

Advanced Battery Technologies for Consumer,  
Automotive & Grid Applications

LONGEST  
RUNNING  
ANNUAL  
BATTERY  
EVENT

42<sup>nd</sup>  
Annual

# International Battery SEMINAR & EXHIBIT

March 17-20, 2025

Loews Royal Pacific Resort  
Orlando, FL

Cambridge  
EnerTech

## 2025 CONFERENCE PROGRAMS:



R&D

- Next-Generation Battery Research
- Battery Recycling
- Lithium-ion Battery Development & Commercialization



MANUFACTURING

- High-Performance Battery Manufacturing
- Global Supply Chain for Battery Raw Materials
- Global Battery Manufacturing Production



APPLICATIONS

- Advances in Automotive Battery Applications
- Grid-Scale Energy Storage
- Battery Power for Consumer Electronics



ENGINEERING

- Battery Safety
- Fast Charging & Infrastructure
- Battery Engineering

## PLENARY KEYNOTES:

SAVE \$500!

REGISTER BY DECEMBER 20



The Importance of Passive Propagation Resistance in Battery Pack Design

Troy Hayes, PhD, Director of Quality, Tesla



This and Next-Generation Battery Development - A UK Perspective

Martin Freer, CEO, Faraday Institution



A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University

Signature Sponsor

EVE

Premier Sponsors

Harper HATCH iontra

# PLENARY KEYNOTE PROGRAM



## 3:55 pm The Importance of Passive Propagation Resistance in Battery Pack Design

**Troy Hayes, PhD, Director of Quality, Tesla**

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.



## 4:55 pm This and Next-Generation Battery Development - A UK Perspective

**Martin Freer, CEO, Faraday Institution**

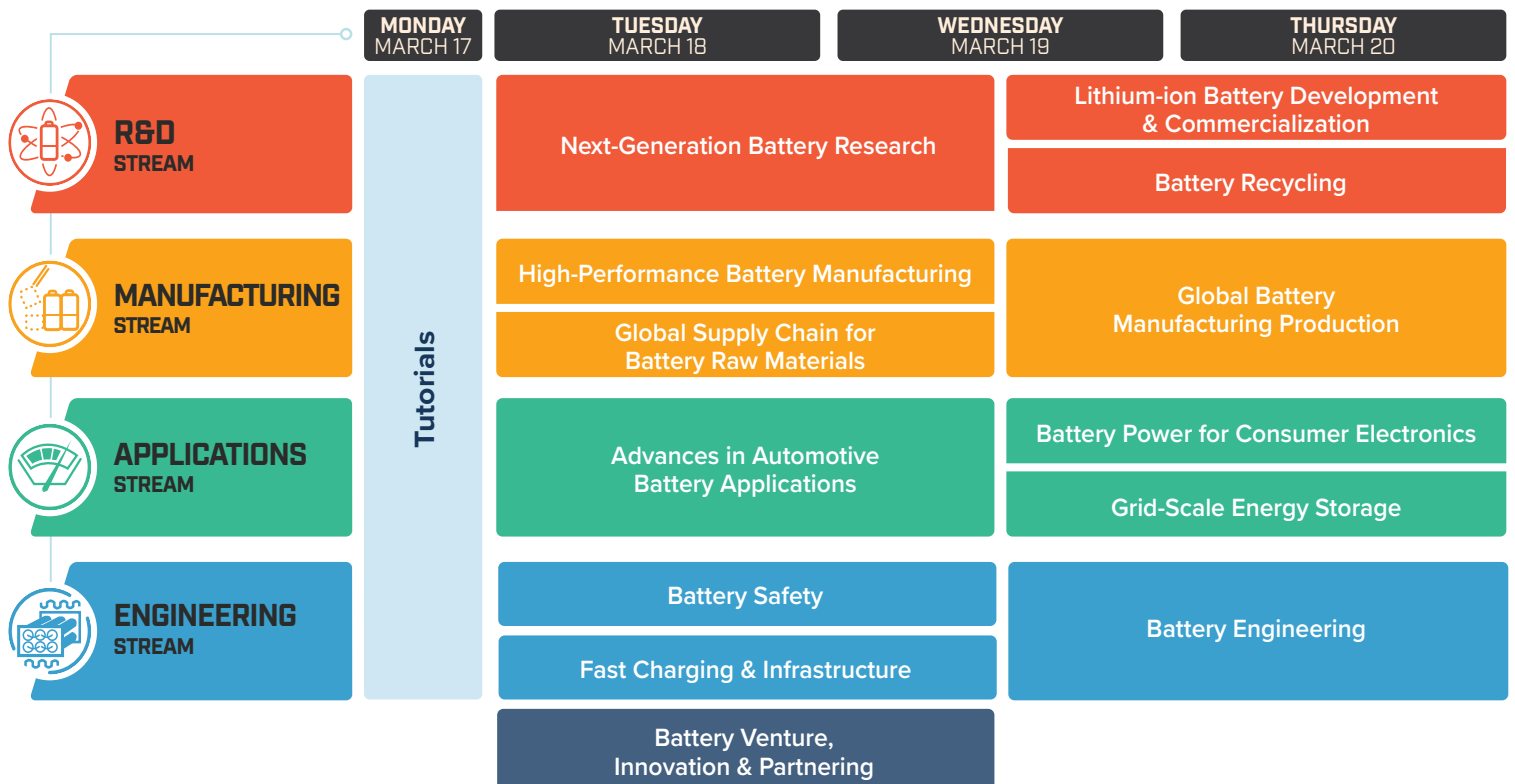
The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This presentation will provide an overview of the UK's battery strategy, the development of associated research programs, and highlight future focus areas for research and innovation.



## 4:25 pm A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

**Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University**

## 2025 Conference Programs: March 17-20, 2025



# INTERACTIVE TUTORIALS\*

## MONDAY, MARCH 17 8:30-10:00 AM

### TUT1: Na-ion Batteries: Materials and State of the Art

Instructor:

Philipp Adelhelm, PhD, Professor, Institute of Chemistry, Humboldt-University Berlin

### TUT2: Battery Safety & Abuse Tolerance Validation

Instructor:

Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.

### TUT3: Economics of Battery Material Development & Manufacturing

Instructor:

Thomas D. Gregory, Owner and Consultant, Borealis Technology Solutions LLC

### TUT4: In-Depth Analysis of the Chinese xEV Battery Industry

Instructor:

Mark Lu, PhD, Senior Industrial Analyst, Industrial Economics & Knowledge Center, Industrial Technology Research Institute

## MONDAY, MARCH 17 10:30 AM-12:00 PM

### TUT5: Solid-State Batteries

Instructor:

Venkataraman Thangadurai, PhD, Chair in Energy & Faraday Institution; Adjunct Professor, School of Chemistry, University of St. Andrews

### TUT6: Technical Approaches to Li-ion Battery Recycling

Instructor:

Eric Gratz, PhD, Co-Founder & CTO, Ascend Elements

### TUT7: Understanding the Future of Battery Cell Cost & Assessing the Economic Feasibility of Emerging Technologies

Instructor:

Rory McNulty, Senior Analyst, Benchmark Mineral Intelligence

### TUT8: Cell & Pack Design

Instructor:

Kevin Konecky, Vice President, Battery Systems Engineering, Ola Electric

## MONDAY, MARCH 17 1:30-3:00 PM

### TUT9: Improving the Energy Density of Batteries with Silicon-Based Anodes

Instructor:

Dee Strand, PhD, CSO, R&D, Wildcat Discovery Technologies, Inc.

### TUT10: Li-ion Cell Design and Manufacturing

Instructor:

James Kaschmitter, CEO, SpectraPower LLC

### TUT11: Li-ion Battery Safety & Thermal Runaway

Instructor:

Ahmad Pesaran, PhD, Chief Energy Storage Engineer, National Renewable Energy Laboratory

### TUT12: Recycling Market & Methods

Instructor:

Steve Sloop, PhD, President, OnTo Technology LLC

## MONDAY, MARCH 17 3:15-4:45 PM

### TUT13: Latest Regulatory and Legislative Developments on the Safe Transport, Storage, Collection & Recycling of Lithium Batteries

Instructor:

George A. Kerchner, Executive Director, PRBA - The Rechargeable Battery Association

### TUT14: Virtual Analysis of Cell Aging and Cell Behaviors for the Selection and Development of Long-Life Cells

Instructor:

Luke Hu, Co Founder & GM, Global Business, Electroder Ltd.

### TUT15: Global EV Market Demand: In-Depth Insights, Future Projections & the Impact on the Battery Supply Chain

Instructors:

Viktor Irlé, Co-Founder & Market Analyst, EV Volumes

Rob Price, Global Key Account Manager, EV Volumes

\*All Access Registration or separate registration required for Tutorials

# 2025 SPONSORS

## Signature Sponsor



## Premier Sponsors



## Corporate Sponsors



## Corporate Support Sponsors



Seeing beyond

**MONDAY, MARCH 17**7:00 am **Registration and Morning Coffee**4:45 pm **Close of Day****TUESDAY, MARCH 18**7:00 am **Registration Open and Morning Coffee****INCREASING ENERGY DENSITY: ELECTROCHEMISTRIES****8:05 Organizer's Remarks***Mary Ann Brown, Executive Director, Conferences, Cambridge EnerTech***8:10 Chairperson's Remarks***Karim Zaghib, PhD, Professor, Chemical & Materials Engineering, Concordia University***8:15 FEATURED PRESENTATION: New Chemistries for the Electrification of Heavy-Duty Applications (PROPEL-1K Program)***Halle Cheesman, PhD, Program Director, Advanced Research Program Agency, U.S. Department of Energy*

(ARPA-E)

For batteries to contribute in the electrification of planes, trains, and ships, a new generation of ESS will be required. ARPA-E has funded next-generation technologies including silicon, solid-state, sodium-ion, and iron-Air, and last July embarked upon a new journey to explore electrochemistries that could achieve 1000Wh/Kg and 1000Wh/L. This presentation will discuss the rationale for this program and highlight its Lithium Air, rechargeable LiCFx, and aluminum projects.

**8:45 Shaping Electrolyte Design for Aqueous Zn-ion Batteries with Molecular Modeling***Travis P. Pollard, PhD, Chemist, Battery Science Branch, DEVCOM Army Research Laboratory*

Talk will highlight recent efforts to 1.) limit the extent of hydrogen evolution reaction (HER) and 2.) leverage products generated by HER to improve the reversibility of Zn plating/stripping in aqueous Zn-ion batteries. Emphasis is placed on the role of molecular dynamics and quantum chemistry calculations to address these issues. Topics covered include the development of mixed Zn-K and Zn-Li aqueous electrolytes and sacrificial additives.

**9:15 Understanding Charge Distribution in Multivalent Batteries***Jeffrey E. Dick, PhD, Richard B. Wetherwill Associate Professor, Chemistry, Purdue University*

Our research examines the electrochemical behavior of aqueous zinc metal batteries (AZMB), focusing on the pathways of electrons at current collectors during charging. We aim to elucidate the factors that determine an electron's fate, as it can participate in zinc electrodeposition, form a passivation film or solid electrolyte interphase, or engage in the hydrogen evolution reaction. These processes are inherently complex and interconnected, presenting significant challenges for understanding charge distribution.

**9:45 Grand Opening Refreshment Break in the Exhibit Hall with Poster Viewing****INCREASING ENERGY DENSITY: CATHODES****10:30 Enabling High Performance Cathode Materials with Conformal Graphene Encapsulation***Damien Despinoy, CEO and Co-Founder, Volexion*

A novel, scalable, conformal graphene encapsulation solution, co-developed at Argonne and Northwestern University, allows enhanced control of the material/electrolyte interface of Cathode Active Materials (CAM) thanks to a pinhole-free thin graphene layer. It improves cycle life, gassing, rate capability, and voltage and temperature range. This solution also enables next-generation CAM such as earth-abundant chemistries, offering wide temperature operability and immediate usability in existing production lines.

**11:00 Ultrastable Cathodes Enabled by Compositional and Structural Dual-Gradient Design***Tongchao Liu, PhD, Assistant Chemist, Chemical Sciences and Engineering Division, Argonne National Laboratory*

Cathodes for next-gen batteries face challenges at high voltage (=4.5V) due to structural degradation and capacity fading. We present a new cathode with a structurally coherent design, merging ordered and disordered frameworks with controllable Ni oxidation activities. This enables high-voltage operation (up to 4.7V) with minimal capacity decay and improved thermal stability. Our approach overcomes the limitations of existing cathodes, offering a breakthrough for long-lasting, high-performance batteries.

**11:30 KEYNOTE PRESENTATION: Sustainable C-LiFePO4 (C-LFP) and C-LiMnxFe1-xPO4 (x=0.1 to 1) (C-LMFP) Cathode Materials for Lithium-ion Batteries***Karim Zaghib, PhD, Professor, Chemical & Materials Engineering, Concordia University*

This presentation offers a comprehensive overview of the entire process involved in the fabrication of C-LFP/LMFP-based lithium-ion batteries, from the initial elements in the mine to the assembly of the final systems that power EVs or energy storage. C-LiFePO4 (C-LFP) and C-LiMnxFe1-xPO4 (x=0.1 to 1) (C-LMFP)-based technologies represent an increasing segment of lithium-ion batteries (LIBs) due to desirable properties such as high safety, low cost, and long cycle life.

**12:00 pm Presentation to be Announced****12:15 Presentation to be Announced****12:30 Networking Luncheon****1:15 Dessert Break in the Exhibit Hall with Poster Viewing****INCREASING ENERGY DENSITY: ANODES****1:45 Chairperson's Remarks***Celina Mikolajczak, Chief Battery Technology Officer, Lyten***1:50 Tackling Lithium Metal Corrosions by Novel Polymeric Coatings***Xiangbo Meng, PhD, Associate Professor, Mechanical Engineering, University of Arkansas Fayetteville*

Although very promising, Li suffers from two daunting issues: (1) continuous formation of unstable solid electrolyte interphase and (2) Li dendritic growth. In searching for solutions, recently we developed



# Next-Generation Battery Research

several novel Li-containing polymers (named as lithicones) via molecular layer deposition. The lithicone-protected Li showed compelling long-term cyclability in Li||Li cells and could dramatically boost the performance of Li||NMC811 (LiNi<sub>0.8</sub>Mn<sub>0.1</sub>Co<sub>0.102</sub>) cells, in terms of sustainable capacity and capacity retention.

## 2:20 New Class of High-Performance and Highly-Safe Li-ion Cell Enabled by Novel Vanadium-Based Oxide Anode

Haodong Liu, PhD, Co-Founder and CTO, Tyfast Energy Corp.; Activate Fellow, Lawrence Berkeley National Laboratory

We are developing high-performance lithium-ion batteries using a vanadium-based oxide anode for heavy-duty applications such as mining, construction, and military vehicles. By utilizing this proprietary vanadium-based anode, we aim to achieve 10x faster charging (<6 mins to 80% SOC), 10x the cycle life (>10,000 cycles), and the ability to charge below freezing (-40°C), while also enhancing safety with the use of a metal oxide anode.

## 2:50 Presentation to be Announced

## 3:20 Refreshment Break in the Exhibit Hall with Poster Viewing



## PLENARY KEYNOTE

### 3:50 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



### 3:55 The Importance of Passive Propagation Resistance in Battery Pack Design

Troy Hayes, PhD, Director of Quality, Tesla

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.



### 4:25 A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University



### 4:55 This and Next-Generation Battery Development—A UK Perspective

Martin Freer, CEO, Faraday Institution

The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This presentation will provide an overview of the UK's battery strategy, the development of associated research programs, and highlight future focus areas for research and innovation.

## 5:25 Reception in the Exhibit Hall with Poster Viewing

## 6:30 Close of Day

## WEDNESDAY, MARCH 19

### 6:50 am Registration Open

### 7:00 Coffee Talk: Interactive Roundtable Discussions with Coffee & Pastries

Roundtable discussions are informal, moderated discussions with brainstorming and interactive problem-solving, allowing participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

#### TABLE 1: Battery Raw Materials Supply Chain

Moderator: Robert Privette, Manager, Business Development, Rechargeable Battery Materials North America, Umicore USA, Inc.

#### TABLE 2: Li-ion NMC Fast Charging New Cells for E-Mobility

Moderator: Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.

#### TABLE 3: Electrolyte Developments: New Components and Approaches

Moderator: Sam Jaffe, Vice President, Battery Solutions, E Source

#### TABLE 4: Battery Pack System Cost and Safety – Will Future xEV Battery Packs Increase in Complexity or Simplify and How Will Cost and Safety Be Impacted?

Moderator: Kevin Konecky, Battery and Energy Storage Systems Consultant, Total Battery Consulting

#### TABLE 5: Innovations in Recycling Battery Materials & Second Life

Moderator: Steven Sloop, President, OnTo Technology LLC

#### TABLE 6: Opportunities and Barriers to Fast Charge in Automotive and Other Applications

Moderator: Brian Barnett, PhD, President, Battery Perspectives

#### TABLE 7: Provisional Patents to Due Diligence

Moderator: Grant Ehrlich, PhD, Member, Intellectual Property & Technology, Stites & Harbison PLLC

#### TABLE 8: Understanding the Pressure Effects on Li Metal Batteries

Moderator: Bin Li, Senior Scientist & Joint Professor, Electrification, Oak Ridge National Laboratory

#### TABLE 9: Challenges and Opportunities in the Distribution of Relaxation Times Analysis

Moderator: Tom Ruether, Lecturer & Chair, Electrical Energy Systems, University of Bayreuth

#### TABLE 10: How Will Emerging Technologies and Paradigms Impact the Future of Electrified Transportation?

Moderator: Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory

#### TABLE 11: Battery Testing & Aging

Moderator: Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH

#### TABLE 12: Thermal Runaway

Moderator: Lin Liu, PhD, Professor, Mechanical Engineering, University of Kansas

#### TABLE 13: Consumer-Driven Trends in Battery Development for Personal Electronics

Moderator: John Wozniak, PhD, President, ESP Consulting

#### TABLE 14: Battery Electrolytes: Materials, Developments and Manufacturing

Moderator: Carl Thoemmes, Senior Manager, Orbia Fluor & Energy Materials

## INCREASING ENERGY DENSITY: SOLID-STATE BATTERIES

### 7:55 Chairperson's Remarks

Chen Liao, PhD, Chemist & Staff Scientist, Chemical Sciences & Engineering, Argonne National Laboratory



MARCH 18 - 19, 2025

# Next-Generation Battery Research

## 8:00 Enhance Battery Safety and Performance Through thermal analysis and In-Operando Isothermal Microcalorimetry

Hang Lau, Segment Marketing Mgr, Segment Marketing, TA Instruments

Thermal analysis techniques are extremely valuable tools for evaluating the thermal stability of battery materials. The decomposition onset temperature, reaction mechanism, and heat of reaction are essential to improving battery safety by design. At the cell level, In-operando isothermal microcalorimetry can simultaneously measure thermal and electrochemical data for a non-destructive determination of performance and stability. Evaluating the thermal properties of a battery during normal operating conditions is crucial for evaluating performance, gaining a deeper understanding of the chemistry, and studying the mechanisms of failure.

## 8:30 New Composite Polymer Electrolytes for High-Performance Li-Metal Batteries

Chen Liao, PhD, Chemist & Staff Scientist, Chemical Sciences & Engineering, Argonne National Laboratory

Polymers can serve as composite materials with oxides to provide unprecedented high ionic conductivity and low interfacial resistance for the all solid-state batteries. Here we introduced two approaches, 1) design of single ion conducting polymer electrolytes (SIE); 2) design of crosslinkers. Significant improvements in Li transference number, electrochemical stability, and cycling life are observed with these designs.

## 9:00 Managing Electromechanical Heterogeneity in Solid-State Batteries

Shou-Hang Bo, PhD, Professor, Global Institute of Future Technology, Shanghai Jiao Tong University

In contrast to solid-liquid electrochemical interfacial processes, solid-state batteries must cope with heterogeneous solid-solid interfaces under mechanical constraints. In this talk, I will discuss the development of ultrafast XCT, photoacoustic microscopy, and confocal Raman microscopy, to directly visualize the dynamic evolution of physicochemical fields. An electrode-adaptive Real 2D (R2D) modeling strategy will also be introduced. These lead to innovative ways to manage and control heterogeneity, thus improving electrochemical performance.

## 9:30 Presentation to be Announced

## 10:00 Talk Title to be Announced

Rob Anstey, CEO, GDI

## 10:15 Coffee Break in the Exhibit Hall with Poster Viewing

## INCREASING ENERGY DENSITY: SODIUM-ION BATTERIES

### 11:00 Insights on Sodium-ion Battery Performance from 3-Electrode Cells

Daniel Abraham, PhD, Senior Materials Scientist, Argonne National Laboratory

Sodium-ion batteries are gaining increased attention due to considerations that include their cost-effectiveness, sustainability, and supply-chain resilience. In this presentation we will discuss insights from 3-electrode cell experiments being conducted at Argonne National Laboratory using layered-oxide cathodes, hard-carbon anodes, and carbonate-based electrolytes. Performance characteristics such as cell capacity fade, impedance rise, voltage-profile changes and the effect of hard-carbon hysteresis and sodium-plating during electrochemical cycling will be discussed.

7 [InternationalBatterySeminar.com](http://InternationalBatterySeminar.com)



## 11:30 Advanced Sodium-ion Batteries with Ultra High-Energy Density

Darren Tan, PhD, CEO, UNIGRID Battery

Through a breakthrough alloy anode innovation, the energy densities of sodium ion batteries can be increased by a factor of 2x and avoid battery safety hazards, offering competitive advantages in e-mobility and energy storage markets. This session will showcase datasets from state-of-the-art commercial scale sodium ion batteries, with unprecedented energy densities, performance, and rigorous safety testing results of U.S.-made advanced sodium ion batteries.

## 12:00 pm Chemo-Mechanical Instabilities in Cathode Materials for Na-ion Batteries

Ozgur Capraz, PhD, Associate Professor, Chemical, Biochemical & Environmental Engineering, University of Maryland Baltimore County

Na-ion cathodes undergo severe chemo-mechanical deformations, which lead to poor capacity retention. Chemo-mechanical deformations can originate from interfacial and structural instabilities. There is a critical scientific need for a comprehensive understanding of the reaction-transport behavior and mechanics of cathodes in Na-ion chemistry. I will present instability mechanisms in battery electrodes by probing operando mechanical deformations during cycling.

## 12:30 Technological Breakthrough Driven by Electrolyte with High Ionic Conductivity

AsahiKASEI

Hirokazu Kamine, Asahi Kasei Corporation

We present the proof-of-concept (POC) of a lithium-ion battery (LIB) featuring a proprietary high ionic conductive electrolyte developed by Asahi Kasei. Our novel electrolyte significantly outperforms conventional ones, with cells showing superior power at -40°C and doubled cycle life at 60°C before reaching a state-of-health (SOH) of 80%. The use of our electrolyte enhances ionic conductivity and prevents degradation, thus improving battery longevity and performance.

## 12:45 Presentation to be Announced

## 1:00 Networking Luncheon

## 2:15 Dessert Break in the Exhibit Hall with Poster Viewing

## 2:45 Close of Conference



**WEDNESDAY, MARCH 19****6:50 am Registration Open****1:00 pm Networking Luncheon****2:15 Dessert Break in the Exhibit Hall with Poster Viewing****MARKET DEMAND FOR RECYCLING****2:45 Chairperson's Remarks***Steve Sloop, PhD, President, OnTo Technology LLC***2:50 FEATURED PRESENTATION: ReCell Center: Advances in Battery Recycling Technologies***Bryant Polzin, Process Engineer & Deputy Director, ReCell Center, Argonne National Laboratory*

The ReCell Center, funded by the Department of Energy—Vehicle Technologies Office, has continued to pursue the advancement of lithium-ion battery recycling technologies. This presentation will cover some of the exciting new technologies that have been developed in ReCell, and the deployment of the pilot-scale recycling facility at Argonne National Laboratory.

**3:20 End-of-Life Management for Battery Energy Storage Systems***Stephanie Shaw, PhD, Technical Executive, EPRI*

This talk will share lessons learned from several case studies of utility-scale battery energy storage decommissioning and recycling. Examples of logistical requirements, cost estimation, and recycling markets will be described. A tutorial of decommissioning planning will also be provided, along with insights gained from decommissioning damaged, defective, and recalled (DDR) battery modules. Research needs for repurposing opportunities from the point of view of electric power companies will be shared.

**3:50 Presentation to be Announced****4:05 Maximizing Battery Recycling Efficiency***Kyle James, Retsch Business Unit Manager, Sales & Applications, Verder Scientific Inc**Cesar Ballester, ELTRA Business Unit Manager, Sales & Applications, VERDER SCIENTIFIC INC*

Fractionizing through Sieving and Homogenization, alongside Carbon/Sulfur Determination & Thermogravimetric Analysis, are vital in battery recycling. Sieving ensures particle size uniformity for accurate material characterization. Determining carbon and sulfur content is essential for evaluating material purity and performance, impacting thermal and mechanical properties.

**4:20 Refreshment Break in the Exhibit Hall with Poster Viewing****5:00 Advancing Sustainability: Battery Materials Technology for a Greener Future***Tomasz Poznar, Vice President, Strategy, Ascend Elements*

As Electric Vehicle (EV) OEMs and battery manufacturers strive to secure their battery supply chains and achieve IRA compliance to advance EV adoption, integrating recycled critical minerals offer a vital solution (compared to reliance on mining alone). Critical minerals used for new battery materials production from recycled sources are IRA-compliant and are infinitely recyclable, without compromising on performance. Based on current projections, future availability of these critical minerals



is limited and production capacity for pCAM and CAM is expected to fall short of forecasted needs, intensifying supply-chain stress through 2030. This presentation will explore the recycling and circular economy in battery manufacturing, including life-cycle assessments of different battery materials, eco-friendly alternatives, and the evolving policy landscape in the U.S. and Europe.

**5:30 Critical Battery Metals Market Outlook***Kirstyn Petras, Senior Reporter, Pricing, Fastmarkets*

This presentation will cover battery supply chains and the role of black mass and battery recycling as countries' electrification efforts. For the US, this will include efforts pertaining to adherence to IRA guidelines, BIL investments, and other legislative efforts. The presentation will also examine the state of black mass markets and its current drivers across Asia, Europe, and the US.

**6:00 How RecycLiCo Goes beyond Recycling to Bridge the Gap in Battery Materials***Shaheem Ali, CFO, RecycLiCo Battery Materials*

This presentation aims to highlight the pivotal role that RecycLiCo Battery Materials Inc. plays in driving sustainable advancements in energy storage. Our journey not only embodies the spirit of innovation but also underscores our commitment to shaping a greener and more sustainable future.

**6:30 Close of Day****THURSDAY, MARCH 20****8:00 am Registration and Morning Coffee****RECYCLING METHODS****8:25 Chairperson's Remarks***Eric Frederickson, Managing Director of Operations, Call2Recycle***8:30 Presentation to be Announced****9:00 Characterization of Process Water from Lithium-ion Battery Recycling***Sascha Nowak, PhD, Head of Analytics & Environmental, Electrochemical Energy Technology, University of Münster*

Water-using recycling processes—such as wet crushing and electrohydraulic fragmentation—generate large amounts of contaminated process water, resulting in increased costs for the disposal of hazardous waste and safety guidelines. To improve wastewater management, safety, and sustainability of water-assisted recycling processes, comprehensive knowledge of the battery components in the water are required. Analytical techniques can play an important role during these processes, including wet shredding processes, wastewater management, and analytical techniques.

**9:00 Battery Booth Crawl with Bagels in the Exhibit Hall with Last Chance for Poster Viewing****9:30 Presentation to be Announced by XiRan Technology Co Ltd**





### 9:45 On-Line Elemental composition of Black Mass and Mixed Metals for Li-ion Battery Recycling. Getting real-time data when and where you need it most.

Jeffrey DeNigris, Bus Dev Batteries, Process Automation, Malvern Panalytical Inc

Monitoring black mass materials, from OEM scrap to end-of-life batteries, is crucial for optimizing Li-ion battery recycling operations. The elemental composition of these materials can vary significantly based on formulation (NMCs, LFPs), source (closed-source versus open-source), size, type, and region.

An effective solution to address this variability is the use of an on-belt PTNFA analyzer, which can identify the elemental composition of materials in real-time.

In this talk, we will explore the PTFNA system and discuss how it reports data to enhance operational efficiency.

### 10:00 Attendee Transition to Booth Crawl in Exhibit Hall

### 10:45 Battery Services for Economic and Environmental Sustainability

Steve Sloop, PhD, President, OnTo Technology LLC

Steve will discuss service strategies to improve the cost and environmental sustainability of batteries. The oil change for the future—battery rejuvenation, elimination of hazards with neutralization, and cathode healing direct recycling of materials will support the low-cost, long-battery lifetimes required for mass adoption of EVs.

### 11:15 Blockchain Solution for Improving Li-ion Batteries Recycling and Material Recovery

Ahmad Mayyas, PhD, Professor, Industrial & Systems Engineering, Khalifa University

This study proposes a blockchain-based solution to optimize the recycling process of lithium-ion batteries, addressing critical challenges in battery lifecycle management as demand surges due to their role in electric vehicles and renewable energy systems. Leveraging blockchain technology and non-fungible tokens (NFTs), the solution enhances traceability, transparency, and efficiency in the battery supply chain.

### 11:45 Sponsored Presentation (Opportunity Available)

### 12:15 pm Enjoy Lunch on Your Own

## RECYCLING METHODS

### 1:10 Chairperson's Remarks

Barry A. Perlmutter, President, Perlmutter & Idea Development (P&ID) LLC

### 1:15 Selection of Process Drying Technology for Maximum Black Mass and Electrolyte Recovery

Barry A. Perlmutter, President, Perlmutter & Idea Development (P&ID) LLC

The drying process is fundamental in chemical process engineering for solids handling. The term "drying" usually refers to the thermal removal of a liquid from a solid product. After mechanical shredding of the lithium-ion battery, process vacuum drying is critical for maximum black mass and other solids recovery and for electrolyte recovery. Dryer technologies are discussed including surrounding ancillary equipment, installation, safety, reliability, and troubleshooting.



### 1:45 Li Onsite De-Energizing BESS Failed or End-of-Life Batteries

Kevin Howlette, Director of Projects, IFE Fire Command and Control, Safety, EHS International

We have developed a global process that involves safely discharging and isolating the battery from the power grid and mitigating risks of electrical shock, fire, or chemical hazards. Proper decommissioning includes following strict protocols, utilizing specialized tools, and often engaging experts to manage the safe disposal or recycling of the battery components.

### 2:15 The Emerging Landscape of Battery Collections

Eric Frederickson, Managing Director of Operations, Call2Recycle

Join Eric Frederickson, the Vice President of Operations for Call2Recycle, North America's oldest and largest battery stewardship program, as we explore the rapidly changing landscape of battery collection in the United States. Eric will review battery collections in the United States, how and why the models are changing, and what impacts that will have on producers, recyclers, and users of batteries and battery powered devices.

### 2:45 Introduction to a Novel Pyromet Process for Recycling Spent Lithium-ion Batteries

Chong-Lyuck Park, PhD, Senior Researcher, LiB Recycling Research Center, Postech, South Korea

Recycling of spent LiB is a critical task for environmental protection and resource conservation. Recently, several novel processes have been developed for more effective and sustainable recycling of waste batteries. We would like to introduce a new concept of an eco-friendly and efficient recycling.

### 3:15 Transition to Closing Plenary Panel

## CLOSING PLENARY PANEL DISCUSSION

### 3:30 CLOSING PLENARY PANEL DISCUSSION: Post-Election Implications for the U.S. Battery Landscape



Moderator: Craig Rigby, Vice President, Technology, Clarios

### 4:30 Close of Conference



# Lithium-ion Battery Development & Commercialization

Bridging the Gap between Benchtop Research and Industrial Development

WEDNESDAY, MARCH 19

6:50 am Registration Open

1:00 pm Networking Luncheon

2:15 Dessert Break in the Exhibit Hall with Poster Viewing

## SOLID-STATE SOLUTIONS

2:45 Chairperson's Remarks

*Venkataraman Thangadurai, PhD, Chair in Energy & Faraday Institution, Adjunct Professor, School of Chemistry, University of St. Andrews*

2:50 Self-Healing Solid-State Separators Enable the World's Fastest Lithium Metal Batteries

*William Fitzhugh, PhD, Co-Founder & CEO, Adden Energy*

For lithium metal solid-state batteries, the presence of defects in the solid-state separator serve as an avenue for dendrite penetration and internal short circuit. As such defects are unavoidable when manufacturing large-scale batteries, new approaches are needed to prevent dendrite penetration. This talk will discuss the use of self-healing separators, where defects are healed passively during cycling, to achieve increased defect tolerance during production and better performance in operation.

3:20 From Lab Research to Commercialization: High-Voltage, High-Energy-Density, Low-Cost (Co-Free) Solid-State Batteries

*Tim Lin, PhD, CTO and Founder, Solid Energies*

Integrating a Co-free/Ni-less LNMO cathode combining with a polymer composite solid electrolyte presents a compelling avenue for development of more-advanced solid-state Li-ion batteries (SSLiBs). This class of SSLiBs, which can be produced with a low-cost, scalable process compatible with current Li-ion manufacturing, is featured with high operation voltage, high energy density, excellent safety, and wide operation temperature. This presentation reviews challenging issues and recent advancement from lab R&D to commercialization.

3:50 Applications of NOVONIX Ultra-High Precision Coulometry Across the Battery Supply Chain

**NOVONIX**

*Stephen Glazier, Dir Technology, Technology, NOVONIX*

NOVONIX is a leading domestic lithium-ion battery materials manufacturer, R&D Service provider, and supplier of Ultra High Precision Coulometry (UHPC) cell testing equipment - the most precise and accurate technology available. UHPC was born in Dr. Jeff Dahn's lab at Dalhousie University and has evolved at NOVONIX Battery Technology Solutions over the past 10 years. In this talk we will discuss the ways in which UHPC can be leveraged to accelerate development across the entire battery supply chain, providing case studies from upstream applications in materials development to downstream processes such as manufacturing QC, lifetime prediction, and even exploring the effects of in-field cell orientation.

4:20 Refreshment Break in the Exhibit Hall with Poster Viewing

5:00 Making Pressure Irrelevant in Fully Dry Silicon Solid-State Batteries

*Kevin Wujcik, PhD, CTO, R&D, Blue Current Inc.*

Blue Current introduces its pioneering work on fully dry solid-state batteries featuring silicon-based anodes and flexible composite electrolytes. The presentation will provide a detailed exploration of Blue Current's pouch cell performance capabilities, focusing specifically

on low-pressure operation that is key for the commercialization of fully dry cells. We will also highlight aspects of the innovative process implemented at the company's 1-2 MWh pilot facility in Hayward.

5:30 Injectable Phase Change Electrolytes as a Scalable Path Towards Solid- and Semi-Solid-State Batteries

*David Mackanic, PhD, Co-Founder and CEO, Anthro Energy*

Anthro's Injectable Phase Change Electrolyte (IPCE) allows for the production of solid and semi-solid state batteries without changing any manufacturing equipment. This presentation showcases the advantages of IPCE compared to traditional liquid electrolytes with respect to safety, swell, cycle life, and temperature stability in commercially relevant multi-Ah pouch cells. Further, IPCE stabilizes next-generation chemistries such as silicon anodes, reducing capacity fade and calendar aging.

6:00 Rapid Thermal Processing of Solid-State Lithium Battery Ceramic Electrolyte Materials

*Stan Farnsworth, Director of Customer Satisfaction, PulseForge Inc.*

We are highlighting recent key battery technology advancements made using PulseForge flashlamp-based thermal processing tools, including processing of solid-state lithium battery ceramic electrolyte materials within seconds at room temperature. These tools have been used in production for over a decade, and unexpected processes such as soldering on PET have become the new norm. We'll review the state of the art plus look at the reductions in energy use and cost of operation.

6:30 Close of Day

THURSDAY, MARCH 20

8:00 am Registration and Morning Coffee

## TECHNO-ECONOMIC INNOVATIONS FROM BENCHTOP RESEARCH TO INDUSTRIAL DEVELOPMENT

8:25 Chairperson's Remarks

*Feng Lin, PhD, Professor, Chemistry, Virginia Tech*

8:30 Presentation to be Announced

**HIOKI**

9:00 How Quickly Can Sodium-ion Learn? Assessing Scenarios for Techno-Economic Competitiveness against Lithium-ion

*William C. Chueh, PhD, Associate Professor, Materials Science & Engineering, Stanford University*

Sodium-ion batteries have garnered significant attention as a potentially low-cost alternative to lithium-ion batteries. In this talk, we assess their techno-economic competitiveness against incumbent lithium-ion batteries. We compare projected price trends across over 6,000 scenarios while varying technology development roadmaps, supply chain scenarios, market penetration, and learning rates.

9:00 Battery Booth Crawl with Bagels in the Exhibit Hall with Last Chance for Poster Viewing

9:30 Successful Development of Technology That Increases Maximum Operating Temperature of All-Solid-State Battery to 150 Degrees Celsius

**maxell**  
Within, the Future

*Genyo Kaneko, Chief Engineer, Energy Products OEM Battery Grp, Maxell Corp of America*

Focusing on the development and practical application of all-solid-state



# Lithium-ion Battery Development & Commercialization

batteries ensures comprehensive performance such as high safety, high performance, and a wide operating temperature range, and is in a leading position in the fierce all-solid-state battery development competition. Maxell has succeeded in developing technology to raise the upper operating temperature to 150 degrees C. In this presentation, we will introduce this technology together with the evaluation method.

## 10:00 Attendee Transition to Booth Crawl in Exhibit Hall

### 10:45 Recent Innovations to Improve Sustainability of Batteries: A Journey from Materials to Pack Design

*Sebastien Patoux, PhD, Head of Battery, LITEN, CEA*

In this communication, we will present our recent works on battery technologies, especially under the prism of sustainability. Our journey will cover materials to the system, including not only Li-ion, but also post Li and non-Li battery technologies. We will consider, among other things, the solutions with less critical raw materials, less solvent for electrode processing, simplified pack design consideration for easier dismantling and longer lifetime.

### 11:15 Enabling Cost-Effective Lithium Metal Anodes for Next-Generation Lithium-Metal Batteries

*Kamyab Amouzegar, PhD, Senior Researcher, Hydro-Quebec*

This talk will highlight Hydro-Québec's approaches to reducing the cost of lithium metal anode through an innovative lithium production process as well as a unique ultra-thin lithium deposition process, to tackle the major challenges of lithium metal anode hindering its widespread market adoption.

## 11:45 Presentation to be Announced



## 12:15 pm Enjoy Lunch on Your Own

## TECHNOLOGY TRANSFORMATION FROM BENCHTOP RESEARCH TO INDUSTRIAL DEVELOPMENT

### 1:10 Chairperson's Remarks

*Celina Mikolajczak, Chief Battery Technology Officer, Lyten*

### 1:15 Development of Drop-In Electrolytes for Next-Generation Electrode Materials

*Feng Lin, PhD, Professor, Chemistry, Virginia Tech*

Next-generation electrodes present challenges in practical applications, as many of these "new" materials are revisited versions of those abandoned decades ago due to stability issues. New advances in battery electrolytes have sparked renewed interest and understanding. It is an exciting time to apply this new knowledge to address key challenges in Mn-rich cathodes and high Si- or full-Si content anodes.

### 1:45 Satellite Batteries: LEO Megaconstellation Challenges & Opportunities

*Ray Barsa, Senior Battery Engineer, SpaceX*

Low Earth Orbit (LEO) megaconstellations are an emerging market for batteries. SpaceX's Starlink constellation comprises the majority of all active satellites, with thousands of Starlink Satellites launched in 2024 alone. This talk discusses the unique design, manufacturing, and operating requirements of Starlink batteries compared to typical terrestrial applications, from cell level chemistries to module-level design considerations.

### 2:15 Clean High-Throughput Continuous Manufacturing of Cathode Active Materials for Lithium Batteries

*Jin Lim, PhD, Co-Founder & CTO, ACT-ion Battery Technologies*

ACT-ion's clean continuous manufacturing process offers an innovative and cost-effective method to produce cathode active materials (CAMs) for lithium batteries. This method effectively reduces energy consumption and production costs, while also lowering carbon emissions. In this presentation, we provide a comprehensive overview of the advancements in scaling up and commercializing the continuous manufacturing process with highlighting the significant strides made towards implementing this promising solution on a practical level.

### 2:45 New Chemistry Evaluation for High-Performance Cell Development at Saft

*Jian Dong, PhD, Senior Engineer Cell Development, R&D Aerospace Defense & Performance ADP, SAFT America*

Long term cycling results of new active materials, such as silicon based anode, LVPF (LiVPO4F) and LNMO (Li1.0Ni0.5Mn1.5O4) will be discussed in the talk. Specially designed cells are used to maximize the cycling performance of the materials themselves. In addition, the effect of temperature, loading, and particle size are explored to design a cell to reach 500 C-rate discharge capability.

## 3:15 Transition to Closing Plenary Panel

### CLOSING PLENARY PANEL DISCUSSION

#### 3:30 CLOSING PLENARY PANEL DISCUSSION: Post-Election Implications for the U.S. Battery Landscape

*Moderator: Craig Rigby, Vice President, Technology, Clarios*



## 4:30 Close of Conference



# High-Performance Battery Manufacturing

Global Production of Safe, Efficient, Higher Energy Density Batteries

## MONDAY, MARCH 17

7:00 am Registration and Morning Coffee

4:45 pm Close of Day

## TUESDAY, MARCH 18

7:00 am Registration Open and Morning Coffee

### GLOBAL MARKET OPPORTUNITIES IN BATTERY MANUFACTURING

#### 8:05 Organizer's Remarks

*Craig Wohlers, General Manager, Cambridge EnerTech*

#### 8:10 Chairperson's Remarks

*Joseph Fisher, President, JCF International*

#### 8:15 Status of Chinese Semi-Solid-State Battery Market and Technology

*Mark Lu, PhD, Senior Industrial Analyst, Industrial Economics & Knowledge Center, Industrial Technology Research Institute*

The semi-solid-state battery has been achieved at the GWh-level already in China in 24H1, and also become the hottest issue to provide safer xEV usage and 1000 KM of driving range. This presentation will cover the Chinese semi-solid-state battery market, technologies, and manufacturing key issues to show the potentials and challenges.

#### 8:45 BATT Coalition Advocacy for a Robust Domestic Battery Materials Manufacturing Supply Chain

*David Howell, Vice President, Strategic Marketing Innovations (SMI)*

The U.S. has made significant progress to establish a domestic battery manufacturing supply chain, but gaps remain. The Battery Advocacy for Technology and Transformation (BATT) Coalition is a voice for the U.S. battery materials manufacturers working to grow the upstream materials supply from extraction, synthesis, processing, and recycling. BATT's mission is to advocate for legislative and federal policy that will promote market incentives and trade policies to support industry growth.



#### 9:15 FEATURED PRESENTATION: LG, Leading the Battery Expansion in North America

*Tim Debastos, Head, LG Energy Solution Tech Center, MI*  
LG Energy Solution is the leading lithium-ion battery manufacturer, working with the top OEMs globally

in transforming the automobile industry. The market for EVs is expanding rapidly, driven by both consumer demand and regulatory incentives. In North America, there are unprecedented levels of investment to support EVs, by both OEMs and battery manufacturers. This presentation will discuss market growth projections, announced expansion plans, and the challenges ahead.

9:45 Grand Opening Refreshment Break in the Exhibit Hall with Poster Viewing

### ADVANCES IN CELL MANUFACTURING

#### 10:30 KEYNOTE PRESENTATION: Exploring Cylindrical Battery Technology and Its Role in the Mobility Market

*Fukuta Hirofumi, Manager, Panasonic*

Panasonic Energy has been a leading company in the field of

cylindrical batteries, particularly for mobility applications. The company is at the forefront of innovative research into cylindrical lithium-ion batteries for the mobility market. In order to further improve driver usability, meet potential needs, and expand their market reach, Panasonic Energy is committed to the continuous evolution of their batteries in all aspects, including technology, service, and beyond.

#### 11:00 Redefining ESS with Next-Generation Mr. Big & Mr. Giant

**EVE** 亿纬锂能*Speaker to be Announced, EVE Energy Co Ltd*

With the characteristics of "Efficient, Simple, and Safe," Mr. flagship series products can break the limitations of traditional energy storage technology, redefine ESS, and solve the problems of economy, complexity of operation and maintenance management, and safety of large-scale energy storage power plants.

#### 11:30 Plasma-Printed Electrodes: Approaches and Potential for Innovative Materials

*Gerrit Bockey, Research Associate, Battery Production Technology, RWTH Aachen University*

Plasma printing is an advanced method for fabricating battery electrodes, offering flexibility for multi-layer processes. This technique enables the combination of cutting-edge materials, making it especially valuable for high-silicon anodes, sodium-ion batteries, and solid-state batteries. Plasma printing enhances performance and functionality by integrating innovative materials in a precise, scalable manner. This approach presents significant opportunities for advancing energy storage technologies, paving the way for more efficient and sustainable battery solutions.

#### 12:00 pm Paraclete Energy's SILO Silicon: 300% Energy Density, \$35/kWh Cost, Silane-Free Sustainability

**PARACLETE**  
ENERGY*Jeff Norris, CEO, Paraclete Energy Inc.*

Explore Paraclete Energy's SILO Silicon technology, a breakthrough in silicon-anode materials for electric vehicles. With 300% the energy density of traditional graphite, SILO Silicon delivers a cost of just \$35/kWh, outperforming LFP by 34%. This innovative, silane-free solution enhances battery safety, sustainability, and scalability, paving the way for faster charging, longer range, and significant cost savings. Learn how our silicon/polymer architecture eliminates silane gas, enabling safe, location-flexible production that supports the next generation of clean, affordable energy storage solutions for EVs and beyond.

#### 12:30 Networking Luncheon

1:15 Dessert Break in the Exhibit Hall with Poster Viewing

### ADVANCES IN CELL MANUFACTURING

#### 1:45 Chairperson's Remarks

*Andreas Stummer, Director, BYK Gardner*

#### 1:50 Battery Manufacturing Excellence: Where Safety, Efficiency, and Quality Converge

**Honeywell***Speaker to be Announced, Honeywell*

#### 2:20 China's Intelligent Manufacturing Revolution in Battery Production

**ONGOAL** 宏工*Speaker to be Announced, Ongoal Technology Co Ltd*

Discover how our intelligent, world-leading automated systems—featuring



cutting-edge unpacking, packing, and pneumatic conveying—transform battery production. We'll highlight the efficiency, precision, and cost savings of our state-of-the-art production line for cathode and anode materials and slurry mixing, showcasing how we are revolutionizing battery manufacturing with unmatched automation and innovation.

### 2:50 Road to 1000-Mile per Charge Battery—24M's Fires and Recalls Free Solutions and Design Platforms



Speaker to be Announced, 24M Technologies Inc

### 3:20 Refreshment Break in the Exhibit Hall with Poster Viewing

## PLENARY KEYNOTE

### 3:50 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



### 3:55 The Importance of Passive Propagation Resistance in Battery Pack Design

Troy Hayes, PhD, Director of Quality, Tesla

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.



### 4:25 A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University



### 4:55 This and Next-Generation Battery Development—A UK Perspective

Martin Freer, CEO, Faraday Institution

The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This presentation will provide an overview of the UK's battery strategy, the development of associated research programs, and highlight future focus areas for research and innovation.

### 5:25 Reception in the Exhibit Hall with Poster Viewing

### 6:30 Close of Day

## WEDNESDAY, MARCH 19

### 6:50 am Registration Open

### 7:00 Coffee Talk: Interactive Roundtable Discussions with Coffee & Pastries

Roundtable discussions are informal, moderated discussions with brainstorming and interactive problem-solving, allowing participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

### TABLE 1: Battery Raw Materials Supply Chain

Moderator: Robert Privette, Manager, Business Development, Rechargeable Battery Materials North America, Umicore USA, Inc.

### TABLE 2: Li-ion NMC Fast Charging New Cells for E-Mobility

Moderator: Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.

### TABLE 3: Electrolyte Developments: New Components and Approaches

Moderator: Sam Jaffe, Vice President, Battery Solutions, E Source

### TABLE 4: Battery Pack System Cost and Safety – Will Future xEV Battery Packs Increase in Complexity or Simplify and How Will Cost and Safety Be Impacted?

Moderator: Kevin Konecky, Battery and Energy Storage Systems Consultant, Total Battery Consulting

### TABLE 5: Innovations in Recycling Battery Materials & Second Life

Moderator: Steven Sloop, President, OnTo Technology LLC

### TABLE 6: Opportunities and Barriers to Fast Charge in Automotive and Other Applications

Moderator: Brian Barnett, PhD, President, Battery Perspectives

### TABLE 7: Provisional Patents to Due Diligence

Moderator: Grant Ehrlich, PhD, Member, Intellectual Property & Technology, Stites & Harbison PLLC

### TABLE 8: Understanding the Pressure Effects on Li Metal Batteries

Moderator: Bin Li, Senior Scientist & Joint Professor, Electrification, Oak Ridge National Laboratory

### TABLE 9: Challenges and Opportunities in the Distribution of Relaxation Times Analysis

Moderator: Tom Ruether, Lecturer & Chair, Electrical Energy Systems, University of Bayreuth

### TABLE 10: How Will Emerging Technologies and Paradigms Impact the Future of Electrified Transportation?

Moderator: Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory

### TABLE 11: Battery Testing & Aging

Moderator: Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH

### TABLE 12: Thermal Runaway

Moderator: Lin Liu, PhD, Professor, Mechanical Engineering, University of Kansas

### TABLE 13: Consumer-Driven Trends in Battery Development for Personal Electronics

John Wozniak, PhD, President, ESP Consulting

### TABLE 14: Battery Electrolytes: Materials, Developments and Manufacturing

Moderator: Carl Thoemmes, Senior Manager, Orbia Fluor & Energy Materials

## ADVANCES IN CELL MANUFACTURING

### 7:55 Chairperson's Remarks

Gerrit Bockey, Research Associate, Battery Production Technology, RWTH Aachen University

### 8:00 Fiber-Based Separators—The Key to Efficient Manufacturing and Enhanced Battery Performance



Alexander Onz, Technical Program Manager IonPort, Sales, Delfort

Often disregarded but crucial in every aspect, separators play an important role in battery development & production. Delfort's latest innovation, IonPort separators, bring significant benefits to both manufacturing efficiency and battery performance. Delfort has developed cutting-edge separators specifically designed for secondary batteries. With its exceptional thermal stability and ability for rapid electrolyte absorption, IonPort separators contribute effectively to enhanced and energy-saving cell production. Moreover, its unique innovative porous cellulose-fiber structure enhances ion flow, boosting charge/discharge rates and extending the battery's lifespan.



# High-Performance Battery Manufacturing

**8:15 Sponsored Presentation** (*Opportunity Available*)

## **8:30 Online Monitoring of Battery Slurries—The Slurry Is Talking to Us**

*Kyung Hyun Ahn, PhD, Professor, Chemical & Biological Engineering, Seoul National University*

To efficiently produce high-quality electrodes, it is crucial to control the microstructure of the battery slurry, rather than focusing solely on composition. However, we do not understand the stress and the signs that the slurry experiences and expresses during the process. We have developed an all-in-one solution called SlurryXpert that precisely analyzes data signals through machine learning and detects the characteristics of the slurry to distinguish the structural differences.

## **9:00 Dispersion & Milling for Energy Storage Development & Manufacturing**

*Andreas Stummer, Director, BYK Gardner*

Highly efficient dissolvers, bead mills and basket mills are designed for the challenges of battery slurry development. In this presentation we'll review the milling and dispersing requirements, process, and best practices. High-performance dispersing and milling equipment is required for optimum performance of battery slurries.

## **9:30 Project Execution Strategy Approaches for Battery Plants**

*Mark Bellino, Global Director, Battery Metals & Cells, Battery Cell Manufacturing, Hatch*

Battery plants have been suffering from cost overruns and schedule delays due to numerous challenging issues that arise during the course of project execution. In this presentation, a review of different project-execution strategies are reviewed to compare the benefits and advantages of each option, including cost control, schedule certainty, flexibility, and adherence to quality criteria. Despite the option selected, appropriate planning and project management tends to improve the outcome, and therefore, recommendations are made for each execution model highlighted.

HATCH

**10:00 Presentation to be Announced**

**10:15 Coffee Break in the Exhibit Hall with Poster Viewing**

liminal

## **SAFETY IN BATTERY MANUFACTURING**



### **11:00 FEATURED PRESENTATION: Enhanced Battery Safety and Cycle Life Enabled by New Separators**

*John Zhang, PhD, CTO/CSO, Polypore International*

The discovery of the ceramic coating on separators greatly enhanced Li-ion battery safety by orders of magnitude. Effective ceramic coating can absorb and/or dissipate the heat generated by electronic internal shorts of batteries. Therefore, it can greatly reduce the short spots' temperature and avoid the charged anode/electrolyte drastic reduction propagation of the generation of the explosive.

### **11:30 Advancing Battery Safety and Durability with High-Performance Atmospheric Spatial ALD**

*Kyunghyun Choi, PhD, Professor, Mechatronics Engineering, Jeju National University*

We have developed a cutting-edge, high-speed atmospheric spatial ALD technology that significantly enhances lithium-ion and next-generation

battery safety and performance. By applying Al<sub>2</sub>O<sub>3</sub> coatings to separators and anodes, this technology not only improves fire prevention and thermal stability but also inhibits dendrite growth on anodes, a key cause of battery failure. Our findings demonstrate how this innovation enhances battery durability and reliability, addressing critical industry challenges.

## **COMPETING WITH CHINA**

### **12:00 pm PANEL DISCUSSION: Why Is the Western World Still Lagging behind the Chinese in the Global Lithium Arms Race**

*Moderator: Joseph Fisher, President, JCF International*

This panel will explore the reasons behind the western world's lag in the global lithium arms race compared to China. Our international group of experts will examine the challenges faced by western nations, including regulatory hurdles, market fragmentation, and the need for cohesive strategies to secure critical resources for emerging technologies and sustainable energy solutions.

*Panelists:*

*Chris A Turner, Chief Technology Officer, Inventus Power*

*Lie Shi, PhD, CEO, AM Batteries*

### **12:30 Battery Industry 3.0: How to Compete with China**

VOLTAIQ

*Tal Shoklapper, CEO & Co-Founder, Executive, Voltaiq, Inc.*

As the global battery market is dominated by a flood of inexpensive cells from China, the modern battery company must focus on speed and efficiency in order to stay competitive. This session will cover how OEMs can mitigate downstream risks from cheap, variable quality battery cells, how battery companies can compete with them, and how digital strategy is key to moving faster and doing more with less.

**1:00 Networking Luncheon**

**2:15 Dessert Break in the Exhibit Hall with Poster Viewing**

**2:45 Close of Conference**



# Global Supply Chain for Battery Raw Materials

Balancing Supply, Demand, and Costs for Battery Materials

## MONDAY, MARCH 17

7:00 am Registration and Morning Coffee

4:45 pm Close of Day

## TUESDAY, MARCH 18

7:00 am Registration Open and Morning Coffee

### GLOBAL PERSPECTIVES ON BATTERY RAW MATERIALS SUPPLY

#### 8:05 Organizer's Remarks

*Craig Wohlers, General Manager, Cambridge EnerTech*

#### 8:10 Chairperson's Remarks

*William Adams, Head of Battery Research, Cobalt & Lithium & Battery Materials Research, Fastmarkets*

#### 8:15 The Evolution of Material Markets and Battery Production Costs

*Andrew Leyland, Co-Founder & Managing Director, SC Insights*

The presentation will examine how low battery prices can go, and if experience curves predicting further declines in price are becoming more or less relevant in the face of rising raw material cost share. This will draw upon SC Insights leading market and cost models, determining the price levels needed to incentivize long-term primary and secondary materials supply growth.

#### 8:45 Securing Supply Chains for the Energy Transition

*Kimberly Berman, Senior Consultant, SFA Oxford*

As automakers re-tool their EV strategies, the elephant in the room remains how to secure the necessary supply chains for the energy transition. While it is well known that China controls battery supply chains, there is also a lack of appetite for the necessary green premiums to de-risk supply. Nickel may be a prime example, but more abundant metals such as phosphorus and iron also have their hurdles to overcome.

#### 9:15 North America's Role in the Lithium-ion Economy

*Andrew Miller, COO, Benchmark Mineral Intelligence*

This presentation will address lithium-ion battery supply-chain dynamics: challenges & opportunities as well as raw-material bottlenecks; lithium, cobalt, graphite, nickel, and financing the EV supply chain; and capital requirements to meet the EV demand of the coming decade.

#### 9:45 Grand Opening Refreshment Break in the Exhibit Hall with Poster Viewing



#### 10:30 FEATURED PRESENTATION: Developments in the Lithium Industry: Collaborations and Regulations with Global Impact

*Roland Chavasse, Secretary General & Co-Founder, International Lithium Association*

The presentation by the International Lithium Association (ILiA) will explore challenges and potential solutions to some of the key global issues in the lithium industry, including efforts to coordinate carbon and water footprinting techniques and regionalization and friendshoring in the value chain. In addition, the role of the ISO in the lithium industry and the risks posed by misinformation will be discussed.



#### 11:00 FEATURED PRESENTATION: Pure Lithium—Introducing the Lithium-Metal Vanadium-Oxide Battery and Reinventing the Global Battery Supply Chain

*Emilie Bodoïn, Founder & CEO, Pure Lithium*

Pure Lithium's Brine to Battery extraction technology creates a lithium-metal battery-anode in one day. Our lithium-metal anode is paired with a non-flammable vanadium cathode to power an energy-dense, low-cost battery that can be completely sourced and manufactured in North America, ending all reliance on graphite, nickel, cobalt, and manganese. Led by Founders CEO Emilie Bodoïn and world-renowned battery expert, MIT Emeritus Professor Donald R. Sadoway, CSO.

#### 11:30 Lithium Ecosystem Evolution: Data-Driven Mine-to-Market Insights

*Apurba Sakti, PhD, Advisor, Data Science, Albemarle*

We will present our data-driven methodology for tracking these accelerating demand dynamics across existing—and emerging—battery technologies and the corresponding response from the lithium market. As the lithium ecosystem continues to evolve over the next decade, our agile analyses provide insight into lithium's present and future.

#### 12:00 pm Presentation to be Announced

#### 12:30 Networking Luncheon

#### 1:15 Dessert Break in the Exhibit Hall with Poster Viewing

### GLOBAL PERSPECTIVES ON BATTERY RAW MATERIALS SUPPLY

#### 1:45 Chairperson's Remarks

*Andrew Leyland, Co-Founder & Managing Director, SC Insights*

#### 1:50 Battery-Metals Outlook—It's Always Darkest before Dawn

*William Adams, Head of Battery Research, Cobalt & Lithium & Battery Materials Research, Fastmarkets*

The battery-metals prices have continued to trend lower over much of 2024, as oversupply and weaker than expected demand have added downward pressure. This patch of weakness is expected to be temporary, but it is having some long-term structural implications that will likely lead to more price volatility and geopolitical risk in the years ahead.

#### 2:20 The Importance of a Reliable and Sustainable Supply Chain for Battery Materials to Ensure Consistency in Quality and Pricing

*Anjani Sri Mourya Sunkavalli, Founder & CEO, Altmin Pvt Ltd. India*

We are dedicated to creating a robust supply chain that meets the global energy needs of the future, by ensuring an uninterrupted supply chain to the existing and upcoming industries from our partnered mines in South America, assuring consistency in quality and pricing.

#### 2:50 R&D GREET: A User-Friendly Tool to Evaluate Life-Cycle Impacts of Battery Supply Chains

*Rakesh Krishnamoorth Iyer, PhD, Energy Systems Analyst, Energy Systems & Infrastructure Analysis Division, Argonne National Lab*

My talk will provide case studies from R&D GREET to highlight the effect of variations in supply chain parameters (e.g., ore grade, type, and location) on the environmental impacts of battery material production, and what these effects mean for the resultant batteries.



**3:20 Refreshment Break in the Exhibit Hall with Poster Viewing****PLENARY KEYNOTE****3:50 Chairperson's Remarks***Craig Wohlers, General Manager, Cambridge EnerTech***3:55 The Importance of Passive Propagation Resistance in Battery Pack Design***Troy Hayes, PhD, Director of Quality, Tesla*

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.

**4:25 A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries***Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University***4:55 This and Next-Generation Battery Development—A UK Perspective***Martin Freer, CEO, Faraday Institution*

The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This presentation will provide an overview of the UK's battery strategy, the development of associated research programs, and highlight future focus areas for research and innovation.

**5:25 Reception in the Exhibit Hall with Poster Viewing****6:30 Close of Day****WEDNESDAY, MARCH 19****6:50 am Registration Open****7:00 Coffee Talk: Interactive Roundtable Discussions with Coffee & Pastries**

Roundtable discussions are informal, moderated discussions with brainstorming and interactive problem-solving, allowing participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

**TABLE 1: Battery Raw Materials Supply Chain***Moderator: Robert Privette, Manager, Business Development, Rechargeable Battery Materials North America, Umicore USA, Inc.***TABLE 2: Li-ion NMC Fast Charging New Cells for E-Mobility***Moderator: Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.***TABLE 3: Electrolyte Developments: New Components and Approaches***Moderator: Sam Jaffe, Vice President, Battery Solutions, E Source***TABLE 4: Battery Pack System Cost and Safety – Will Future xEV Battery Packs Increase in Complexity or Simplify and How Will Cost and Safety Be Impacted?***Moderator: Kevin Konecky, Battery and Energy Storage Systems**Consultant, Total Battery Consulting***TABLE 5: Innovations in Recycling Battery Materials & Second Life***Moderator: Steven Sloop, President, OnTo Technology LLC***TABLE 6: Opportunities and Barriers to Fast Charge in Automotive and Other Applications***Moderator: Brian Barnett, PhD, President, Battery Perspectives***TABLE 7: Provisional Patents to Due Diligence***Moderator: Grant Ehrlich, PhD, Member, Intellectual Property & Technology, Stites & Harbison PLLC***TABLE 8: Understanding the Pressure Effects on Li Metal Batteries***Moderator: Bin Li, Senior Scientist & Joint Professor, Electrification, Oak Ridge National Laboratory***TABLE 9: Challenges and Opportunities in the Distribution of Relaxation Times Analysis***Moderator: Tom Ruether, Lecturer & Chair, Electrical Energy Systems, University of Bayreuth***TABLE 10: How Will Emerging Technologies and Paradigms Impact the Future of Electrified Transportation?***Moderator: Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory***TABLE 11: Battery Testing & Aging***Moderator: Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH***TABLE 12: Thermal Runaway***Moderator: Lin Liu, PhD, Professor, Mechanical Engineering, University of Kansas***TABLE 13: Consumer-Driven Trends in Battery Development for Personal Electronics***John Wozniak, PhD, President, ESP Consulting***TABLE 14: Battery Electrolytes: Materials, Developments and Manufacturing***Moderator: Carl Thoenmes, Senior Manager, Orbia Fluor & Energy Materials***MARKET DEMAND FOR BATTERY RAW MATERIALS****7:55 Chairperson's Remarks***Rakesh Krishnamoorth Iyer, PhD, Energy Systems Analyst, Energy Systems & Infrastructure Analysis Division, Argonne National Lab***8:00 Protect Your Cathode Materials with AEROXIDE Fumed Metal Oxides—Unlocking Unmatched Performance Benefits***Victor Lifton, Tech Director, Tech Market, Evonik Corp.***8:30 Graphite and MWCNTs Made from CO<sub>2</sub>: Sustainable and Risk-Free Anode Materials***Sebastian Pohlmann, PhD, CTO, Up Catalyst OÜ*

We present a novel sustainable and competitive source for graphite and MWCNTs. Using CO<sub>2</sub> as a carbon source, high-quality MWCNTs and graphite can be synthesized in low temperature—20x fewer carbon emissions for graphite combined with a localized production.

**8:40 Project Positive+: Onshoring Critical pCAM Production Capacity in North America***Marco Romero, Founder & CEO, Positive Materials*

The project seeks to strengthen North America's battery supply chains, creating an alternative in a global industry where China currently holds a ~96% market share. The initial phase of Project Positive+ targets 30ktpa by 2028, expanding to 120ktpa by 2032. The project features local, sustainable, IRA-compliant battery material production, enabling North American critical minerals use and collaboration with automakers to strengthen the regional supply chains.





# Global Supply Chain for Battery Raw Materials

9:10 Presentation to be Announced

9:30 Presentation to be Announced

10:00 Presentation to be Announced

10:15 Coffee Break in the Exhibit Hall with Poster Viewing

11:00 Battery Raw Materials: Time to Market for New Mineral Deposits

*Rod Eggert, PhD, Professor, Colorado School of Mines*

This talk discusses the time lags in converting known but undeveloped mineral resources in the ground into operating mines and associated processing facilities. It uses detailed information on lithium as an example, but refers more broadly to other battery materials such as nickel and cobalt. It refers to both conventional resources, those for which there is commercial production at scale, and unconventional or secondary resources.

11:30 Optimization of Cathode Materials for High-Performance EV Batteries

*Rohan Gokhale, PhD, Applied Technology Manager, Umicore Rechargeable Battery Materials*

Umicore is a global leader in the battery cathode materials manufacturing space, with over 20 years of experience and expertise in development of specialized products using innovative processes, driven primarily by customer demand. This presentation will provide an overview of recent updates on localization of production in North America and toolkit used by CAM manufacturers to obtain best performance in the cathode product.

12:00 pm CarbonX: Unlocking Key Drivers for Global Electrification and the Road towards More Resilient and Sustainable Supply Chains

*Speaker to be Announced, CarbonX B V*

ARKEMA

Harper

FORGE  
NANO

CARBON X

12:30 Presentation to be Announced

1:00 Networking Luncheon

2:15 Dessert Break in the Exhibit Hall with Poster Viewing

2:45 Close of Conference

CHASM™

**WEDNESDAY, MARCH 19****6:50 am Registration Open****1:00 pm Networking Luncheon****2:15 Dessert Break in the Exhibit Hall with Poster Viewing****SCALING GLOBAL BATTERY PRODUCTION****2:45 Chairperson's Remarks***Ines Miller, Team Lead Battery Cells, E Mobility, P3 Automotive GmbH***2:50 KEYNOTE PRESENTATION: 0 to 100,000,000: Lessons from Tesla's 4680 Journey***Bonne Eggleston, PhD, Senior Director, Tesla*

Tesla's entry into the cell manufacturing space started in 2018 with an investigation searching for the platonic

ideal battery design, and the manufacturing processes to match.

Many salient lessons were learned along the way; we would like to highlight some of these lessons, which may help to guide others seeking to take new battery technologies from concept to reality.

**3:20 Key Success Factors for Efficiently Scaling-up Battery Manufacturing***Hailong Ning, PhD, Co-Founder & CEO, VTA Technology*

The talk explores essential strategies for scaling battery manufacturing effectively, highlighting innovations in technology, supply chain optimization, workforce development, and sustainable practices.

**3:50 VAV Control for Battery Manufacturing Cleanrooms***David Rausch, Senior Business Development Manager, Sales & Marketing, Phoenix Controls Corp.*

This presentation will provide you with the basic approach on HVAC and pressure control design strategies with a focus on the ISO Class Cleanrooms. Specifically, we will emphasize variable air volume control and demand-based ventilation for EV Lithium Battery fabrication plants.

**Honeywell****4:05 Presentation to be Announced****4:20 Refreshment Break in the Exhibit Hall with Poster Viewing****5:00 Bridging Lab and Real-World Battery Cell Testing Challenges***Dexter He, Senior Hardware Engineer, Battery Accelerator Team, McKinsey & Co.*

This session introduces an innovative approach for testing battery cell lifetimes in automotive applications by devising scenarios that reflect diverse customer behaviors through fleet data analysis. This method captures realistic battery degradation trends under actual driving conditions and bridging the gap between lab-scale cell testing and vehicle-level aging tests. It also addresses the warranty concerns while complementing traditional lab testing environments.

**5:30 Downstream Pack Manufacturing and Supply Chain Challenges and Opportunities***John Warner, PhD, Chief Customer Officer, American Battery Solutions*

Battery pack manufacturing is a key step in the downstream value chain. It has evolved as the product designs have evolved and presents new and emerging challenges. This presentation will cover the challenges of

battery pack manufacturing, ranging from volumes, product variation, and supply chain management, and then look at the future of pack manufacturing from integrating new processes, AI, cybersecurity, and automation.

**6:00 How Suppliers Keep Gigafactory Projects on Schedule***Eric Boschert, EV Battery Process Expert, Engineering, Jacobs Engineering*

The critical path on new gigafactory construction projects is typically the design and delivery of process manufacturing equipment. Frequently, key data such as utility demands are not available when they are needed. We'll discuss why this causes projects delays and what the industry needs from suppliers to complete projects on schedule.

**6:30 Close of Day****THURSDAY, MARCH 20****8:00 am Registration and Morning Coffee****INNOVATION IN R&D FOR MANUFACTURING****8:25 Chairperson's Remarks***Dexter He, Senior Hardware Engineer, Battery Accelerator Team, McKinsey & Co.***8:30 Presentation to be Announced****8:45 Sponsored Presentation (Opportunity Available)****9:00 Battery Electrode Manufacturing Modeling***Erik Huemiller, PhD, Senior Researcher, R&D, General Motors*

Battery cost continues to be a limiting factor in transitioning to an EV driven world. Quality verification tools are key to lowering cost in the cell, module, and pack value chains. Process complexity and low reworkability amplify the impact of test methods on the bottom line. This talk will discuss recent manufacturing quality system research initiatives within General Motors targeted at improving battery manufacturing while enabling an EV future.

**9:00 Battery Booth Crawl with Bagels in the Exhibit Hall with Last Chance for Poster Viewing****9:30 Sponsored Presentation (Opportunity Available)****10:00 Attendee Transition to Booth Crawl in Exhibit Hall****10:45 Challenges in Cell Manufacturing: Why Are Western Players Struggling So Much While Asian Competition Is Slowly Taking Over?***Ines Miller, Team Lead Battery Cells, E Mobility, P3 Automotive GmbH*

This presentation examines why emerging Western manufacturers are facing such challenges during their cell ramp-up and production, while Asian competitors, particularly from China, steadily advance. It further elaborates the relevance of switching to next-gen production technologies in this highly competitive industry and how it might impact production processes, ramp-ups and production excellence.

**11:15 Molicel's X Series in Field & Ultra-High Power, Zero Cell-to-Cell Variance Production***Speaker to be Announced, E One Moli Energy Canada Ltd*

E-One Moli Energy CORP Molicel is a leading high-power cell development and manufacturing company which gives high performance and wide operation temperature LIBs to various high-end application fields, power





tool, EV-super car, eVotol, and aerospace. A high-precision manufacturing process is key to minimize the cell-to-cell variance “after” high power and low temperature cycling, which gives a new vision of the reliability of LIBs.

### 11:45 Battery Manufacturing for Special Applications: Scaling from R&D to Gigafactories through Real-world Production Experience

*Stefan Alexander Permien, CEO, UniverCell Holding GmbH*

Started in 2019 as a specialized electrode and cell manufacturer, UniverCell has developed its technical expertise and production know-how over the past five years by supporting customers across the battery value chain, from recipe development to full GWh-scale electrode production. The lessons learned during this period have enabled us to better understand the true Technology Readiness Level (TRL) of emerging technologies in this industry. Over the last two years, these insights have allowed us to develop our own flexible, state-of-the-art cylindrical cell products and production lines tailored for North American and EU customers with specialized applications.



### 12:15 pm Enjoy Lunch on Your Own

## INNOVATION IN R&D FOR MANUFACTURING

### 1:10 Chairperson's Remarks

*Eric Boschert, EV Battery Process Expert, Engineering, Jacobs Engineering*

### 1:15 Surface Treatment Solutions for Mixing Equipment to Reduce Electrode Contamination and Extend Component Life

*Adam Smith, PhD, Research Scientist, High Velocity Thin Films, R&D, Linde AMT*

New battery factories are ramping to full-time production. The industry is gaining experience on the life of the original equipment components used in the mixing and rolling processes. Linde Advanced Material Technologies has a portfolio of surface treatments to protect these components against wear and corrosion to retain product quality and extend component life.

## BRIDGING THE TALENT GAP

### 1:45 Filling the Talent Gap in the Battery Industry

*Jordan Elkins Wilde, Director of Talent Acquisition, Northvolt*

A discussion around hiring and developing top talent in the battery industry. Led by Battery Talent Acquisition Leader, Jordan Elkins, this presentation will cover three strategies to increase technical and operational battery talent in your company while also addressing ways to increase diversity, equity, and inclusion in the workplace.

## SCALING GLOBAL BATTERY PRODUCTION

### 2:15 Successfully Identifying the Optimal Production Location with Maximized Incentives for Your Full-Scale Gigafactory

*Tom Croteau, Senior Managing Director, Maxis Advisors*

The talk explores critical site selection factors for companies transitioning to full-scale manufacturing. Whether navigating federal “Disadvantaged Communities,” “Justice 40 initiatives,” or “Energy Communities” requirements—or more traditional comparative analyses of carbon neutral energy sources and costs, talent availability, and logistics—or utilizing economic incentive, a technical Site Selection approach can enhance your ability to thread the needle to unlock an optimal full-scale factory location while securing maximum financial assistance.

### 2:45 Washington Takes Aim at EV Battery Offshore Inputs

*Antonio Rivera, Partner and Electric Mobility Practice Group Leader, ArentFox Schiff LLP*

Washington’s policy and funding support for U.S. domestic EV manufacturing comes with caveats primarily in the form of steep import tariffs, from the 2022 IRA to 100% import duties on EV’s produced in China. Understanding the underlying “country of origin” rule and how the legal term “substantial transformation” can be applied are key to mitigating costly tariffs and reduce procurement uncertainty.

### 3:15 Transition to Closing Plenary Panel

## CLOSING PLENARY PANEL DISCUSSION

### 3:30 CLOSING PLENARY PANEL DISCUSSION: Post-Election Implications for the U.S. Battery Landscape



*Moderator: Craig Rigby, Vice President, Technology, Clarios*

### 4:30 Close of Conference

**MONDAY, MARCH 17****7:00 am Registration and Morning Coffee****4:45 pm Close of Day****TUESDAY, MARCH 18****7:00 am Registration Open and Morning Coffee****OEM APPLICATION-DRIVEN DEVELOPMENT****8:05 Organizer's Remarks***Craig Wohlers, General Manager, Cambridge EnerTech***8:10 Chairperson's Remarks***Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America***8:15 Bridging Lab and Real-World Battery Cell Testing Challenges***Saewon Kim, Senior Battery Cell Engineer, Lucid Motors*

This session introduces an innovative approach for testing battery cell lifetimes in automotive applications by devising scenarios that reflect diverse customer behaviors through fleet data analysis. This method captures realistic battery degradation trends under actual driving conditions and bridging the gap between lab-scale cell testing and vehicle-level aging tests. It also addresses the warranty concerns while complementing traditional lab testing environments.

**8:45 Introducing a Comprehensive State-of-Health Inconsistency (SOHI) as Novel Parameter to Monitor the Aging-State Variance of Connected Batteries***Natalia Canas, PhD, Team Lead Battery, Energy Management and Testing, Daimler Buses GmbH**Susann Wunsch, Software Development Engineer, Daimler Buses GmbH*

This talk presents the State of Health Inconsistency (SOHI), a new parameter designed to monitor the aging-state variance in connected batteries. This comprehensive approach provides insights into the aging processes, allowing for improved management and optimization of battery systems.

**9:15 Electrolyte Motion-Induced Salt Inhomogeneity in Large-Format Lithium-ion Cells—Implications for Cell Lifetime and Performance***Frederik Morgenstern, Senior Battery Technology Engineer, BMW Group*

The Dalhousie group demonstrated that expansion of active materials causes electrolyte flow in cylindrical cells upon cell cycling. We discuss the influence of this electrolyte inhomogeneity on cell performance and lifetime. This novel mechanism—which we termed “electrolyte motion-induced salt inhomogeneity” (EMS)—is not restricted to cylindrical cells but can occur in all large-format lithium-ion cells under high compression.

**9:45 Grand Opening Refreshment Break in the Exhibit Hall with Poster Viewing****10:30 Lightweighting in Automotive Batteries—Conflicts and Contradictions***Oliver Gross, MAsc, SME Energy Storage and Conversion, Advanced Propulsion Technology, Stellantis*

A lower weight EV battery will improve overall vehicle efficiency and

energy use when the vehicle is in operation. There are many paths to reducing battery weight, through new materials and technologies, but also through prudent synergistic design and use cases. These routes can introduce other significant drawbacks as well. This talk will compare and contrast different drivers and their respective figures of merit on battery lightweighting.

**11:00 Overview of Battery Development Programs at USABC***Meng Jiang, PhD, Staff Researcher, R&D, General Motors Company*

The United States Advanced Battery Consortium is a collaborative research partnership among Ford, General Motors, and Stellantis. USABC has been pursuing advanced energy storage technologies for electrified vehicles for over 30 years. This talk will highlight the recent history of USABC, as well as provide an overview of expected upcoming funding opportunities for US-based battery suppliers.

**11:30 Solid-State Battery Commercialization: Status and Challenges***Alvaro Masias, Supervisor, Cell Technology Research, Ford Motor Company*

Solid state batteries garner a large amount of attention as the future of next-generation battery chemistries and as a result it can be difficult to separate hype from reality in this important technology. This talk will discuss the status of solid state battery commercialization, important challenges remaining, and technology needs from an automotive OEM perspective.

**12:00 pm Presentation to be Announced****12:30 Networking Luncheon****1:15 Dessert Break in the Exhibit Hall with Poster Viewing****OEM APPLICATION-DRIVEN DEVELOPMENT****1:45 Chairperson's Remarks***Alvaro Masias, Supervisor, Cell Technology Research, Ford Motor Company***1:50 Cathode Degradation Revisited—Automotive Perspective***Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America*

Battery degradation is to a large part attributed to the anode. As the industry strives for higher performance batteries, the cathode is moving more into focus. If the battery can be utilized better, cost is effectively reduced and energy density increased. We have studied several aspects of cathode degradation and want to review it from an automotive perspective.

**EV MARKET EXPANSION****2:20 FEATURED PRESENTATION: U.S.****Department of Energy Electric Vehicle Battery Research Pathways and Key Results***Brian S. Cunningham, Energy Storage Technology Development Manager, U.S. Department of Energy*

The U.S. Department of Energy set key technical targets necessary to enable Electric Vehicles (EV) to be as affordable as gasoline vehicles. A focus of this effort is the development of more cost-effective, longer lasting, and more abuse-tolerant EV batteries. This discussion will highlight the current battery R&D pathways supported by VTO and key technical results.





# Advances in Automotive Battery Applications

## ADVANCED BATTERY R&D FOR AUTOMOTIVE APPLICATIONS



### 2:30 FEATURED PRESENTATION: Can We Have a Safe Lithium-Metal Battery?

*Shirley Meng, PhD, Professor, University of Chicago; Chief Scientist, Argonne Collaborative Center for Energy Storage Science, Argonne National Laboratory*

Along the pathway beyond 500 Wh/Kg, enabling lithium-metal anodes becomes a must. In this talk, I will introduce a new framework with which we can design lithium-metal anodes not only for high energy and long cycling, but also for safe operation. The design rule for possible anode-free architecture will also be discussed.

### 2:50 Earth-Abundant Cathode-Active Materials: Research and Development Efforts at Argonne National Laboratory

*Jason Croy, PhD, Group Leader, Materials Research Group, Electrochemical Energy Storage, Argonne National Lab*

The Vehicle Technologies Office (US DoE) has established a consortium of six national laboratories to address the challenges of enabling sustainable cathode technologies. This consortium is focusing efforts across a wide range of materials and technology readiness levels. In this presentation, we will discuss ongoing efforts within the program aimed at the design, synthesis, and characterization of Mn-rich cathodes as alternative, next-generation materials.

### 3:20 Refreshment Break in the Exhibit Hall with Poster Viewing

## PLENARY KEYNOTE

### 3:50 Chairperson's Remarks

*Craig Wohlers, General Manager, Cambridge EnerTech*



### 3:55 The Importance of Passive Propagation Resistance in Battery Pack Design

*Troy Hayes, PhD, Director of Quality, Tesla*

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.



### 4:25 A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

*Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial*

*Research Chair, Canada Research Chair, Dalhousie University*



### 4:55 This and Next-Generation Battery Development—A UK Perspective

*Martin Freer, CEO, Faraday Institution*

The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This

presentation will provide an overview of the UK's battery strategy, the development of associated research programs, and highlight future focus areas for research and innovation.

### 5:25 Reception in the Exhibit Hall with Poster Viewing

### 6:30 Close of Day

## WEDNESDAY, MARCH 19

### 6:50 am Registration Open

### 7:00 Coffee Talk: Interactive Roundtable Discussions with Coffee & Pastries

Roundtable discussions are informal, moderated discussions with brainstorming and interactive problem-solving, allowing participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

#### TABLE 1: Battery Raw Materials Supply Chain

*Moderator: Robert Privette, Manager, Business Development, Rechargeable Battery Materials North America, Umicore USA, Inc.*

#### TABLE 2: Li-ion NMC Fast Charging New Cells for E-Mobility

*Moderator: Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.*

#### TABLE 3: Electrolyte Developments: New Components and Approaches

*Moderator: Sam Jaffe, Vice President, Battery Solutions, E Source*

#### TABLE 4: Battery Pack System Cost and Safety – Will Future xEV Battery Packs Increase in Complexity or Simplify and How Will Cost and Safety Be Impacted?

*Moderator: Kevin Konecky, Battery and Energy Storage Systems Consultant, Total Battery Consulting*

#### TABLE 5: Innovations in Recycling Battery Materials & Second Life

*Moderator: Steven Sloop, President, OnTo Technology LLC*

#### TABLE 6: Opportunities and Barriers to Fast Charge in Automotive and Other Applications

*Moderator: Brian Barnett, PhD, President, Battery Perspectives*

#### TABLE 7: Provisional Patents to Due Diligence

*Moderator: Grant Ehrlich, PhD, Member, Intellectual Property & Technology, Stites & Harbison PLLC*

#### TABLE 8: Understanding the Pressure Effects on Li Metal Batteries

*Moderator: Bin Li, Senior Scientist & Joint Professor, Electrification, Oak Ridge National Laboratory*

#### TABLE 9: Challenges and Opportunities in the Distribution of Relaxation Times Analysis

*Moderator: Tom Ruether, Lecturer & Chair, Electrical Energy Systems, University of Bayreuth*

#### TABLE 10: How Will Emerging Technologies and Paradigms Impact the Future of Electrified Transportation?

*Moderator: Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory*

#### TABLE 11: Battery Testing & Aging

*Moderator: Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH*

#### TABLE 12: Thermal Runaway

*Moderator: Lin Liu, PhD, Professor, Mechanical Engineering, University of Kansas*

#### TABLE 13: Consumer-Driven Trends in Battery Development for Personal Electronics

*John Wozniak, PhD, President, ESP Consulting*

#### TABLE 14: Battery Electrolytes: Materials, Developments and Manufacturing

*Moderator: Carl Thoemmes, Senior Manager, Orbia Fluor & Energy Materials*



# Advances in Automotive Battery Applications

## ADVANCED BATTERY R&D FOR AUTOMOTIVE APPLICATIONS

### 7:55 Chairperson's Remarks

Jason Croy, PhD, Group Leader, Materials Research Group, Electrochemical Energy Storage, Argonne National Lab

### 8:00 Presentation to be Announced



### 8:30 Wireless Battery Management Systems: Innovations, Challenges, and Future Perspectives

Chris Mi, PhD, Fellow, IEEE & SAE; Distinguished Professor, San Diego State University

With the growing adoption of batteries, the effective management of battery systems has become increasingly critical. The advent of Wireless Battery Management Systems (wBMS) represents a significant innovation in battery management to overcome the challenges of traditional wired BMS, including complexity, weight, and failure modes. wBMS eliminates physical connections, offers enhanced flexibility, reduces packaging complexity, and improves reliability. This talk explores its evolution, current state, and future directions.

### 9:00 Optimizing Performance of LMFP/NMC Blends

Dee Strand, PhD, CSO, R&D, Wildcat Discovery Technologies, Inc.

This presentation shows a systematic evaluation of NMC and LMP blends with the aim of mapping the blend/performance space. The focus will be on performance metrics for high-energy cells with power performance sufficient for auto applications.

### 9:30 Improving Battery Reliability with X-ray Particle Contaminants Analysis

Dean Schmidt, US Key Account & Channel Partner Manager, Sales, Hitachi High Tech

The use of X-ray particle contaminants analysis technology can help battery manufacturers improve product safety, performance, and yield by rapidly detecting and analyzing unwanted metal particles. By improving overall yield and reducing waste, you can deliver a range of operational and strategic benefits for your organization, with solutions that are available now and developing in line with future trends.



### 9:45 Rethinking the Battery Test Lab Environment to Meet Future Testing Demands

Bob Zollo, Strategic Portfolio Planner, Automotive & Energy Solutions, Keysight Technologies



New EV battery pack designs with higher capacities require a new way of thinking about the test laboratory environment to achieve efficiency while maintaining flexibility. Testing general driving profiles usually requires low power at the test stand, while maximum power peaks are rare. This duty cycle can be exploited for savings. We will present an innovative, demand-driven power allocation approach with up to 20% savings in both the footprint and price, while guaranteeing sufficient power.

### 10:15 Coffee Break in the Exhibit Hall with Poster Viewing

### 11:00 Outstanding Battery Performance and Safety in Automotive Applications by AI-Powered Digital Twins

Nikolaus Keuth, PhD, Head of Product and Solution Management, IODP XI Data Analytics Solutions, AVL List GmbH

The presentation delves into the innovative application of AI-powered digital twins for battery systems. This cutting-edge approach aims to enhance battery safety, reduce warranty claims, and optimize

performance through precise failure prediction and health monitoring. By leveraging data from development, telematics, and in-vehicle usage, this scalable digital-twin architecture promises to revolutionize the automotive industry, offering significant cost savings and improved battery life

## OUTLOOK FOR EV MARKET EXPANSION

### 11:30 EV Sales Review for 2024, Expectations Going Forward, and Implications for Battery Demand

Viktor Irlé, Co-Founder & Market Analyst, EV Volumes

This presentation will cover the EV Sales Review of 2024, expectations going forward, and implications on battery demand, and will share the latest insights from collecting the facts in the EV industry. You will understand the best sellers, which countries and regions are doing the most for EV adoption, and what to expect in the future, both short term, and long term.

### 11:50 Battery Technology Roadmaps: Unravelling the Current Landscape and Confronting Challenges for Solid-State Batteries

Varnika Agarwal, Research Analyst, Battery, Rho Motion

The battery market saw a deployment of around 1.2TWh in 2024. Battery evolution is occurring in many different directions, with each avenue viewed as 'the next big thing.' Developments include advancements in LFP chemistry with LMFP, the use of silicon anodes, sodium-ion, or the emergence of ultra-fast charging technologies. However, solid-state batteries have gained interest for over a decade now.

### 12:10 pm Industry Updates: Emerging Battery Technology and the Potential Changes to the Automotive Market

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

There have been many announcements for capacity, new technology, and impact to the markets—many of these are overstated. Avicenne Energy will be sharing a realistic view and presenting updates on the mass commercialization of lithium-ion battery. Many emerging technologies could have impact for the automotive markets. Technologies to be covered are lithium-ion, dry process, solid state and sodium ion with key drivers, progress to date and forecasts.

### 12:30 Sponsored Presentation (Opportunity Available)

### 1:00 Networking Luncheon

### 2:15 Dessert Break in the Exhibit Hall with Poster Viewing

### 2:45 Close of Conference

**WEDNESDAY, MARCH 19****6:50 am Registration Open****1:00 pm Networking Luncheon****2:15 Dessert Break in the Exhibit Hall with Poster Viewing****ALTERNATIVE CHEMISTRIES FOR STATIONARY ENERGY STORAGE****2:45 Chairperson's Remarks***Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory***2:50 Carbon-Capture Batteries to Store Renewable Energy***Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory*

Efficient use of renewable energy sources and reduction of carbon dioxide emissions depend on the advancement of long-duration energy storage technology. This study explores how the aqueous Na-CO<sub>2</sub> battery deactivates and reactivates during extended cycling. Comprehensive characterization reveals valuable insights into the decomposition products. We demonstrate a technique involving electrochemical processes to renew these water-based cells. Gained insights pave the way for the development of self-healing systems with extended lifespans.

**3:20 Advancing BESS with Sodium-ion Batteries***Brandon Kelly, PhD, Vice President, Cell Engineering, Peak Energy*

Sodium-ion batteries are set to transform utility-scale energy storage systems BESS. Utilizing NFPP (Na<sub>4</sub>Fe<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>P<sub>2</sub>O<sub>7</sub>) cathode and hard carbon anode provides outstanding cycling stability and critical safety advantages, enabling the safe placement of BESS closer to city centers and high-demand areas, reducing transmission costs and improving grid efficiency. At the system level, the energy density of NFPP/HC sodium-ion batteries is highly competitive, ensuring optimal footprint and cost-efficiency while delivering robust performance.

**3:50 Presentation to be Announced****4:20 Refreshment Break in the Exhibit Hall with Poster Viewing****5:00 Advanced Non-Flow Zinc Alloy-Bromide Battery for Stationary Storage***Prima Francis, PhD, Senior Scientist, R&D, Golden Gate Battery India Pvt. Ltd.*

Our advanced non-Flow Zinc Bromide battery offers an alternative to LFP batteries, with comparable energy density and cycle life, but with a 25% cost reduction. We will discuss the R&D pathways to resolve the technical issues traditionally associated with such batteries, namely, dendrite formation, free bromine corrosion and electrode damage. With abundant raw materials and almost 100% recyclability, our Zinc Bromide batteries offer a sustainable and cost-effective energy storage solution.

**5:30 Sodium-Sulfur Batteries (NAS Batteries) for Long-Duration Stationary Energy Storage***Caroline Brannock, PhD, Senior Sales Manager, Battery Technology, BASF Corp.*

Sodium-sulfur (NAS) batteries have a 20-year history of providing reliable power. Due to their containerized nature, NAS can be easily scaled to any size for utility-scale requirements, and they can operate in extreme

weather conditions without additional efforts for cooling or heating. Through this presentation, I will explain how NAS batteries are a good fit for operators looking to prepare their grids for the challenges in the years to come.

**6:00 PANEL DISCUSSION: Exploring Traditional and Emerging Electrochemistries for Utility-Scale Energy Storage Systems***Moderator: Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory*

The future of renewable energy and the reduction of carbon emissions rely heavily on the continued development of advanced energy storage technologies. This panel of experts dives into both traditional and emerging electrochemistries for utility-scale systems, addressing key factors that shape the industry, including:

- Long-duration energy storage solutions
- Energy density improvements
- Cycling stability and performance
- Safety enhancements
- Cost-efficiency and scalability
- Availability and sourcing of raw materials
- Recyclability and sustainability

*Panelists:**Caroline Brannock, PhD, Senior Sales Manager, Battery Technology, BASF Corp.**Prima Francis, PhD, Senior Scientist, R&D, Golden Gate Battery India Pvt. Ltd.**Brandon Kelly, PhD, Vice President, Cell Engineering, Peak Energy***6:30 Close of Day****THURSDAY, MARCH 20****8:00 am Registration and Morning Coffee****IMPLEMENTING UTILITY-SCALE ENERGY STORAGE SYSTEMS****8:25 Chairperson's Remarks***Chris Wright, Senior Vice President, Project Technology, Spearmint Energy***8:30 Sponsored Presentation (Opportunity Available)****9:00 Improving the Deployment of Grid-Scale Battery Energy Storage***Chris Wright, Senior Vice President, Project Technology, Spearmint Energy*

As grid connected stationary energy storage continues to deploy at scale worldwide, the lithium-ion industry has many opportunities to advance safety, performance, and reliability. We will discuss a few of these opportunities and outline how industry research can bring demonstrable advantages to facilitating ESS projects.

**9:00 Battery Booth Crawl with Bagels in the Exhibit Hall with Last Chance for Poster Viewing****9:30 Sponsored Presentation (Opportunity Available)****10:00 Attendee Transition to Booth Crawl in Exhibit Hall****REPT**

**10:45 Planning for Energy Storage Augmentation**

*Joseph O'Connor, Director, ESS Solutions, Engineering, Nuvation Energy*

As batteries age, their capacity diminishes, making augmentation crucial to meet long-term electricity needs. Mixing old and new technologies on the same site poses unique challenges. This presentation explores strategies for integrating different generations of energy storage and designing systems that allow for seamless upgrades and expansion as technology evolves.

**11:15 Power Partnerships Co-Presentation: Indian Energy Microgrid Solutions**

*Jessica Cadreau, Vice President, Asset Management, Indian Energy*

*Allen Cadreau, Vice President, Engineering, Indian Energy*

Indian Energy's mission is to develop holistic and sustainable opportunities so that we can maintain a traditional way of life that provides for our seventh generation. Indian Energy is a micro-grid development, systems integration and energy asset owner/operator focused primarily on creating strategic partnerships for Energy Security solutions for the Department of Defense and Energy Sovereignty Solutions for Native American Indian Tribes and the Indigenous Peoples around the world.

**11:45 Sponsored Presentation (Opportunity Available)****12:15 pm Enjoy Lunch on Your Own****TECHNO-ECONOMICS OF GRID INTEGRATION****1:10 Chairperson's Remarks**

*Iola Hughes, Research Manager, Rho Motion*

**1:15 Battery Storage: Latest Trends and Technology Innovation**

*Iola Hughes, Research Manager, Rho Motion*

The storage market continues to be fastest growing battery demand market, with deployments in the US and Canada more than doubling in H1 2024 compared to the same period in 2023. The session will address several key questions: What are the biggest opportunities and challenges for the stationary storage market? What is the outlook for alternative tech? Who are the key and emerging players in the BESS market?

**1:45 Economic Assessment of Hybrid Energy Storage for Multi-Energy Arbitrage in Wholesale Electricity Markets**

*Ahmad Mayyas, PhD, Professor, Industrial & Systems Engineering, Khalifa University*

This presentation focuses on the commercial application of energy storage and economic potential of hybrid energy storage systems for multi-energy trading and arbitrage in electricity markets. Optimization model to maximize profits was developed to find a suitable hybrid energy system configuration and trading pattern. A case study of Li-ion

battery and Reversible Fuel Cells was developed to evaluate the trading economics for electricity and hydrogen arbitrage in the United States.

**2:15 Modeling Energy Storage across Potential Electricity Sector Futures**

*Anna Schleifer, PhD, Researcher, Grid Planning and Analysis Center, National Renewable Energy Lab*

Energy storage is widely expected to be a key technology for decarbonizing electricity and broader energy systems. Understanding the opportunities and challenges facing energy storage requires modeling at various geographic and temporal scales and resolutions. This presentation focuses on the application of long-term capacity expansion planning modeling to understanding the role of energy storage in the U.S. electricity sector across multiple potential futures, representing different electrification and emissions reductions pathways.

**2:45 PANEL DISCUSSION: Economics of the Energy Ecosystem**

*Moderator: Iola Hughes, Research Manager, Rho Motion*

The nation's power grid is facing pivotal challenges. BESS is playing key roles in addressing them. BESS not only provides electricity to the grid but also offers essential services, such as balancing supply and demand. As a result, the stationary storage market is the fastest-growing sector in battery demand. The battery industry is poised to enhance safety, performance, and reliability, which are critical for the future of our energy ecosystem.

*Panelists:*

*Ahmad Mayyas, PhD, Professor, Industrial & Systems Engineering, Khalifa University*

*Anna Schleifer, PhD, Researcher, Grid Planning and Analysis Center, National Renewable Energy Lab*

*Chris Wright, Senior Vice President, Project Technology, Spearmint Energy*

**3:15 Transition to Closing Plenary Panel****CLOSING PLENARY PANEL DISCUSSION****3:30 CLOSING PLENARY PANEL DISCUSSION: Post-Election Implications for the U.S. Battery Landscape**

*Moderator: Craig Rigby, Vice President, Technology, Clarios*

**4:30 Close of Conference**



**WEDNESDAY, MARCH 19****6:50 am Registration Open****1:00 pm Networking Luncheon****2:15 Dessert Break in the Exhibit Hall with Poster Viewing****ADVANCED BATTERY DEVELOPMENT AND SAFETY****2:35 Organizer's Remarks***Sarah Stockwell, PhD, Conference Producer, Cambridge EnerTech***2:40 Chairperson's Remarks***Jeff Bruce, Director Battery Technologies, Battery Development, Microsoft Corp.***2:45 Unlocking Next-Level Battery Performance through Electrolyte Additives: Enhancing Capacity, Efficiency, and Lifetime***Emily Dickens, Chief Commercial Officer, Octet Scientific*

Electrolyte additives offer a key, underexplored way to enhance both traditional and next-gen battery performance. This talk will cover the role of electrolyte optimization in boosting battery life, efficiency, and capacity. Octet, a leader in battery chemistry, specializes in developing custom electrolyte solutions. We'll highlight case studies and share insights into how the right chemistry can unlock new energy storage potential.

**3:15 Energy-Dense Solid-State Lithium Batteries Enabled by Halide Electrolytes***Yan Yao, PhD, Professor, Electrical Engineering, University of Houston*

Despite the impressive cycle life observed in halide-based batteries under high stack pressures or at elevated temperatures, poor cathode-electrolyte stabilities still pose a significant challenge that results in rapid capacity decay under low pressure. Here, I will present strategies to improve the interfacial instability in halide-based solid-state batteries. We demonstrate stable cycling of solid-state cells using lithium metal anode for 1000 cycles at room temperature.

**3:45 High-Voltage, Solvent/PFA-Free LCO Electrodes to Power Consumer Electronics and More***Rajan Kumar, CEO & Founder, Ateios**Kevin Barry, Vice President Battery Engineering, Engineering, Ateios*

Current manufacturing of electrodes is limiting the ability to build longer lasting batteries to power consumer electronics due to thinner electrodes (less than 15 mg/cm<sup>2</sup>), instability at high voltages, and usage of toxic/forever chemicals that are being banned. Through Ateios Systems' Raicure platform, a solvent/forever chemical (PFAs)-free electrode manufacturing process has demonstrated that with high-voltage, lithium-cobalt oxide (LCO) at a high-energy dense electrode (over 20 mg/cm<sup>2</sup>), improved capacity retention and assembly yield to build better batteries at price parity.

**4:00 Presentation to be Announced****4:20 Refreshment Break in the Exhibit Hall with Poster Viewing****5:00 PFAS-Free Electrically Conductive Polymer Binders for Lithium-ion Batteries—From Environmentally Benign Solvents to Dry Electrode Processing***Gao Liu, PhD, Group Leader, Energy Storage & Distributed Resources Division, Lawrence Berkeley National Lab*

Green processing of lithium rechargeable battery electrodes, free from NMP solvents and PFAS, is crucial for sustainability. Electrode binders ensure cohesion and adhesion while managing volume changes. CMC/SBR binders serve as eco-friendly alternatives to PVDF, delivering superior performance at lower costs. While silicon-based anodes offer high capacity, they face stability challenges. Innovative conductive polymers are being developed to enhance performance and improve battery longevity through environmentally friendly processing.

**5:30 At the Intersection of Micromobility, Aftermarket Batteries, and Product Safety***Ibrahim Jilani, Global Director, Consumer Technology, UL Solutions*

This presentation will go into the latest regulations for micromobility and their batteries, as well as the safety concerns of aftermarket batteries (whitepaper issued by UL Solutions in 2024) and its intersection with product safety.

**6:00 Batteries for Medical Devices***Laura McCalla, PhD, Senior Principal Scientist, Battery Research & Technology, Medtronic*

Within the medical device market, lithium-ion batteries power everything from miniature implantable products to large hospital capital equipment. Delivering the utmost safety and reliability to our patients requires a unique focus on requirements and a clear understanding of the use conditions. Here, we will examine how some of these aspects influence the design and use of lithium-ion cells and packs in medical devices.

**6:30 Close of Day****THURSDAY, MARCH 20****8:00 am Registration and Morning Coffee****OEM-DRIVEN DEVELOPMENT****8:25 Chairperson's Remarks***Laura McCalla, PhD, Senior Principal Scientist, Battery Research & Technology, Medtronic***8:30 Sponsored Presentation (Opportunity Available)****9:00 Batteries for Outdoor Security Camera Applications***Jason Randel, PhD, Product Safety Engineer, Amazon Ring*

The global smart home security camera market size, wireless and wired combined, is increasing year over year and has reached over \$7 billion dollars in 2022. The reliability and safety performance of the battery cells in the wireless space is more demanding than ever. The talk aims to share some of the lessons learned to balance these competing priorities and to select the best cells for these adverse applications.

**9:00 Battery Booth Crawl with Bagels in the Exhibit Hall with Last Chance for Poster Viewing****9:30 Presentation to be Announced****10:00 Attendee Transition to Booth Crawl in Exhibit Hall**

**10:40 Chairperson's Remarks**

*Laura McCalla, PhD, Senior Principal Scientist, Battery Research & Technology, Medtronic*

**10:45 Challenges and Solutions for LFP and LMFP State-of-Charge Indication**

*Yevgen Barsukov, PhD, Head, Algorithm Development, Battery Power Systems, Texas Instruments, Inc.*

This presentation examines various challenges related to measuring the state-of-charge in lithium iron phosphate (LFP) and lithium manganese iron phosphate (LMFP) battery types. It discusses factors affecting accuracy and suggests potential improvements. The aim is to enhance overall performance and reliability in energy storage systems.

**11:15 AI-Based Smart Charging Algorithm for Next-Generation Li-ion Batteries**

*Naoki Matsumura, Principal Engineer, Intel*

Li-ion batteries are widely used but degrade quickly with always-full and fast-charging. Current adaptive charging, which adjusts charge level and speed based on "if-then" scenarios, can prolong battery longevity if user behavior aligns with these scenarios. This session introduces context-based charging, which employs machine-learning and deep-learning to customize charging to individual usage patterns, extending longevity further. The session also covers implementation and application to future batteries.

**11:45 Sponsored Presentation (Opportunity Available)****12:15 pm Enjoy Lunch on Your Own****1:10 Chairperson's Remarks**

*Emily Dickens, Chief Commercial Officer, Octet Scientific*

**1:15 Understanding Battery Requirements for 3C Applications**

*Jeff Bruce, Director Battery Technologies, Battery Development, Microsoft Corp.*

There is an assumption that battery requirements for 3C applications are way easier to meet than for EV or ESS; while true in many regards, there are still some difficult requirements for the newer technologies (think silicon, solid-state) to meet. This talk will review where LCO—and to a lesser extent—NCM are, and where Si and SSB need to be in order to use 3C applications.

**1:45 Designing Batteries for Mixed-Reality Headsets and Augmented-Reality Glasses**

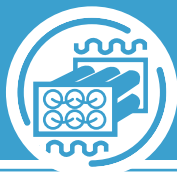
*Karthik Kadirvel, PhD, Director, Battery Engineering, Meta Platforms*

This presentation explores innovative battery designs tailored for mixed reality headsets and augmented reality glasses. We examine the unique power demands and spatial constraints of these devices, proposing solutions that enhance energy efficiency, reduce weight, and extend operational lifespan. By integrating advanced materials and smart battery management systems, our research aims to improve user experience and device performance in immersive applications, paving the way for future developments in augmented technologies.

**2:15 Presentation to be Announced****2:45 Presentation to be Announced****3:15 Transition to Closing Plenary Panel****CLOSING PLENARY PANEL DISCUSSION****3:30 CLOSING PLENARY PANEL DISCUSSION: Post-Election Implications for the U.S. Battery Landscape**

*Moderator: Craig Rigby, Vice President, Technology, Clarios*

**4:30 Close of Conference**

**MONDAY, MARCH 17**7:00 am **Registration and Morning Coffee**4:45 pm **Close of Day****TUESDAY, MARCH 18**7:00 am **Registration Open and Morning Coffee****BATTERY PACK DEVELOPMENT****8:05 Organizer's Remarks***Victoria Mosolgo, Conference Producer, Cambridge EnerTech***8:10 Chairperson's Remarks***Ahmad Pesaran, PhD, Chief Energy Storage Engineer, National Renewable Energy Laboratory***8:15 Electric Automotive Battery Management System Development***Yangsoo An, Engineer, BMS Development, LG Energy Solution***8:45 Diagnostics and Modeling***Ahmad Pesaran, PhD, Chief Energy Storage Engineer, National Renewable Energy Laboratory*

Significant demand for Lithium-ion Batteries (LIBs) for EV and grid applications has led to supply chain issues for North America (NA). To track the growth of LIB supply chain, NAATBatt and NREL have published a database of companies' mine, process, manufacture, reuse, and recycle batteries in NA since September, 2021. We will discuss the growth of various segments particularly in mining and material processing over the last four years.

**9:15 Advancing Automotive Battery Pack Safety with Innovative Venting Units***Michael Harenbrock, PhD, Principal Expert, Engineering Electric Mobility, MANN+HUMMEL GmbH*

Vents are crucial for battery pack safety, especially under thermal runaway conditions. As battery cell chemistry and pack designs evolve, selecting appropriate venting units becomes increasingly important. The presentation provides an overview of regulatory and technological trends influencing vent design and introduces additional features like gas sensors and hot particle filters.

**9:45 Grand Opening Refreshment Break in the Exhibit Hall with Poster Viewing****THERMAL RUNAWAY****10:30 Factors Influencing Battery Abuse with Immersion Cooling***Ian Smith, Manager R&D, Electrified Powertrain, Southwest Research Institute*

The benefits of direct battery immersion cooling are significant, not just during regular operation but also in preventing thermal runaway in extreme conditions. This presentation emphasizes the importance of flow rate and duration of flow after an abuse event when considering immersion cooling. The data provided is valuable for designing immersion cooling systems and for selecting appropriate test conditions when evaluating fluids.

**11:00 NMC vs. LFP: Thermal Runaway Propagation Pack Design Considerations Based on Chemistry***Brandon Bartling, Advanced Development Specialist, Automotive & Aerospace Solution, 3M*

Battery pack designs and technical safety requirements are evolving at a rapid pace. Shifts in government policy, sourcing requirements, and consumer expectations are driving designs that are maximizing cell content in packs and introducing new chemistries. These changes can have a profound impact on how thermal propagation may take place in the pack. In this talk, we will compare and contrast the thermal runaway behavior of LFP cells vs. NMC cells and speak about how those differences could translate into new material design and philosophies for how to mitigate these challenges.

**11:30 Battery Safety in Aggressive and Abnormal Conditions: Some Insights from Recent Research***Tanvir Tanim, Battery R&D Engineer and Group Lead, Energy Storage Technology Group, Idaho National Laboratory*

Battery safety during fast charging or post-accident scenarios is critical for electric vehicle adoption. Lately significant efforts are being devoted to detecting early signs of failure using innovative methods and diagnostics. This presentation highlights Idaho National Laboratory's advancements in enhancing battery safety, offering valuable insights for consumers, first responders, and recovery teams in challenging conditions.

**12:00 pm Increasing Success and Safety in Battery Testing***Robert Laudisi, Applications & Mechanical Engineering, Sales, Associated Environmental Systems*

Enhancing safety in battery testing processes is crucial to managing high-density testing in controlled, secure environments. This practice involves creating specialized scenarios that ensure safety measures are prioritized and optimized, helping to protect both equipment and personnel. In certain applications, larger batch testing in safely managed environments may be required. We will guide you through the necessary steps to ensure a safer approach to battery testing.

**12:15 SafeCore - An Internal Fuse to Help Prevent Thermal Runaway***Speaker to be Announced, Amionx*

SafeCore by Amionx is a material that is coated on the current collector in a battery cell that is responsive to current, temperature and voltage thresholds being reached. When one or any combination of these thresholds is reached, the material either: 1. Decomposes and cuts the flow of electricity in the cell, or 2. Creates a high impedance environment. In both cases, thermal runaway is prevented. Commercial progress and test results will be discussed.

**12:30 Networking Luncheon****1:15 Dessert Break in the Exhibit Hall with Poster Viewing****TRANSPORTATION AND REGULATION****1:45 Chairperson's Remarks***Chris Egloff, Vice President, Strategic Opportunities, Americase***1:50 Advancing Battery Safety: Research Innovations at the U.S. Department of Transportation***Erica Wiener, Physical Scientist, R&D & Technology PHH 63, PHMSA*  
Batteries present unique safety risks throughout their lifecycle—from



production, transportation, and use, to end-of-life disposal/recycling. This talk highlights the Office of Hazardous Materials Safety's battery research portfolio at the U.S. Department of Transportation. Our battery safety research covers safety throughout the lifecycle, investigating safer packaging, risks of new/emerging chemistries, battery safety monitoring/detection, and end-of-life handling. Additionally, the team pursues applied research on innovative technologies that can enhance battery safety.

### 2:20 PANEL DISCUSSION: Battery Safety & Regulations

*Moderator: Chris Egloff, Vice President, Strategic Opportunities, Americase*

Explore the critical aspects of battery safety and the evolving regulations that govern their production, transportation, and disposal. This panel will address best practices, compliance challenges, and innovations aimed at enhancing battery safety in various applications.

*Panelists:*

*Todd Mackintosh, Tech Specialist, Global Battery Systems Engineering, General Motors Co.*

*Mike Pagel, Senior Consultant, Hazmat Safety Consulting*

### 3:20 Refreshment Break in the Exhibit Hall with Poster Viewing

## PLENARY KEYNOTE

### 3:50 Chairperson's Remarks

*Craig Wohlers, General Manager, Cambridge EnerTech*



### 3:55 The Importance of Passive Propagation Resistance in Battery Pack Design

*Troy Hayes, PhD, Director of Quality, Tesla*

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.



### 4:25 A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

*Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University*



### 4:55 This and Next-Generation Battery Development—A UK Perspective

*Martin Freer, CEO, Faraday Institution*

The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This presentation will provide an overview of the UK's battery strategy, the development of associated research programs, and highlight future focus areas for research and innovation.

### 5:25 Reception in the Exhibit Hall with Poster Viewing

### 6:30 Close of Day

## WEDNESDAY, MARCH 19

### 6:50 am Registration Open

### 7:00 Coffee Talk: Interactive Roundtable Discussions with Coffee & Pastries

Roundtable discussions are informal, moderated discussions with brainstorming and interactive problem-solving, allowing participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

#### TABLE 1: Battery Raw Materials Supply Chain

*Moderator: Robert Privette, Manager, Business Development, Rechargeable Battery Materials North America, Umicore USA, Inc.*

#### TABLE 2: Li-ion NMC Fast Charging New Cells for E-Mobility

*Moderator: Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.*

#### TABLE 3: Electrolyte Developments: New Components and Approaches

*Moderator: Sam Jaffe, Vice President, Battery Solutions, E Source*

#### TABLE 4: Battery Pack System Cost and Safety – Will Future xEV Battery Packs Increase in Complexity or Simplify and How Will Cost and Safety Be Impacted?

*Moderator: Kevin Konecky, Battery and Energy Storage Systems Consultant, Total Battery Consulting*

#### TABLE 5: Innovations in Recycling Battery Materials & Second Life

*Moderator: Steven Sloop, President, OnTo Technology LLC*

#### TABLE 6: Opportunities and Barriers to Fast Charge in Automotive and Other Applications

*Moderator: Brian Barnett, PhD, President, Battery Perspectives*

#### TABLE 7: Provisional Patents to Due Diligence

*Moderator: Grant Ehrlich, PhD, Member, Intellectual Property & Technology, Stites & Harbison PLLC*

#### TABLE 8: Understanding the Pressure Effects on Li Metal Batteries

*Moderator: Bin Li, Senior Scientist & Joint Professor, Electrification, Oak Ridge National Laboratory*

#### TABLE 9: Challenges and Opportunities in the Distribution of Relaxation Times Analysis

*Moderator: Tom Ruether, Lecturer & Chair, Electrical Energy Systems, University of Bayreuth*

#### TABLE 10: How Will Emerging Technologies and Paradigms Impact the Future of Electrified Transportation?

*Moderator: Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory*

#### TABLE 11: Battery Testing & Aging

*Moderator: Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH*

#### TABLE 12: Thermal Runaway

*Moderator: Lin Liu, PhD, Professor, Mechanical Engineering, University of Kansas*

#### TABLE 13: Consumer-Driven Trends in Battery Development for Personal Electronics

*John Wozniak, PhD, President, ESP Consulting*

#### TABLE 14: Battery Electrolytes: Materials, Developments and Manufacturing

*Moderator: Carl Thoenmes, Senior Manager, Orbia Fluor & Energy Materials*

## UNDERSTANDING AND PREVENTING THERMAL RUNAWAY

### 7:55 Chairperson's Remarks

*Lin Liu, PhD, Associate Professor, Mechanical Engineering, University of Kansas*

### 8:00 Presentation to be Announced



### 8:30 Dynamics of Intra-Cell Thermal Front Propagation in Lithium-ion Battery Safety Issues

*Jun Xu, PhD, Associate Professor Mechanical Engineering, Spencer Lab, University of Delaware*

Understanding thermal front propagation (TFP) characteristics, such as front and velocity, is crucial for assessing energy release and temperature distribution for battery hazardous estimation. Recent studies assume that TR within cells propagates at a near-constant velocity, based on the reaction kinetics and thermal properties. Here, an intra-battery TR model is further proposed and it indicates that TFP velocity stabilizes when the front is distanced from the heat source.

### 9:00 Thermal Runaway Prognosis

*Lin Liu, PhD, Associate Professor, Mechanical Engineering, University of Kansas*

Thermal runaway, recognized as one of the major obstacles in the safe performance of lithium-ion batteries, has seriously hindered their large deployment. Therefore, it is crucial to develop new approaches that can accurately predict the failure of lithium-ion batteries and prevent catastrophic incidents. For this purpose, this study focuses on analyzing the failure of lithium-ion batteries due to the occurrence of thermal runaway using a data-driven framework called data-driven prognosis.

### 9:30 Whodunit? The Science behind Battery Fire Investigations

*Speaker to be Announced, Exponent*

Growing public awareness of lithium-ion battery thermal runaway hazards has coincided with increased scrutiny of batteries when they are found at fire scenes. Lithium-ion thermal runaway can occur due to heating from an external fire, even if they are not the cause of the fire. This presentation will encompass many analytical tools that may be relied upon when analyzing the role of lithium-ion batteries at fire scenes, as well as in the post-scene analysis of batteries and devices.

### 10:00 Why Energy Storage Safety Matters & How It Is Achieved

*Thomas Farrell, Manager, Test & Validation, Fike Corp.*

The increasing deployment of energy storage systems (ESS) globally requires a focus on understanding their hazards and ensuring reliable safety systems. Fike will present the dangers & causes of thermal runaway, an unpredictable fire hazard occurring in the lithium battery cells held in an ESS. Backed by years of internal test data, we'll review the effectiveness of thermal runaway safety solutions recommended by global codes & standards and will analyze various ESS installation scenarios and the comprehensive safety systems we'd recommend ensuring these hazards are mitigated.

### 10:15 Coffee Break in the Exhibit Hall with Poster Viewing

## POST INCIDENT

### 11:00 Explosion Control

*Matthew Paiss, Tech Advisor, Battery Materials & Systems, Pacific Northwest National Lab*

With code requirements in NFPA 855 for explosion control, the mitigations for achieving this vary greatly in both complexity and reliability. We will discuss best practices emerging for deflagration prevention designs for BESS cabinets.

### 11:30 How Fire Departments Respond to Battery Incidents

*Michael O'Brian, CEO, Code Savvy Consultants and Fire Chief, Brighton Area Fire Department*

This program will provide an overview of the various ways the fire service is interacting with battery incidents. This includes the rapid changes on mobility, EV, ESS, and indoor battery facilities. This program will provide best practices for consideration in developing emergency response plans and meeting current fire and building code requirements.

### 12:00 pm After the Fire

*Joseph Nowikowski, Senior Practice Leader, M&E, Rimkus Consulting Group Inc.*

Those outside of the insurance industry have little to no understanding of what happens when an insured event occurs and what the process of subrogation is. This session will guide the audience through the process from production of a battery product to alleged failure—and explain the nuances that exist.

### 12:30 Presentation to be Announced

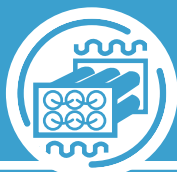
### 12:45 Presentation to be Announced

### 1:00 Networking Luncheon

### 2:15 Dessert Break in the Exhibit Hall with Poster Viewing

### 2:45 Close of Conference



**MONDAY, MARCH 17****7:00 am Registration and Morning Coffee****4:45 pm Close of Day****TUESDAY, MARCH 18****7:00 am Registration Open and Morning Coffee****CHARGING INFRASTRUCTURE OVERVIEW****8:05 Organizer's Remarks***Ian Murray, Associate Conference Producer, Cambridge EnerTech***8:10 Chairperson's Remarks***Wilhelm Pfleging, PhD, Head of Group Laser Materials Processing/Lithium-ion Batteries, Institute for Applied Materials (IAM-AWP), Karlsruhe Institute of Technology (KIT)***8:15 Lowering EV Adoption Barriers by Accelerating Access to Public Charging***Candace O'Melia, Strategist, EV Policy & Market Development, General Motors*

A large proponent of lowering the barriers to adoption is access to fast, convenient public charging infrastructure—an effort that is most successful when championed by a collaborative approach. Learn about cross-industry collaboration between OEMs, utilities, charge station operators, policymakers, and government agencies. By working collaboratively and across industries, GM works to ensure widespread access to technology, charging, and energy management for current and future EV drivers.

**8:45 From Charging Systems to V2G: Addressing Current Challenges***Devraj Dutt, Charging Systems V2G Group Lead, Jaguar Land Rover*

This presentation highlights recent research in charging systems and current challenges in vehicle-to-grid (V2G) technology. We analyze barriers such as infrastructure limitations, regulatory hurdles, and technological compatibility. By exploring solutions that enhance grid integration and optimize energy management, we provide insights into overcoming these obstacles.

**9:15 Funding & Incentives Capturing for EV Charging: Navigating Opportunities, Complexities, and the Policy Landscape***Sarah King, Policy Principal, Advanced Energy United*

Billions of dollars in grants, rebates, loans, and incentives flood the EV charging landscape, offering powerful opportunities for organizations to accelerate deployment. However, navigating this complex funding environment, with its political and policy dynamics, can be challenging. This session explores available financial opportunities, strategies and tricks to identify and qualify for funding, and the complexities of the current and future policy landscape, helping organizations unlock successful project implementation and growth.

**9:45 Grand Opening Refreshment Break in the Exhibit Hall with Poster Viewing****FAST CHARGING R&D: SYSTEMS & METHODS****10:30 A Systems-Level Approach to Unlocking Much Faster Charging Times***Sai Shivareddy, PhD, CEO & Co-Founder, Nyobolt*

This talk presents a systems-level approach to achieving faster charging for electric vehicles (EVs), encompassing the entire system from battery cells and packs to charging power electronics. By integrating cutting-edge advancements across these components, we have achieved significant reductions in charging times. We discuss how optimizing the synergy between battery technology and charging infrastructure is crucial for enabling ultra-fast charging solutions, ultimately promoting greater EV adoption and sustainability.

**11:00 Low-Temperature Charging: Enabling Fast Charging in Real-World Temperature Scenarios***Ian Campbell, PhD, CEO & Co-Founder, Breathe Battery Technologies*

Achieving fast charging at different temperatures is a challenge not well addressed by the majority of charging strategies. More often than not, optimization is focused on too narrow a window. But how often do EVs meet these conditions? What happens when users charge during an Alaskan winter or a Texan summer? Discover how adaptive charging is revolutionizing charging consistency by delivering performance gains across a range of real-world usage scenarios.

**11:30 Beyond the Plug: Exploring Wireless, Swapping, and Off-Grid EV Charging***Shazan Siddiqi, Senior Technology Analyst, IDTechEx*

Alternative EV charging technologies beyond conductive cable-based solutions include wireless charging, which allows charging without cables; battery swapping, which replaces depleted batteries with fully charged ones in minutes; and off-grid solutions like solar-powered or generator-based charging systems, providing power in remote areas or during grid outages. These technologies enhance convenience, reduce dependency on grid infrastructure, and support faster and more flexible EV adoption.

**12:00 pm Presentation to be Announced****12:30 Networking Luncheon****1:15 Dessert Break in the Exhibit Hall with Poster Viewing****FAST CHARGING R&D: BATTERY****1:45 Chairperson's Remarks***Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory***1:50 Advanced Lithium-ion Battery Fast Charging: Enhancing Performance, Longevity, and Safety for Electric Vehicles***Vallabha Rao Rikka, PhD, Research Scientist IV, UL Research Institutes*

Cathode materials in lithium-ion batteries suffer rapid capacity fade during fast-charging due to transition metal (TM) dissolution, especially at high voltages and temperatures. Our study identifies an increase in cell temperature as the primary driver of Fe dissolution in LiFePO<sub>4</sub>/graphite cells during 4C cycling. After 400 cycles, Fe dissolution accelerates, limiting cycle life to 956 cycles. Despite advancements, mitigating TM dissolution remains challenging, and still not fully understood.



### 2:20 Ultrafast Laser Processing of Battery Electrodes for Faster Charging and Improved Electrolyte and Electrode Wetting

Bertrand J. Tremolet de Villers, PhD, Research Scientist, Materials, Chemical, and Computational Science, National Renewable Energy Laboratory (NREL)

Ultrafast lasers can be used to create micro-structures in battery electrodes that provide homogeneous wetting and greatly improve high-rate charging. Our cost-analysis simulations using the Battery Performance and Cost model indicate that adoption of ultrafast-laser electrode processing adds minimal additional cell costs, approximately \$1.50/kWh. We present a detailed characterization of experimental laser ablation for common battery electrodes, enabling informed choices of laser parameters and accurate predicting of processing throughput.

### 2:50 Upscaling Advanced 3D Electrode Architectures for Fast Charging Batteries

Wilhelm Pflöging, PhD, Head of Group Laser Materials Processing/Lithium-ion Batteries, Institute for Applied Materials (IAM-AWP), Karlsruhe Institute of Technology (KIT)

Laser structuring of thick film electrodes has been advanced to pilot-line level for the production of 3D batteries. Fast charging performance is significantly improved, while lithium plating is suppressed. In addition, capacity retention is dramatically enhanced and cycle lifetime can be at least doubled. Upscaling of the 3D battery concept is demonstrated for both pouch and cylindrical cells, offering significant advantages in increasing energy density, while reducing production costs.

### 3:20 Refreshment Break in the Exhibit Hall with Poster Viewing

## PLENARY KEYNOTE

### 3:50 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



### 3:55 The Importance of Passive Propagation Resistance in Battery Pack Design

Troy Hayes, PhD, Director of Quality, Tesla

Over 30 years after the first Li-ion battery was produced, random thermal runaway events still occur. Despite the low probability of such incidents at the cell level, the volume of cells in EVs dictates that manufacturers prepare for these occurrences and ensure they do not create a significant risk for vehicle occupants. This talk will discuss the importance of passive propagation resistance and rigorous testing in safe battery pack design.



### 4:25 A Comprehensive Analysis of Modern Silicon-Carbon Nanocomposite Negative Electrode Materials for Li-ion Batteries

Jeff Dahn, FRSC, PhD, Professor of Physics and Atmospheric Science, NSERC/Tesla Canada Industrial Research Chair, Canada Research Chair, Dalhousie University



### 4:55 This and Next-Generation Battery Development—A UK Perspective

Martin Freer, CEO, Faraday Institution

The UK government set out a battery strategy in 2023, matched by a significant delivery program associated with the Faraday Battery Challenge, including the Faraday Institution which coordinates the UK's battery research program. This presentation will provide an overview of the UK's battery strategy, the

development of associated research programs, and highlight future focus areas for research and innovation.

### 5:25 Reception in the Exhibit Hall with Poster Viewing

### 6:30 Close of Day

## WEDNESDAY, MARCH 19

### 6:50 am Registration Open

### 7:00 Coffee Talk: Interactive Roundtable Discussions with Coffee & Pastries

Roundtable discussions are informal, moderated discussions with brainstorming and interactive problem-solving, allowing participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

#### TABLE 1: Battery Raw Materials Supply Chain

Moderator: Robert Privette, Manager, Business Development, Rechargeable Battery Materials North America, Umicore USA, Inc.

#### TABLE 2: Li-ion NMC Fast Charging New Cells for E-Mobility

Moderator: Shmuel De-Leon, CEO, Shmuel De-Leon Energy Ltd.

#### TABLE 3: Electrolyte Developments: New Components and Approaches

Moderator: Sam Jaffe, Vice President, Battery Solutions, E Source

#### TABLE 4: Battery Pack System Cost and Safety – Will Future xEV Battery Packs Increase in Complexity or Simplify and How Will Cost and Safety Be Impacted?

Moderator: Kevin Konecky, Battery and Energy Storage Systems Consultant, Total Battery Consulting

#### TABLE 5: Innovations in Recycling Battery Materials & Second Life

Moderator: Steven Sloop, President, OnTo Technology LLC

#### TABLE 6: Opportunities and Barriers to Fast Charge in Automotive and Other Applications

Moderator: Brian Barnett, PhD, President, Battery Perspectives

#### TABLE 7: Provisional Patents to Due Diligence

Moderator: Grant Ehrlich, PhD, Member, Intellectual Property & Technology, Stites & Harbison PLLC

#### TABLE 8: Understanding the Pressure Effects on Li Metal Batteries

Moderator: Bin Li, Senior Scientist & Joint Professor, Electrification, Oak Ridge National Laboratory

#### TABLE 9: Challenges and Opportunities in the Distribution of Relaxation Times Analysis

Moderator: Tom Ruether, Lecturer & Chair, Electrical Energy Systems, University of Bayreuth

#### TABLE 10: How Will Emerging Technologies and Paradigms Impact the Future of Electrified Transportation?

Moderator: Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory

#### TABLE 11: Battery Testing & Aging

Moderator: Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH

#### TABLE 12: Thermal Runaway

Moderator: Lin Liu, PhD, Professor, Mechanical Engineering, University of Kansas

#### TABLE 13: Consumer-Driven Trends in Battery Development for Personal Electronics

Moderator: John Wozniak, PhD, President, ESP Consulting

#### TABLE 14: Battery Electrolytes: Materials, Developments and Manufacturing

Moderator: Carl Thoemmes, Senior Manager, Orbia Fluor & Energy Materials



## WHERE CHARGING R&D MEETS INFRASTRUCTURE EXPANSION

2:45 Close of Conference

### 7:55 Chairperson's Remarks

*Shazan Siddiqi, Senior Technology Analyst, IDTechEx*

### 8:00 Presentation to be Announced



### 8:30 PANEL DISCUSSION: Where Fast Charging R&D and Infrastructure Expansion Converge

*Moderator: Sarah King, Policy Principal, Advanced Energy United*

Global EV adoption will require faster reliable charging and the significant expansion of public charging infrastructure. Hear from our experts as they aim to facilitate this transition through highlighting recent technological advancements in fast charging and exploring the key challenges and opportunities in scaling EV charging infrastructure.

*Panelists:*

*Kaylan Mills, Assistant Manager, Charging Network Development, General Motors*

### 9:30 Sponsored Presentation (Opportunity Available)

### 10:15 Coffee Break in the Exhibit Hall with Poster Viewing

## CHARGING SEAMLESSLY AND SECURELY

### 11:00 The Future of Fast Charging: A User's Wishlist

*Antony Martin, Lead Product Manager - Charging, Lucid Motors*

Many fast charging stations lack the basic amenities that ICE drivers can expect from even the barest of gas stations. This presentation outlines the improvements that must be made to the EV charging customer's experience to not only make EV adoption more palatable, but the more desirable option.

### 11:30 ChargeX Consortium: Latest Efforts in Addressing Charging Reliability and User Experience

*Benny Varghese, PhD, Research Engineer, Energy Storage & Advanced Transportation, Idaho National Laboratory*

The presentation will provide an overview of the ChargeX multi-lab industry consortium and its efforts to address public EV charging reliability over the past year. The talk will also discuss the various aspects of user experience during the charging process and how they factor into EV range and charging anxiety.

### 12:00 pm Understanding the EVSE Ecosystem: Strategic Initiatives and Guidance for Advancing Secure Fast Charging

*Sabrina Rodriguez, Research Engineer, Southwest Research Institute (SwRI)*

As electric vehicle (EV) charging infrastructure expands, so does the risk of cyberattacks. This presentation addresses the role of cybersecurity in EV charging infrastructure, highlighting high-profile cyberattacks, as well as cybersecurity best practices and guidance solutions. This presentation focuses on known vulnerabilities and exploits seen in EV charging infrastructure, as well as discusses Southwest Research Institute's (SwRI) applied research conducted on EV chargers (L2 and Direct Current Fast Charging (DCFC)).

### 12:30 Sponsored Presentation (Opportunity Available)

### 1:00 Networking Luncheon

### 2:15 Dessert Break in the Exhibit Hall with Poster Viewing



**WEDNESDAY, MARCH 19****6:50 am Registration Open****1:00 pm Networking Luncheon****2:15 Dessert Break in the Exhibit Hall with Poster Viewing****MATERIALS DESIGN****2:45 Chairperson's Remarks***Chen Ling, PhD, Principal Scientist, Toyota Research Institute of North America***2:50 Air Power: Lithium-ion Batteries***Lane Crofton, R&D Research Engineer, SAFT*

From F35 to F1: an overview of Saft Power Capability. Saft has established a market-leading position in providing batteries with very-high power capability. Recent efforts have led to an improvement in various dimensions of Saft's very-high power-capable products, making them even more well-suited for the applications in which they are used. A summary of the work undertaken and the performance advantages that have resulted is presented.

**3:20 Computation Design for Materials***Chen Ling, PhD, Principal Scientist, Toyota Research Institute of North America*

Lethargic oxygen evolution reaction (OER) hinders proton exchange membrane water electrolyzer adoption for green hydrogen production. While iridium- and ruthenium-based catalysts are prevalent, this study proposes a high-throughput screening approach, predicting 61 potential acid OER candidates from 6912 pyrochlore compounds, including promising p-block metal dopants. These findings highlight pyrochlore compounds as versatile materials for various applications.

**3:50 Presentation to be Announced****4:20 Refreshment Break in the Exhibit Hall with Poster Viewing****BATTERY SYSTEMS AND TESTING****5:00 Lithium Battery Packs and Battery Management Systems for Racing Applications***Derek Barger, Chief of Electronics, Engineering, Droni Aerospace*

We will examine custom battery packs engineered for racing vehicles and explore how these innovations are being adapted for use in the aerospace industry, particularly in electric vehicle vertical takeoff and landing (eVTOL) aircraft. This discussion will cover their implications for safety, battery pack design, and the circular battery pack recycling system.

**5:30 Fast Track to Superior Automotive Batteries: Virtual System Validation and AI-Driven Testing***Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH*

The proposal highlights the use of advanced AI and virtual testing methods to enhance battery performance and quality for automotive applications in much shorter time. By integrating state-of-the-art simulation tools and virtualization solutions, this approach allows for rapid, cost-effective development and optimization of battery systems. Utilizing predictive modeling and iterative design optimization, engineers can explore diverse scenarios, accelerating the development process and significantly improving quality and cycle-life of Li-ion batteries.

**6:00 Big Data for the Diagnosis and Prognosis of Deployed Battery Systems***Matthieu Dubarry, PhD, Assistant Researcher, Battery Testing & Evaluation & Modeling, University of Hawaii*

The diagnosis and prognosis of deployed batteries is complex because cells might never experience controlled conditions during operation. This work presents a new methodology for diagnosis that used real observed solar irradiance, modeled clear sky irradiance, a load usage model, and synthetically-generated battery data from a battery digital twin to diagnose the degradation of commercial Li-ion batteries connected to photovoltaic systems.

**6:30 Close of Day****THURSDAY, MARCH 20****8:00 am Registration and Morning Coffee****TEMPERATURE CONTROL****8:25 Chairperson's Remarks***Gerald Sammer, PhD, Principal Business Development Manager, AVL List GmbH***8:30 Presentation to be Announced****9:00 Controlling the Temperature Build-Up in Electrode-Sealed Coin-Shaped Batteries via Designing Central Heat Dissipator***Stanislav I. Stoliarov, PhD, Professor, Fire Protection Engineering, University of Maryland*

This talk explores innovative strategies for managing temperature build-up in electrode-sealed coin-shaped batteries. By designing an efficient central heat dissipator, we enhance thermal regulation, improving battery performance and lifespan. Attendees will learn about the impact of thermal management on energy storage systems and the potential for increased safety and efficiency.

**9:00 Battery Booth Crawl with Bagels in the Exhibit Hall with Last Chance for Poster Viewing****AI BATTERY MANAGEMENT SYSTEMS****9:30 Accelerating the battery design process: A physics-based modeling approach.***Johan Sundqvist, VP Sales, Sales, COMSOL Inc*

Designing high-performance, durable, and safe batteries requires a detailed understanding of battery technology and the underlying physical processes. The physics-based modeling approach in COMSOL helps designers to create accurate simulations of batteries, thus reducing the need for time-consuming and expensive experiments. The COMSOL software provides modeling solutions of batteries ranging from simulating micro-structures within the battery's porous electrode to the battery pack scale. In this presentation, we will explore various aspects of electrochemical modeling for battery cells, upscaling to system-level modeling and incorporating thermal management solutions for battery packs.





### 9:45 Pulsetrain: The New Era of AI-Driven and Fully Integrated Battery Management Systems

PULSETRAIN

Niclas Lehnert, Chief Operations Officer, PULSETRAIN GmbH

Pioneering revolutionary battery management system technology to address today's challenges within electromobility.

### 10:00 Attendee Transition to Booth Crawl in Exhibit Hall

## PREDICTING BATTERY DEGRADATION

### 10:45 A Method for Estimating the Useful Lifetime of Lithium-ion Battery

Cher-Ming Tan, PhD, Director, Center for Reliability Sciences & Technologies, Chang Gung University

Current method of useful life is based on the SoH monitoring of LiB and perform various methods to estimate from the trend of SoH degradation, and usually these LiB cells are already connected. This talk presents a method where the estimation is done on the first charge-discharge cycle of LiB cell, allowing for good selection of cells for pack building. This method is verified experimentally.

### 11:15 Predicting Rapid Degradation Onset in Lithium-ion Batteries during Real-Time Operation Using Machine Learning

Vikas Tomar, PhD, Faculty Lead, Innovation and Commercialization, School of Aeronautics and Astronautics, Purdue

This talk presents low data machine learning models for capacity degradation trajectory and EOL of commercial lithium-ion batteries (LiBs) using the data from the initial historical cycles, employing a recently developed machine learning approach based on a capacity degradation network (CD-Net). Additionally, the machine learning models are employed to predict the knee point in the degradation curve showing applicability to accident scenario. Finally, data is shown in real world operations.

### 11:45 Presentation to be Announced by Individual Consultant

### 12:00 pm Can We Trust AI for Battery Design and Testing?

MONOLITH

Richard Ahlfeld, CEO, Monolith AI

AI is transforming industries, offering powerful new tools but also raising debates around regulation and trust. In engineering, AI can streamline processes, enhance innovation, and reduce costs—but is it always appropriate?

In this talk, Richard Ahlfeld explores how AI and machine learning can drive faster time-to-market, improved design, and cost savings, with a focus on battery technology. Through practical examples, he'll demonstrate AI's impact on optimising battery performance, energy storage, and predictive maintenance, and discuss future opportunities and challenges for AI in engineering.

### 12:15 Enjoy Lunch on Your Own

## CONTROLS & MODELLING

### 1:10 Chairperson's Remarks

Gregory J. Offer, PhD, Professor in Electrochemical Engineering, Imperial College London

### 1:15 Model-Based Control and Machine Learning for Lithium-ion and Lithium-Sulfur Batteries

Hosam K. Fathy, PhD, Mechanical Engineering, University of Maryland College Park

This talk will provide a high-level exploration of some of the key challenges and opportunities in the model-based control of both lithium-ion and lithium-sulfur batteries, including both solid and liquid electrolyte Li-S batteries. Much of the talk will focus on emerging opportunities for test trajectory optimization and machine learning for both battery types, with a focus on Li-S batteries.

### 1:45 Estimating Parameters of Physics-Based Model of Lithium-Metal Battery Cells Using EIS

Gregory L. Plett, PhD, Professor, Electrical & Computer Engineering, University of Colorado, Colorado Springs

Lithium-metal batteries hold promise for heavy-duty transportation due to their high energy density, but before they can be adopted, battery-management systems (BMS) must be developed to monitor and control their operation. This talk introduces a method to parameterize a physics-based model of these cells for BMS application that uses simple tests performed on electrochemical-impedance-spectroscopy (EIS) equipment.

### 2:15 A Comparative Review of Simplified Battery Models Used for Advanced Controls

Scott Trimboli, PhD, Professor, Electrical & Computer Engineering, University of Colorado, Colorado Springs

State-of-the-art BMS rely on accurate battery models and specialized algorithms to obtain useful estimates of the battery state in order to ensure proper performance and safe operation. Most practical models are simplifications, and thus must trade off high accuracy for computational efficiency. This talk examines the implications of using various simplified models in the performance of key BMS tasks.

### 2:45 Understanding, Modeling, Validating, and Predicting Lithium-ion Battery Degradation

Gregory J. Offer, PhD, Professor in Electrochemical Engineering, Imperial College London

This presentation covers understanding lithium-ion battery degradation, how to model it, and how close those models are getting to usefully predict lifetime. We will describe our efforts to model lithium plating, SEI layer growth, positive electrode (cathode) decomposition, unequal degradation in silicon carbon composite electrodes, particle cracking, electrolyte consumption and cell dry-out, and how multiple degradation mechanisms are coupled with each other and contribute towards accelerated degradation (the knee point/cliff-edge/etc).

### 3:15 Transition to Closing Plenary Panel

## CLOSING PLENARY PANEL DISCUSSION

### 3:30 CLOSING PLENARY PANEL DISCUSSION: Post-Election Implications for the U.S. Battery Landscape



Moderator: Craig Rigby, Vice President, Technology, Clarios

### 4:30 Close of Conference

# BATTERY

## VENTURE, INNOVATION & PARTNERING

March 18-19, 2025

Loews Royal Pacific Resort  
Orlando, FL

## Financing Innovation & Commercialization of Emerging Technologies

**The Battery Venture, Innovation & Partnering conference will be held, for the second time, in conjunction with the International Battery Seminar & Exhibit, at the same location.**

In recent years, it has become increasingly difficult for battery start-ups to raise cash and find alternative sources of capital, a stark change from just a few years ago. The trend toward LFP and lower cost batteries coming out of China, the slowdown of the EV market, and political uncertainty all add to the challenges in the financial markets. It's never been more critical to bring together leading battery innovators—CEOs/founders, early and late-stage investors, with corporate executives from both the battery and the automotive side, to discuss what the future of financing and innovation looks like for batteries, and what companies need to do to survive and thrive, particularly in the US.

### Panel Themes:

- Early-Stage Investor Panel
- Beyond Late-Stage Investing in Batteries
- Late-Stage Investment & Scaling to Manufacturing
- How to Build a Domestic Battery Supply Chain in US
- Li-ion and Na-ion Technology and the Growth and Demand for ESS
- Battery Applications for ESS
- EV Market Review—What Is the Impact on the Battery Market?
- Emerging Technologies & Continuing to Invest in Innovation

### Advisory Board for the Battery Venture, Innovation & Partnering Conference:



**Anil Achyuta**  
Managing Director,  
TDK Ventures Inc.



**Kojo Ako-Asare**  
Managing Director,  
Decarbonization  
Partners | a  
BlackRock &  
Temasek JV



**Chris Claxton**  
Principal, Volta  
Energy  
Technologies



**Cameron Dales**  
Co-Founder, Peak  
Energy



**Sam Jaffe**  
Managing Director,  
Decarbonization  
Partners | a  
BlackRock &  
Temasek JV



**Dong-Su Kim**  
CEO, LG Technology  
Ventures



**Hansol Kim**  
Managing Partner,  
Bricks Capital  
Management



**Emmanuel  
Lagarrigue**  
Partner & Global  
Co-Head of Climate,  
Kohlberg Kravis  
Roberts & Co.



**Annie Liu**  
Chief Commercial  
& Strategy Officer,  
Mangrove Lithium



**Kunal Sinha**  
Global Head,  
Recycling, Glencore



**Kyle Teamey**  
Managing Partner,  
Planetary Health,  
RA Capital  
Management



**Danijel Visevic**  
General Partner &  
Co-Founder, World  
Fund



**Scott Walbrun**  
Principal, BMW i  
Ventures



**Michal Wolkin**  
Former Director, GM  
Ventures, Battery &  
Electrification

[InternationalBatterySeminar.com/Investor](https://InternationalBatterySeminar.com/Investor)

# HOTEL & TRAVEL INFORMATION

## Conference Venue & Host Hotel:

Loews Royal Pacific Resort  
6300 Hollywood Way  
Orlando, FL 32819 USA  
Discounted Room Rate: \$295 s/d  
Discounted Room Rate Cut-Off: February 4, 2025

## Additional Hotels:

Loews Sapphire Falls Resort  
6601 Adventure Way  
Orlando, FL 32819 USA  
Discounted Room Rate: \$259 s/d  
Discounted Room Rate Cut-Off: February 4, 2025

## Top Reasons to Stay at a Universal Orlando Property

- No Commute! Conference taking place at the same location.
- Located on the grounds of Universal Orlando, and all guests receive exclusive theme-park benefits.
- Waterways, roads and walking paths connect this Premier resort hotel to Universal Studios Florida™, Universal's Islands of Adventure™ and Universal CityWalk™. Guests of Premier and Preferred hotels can get around easily with complimentary water taxis and shuttle services. Universal's Volcano Bay™ is accessible only by complimentary shuttle.
- Enjoy the themed resort with plenty of sun, sand, and palm trees!
- Variety of on-site restaurants and lounges.

For more information on additional hotels and booking your discounted room, visit the [Hotel & Travel page](#)



## Student Fellowships Now Available



Full-time graduate students including Masters, PhD candidates and post-docs presenting a poster can attend the main seminar for \$299. Please see the website for details.

## CONFERENCE PARTNERS

Official Media Partner:



Media Partners:



# SPONSORSHIP & EXHIBIT OPPORTUNITIES



CET offers comprehensive sponsorship packages which include presentation opportunities, exhibit space, branding and networking with specific prospects. Sponsorships allow you to achieve objectives before, during, and long after the event. Any sponsorship can be customized to meet your company's needs and budget.



FOR SPONSORSHIP & EXHIBIT INFORMATION, PLEASE CONTACT:



**COMPANIES A-K**  
**Sherry Johnson**  
 Lead Business Development Manager  
 781-972-1359  
 sjohnson@cambridgeenergetech.com



**COMPANIES L-Z**  
**Rod Eymael**  
 Sr Business Development Manager  
 781-247-6286  
 reymael@cambridgeenergetech.com

## 2024 Sample Attendee List

- |   |  |  |  |  |   |  |  |   |   |
|---|--|--|--|--|---|--|--|---|---|
| <br>3M Purification, Sr Tech Lead   | <br>Amazon, Sr Battery Engineer, Kulper                                  | <br>Apple Inc, Dir Battery Technology  | <br>Bank of America, Sr VP & Sr Relationship Mgr, AutoTech               | <br>BenQ Materials Corp, Deputy Dir, Advanced Battery Materials    | <br>BMW Grp, Sr Battery Technology Engineer, Battery Engineering                  | <br>Boeing, Industrial Engineer, Boeing Cabot Corp, Scientist, Battery Materials       | <br>Corning Inc, Battery Technology Mgr, Environmental Technologies<br>Daimler Truck N.America, Battery Materials Engineer | <br>-Powertrain Engineering-<br>Dow Chemical Co, Assoc Research Scientist, Engineered Materials | <br>Dyson Ltd, Principal Engineer, Energy Storage Dev   |
| <br>ExxonMobil, Sr Research Engineer  | <br>FDA, Engineer, ORA   | <br>Federal Aviation Administration, Engineer, Ofc of Hazardous Materials Safety | <br>Ford Motor Co, Battery Research Engineer, Energy Storage Research    | <br>Garmin Intl Inc, Advanced Battery Engineer                     | <br>General Motors Co, Sr Process Engineer, Electrochemical, Cell Mfg Engineering | <br>Google, Sr Strategic Sourcing Mgr, Supply Chain Technical Infrastructure           | <br>Henkel Corp, VP Automotive Electronics & eMobility NAMEX   | <br>Honda Automobile R&D Ctr, Chief Engineer, Energy Storage Systems                            | <br>Honeywell Intl Inc, Dir Regulations, Electrification & Sensing & Safety Technologies<br>Hyundai Mobis Tech Ctr, |
| <br>Product Planning Mgr, Product Electrification Planning & Strategy<br>IBM Almaden Research | <br>Ctr, Staff Scientist, Research                                       | <br>Intel Corp, Sr Staff Engineer, Battery                                       | <br>Kimberly Clark Co, Dir   | <br>LG Energy Solution, Engineer, BMS Dev                          | <br>Massachusetts Institute of Technology, Postdoc, Mechanical Engineering        | <br>Medtronic Inc, Sr Principal Scientist, Battery & Electrochemical Systems           | <br>Mercedes Benz R&D N America Inc, Principal Systems Engineer  | <br>Meta, Battery System Engineer, Battery Engineering  | <br>Microsoft Corp, Battery Insight Dir, Battery Dev  |
| <br>Milwaukee Tool, Sr Electrical Engineer, Battery & Charger Dev                             | <br>Mitsubishi Motors R&D of America Inc, Mgr, EV Powertrain Engineering | <br>Motorola Solutions Inc, Cell Technologist, PSRC                              | <br>NASA Johnson Space Ctr, Asst Dir of Energy Conversion, Power Systems | <br>Natl Renewable Energy Lab, Research Scientist, Nanoscience Ctr | <br>Nissan Tech Ctr N America Inc, Sr Mgr, Battery Research                       | <br>Pacific Northwest Natl Lab, Sr Scientist, Battery Chemistry & Electrochemistry Grp | <br>Panasonic Corp Energy R&D Ctr, Dir   | <br>Philips Healthcare, Mgr Global Supplier Account, Procurement                                | <br>Phillips 66, Mgr of Special Carbons, Bus Dev  |
| <br>Rolls Royce Solutions GmbH, Sr Mgr Engineering, Sustainable Solutions                     | <br>Saab AB, System Engineer, Electrical Systems Submarine               | <br>Samsung SDI, Dir of Research, R&D America                                    | <br>SpaceX, Sr Battery Engineer, Vehicle Engineering                     | <br>Tanaka Chemical Corp, Sr Staff, R&D                            | <br>Tesla Motors, EHS Mgr Cell & Active Materials, Cell Mfg & Active Materials    | <br>Toyota Motor Engineering & Mfg North America, Technician, Battery PE               | <br>US Dept of Energy, Battery Technology Mgr, Vehicle Technologies  | <br>Valvoline, EV Scientist, Tech   | <br>Volkswagen Grp of America, Electrical Engineer  |
| <br>Volkswagen Grp N America, Sr Supplier Quality   | <br>Engineer, Battery Electric Vehicle                                   |  |  |  |   |  |  |   |   |

# 2025 Sponsors & Exhibitors (as of 10/22/24)

24M Technologies Inc	CarbonX B V	GDI	MTI Corp	TotalEnergies
3M Corp RESEARCH LAB	Carl Zeiss Microscopy LLC	Glimpse	Muhlbauer Inc	Trinseo LLC
6K Inc	CEM Corp	Granutools	Naeco LLC	Umicore
Across Intl	CHASM Advanced Materials	HAP Marketing Svcs Inc	NanoGraf Corp	Uncountable
Action Wood 360	Chroma ATE Inc	Harper Intl Corp	NETZSCH Premier Technologies LLC	Unico Inc
Admiral Instruments LLC	Cincinnati Automation	Hatch Ltd	Neuman & Esser Grp USA	United Mineral & Chemical Corp
Advanced Test Equipment Rentals	Cirba Solutions	Henkel Corp	Neware Technology Ltd	USABC
AEM Components Inc	Clean Earth Systems	Hioki USA	next Machinery Grp Inc	Vishay Intertechnology Inc
Agilent Technologies Inc	Coatema Coating Machinery GmbH	Hitachi High Tech	Nikon Metrology Inc	Voltaiq Inc
Airgas	COMSOL Inc	Honeywell	NOVONIX	WL Gore & Associates Inc
Airtho	Conamix Inc	Honeywell Intl Inc	Ongoal Technology Co Ltd	Zeta Energy
Altmin Pvt Ltd	Conamix Inc	Hoosun Tech China	OnTo Technology LLC	
AMADA WELD TECH INC	Coreshell Technologies	Hydro Precision Tubing N America	Pacific Industrial Dev Corp	
Americase	Coulometrics LLC	IAV Automotive Engineering Inc	Paraclete Energy Inc	
AMETEK	CUSTOMCELLS	IDTechEx Inc	PEC North America	
AMETEK Land	Delfort	IKA Works Inc	Phoenix Controls Corp	
AMETEK Specialty Metal Products	Delta ModTech	Individual Consultant	Precision Roll Grinders Inc	
Amionx	Dietrich Engineering Consultants SA	Initial Energy Science & Technology Co Ltd IEST	Princeton NuEnergy	
Amprion Inc	Digatron Power Electronics Inc	Innovative Machine Corp	PULSETRAIN GmbH	
Anguil Environmental Systems Inc	DST America	Interco A Metalronics Recycler	Rept Battero Energy Co Ltd	
Anton Paar USA Inc	E One Moli Energy Canada Ltd	Iontra Inc	Rexgear	
Arbin Instruments	EA Elektro Automatik	Ionworks Technologies Inc	Ridgetop Grp Inc	
Armor Battery Films	Economic Dev Partnership of North Carolina EDPNC	JBC Technologies	Rigaku Americas Corp	
ASAHI KASEI ELECTRONICS	ECS Electrochemical Society	JEOL USA Inc	Robatel Inc	
Ascend Elements	Eirich Machines Inc	Kanematsu Corp	Rochester Institute of Technology	
Associated Environmental Systems	EL CELL GmbH	Kawata USA Inc	Saltworks	
Ateios	Electrochemical Safety Research Inst	Keysight Technologies	Scantech Americas Inc	
Aumund Corp	Element Materials Technology	Koomax Electronics Ltd	Schrodinger Inc	
Avery Dennison	Elkem ASA	Koura	Scientific Climate Systems	
AVL Test Systems Inc	Email Address Only EnerTech	Laminar Co Ltd	Seal Methods Inc	
B&P Littleford	Engineered Materials Solutions	Liminal Insights	SierraThermal	
Beijing Lihang Intl Exhibition Co Ltd	ENTEK	Linde plc	Sinexcel Electric Co Ltd	
Belmont Scientific Inc	Environmental Specialties LLC	Lumafield	SIONIC Energy	
Bio Logic USA	Erhardt+Leimer Inc	Lyten Inc	Soteria Battery Innovation Grp	
Bitrode Corp	EVE Energy Co Ltd	M Braun Inc	SPECTRO Analytical Instruments	
Brenntag N America Inc	Evonik	MACCOR Inc	Staeubli Co	
Brueckner Grp USA	EWI	Malvern Instruments	Stress Engineering Svcs Inc	
Bruker AXS Inc	Excel Engineering DTC	Manz USA Inc	Sugino Corp	
Bry Air Inc	Exponent	Maxell Corp of America	Surface Measurement Systems	
BS&B Safety Systems LLC	Fike Corp	Merge Chemistry	TA Instruments	
BST North America Inc	Forge Nano	Metrohm USA	TDK Lambda Americas Inc	
BYK Gardner	Fralock	Micantis Inc	Ten Nine Technologies LLC	
CAEN Technologies Inc		Micromeritics Instrument Corp	Ten-E Packaging Svcs Inc	
CAMX Power		MoistTech Corp	Thermal Hazard Technology	