexibility correlates with proton-hopping barriers in diverse ternary metal oxides
17:05 - 17:20 St.James-03	<u>Takahisa Omata</u> ( <i>Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University</i> ), Aman Sharma, Issei Suzuki, Kei Toyooka, Tomohiro Ishiyama, Junji Junji Suppression of electronic conduction by local structural change around vanadium ions induced by replacing sodium ions with protons in vanadophosphate glass
17:20 - 17:35 St.James-04	<u>Yabing Wen</u> ( <i>University of Oslo (UiO)</i> ), Yadan Luo, Truls Norby Polarization from the space charge layer at the interface between metal Ag electrodes and proton ceramic electrolytes
<b>5B4 In-situ, In-Operando Techniques. Room: Moore</b> Chair: Peter Bruce	
16:05 - 16:20 Moore-04	<u>Boyang Fu</u> ( <i>AGH University of Krakow, Faculty of Energy and Fuels, Al. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Andrzej Kulka, Konrad Świerczek Interphase Engineering by Electrolyte Additives for Lithium-Rich Layered Oxides: operando XRD studies, operando Raman studies, and electrochemical properties
16:20 - 16:35 Moore-03	<u>Zhiyuan ZENG</u> ( <i>Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong SAR, P.R. China</i> ) Electrochemical lithium intercalation & exfoliation in 2D TMDs and its in-situ studies
16:35 - 16:50 Moore-01	<u>Ozgur Capraz</u> ( <i>University of Maryland Baltimore County</i> ) Probing Chemo-Mechanical Deformations in Cathode Materials for Alkali Metal Ion Batteries via Operando Stress/Strain Measurements
16:50 - 17:05 Moore-02	Chao Zhu, Franjo Weber, Till Fuchs, Shiguru Kobayashi, Felix Richter, Taro Hitosugi, Jürgen Janek, <u>Rüdiger Berger</u> ( <i>Max Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany</i> ) Lithium dendrite growth and space charge layers detected by operando KPFM measurements
<b>5B5 Exsolution/ Surfaces. Room: Abbey</b> Chair: WooChul Jung	
16:05 - 16:35 Abbey-K1	<u>Ilan Riess</u> ( <i>Physics Department, Technion-IIT, Haifa 3200003, Israel</i> ) The unique properties of the surface monomolecular layer of reduced ceria
16:35 - 16:50 Abbey-01	<u>Yuji Okuyama</u> ( <i>Faculty of Engineering, University of Miyazaki, Gakuen-kibanadai-nishi-1-1, Miyazaki, 889-2192, Japan.</i> ), Hideaki Iguchi, Yuki Sekitani, Kosuke Yamuchi, Yuichi Mikami, Tomohiro Kuroha, Youya Sasakawa, Nai Shi, Junji Hyodo, Yoshihiro Yamazaki Ni exsolution induced fast proton conduction in Lu and Ni-codoped barium zirconate
16:50 - 17:05 Abbey-02	<u>Juanita Hidalgo</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, USA</i> ), Florian Schrenk, Filip Grajkowski, Bilge Yıldız Understanding surface chemistry and exsolution mechanisms by in-situ ambient-pressure spectroscopy for optimal nanocatalyst design
17:05 - 17:20 Abbey-03	<u>Zhishan Li</u> ( <i>Foshan Xianhu Laboratory</i> ), San Ping Jiang EFFECT OF SURFACE DECORATED CeO <sub>2</sub> AMOUNT on the ELECTROCHEMICAL PERFORMANCE of RSOC FUEL ELECTRODE
17:20 - 17:35 Abbey-04	<u>Alexandre Merieau</u> ( <i>Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, F-44000 Nantes, France</i> ), Olivier Joubert, Clément Nicollet Surface acidity: an understanding of the catalytic properties in mixed conducting oxides for oxygen exchange reaction
17:35 - 17:50 Abbey-05	<u>Joë Kler</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University</i> ), Jacqueline M. Börgers, Roger A. De Souza The Effect of Surface Orientation and Water on the Oxygen Surface Exchange in Strontium Titanate
<b>5B6 Materials Discovery/ High Entropy Materials. Room: Gielgud</b> Chair: Aleksandra Mielewczyk-Gryn	
16:05 - 16:35 Gielgud-K1	Haley Buckner, Joshua Simpson-Gomez, Alexander Bonkowski, Kathrin Rubartsch, Hua Zhou, Roger De Souza, <u>Nicola Perry</u> ( <i>University of Illinois Urbana-Champaign</i> ) Transforming an Ionic Conductor into an Electronic Conductor Through Crystallization
16:35 - 16:50 Gielgud-01	<u>Margarita Nowakowska</u> ( <i>Faculty of Materials Science and Ceramics, AGH University of Krakow, al. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Juliusz Dąbrowa, Anna Stępień, Marek Zajusz, Keyun Li, Klaudia Zielińska, Konrad Świerczek Improving the performance of SrFe <sub>1-x</sub> MoxO <sub>3-δ</sub> -based SOFC electrodes by application of the high-entropy approach
16:50 - 17:05 Gielgud-02	Hasti Vahidi, Huiming Guo, <u>William Bowman</u> ( <i>Department of Materials Science and Engineering, University of California, Irvine, Irvine, CA United States 92617</i> ) Atomic and Nanoscale Studies of Secondary Phase Formation and Exsolution-Self-Assembly in High Entropy Oxide Electroceramics
17:05 - 17:20 Gielgud-03	<u>Kosova Kreka</u> ( <i>Catalonia Institute for Energy Research (IREC), Sant Adrià de Besos, 08930, Barcelona, Spain.</i> ), Antonio Maria, Simon Schweidler, Miriam Botros, Mohana V. Kante, Marc Torrell, Albert Tarancón High Entropy Oxides for Enhanced Performance and Stability at High Current Densities in Solid Oxide Cells
17:20 - 17:35 Gielgud-04	<u>Keyun Li</u> ( <i>Department of Hydrogen Energy, Faculty of Energy and Fuels, AGH University of Krakow, al. A. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Piotr Winiarz, Anna Niemczyk, Yevgeniy Naumovich, Kosova Kreka, Marc Torrell, Albert Tarancón, Konrad Świerczek Development of Oxygen Electrodes for Solid Oxide Cells based on Multicomponent La <sub>0.6</sub> Sr <sub>0.4</sub> Ni <sub>0.15</sub> Mn <sub>0.15</sub> Fe <sub>0.15</sub> Cu <sub>x</sub> Co <sub>0.55-x</sub> O <sub>3-δ</sub> Perovskite: Role of Copper Substitution, Influence of Entropy and Morphology Modification by Electrospinning
17:35 - 17:50 Gielgud-05	<u>Yoji Kobayashi</u> ( <i>King Abdullah University of Science and Technology (KAUST) - Saudi Arabia</i> ) Precise anion structure and ionic conductivity of high entropy oxides and oxyhydrides
18:00 - 19:30	<b>Poster Session</b>



July 17th - Day 4 (Wednesday)	
07:30 - 08:20	<b>Registration</b>
	<b>Plenary Session 3. Room: Fleming</b> Chair: Richard Catlow
08:20 - 09:10 Fleming-T1	<u>Aron Walsh</u> ( <i>Department of Materials, Royal School of Mines, Imperial College London, London SW7 2AZ, England</i> ) Solid State Informatics
09:10 - 09:25	<b>Poster Awards Ceremony. Room: Fleming</b>
09:25 - 09:40	<b>ISSI Elections. Room: Fleming</b>
09:40 - 09:45	<b>Session Change</b>
	<b>2C1 Catalysis. Room: Fleming</b> Chair: Sean Bishop
09:45 - 10:15 Fleming-K1	<u>Huayang Zhu</u> , Gregory S. Jackson, Joshua Perksy, <u>Robert J. Kee</u> ( <i>Mechanical Engineering, Colorado School of Mines, Golden, CO 80401</i> ) Gadolinium-Doped Ceria as a Mixed-Conducting Electrolyte in a Membrane-Assisted Water-Gas-Shift Process
10:15 - 10:30 Fleming-O1	<u>Gang Wan</u> ( <i>Department of Mechanical Engineering, Stanford University</i> ), Arun Majumdar When Free Radicals Meet the Solid, Ion, and Gas in Photochemical Methane Oxidation and Removal
10:30 - 10:45 Fleming-O2	<u>Dongha Kim</u> ( <i>University of Toronto</i> ), Shijie Liu, David Sinton Direct air capture via two-electrolyser electrocatalysis coupled with carbonate crystallizer
	<b>2C2 Materials Modelling. Room: Westminster</b> Chair: Dane Morgan
09:45 - 10:15 Westminster-K1	<u>Saiful Islam</u> ( <i>Department of Materials, University of Oxford; Oxford, UK</i> ) From Cathodes to Solid Electrolytes: Atomic-Scale Insights into Battery Materials
10:15 - 10:30 Westminster-O1	<u>Yoshitaka Tateyama</u> ( <i>Laboratory for Chemistry and Life Science, Tokyo Institute of Technology, Yokohama, Japan</i> ), Zizhen Zhou, Huu Duc Luong, Bo Gao Strain Effects on Li-ion Transport around Cathode-Coating Interfaces: A DFT Study
10:30 - 10:45 Westminster-O2	Marcel Sadowski, Sabrina Siculo, Leonie Koch, <u>Karsten Albe</u> ( <i>TU Darmstadt, Institute of Materials Science, Otto-Berndt-Str. 3, D-64287 Darmstadt, Germany</i> ) On the role of dislocations in chemomechanical degradation of layered transition-metal oxides: A computational study
	<b>2C3 Sodium Batteries/Materials. Room: St.James</b> Chair: Emma Kendrick
09:45 - 10:15 St.James-K1	<u>Jürgen Janek</u> ( <i>Institute of Physical Chemistry &amp; Center for Materials Research, Justus Liebig University Giessen</i> ) High Capacity Anodes in Lithium and Sodium Solid-State Batteries
10:15 - 10:30 St.James-O1	<u>Alice Beardmore</u> ( <i>Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, CB2 1EW, Cambridge, UK</i> ), Svetlana Menkin, Dominic Wright, Clare Grey Elucidating the Effect of Solvent and Binder Choice on SEI Stability Using Novel Electrolytes for Sodium-Ion Batteries
10:30 - 10:45 St.James-O2	<u>Debolina Deb</u> ( <i>Department of Materials Engineering, Indian Institute of Science, Bengaluru, 560012, Karnataka, India</i> ), Sai Gautam Gopalakrishnan Exploration of Fluoride-Based Compounds as Na-Ion Cathodes
	<b>2C4 Thin Films/Devices. Room: Moore</b> Chair: Dillon Fong
09:45 - 10:15 Moore-K1	<u>Albert Tarancón</u> ( <i>ICREA, Passeig Lluís Companys 23, 08010, Barcelona, Spain</i> ), Juan de Dios Sirvent, Philipp Langner, Fjorelo Buzi, Paul Nizet, Kosova Kreka, Nerea Alayo, Alex Morata, Federico Baiutti, Francesco Chiabrera The Beginning of the Ion Age: Thin Film Oxides for Solid-State Ionics and Iontronics Devices
10:15 - 10:30 Moore-O1	<u>Nicolas Oseniat</u> ( <i>Laboratory for Thin Films and Photovoltaics, Empa - Swiss Federal Laboratories for Materials Science and Technology, CH-8600 Dübendorf, Switzerland</i> ), Erica Clinton, André Müller, Joël Casella, Jędrzej Morzy, Moritz Futscher, Kumar Yalamanchili, Yaroslav Romanyuk Sputtering of C- and Si-doped LiPON as thin-film electrolyte separator for all-solid-state Li-ion batteries
10:30 - 10:45 Moore-O2	<u>Mohammadhossein Montazerian</u> ( <i>Department of Chemistry and Applied Biosciences, ETH Zürich, Zürich, Switzerland</i> ), Adil Baiju, Daniele Pergolesi, Mario El Kazzi, Thomas Lippert, Nikita Shepelin All-Oxide all-solid-state micro Li-ion batteries
	<b>2C5 Batteries. Room: Abbey</b> Chair: Yet-Ming Chiang
09:45 - 10:15 Abbey-K1	<u>Juergen Fleig</u> ( <i>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</i> ) The Chemical Capacitance as the Link between Defect Chemistry and Electrode Potentials in Lithium Ion and Oxygen Ion Batteries
10:15 - 10:30 Abbey-O1	<u>Alexander Schmid</u> ( <i>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</i> ), Barbara Wagner, Jürgen Fleig Rechargeable oxygen ion batteries based on mixed conducting oxides
10:30 - 10:45 Abbey-O2	<u>Weicheng Hua</u> ( <i>Norwegian University of Science and Technology (NTNU)</i> ), Krisianne Nygård Nilsen Hjelseng, Ann Mari Svensson, Maria Valeria Blanco, Frederico Cova, Johan Jean-Claude Maurice Hamonnet, Pedro Alonso Sanchez, Juan Rubio Zuazo Multi-Pronged Approach for Probing the Reaction Mechanism of SiO <sub>2</sub> Anodes in Li-ion Batteries
	<b>2C6 Membranes. Room: Gielgud</b> Chair: Ian Metcalfe
09:45 - 10:15 Gielgud-K1	<u>Dong Ding</u> ( <i>Energy and Environmental Science and Technology, Idaho National Laboratory, Idaho Falls, ID 83415, USA</i> ) Flexible Chemical and Fuel Production at Elevated Temperature using Protonic Ceramic Electrochemical Cells (PCEC) for a Net-Zero World
10:15 - 10:30 Gielgud-O1	<u>María Balaquer</u> ( <i>Instituto de Tecnología Química (Universitat Politècnica de València - Consejo Superior de Investigaciones Científicas), Av. Los Naranjos, s/n, 46022 Valencia, Spain</i> ), Sonia Escolástico, Cecilia Solís, Fidel Toldra-Reig, Simona Somacescu, Uta Gerhards, Ainara Agüadero, Katja Haas-Santo, Roland Dittmeyer, Jose Manuel Serra H <sub>2</sub> S Promotion of Mixed Protonic-Electronic Transport in La <sub>5</sub> .4WO <sub>11</sub> .1- $\delta$ Membranes



10:45 - 11:15	<b>Coffee Break</b>
	<b>3C1 Catalysis. Room: Fleming</b> Chair: Robert Kee
11:15 - 11:45 Fleming-K1	<u>Sean Bishop</u> ( <i>Sandia National Laboratories, Albuquerque, NM, USA</i> ), Matthew Witman, Keith King, Arielle Clauser, Michael Dzara, Perla Salinas, Joshua Sugar, Pinwen Guan, Bert Debusschere, Eric Coker, David Ginley, Anthony McDaniel Predicting and Evaluating New Water Splitting Materials for Solar Thermochemical Hydrogen Production
11:45 - 12:00 Fleming-O1	<u>Filip Grajkowski</u> ( <i>Laboratory for Electrochemical Interfaces, Massachusetts Institute of Technology, Cambridge, MA, USA</i> ), Subhash Chandra, Sanaz Koohfar, Dongha Kim, Georgios Dimitrakopoulos, Bilge Yildiz Utilizing the intermediates of oxygen evolution to promote the selective electrochemical oxidative coupling of methane to ethylene
12:00 - 12:15 Fleming-O2	Won Jun Lee, <u>Jeong Woo Han</u> ( <i>Department of Materials Science &amp; Engineering, Seoul National University, Seoul, Korea</i> ) Highly Active, Stable Ru-free Anode for Direct Ammonia Solid Fuel Cells: Enhanced Performance through Donor-Promoted NiFe Alloy Catalysts
12:15 - 12:30 Fleming-O3	<u>Maha El Bedaiwy</u> ( <i>The American University in Cairo</i> ), Mostafa Youssef, Mohamed El-Morsi, Mohamed Amr Serag-Eldin The thermochemistry of the water splitter SrTi <sub>0.5</sub> Mn <sub>0.5</sub> O <sub>3-δ</sub> studied using density functional theory (DFT+U)
	<b>3C2 Materials Modelling. Room: Westminster</b> Chair: Aron Walsh
11:15 - 11:45 Westminster-K1	<u>Dane Morgan</u> ( <i>University of Wisconsin-Madison</i> ) Molecular Simulations and Machine Learning for Computational Design of Materials with Fast Oxygen Kinetics
11:45 - 12:00 Westminster-O1	<u>Jeongah Lee</u> ( <i>Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea.</i> ), Sangwoo Kim, Yong Beom Kim, DongHwan Oh, Sejong Ahn, Sung-Yoon Chung, WooChul Jung A study on Ca-substituted LaCoO <sub>3</sub> perovskite oxides for alkaline water and ethanol oxidation reactions
12:00 - 12:15 Westminster-O2	<u>Mostafa Youssef</u> ( <i>The American University in Cairo</i> ), Mohamed Abdallah, Sahar Abdel Azeem Understanding Field-Enhanced Ion Transport in Insulating Oxides: Insights from Molecular Dynamics Simulations and Cumulants analysis
12:15 - 12:30 Westminster-O3	<u>Takaya Fujisaki</u> ( <i>Faculty of Materials for Energy, Shimane University</i> ), Yuta Tsuji, Phuc Hoan Tu, David S. Rivera Rocabado, Aleksandar Tsekov Staykov, Yusuke Shiratori, Keiji Yashiro Effect of hydrogen ion behavior on methane dissociation on CeO <sub>2</sub> -supported Ni nanoparticles
	<b>3C3 Sodium Batteries/Materials. Room: St.James</b> Chair: Jürgen Janek
11:15 - 11:45 St.James-K1	<u>Emma Kendrick</u> ( <i>University of Birmingham</i> ) Critique of critical and other materials in sustainable new battery chemistry developments
11:45 - 12:00 St.James-O1	<u>Qidi Wang</u> ( <i>Storage of Electrochemical Energy, Department of Radiation Science and Technology, Faculty of Applied Sciences, Delft University of Technology, Mekelweg 15, 2929JB, Delft, The Netherlands</i> ), Chenglong Zhao, Marnix Wagemaker Principles of layered electrode/electrolyte materials for batteries
12:00 - 12:15 St.James-O2	<u>Ester García-González</u> ( <i>Departamento de Química Inorgánica, Facultad de Ciencias Químicas, Universidad Complutense de Madrid, Madrid 28040, Spain</i> ), Chandrasekar M Subramaniyan, Alois Kuhn, Olga Guerrero-Pérez, Enrique Rodríguez-Castellón, Flaviano García-Alvarado The underexplored tunneled-V4O9: a competitive cathode material efficiently synthesized
12:15 - 12:30 St.James-O3	<u>Theodosios Famprikis</u> ( <i>Department of Radiation Science &amp; Technology, Faculty of Applied Sciences, Delft University of Technology, The Netherlands</i> ), Alexandros Vasileiadis Structure and Dynamics of Inorganic Rotor-Phase Electrolytes
	<b>3C4 Thin Films/Devices. Room: Moore</b> Chair: Matthew Wells
11:15 - 11:45 Moore-K1	<u>Dillon Fong</u> ( <i>Materials Science Division, Argonne National Laboratory</i> ) X-ray studies of oxygen vacancies in epitaxial SrCoO <sub>x</sub> heterostructures
11:45 - 12:00 Moore-O1	<u>En Ju Cho</u> ( <i>Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA</i> ), Nicola Perry Optimizing Ionic Conductivity of Pulsed Laser Deposited Li <sub>1.3</sub> Al <sub>0.3</sub> Ti <sub>1.7</sub> (PO <sub>4</sub> ) <sub>3</sub> (LTP) Thin Films for Multilayer Solid-State Battery Electrolytes
12:00 - 12:15 Moore-O2	<u>Frederic Le Cras</u> ( <i>Univ. Bordeaux, CNRS, Bordeaux INP, ICMCB, UMR 5026, F-33600 Pessac, France</i> ), William Berthou, Maxime Legallais, Bruno Bousquet, Vincent Motto-Ros, Stephanie Sorieul, Gunay Yildirim High Throughput Screening of Thin Film Solid Ionic Conductors using an Experimental Approach: Application to the Li(Si)PON System
	<b>3C5 Batteries. Room: Abbey</b> Chair: Juergen Fleig
11:15 - 11:45 Abbey-K1	<u>Yet-Ming Chiang</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology</i> ), Cole D. Fincher, Vijay D. Veeraraghavan, Colin Gilenbach, Daniela Vallejo, Chiung-Yuan Lo, James LeBeau, Brian W. Sheldon, W. Craig Carter, M. D. Thouless Stability of the Metal Electrode – Solid Electrolyte Subassembly for Solid-State Batteries
11:45 - 12:00 Abbey-O1	Mickael Dolle, <u>Rozita Sadeghzadeh</u> ( <i>University of Montreal, Canada</i> ), David Lepage, Gabrielle Foran, Arnaud Prébé, David Aymé-Perrot Advances in the Synthesis and Characterization of Blended Polymer Electrolytes for Li-Based Batteries: From Solid to Gel Electrolytes with Enhanced Ionic Conductivity
12:00 - 12:15 Abbey-O2	<u>Hirotochi Yamada</u> ( <i>Nagasaki University</i> ), Tomoko Ito Influence of Stress Buffer in Oxide-based All-solid-state Batteries
12:15 - 12:30 Abbey-O3	<u>Kazunori Nishio</u> ( <i>School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo 152-8552, Japan.</i> ), Daisuke Imazeki, Kosuke Kurushima, Yuki Takeda, Kurei Edamura, Shigeru Kobayashi, Ryo Nakayama, Ryota Shimizu, Taro Hitosugi Quantitative investigation of the interface resistance between sulfide solid electrolyte and positive electrode in all-solid-state Li batteries
	<b>3C6 Young Scientist Awards. Room: Gielgud</b> Chair: Rotraut Merkle
11:15 - 11:30 Gielgud-O1	<u>Kent Griffith</u> ( <i>University of California San Diego, California 92093-0021, United States of America</i> ) Designing Crystal Chemistry for High-power, Fast-charging Batteries



11:30 - 11:45 Gielgud-02	<u>Chuancheng Duan</u> ( <i>Kansas State University, USA</i> ) Ionic Synergy in Advancing Ceramic Electrochemical Cells with Composite Electrodes
11:45 - 12:00 Gielgud-03	<u>Andrey Poletaev</u> ( <i>Department of Materials, University of Oxford, Parks Road, Oxford, OX1 3PH, UK</i> ), Matthias Hoffmann, James Dawson, Samuel Teitelbaum, Mariano Trigo, Saiful Islam, Aaron Lindenberg Between vibrations and diffusion: the persistence of memory in ion conduction
12:00 - 12:15 Gielgud-04	<u>Qiyang Lu</u> ( <i>School of Engineering, Westlake University, Hangzhou, China</i> ) Navigating Complexity: Harnessing Ionic Defects for Tailored Oxide Thin Film Properties
12:15 - 12:30 Gielgud-05	<u>Iwnetim Abate</u> ( <i>MIT, USA</i> ) High-Valent Redox in Intercalation Electrodes: The Interplay of Defect Chemistry, Electrostatics, and Structure
12:30 - 14:00	<b>Lunch Break</b>
	<b>Mid career Award Lecture and Ceremony - Room: St.James</b> Chair: Koji Amezawa
13:30 - 14:00 St.James-K1	<u>Philipp Adelhelm</u> ( <i>Humboldt-University of Berlin, Germany</i> ) Solvent co-intercalation and other chemical surprises in Na-ion batteries
	<b>4C1 Catalysis. Room: Fleming</b> Chair: Aleksey Yaremchenko
14:00 - 14:30 Fleming-K1	<u>Jan Metcalfe</u> ( <i>Newcastle University</i> ) Mixed ionic and electronic conductors for fuels to hydrogen
14:30 - 14:50 Fleming-I1	<u>Di Chen</u> ( <i>Tsinghua University</i> ) Enhancing Surface Redox Kinetics in Ceria Thin Films: The Role of Biaxial Strain and Alkaline Oxides
14:50 - 15:05 Fleming-O1	<u>Lisa Winkler</u> ( <i>Technical University of Munich</i> ), Jennifer Rupp Proton Conducting Ceramic Single Chamber Glucose Fuel Cells for Human Implants
15:05 - 15:20 Fleming-O2	<u>Alessandro Senocrate</u> ( <i>Empa-Swiss Federal Laboratories for Materials Science and Technology, CH-8600, Dübendorf, Switzerland</i> ), Francesco Bernasconi, Peter Kraus, Corsin Battaglia Controlling CO <sub>2</sub> and H <sub>2</sub> O Mass Transport in Gas Diffusion Electrodes for CO <sub>2</sub> Reduction by Acting on the Substrate
	<b>4C2 Materials Modelling. Room: Westminster</b> Chair: Richard Catlow
14:00 - 14:30 Westminster-K1	<u>Pooja Goddard</u> ( <i>Loughborough University</i> ), Apoorv Jain, Bassej Oboho, Maurits Houck, Alex Groombridge, Fiona Coomer Solid State Ionic Modelling of Niobium Based Oxides for Battery Applications
14:30 - 14:50 Westminster-I1	<u>Aleksandar Staykov</u> ( <i>International Institute for Carbon-Neutral Energy Research (I2CNER), Kyushu University, 744 Motoooka, Fukuoka 819-0395, Japan</i> ) Theoretical insights in surface catalytic activity and ionic transport in complex oxides
14:50 - 15:05 Westminster-O1	<u>Shusuke Kasamatsu</u> ( <i>Faculty of Science, Yamagata University</i> ), Tatsumi Aoyama, Yuichi Motoyama, Kazuyoshi Yoshimi Ab Initio Statistical Thermodynamics of Dopant Segregation and Space Charge Formation at Metal/Ionic Conductor Interfaces
15:05 - 15:20 Westminster-O2	<u>Alexander Shluger</u> ( <i>Department of Physics and Astronomy, University College London, Gower Street, London, WC1E 6BT, United Kingdom</i> ), Teofilo Cobos Freire Formation, Diffusion and Incorporation of Interstitial Oxygen Ions at the TiN/Oxide Interfaces
15:20 - 15:35 Westminster-O3	<u>Meng Li</u> ( <i>Energy and Environmental Science and Technology, Idaho National Laboratory, Idaho Falls, ID, 83415, United States</i> ), Dong Ding, Yanwen Zhang Revealing Small Ion Intercalation Dynamics through Data Mining of Trajectories
	<b>4C3 Sodium Batteries/Materials. Room: St.James</b> Chair: Shirley Meng
14:00 - 14:30 St.James-K1	<u>Chuanlian Xiao</u> ( <i>Max Planck Institute for Solid State Research, Physical Chemistry of Solids, Stuttgart, 70569, Germany</i> ), Yue Zhu, Joachim Maier Solid State Ionics of Lithium or Sodium Storage
14:30 - 14:50 St.James-I1	<u>ANKE WEIDENKAFF</u> ( <i>Technical University, Darmstadt</i> ) Regenerative Sustainable Materials for a Circular Economy
14:50 - 15:05 St.James-O1	<u>Saneyuki Ohno</u> ( <i>Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University</i> ), Zheng Huang New Na-ion conducting halide-based solid electrolytes: NaNbCl <sub>6</sub> and NaTaCl <sub>6</sub>
15:05 - 15:20 St.James-O2	<u>Anastasia GREBENSHCHIKOVA</u> ( <i>Institut de Chimie de la Matière Condensée de Bordeaux, Bordeaux INP, ICMCB UMR 5026, F-33600 Pessac, France</i> ), Jacob OLCHOWKA, Loïc SIMONIN, Laurence CROGUENNEC, Christian MASQUELIER Iron and Sulfate Based Positive Electrode Materials for Na-ion Batteries
15:20 - 15:35 St.James-O3	<u>Cristina Garcia</u> ( <i>Instituto de Ciencia de Materiales de Madrid, ICMM-CSIC, Sor Juana Inés de La Cruz 3, Madrid, 28049, Spain</i> ), Ainara Aguadero, Ricardo Jimenez, Jose Antonio Alonso Engineering of NaSICON-current collector interfaces to optimise the performance of Na solid-state reservoir-free batteries
	<b>4C4 Thin Films/Devices. Room: Moore</b> Chair: Albert Tarancón
14:00 - 14:30 Moore-K1	<u>David Scanlon</u> ( <i>School of Chemistry, University of Birmingham, Birmingham, UK</i> ) Identifying the ground state structures of point defects in solids
14:30 - 14:50 Moore-I1	<u>Federico Baiutti</u> ( <i>Catalonia Institute for Energy Research (IREC), Sant Adrià de Besos, 08930, Barcelona, Spain.</i> ), Fjorelo Buzi, Juande Sirvent, Kosova Kreka, Lucile Bernadet, Francesco Chiabrera, Lucile Bernadet, Alex Morata, Albert Tarancon Nanostructured thin-film architectures for high-temperature electrochemistry
14:50 - 15:05 Moore-O1	<u>Xin Xu</u> ( <i>The Polytechnic School, Arizona State University</i> ) Ultra-thin Surface Doping for Regulating Li Intrusion in Garnet Solid Electrolytes
15:05 - 15:20 Moore-O2	<u>Matthew Wells</u> ( <i>University of Cambridge.</i> ), Judith MacManus-Driscoll Performance Enhancement of Low-Temperature Solid Oxide Cells with Vertically Aligned Nanocomposite Films
15:20 - 15:35 Moore-O3	<u>Tim K. Hecker</u> ( <i>Institute of Experimental Physics I, Justus Liebig University, Heinrich-Buff-Ring 16, 35392 Giessen, Germany</i> ), Markus S. Friedrich, Alexander G. Strack, Paul Tuchecker, Peter J. Klar Impact of Hydrogen-Induced Structural Phase Transition on Diffusion in Tungsten Trioxide Thin-Films



<b>4C5 Batteries. Room: Abbey</b>	
Chair: Philipp Adelhelm	
14:00 - 14:30 Abbey-K1	<u>Clare Grey</u> ( <i>University of Cambridge</i> ) Linking Transport with Intercalation Mechanisms, Cracking, and Dendrite Formation in Conventional and Solid-State Batteries.
14:30 - 14:50 Abbey-I1	<u>Chun Ann Huang</u> ( <i>Department of Materials, Imperial College London, London, UK</i> ) Novel processing and 3D correlative imaging of electrodes for batteries
14:50 - 15:05 Abbey-O1	<u>Dominika Gastol</u> ( <i>School of Metallurgy and Materials, University of Birmingham, Birmingham B15 2TT, UK</i> ), Yongxiu Chen, Mathew Capener, Alexis Maurel, Ana Cristina Martinez Maciel, Yirong Lin, Eric MacDonald, Emma Kendrick 3D printing of dual-chemistry and dual-structured electrodes for high energy and controlled recycling of Li-ion batteries
15:05 - 15:20 Abbey-O2	<u>Amna Rafique</u> ( <i>Center for Cooperative Research on Alternative Energies (CIC energiGUNE), Basque Research and Technology Alliance (BRTA), Parque Tecnológico de Álava, Albert Einstein, 48, 01510, Vitoria-Gasteiz, Spain</i> ), Lorenzo Fallarino, Pedro López-Aranguren, Arianna Pesce Interfacial design and engineering of anode-less ceramic LLZO Batteries
15:20 - 15:35 Abbey-O3	<u>Yejin Kang</u> ( <i>Department of Mechanical Engineering, KAIST, Daejeon, Republic of Korea</i> ), Seungsoo Jang, Joonam Park, Hyeongseok Kim, Kang Taek Lee An Electro-Chemo-Mechanical Modeling for Anode Degradations using Heterogeneous Graphite Electrodes of Lithium-Ion Batteries
<b>4C6 Membranes. Room: Gielgud</b>	
Chair: Markus Kubicek	
14:00 - 14:30 Gielgud-K1	<u>Jean-Marc BASSAT</u> ( <i>CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB UMR 5026, F-33600 Pessac, France</i> ), Pierre-Marie GEFFROY, Elise BONNET, Romuald FRUGIER, Zonghao SHEN, Jérôme LAURENCIN, Jacinthe GAMON Recent advances in materials, shaping and characterization tools for efficient SOFC and SOEC devices operating at intermediate temperatures
14:30 - 14:50 Gielgud-I1	<u>Leonard Kwati</u> ( <i>International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Kyushu University, Japan.</i> ), Mariya E. Ivanova, Christain Dellen, Moritz Kindelmann, Wilhelm A. Meulenber, Tatsumi Ishihara, Hiroshige Matsumoto Processing Ceramic Protonic Membranes with Optimized Electrode/Electrolyte Interface for PCEC/PCFC Application.
14:50 - 15:05 Gielgud-O1	<u>Marwan Laqdiem</u> ( <i>Instituto de Tecnología Química (Universitat Politècnica de València - Consejo Superior de Investigaciones Científicas), Av. Los Naranjos s/n, E-46022 Valencia, Spain</i> ), Jose Manuel Serra Alfaro, Laura Almar, Alfonso J. Carrillo, Alvaro Represa, Sonia Escolastico, David Catalán-Martinez, Julio Garcia-Fayos Electrifying Ba <sub>0.5</sub> Sr <sub>0.5</sub> Co <sub>0.8</sub> Fe <sub>0.2</sub> O <sub>3-<math>\delta</math></sub> for focalized heating in oxygen transport membranes
15:05 - 15:20 Gielgud-O2	<u>Håkon Andersen</u> ( <i>Department of Chemistry, Centre for Materials Science and Nanotechnology, University of Oslo</i> ), Yngve Larring, Reidar Haugsrud Kinetic study of novel oxygen carriers for chemical looping for hydrogen production: Ca <sub>0.6</sub> La <sub>0.4</sub> Ti <sub>0.1</sub> CrxMn <sub>0.9-x</sub> O <sub>3-<math>\delta</math></sub> (x = 0, 0.3, 0.45 & 0.9)
15:20 - 15:35 Gielgud-O3	<u>Philipp Brünner</u> ( <i>IONTOF GmbH</i> ), Thomas Grehl, Jona Schuch, Sebastian Klemenz, Till Frömling Low Energy Ion Scattering analysis of Co <sub>2</sub> B catalysts for water electrolysis
15:35 - 16:35	<b>Mentoring Session. Albert Room</b>
19:45 - 22:30	<b>Gala Dinner. Room: Churchill</b>



July 18th - Day 5 (Thursday)	
08:00 - 08:30	<b>Registration</b>
	<b>Plenary Session 4. Room: Fleming</b> Chair: Stephen Skinner
08:30 - 09:20 Fleming-T1	<u>Bilge Yıldız</u> ( <i>Massachusetts Institute of Technology Laboratory for Electrochemical Interfaces, Departments of Nuclear Science and Engineering, and Materials Science and Engineering</i> ) Lattice Dynamics to Uncover Fast Proton Conductors
09:20 - 09:35	<b>Poster Awards Ceremony. Room: Fleming</b>
09:35 - 09:45	<b>Session Change</b>
	<b>2D1 SOFC Electrodes. Room: Fleming</b> Chair: Zonghao Shen
09:45 - 10:15 Fleming-K1	<u>Rose-Noëlle Vannier</u> ( <i>Univ. Lille, CNRS, Centrale Lille, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide, F-59000 Lille, France</i> ), Fatima-Ezzahra El Bassiri, Aurélie Rolle Innovative Solid Oxide Cell air electrode: a review
10:15 - 10:35 Fleming-I1	<u>George Harrington</u> ( <i>University of Bath</i> ) Understanding the role of acidity on the surface exchange reaction in mixed conductors: The case for water species
10:35 - 10:50 Fleming-O1	<u>Insaf Abdouli</u> ( <i>Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, F-44000 Nantes, France</i> ), Clément Nicollet Effect of Transition Metal Oxides Infiltration on Oxygen Exchange Kinetics and Adsorption Properties in Mixed Ionic and Electronic Conducting Oxides.
	<b>2D2 Memristors/ Materials for Neuromorphic Computing. Room: Westminster</b> Chair: Felix Gunkel
09:45 - 10:15 Westminster-K1	<u>Regina Dittmann</u> ( <i>Peter Gruenberg Institute (PGI-7), Forschungszentrum Juelich GmbH and JARA-FIT, Juelich, 52425, Germany</i> ), Alexandros Sarantopoulos, Christopher Bengel, Alexander Gutsche, Felix Cüppers, Susanne Hoffmann-Eifert, Stephan Menzel Engineering the switching kinetics of valence change memory for neuromorphic computing
10:15 - 10:35 Westminster-I1	<u>Yiyang Li</u> ( <i>University of Michigan</i> ) Phase Separation in Amorphous Metal Oxides Enables Information Retention
10:35 - 10:50 Westminster-O1	<u>Matthaeus Siebenhofer</u> ( <i>Laboratory for Electrochemical Interfaces, Massachusetts Institute of Technology, Cambridge, MA, USA</i> ), Pjotr Zguns, Bilge Yıldız Ion migration in mixed conducting oxides for fast conductivity modulation in neuromorphic devices
	<b>2D3 Protonic Triple Conductors. Room: St.James</b> Chair: Ming Li
09:45 - 10:15 St.James-K1	<u>Rotraut Merkle</u> ( <i>Max Planck Institute for Solid State Research, Stuttgart, Germany</i> ), Maximilian F. Hoedl, Andrew Chesnokov, Christian Berger, Giulia Raimondi, Tolga Acartürk, Ulrich Starke, Denis Gryaznov, Eugene A. Kotomin, Joachim Maier Proton Mobility in Triple-conducting Perovskites - Insights from Experiment and Theory
10:15 - 10:35 St.James-I1	<u>Yue Qi</u> ( <i>School of Engineering, Brown University</i> ), Jiyun Park, Boyuan Xu, Dawei Zhang, Wei Li, Xingbo Liu, Jian Luo, Stephan Lany Accurate prediction of oxygen vacancy concentration in Compositionally Complex Perovskite Oxides (CCPO)
10:35 - 10:50 St.James-O1	<u>Yewon Shin</u> ( <i>Colorado School of Mines</i> ), Michael Sanders, Michael Walker, Bernadette Cladek, Kennedy Agyekum, Jue Liu, Erica Truong, Katharine Page, Yan-Yan Hu, Sossina Haile, Ryan O'Hayre Investigating proton transport in the triple-conducting oxide BaCo <sub>x</sub> Fe <sub>0.8-x</sub> Zr <sub>0.1</sub> Y <sub>0.1</sub> O <sub>3-d</sub> (BCFZY, 0.1 ≤ x ≤ 0.7) system by correlative characterizations: ToF-SIMS/ND/SSNMR
	<b>2D4 Grain Boundaries/Interfaces. Room: Moore</b> Chair: David Mebane
09:45 - 10:15 Moore-K1	<u>Jennifer Rupp</u> ( <i>Department of Chemistry, Technical University of Munich</i> ) Lithium, Interfaces & Action: Designing Next Solid Battery Materials - From Engineered Grain Boundaries to Novel High Entropy Amorphous Phases
10:15 - 10:35 Moore-I1	<u>Kulbir Ghuman</u> ( <i>Institut National de la Recherche Scientifique - Énergie, Matériaux et Télécommunications, Université du Québec</i> ) Unraveling the Role of Interfaces and Grain Boundaries in LLTO: A Molecular Dynamics Investigation
10:35 - 10:50 Moore-O1	<u>Adrian Usler</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University, 52074 Aachen, Germany</i> ), Fabian Ketter, Roger De Souza Reading between the grains of oxide-ion conductors: the thermal history of space-charge layers
	<b>2D6 New Materials. Room: Gielgud</b> Chair: Ieuan Seymour
09:45 - 10:15 Gielgud-K1	Zhihong Du, Yang Zhang, Leyu Shen, <u>Hailei Zhao</u> ( <i>University of Science and Technology Beijing</i> ) Modulation of electrode reaction kinetics of B-site double perovskite-based materials for SOFC
10:15 - 10:35 Gielgud-I1	<u>Taner Akbay</u> ( <i>Materials Science and Nanotechnology Engineering Department, Yeditepe University, Istanbul, Turkey</i> ) Atomistic Elucidation of Anion Adsorption on Charged Graphene
10:35 - 10:50 Gielgud-O1	Takeru Miyagawa, Manuel Grumet, Namita Krishnan, Christian Reverón Baecker, <u>Waldemar Kaiser</u> ( <i>Department of Physics, TUM School of Natural Sciences, Technical University of Munich, 85748 Garching, Germany</i> ), David A. Egger Ion Migration in Anharmonic Solid-State Ion Conductors from Machine-Learning Molecular Dynamics
10:50 - 11:20	<b>Coffee Break</b>
	<b>3D1 SOFC Electrodes. Room: Fleming</b> Chair: Rose-Noëlle VANNIER
11:20 - 11:40 Fleming-I1	<u>Zonghao Shen</u> ( <i>CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB UMR 5026, F-33600 Pessac, France</i> ), Jean-Marc Bassat, Sebastien Fourcade, Alain Demourgues, Etienne Durand, Lionel Teule-Gay, Mathieu Duttine, Jacinthe Gamon Is fluorine incorporation in the La <sub>0.6</sub> Sr <sub>0.4</sub> Co <sub>0.2</sub> Fe <sub>0.8</sub> O <sub>3-δ</sub> improving its electrochemical behaviour for solid oxide cells applications?
11:40 - 11:55 Fleming-O1	<u>Takuya Katsumata</u> ( <i>Tohoku University</i> ), Ryotaro Aso, Yuta Kimura, Koji Amezawa, Takashi Nakamura Effect of Electrochemical F doping on Oxygen Evolution Reaction



11:55 - 12:10 Fleming-O2	<u>Ozden Celikbilek</u> ( <i>Univ. Grenoble Alpes, CEA-Liten, DTCH, 38000 Grenoble, France</i> ), Karthikeyan Saravanabavan, Giuseppe Sassone, Cintia Hartmann, Maxime Hubert, Jerome Laurencin Investigating the Impact of Humidity on the Degradation of Oxygen Electrodes in Solid Oxide Cells
12:10 - 12:25 Fleming-O3	Nguyen Xua Dong, Lee Sang Won, Kim Hye Young, <u>Tae Ho Shin</u> ( <i>Low-carbon &amp; DX R&amp;D Division, Korea Institute of Ceramic Engineering and Technology, Jinju-si, Gyeongsangnam-do 52851, Republic of Korea.</i> ) Boosting Electrochemical High-Performance via Extra-Role of Doped CeO <sub>2</sub> -δ Interlayer for "Oxygen Provider" at High-Current SOFC Operation
<b>3D2 Memristors/ Materials for Neuromorphic Computing. Room: Westminster</b> Chair: Regina Dittmann	
11:20 - 11:40 Westminster-I1	<u>Felix Gunkel</u> ( <i>Forschungszentrum Jülich GmbH, Peter Grünberg Institute, Electronic Materials (PGI-7), 52425 Jülich, Germany</i> ) Solid state ionics for a tailored ionic-electronic structure in oxide thin films and heterostructures for electronics and energy applications
11:40 - 11:55 Westminster-O1	<u>Alexandros Sarantopoulos</u> ( <i>Peter Gruenberg Institute (PGI-7), Forschungszentrum Juelich GmbH and JARA-FIT, Juelich, 52425, Germany</i> ), Kristof Lange, Francisco Rivadulla, Stephan Menzel, Regina Dittmann Resistive switching acceleration induced by thermal confinement.
11:55 - 12:10 Westminster-O2	<u>Takashi Tsuchiya</u> ( <i>National Institute for Materials Science, Japan</i> ), Daiki Nishioka, Wataru Namiki, Kaoru Shibata, Tomoki Wada, Makoto Takayanagi, Masataka Imura, Yasuo Koide, Tohru Higuchi, Kazuya Terabe Ion-gating Reservoirs Operating on Electric Double Layer and Redox Mechanisms for High Performance Physical Reservoir Computing
12:10 - 12:25 Westminster-O3	<u>Philipp Langner</u> ( <i>Department of Advanced Materials for Energy Applications, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià del Besòs, Barcelona, Spain</i> ), Francesco Chiabrera, Nerea Alayo, Paul Nizet, Luigi Morrone, Alex Morata, Albert Tarancón Beyond the von Neumann Bottleneck: A Solid-State Oxide-Ion Synaptic Transistor for Analog Computing
<b>3D3 Protonic Triple Conductors. Room: St. James</b> Chair: Rotraut Merkle	
11:20 - 11:40 St.James-I1	<u>Ming Li</u> ( <i>University of Nottingham</i> ) Enhancing/Suppressing Oxide Ion Conductivity in Perovskite Oxides
11:40 - 11:55 St.James-O1	<u>Minkyong Jo</u> ( <i>HMC, Department of Nanotechnology and Advanced Materials Engineering, Sejong University, 209 Neungdong-ro, Gwangjin-gu, Seoul 05006, Republic of Korea</i> ), Minji Kim, Jun-young Park High-performance air-electrode for reversible proton ceramic cells with alkali metal doping
11:55 - 12:10 St.James-O2	<u>Mayuri Kushare</u> ( <i>Mechanical Engineering, Colorado School of Mines, Golden, CO 80401</i> ), Kingsley Egbo, Sandrine Ricote, Su Jeong Heo, Jesse Fosheim, Andriy Zakutayev, Gregory Jackson The Study of Surface Chemistry of Water Splitting on Pr <sub>2</sub> NiO <sub>4</sub> +δ Electrodes with and without Ba(Zr,Y,Pr)O <sub>3</sub> -δ Overlayers in Proton-Ceramic Electrolysis Cells
12:10 - 12:25 St.James-O3	<u>Ryoga Sato</u> ( <i>Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai 980-8579, Japan</i> ), Akihiro Ishii, Itaru Oikawa, Hitoshi Takamura Electron-Hole Incorporation into Ba-Zr-Based Proton Conductors by High-Pressure Oxidation
<b>3D4 Grain Boundaries/Interfaces. Room: Moore</b> Chair: Jennifer Rupp	
11:20 - 11:40 Moore-I1	<u>David Mebane</u> ( <i>West Virginia University</i> ) Quantifying physical parameters with microscope data from ion conducting grain boundaries and electrocatalytic surfaces using accessible codes for model-based Bayesian analysis
11:40 - 11:55 Moore-O1	<u>Zijie Sha</u> ( <i>Department of Materials, Imperial College London, London, SW7 2AZ, United Kingdom.</i> ), James Douglas, Lluís Yedra, Stephen Skinner, John Kilner Understanding grain boundary transport in mixed conducting perovskite electrodes
11:55 - 12:10 Moore-O2	<u>Jan L. Dornseifer</u> ( <i>Institute of Experimental Physics I, Justus Liebig University, Heinrich-Buff-Ring 16, 35392 Giessen, Germany</i> ), Janis K. Eckhardt, Matthias T. Elm, Christian Heiliger, Peter J. Klar Correlation between Microstructure and Impedance in Polycrystalline Ceria Thin Films
<b>3D5 Battery Degradation/Dendrites. Room: Abbey</b> Chair: Chun Ann Huang	
11:20 - 11:40 Abbey-I1	Hung Q. Nguyen, Feng Jin, Florian Flatscher, Juraj Todt, Peter Siffalovic, Günther J. Redhammer, Jozef Keckes, <u>Daniel Rettenwander</u> ( <i>Department of Material Science and Engineering, NTNU Norwegian University of Science and Technology, 7034 Trondheim, Norway.</i> ) Studying solid-state batteries during operation using X-rays
11:40 - 12:00 Abbey-I2	<u>Yue Qi</u> ( <i>School of Engineering, Brown University</i> ), Harsh Jagad, Sydney Morris, Changmin Shi, Stephen Harris, Brian Sheldon Blocking Lithium Dendrites in Solid Electrolytes with Ion-Exchange Induced Residual Stresses - Theory and Experiments
12:00 - 12:15 Abbey-O1	<u>Sundeep Vema</u> ( <i>Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, CB2 1EW, Cambridge, UK</i> ), Dipayan Mukherjee, Joe Stallard, Supreeth Nagendran, Norman Fleck, Vikram Deshpande, Clare Grey Factors governing lithium-metal dendrite initiation in ceramic solid electrolytes
12:15 - 12:30 Abbey-O2	<u>Gang Wan</u> ( <i>Department of Mechanical Engineering, Stanford University</i> ), Chia-Chin Chen, Zonghai Chen, Kang Xu Self-discharge of Layered Oxide Cathodes Induced by Carbonate-mediated Hydrogenation
<b>3D6 New Materials. Room: Gielgud</b> Chair: Hailei Zhao	
11:20 - 11:40 Gielgud-I1	<u>Ieuan Seymour</u> ( <i>Department of Chemistry, School of Natural and Computing Sciences, University of Aberdeen, King's College, Aberdeen, AB24 3UE, U.K.</i> ), Kit Barker, Sarah McKinney, Raul Artal, Nuria Tapia-Ruiz, Ricardo Jimenez, Stephen Skinner, Ainara Agüadero Understanding the role of A-site cations on the ionic conductivity of halide solid-state electrolytes for solid-state batteries
11:40 - 11:55 Gielgud-O1	<u>Ana Carolina Coutinho Dutra</u> ( <i>Newcastle University</i> ), James A. Dawson Exploring the Links between Dynamics and Dimensionality in Anti-Perovskite Solid Electrolytes
11:55 - 12:10 Gielgud-O2	<u>Juliane Fiates</u> ( <i>Department of Chemistry, Newcastle University, Bedson Building</i> ), James Dawson Simulating Electrolytes and SEI Formation in Anode-Free Batteries
12:10 - 12:25 Gielgud-O3	<u>Bora Karasulu</u> ( <i>Department of Chemistry, University of Warwick, CV4 7AL, Coventry, United Kingdom.</i> ) First-principles Simulations of Interfaces within All-Solid-State Batteries: A special case of Lithium Thiophosphates
12:30 - 14:00	<b>Lunch Break</b>





<b>4D1 SOFC Electrodes. Room: Fleming</b>	
Chair: Elisabeth Djurado	
14:00 - 14:30 Fleming-K1	<u>Teruhisa HORITA</u> ( <i>National Institute of Advanced Industrial Science and Technology</i> ) Overview of Mass Transports by Impurity Poisoning at (La,Sr)(Co,Fe)O <sub>3</sub> based cathode in Solid Oxide Fuel Cells
14:30 - 14:45 Fleming-O1	<u>Fatima-Ezzahra EL BASSIRI</u> ( <i>Univ. Lille, CNRS, Centrale Lille, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide, F-59000 Lille, France</i> ), Aurélie Rolle, Rose-Noëlle Vannier In-depth study of the oxygen reduction reaction of the Ca <sub>3</sub> Co <sub>4</sub> O <sub>9+δ</sub> / CGO composite
14:45 - 15:00 Fleming-O2	<u>Aurélien Rolle</u> ( <i>UCCS - Unité de Catalyse et Chimie du Solide, UMR CNRS 8181, Univ. Lille, Centrale Lille, Univ. Artois, F-59000 Lille, France</i> ), Laurine Verfaillie, Ibtissam Kehal, Sylvie Daviero-Minaud, Rose-Noëlle Vannier Investigation of Ba <sub>2</sub> Co <sub>9</sub> O <sub>14</sub> as potential electrode material for Solid Oxide Fuel Cell
15:00 - 15:15 Fleming-O3	<u>Riyan Achmad Budiman</u> ( <i>Graduate School of Environmental Studies, Tohoku University, Japan</i> ), Junichi Sakuraba, Mina Yamaguchi, Shin-ichi Hashimoto, Keiji Yashiro, Tatsuya Kawada Determining the enhancement factors of porous La 0.6 Sr 0.4 CoO 3-δ - Ce 0.9 Gd 0.1 O 1.95 composite for solid oxide fuel cell cathode
15:15 - 15:30 Fleming-O4	<u>Masahiro Yasutake</u> ( <i>Next-Generation Fuel Cell Research Center (NEXT-FC), Kyushu University</i> ), Han Gil Seo, Yohei Nagatomo, Junko Matsuda, Kazunari Sasaki, Harry Tuller Degradation and Recovery of LSCF Reversible Solid Oxide Cell Air Electrodes by Controlled Surface Acidity
<b>4D2 Memristors/ Materials for Neuromorphic Computing. Room: Westminster</b>	
Chair: Davide Moia	
14:00 - 14:30 Westminster-K1	<u>Derek C Sinclair</u> ( <i>Department of Materials Science and Engineering, University of Sheffield, Sheffield, UK</i> ), James H Killeen, Sadi Ege Parim, Thomas E Hooper, Erin Carroll, Julian S Dean The Influence of A-site Deficiency on the Functionality of Niobate-based Perovskites and Tungsten Tetragonal Bronzes.
14:30 - 14:45 Westminster-O1	<u>Drew Buzzell</u> ( <i>Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA</i> ), Fran Kurnia, Hyunwon Chu, Lingping Kong, Jesus del Alamo, Jennifer Rupp Tailoring Li <sub>4</sub> Ti <sub>5</sub> O <sub>12</sub> thin film carrier kinetics through solid solution doping for Battery and Memristor Applications
14:45 - 15:00 Westminster-O2	<u>Fran Kurnia</u> ( <i>Department of Chemistry, Technical University of Munich, 85748 Garching, Germany</i> ), Drew Buzzell, Thomas Defferriere, Lukas Wolz, Yang Wang, Johanna Eichhorn, Harry Tuller, Bettina Lotsch, Jennifer Rupp Opto-Ionics for Memristive Switching in Lithium Titanate
15:00 - 15:15 Westminster-O3	<u>Miranda Schwacke</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology</i> ), Thomas Defferriere, Matthäus Siebenhofer, Harry Tuller, Bilge Yildiz Modulation of Space Charge Resistances in Polycrystalline WO <sub>3</sub> Films by Mg Ion Intercalation in ECRAM Devices
15:15 - 15:30 Westminster-O4	Alan Zhang, Catalin Spataru, Joshua Sugar, A. Alec Talin, Suhas Kumar, <u>Elliot Fuller</u> ( <i>Sandia National Laboratories, Livermore, CA, USA</i> ) Tuning the insulator metal transition in rare earth nickelates through dynamic electrochemical ion insertion
<b>4D3 Protonic Triple Conductors. Room: St. James</b>	
Chair: Joachim Maier	
14:00 - 14:30 St.James-K1	<u>Hiroshige Matsumoto</u> ( <i>International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Kyushu University, Japan.</i> ), Veeramani Vedyiyappan, Leonard Kwati, Bhuvaneshwari Manivannan, Paulo Wiff Controlling transport of electrode reaction species to suppress electronic leakage in proton-conducting oxide cells
14:30 - 14:45 St.James-O1	<u>Genki Kobayashi</u> ( <i>RIKEN - Japan</i> ), Yoshiki Izumi, Fumitaka Takeiri, Kei Okamoto, Takashi Saito, Takashi Kamiyama, Akihide Kuwabara Electropositive Metal Doping into Lanthanum Hydride for H- Conducting Solid Electrolyte Use at Room Temperature
14:45 - 15:00 St.James-O2	<u>Xiaolan Kang</u> ( <i>Max Planck Institute for Solid State Research, Stuttgart, Germany</i> ), Rotraut Merkle, Joachim Maier Water Adsorption and Surface Protonics of Mixed Conducting Oxides
15:00 - 15:15 St.James-O3	<u>Maria Szymczak</u> ( <i>Faculty of Materials Science and Ceramics, AGH University of Krakow, al. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Juliusz Dąbrowa, Marek Zajusz, Wojciech Skubida, Konrad Świerczek Modifying Ba-based Triple-Conducting Perovskites for Enhanced PCFC Air-Electrode Performance
15:15 - 15:30 St.James-O4	<u>Takuma Shiraiwa</u> ( <i>Tohoku University</i> ), Tomoyuki Yamasaki, Takahisa Omata Mixed Protonic and Electronic Conductivity of Nb-doped TiO <sub>2</sub> Under Hydrogen Atmosphere
<b>4D4 Grain Boundaries/Interfaces. Room: Moore</b>	
Chair: Katherine Bagarinao	
14:00 - 14:30 Moore-K1	Thomas Defferriere, Colin Gilgenbach, James LeBeau, Han Gil Seo, Yong Beom Kim, Woo Chul Jung, <u>Harry Tuller</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology</i> ) Engineering of Grain Boundaries in Gd-Doped Ceria Solid Electrolytes
14:30 - 14:45 Moore-O1	<u>Gen Hasegawa</u> ( <i>National Institute for Materials Science (NIMS)</i> ), Naoaki Kuwata Grain boundary diffusion analysis in solid electrolytes by lithium isotope SIMS imaging
14:45 - 15:00 Moore-O2	<u>Jan Dippell</u> ( <i>Helmholtz Institute Ulm for Electrochemical Energy Storage (HIU), Ulm, Germany</i> ), Timo Danner, Arnulf Latz Simulating Impedances of Interfaces between Solid Electrolytes
15:00 - 15:15 Moore-O3	<u>James Quirk</u> ( <i>Department of Chemistry, Newcastle University, Bedson Building</i> ), James Dawson Design Principles for Grain Boundaries in Solid Electrolytes
15:15 - 15:30 Moore-O4	<u>Vaibhav Arun Deshmukh</u> ( <i>Department of Materials- and Geo-Sciences, Technische Universität Darmstadt, Darmstadt, Germany</i> ), Jochen Rohrer, Karsten Albe Molecular Dynamics Simulations of Na-ion Transport at Grain Boundaries in NaSICON-Type Na <sub>3</sub> Zr <sub>2</sub> Si <sub>2</sub> PO <sub>12</sub> Solid Electrolytes
<b>4D5 Battery Degradation/Dendrites. Room: Abbey</b>	
Chair: Louis Piper	
14:00 - 14:30 Abbey-K1	<u>Peter Bruce</u> ( <i>Department of Materials, University of Oxford; Oxford, UK</i> ), Dominic Melvin, Ziyang Ning, Dominic Spencer-Jolly, Guan Chen Li, James Marrow, Charles Monroe Challenges in solid state batteries at the lithium/ceramic electrolyte interface
14:30 - 14:45 Abbey-O1	<u>Cole Fincher</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, USA</i> ), Colin Gilgenbach, Rachel Osmundsen, Christian Roach, Aubrey Penn, Michael Thoullass, W. Craig Carter, Brian Sheldon, James Lebeau, Yet-Ming Chiang Direct observations of dendrite growth in ceramic electrolytes



14:45 - 15:00 Abbey-02	<u>Toyoki Okumura</u> ( <i>National Institute of Advanced Industrial Science and Technology (AIST), Kansai Center</i> ), Tomonari Takeuchi, Machiko Ode, Kazunori Takada Self-assembled composite texture of layered rock-salt electrode / LISICON-type electrolyte for oxide-based all-solid-state battery
15:00 - 15:15 Abbey-03	<u>Dimitrios Chatzogiannakis</u> ( <i>Institut de Ciencia de Materials (ICMAB), Campus UAB, Bellaterra, 08193, Spain</i> ), Montse Casas-Cabanas, M. Rosa Palacin Understanding material specific contribution and charge transfer dynamics in blended positive electrodes for Li-ion batteries
<b>4D6 New Materials. Room: Gielgud</b> Chair: Orkun Furat	
14:00 - 14:30 Gielgud-K1	<u>Francesco Ciucci</u> ( <i>University of Bayreuth</i> ) Cobalt-Free Air Electrodes for Protonic Ceramic Cells
14:30 - 14:45 Gielgud-01	<u>Yoshihiro Yamazaki</u> ( <i>Platform of Inter-Transdisciplinary Energy Research (Q-PIT), Kyushu University</i> ), Kota Tsujikawa, Junji Hyodo, Susumu Fujii, Shusuke Kasamatsu Materials discovery by interpretation: a case of proton-conducting oxides
14:45 - 15:00 Gielgud-02	<u>Steffen Neitzel-Grieshammer</u> ( <i>FH Münster University of Applied Sciences</i> ) Modelling Proton and Oxygen Ion Conductivity in Yttrium Doped Barium Zirconate from First Principles
15:00 - 15:15 Gielgud-03	<u>Armando Morin Martínez</u> ( <i>Department of Energy Conversion and Storage, Technical University of Denmark (DTU)</i> ), Benjamin Sjølin, R Baby Dhanalakshmi, Vincenzo Esposito, Ivano Castelli Autonomous Workflows for the Discovery of Ionic Oxide Conductors at Low Temperatures
15:30 - 16:00	<b>Coffee Break</b>
<b>5D1 SOFC Electrodes. Room: Fleming</b> Chair: Teruhisa Horita	
16:00 - 16:20 Fleming-11	<u>Elisabeth Djurado</u> ( <i>Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP, LEPMI, F-38000 Grenoble</i> ), Lydia Yefsah, Maxime Hubert, Ozden Celikbilek, Dario Ferreira Sanchez, Karine Couturier, Jérôme Laurencin PrO1.833 as an Innovative Nanostructured Oxygen Electrode for High-Temperature Electrolysis: Performance and Stability
16:20 - 16:35 Fleming-01	<u>Taeheun Lim</u> ( <i>Pusan National University</i> ), Kanghee Jo, Woo Jin Kim, Yong-Nam Kim, Heesoo Lee Valence electronic structure on oxygen reduction reaction kinetics of Fe-based perovskite oxides for intermediate-temperature solid oxide fuel cells
16:35 - 16:50 Fleming-02	<u>Yue Liu</u> ( <i>Institute of Material Science, Technische Universität Darmstadt, Germany</i> ), Stefanie Frick, Nicole S. Bein, Katharina N.S. Schuldt, Adrián López Vergara, Andreas Klein Charge Transition Level of Co <sup>2+</sup> /3 <sup>+</sup> in Perovskite Oxides
16:50 - 17:05 Fleming-03	<u>Ryszard Kluczkowski</u> ( <i>Institute of Power Engineering, Mory 8, 01-330 Warsaw, Poland</i> ), Yevgeniy Naumovich, Anna Niemczyk, Krystian Machaj, Piotr Winiarz, Konrad Świerczek, Keyun Li Copper As Cobalt Surrogate In The Electrodes Of Solid Oxide Cells: Challenges And Solutions
17:05 - 17:20 Fleming-04	<u>Juande Sirvent</u> ( <i>Department of Advanced Materials for Energy, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Sant Adrià del Besòs, Barcelona 08930, Spain</i> ), Giulio Cordaro, Carlota Bozal-Ginesta, Sarah Fearn, Zijie Sha, Kosova Kreka, Juan Carlos González-Rosillo, Lisa Laa, Marc Núñez, Francesco Chiabrera, Alex Morata, Guilhem Dezanneau, John Kilner, Federico Baiutti, Albert Tarancón A combinatorial (La,Sr)(Mn,Co,Fe)O <sub>3</sub> library for screening oxygen electrodes in solid oxide fuel cells: high throughput for performance and thermal degradation
17:20 - 17:35 Fleming-05	<u>Paul Nizet</u> ( <i>Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930, Sant Adrià de Besòs, Spain</i> ), Francesco Chiabrera, Nicolau López-Pintó, Nerea Alayo, Philipp Langner, Federico Baiutti, Alex Morata, Jordi Sort, Albert Tarancón Oxygen-ion control and functional properties of Sr-doped lanthanum ferrites
17:35 - 17:50 Fleming-06	<u>Sejong Ahn</u> ( <i>Department of Materials Science and Engineering, KAIST, Daejeon, Republic of Korea</i> ), Kyu In Sim, Jun Hyuk Kim, Jeong Woo Han, WooChul Jung The effect of cubic phase stabilization on oxygen reduction kinetics in barium cobaltite
<b>5D2 Memristors/ Materials for Neuromorphic Computing. Room: Westminster</b> Chair: Derek Sinclair	
16:00 - 16:15 Westminster-01	<u>James Killeen</u> ( <i>Department of Materials Science and Engineering, University of Sheffield, Sheffield, UK</i> ), Julian Dean, Derek Sinclair The Role of A-Site Vacancies on the Dielectric Response of the NaNbO <sub>3</sub> - La <sub>1/3</sub> NbO <sub>3</sub> Solid Solution
16:15 - 16:30 Westminster-02	<u>Davide Moia</u> ( <i>Max Planck Institute for Solid State Research, Physical Chemistry of Solids, Stuttgart, 70569, Germany</i> ), Joachim Maier Defect chemical and equivalent circuit models for photo-active mixed ionic-electronic conducting devices
16:30 - 16:45 Westminster-03	<u>Mina Jung</u> ( <i>Max Planck Institute for Solid State Research, Stuttgart, Germany.</i> ), Masaud Almalki, Michael Graetzel, Davide Moia, Joachim Maier Evidence for ionically-generated space charges in halide perovskites and their impact on photovoltaics
16:45 - 17:00 Westminster-04	<u>Ya-Ru Wang</u> ( <i>Max Planck Institute for Solid State Research, Stuttgart, Germany.</i> ), Marko Mladenović, Ursula Rothlisberger, Jovana V. Milić, Davide Moia, Michael Grätzel, Joachim Maier Photo De-Mixing in Mixed Bromide-Iodide Perovskites: Dimensionality and Encapsulation Effects on Ionic & Electronic Transport Properties
17:00 - 17:15 Westminster-05	Thijs Smolders, Roger De Souza, Alison Walker, <u>Matthew Wolf</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University, 52074 Aachen, Germany</i> ) Diffusivity tensors of Br and Cs vacancies in biaxially strained perovskite CsPbBr <sub>3</sub>
<b>5D3 Protonic Triple Conductors. Room: St.James</b> Chair: Hiroshige Matsumoto	
16:00 - 16:20 St.James-11	Einar Vollestad, <u>Ragnar Strandbakke</u> ( <i>SINTEF Industry, Sustainable Energy Technology, Oslo, Norway</i> ) Approaching a Mechanistic Understanding of Electrode Processes and Surface Protonics for Proton Ceramic Electrochemical Cells
16:20 - 16:35 St.James-01	<u>Kosuke Kawai</u> ( <i>Waseda University</i> ), Seong-Hoon Jang, Jun Kikkawa, Koji Yazawa, Kazuma Gotoh, Yuta Igarashi, Yoshitaka Tateyama, Atsuo Yamada, Masashi Okubo Strain-free proton intercalation of Mo <sub>3</sub> Nb <sub>2</sub> O <sub>14</sub> anode in aqueous rechargeable batteries
16:35 - 16:50 St.James-02	<u>Seongwoo Nam</u> ( <i>Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea.</i> ), Jinwook Kim, Hyunseung Kim, Byeom Gyun Jung, WooChul Jung Understanding Electrochemical Reactions Occurring in Air Electrodes for Protonic Ceramic Cell



16:50 - 17:05 St.James-03	<u>Wei Wu</u> ( <i>Idaho National Laboratory</i> ), Dong Ding, Ju Li Revitalizing performance and expanding lifetime of protonic ceramic cells by interfacial acid etch
17:05 - 17:20 St.James-04	<u>Chenyang Liao</u> ( <i>Department of Materials, Royal School of Mines, Imperial College London, London SW7 2AZ, England</i> ), Kehan Huang, Zijie Sha, Miguel Gonzalez, Stephen Skinner Study exclusively the proton diffusion in barium-based perovskite - from microscopic to macroscopic
17:20 - 17:35 St.James-05	<u>Angus Pedersen</u> ( <i>Department of Materials, Royal School of Mines, Imperial College London, London SW7 2AZ, England</i> ), Rifael Snitkoff-Sol, Yan Yurko, Jesús Barrio, Rongsheng Cai, Theo Suter, Guangmeimei Yang, Sarah Haigh, Dan Brett, Rhodri Jervis, Magda Titirici, Ifan Stephens, Lior Elbaz A Highly Porous Fe-N-C-based Proton Exchange Membrane Fuel Cell: Effect of Ionomer Loading Probed by in situ Electrochemical Methods
<b>5D4 Grain Boundaries/Interfaces. Room: Moore</b> Chair: Harry Tuller	
16:00 - 16:20 Moore-11	<u>Katherine Develos-Bagarinac</u> ( <i>National Institute of Advanced Industrial Science and Technology (AIST)</i> ), Qingchuan Bai, Takuya Yamaguchi, Toshiaki Yamaguchi, Haruo Kishimoto Elucidating the role of the interdiffusion layer at GDC/YSZ heterointerfaces
16:20 - 16:35 Moore-01	<u>Colin Gilgenbach</u> ( <i>Department of Materials Science and Engineering, Massachusetts Institute of Technology</i> ), Thomas Defferriere, Harry Tuller, James LeBeau Coupled Electrochemical and Structural Analysis of Interfaces Using Multislice Electron Ptychography
16:35 - 16:50 Moore-02	<u>Claudia Steinbach</u> ( <i>Institute of Chemical Technologies and Analytics, Technische Universität Wien, 1060 Vienna, Austria</i> ), Alexander Schmid, Andreas Nennung, Florian Fahrnberger, Herbert Hutter, Markus Kubicek, Juergen Fleig Prediction of Space Charges at SrTiO <sub>3</sub>   Mixed Ionic and Electronic Conducting Oxide Heterojunctions from Defect Chemistry
16:50 - 17:05 Moore-03	<u>Kaichuang Yang</u> ( <i>Westlake University</i> ), Qiyang Lu Differentiating Oxygen Exchange Reaction Mechanisms across Phase Boundaries
17:05 - 17:20 Moore-04	<u>San Ping Jiang</u> ( <i>Curtin University</i> ) Development of nanostructured lanthanum strontium cobalt ferrite/gadolinium-doped ceria composite electrodes of solid oxide cells formed by in situ polarization
<b>5D5 Battery Degradation/Dendrites. Room: Abbey</b> Chair: Konrad Świerczek	
16:00 - 16:20 Abbey-11	<u>Louis Piper</u> ( <i>WMG, University of Warwick</i> ) Seeing degradation in NMC 811/graphite pouch cells with operando X-ray studies
16:20 - 16:35 Abbey-01	<u>Kieran Mylrea</u> ( <i>Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, CB2 1EW, Cambridge, UK</i> ), Xiaorui Shi, Svetlana Menkin, Jonathan Slaughter, Jana Fritze, Dominic Wright, Clare Grey EIS-NMR Study of Interphase Evolution in 'Anode-Free' Li Metal Battery Self-Discharge
16:35 - 16:50 Abbey-02	<u>Dominic Spencer-Jolly</u> ( <i>School of Metallurgy and Materials, University of Birmingham, Edms Road, Birmingham, B15 2SE, UK</i> ), Varnika Agarwal, Peter Bruce Towards understanding silver-carbon composite interlayers in anode-free solid-state batteries
16:50 - 17:05 Abbey-03	Jinkyu Chung, Junho Bae, Hanbi Choi, Chihyun Nam, Danwon Lee, Bonho Koo, Namdong Kim, <u>Jongwoo Lim</u> ( <i>Seoul National University, Seoul, South Korea</i> ) Dynamic coupling of internal strain field and lithium pathway within individual battery particles in solid state batteries
17:05 - 17:20 Abbey-04	<u>Moumita Rana</u> ( <i>Delft University of Technology, The Netherlands</i> ), Wolfgang Zeier Route to high performance silicon-based composite anode for solid state battery through modulating charge carrier transport
17:20 - 17:35 Abbey-05	<u>Edward Mu</u> ( <i>Department of Chemistry, Stanford University</i> ), Hari Ramachandran, Eder Lomeli, Augustin Braun, Jue Liu, Zhelong Jiang, Kipil Lim, Grace Busse, Brian Moritz, Edward Solomon, Wanli Yang, William Gent, Thomas Devereaux, William Chueh A new high-valent Fe redox couple in intercalation electrodes
17:35 - 17:50 Abbey-06	<u>Jenny Pringle</u> ( <i>Institute for Frontier Materials, Deakin University, 221 Burwood Highway, Burwood, Victoria 3125, Australia</i> ), Faezeh Makhlooghiyazad, Luke O'Dell, Azra Sourjah, Maria Forsyth The Development of New Ionic Electrolytes for Energy Storage Devices
<b>5D6 New Materials. Room: Gielgud</b> Chair: Francesco Ciucci	
16:00 - 16:20 Gielgud-11	<u>Orkun Furat</u> ( <i>Ulm University, Institute of Stochastics</i> ), Anja Bielefeld, Jürgen Janek, Volker Schmidt Generative Adversarial Framework for Calibrating Stochastic Geometry Models to ASSB Cathode Microstructures
16:20 - 16:35 Gielgud-01	<u>Sona Guluzade</u> ( <i>Department of Chemistry, University of Bath, Claverton Down, Bath BA2 7AX, UK</i> ), Christian Masquelier, Saiful Islam, Benjamin Morgan Computational Screening for Novel Fast-Ion Conductors in the Li-Si-S Chemical Space
16:35 - 16:50 Gielgud-02	<u>Ronald Kam</u> ( <i>Department of Materials Science and Engineering, University of California, Berkeley, CA, 94720, USA</i> ), Aaron Kaplan, Luca Binci, Tucker Holstun, Nicola Marzari, Gerbrand Ceder Relating the Phase Stability, Electronic Structure, Magnetic Order, and Ionic Configuration of Li-Mn-O Rock Salt Phases from First Principles
16:50 - 17:05 Gielgud-03	<u>Marcel Sadowski</u> ( <i>Institute of Materials Science, Technical University of Darmstadt, Germany</i> ), Laura Fieber, Karsten Albe Kinetics of Pore Formation at the Interface Between Solid Electrolyte and Metal Anodes in All-Solid-State Batteries During Discharge
17:05 - 17:20 Gielgud-04	<u>Sai Gautam Gopalakrishnan</u> ( <i>Department of Materials Engineering, Indian Institute of Science, Bengaluru, 560012, Karnataka, India</i> ), Vijay Choyal Machine learning guided exploration of amorphous materials as cathodes for Mg-batteries
17:20 - 17:35 Gielgud-05	<u>Reshma Devi Parthasarathy</u> ( <i>Department of Materials Engineering, Indian Institute of Science, Bengaluru, 560012, Karnataka, India</i> ), Keith Tobias Butler, Sai Gautam Gopalakrishnan Enhancing Material Property Predictions by Leveraging Transfer Learning Techniques
17:35 - 17:50 Gielgud-06	<u>Dereje Bekele Tekliye</u> ( <i>Department of Materials Engineering, Indian Institute of Science, Bengaluru, 560012, Karnataka, India</i> ), Sai Gautam Gopalakrishnan Weberite-Frameworks as Potential Calcium-Ion Battery Cathodes



July 19th - Day 6 (Friday)	
08:00 - 08:30	<b>Registration</b>
<b>Plenary Session 5. Senior Scientist Awards Room: Fleming</b> Chair: Bilge Yıldız	
08:30 - 09:20 Fleming-T2	<u>Joachim Maier</u> (Max Planck Institute for Solid State Research, Physical Chemistry of Solids, Stuttgart, 70569, Germany) Nanoionics: More Than a Fashionable Slogan
09:20 - 10:10 Fleming-T1	<u>John Kilner</u> (Imperial College London, Department of Materials, London SW7 2AZ, UK.) Optimisation of Oxygen Ion Transport for Solid Oxide Devices
10:10 - 10:40	<b>Coffee Break</b>
10:40 - 10:45	<b>Session Change</b>
<b>2E1 Battery Materials. Room: Fleming</b> Chair: David Muñoz-Rojas	
10:45 - 11:15 Fleming-K1	<u>M. Rosa Palacin</u> (Institut de Ciència de Materials de Barcelona (ICMAB-CSIC)) Prussian Blue type compounds as positive electrodes for Mg and Ca based batteries
11:15 - 11:45 Fleming-K2	<u>Venkataraman Thangadurai</u> (Department of Chemistry, University of Calgary) Advanced Electrolytes for High-Performance Solid State Metal Batteries
11:45 - 12:00 Fleming-O1	<u>Clarissa Glaser</u> (Institute of Physical Chemistry, Justus Liebig University, Heinrich-Buff-Ring 17, 35392 Giessen, Germany), Marcus Rohnke, Jürgen Janek MgB <sub>2</sub> X <sub>4</sub> (B = Sc, Er, Tm, Y; X = S, Se) Spinels as Promising Mg-Ion Conductors for Almost-Solid-State Mg Batteries
12:00 - 12:15 Fleming-O2	<u>Zhixuan Wei</u> (Institute of Physical Chemistry & Center for Materials Research, Justus Liebig University Giessen), Jürgen Janek Investigation of Magnesium Metal Deposition in Solid-State Mg Batteries on NASICON/IL Hybrid Solid Electrolyte
12:15 - 12:30 Fleming-O3	Tsuyoshi Ohnishi, Isao Sakaguchi, <u>Kazunori Takada</u> (National Institute for Materials Science) Surface treatment of garnet-type solid electrolyte for lithium metal anode
12:30 - 12:45 Fleming-O4	<u>Naoaki Kuwata</u> (National Institute for Materials Science (NIMS)), Gen Hasegawa Lithium Diffusion in Perovskite-Type Solid Electrolytes Revealed by PFG-NMR
<b>2E2 Machine Learning/Materials Modelling. Room: Westminster</b> Chair: Seungwu Han	
10:45 - 11:15 Westminster-K1	<u>Paul Shearing</u> (The ZERO Institute, The University of Oxford, Holywell House, Oxford OX2 0EST) Understanding battery materials using advanced X-ray and correlative imaging methods
11:15 - 11:35 Westminster-I1	<u>Samuel Cooper</u> (Dyson School of Design Engineering, Imperial College London, Exhibition Road, London SW7 2AZ, United Kingdom), Steve Kench, Isaac Squires, Amir Dahari, Ronan Docherty, Sam Hair Machine learning for the characterisation and design of electrode materials
11:35 - 11:50 Westminster-O1	<u>Wenhao Sun</u> (Materials Science and Engineering, University of Michigan, Ann Arbor) Navigating phase diagram complexity to guide robotic inorganic materials synthesis
11:50 - 12:05 Westminster-O2	<u>Sonja Ambaum</u> (Institute of Physical Chemistry, RWTH Aachen University), Neil L. Allan, Regina Dittmann, Roger A. De Souza Oxygen Diffusion in Brownmillerite Sr <sub>2</sub> Fe <sub>2</sub> O <sub>5</sub> is Two-Dimensional: Results from a Molecular Dynamics Study
12:05 - 12:20 Westminster-O3	<u>Ying Zhou</u> (Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom.), James Dawson Modelling Solid Electrolyte Materials using Machine Learning Potentials
12:20 - 12:35 Westminster-O4	<u>Annalena R. Genreith-Schrieber</u> (Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, CB2 1EW, Cambridge, UK), Alexandra Alexiu, Chloe S. Coates, George S. Phillips, Liam A. V. Nagle-Cocco, Joshua D. Bocarsly, Farheen N. Sayed, Katharina Märker, Ieuan D. Seymour, Euan N. Basseby, Sian E. Dutton, Clare P. Grey Probing Jahn-Teller Distortions and Antisite Defects in LiNiO <sub>2</sub> with Ab-initio Molecular Dynamics, Variable-Temperature X-Ray Diffraction, and 7Li NMR Spectroscopy
<b>2E3 Battery Materials. Room: St.James</b> Chair: Michele Riva	
10:45 - 11:15 St.James-K1	<u>Jeff Sakamoto</u> (Materials and Mechanical Engineering Departments, University of California, Santa Barbara) Mechano-electrochemical Phenomena in Solid-State Batteries
11:15 - 11:35 St.James-I1	<u>Till Frömling</u> (Fraunhofer IWKS), Lukas Porz, Qaisar Khushi Muhammad, Jürgen Rödel Introduction of dislocations as a strategy for modifying properties of functional ceramics
11:35 - 11:50 St.James-O1	<u>Nidhi Kapate</u> (Department of Materials Science and Engineering, Stanford University, Stanford, CA, USA;), Stephen Kang, Jimmy Kuo, Hongbo Zhao, William Chueh Understanding the Kinetic Origins of GITT Voltage Relaxation and Low-Frequency EIS Measurements in Porous Electrodes
11:50 - 12:05 St.James-O2	<u>Jaekwang Lee</u> (School of Materials science and Engineering, Pusan National University), Tae Won Nam, Min Chul Shin, Heesoo Lee Solution combustion synthesis and electrochemical properties of nickel oxide/carbon nanotube composites
12:05 - 12:20 St.James-O3	Hiroto Katsuragawa, Yusuke Tago, Sawako Mori, Shota Maeda, Shuichi Matsuda, Ryo Nakayama, Shigeru Kobayashi, Taro Hitosugi, <u>Makoto Moriya</u> (Graduate School of Science and Technology, Shizuoka University, Shizuoka 422-8529, Japan.) Molecular Crystalline Electrolyte Consisting of LiTFSA and Succinonitrile with High Li-ion Transference Number and 5 V-class Electrochemical Stability
12:20 - 12:35 St.James-O4	<u>Victor Landgraf</u> (Delft University of Technology, The Netherlands) Entropy-induced high conductivity in fully-reduced solid-electrolytes thermodynamically stable against Li metal
<b>2E4 Solid Oxide Cells/Protonics. Room: Moore</b> Chair: Na Ni	
10:45 - 11:15 Moore-K1	<u>Olga A. Marina</u> (Pacific Northwest National Laboratory, USA), Surendra Karki, Chris Coyle, Long Le, Dan Edwards, Tian Liu, Jie Bao LSCF Phase Evolution During Solid Oxide Electrolysis Cell Operation
11:15 - 11:35 Moore-I1	<u>MIGUEL A. LAGUNA-BERCERO</u> (Instituto de Nanociencia y Materiales de Aragón (INMA), CSIC-Universidad de Zaragoza, Zaragoza, 50009, Spain), ALODIA ORERA, ANGEL LARREA, ANDRES ACIN, JOSE I. PEÑA, RUTH LAHOZ 3D laser machining: a potential tool to develop new architecture designs for solid state energy devices



11:35 - 11:50 Moore-01	<u>Tomoyuki Yamasaki</u> ( <i>Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University</i> ) Mixed conduction in Lanthanum oxyhydrides
11:50 - 12:05 Moore-02	<u>Hinuma Yoyo</u> ( <i>National Institute of Advanced Industrial Science and Technology (AIST), Kansai Center</i> ) Why are there two activation barriers for H diffusion in LaH <sub>2</sub> .7500.125?
12:05 - 12:20 Moore-03	<u>Jinwook Kim</u> ( <i>Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology</i> ), Seongwoo Nam, Sejong Ahn, Hyunseung Kim, Jun Hyuk Kim, Byeom Gyun Jeong, Di Chen, WooChul Jung Investigation of Electrochemical Reaction Mechanism at the Fuel Electrode Surface in Proton-Conducting Oxide Cells
12:20 - 12:35 Moore-04	<u>Motova Karino</u> ( <i>Grad. Sch. of Engineering, Tohoku Univ.</i> ), Teruki Yoshioka, Diao Zhou, Yuta Kimura, Takashi Nakamura, Keiji Yashiro, Tatsuya Kawada, Koji Amezawa Effect of Mixed Conduction in Electrolytes on the Impedance Response of Proton Conducting Ceramic Fuel Cell Cathodes
<b>2E5 Electrocatalysis. Room: Abbey</b> Chair: André Weber	
10:45 - 11:15 Abbey-K1	<u>Jose M. Serra</u> ( <i>Instituto de Tecnología Química (Universitat Politècnica de València - Consejo Superior de Investigaciones Científicas), Av. Los Naranjos, s/n, 46022 Valencia, Spain</i> ), Aitor Domínguez-Saldaña, Alfonso Juan Carrillo, Joaquín Santos, Laura Navarrete, María Balaguer, Beatriz García-Baños, Pedro Plaza-González, David Catalán-Martínez, Jose Manuel Catalá-Civera Microwave-driven Modulation of Redox Properties of Solid-State Ionic Conductors
11:15 - 11:35 Abbey-I1	<u>marie-laure fontaine</u> ( <i>SINTEF AS</i> ), Didrik Småbråten, einar vøllestad, Ragnar Strandbakke On the development of cost-effective and large-scale H <sub>2</sub> and NH <sub>3</sub> production technologies
11:35 - 11:50 Abbey-O1	<u>Xi Xu</u> ( <i>Department of Materials Exhibition Road, Imperial College London, London, SW7 2AZ, UK</i> ), Stephen Skinner Locally Tuning Sr Segregation Blocking Layers for Mixed Ion and Electron Conduction (MIEC) Using Oriented Crystal Planes
11:50 - 12:05 Abbey-O2	<u>Qiyang Lu</u> ( <i>Westlake University</i> ) Understanding the Role of Ionic Point Defects in Oxide Electrocatalysts
12:05 - 12:20 Abbey-O3	<u>Kun Zheng</u> ( <i>AGH University of Krakow, Faculty of Energy and Fuels, Department of Hydrogen Energy, al. A. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Jakub Lach, Michał Gogacz, Muhammad Bilal Hanif, Luo Jie, Amir Sultan, Paweł Czaja, Michał Mosiątek, Yihan Ling The synergistic effect of dual-phase in designing hybrid electrodes for high-performance SOFCs
<b>2E6 SOFC/SOEC. Room: Gielgud</b> Chair: Masatomo Yashima	
10:45 - 11:15 Gielgud-K1	<u>Avner Rothschild</u> ( <i>Department of Materials Science and Engineering, Technion - Israel Institute of Technology, Haifa, 3200003, Israel</i> ) Decoupled Water Splitting: Reshaping Water Electrolysis for Green Hydrogen Production at Scale
11:15 - 11:35 Gielgud-I1	<u>Aleksey Yaremchenko</u> ( <i>CICECO - Aveiro Institute of Materials, University of Aveiro, Portugal</i> ), Rui Pinto, Javier Macías, Jorge Frade Vanadate- and Molybdate-Based Anode Components for Biogas-Fueled SOFCs
11:35 - 11:50 Gielgud-O1	<u>Manfred Martin</u> ( <i>Institute of Physical Chemistry, RWTH Aachen University, 52074 Aachen, Germany</i> ) Kinetics of Unmixing Caused by Electrochemical Potential Gradients
11:50 - 12:05 Gielgud-O2	<u>Simon Guillon</u> ( <i>Institut des Matériaux Jean Rouxel, Université de Nantes</i> ), Olivier Joubert, Clément Nicollet Monitoring redox properties of transition metals in spinel type structures for improved oxygen exchange kinetics.
12:05 - 12:20 Gielgud-O3	<u>Hyeonmin Yu</u> ( <i>Department of Mechanical Engineering, KAIST, Daejeon, Republic of Korea</i> ), Seungsoo Jang, Donghun Lee, Kang Taek Lee Facile Microstructural Tuning via One-step Microwave-assisted Sintering for High Performing Solid Oxide Electrochemical Cells
12:20 - 12:35 Gielgud-O4	Jangwoo Seo, Kwangchul Jung, Insung Lee, <u>Bumsoo Kim</u> ( <i>E&amp;KOA co.</i> ), Suok Kim Manufacturing and Performance Assessment of CuMn Foam as a Current Collector for Air Electrodes in SOFC and SOEC Stacks.
12:35 - 14:00	<b>Lunch Break</b>
<b>3E1 Battery Materials. Room: Fleming</b> Chair: M Rosa Palacin Peiro	
14:00 - 14:20 Fleming-I1	<u>David Muñoz-Rojas</u> ( <i>Université Grenoble Alpes, CNRS, Grenoble INP, LMGP, Grenoble, CS 50257, Grenoble Cedex 1 38016, France</i> ) Fast, open-air printing of functional thin films for energy applications
14:20 - 14:35 Fleming-O1	<u>Maycol F. Mená</u> ( <i>Instituto de Cerámica y Vidrio ICV-CSIC, Madrid, España</i> ), Ferley A. Vásquez, Jadra Mosa, Mario Aparicio, Jorge A. Calderon, Nataly Carolina Rosero-Navarro Improving the Electrochemical Performance type-Perovskite Solid Electrolyte through controlled Synthesis Parameters in the Sol-Gel Process.
14:35 - 14:50 Fleming-O2	<u>Marc Bertrand</u> ( <i>Université de Montréal</i> ), Steeve Rousselot, Maxime Rioux, David Aymé-Perrot, Mickael Dolle Ionic Percolation through Low-Temperature Densification of Glass-Ceramic LAGP Electrolytes for All-Solid-State Batteries
<b>3E2 Machine Learning/Materials Modelling. Room: Westminster</b> Chair: Paul Shearing	
14:00 - 14:20 Westminster-I1	<u>Seungwu Han</u> ( <i>Department of Materials Science and Engineering, Research Institute of the Advanced materials, Seoul National University, Seoul 08826, Republic of Korea</i> ) Application of pretrained machine learning force fields to Li diffusion in electrolytes
14:20 - 14:35 Westminster-O1	<u>Marcin Kryński</u> ( <i>Warsaw University of Technology</i> ), Aleksandra Dzięgielewska, Konrad Kwatek, Marcin Małys, Jan Jamroz, Hangfeng Zhang, Wojciech Wróbel, Isaac Abrahams, Franciszek Krok Bridging the gap between theoretical modeling and experiments in bismuth oxide based solids
14:35 - 14:50 Westminster-O2	<u>Thorben Böger</u> ( <i>Institute of Inorganic and Analytical Chemistry, University of Münster, D-48149 Münster, Germany</i> ), Wolfgang G. Zeier Deciphering Thermal Transport in NASICON-Electrolytes: Experimental and Ab-initio Insights into Phonon Dynamics and Heat Transport
14:50 - 15:05 Westminster-O3	<u>Seung-jae Shin</u> ( <i>Thomas Young Centre and Department of Materials, Imperial College London, London, United Kingdom.</i> ), Aron Walsh, Alexander C. Forse, Jamie W. Gittins, Matthias J. Golomb Microscopic Origin of Electrochemical Capacitance in two-dimensional Metal Organic Frameworks
<b>3E3 Battery Materials. Room: St.James</b> Chair: Samuel Cooper	
14:20 - 14:35 St.James-O1	<u>Kazuhiro Hikima</u> ( <i>Toyohashi University of Technology, Japan</i> ), Ryota Kishi, Atsunori Matsuda Electrochemical Properties of Li <sub>10</sub> GeP <sub>2</sub> S <sub>12</sub> Ionic Conductors Synthesized by the Solution Method
14:35 - 14:50 St.James-O2	<u>Oliver Maus</u> ( <i>Institute of Inorganic and Analytical Chemistry, University of Münster, D-48149 Münster, Germany</i> ), Wolfgang Zeier A Close Look into Post-synthesis Ball-milling of the Highly Conducting Solid Electrolyte Li <sub>5</sub> PS <sub>4</sub> .5Cl <sub>1.5</sub> for All-solid State Batteries



14:50 - 15:05 St.James-03	<u>Neelam Srivastava</u> ( <i>Banaras Hindu University</i> ), Dipti Yadav, Kanak Aggarwal Economic, Ecofriendly and Easy to Handle Polymer-In-Salt-Electrolytes
15:05 - 15:20 St.James-04	<u>Vasiliki Faka</u> ( <i>University of Muenster</i> ), Wolfgang Zeier Pressure-induced dislocations and their influence on ionic transport in Li <sup>+</sup> conducting argyrodites
<b>3E4 Solid Oxide Cells/Protonics. Room: Moore</b> Chair: Olga Marina	
14:00 - 14:20 Moore-I1	<u>André Weber</u> ( <i>Karlsruhe Institute of Technology (KIT), Institute for Applied Materials - Electrochemical Technologies (IAM-ET)</i> ) Interaction of SOFC Fuel Electrodes with different Fuels and therein contained Impurities
14:20 - 14:35 Moore-O1	<u>Shunrui Luo</u> ( <i>Institut Català de Nanociència i Nanotecnologia (ICN2)</i> ), Kai Pei, Bote Zhao, Yu Chen, Jordi Arbiol Optimization Surface/Interface of PrBaCo <sub>2</sub> O <sub>5+δ</sub> as Oxygen Electrode for Enhanced Reversible Protonic Ceramic Electrochemical Cells
14:35 - 14:50 Moore-O2	<u>Ho-Il Ji</u> ( <i>Korea Institute of Science and Technology (KIST)</i> ), Seunghyeok Im Proton Uptake Process in Double Perovskite Triple Ionic-Electronic Conducting Oxides for Protonic Ceramic Cells
14:50 - 15:05 Moore-O3	<u>Jack Strand</u> ( <i>Nanolayers Research Computing</i> ), Alex Shluger, David Gao Interplay of Electronic and Ionic Processes in Field-Induced Degradation in Amorphous Oxides
<b>3E5 Electrocatalysis. Room: Abbey</b> Chair: Jose Manuel Serra	
14:00 - 14:20 Abbey-I1	<u>Markus Kubicek</u> ( <i>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</i> ), Matthäus Siebenhofer, Christoph Riedl, Florian Fahrnberger, Herbert Hutter, Andreas Nennung, Jürgen Fleig Near-surface Dipoles on Mixed Ionic Electronic Conducting Oxides: Formation - Measurement - Manipulation
14:20 - 14:35 Abbey-O1	<u>Vladislav Kolotygin</u> ( <i>Department of Advanced Materials for Energy, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Sant Adrià del Besòs, Barcelona 08930, Spain</i> ), Antonio María, Lucile Bernadet, Marc Torrell, Albert Tarancón Development of Sr <sub>2</sub> Fe <sub>1.5</sub> Mo <sub>0.5</sub> O <sub>6-δ</sub> -based Electrodes for Small- and Large-scale SOC Applications
14:35 - 14:50 Abbey-O2	<u>Michał Gogacz</u> ( <i>AGH University of Krakow, Faculty of Energy and Fuels, Department of Hydrogen Energy, al. A. Mickiewicza 30, 30-059 Krakow, Poland</i> ), Kun Zheng, Jie Luo, Jakub Lach, Yihan Ling Engineering high-performance heterostructured electrodes for boosting the performance of SOFCs
14:50 - 15:05 Abbey-O3	<u>Haodong Wu</u> ( <i>School of Chemistry, University of St Andrews, St Andrews, Fife KY16 9ST, UK</i> ), Xiangling Yue A Comparative Investigation of ZDX-SFM Composite-Structured Anode for Hydrocarbon-Fueled Solid Oxide Fuel Cells
<b>3E6 Oxide Materials. Room: Gielgud</b> Chair: Manfred Martin	
14:00 - 14:30 Gielgud-K1	<u>Masatomo Yashima</u> ( <i>Tokyo Institute of Technology</i> ) DISCOVERY of HIGH PROTON and OXIDE-ION CONDUCTORS via INTRINSIC OXYGEN VACANCIES
14:30 - 14:50 Gielgud-I1	<u>Michele Riva</u> ( <i>Technical University of Vienna</i> ) Surfaces of La <sub>0.8</sub> Sr <sub>0.2</sub> MnO <sub>3</sub> at the Atomic Scale
14:50 - 15:20 Gielgud-K2	<u>Richard Catlow</u> ( <i>Department of Chemistry, University College London, London, (United Kingdom)</i> ) New Insights into Defect and Electronic Properties of Oxides and Nitrides
15:30 - 15:45	<b>Fleming Room - Closing &amp; Awards Ceremony</b>