

Beyond Lithium Ion X

IBM, Almaden CA, June 27-29, 2017

Agenda

| Day 1 – June 27, 2017 | | |
|---|--|---|
| Session I: (Chair: Dionne Hernandez-Lugo) | | |
| 7:30 am | Registration Breakfast | |
| 8:30 am | Welcome (10 mins) | Dionne Hernandez-Lugo , NASA Ho-Cheol Kim , IBM |
| 8:40 am | IBM Executive Welcome | Spike Narayan , Director Science & Technology, IBM Almaden Research Center |
| Keynote Speakers (Chair: Dionne Hernandez-Lugo) | | |
| 9:00 am | ARPA-E efforts to advance materials and cell designs for high-energy batteries | Sue Babinec , Senior Commercialization Advisor, ARPA-E |
| 9:30 am | NASA Glenn perspective on Electric Aircraft Propulsion | Greg Follen , Deputy Director Aeronautics, NASA GRC |
| 10:00 am | JCESR: Progress and Highlights from the Battery Hub | Lynn Trahey , Joint Center Energy Storage Research (JCESR) |
| 10:30 am | <i>Break (30 minutes)</i> | |
| Session II: Industry Innovations (Chair: Ray Bair) | | |
| 11:00 am | Glass Protected Li Metal Electrodes for Next Generation Batteries | Steve Visco , CEO and CTO at Polyplus Battery Company |
| 11:30 am | Sion Power's <i>Licerion</i> [®] Batteries | Yuriy Mikhaylik , Director Materials Development at Sion Power Corporation |
| 12:00 pm | Progress Towards Energy Dense Sulfide-Based Solid-State Batteries | Josh Buettner-Garrett - Chief Technology Officer at Solid Power |
| 12:30 pm | <i>Lunch (90 mins)</i> | |
| Session III: Lithium Metal Technologies (Chair: Wu Xu) | | |
| 2:00 pm | The Mechanical Behavior of Vapor Deposited Lithium Films | Nancy Dudney , ORNL Erik Herbert – Michigan Technological University |
| 2:30 pm | Novel Electrolytes Enabling High Efficiency Cycling of Rechargeable Li Metal Batteries | Jason Zhang , PNNL |
| 3:00 pm | <i>Break (30 minutes)</i> | |
| 3:30 pm | Lithium Metal Matrix and its Protective Solid Electrolyte Interphase | Qiang Zhang , Tsinghua University |
| 4:00 pm | Fundamental Study on Li Metal Dissolution and Deposition on Cu Foil in Nonaqueous Electrolytes with 3DOM Separator for Next Generation Batteries | Kiyoshi Kanamura , Tokyo Metropolitan University |
| 4:30 pm | Computational analysis of Li-doped ionic liquid electrolytes: from bulk properties to interfacial behavior | John Lawson , NASA Ames Research Center |
| 5:00 pm | The need for Li metal protection in lithium-oxygen batteries with redox mediators | Kyu Tae Lee , Seoul National University |
| 5:30 pm | <i>Break (30 mins)</i> | |
| 6:00 pm | <i>Reception sponsor by BLI</i> | |

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| Day 2 – June 28, 2017 | | |
|---|---|--|
| 7:30 am | <i>Breakfast</i> | |
| Keynote Speaker | | |
| 8:00 am | Uber Elevate -Stored Energy Solutions for On-Demand Urban Aviation | Nikhil Goel , Uber Elevate |
| Session IV: Status of Today's Technology (Chair: Ho-Cheol Kim) | | |
| 8:30 am | Smart Batteries Enabled by in-cell Sensors and Actuators | Chao-Yang Wang , Penn State University |
| 9:00 am | Development towards High Energy Na-ion Batteries | Xiaolin Li , PNNL |
| 9:30 am | Atomistic simulations on sodium transport in NASICON solid-state electrolytes and nucleation processes in lithium-air batteries | David Aller Giraldez and Federico Zipoli Zurich Lab |
| 10:00 am | <i>Break (30 mins)</i> | |
| 10:30am | New Territories of Sustainable Batteries by Carbon-Based Materials | David Ji , Oregon State University |
| 11:00 am | Safe electrolytes for Li-ion batteries | Chunsheng Wang , University of Maryland |
| 11:30 am | How Interphases form in Aqueous Electrolytes and its Implication | Chunsheng Wang , University of Maryland, Kang Xu , Army Research Lab |
| 12:00 pm | <i>Lunch (90 mins)</i> | |
| Session V: Solid State Batteries (Chair: Gao Liu) | | |
| 1:30 pm | Solid State Battery Development | Bin Li , Wildcat Discovery Technologies |
| 2:00 pm | Superionic Conductive Polymer Composite Electrolyte for All-Solid-State Li-Ion Battery | Yu Zhu , University of Akron |
| 2:30 pm | New Approaches to Solid Electrolytes: Recent Progress in Glassy Fast Ion Conducting Solid Electrolytes” | Steve Martin , Iowa State University |
| 3:00 pm | Enabling All-Solid-State Li-ion Battery through Computation-Guided Understanding and Design of Materials and Interfaces | Yifei Mo , University of Maryland |
| 3:30 pm | Post Lithium-Ion Materials: A Path to Novel and Sustainable Batteries | Andreas Hintennach , Mercedes-Benz |
| 4:00 pm | <i>Poster Session and Refreshments</i> | |
| 6:00 pm | <i>Dinner Sponsor by BLI</i> | |

Beyond Lithium Ion X

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Agenda

| Day 3 – June 29, 2017 | | |
|---|---|---|
| 7:30 am | <i>Breakfast</i> | |
| Keynote Speaker | | |
| 8:30 am | NASA X-57 Maxwell Electric Propulsion Flight Demonstrator | Sean Clarke , PI, NASA AFRC |
| Session VI: Multivalent Technologies (Chair: Chunmei Ban) | | |
| 9:00 am | Development of Cathode Materials for Rechargeable Magnesium Batteries | Yan Yao , University of Houston |
| 9:30 am | Magnesium Battery Technology: Challenges of Innovation in Electrolytes | Guosheng Li , PNNL |
| 10:00 am | Reversible Mg Chemistry in Carbonate Based Electrolyte Enabled by Mg ²⁺ -conducting Artificial Interphase | Chunmei Ban , NREL |
| 10:30 am | <i>Break (30 mins)</i> | |
| 11:00 am | Aqueous Multivalent Systems for Energy Storage | Ramesh K. Guduru , Lamar University |
| 11:30 am | Stable Electrolytes for High Voltage Mg Ion Batteries: Decoupling Weakly Coordinating Anion and Solvent Stability to Reveal Design Principles | Kevin Zavadil , Sandia National Laboratory |
| 12:00 pm | One dimensional nanomaterials for emerging energy storage beyond Li-ion battery | Liqiang Mai , Wuhan University of Technology |
| 12:30 pm | <i>Lunch (90 mins)</i> | |
| Session VIII: Battery Safety and Diagnostics (Chair: Jagjit Nanda) | | |
| 2:00 pm | Reviving Lithium Metal Anode Through Materials, Interfacial and Solid Electrolyte Design | Yi Cui , Stanford University |
| 2:30 pm | Quantifying Battery Safety | Alvaro Masias , Ford |
| 3:00 pm | A New Concept – Multifunctional Batteries with Safecore™ | Jiang Fan , American Lithium Energy |
| 3:30 pm | Operando X-ray based Diagnostics in Energy Storage | Mike Toney , SLAC |
| 4:00 pm | <i>Break (30mins)</i> | |
| 4:30 pm | IBM Tours (Optional) 1. Battery Laboratory – POC: Dr. Ho-Cheol Kim 2. Scanning Tunneling Microscope Laboratory- Dr. Dan Rugar Sensor Lab-POC: Dr. Andrea Fasoli | |
| 6:00 pm | Adjourn-See you next year at NASA Glenn Research Center | |

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