

SCIENTIFIC PROGRAMME

Monday, March 9

Arnold Hall

8:20 - 8:30	Opening ceremony
8:30 - 10:25	Session 1 Chairman: Christopher Johnson
8:30 - 9:00	Plenary lecture: Pushing the limits of intercalation reactions: two Li vs higher Ni NMC M. Stanley Whittingham (United States)
9:00 - 9:25	Keynote lecture: The redox paradox of vanadium at the origin of the electrochemical behavior of $\text{LiVPO}_4\text{F}_{1-y}\text{O}_y$ and $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_3\text{-yO}_y$ <u>Laurence Croguennec</u> , Long H.B. Nguyen, Edouard Boivin, Jacob Olchowka, Jean-Noël Chotard, Dany Carlier, Christian Masquelier (France)
9:25 - 9:45	Invited lecture: Energain® : development of a high added value electrolyte formulation package, from computational modeling to high throughput materials screening M. Guillaume, A. Emery, J. Wang, <u>Hyncheol Lee</u> , L. Hough, H.-C. Lee, T. Mathivet (Belgium, South Korea, France)
9:45 - 10:05	Invited lecture: High energy density lithium-rich layered oxides (LLO) and new lithium diffusion model for LLO Kisuk Kang (South Korea)
10:05 - 10:25	Invited lecture: Designing high performance P3-type layered oxide cathode material for Na-ion batteries Abhinav Tripathi, <u>Palani Balaya</u> (Singapore)
10:25 - 10:50	COFFEE BREAK

10:50 - 12:20	Session 2 Chairman: Laurence Croguennec
10:50 - 11:15	Keynote lecture: Layered Structure Cathodes; Prejudice, Inverse Concept and New Possibility Yong-mook Kang (South Korea)
11:15 - 11:40	Keynote lecture: Generation and evolution of the solid electrolyte interphase on silicon anodes of lithium ion batteries Brett Lucht (United States)
11:40 - 12:00	Invited lecture: Strategy to optimize NMC materials for all-solid state batteries Shinichi Kumakura, Jens Paulsen (Japan, Korea)
12:00 - 12:20	Invited lecture: Silicon - a capacity-enhancing additive to graphite electrodes Fabian Jeschull, Petr Novák, <u>Sigita Trabesinger</u> (Switzerland)
12:20 - 14:00	LUNCH
14:00 - 15:50	Session 3 Chairman: Stefano Passerini
14:00 - 14:30	Plenary lecture: European Commission vision on policy and R&I on batteries Julija Sakovica (Belgium)
14:30 - 14:50	Invited lecture: Challenges of amorphous Si nanoparticles as anode materials for the future Li-ion batteries Jan Petter Mæhlen, Samson Lai, Asbjørn Ulvestad, Thomas Preston, Hallgeir Klette, Marte Skare, Junjie Zhu, Ola Nilsen, <u>Alexey Kopusov</u> (Norway)
14:50 - 15:10	Invited lecture: BASF's approach to improving specific cost of cathode active materials for electromobility utilizing overlithiated high manganese layered oxides Jordan Lampert (United States)

15:10 - 15:30	<p>Invited lecture:</p> <p>Strategies and Progresses for High Energy Lithium Batteries</p> <p>Jun Liu (United States)</p>
15:30 - 15:50	<p>Invited lecture:</p> <p>Anion redox-Structure-Electrochemistry Correlation in Li-rich Layered Oxides</p> <p>Jihyun Hong (South Korea)</p>
15:50 - 16:20	COFFEE BREAK
16:20 - 17:30	<p>Session 4</p> <p>Chairman: Brett Lucht</p>
16:20 - 16:45	<p>Keynote lecture:</p> <p>Sustainable materials and processes for batteries</p> <p><u>Stefano Passerini</u>, Matthias Kuenzel, Dominic Bresser, Guk-Tae Kim (Germany)</p>
16:45 - 17:10	<p>Keynote lecture:</p> <p>Reaction mechanisms in non-aqueous oxygen redox chemistries</p> <p><u>Stefan Freunberger</u>, Sergio Brutti, Olivier Fontaine, Sergey Borisov, Nika Mahne, Yann Petit, Eléonore Mourad (Austria, France, Italy)</p>
17:10 - 17:30	<p>Invited lecture:</p> <p>Insight on the Local structure and Electronic Structure of Positive Electrode Materials for Na-ion batteries through Solid State NMR</p> <p><u>Dany Carlier</u>, Long H. B. Nguyen, Paula Sanz Camacho, Yohan Biecher, Jacob Olchowka, Marie Guignard, Christian Masquelier, Claude Delmas, Laurence Croguennec (France)</p>
17:30 - 19:30	Award Ceremony and Welcome Reception

Tuesday, March 10

8:30 - 10:25	<p>Session 5 Chairman: Christian Masquelier</p>
8:30 - 9:00	<p>Plenary lecture: New Hosts and Solutes for LIBs and Li^oBs Michel Armand (Spain)</p>
9:00 - 9:25	<p>Keynote lecture: Elucidation of electrochemical reactions in all-solid-state battery Ryoji Kanno, Kazuhiro Hikima, Keisuke Shimizu, Hisao Kiuchi, Kota Suzuki, Masaaki Hirayama (Japan)</p>
9:25 - 9:45	<p>Invited lecture: On interphase design for high-energy solid-state batteries Jihui Yang (United States)</p>
9:45 - 10:05	<p>Invited lecture: Prospects and limits of rechargeable lithium metal anode batteries Kuzhikalail Abraham (United States)</p>
10:05 - 10:25	<p>Invited lecture: Lithium metal polymer batteries: state-of-the-art of the technology and commercial prospects Margaud Lécuyer (France)</p>
10:25 - 10:50	COFFEE BREAK
10:50 - 12:20	<p>Session 6 Chairman: Minuru Inaba</p>
10:50 - 11:15	<p>Keynote lecture: The Lithium Metal Anode in Solid State Batteries Jürgen Janek (Germany)</p>
11:15 - 11:40	<p>Keynote lecture: Thin and flexible Li-ion batteries based on CNT tissues serving as current collectors Yair Ein-Eli (Israel)</p>

11:40 - 12:00	<p>Invited lecture: All Solid-State Batteries: from Sulfide Electrolyte to Halide Electrolyte Andy Xueliang Sun (Canada)</p>
12:00 - 12:20	<p>Invited lecture: Crystal chemistry of Li and Na thiophosphate solid electrolytes Theodosios Famprikis, Ulas Kudu, James Dawson, Saiful Islam, <u>Christian Masquelier</u> (France, United Kingdom)</p>
12:20 - 14:00	LUNCH
14:00 - 15:50	<p>Session 7 Chairman: Y. Shirley Meng</p>
14:00 - 14:30	<p>Plenary lecture: Composite structured layered and spinel-type cathodes for Li-ion batteries <u>Christopher Johnson</u>, Jason Croy, Michael Thackeray, Eungje Lee, Arturo Gutierrez, Hakim Iddir (United States)</p>
14:30 - 14:50	<p>Invited lecture: Disorder parametrization in battery materials using X-ray scattering techniques Marine Reynaud, Damien Saurel, Jon Serrano-Sevillano, <u>Montse Casas-Cabanas</u> (Spain)</p>
14:50 - 15:10	<p>Invited lecture: Coulombic self-ordering upon charging a large-capacity layered cathode material <u>Atsuo Yamada</u>, Masashi Okubo, Shin-ichi Nishimura (Japan)</p>
15:10 - 15:30	<p>Invited lecture: Full use of the oxygen redox reaction by controlling Li/TM distribution in Co- free Li-rich materials Byoungwoo Kang (South Korea)</p>

15:30 - 15:50	<p>Invited lecture:</p> <p>Degradation Mechanisms of NCM811 upon Exposure to Ambient Air and During Extended Charge/Discharge Cycling</p> <p><u>Hubert A. Gasteiger</u>, Hans Beyer, Anna T. S. Freiberg, Franziska Friedrich, Michael Metzger, Michele Piana, Daniel Pritzl, Johannes Sicklinger, Benjamin Strehle (Germany)</p>
15:50 - 16:20	COFFEE BREAK
16:20 - 17:30	<p>Session 8</p> <p>Chairman: Rosa Palacin</p>
16:20 - 16:45	<p>Keynote lecture:</p> <p>Process development for electrode and cell manufacturing of high energy Lithium-Ion-Batteries</p> <p><u>Margret Wohlfahrt-Mehrens</u>, Stefan Rössler, Wolfgang Braunwarth, Nina Zensen, Peter Axmann, Michaela Memm, Rares Scurtu, Lea Kremer, Alice Hoffmann (Germany)</p>
16:45 - 17:10	<p>Keynote lecture:</p> <p>Quantitative Cell Qualification to Enable Long Life Rechargeable Li Metal Batteries</p> <p>Yulun Zhang, Qiang Wang, <u>Boryann Liaw</u>, Shrikant C. Nagpure, Eric J. Dufek, Charles C. Dickerson (United States)</p>
17:10 - 17:30	<p>Invited lecture:</p> <p>Understanding synergetic effects of electrode structure and electrolyte composition in metal-sulfur batteries</p> <p><u>Nuria Garcia-araez</u>, Rinaldo Raccichini, Liam Furness, James W. Dibden, Nina Meddings, He Li, John Lampkin, John R. Owen (United Kingdom)</p>
17:30 - 17:40	Announcement of IBA 2021
17:40 - 19:30	Poster Session I (Sonce and Zrak Hall)
18:00	IBA Board Meeting

Wednesday, March 11

8:30 - 10:25	<p>Session 9 Chairman: Kristina Edström</p>
8:30 - 9:00	<p>Plenary lecture: Back to the Surface: 35 Years of Operando Characterization of Battery Electrodes Petr Novák (Switzerland)</p>
9:00 - 9:25	<p>Keynote lecture: New Magnetic Resonance Methods for Studying Redox Flow Batteries, Interfaces, Degradation and Fast Charging Evan Wenbo Zhao, Erlendur Jónsson, Michael A. Hope, Clare P. Grey (United Kingdom)</p>
9:25 - 9:45	<p>Invited lecture: Multiscale image characterization for battery research Herman Lemmens (The Netherlands)</p>
9:45 - 10:05	<p>Invited lecture: Recent achievement of the RS2E prototyping platform From Li-ion to Na-ion technology $\underline{\text{Mathieu Morcrette}}$, François Rabuel, Tristan Lombard, Iona Moog (France)</p>
10:05 - 10:25	<p>Invited lecture: New tools to discriminate quality of EIS measurements on battery Clément Caironi (France)</p>
10:25 - 10:50	COFFEE BREAK



10:50 - 12:20	<p>Session 10</p> <p>Chairman: Won - Sub Yoon</p>
10:50 - 11:15	<p>Keynote lecture:</p> <p>Transitioning from Insertion-reaction Cathodes to Conversion-reaction Cathodes for Lithium-based Batteries</p> <p>Arumugam Manthiram (United States)</p>
11:15 - 11:40	<p>Keynote lecture:</p> <p>Advanced Characterization for Metal Anode and Their Interfaces with Next Generation Electrolytes</p> <p>Shirley Meng (United States)</p>
11:40 - 12:00	<p>Invited lecture:</p> <p>Transmission line model of battery cell's impedance: theory vs. experiments</p> <p><u>Miran Gaberšček</u>, Jože Moškon, Sara Drvarič Talian, Robert Dominko (Slovenia)</p>
12:00 - 12:20	<p>Invited lecture:</p> <p>Advanced Imaging and Analysis: How Tools from Computer Vision and Machine Learning can Help Battery Engineering</p> <p>Vanessa Wood (Switzerland)</p>
12:20 - 14:00	LUNCH
14:00 - 15:50	<p>Session 11</p> <p>Chairman: Venkat Srinivasan</p>
14:00 - 14:30	<p>Plenary lecture:</p> <p>Understanding degradation in batteries through the study of interfacial reactions</p> <p>Kristina Edstrom (Sweden)</p>
14:30 - 14:50	<p>Invited lecture:</p> <p>Mitigating Active Lithium Loss in Silicon-based Lithium Ion Full-Cells by Tailored Design of Electrolyte Additives for Effective Interphase Formation</p> <p><u>Tobias Placke</u>, Roman Nölle, Jan-Patrick Schmiegel, Andrey Vinograd, Martin Winter (Germany)</p>

14:50 - 15:10	<p>Invited lecture:</p> <p>The science and engineering of structural batteries – but are they practical solution?</p> <p><u>Adam Best</u>, Joel Galos, Ilias Kyrtziz, Pooneh Attar, Koranat Pattarakunnan, Adrian Mouritz (Australia)</p>
15:10 - 15:30	<p>Invited lecture:</p> <p>Origin of Lithium Metal Dendrites and its Implications in Rechargeable Lithium metal Batteries</p> <p>Jie Xiao (United States)</p>
15:30 - 15:50	<p>Invited lecture:</p> <p>“Burning” Lithium in CS₂: Compact Li₂S@Graphene Nanocapsules for Li-S Batteries</p> <p>Jun Lu (United States)</p>
15:50 - 16:20	COFFEE BREAK
16:20 - 17:50	<p>Session 12</p> <p>Chairman: Daniel Brandell</p>
16:20 - 16:45	<p>Keynote lecture:</p> <p>Morphological and chemical stability issues at interfaces in solid state batteries</p> <p>Gerbrand Ceder (United States)</p>
16:45 - 17:10	<p>Keynote lecture:</p> <p>Computational design and autonomous discovery of next-generation battery materials</p> <p>Tejs Vegge (Denmark)</p>
17:10 - 17:30	<p>Invited lecture:</p> <p>Guiding the synthesis of battery materials using microstructure-scale models</p> <p><u>Venkat Srinivasan</u>, Pallab Barai, Juan Garcia, Hakim Iddir, Timothy Fister, Mark Wolfman, Xiaoping Wang (United States)</p>
17:30 - 17:50	<p>Invited lecture:</p> <p>The Impact of Solvation Structure on Liquid Organic Electrolyte Properties and Design of Novel Systems</p> <p>Kristin Persson (United States)</p>
17:50 - 18:00	IBA 2021
20:00 - 23:00	Conference dinner (Grand hotel Toplice)

Thursday, March 12

8:30 - 10:25	<p>Session 13</p> <p>Chairman: Dominique Guyomard</p>
8:30 - 9:00	<p>Plenary lecture:</p> <p>Challenges in On-Line Analysis of Composite Intercalation Electrodes: The Use of EQCM-D for In-Situ Monitoring Mechanical Degradation Processes in Operating Battery Electrodes</p> <p>Doron Aurbach (Israel)</p>
9:00 - 9:25	<p>Keynote lecture:</p> <p>Alkali electrodes and interphases in superconcentrated Ionic Liquid electrolytes and the role of interfacial structure</p> <p><u>Maria Forsyth</u>, P.C. Howlett, F. Chen, R. Kerr (Australia, Spain)</p>
9:25 - 9:45	<p>Invited lecture:</p> <p>Identifying Protecting Coating Materials for Mg Batteries</p> <p><u>Pieremanuele Canepa</u>, Gopalakrishnan Sai Gautam (Singapore, United States)</p>
9:45 - 10:05	<p>Invited lecture:</p> <p>Electrolyte, cation solvation shell and interphase for Ca and Mg metal anode based batteries</p> <p>Alexandre Ponrouch (Spain)</p>
10:05 - 10:25	<p>Invited lecture:</p> <p>Organic cathode materials for multivalent rechargeable batteries</p> <p><u>Jan Bitenc</u>, Klemen Pirnat, Alen Vizintin, Anna Randon-Vitanova, Patrik Johansson, Robert Dominko (Slovenia, Germany, Sweden, France)</p>
10:25 - 10:50	COFFEE BREAK

10:50 - 12:20	<p>Session 14</p> <p>Chairman: Patrik Johansson</p>
10:50 - 11:15	<p>Keynote lecture:</p> <p>Cascade-Type Prelithiation Approach for batteries and Li-Ion Capacitors</p> <p><u>Dominique Guyomard</u>, Bihag Anothumakkool, S. Wiemers-Meyer, Martin Winter, Thierry Brousse, Joel Gaubicher (France, Germany)</p>
11:15 - 11:40	<p>Keynote lecture:</p> <p>Consideration on the Mechanism of Conversion Electrodes</p> <p>Hikari Sakaebe (Japan)</p>
11:40 - 12:00	<p>Invited lecture:</p> <p>Operando characterization of lithium/sulfur batteries and lithium metal anodes</p> <p><u>Céline Barchasz</u>, Guillaume Tonin, Gavin Vaughan, Renaud Bouchet, Fannie Alloin, Marco Di Michiel, Lionel Blanc, Eric Mayousse, Benoit Chavillon, Jean-François Colin (France)</p>
12:00 - 12:20	<p>Invited lecture:</p> <p>When todays Li-ion batteries surge can become tomorrow's solution</p> <p>Mathieu Charbonneau, Thomas Bibienne, Clémence Ly, Jean Francois Magnan, <u>Mickael Dollé</u> (Canada)</p>
12:20 - 14:00	LUNCH
14:00 - 15:50	<p>Session 15</p> <p>Chairman: Pieremanuele Canepa</p>
14:00 - 14:30	<p>Plenary lecture:</p> <p>Development of nonaqueous electrolytes for K-ion batteries</p> <p><u>Shinichi Komaba</u>, Tomooki Hosaka, Kei Kubota, Tatsuo Matsuyama (Japan)</p>
14:30 - 14:50	<p>Invited lecture:</p> <p>The Electrochemistry of Divalent Cations</p> <p>Kimberly A. See (United States)</p>
14:50 - 15:10	<p>Invited lecture:</p> <p>The next generation of solid polymer electrolytes</p> <p><u>Daniel Brandell</u>, Jonas Mindemark (Sweden)</p>

15:10 - 15:30	<p>Invited lecture:</p> <p>Novel Computational Approaches to Elucidate Electrolyte Ion Transport Mechanisms</p> <p>Rasmus Andersson, Fabian Årén, Gustav Åvall, <u>Patrik Johansson</u> (Sweden, France)</p>
15:30 - 15:50	<p>Invited lecture:</p> <p>Ultrathin Ionomer Membrane for Enhancing Performance of Li Metal Anodes in Carbonate-Based Electrolytes</p> <p>Yu-Ting Weng, <u>Nae-lih Nick Wu</u> (Taiwan)</p>
15:50 - 16:20	COFFEE BREAK
16:20 - 17:50	<p>Session 16</p> <p>Chairman: Robert Kostecki</p>
16:20 - 16:45	<p>Keynote lecture:</p> <p>Electrolyte Stability/Reactivity at Li/Mg-Ion Battery Interfaces: A grand canonical DFT approach</p> <p>Anja Kopac-Lautar, Jan Bitenc, Tomaz Rejec, Robert Dominko, Jean-Sébastien Filhol, <u>Marie-liesse Doublet</u> (Slovenia, France)</p>
16:45 - 17:10	<p>Keynote lecture:</p> <p>Insights in solid electrolyte decomposition and Li-ion transport in all-solid state batteries</p> <p>Violetta Arszelewska, Tammo Schwietert, Zhu Cheng, Chuang Yu, Ming Liu, Swapna Ganapathy, Haoshen Zhou, <u>Marnix Wagemaker</u> (Netherlands, China)</p>
17:10 - 17:30	<p>Invited lecture:</p> <p>Advanced materials for Li-ion battery technologies</p> <p><u>Benoît Mortemard de Boisse</u>, Julien Demeaux, Lucille Gal, Vincent Pelé, Erwan Dumont, Christian Jordy, Cécile Tessier, Patrick Bernard (France)</p>
17:30 - 17:50	<p>Invited lecture:</p> <p>Closo-borate electrolyte for all-solid-state batteries</p> <p>Léo Duchêne, Ryo Asakura, Arash Payandeh, Arndt Remhof, <u>Corsin Battaglia</u> (Switzerland)</p>
17:50 - 19:30	Poster Session II (Sonce and Zrak Hall)

Friday, March 13

8:30 - 9:55	<p>Session 17</p> <p>Chairman: Alexis Grimaud</p>
8:30 - 8:55	<p>Keynote lecture:</p> <p>Characterization of Electrochemical Interfaces in Batteries with IR Near-Field Probes</p> <p>Robert Kostecki, Jonathan Larson, Maurice Ayache, Jaroslaw Syzdek, Yi-Hsien Lu, Artem Baskin, Xiao Zhao, Paul D. Ashby, David Prendergast, Hans A. Bechtel, Miquel Salmeron (United States)</p>
8:55 - 9:15	<p>Invited lecture:</p> <p>Rational design of Membrane-Free Organic Redox Flow Batteries</p> <p>Rebeca Marcilla (Spain)</p>
9:15 - 9:35	<p>Invited lecture:</p> <p>A new class of stable electrolytes for room-temperature rechargeable calcium batteries and its first applications</p> <p>Zhirong Zhao-Karger, Zhenyou Li, <u>Maximilian Fichtner</u> (Germany)</p>
9:35 - 9:55	<p>Invited lecture:</p> <p>Pursuing a wide variety of hydrate-melt electrolytes with an asymmetric imide salt</p> <p><u>Yuki Yamada</u>, Atsuo Yamada (Japan)</p>
9:55 - 10:10	COFFEE BREAK

10:10 - 11:40	Session 18 Chairman: Corsin Battaglia
10:10 - 10:35	Keynote lecture: Predicting the impact of manufacturing process on electrode texture and battery performance: the ARTISTIC project Alejandro A. Franco (France)
10:35 - 11:00	Keynote lecture: Ultra Stretchable Membranes integrating various Functions with the Objectives of Making Safer and Durable Battery Christel Laberty-Robert, L. Coustan, F. Leclercq (France)
11:00 - 11:20	Invited lecture: Local processes in rocksalt oxyfluoride cathodes from solid-state NMR and theory Raynald Giovine, Emily Foley, Daniil Kitchaev, Bin Ouyang, Zhengyan Lun, Yuan Yue, Jinhyuk Lee, Wei Tong, Gerbrand Ceder, Raphaële Clément (United States)
11:20 - 11:40	Invited lecture: Toward the development of aqueous batteries through the control of water solvation properties Alexis Grimaud (France)
11:40 - 11:50	Closing ceremony

