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aaabc

advanced automotive battery conference

DECEMBER 9 - 12, 2024

LAS VEGAS, NV

Mandalay Bay Resort & Casino

2024 Conference Programs

Pre-Conference Tutorials: MONDAY, DECEMBER 9, 2024

TUESDAY AND WEDNESDAY, DECEMBER 10 AND 11



CHEMISTRY



ENGINEERING



HEAVY DUTY



BATTERY
MANUFACTURING



RECYCLING



CHARGING &
INFRASTRUCTURE

WEDNESDAY AND THURSDAY, DECEMBER 11 AND 12



XEV BATTERY
TECHNOLOGY



RAW
MATERIALS

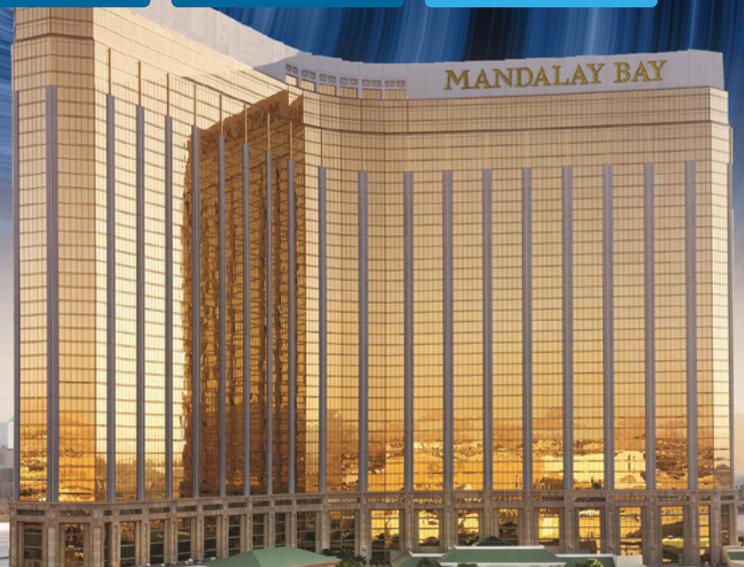


BATTERY
INTELLIGENCE



MANUFACTURING
PRODUCTION

A CO-LOCATED EVENT
HYDROGEN
& FUEL CELLS



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December 9, 2024 | Las Vegas, NV

Tutorials*

MONDAY, DECEMBER 9, 2024 8:30 - 10:00 AM

TUT1: Materials Selection & Design

Instructor:

Yi Cui, PhD, Professor, Department of Materials Science & Engineering, and Energy Science & Engineering, Stanford University

TUT2: Na-ion Batteries: Materials and State of the Art (instructor will be presenting virtually)

Instructor:

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

TUT3: Battery Intelligence

Instructor:

Kevin Wood, PhD, Director, Battery Consulting & Services, Voltaiq, Inc.

TUT4: Battery Management Systems & Charging

Instructors:

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

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

MONDAY, DECEMBER 9, 2024 10:30 AM - 12:00 PM

TUT5: Cell & Pack Design

Instructor:

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

TUT6: Battery Sustainability

Instructors:

Haajarah Ahmed, Manager, Social Performance, ICMM

Beatrice Browning, Senior Recycling Analyst, Benchmark Mineral Intelligence

Stefan Debruyne, Director of External Affairs, SQM International

Emily Greenspan, Associate Director, Oxfam America

TUT7: Battery Safety & Abuse Tolerance Validation

Instructor:

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

TUT8: Economics of Battery Material Development & Manufacturing

Instructor:

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

MONDAY, DECEMBER 9, 2024 1:00 - 2:30 PM

TUT9: Solid-State Batteries

Instructor:

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

TUT10: Sodium Sulfate Management: An Emerging Challenge for North American pCAM Producers

Instructors:

Kenji Naoi, Executive Director & Co-Founder, Positive Materials

Tomasz Poznar, PhD, Vice President, Strategy, Ascend Elements

David Rayworth, Vice President, Environment, Positive Materials

Marco Romero, Founder & CEO, Positive Materials

Bruce Thomas-Benke, Strategy & Growth Director, Worley Consulting

Karel Vratny, Thermal Domain and Battery Materials Sales, Veolia Water Technologies & Solutions

TUT11: Li-ion Cell Design and Manufacturing

Instructor:

James Kaschmitter, CEO, SpectraPower LLC

TUT12: In-Depth Analysis of the Chinese xEV Battery Market

Instructor:

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

MONDAY, DECEMBER 9, 2024 3:00 - 4:30 PM

TUT13: Improving the Energy Density of Batteries with Silicon-Based Anodes

Instructor:

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

TUT14: Li-ion Battery Safety & Thermal Runaway

Instructor:

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

TUT15: Battery Recycling

Instructor:

Steve Sloop, PhD, President, OnTo Technology LLC

TUT16: The Rechargeable Battery Market Value Chain & Main Trends: 2024-2034

Instructor:

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

SPONSORSHIP & EXHIBIT OPPORTUNITIES

AABC offers comprehensive packages that can be customized to your budget and objectives.

Sponsorship allows you to achieve your goals before, during, and long after the event. Packages may include presentations, exhibit space and branding, as well as the use of delegate lists. Signing on early will maximize your exposure to qualified decision-makers and drive traffic to your website in the coming months.

Podium Presentations – Available within Main Agenda!

Showcase your solutions to a guaranteed, targeted audience through a 20-minute presentation during a specific program, breakfast, lunch, or a pre-conference workshop. Package includes exhibit space, on-site branding, and access to cooperative marketing efforts by AABC. Lunches are delivered to attendees who are already seated in the main session room. Presentations will sell out quickly! Sign on early to secure your talk.

One-to-One Meetings

Select your top prospects from the pre-conference registration list. AABC will reach out to your prospects and arrange the meeting for you. A minimum number of meetings will be guaranteed, depending on your marketing objectives and needs. A very limited number of these packages will be sold.

Invitation-Only VIP Dinner/Hospitality Suite

Select specific delegates from the pre-registration list to attend a private function at an upscale restaurant or a reception at the hotel. From extending the invitations, to venue suggestions, AABC will deliver your prospects and help you make the most of this invaluable opportunity.

Exhibit

Exhibitors will enjoy facilitated networking opportunities with qualified delegates, making it the perfect platform to launch a new product, collect feedback, and generate new leads. Exhibit space sells out quickly, so reserve yours today!

Additional branding and promotional opportunities are available, including:

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- Literature Distribution (Tote Bag Insert or Chair Drop)
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- Padfolios and More...

For more information, please contact:



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Battery Chemistries for Automotive Applications

Recent Advancements in Battery Chemistries

MONDAY, DECEMBER 9

7:00 am Registration Open until 4:30 pm

8:30 - 4:30 pm Conference Tutorials

Choose from 16 tutorials to maximize your networking and educational opportunities.

TUESDAY, DECEMBER 10

7:30 am Registration and Morning Coffee

BATTERY APPLICATIONS

8:30 Organizer's Remarks

Victoria Mosolgo, Conference Producer, Cambridge EnerTech

8:35 Chairperson's Remarks

Martin Winter, PhD, Director & Professor, Electrochemical Energy Technology, University of Muenster

8:40 Status of Batteries for Aviation Applications

Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

As light duty passenger cars become more ubiquitous, the challenge for battery technology has evolved with focus shifting to supply chain challenges and the need for better batteries for hard-to-decarbonize sectors such as aviation. This talk will summarize the status of battery technology for these emerging markets and deep dive the approaches that are being pursued.

9:00 High Energy Li-ion Batteries

Chunsheng Wang, PhD, Professor & RF & FR Wright Distinguished Chair, Chemical & Biomolecular Engineering, University of Maryland College Park

Lithium halide-graphite conversion-intercalation cathodes offer a high energy density at a low cost for rechargeable batteries. The high reversibility of the lithium halide-graphite cathodes can be achieved by forming liquefied interhalogen compounds using different electronegativity. A reversible LiCl conversion-intercalation chemistry in organic electrolytes is demonstrated by utilizing redox coupling with less electronegative I/Br to form liquid ICl/BrCl. This principle can even make CFx reversible providing extremely high energy density.

9:20 Advanced Batteries to Defossilize Transportation

Mohammad Asadi, PhD, Assistant Professor, Illinois Institute of Technology

Recent scientific advancements and technological innovations have driven the rapid development of sustainable energy technologies. However, a real activity improvement for clean energy technologies requires advanced materials with unique properties that are currently a bottleneck. In this presentation, I will introduce our recently developed air-battery technologies, which offer a cost-effective and energy-efficient solution with superior energy density. These advancements open a new opportunity to defossilize the US transportation sectors.

9:40 MODERATED Q&A: Session Wrap-Up

Moderator: Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

Panelists:

Chunsheng Wang, PhD, Professor & RF & FR Wright Distinguished Chair, Chemical & Biomolecular Engineering, University of Maryland College Park

Mohammad Asadi, PhD, Assistant Professor, Illinois Institute of Technology

10:00 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

LITHIUM SULFUR

10:40 Recent Developments for Solid- and Semi-Solid-State Lithium-Sulfur Prototype Cells

Susanne Doerfler, PhD, Group and Project Manager, Fraunhofer

This talk summarizes recent advancements in solid- and semi-solid-state lithium-sulfur prototype cells, highlighting innovations in electrolyte design, electrode materials, and performance improvements. It underscores key findings that enhance the viability and efficiency of next-generation energy storage technologies.

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11:00 Solving "Shuttle" with Immobilized Chalcogen Materials—Enabling High-Energy Sulfur and Selenium Cathodes

Rob Murano, Senior Director of Product Development & Commercialization, Coherent

This talk explores advanced solutions to the shuttle effect in lithium-sulfur and lithium-selenium batteries. By chemically immobilizing chalcogen materials, we enhance cathode stability and performance. Our approach promises to significantly increase the cycle life of these batteries, making them viable for EV applications. We will discuss the science behind our methods, key results, and implications for future battery technology advancements.

11:20 Lyten's Recent Developments of Lithium-Sulfur Batteries for Electric Vehicles



Celina Mikolajczak, Chief Battery Technology Officer, Lyten

Lyten has been developing high energy density and long-life lithium-sulfur cells for EV applications based on their proprietary 3D graphene as cathode host, novel protected Li composite anodes including 3D architectures, advanced stable electrolytes, and multi-functional separators that can block polysulfide crossover to the anode. Our recent prototype cells have exhibited specific energy comparable to current Li-ion cells (250-275 Wh/kg) and cycle life of ~300 cycles at C/3 and 100% DOD, and over 3000 cycles at 20% DOD in a LEO (Low Earth Orbit) satellite cycling. In this talk, we will describe the improvements in both performance and safety of our Li-S cells from advanced materials and cell components currently being developed.

11:40 MODERATED Q&A: Session Wrap-Up

Moderator: Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

Panelists:

Susanne Doerfler, PhD, Group and Project Manager, Fraunhofer

Rob Murano, Senior Director of Product Development & Commercialization, Coherent

Celina Mikolajczak, Chief Battery Technology Officer, Lyten

12:00 pm Roaming Networking Lunch in the Exhibit Hall



12:30 Dessert Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

SOLID STATE

1:00 Chairperson's Remarks

Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

1:05 Mechano-Electrochemical Phenomena in Ceramic Ion Conductors

Jeffrey Sakamoto, PhD, Associate Professor, Mechanical Engineering, University of Michigan

This discussion will consist of 1) mechano-electrochemical phenomena at solid interfaces, 2) manufacturing challenges related to Li metal integration, and 3) a brief overview of the new Department of Energy, Energy Frontier Research Center, MUSIC—Mechano-chemical Understanding of Solid Ion Conductors.

1:25 Making Pressure Irrelevant in Solid-State Batteries Using Elastic Composite Electrolyte Chemistry

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

Blue Current will detail the market potential, safety, and performance of fully dry silicon elastic composite solid-state cells. This includes how the company is achieving safe and low-pressure operation, required for commercial viability, that exceeds state-of-the-art lithium-ion battery cells.

1:45 Unlocking the Potential of Dry Cathodes with Solgain™

Ludovic Odoni, Head of Technology, Research & Innovation, Syensqo



Solgain™ is the technology for "dry cathode manufacturing" enabled by the latest Syensqo PVDF polymer. Solgain™ technology produces a thick, highly loaded homogenous electrode in different manufacturing processes. It supports some of the known "dry" process advantages like lowering energy consumption, reducing footprint and costs. It also improves the ease and scalability for manufacturing and improves electrode performance using all kinds of cathode active materials.

2:05 MODERATED Q&A: Session Wrap-Up

Moderator: Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

Panelists:



Battery Chemistries for Automotive Applications

Recent Advancements in Battery Chemistries

Jeffrey Sakamoto, PhD, Associate Professor, Mechanical Engineering, University of Michigan

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

Ludovic Odoni, Head of Technology, Research & Innovation, Syensqo

2:20 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

CATHODES

2:55 Chairperson's Remarks

Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

3:00 Advantages and Latest Developments of NOVONIX All-Dry, Zero-Waste Cathode Synthesis Technology



Mark McArthur, Director of R&D, R&D - Cathode, NOVONIX

Nickel-based cathodes are the most expensive component of a lithium-ion cell. Their production is complicated and generates large quantities of waste. NOVONIX has recently introduced a new patented method to synthesize NMC powders in a completely dry state. This process, called all-dry, zero-waste synthesis, produces single-crystal NMC powders showing competitive performance relative to conventionally produced NMC. In this presentation, an examination of NOVONIX high-nickel NMC will be given, highlighting performance along with potential cost and environmental advantages.

3:20 BASF Cathode Materials Driving eMobility growth through Uncertain Times



Mark Szendro, CEO, Battery Materials, BASF Corp

In this presentation at AABC US 2024, Mark Szendro, CEO of BASF-TODA Americas and Director of BASF Battery Materials North America, addresses the evolving landscape of eMobility amidst recent market challenges. The momentum for xEVs has significantly slowed in 2024, with growth rates halving due to reduced demand and delays in capital commitments from OEMs, cell manufacturers, and CAM producers in the Western hemisphere. Despite these challenges, eMobility continues to gain traction globally, and BASF remains confident in the long-term growth potential of the xEV market and highlights the importance of innovation and a customer-centric approach to foster market growth.

BASF is uniquely positioned as the only company with a truly global footprint in Cathode Active Materials (CAM), equipped with assets that cater to various volume scales, and it is currently the only mass-production CAM manufacturer in North America with 10+ years of experience.

3:40 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.

4:00 MODERATED Q&A: Session Wrap-Up

Moderator: Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

Panelists:

Mark McArthur, Director of R&D, R&D - Cathode, NOVONIX

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

Mark Szendro, CEO, Battery Materials, BASF Corp

SILICON ANODES

4:15 Bringing 100% Active Silicon Anode Batteries to the Masses

Robert Rosen, PhD, Senior Director, Strategic Materials, ENOVIX Corp

Here we discuss strategies and innovations enabling the mass production of batteries with 100% active silicon anodes. Highlighting breakthroughs in electrode architecture and manufacturing processes, it addresses challenges and opportunities for scalable deployment in energy storage systems.

4:35 Commercialization of 100% Silicon Anodes via GDI's Advanced Electrode Architecture and Industrial PECVD Equipment



Rob Anstey, CEO and Founder, GDI

Silicon has one of the highest lithium-ion storage capacities, thereby increasing energy density and charging speeds of Li-ion cells. However, the expansion of silicon and the reactivity of the resulting anodes have caused major challenges in cell manufacturing and performance. Increasing the percent of silicon has resulted in larger coulombic losses, shorter calendar life, and damage to the components of commercial cells. GDI aims to solve these challenges from the bottom-up via a 100% silicon anode architecture that leverages an existing industrial supply chain, high volume manufacturing methods, and integrates into existing cell manufacturing.

4:55 How Nano-Composite Silicon and Other Technologies will Unlock Higher Performance Lithium-ion Batteries

Gleb Yushin, PhD, CTO, Co-Founder, Sila Nanotechnologies; Professor, Georgia Institute of Technology

As we transition from fossil fuel dependency to clean, renewable-based energy, we need to quickly scale up the production of high-performance products that support our climate goals. This talk will discuss how Sila's Titan Silicon improves energy density of Li-ion cells by over 20%. This advanced material is already being used in consumer electronics and Sila is rapidly expanding production with a new facility set to power EVs by mid-2025.

5:15 Driving Innovation and Commercialization of Silicon Battery Technology for Rechargeable Batteries

Rick Costantino, PhD, Co-Founder & CTO, Group14 Technologies

We will discuss how Group14 developed its flagship silicon battery material SCC55™ with performance and scalability top of mind. Enabling up to 50% higher energy density over traditional lithium-ion batteries while unlocking fast charging from 0-80% in mere minutes in EV batteries, SCC55™ is drop-in ready and already in commercial production and delivery to battery manufacturers and OEMs.

5:35 MODERATED Q&A: Session Wrap-Up

Moderator: Venkat Srinivasan, PhD, Director, Center for Collaborative Energy Storage Science, Argonne National Laboratory

Panelists:

Rob Anstey, CEO and Founder, GDI

Robert Rosen, PhD, Senior Director, Strategic Materials, ENOVIX Corp

Gleb Yushin, PhD, CTO, Co-Founder, Sila Nanotechnologies; Professor, Georgia Institute of Technology

Rick Costantino, PhD, Co-Founder & CTO, Group14 Technologies

5:55 Networking Reception in the Exhibit Hall with Poster Viewing



7:00 Close of Day

WEDNESDAY, DECEMBER 11

7:30 am Registration and Morning Coffee

7:45 Interactive Breakout Discussions

Interactive Breakout 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: Innovations in Recycling Battery Materials & Second Life

Moderator: Steve Sloop, PhD, President, OnTo Technology LLC

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

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

TABLE 3: Silicon Anodes and Cells

Moderator: Benjamin Park, PhD, Founder & CTO, Enevate

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: Production Supply and Sustainability of a North American Supply Chain

Moderator: Rob Privette, Business Development Manager, North America, Umicore



Battery Chemistries for Automotive Applications

Recent Advancements in Battery Chemistries

TABLE 6: Battery Passport, CO2 Footprint & Lifetime Warranty – How Is the Implementation of the Battery Regulation Legislation Going?

Moderator: Cameron Chase, Director, Business Development, Systems Engineering, NXP Semiconductors

TABLE 7: Battery Testing & Aging

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

TABLE 8: Battery AI

Moderator: Weihan Li, Research Group Leader, RWTH Aachen University

TABLE 9: Battery Management Systems

Moderator: Stefan Goede, CTO, Co-Founder, Munich Electrification GmbH

TABLE 10: Lithium-Sulfur Batteries

Moderator: Rob Murano, Senior Director of Product Development & Commercialization, Coherent

TABLE 11: Solid-State Batteries

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

TABLE 12: Inactive Materials: Developments in Current Collectors, Separators and Electrolytes

Moderator: Sam Jaffe, Business Development, Addionics

TABLE 13: Battery Electrolytes: Materials, Developments and Manufacturing

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

TABLE 14: Advanced Battery Opportunities, Challenges and Co-Opetition for the United States

Moderator: Adam Carpenter, Marketing Director & Sales Manager, Enpower Greentech

CATHODES

8:25 Chairperson's Remarks

Martin Winter, PhD, Director & Professor, Electrochemical Energy Technology, University of Muenster

8:30 Additions to GEMX cathode platform: Zero-Cobalt High-Nickel, and High-Manganese Low-Cobalt



Kenan Sahin, President & Founder, CAMX Power

The globally patented GEMX cathode platform from CAMX has now wide industry availability especially with Panasonic Energy having also licensed it recently. We will present three additions to this platform: High-Nickel ZERO Cobalt; high-Manganese low-Cobalt; and high-Nickel ultra-low Cobalt (2 to 3%), all with good performance, with high Manganese having excellent cycle life.

8:50 Improving Olivine Cathode Materials through Stoichiometry and Morphology Optimization

Chirranjeevi Balaji Gopal, PhD, Co-Founder & Chief Product Officer, Product & Engineering, Mitra Chem

LMFP-based cathode materials have been heralded as the next-generation of olivine-based cathode beyond LFP. Yet there are several key technological challenges to be solved ahead of their commercial deployment. This talk will discuss the design trade-offs needed to achieve high-capacity, high-stability LMFP cathode materials, methodologies to gain a mechanistic understanding of synthesis, and electrochemical performance in cells.

9:10 DOE's Perspective on Phosphate-Based Cathodes and Future R&D Activities

Carine Steinway, Technology Development Leader, US Department of Energy

The Vehicle Technologies Office targets the development of phosphate-based cathodes. The primary objective for the office is to increase the energy density of battery cells containing phosphate-based cathodes compared to state-of-the-art Lithium Iron Phosphate (LiFePO4) cathode active material, using low- to no-critical minerals. VTO will discuss the advantages and challenges of Lithium Manganese Iron Phosphate as well as VTO R&D strategy and portfolio.

9:30 Safe, High-Energy Density Phosphate Chemistry and Cell Development

Thomas Greszler, Manager Cell Development, R&D, SAFT America

This talk outlines advancements in safe, high-energy density phosphate chemistry and cell development, focusing on novel electrode materials and electrolyte innovations to enhance battery safety and performance.

9:50 LMFP: Material Technology and Cell Performance



Vincent Huang, Senior Manager, R&D, HCM Co Ltd

In recent year, LMFP has gained significant attention due to its advantages, such as high safety, longer cycle life, and high voltage. We believe LMFP will become a key material in the lithium-ion battery industry. In this talk, we will discuss our 10

years of experience in LMFP material technology and share the latest performance data for LMFP lithium-ion cells and Li-metal cells.

10:10 MODERATED Q&A: Session Wrap-Up

Moderator: Martin Winter, PhD, Director & Professor, Electrochemical Energy Technology, University of Muenster

Panelists:

Kenan Sahin, President & Founder, CAMX Power

Chirranjeevi Balaji Gopal, PhD, Co-Founder & Chief Product Officer, Product & Engineering, Mitra Chem

Carine Steinway, Technology Development Leader, US Department of Energy

Thomas Greszler, Manager Cell Development, R&D, SAFT America

Vincent Huang, Senior Manager, R&D, HCM Co Ltd

Shih-Chieh Liao, Chief Tech Advisor, R&D, HCM Co Ltd

10:25 Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline.

Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

2:00 Close of Conference



ENGINEERING

December 10-11, 2024 | Las Vegas, NV

Battery Engineering for Automotive Applications

Building Better Batteries through Improvements in Battery Safety, Cell Engineering, and Battery Management Systems

MONDAY, DECEMBER 9

7:00 am Registration Open until 4:30 pm

8:30 - 4:30 pm Conference Tutorials

Choose from 16 tutorials to maximize your networking and educational opportunities.

TUESDAY, DECEMBER 10

7:30 am Registration and Morning Coffee

BATTERY TESTING AND AGING

8:10 Organizer's Remarks

Victoria Mosolgo, Conference Producer, Cambridge EnerTech

8:15 Chairperson's Remarks

Yatish Patel, PhD, Research Associate Mechanics of Materials, Mechanical Engineering, Imperial College, London

8:20 Updates in Lithium-Metal Battery Technology

Daniel Braithwaite, Senior Director II, Cell Engineering, QuantumScape

Today's conventional lithium-ion batteries fall short of meeting the needs of many automotive, consumer electronics, and stationary storage applications. Many believe that the unique cell design of solid-state lithium-metal batteries will help bridge this gap – particularly when it comes to electric vehicles – because the technology is designed to enable longer range, faster charging and enhanced safety compared to conventional lithium-ion batteries.

8:40 From Cells to Cars: How Cell-to-Cell Variability Impacts Everyday Vehicle Performance

Maithri Venkat, Manager—Battery Cell Lifetime and Parameterization, Lucid Motors, Inc.

Tracking cell-level statistical distributions in EV batteries is crucial for consistent performance, optimized range, and long-term reliability. This presentation will explore how variability among individual cells, driven by manufacturing tolerances, impacts pack-level prediction accuracy. The session will cover testing methods to improve range and power estimations, highlight the importance of monitoring inconsistencies, and emphasize the role of automotive testing in refining tolerances for reliable and durable EV performance.

9:00 Future Battery Requirement for Next NISSAN X-EV

Kenji Hosaka, Battery Engineering, Deputy General Manager, Nissan Japan

Nissan have announced mid-term plan "The Arc" in March 2024. We have a plan to launch 16 new electrified models by 2026. In this report, we show our battery roadmap based on our experience and analysis of x-EV models.

9:20 Accelerated Aging and Failure Analysis

Eric J. Dufek, PhD, Research Scientist & Group Lead, Energy Storage & Advanced Vehicles, Idaho National Laboratory

Fast-charging can readily lead to early cell failure and reduced performance. The ability to use cell parameters for the development of advanced charge protocols provides an opportunity to tailor both the time and energy accepted to specific needs while minimizing degradation. During this talk, advanced protocols and analysis, including the use of machine learning to identify failure modes and predict performance, will be discussed.

9:40 MODERATED Q&A: Session Wrap-Up

Moderator: Yatish Patel, PhD, Research Associate Mechanics of Materials, Mechanical Engineering, Imperial College, London

Panelists:

Daniel Braithwaite, Senior Director II, Cell Engineering, QuantumScape

Maithri Venkat, Manager—Battery Cell Lifetime and Parameterization, Lucid Motors, Inc.

Kenji Hosaka, Battery Engineering, Deputy General Manager, Nissan Japan

Eric J. Dufek, PhD, Research Scientist & Group Lead, Energy Storage & Advanced Vehicles, Idaho National Laboratory

10:00 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

SOC, SOH, AND MODELING

10:40 Sensitivity of Lithium-ion Battery SOC and SOH Estimates to Sensor Measurement Error and Latency

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

Highly accurate and confident estimates of SOC and SOH are crucial to maximizing the performance and safety of a battery. They are not directly measurable, so algorithms must estimate their values. Algorithm inputs are measurements of voltage, current, and temperature, which are characterized by precision, accuracy, and synchronicity. This talk evaluates the impact on SOC and SOH estimates based on the integrity of sensor measurements through execution of model-based simulation.

11:00 Perspectives on Employing Physics-Based Battery Modeling and Management for Electric Vehicles

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

Physics-based models (PBMs) of lithium-ion batteries, unlike empirical circuit-based models, harbor essential information that can be exploited by advanced battery management systems to push performance and lifetime close to theoretical limits. However, due mainly to their complexity, PBMs have been slow to appear in implementation. This presentation describes key obstacles to using PBMs for battery management, highlights some perspectives for overcoming these, and points the way toward future improvements.

11:20 Ahead of the Curve: Empirical End-of-Life Performance Modeling of Aerogel Thermal Barriers

aspen|aerogels

Tyler Gurian, Senior Battery Program Engineer, Aspen Aerogels

Cell barriers play a crucial role in both thermal propagation protection and the state of health (SOH) of the cells in EV modules or packs. However, engineers often lack the time for long-term testing to inform their design decisions. Accurately predicting cell pad performance throughout the lifecycle is vital for ensuring battery safety and optimal pack performance. Aspen Aerogels has integrated real-life data with our forecasting models to improve lifecycle performance assessments.

11:40 MODERATED Q&A: Session Wrap-Up

Moderator: Yatish Patel, PhD, Research Associate Mechanics of Materials, Mechanical Engineering, Imperial College, London

Panelists:

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

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

Tyler Gurian, Senior Battery Program Engineer, Aspen Aerogels

12:00 pm Roaming Networking Lunch in the Exhibit Hall



12:30 Dessert Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

TEMPERATURE EFFECTS AND FIRE SUPPRESSION

1:00 Chairperson's Remarks

Halle Cheeseman, PhD, Program Director, ARPA-E

1:05 Low Temperature Performance of New Materials

Halle Cheeseman, PhD, Program Director, ARPA-E

The talk will explore advancements in battery performance under low temperatures, focusing on challenges, solutions, and innovations to enhance cold weather reliability and efficiency.

1:25 Clean Coolants for EV Battery Packs

Michael Harenbrock, PhD, Principal Expert, Engineering Electric Mobility, MANN+HUMMEL GmbH

This presentation discusses strategies and technologies for efficiently cooling battery packs, addressing thermal management challenges to enhance performance, longevity, and safety in various applications. New requirements on coolant properties for indirect and immersion cooling of battery packs, e.g., cleanliness and electric conductivity are explained and solutions for the removal of particles, water and ions from coolants are highlighted which enable longer coolant service life.



ENGINEERING

Battery Engineering for Automotive Applications

Building Better Batteries through Improvements in Battery Safety, Cell Engineering, and Battery Management Systems

1:45 Experimental Study of Fire Suppression and Hazard Characterization in Li-ion Battery Fires

Byoungchul Kwon, PhD, Research Scientist, UL ESRI

This study aims to explore the efficacy of water and aerosol-based suppressants in suppressing lithium-ion battery fires. Experiments were conducted in a test setup representative of stationary grid energy storage application using commercial lithium-ion battery modules. Various measurements that included temperature, heat flux, particulate and gaseous emissions were conducted. Results provide insight into fire suppression strategies and critical information on potential hazards to first responders in lithium-ion battery fires.

2:05 MODERATED Q&A: Session Wrap-Up

Moderator: Halle Cheeseman, PhD, Program Director, ARPA-E

Panelists:

Michael Harenbrock, PhD, Principal Expert, Engineering Electric Mobility, MANN+HUMMEL GmbH

Byoungchul Kwon, PhD, Research Scientist, UL ESRI

2:20 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

THERMAL RUNAWAY

2:55 Chairperson's Remarks

Halle Cheeseman, PhD, Program Director, ARPA-E

3:00 Suppressing Thermal Runaway of High-Energy Lithium-ion Batteries Using Nonflammable Liquid Electrolyte

Seung-Wan Song, PhD, Professor, Chemical Engineering & Applied Chemistry, Chungnam National University

Safety hazard issue is a weakness of state-of-the-art Li-ion batteries (LIB), EVs, and ESS. Replacement of highly flammable LIB electrolyte with a nonflammable liquid electrolyte is a critical step to reduce or prevent the risk of thermal runaway (TR). The SEI (interface) stabilization technology on graphite-based anode is a must for dendrites-free LIBs. I will present that well-designed nonflammable liquid electrolyte enables TR suppression and long-cycled LIBs.

3:20 Lithium-ion Battery Degradation and Aging

Yatish Patel, PhD, Research Associate Mechanics of Materials, Mechanical Engineering, Imperial College, London

This talk delves into the degradation and aging mechanisms of lithium-ion batteries, examining key challenges such as capacity fade and impedance growth. It explores mitigation strategies including advanced materials, innovative designs, and operational optimizations to extend battery lifespan and enhance performance reliability.

3:40 Unlocking Metallurgical Silicon Anodes for Electric Vehicle Batteries

Jonathan Tan, CEO, Coreshell Technologies, Inc.

Coreshell's metallurgical Silicon enabling technology delivers high capacity, fast-charging, and superior safety. Our low-cost liquid-phase nano-coating addresses critical electrode surface degradation issues and enables batteries with a Silicon-dominant anode that have 30+% higher energy density and significantly lower cost/kWh compared to current LIBs. Our Si anode material is 50% the cost of graphite and 100% domestically sourced.

Jonathan Tan, Coreshell's CEO and co-founder will be providing an update on Coreshell's latest update - scaling its technology to a 60Ah automotive cell.

4:00 MODERATED Q&A: Session Wrap-Up

Moderator: Halle Cheeseman, PhD, Program Director, ARPA-E

Panelists:

Seung-Wan Song, PhD, Professor, Chemical Engineering & Applied Chemistry, Chungnam National University

Yatish Patel, PhD, Research Associate Mechanics of Materials, Mechanical Engineering, Imperial College, London

Jonathan Tan, CEO, Coreshell Technologies, Inc.

4:15 Streamlining BMS Variant Management with the Smart Edge BMS Approach

Stefan Goede, CTO, Co-Founder, Munich Electrification GmbH

Battery management systems are a decisive factor for successful and fast development of batteries. Especially in recent times, increasing cost pressure and fierce competition require OEMs to manage their BMS software complexity. Efficiently

handling the growing number of variants with platform approaches becomes a vital factor. This talk presents a view on future BMS architectures. The smart edge BMS concept is introduced and compared to other common architectures.

4:35 Battery Engineering

Daniel Farzannekou, PhD, Research Affiliate, Advanced Materials, Lawrence Berkeley National Laboratory

Aerogels are a lightweight insulation material gaining increasing interest for battery thermal management. Aerogels' uniquely low thermal conductivity and density enables pack designers to manage thermal runaway while adding minimal weight and volume to the overall pack design. Despite these advantages, challenges in scalable and low-cost manufacturing have limited adoption to high-value applications. This presentation focuses on breakthroughs in manufacturing and application of aerogels in EV battery thermal management.

4:55 Current Collector: The Forgotten Component

Sam Jaffe, Principal, 1019 Technologies

Battery current collectors used to be off-the-shelf rolls of metal foil. Now they are getting lighter (down to 4 microns), getting more conductive (thanks to carbon priming), and getting more dimensional (3D topographies). This talk will explore the evolution of current collectors from dumb solid sheets of metal to intelligent and efficient highways for electrons.

5:15 High Capacity and High Power Cell Designs with Silicon Anodes



Ionel Stefan, Chief Technology Officer, R&D, Amprion Technologies

Amprion's silicon anode technology offers distinct performance advantages compared to graphite cells, delivering up to five times the power-to-energy ratio and reaching energy densities of over 400 Wh/kg. This breakthrough is crucial for advancing EV and electric flight by enabling fast charging (in under 10 minutes) and continuous power output up to 10C. By combining fast charging, high power, and exceptional energy density, Amprion's silicon anode cells set a new standard in electric mobility.

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Daniel Farzannekou, PhD, Research Affiliate, Advanced Materials, Lawrence Berkeley National Laboratory

Sam Jaffe, Principal, 1019 Technologies

Ionel Stefan, Chief Technology Officer, R&D, Amprion Technologies

5:55 Networking Reception in the Exhibit Hall with Poster Viewing



7:00 Close of Day

WEDNESDAY, DECEMBER 11

7:30 am Registration and Morning Coffee

7:45 Interactive Breakout Discussions

Interactive Breakout 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.

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Battery Engineering for Automotive Applications

Building Better Batteries through Improvements in Battery Safety, Cell Engineering, and Battery Management Systems

December 10-11, 2024 | Las Vegas, NV

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TABLE 8: Battery AI

Moderator: Weihan Li, Research Group Leader, RWTH Aachen University

TABLE 9: Battery Management Systems

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TABLE 14: Advanced Battery Opportunities, Challenges and Co-Opertition for the United States

Moderator: Adam Carpenter, Marketing Director & Sales Manager, Empower Greentech

SAFETY AND STABILITY OF NEW MATERIALS

8:25 Chairperson's Remarks

Stefan Goede, CTO, Co-Founder, Munich Electrification GmbH

8:30 Advanced Technologies in Customized Battery Interconnect Solutions

Aishwarya Patwardhan, Application Engineer Current Collector Systems, Engineering, ENNOVI

Gustavo Cibrian, Product Manager Energy Systems, Energy Interconnect Systems NA Region, ENNOVI

ENNOVI will be presenting two new Customized Battery Interconnect Solutions in this year's aabc conference: The first would be the newly launched ENNOVI-CellConnect-Pouch, utilizing our knowhow in lamination technologies. In this solution, we will be showcasing sustainable components that we have presented in the previous year, putting it into actual product offering. Secondly, we will be presenting a brand new conceptualized and patented laminating method for our current collector systems / current collector assemblies. This new technology is continuing to pursue sustainability and better cost efficiency for customers in the EV field.



8:50 SafeCore—An Internal Fuse to Help Prevent Thermal Runaway

Matthew Wang, VP, Tech Programs, Amionx

SafeCore is a material that is coated on the current collector that acts like a fuse to help prevent thermal runaway. It protects against overcharge and internal short, and can enable next-generation chemistries like lithium metal and nanosilicon.

Amionx has successfully transferred its patented SafeCore technology to multiple manufacturers to enhance their cell safety performance.



9:10 Stabilized Lithium-Rich Cathode Materials; Next-Generation Products with High Capacity and Cycle Stability

Jay F. Whitacre, PhD, CEO & CTO, Materials Science & Engineering, Stratus Materials

This talk presents new results from Stratus Materials on our advanced cathode materials. Enhanced processing innovations yield materials nearing 1000 Wh/kg, offering superior performance across various applications. We'll discuss pack-level benefits, including safety and techno-economic assessments, highlighting energy densities surpassing those of LFP and NMC cells, thanks to enhanced thermal performance.

9:30 Understanding Safety of New Technologies (SSB, Na-ion, Li Metal) from the Ground Up

Nathan Johnson, PhD, Postdoctoral Appointee, Sandia National Laboratories

Sandia National Laboratories aims to create a comprehensive safety framework for next-generation batteries, integrating material testing, mechanistic modeling, and safety assessments. This approach will mitigate risks, streamline design, and establish safety criteria crucial for advancing battery technology.

9:50 Characterization of Commercial 46 mm Cylindrical Cells

Keith Beers, Principal Engineer, Polymer Science & Materials Chemistry, Exponent Inc

As demand for 46 mm diameter cylindrical cells increases, so have the number of suppliers, and unique cell designs. This talk will explore the construction of commercially available 46 mm cell designs of various length, construction, and



chemistry to understand the various design choices being made and the response of these designs to induced thermal runaway events. Potential implications for the future direction of this cell format, including how cell design affects safety, and implications for use in multi-cell packs will be discussed.

10:10 MODERATED Q&A: Session Wrap-Up

Moderator: Stefan Goede, CTO, Co-Founder, Munich Electrification GmbH

Panelists:

Aishwarya Patwardhan, Application Engineer Current Collector Systems, Engineering, ENNOVI

Gustavo Cibrian, Product Manager Energy Systems, Energy Interconnect Systems NA Region, ENNOVI

Matthew Wang, VP, Tech Programs, Amionx

Jay F. Whitacre, PhD, CEO & CTO, Materials Science & Engineering, Stratus Materials

Nathan Johnson, PhD, Postdoctoral Appointee, Sandia National Laboratories

Keith Beers, Principal Engineer, Polymer Science & Materials Chemistry, Exponent Inc

10:25 Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kely, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



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Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline. Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kely, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

2:00 Close of Conference



EV Technology for Heavy-Duty Applications

Commercializing Advanced High-Energy Batteries and Infrastructure for HEVs

MONDAY, DECEMBER 9

7:00 am Registration Open until 4:30 pm

8:30 - 4:30 pm Conference Tutorials

Choose from 16 tutorials to maximize your networking and educational opportunities.

TUESDAY, DECEMBER 10

7:30 am Registration and Morning Coffee

HEAVY-DUTY MARKET EXPANSION

8:30 Organizer's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech

8:35 Chairperson's Remarks

Julie Johnson, CEO, Joules Ventures



8:40 FEATURED PRESENTATION: Battery Safety in Commercial EVs: Innovations and Best Practices

Thomas Blazak, Chief Engineer, Proterra

With the rise of commercial EVs, battery safety and reliability are crucial. This presentation covers the latest innovations and best practices in battery safety, including advanced thermal management, robust software, enhanced safety materials, and thorough testing. Attendees will learn to effectively apply these technologies to create safe, reliable, and efficient battery packs at-scale.

9:00 Battery Technologies for Heavy-Duty Trucks

Jordan Loos, Senior Specialist, Battery Integration, Cummins Battery Systems North America

Heavy-duty truck OEMs have shown mixed interest in their cathode selection for BEV. In North America and Europe, some companies leveraging their passenger car battery development have chosen layered-oxide cathodes, whereas others have chosen phosphate technology. China boasts the highest use of heavy truck BEVs, with phosphate technology being the predominant choice. We are investigating both technologies. Advantages, disadvantages, and the roadmaps of these chemistries will be discussed

9:20 Hyundai's Programs for North America, including ZEV Trucks

Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

This presentation will focus on Hyundai's trucks and its North America-focus on Class 8 applications. In addition, battery applications in Korea will be reviewed.

9:40 MODERATED Q&A: Session Wrap-Up

Moderator: Julie Johnson, CEO, Joules Ventures

Panelists:

Thomas Blazak, Chief Engineer, Proterra

Jordan Loos, Senior Specialist, Battery Integration, Cummins Battery Systems North America

Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

10:00 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

10:40 Design and Manufacturing of Commercial-Vehicle-Specific Battery Cells: A Requirements-Based Approach

Philip Stephenson, PhD, General Manager, PACCAR Technical Center

Heavy-duty electric trucks will continue to grow in breadth of application and market share in the coming years. Heavy-duty batteries are subject to long hours of use and harsh environmental conditions, with higher uptime expectations. Powertrain and battery weight and physical size are also key constraints. Functional safety, long life, and ability to be rapidly recharged are also requirements specific to battery cells for commercial vehicle applications.

11:00 Why and How Should School-Bus-Fleet Owners Plan for Battery End-of-Life Management

Vishant Kothari, Senior Manager, Electric School Bus Initiative, World Resources

Institute

Learn how to make the most of today's vehicle procurement opportunity to address future challenges from WRI's senior manager of school bus electrification and battery circularity.

11:20 Multifunctional Material Solutions to Optimize Cell Performance and Pack Design

Fei Wang, R&D Manager, R&D, Saint Gobain

Inter cell materials are critical design components for batteries' longevity and safety. This talk will present the latest developments on multifunctional inter cell materials at Saint-Gobain Tape Solutions, with focus on mechanical cushioning for battery life extension and thermal runaway protection for safety.

11:40 MODERATED Q&A: Session Wrap-Up

Moderator: Julie Johnson, CEO, Joules Ventures

Panelists:

Philip Stephenson, PhD, General Manager, PACCAR Technical Center

Vishant Kothari, Senior Manager, Electric School Bus Initiative, World Resources Institute

Fei Wang, R&D Manager, R&D, Saint Gobain

12:00 pm Roaming Networking Lunch in the Exhibit Hall

12:30 Dessert Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

HEAVY-DUTY MARKET EXPANSION

1:00 Chairperson's Remarks

Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

1:05 Artificial Intelligence and Machine Learning for Optimizing Medium-/Heavy-Duty Electric Truck and Bus Fleets

Rajit Gadh, PhD, Professor, UCLA and Co-Founder, MOEV

As heavy-duty fleets of trucks and buses electrify, operators face challenges in managing EV charging, coordinating operations, and managing high electric bills. Charging reliability and the need to redesign operations from ICE vehicles to EVs add complexity. This talk will discuss how AI and machine learning solve integration, cost, and reliability issues in EV operations.

1:25 Achieving Emission Reductions in Heavy-Duty Fleets with Zero-Emission Vehicles

Leslie Goodbody, Engineer, California Air Resources Board

To address climate pollution and reduce the impact of poor air quality on our most vulnerable populations, California has embarked on bold measures to increase adoption of zero-emission vehicles and equipment in many on- and off-road sectors. This talk will cover regulations in place and on the horizon that are compelling the adoption of zero-emission technology, and how the state is supporting it with incentives, financing, permitting assistance, and outreach.

1:45 Navigating the EV Commercial Fleet Transition: Powering Infrastructure Where It's Needed

Julie Johnson, CEO, Joules Ventures

Embark on a dynamic exploration of the emerging EV transition sector, revealing its precision in delivering power where infrastructure is demanded. Delve into the complexities of where, what, and when, discovering the daily unfolding 'hows' that form the building blocks of a scalable future. Uptime, security, and health take center stage in this transformative journey, shaping the path toward a sustainable and resilient commercial fleet transition.

2:05 MODERATED Q&A: Session Warp-Up

Moderator: Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

Panelists:

Rajit Gadh, PhD, Professor, UCLA and Co-Founder, MOEV

Leslie Goodbody, Engineer, California Air Resources Board

Julie Johnson, CEO, Joules Ventures

2:20 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

3:00 Market Trends and Outlook across MHD e-Mobility in 2024

Kevin Beaty, President, YUNEV LLC





EV Technology for Heavy-Duty Applications

Commercializing Advanced High-Energy Batteries and Infrastructure for HEVs



This 2024 market update will cover key developments in commercial vehicle e-mobility, including market segment highlights and growth in H2 powertrains (and the implications for battery-pack DVPR). We'll review the US National Zero-Emission Freight Corridor Strategy, including its forecasted impact on MHD-charging and H2-refueling infrastructure, and assess whether the PC/LT shift towards HEVs/PHEVs will create a battery surplus to meet commercial vehicle demands through 2030.

3:20 Global Battery Supply Chain Outlook for Heavy-Duty Applications

Gabrielle Aversa, Senior Research Analyst, Supply Chain and Technology, S&P Global Mobility

Auto Supply Chain & Technology's Battery team in S&P Global Mobility will share its new proprietary market data and insights on global electric vehicle (EV) battery supply and demand, specifically in the heavy-duty market. Gabrielle will point out and discuss the unique challenges that face heavy-duty applications, and demonstrate how they are reflected in the market through the end of the decade.

INNOVATION IN HEAVY-DUTY EV APPLICATIONS

3:40 Manufacturing Processes and Equipment for Battery Electrodes: Past, Present and Future



Qiao SHI, Deputy General manager, Shangshui SmarTech Ltd.

The development of processes and equipment for battery electrode manufacturing will be introduced, which is centering on the two main lines of "high efficiency and low energy consumption" for battery manufacturing. Besides, some electrode manufacturing principles will be explained, and what Shangshui have done and is being developing for the future electrode manufacturing will be introduced, including to high-solid-content electrode manufacturing and dry-electrode manufacturing.

4:00 MODERATED Q&A: Session Wrap-Up

Moderator: Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

Panelists:

Gabrielle Aversa, Senior Research Analyst, Supply Chain and Technology, S&P Global Mobility

Kevin Beaty, President, YUNEV LLC

Qiao SHI, Deputy General manager, Shangshui SmarTech Ltd.

4:15 Extreme Fast-Charge Batteries for Heavy-Duty Applications

Brian Barnett, PhD, CTO, Nyobolt

For many heavy-duty applications, batteries must deliver very high-power discharge capability and a very large number of charge-discharge cycles. The IDEAL battery would provide these attributes and would also be capable of incredibly fast charge with minimal heat release, allowing almost constant up-time. Nyobolt is commercializing battery technology with the capability of fully charging in 5-10 minutes or less, with outstanding cycle life, for mining and material handling/robotic applications.

4:35 Thermal Runaway Mitigation Strategies for Heavy-Duty Vehicles

Nicholas Faenza, PhD, Managing Engineer, Materials and Corrosion Engineering, Exponent

This presentation will provide an overview of advanced thermal runaway mitigation strategies applicable to energy storage systems in heavy-duty vehicles. The talk will begin with the fundamental mechanisms that cause thermal runaway propagation throughout a battery pack, then identify potential strategies to mitigate those hazards, and expand to include a discussion on the unique challenges and opportunities that can be incorporated into heavy-duty battery pack designs.

4:55 How to Design, Build, Operate, Train, Maintain, and Scale-Up Your EV Bus Infrastructure for Long Term Success

Joshua Goldman, Senior Director of Sales, eMobility, ABM ATS

In this presentation, Mr. Goldman will discuss ABM's 10+ years of experience in vehicle electrification including recent case studies from New York City's MTA Transit Bus installations and the LAX 1200+ charger installation.

5:15 MODERATED Q&A: Session Wrap-Up

Moderator: Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

Panelists:

Brian Barnett, PhD, CTO, Nyobolt

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7:00 Close of Day

WEDNESDAY, DECEMBER 11

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7:45 Interactive Breakout Discussions

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GRID-SCALE APPLICATIONS & MARKET EXPANSION

8:45 Chairperson's Remarks

Joshua Goldman, Senior Director of Sales, eMobility, ABM ATS

8:50 From Solid-state Battery to New Generation Platform by ProLogium.



Dr. Dmitry Belov, Chief Scientist, ProLogium Technology Co Ltd

From Solid-state Battery to New Generation Platform by ProLogium.

9:10 Energy-Storage Market Expansion in the US and Europe

Wolfgang Bernhart, Senior Partner, Automotive Competence Center, Roland Berger Strategy Consultants GmbH

The energy-storage market in Europe is undergoing significant expansion, driven by increased demand for sustainable energy solutions. This presentation will look at innovative technologies and supportive policies that are fostering growth and positioning Europe as a key global player in advancing energy storage solutions.



EV Technology for Heavy-Duty Applications

Commercializing Advanced High-Energy Batteries and Infrastructure for HEVs

9:30 Increasing Voltage Level in Heavy-Duty Commercial Trucking

Ahmed Ahmed-Fouad, Project Engineer, BEV Power Electronics, PACCAR

This presentation explores increasing the voltage level in commercial heavy-duty truck HV systems. We will showcase the benefits, such as improved efficiency, reduced thermal load, and increased design flexibility while enabling high-power charging. Furthermore, we will discuss the challenges, such as component design, availability, and safety considerations that are exacerbated as we push voltage levels higher in automotive applications.

9:50 MODERATED Q&A: Session Wrap-Up

Moderator: Joshua Goldman, Senior Director of Sales, eMobility, ABM ATS

Panelists:

Wolfgang Bernhart, Senior Partner, Automotive Competence Center, Roland Berger Strategy Consultants GmbH

Ahmed Ahmed-Fouad, Project Engineer, BEV Power Electronics, PACCAR

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PLENARY KEYNOTE

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2:00 Close of Conference

Present a Poster SAVE \$50!

AABC encourages attendees to gain further exposure by presenting their work in the poster sessions. To secure an onsite poster board, your full submission must be received, and your registration paid in full by November 8, 2024.

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- Discuss your research and collaborate with interested attendees and speakers
- Your poster presentation will be published in our conference materials
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High-Performance Battery Manufacturing

Manufacturing Safe, Efficient, Higher Energy Density Batteries

MONDAY, DECEMBER 9

7:00 am Registration Open until 4:30 pm

8:30 - 4:30 pm Conference Tutorials

Choose from 16 tutorials to maximize your networking and educational opportunities.

TUESDAY, DECEMBER 10

7:30 am Registration and Morning Coffee

ADVANCES IN CELL MANUFACTURING

8:30 Organizer's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech

8:35 Chairperson's Remarks

Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory

8:40 Umicore Solid-State Battery—Technology Development and Go-to-Market

Godwill K. Bancole, Head, Solid State Battery Incubator, Umicore

This presentation will cover Umicore Solid-State Battery (SSB) from both technology and business viewpoints. Topics covered: SSB market and value proposition, SSB products portfolio, research and development achievements and challenges, upscaling focus in 2024-2026, and mass production pathway challenges.

9:00 Road to 1000-mile per Charge Battery –24M's Fires and Recalls Free Solutions and Design Platforms.



Junzheng Chen, VP of Advanced R&D, Advanced R&D, 24M Technologies Inc

Conventional LIB platforms are struggling with energy density and cost while working to improve safety. In this technical session, we will go over the unique approaches from 24M (SemiSolid, ETOP, Impervio, Eternalyte, Liforever) in addressing these current bottlenecks, including process and product design platforms and unique separator and electrolyte material to achieve higher energy density with better cost and recycling structure, while dramatically improving safety performance.

9:20 Advancing Battery Development and Manufacturing with AI-Enabled Innovations



Factorial

Raimund Koerver, Senior Director, Commercial, Sales, Factorial Inc.

The development of next-generation batteries is increasingly underpinned by the integration of artificial intelligence (AI) into various aspects of battery design and manufacturing. Advanced machine learning techniques are being leveraged by Factorial for accurate state-of-health estimation and optimizing fast-charging protocols, which are critical for enhancing cell performance. Furthermore, automatic image defect detection is utilized for proactive quality control and maintenance. These AI-driven approaches are essential in paving the way towards a new era of efficient and reliable electric vehicles.

9:40 MODERATED Q&A: Session Wrap-Up

Moderator: Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory

Panelists:

Godwill K. Bancole, Head, Solid State Battery Incubator, Umicore

Junzheng Chen, VP of Advanced R&D, Advanced R&D, 24M Technologies Inc

Raimund Koerver, Senior Director, Commercial, Sales, Factorial Inc.

10:00 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

10:40 Numerical Modeling of Solvent-Based and Dry Manufacturing of Lithium-ion and Solid-State Battery Electrodes

Alejandro Franco, PhD, Professor, Reactivity & Chemistry of Solids Lab, University of Picardie Jules Verne

I discuss our novel dynamic 3D-resolved numerical models able to predict how manufacturing parameters impact the microstructure of lithium-ion and solid-state battery electrodes, produced via solvent-based and dry methods. These models, confronted to experimental data, demonstrate the chemistry-agnostic character of our ARTISTIC battery manufacturing simulation platform. The coupling of these models with deep learning techniques, and our Virtual Reality battery manufacturing metaverse, are also discussed.

11:00 Future Manufacturing Approaches including Advances in Pre-Lithiation

Wolfgang Bernhart, Senior Partner, Automotive Competence Center, Roland Berger Strategy Consultants GmbH

Outlook on achieving manufacturing targets with on-demand supply balance for Li, Ni, Co, Mn, and graphite; alternative feedstock and processing routes; comparing costs and CO2 emission; strategies to secure critical raw materials adopted by major players; framework for holistic evaluation of manufacturing strategies.

11:20 Thermal Management and Electrical Insulation Solutions for High Voltage EV Batteries



Speaker to be Announced, SABIC Innovative Plastics

Somasekhar Bobba, SABIC

Flame retardance, dielectric strength, chemical resistance, and high mechanical strength are critical to quality for material selection to meet the safety requirements of electric vehicle battery applications. An exercise is carried out to study the feasibility and performance of lightweight specialty thermoplastic solutions for EV battery components vs. incumbent metal solutions using virtual simulation tools

Thermal management in inverter applications is critical for performance. Design plays an important role in selection of materials. View study results on long-term aging effect of ethylene glycol coolant & refrigerant on specialty thermoplastics' behavior w/mechanical property retention, FTIR, TEM, weight loss. Hybrid design concept evaluated w/CAE simulation. Up to 25% weight saving, potential system cost savings-part integration, minimizing secondary operations.

11:40 MODERATED Q&A: Session Wrap-Up

Moderator: Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory

Panelists:

Alejandro Franco, PhD, Professor, Reactivity & Chemistry of Solids Lab, University of Picardie Jules Verne

Wolfgang Bernhart, Senior Partner, Automotive Competence Center, Roland Berger Strategy Consultants GmbH

Somasekhar Bobba, SABIC

12:00 pm Roaming Networking Lunch in the Exhibit Hall



12:30 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

ADVANCES IN CELL MANUFACTURING

1:00 Chairperson's Remarks

Alejandro Franco, PhD, Professor, Reactivity & Chemistry of Solids Lab, University of Picardie Jules Verne

1:05 Upscaling of 3D Electrode Architectures for High-Performance EV 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 processing has been successfully developed for structuring thick-film composite electrodes. Compared to cells with conventional electrodes, lithium-ion batteries with 3D electrodes show excellent capacity retention for high-power operation, significant suppression of lithium plating, drastic improvement of fast

High-Performance Battery Manufacturing

Manufacturing Safe, Efficient, Higher Energy Density Batteries

charging, and at least doubling of cycle life. Roll-to-roll machine concepts for process upscaling have been implemented using high-power ultrafast lasers to enable damage-free structuring of thick-film electrodes with a large footprint.

1:25 Current Collector: The Forgotten Component

Sam Jaffe, Principal, 1019 Technologies

Battery current collectors used to be off-the-shelf rolls of metal foil. Now they are getting lighter (down to 4 microns), more conductive (thanks to carbon priming), and more dimensional (3D topographies). This talk will explore the evolution of current collectors from dumb solid sheets of metal to intelligent and efficient highways for electrons.

1:45 Automated Quality Control of Ultrasonically Welded Cell Foil Tab Using Eddy Current

Anthony Krause, NDT Engineer, InspecTech

The tab welds are the most important on Li-ion cells. Poor welds deteriorate over time due to mechanical vibrations, reducing battery longevity. Rapid, automated feedback on weld quality is essential for maintaining optimal weld process. Eddy Current is shown to be a feasible NDT Technique for automated quality control of cell foil tabs that have been ultrasonically welded. The technique identifies over-welding, under-welding, tears, missing foils, and lack of fusion.

2:05 MODERATED Q&A: Session Wrap-Up

Moderator: Alejandro Franco, PhD, Professor, Reactivity & Chemistry of Solids Lab, University of Picardie Jules Verne

Panelists:

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

Sam Jaffe, Principal, 1019 Technologies

Anthony Krause, NDT Engineer, InspecTech

2:20 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

BATTERY SAFETY

3:00 Mechanism and Solutions for Li-ion Thermal Runaway via Internal Shorts: Laser vs DSC and ARC

John Zhang, PhD, CTO/CSO, Polypore International

The conclusions of this study, such as using ceramic coated separator (active approach), direct Cu/Al shorting (passive approach), etc. have been (extremely) broadly used in Li-ion industry today. The fire and explosion rate has been improved by 5 orders of magnitude. Now, all 3C and all NMC EDV and 70% LFP EDV are using the methods result from these improving methods.

GLOBAL BATTERY MANUFACTURING MARKET EXPANSION

3:20 Bridging the Gap from Research to Manufacturing to Increasing Production and Lowering Costs

Katharina Gerber, PhD, Engagement Lead for Battery Industry, Siemens DISW

The transition from research to full-scale manufacturing in the automotive battery industry is fraught with challenges. Explore how Siemens' most comprehensive suite of digital tools accelerates R&D cycles and optimizes manufacturing in the automotive battery industry. By enabling virtual prototyping and commissioning, Siemens helps avoid costly and time-consuming re-designs and re-engineering. Siemens' solutions for seamless OT/IT integration support real-time data analytics and production optimization, driving high yields and reducing delays.

3:40 Solving the Billion-Dollar Battery Production Problem

Tal Sholklipper, CEO & Co-Founder, Executive, Voltaiq

The global battery race is on, but ramping up new gigafactories to profitability takes several years and costs billions of dollars. What if the answer to accelerating across this chasm lies within your existing processes, equipment, and data? Learn how manufacturers can leverage battery quality analytics—using data already captured in your core production operation—to reduce scrap waste,

VOLTAIQ

increase yield, and reach profitability months, if not years, sooner. These insights can streamline operations, optimize production, and identify potential quality issues before they impact your bottom line.

4:00 MODERATED Q&A: Session Wrap-Up

Moderator: Alejandro Franco, PhD, Professor, Reactivity & Chemistry of Solids Lab, University of Picardie Jules Verne

Panelists:

John Zhang, PhD, CTO/CSO, Polypore International

Katharina Gerber, PhD, Engagement Lead for Battery Industry, Siemens DISW

Tal Sholklipper, CEO & Co-Founder, Executive, Voltaiq

4:15 Introduction of the Beff Platform: Comprehensive Support from Cell Development to Production

Shunsuke Amagai, Founder & Co-CEO, Beff

Since our company's inception, we have collaborated with cell manufacturers and automotive OEMs to address numerous development and production challenges related to cells. Leveraging the expertise of our engineers who have extensive experience in the lithium-ion battery field, we offer comprehensive solutions from cell design to mass production. In this presentation, we will showcase the development methodologies using the Beff Platform, complemented by real-world examples.

4:35 Strengthening the Domestic Supply Chain for Li-ion Separators

Richard W. Pekala, CTO, R&D, Entek International, LLC

As part of the U.S. government's focus on developing a robust domestic supply chain for Li-ion batteries, ENTEK is constructing a new separator plant in Terre Haute, Indiana. ENTEK has partnered with Bruckner and Bonfanti, world leaders in biaxial stretching equipment and automated roll handling to ensure state-of-the-art "wet process" polyethylene separator lines in combination with coating technology to produce = 1.4 billion m² of coated separator in 2030.

4:55 Battery Talent Trends, Solutions, and Development

Matt Anders, Vice President, Batteries & Future Mobility, Pangea Talent Solutions

As the battery industry continues to expand, who you hire into your organization is a critical component of your success. In what seems like an increasingly competitive industry and talent still in short supply, how can you stand out? In this presentation we will not only discuss trends in the talent industry but we will also explore solutions that you and your business can roll out to become more competitive.

5:15 MODERATED Q&A: Session Wrap-Up

Moderator: Alejandro Franco, PhD, Professor, Reactivity & Chemistry of Solids Lab, University of Picardie Jules Verne

Panelists:

Shunsuke Amagai, Founder & Co-CEO, Beff

Richard W. Pekala, CTO, R&D, Entek International, LLC

Matt Anders, Vice President, Batteries & Future Mobility, Pangea Talent Solutions

5:55 Networking Reception in the Exhibit Hall with Poster Viewing

7:00 Close of Day

WEDNESDAY, DECEMBER 11

7:30 am Registration and Morning Coffee

7:45 Interactive Breakout Discussions

Interactive Breakout 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: Innovations in Recycling Battery Materials & Second Life

Moderator: Steve Sloop, PhD, President, OnTo Technology LLC

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

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

TABLE 3: Silicon Anodes and Cells

High-Performance Battery Manufacturing

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Moderator: Benjamin Park, PhD, Founder & CTO, Enevate

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: Production Supply and Sustainability of a North American Supply Chain

Moderator: Rob Privette, Business Development Manager, North America, Umicore

TABLE 6: Battery Passport, CO2 Footprint & Lifetime Warranty – How Is the Implementation of the Battery Regulation Legislation Going?

Moderator: Cameron Chase, Director, Business Development, Systems Engineering, NXP Semiconductors

TABLE 7: Battery Testing & Aging

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

TABLE 8: Battery AI

Moderator: Weihai Li, Research Group Leader, RWTH Aachen University

TABLE 9: Battery Management Systems

Moderator: Stefan Goede, CTO, Co-Founder, Munich Electrification GmbH

TABLE 10: Lithium-Sulfur Batteries

Moderator: Rob Murano, Senior Director of Product Development & Commercialization, Coherent

TABLE 11: Solid-State Batteries

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

TABLE 12: Inactive Materials: Developments in Current Collectors, Separators and Electrolytes

Moderator: Sam Jaffe, Business Development, Addionics

TABLE 13: Battery Electrolytes: Materials, Developments and Manufacturing

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

TABLE 14: Advanced Battery Opportunities, Challenges and Co-Opportunity for the United States

Moderator: Adam Carpenter, Marketing Director & Sales Manager, Empower Greentech

ADVANCES IN CELL MANUFACTURING

8:25 Chairperson's Remarks

Matt Anders, Vice President, Batteries & Future Mobility, Pangea Talent Solutions

8:30 EV Battery Pack: Assembly Automation and Improvements



Daniel Britton, National Sales Head - US, Cybernetik Inc.

Battery packs are the heart of electric vehicles. With technology enabling longer-range batteries in a world obsessed with cutting emissions, EVs are gaining increasing acceptability. But how does a battery manufacturer build high-performance battery packs? The answer lies in building a robust assembly line. Fully automated battery pack assembly lines need to be integrated with cutting-edge technologies that include total quality parameter tracking, complete operational integration from cell testing and stack formation to end-of-line testing, SCADA for customized recipe handling, ESD workbench for safety, Servo, Robots, Vision Systems for accuracy and speed, Poka Yoke for error proofing, and more. This presentation will cover the most complex challenges that companies encounter while building fully automated battery pack assembly lines, and innovative solutions to solve these complex challenges.

8:50 Heat Recovery and Oxygen Recycling in CAM- Calcination Kilns with ONEJOON RHK-ecoCAM



Laurenz Ploechl, Sr Key Account Mgr, Battery Materials, Onejoon Thermal Solutions GmbH

In CAM production today, huge amounts of gas and energy are used on a once-through basis in the roller hearth kiln (RHK), accounting for a major part of the LiB carbon footprint. This presentation gives details of state-of-the-art equipment and technology for recycling up to 80% of the process gas and recovery of most of the off-gas energy into valuable heat and power. This technology offers significant OPEX and carbon reduction opportunities for CAM manufacturers.

9:10 Increasing Battery Yield: On the Line, Near the Line, and Off the Line



Speaker to be Announced, Thermo Fisher Scientific Inc

Fabrizio Moltoni, Vice President & General Manager, Clean Energy, Thermo Fisher Scientific

Implementing comprehensive analytical techniques is vital for detecting contaminants and resolving process issues to reduce scrap rates, particularly in the production of cathode active materials. In this presentation, learn how off-line laboratory methods play a key role in lowering scrap rates, detecting contaminants, and addressing process issues; and how in-line approaches further aid in this effort by monitoring composition distribution and concentration, limiting QA/QC costs and rework. These integrated methods ensure high-quality cathode active material compositions and improve overall production efficiency.

9:30 Advancing EV Battery Potential: Micantis Data and Analytics Solutions



Jill Pestana, Micantis

As EV demand grows, breakthroughs in battery performance, reliability, and efficiency are crucial. Battery design faces challenges, from understanding degradation to optimizing materials for longer life. Micantis, a cutting-edge SaaS platform, transforms battery innovation with advanced data and analytics. Learn how Micantis empowers developers to enhance cycle life, streamline R&D, and accelerate testing, reducing costs and time-to-market for next-gen EV batteries.

DIGITAL PASSPORTS FOR BATTERY MANUFACTURING

9:50 Secure Twinning for the Upcoming EV Battery Regulations with Digital Battery Passport Solution

Cameron Chase, Dir Bus Dev, Systems Engineering, NXP Semiconductors

In order to securely "twin" a real battery with its cloud-based virtual twin, one needs to use tags or unique markings in transporting goods and parts for batteries, implement unique IDs in cells and modules, secure storage on a battery level, and communication methods that respect CRA and GDPR together with the DPP and EU battery regulation.

10:10 MODERATED Q&A: Session Wrap-Up

Moderator: Matt Anders, Vice President, Batteries & Future Mobility, Pangea Talent Solutions

Panelists:

Cameron Chase, Dir Bus Dev, Systems Engineering, NXP Semiconductors

Fabrizio Moltoni, Vice President & General Manager, Clean Energy, Thermo Fisher Scientific

Laurenz Ploechl, Sr Key Account Mgr, Battery Materials, Onejoon Thermal Solutions GmbH

Jill Pestana, Micantis

Daniel Britton, National Sales Head - US, Cybernetik Inc.

10:25 Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

High-Performance Battery Manufacturing

Manufacturing Safe, Efficient, Higher Energy Density Batteries

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelty, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline.

Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kelty, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (*Sponsorship Opportunity Available*)

2:00 Close of Conference



Battery Recycling

Advanced Recycling Methods for a Sustainable Battery Materials Supply

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TUESDAY, DECEMBER 10

7:30 am Registration and Morning Coffee

RECYCLING MARKET DEMAND

8:30 Organizer's Remarks

Sarah Stockwell, PhD, Conference Producer, Cambridge EnerTech

8:35 Chairperson's Remarks

Steve Sloop, PhD, President, OnTo Technology LLC

8:40 Battery Recycling & Black Mass Markets

Kirstyn Petras, Senior Reporter, Pricing, Fastmarkets

This presentation will cover US battery supply chains and the role of black mass and battery recycling in adhering to IRA guidelines, BIL investments, and other legislative efforts. The presentation will also examine the state of black mass markets and its current drivers.

9:00 Can a Closed-Loop Battery Supply Chain Work in the Real World? Comparing the US and European Markets

Tomasz Poznar, PhD, Vice President, Strategy, Ascend Elements

The term "closed-loop" is used to describe many types of battery recycling processes, but some are more tightly closed and efficient than others. This presentation will review the technical and economic aspects of various closed-loop battery recycling technologies and compare true closed-loop approaches vs. more open global approaches that incorporate processing in Asia. We will discuss and compare the regulatory landscapes and compliance issues in the United States and Europe.

9:20 Understanding the North American Lithium-ion Battery Supply Chain: Considering Scrap Availability, Black Mass Movement, and Policy Momentum

Beatrice Browning, Senior Recycling Analyst, Benchmark Mineral Intelligence

This talk will discuss Western-specific battery recycling, infrastructure buildout, and black mass trading using Benchmark data—with comparisons made between the West, China, and the rest of Asia, alongside insights into how Western recycling infrastructure must be directed to reach the required capacities. More specifically, North American-based battery recycling will be discussed, where momentum has been made with capacity buildout, legislation, and company announcements in recent months.

9:40 MODERATED Q&A: Session Wrap-Up

Moderator: Steve Sloop, PhD, President, OnTo Technology LLC

Panelists:

Kirstyn Petras, Senior Reporter, Pricing, Fastmarkets

Tomasz Poznar, PhD, Vice President, Strategy, Ascend Elements

Beatrice Browning, Senior Recycling Analyst, Benchmark Mineral Intelligence

10:00 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

10:40 Battery Recycling: Transforming the Domestic Supply Chain

Shane Thompson, Executive Vice President of Business Development and Strategy, Cirba Solutions

Making new battery chemicals from end-of-life batteries is a newer process and with that comes complexities. The collecting, sorting, and mechanical and hydrometallurgical processing—to the creation of a product that meets tight OEM requirements—is just one challenge Cirba Solutions is actively solving. We will

provide an overview of the materials management of used batteries and scrap into new batteries creating a closed-loop domestic supply of critical battery materials.

11:00 EV Battery Recycling Policy in the US

Jessica Dunn, PhD, Scientist, Union of Concerned Scientists

EV battery recycling policies are either implemented or proposed in several states around the U.S., including New Jersey, California, Washington State, and Hawaii. These policies are intended to increase recycling rates and create an alternative and local source of minerals. This session will explore what these policies require, the motivations behind their creation, and how they differ from the European Union requirements.

11:20 Regulatory Considerations in Electric Vehicle Battery Recycling

Emil Nusbaum, Vice President Strategy, Gov & Regulatory Affairs, Automotive Recyclers Association

Explore the entire vehicle lifecycle and the changes that will be necessary to promote a transition to electric vehicles. This session will also explore the policy considerations and regulatory activities associated with safe handling, storage, transport, and dismantling of electric vehicles and electric vehicle batteries.

11:40 MODERATED Q&A: Session Wrap-Up

Moderator: Steve Sloop, PhD, President, OnTo Technology LLC

Panelists:

Shane Thompson, Executive Vice President of Business Development and Strategy, Cirba Solutions

Jessica Dunn, PhD, Scientist, Union of Concerned Scientists

Emil Nusbaum, Vice President Strategy, Gov & Regulatory Affairs, Automotive Recyclers Association

Renata Arsenault, Tech Expert, Advanced Battery Recycling, Ford Motor Co

12:00 pm Roaming Networking Lunch in the Exhibit Hall



12:30 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

RECYCLING METHODS

1:00 Chairperson's Remarks

Shane Thompson, Executive Vice President of Business Development and Strategy, Cirba Solutions

1:05 Leading Edge Innovations for a Future Circular Economy of Lithium-Ion Batteries

Gavin Harper, PhD, University of Birmingham

Presently the volumes of LIBs reaching end-of-life are modest, but looking forward much greater volumes are anticipated. What are the future technologies that can enable an efficient circular economy of lithium-ion batteries, that look beyond current industry practice? Drawing on the foresight of a number of significant reviews and roadmap exercises, promising leading-edge innovations that could enhance the circularity of lithium-ion batteries will be discussed.

1:25 Strategic Approaches to Enhance LIB Recycling Economics & Sustainability

Cameron Lippert, PhD, Co-Founder & Chief Innovation Officer, ElectraMet

This presentation explores the negative impacts of residual metal impurities derived from hydrometallurgical processing of black mass. It will examine advanced separation and purification technologies to achieve the purity requirements to yield battery-grade products and the challenges associated therein. Additionally, it evaluates the economic aspects of producing metal salts versus pCAM/CAM. The findings provide insights into optimizing recycling processes and improving the sustainability and cost-effectiveness of LIB material recovery.

1:45 Redefining Battery Recycling: The Most Economical and Sustainable Solution

Chao Yan, CEO, Princeton NuEnergy





Battery Recycling

Advanced Recycling Methods for a Sustainable Battery Materials Supply

In this discussion, we will explore how PNE Direct Recycling technology offers the most economical solution for recycling various battery chemistries, including NMC, NCA, and LFP. By maximizing cost efficiencies, minimizing waste and CO2 emissions, and eliminating hazardous chemicals, this technology is revolutionizing battery recycling. We will address how this innovative approach recovers and reuses key materials without compromising quality, while overcoming challenges such as impurity removal and cathode rejuvenation. Ultimately, it paves the way for a sustainable and efficient future in battery recycling.

2:05 MODERATED Q&A: Session Wrap-Up

Moderator: Shane Thompson, Executive Vice President of Business Development and Strategy, Cirba Solutions

Panelists:

Cameron Lippert, PhD, Co-Founder & Chief Innovation Officer, ElectraMet

Gavin Harper, PhD, University of Birmingham

Chao Yan, CEO, Princeton NuEnergy

2:20 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

3:20 Direct Recycling and Remanufacturing of Lithium-ion Battery Electrode Scraps

Yaocai Bai, PhD, R&D Staff Scientist, Oak Ridge National Lab

Manufacturing scraps from lithium-ion battery production are a primary source of recyclable materials. This presentation explores advances in directly recycling electrode scraps using solvent-based separation processes at low temperatures, developed at Oak Ridge National Laboratory, while preserving the integrity of electrode-active materials. The recovered materials can be remanufactured into new electrodes, achieving performance comparable to pristine materials, and thereby supporting a sustainable and circular battery economy.

3:40 Cathode Healing and Battery Neutralization to Improve the Value Chain from Recycling to Manufacturing

Steve Sloop, PhD, President, OnTo Technology LLC

Neutralization of batteries and direct recycling of their materials are critical technologies to improve logistical safety in the supply chain at battery end-of-life, and to reuse scrap in original manufacturing. Onsite recycling to address manufacturing scrap and onsite neutralization to address generation of class-9 hazards in lithium-ion battery recycling are technologies developed by OnTo; these are available for integration within the industry from the gigafactory to the EV service shop.

4:00 MODERATED Q&A: Session Wrap-Up

Moderator: Shane Thompson, Executive Vice President of Business Development and Strategy, Cirba Solutions

Panelists:

Yaocai Bai, PhD, R&D Staff Scientist, Oak Ridge National Lab

Steve Sloop, PhD, President, OnTo Technology LLC

4:35 Challenges and Opportunities in the Li-ion Battery Recycling Industry

Mark Bellino, Global Director, Battery Metals & Cells, Hatch Ltd

A key challenge in the Li-ion Battery recycling industry is the interplay between battery compositions and the market, and how forces between will drive the business case for participants. Access to black mass, varying chemistries, and a general delay in end-of-life further add complications to the nascent industry. This presentation is sharing Hatch's perspective on how the evolving battery recycling market will develop and how market participants can adapt.

4:55 Opportunities and Challenges for Closed Loop within North America

Aki Fujita, Co-Head, Research & Consulting, Nomura Research Institute America, Inc.

As of 2024, the North American recycling supply chain is not a closed loop within the region, and the challenges include "leakage" of black mass to Asia (sometimes Europe) and lack of pCAM factory. This presentation will discuss the challenges and business opportunities for establishing a closed-loop supply chain within North America in the future.

5:15 Safeguarding the EV Lifecycle: Advanced Strategies for Battery Shipping and Recycling

KULR

Ted Krupp, VP Sales & Marketing, Sales & Marketing, KULR Technology Group

Eric James, Director of Product Development & Compliance, Engineering, Action Wood 360

As the electric vehicle (EV) industry continues its rapid expansion, the safe transportation of end-of-life batteries to recycling facilities has become a critical challenge. This presentation examines innovative strategies and state-of-the-art technologies designed to address the inherent risks of shipping high-energy lithium-ion batteries. By leveraging advanced safety solutions and refined logistical processes, these cutting-edge approaches are transforming the EV battery recycling process into a safer, more efficient, and sustainable endeavor.

5:35 MODERATED Q&A: Session Wrap-Up

Moderator: Shane Thompson, Executive Vice President of Business Development and Strategy, Cirba Solutions

Panelists:

Mark Bellino, Global Director, Battery Metals & Cells, Hatch Ltd

Ted Krupp, VP Sales & Marketing, Sales & Marketing, KULR Technology Group

Aki Fujita, Co-Head, Research & Consulting, Nomura Research Institute America, Inc.

5:55 Networking Reception in the Exhibit Hall with Poster Viewing



7:00 Close of Day

WEDNESDAY, DECEMBER 11

7:30 am Registration and Morning Coffee

7:45 Interactive Breakout Discussions

Interactive Breakout 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.

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Moderator: Benjamin Park, PhD, Founder & CTO, Enevate

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: Production Supply and Sustainability of a North American Supply Chain

Moderator: Rob Privette, Business Development Manager, North America, Umicore

TABLE 6: Battery Passport, CO2 Footprint & Lifetime Warranty – How Is the Implementation of the Battery Regulation Legislation Going?

Moderator: Cameron Chase, Director, Business Development, Systems Engineering, NXP Semiconductors

TABLE 7: Battery Testing & Aging

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

TABLE 8: Battery AI

Moderator: Weihan Li, Research Group Leader, RWTH Aachen University

TABLE 9: Battery Management Systems

Moderator: Stefan Goede, CTO, Co-Founder, Munich Electrification GmbH

TABLE 10: Lithium-Sulfur Batteries



Battery Recycling

Advanced Recycling Methods for a Sustainable Battery Materials Supply

December 10-11, 2024 | Las Vegas, NV

Moderator: Rob Murano, Senior Director of Product Development & Commercialization, Coherent

TABLE 11: Solid-State Batteries

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

TABLE 12: Inactive Materials: Developments in Current Collectors, Separators and Electrolytes

Moderator: Sam Jaffe, Business Development, Addionics

TABLE 13: Battery Electrolytes: Materials, Developments and Manufacturing

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

TABLE 14: Advanced Battery Opportunities, Challenges and Co-Opetition for the United States

Moderator: Adam Carpenter, Marketing Director & Sales Manager, Empower Greentech

RECYCLING METHODS

9:05 Chairperson's Remarks

Beatrice Browning, Senior Recycling Analyst, Benchmark Mineral Intelligence

9:10 Characterization of Process Water in 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.

9:30 Addressing Data Transparency in the Reuse and Recycling of EV Batteries

Antoni Tong, PhD, CEO, Smartville

The lack of shared, trusted, and transparent battery data is a key bottleneck to scalable EV battery circularity. In this presentation, Antoni Tong, CEO of Smartville, will discuss their efforts in creating a data platform and a battery pack testing kit. These tools aim to easily assess, capture, and share battery health data, supporting data-driven battery recycling and reuse, and fostering vital EV battery marketplaces.

9:50 Novel Recycling Solution for Battery Critical Materials Based on Carbon Neutral

Kai Lun Chiu, PhD, Tech Mgr, Intl Business, Botree Recycling Technology

This presentation provides an overview of the new energy battery market and the need for efficient recycling solutions to reduce carbon emissions. Botree has developed an innovative recycling approach using advanced technologies, including pre-lithium extraction and a multi-component LFP recycling process. These methods enable the efficient recovery of Ni, Co, and Mn while supporting industrial carbon neutrality. The significance of recycling in achieving carbon reduction will also be highlighted.

10:10 MODERATED Q&A: Session Wrap-Up

Moderator: Beatrice Browning, Senior Recycling Analyst, Benchmark Mineral Intelligence

Panelists:

Sascha Nowak, PhD, Head of Analytics & Environmental, Electrochemical Energy Technology, University of Münster

Antoni Tong, PhD, CEO, Smartville

Kai Lun Chiu, PhD, Tech Mgr, Intl Business, Botree Recycling Technology

10:25 Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kely, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline. Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kely, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

2:00 Close of Conference

EV Fast Charging & Infrastructure

A Global Roadmap to Powering an Anxiety-Free EV Charging Future

MONDAY, DECEMBER 9

7:00 am Registration Open until 4:30 pm

8:30 - 4:30 pm Conference Tutorials

Choose from 16 tutorials to maximize your networking and educational opportunities

TUESDAY, DECEMBER 10

7:30 am Registration and Morning Coffee

EV INFRASTRUCTURE ROADMAP

8:30 Organizer's Remarks

Ian Murray, Associate Conference Producer, Cambridge EnerTech

8:35 Chairperson's Remarks

Brian Sisk, PhD, CTO, Sepion Technologies



8:40 FEATURED PRESENTATION: North American Fast Charging Infrastructure Expansion: The Roadmap to Driving ZEV Adoption

Jeff Samalot, Public Network Product Manager, Electrify America

Since 2018, Electrify America has enabled EV ownership by building a robust network of Hyper-Fast chargers. With 10 million+ customer charging sessions on the Electrify America network in 2023, it is critical to meet current and future needs of EV drivers. This presentation explores the company's efforts to meet the growing need through future expansion and initiatives intended to increase charger availability and drive positive customer experiences around public charging.

9:00 EV Highway Charging Infrastructure Development—Where Are We 3 Years In?

Michael Maten, Director, EV Policy & Regulatory Affairs, General Motors

Reliable, near-ubiquitous charging infrastructure is necessary to support widespread EV deployment. The NEVI program is in full swing, and charging technology continues to evolve. All OEMs have agreed to design to one charging standard, and business models are developing throughout the value chain. How can we create a viable customer experience and business proposition for industry participants? What key developments in technology and policy will get us to our destination?

9:20 State of Charge—Current Efforts for Cybersecurity Research within the EV Ecosystem

Cameron Mott, Section Manager - Cyber Physical Systems, Southwest Research Institute

As the Electric Vehicle (EV) ecosystem expands, robust cybersecurity is essential to protect users and infrastructure. This presentation highlights current efforts and research by Southwest Research Institute (SwRI) to secure the EV charging ecosystem. Key priorities for the EV industry include cybersecurity risk management, vehicle penetration testing, EVSE security, PKI implementations, and secure architecture design. By fostering collaboration and advancing research, the industry can enhance the EV ecosystem's cybersecurity.

9:40 MODERATED Q&A: Session Wrap-Up

Moderator: Brian Sisk, PhD, CTO, Sepion Technologies

Panelists:

Jeff Samalot, Public Network Product Manager, Electrify America

Michael Maten, Director, EV Policy & Regulatory Affairs, General Motors

Cameron Mott, Section Manager - Cyber Physical Systems, Southwest Research Institute

10:00 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

DRIVING INFRASTRUCTURE EXPANSION AND POLICY

10:40 The Politicization of Electric Vehicles and Implications on Charging Infrastructure

Erin Sowerby, Principal, Roland Berger

The Biden administration passed a surprising number of climate friendly policies, including funding for EVs and charging infrastructure. President-Elect Trump's rhetoric has increasingly politicized electric vehicles, bringing them into the culture wars. A Trump administration could pull back on funding either through full repeal or through executive action—a death by a thousand cuts. Blue states could respond with more support, leading to an even more bifurcated market.

HIGH SPECIFIC ENERGY CELL DESIGN

11:00 Metallized Plastic Current Collectors & All Ceramic Separators in High Specific Energy Cell Designs

Eric Darcy, PhD, Battery Technical Discipline Lead, Power Systems, NASA Johnson Space Center

Nail penetration tests of these cell designs with all-ceramic and ceramic coated separators with high speed radiography indicate the benefits of the all-ceramic boehmite separator. However, more design and testing improvements are needed to demonstrate similar internal short consistency as with the < 250 Wh/kg cell designs.

11:20 MODERATED Q&A: Session Wrap-Up

Moderator: Brian Sisk, PhD, CTO, Sepion Technologies

Panelists:

Erin Sowerby, Principal, Roland Berger

Eric Darcy, PhD, Battery Technical Discipline Lead, Power Systems, NASA Johnson Space Center

12:00 pm Roaming Networking Lunch in the Exhibit Hall

12:30 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)



THE CHARGING EXPERIENCE

1:00 Chairperson's Remarks

Jeff Samalot, Public Network Product Manager, Electrify America

1:05 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.

1:25 Innovative Fundamentals for EV Charging Destinations

Richard Osuch, CEO & Founder, My EV Charger, LLC

The EV Revolution is here along with a growing demand for EV charging infrastructure across the nation. To meet this demand, it is essential to understand the key elements and challenges of developing an EV charging destination. This presentation will explore infrastructure development, including: power constraints, layout considerations, equipment selection, installation challenges, and activation protocol. The importance of training as well as maintenance and customer support will also be discussed.

1:45 Off-Grid Charging Infrastructure: An Overview of Key Technologies and Developments

Mika Takahashi, Technology Analyst, Electric Vehicle Research, IDTechEx

As EV uptake increases, how can we ensure that the grid can cope? Replacing hydrocarbons with electricity as fuel requires unprecedented expansion of the utility grid, and delays to these upgrades risk becoming a bottleneck to EV adoption. Bypassing the grid entirely is an exciting alternative, and in this talk, IDTechEx explores some of the key enabling technologies and strategies that allow EV charging in grid-constrained scenarios.

EV Fast Charging & Infrastructure

A Global Roadmap to Powering an Anxiety-Free EV Charging Future

2:05 MODERATED Q&A: Session Wrap-Up

Moderator: Jeff Samalot, Public Network Product Manager, Electrify America

Panelists:

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

Richard Osuch, CEO & Founder, My EV Charger, LLC

Mika Takahashi, Technology Analyst, Electric Vehicle Research, IDTechEx

2:20 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

ADVANCES IN FAST CHARGING & IMPACTS ON THE GRID

2:55 Chairperson's Remarks

Michael Maten, Director, EV Policy & Regulatory Affairs, General Motors

3:00 Impact of Charging Infrastructure on the Grid

Anusha Pillay, Product Manager - Busways & Busplugs for Datacenters, Electrical Products, Siemens

The rise in electric vehicles (EVs) has boosted global demand for charging infrastructure, impacting grid stability, load management, and efficiency across technical, economic, and regulatory dimensions. It addresses distribution network strain from peak demand and potential grid congestion. Integrating smart grid tech and renewables such as advanced metering, demand response, and battery storage is essential for enhancing grid performance amid evolving energy demands.

3:20 EV Grid Integration: Emerging Challenges and Potential Solutions

Jubair Yusuf, PhD, Senior R&D S&E Electrical Engineer, Sandia National Laboratories

EV will encompass many of the vehicles in the upcoming days, and the inability to charge them sufficiently can accelerate the damages during catastrophic scenarios. This session will analyze the emerging challenges of the integration of electrified transport into power systems during emergencies, considering both grid and mobility challenges, and present solutions to mitigate these impacts. The presenter will cover a range of challenges and solutions for different stakeholders.

3:40 Using Electrodynamics and Custom Waveforms to Lower Voltage Rise, Improve Charge Times, and Reduce Damage in EV Cells

Daniel Higgs, Director, Revenue, Iontra Inc.

This presentation will show how custom waveform charging of larger capacity pouch cells can result in faster charging and less damage. We'll demonstrate how lower voltage rises can be achieved with charging that is "tuned into" the battery cell. This work is the initial data from a long-term project with the ultimate goal of faster DC charging for EV packs. We'll also touch on some concepts of electrostatics, an often-overlooked, yet critical component to understanding how best to charge batteries.



4:00 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Maten, Director, EV Policy & Regulatory Affairs, General Motors

Panelists:

Anusha Pillay, Product Manager - Busways & Busplugs for Datacenters, Electrical Products, Siemens

Jubair Yusuf, PhD, Senior R&D S&E Electrical Engineer, Sandia National Laboratories

Daniel Higgs, Director, Revenue, Iontra Inc.

4:15 Delivering Critical Power and Fast Charging in Cold Climates

Eric Rountree, PhD, CEO, FastLion Energy

Across the temperature range that lithium-ion batteries must operate, their power output and charge acceptance changes by 1000-fold. This has traditionally been viewed as a drawback. We have flipped the script and begun using this paradigm

as a tool to deliver arctic fast charging and low-cost, high-power output batteries. In this talk, we will present how we have accomplished this and how you can implement the same.

4:35 Battery Management for Fast-Charging Lithium-Metal Batteries

Brian Sisk, PhD, CTO, Sepion Technologies

Despite a clear energy density advantage, lithium-metal batteries have been delayed from the market due to numerous challenges, including safety, cycle life, power, cost, and difficulty in vehicle-level management. Many dendrite-suppression approaches fail to incorporate dynamic test profiles, only focusing on constant-current cycling and full-depth cycling. In this presentation, we present approaches to the improvement of fast-charging in lithium-metal batteries, including material-level improvements, BMS-level strategies, and vehicle-relevant solutions.

4:55 Advanced Lithium-ion Battery Fast Charging: Enhancing Performance, Longevity, and Safety for Electric Vehicles

Vallabha Rao Rikka, PhD, Research Scientist IV, UL Research Institutes

Range anxiety can be mitigated by increasing range or reducing charging time. Our research developed an optimal fast-charging method that achieves full energy density in 15 minutes by mitigating lithium plating and transition metal dissolution at 100% SOC. This approach doubled the cycle life compared to conventional protocols. We developed an LIB charging protocol offering longer driving ranges, quicker charging times, and the potential for safer EV battery packs.

5:15 1500 V DC for Next Generation E-Mobility?!

Reik Laubenstein, Sr Engineer, High Voltage Battery Systems, IAV Automotive Engineering Inc



Fast charging is key to increasing EV attractiveness and acceptance. This presentation explores high system voltage levels, such as 1500 V, for efficient charging and compact design. Challenges include safety requirements, partial discharge, and higher costs for new power modules. IAV analyzes optimal voltage levels for various applications, future energy grids, and drive train topologies. Key performance indicators like efficiency, cost, packaging, mass, and user benefits are discussed to understand trade-offs and benefits.

5:35 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Maten, Director, EV Policy & Regulatory Affairs, General Motors

Panelists:

Eric Rountree, PhD, CEO, FastLion Energy

Brian Sisk, PhD, CTO, Sepion Technologies

Vallabha Rao Rikka, PhD, Research Scientist IV, UL Research Institutes

Reik Laubenstein, Sr Engineer, High Voltage Battery Systems, IAV Automotive Engineering Inc

5:55 Networking Reception in the Exhibit Hall with Poster Viewing



7:00 Close of Day

WEDNESDAY, DECEMBER 11

7:30 am Registration and Morning Coffee

7:45 Interactive Breakout Discussions

Interactive Breakout 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: Innovations in Recycling Battery Materials & Second Life

Moderator: Steve Sloop, PhD, President, OnTo Technology LLC

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

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

TABLE 3: Silicon Anodes and Cells

Moderator: Benjamin Park, PhD, Founder & CTO, Enevate

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

EV Fast Charging & Infrastructure

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Battery Consulting

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TABLE 14: Advanced Battery Opportunities, Challenges and Co-Operation for the United States

Moderator: Adam Carpenter, Marketing Director & Sales Manager, Empower Greentech

STANDARDIZATION & IMPLEMENTATION

9:05 Chairperson's Remarks

Anusha Pillay, Product Manager - Busways & Busplugs for Datacenters, Electrical Products, Siemens

9:10 Standards Development Organizations Are Actively Shaping Requirements for Electric Transportation

Ralph Troute, Principal Engineer, Ralph Troute Consulting

Standards Development Organizations (SDOs) are critical in ensuring the next generation of electric transportation is dependable and safe. Recent developments and guidelines from organizations such as ANSI, the DOE, NREL, and the ChargeX Consortium are continuing to shape the evolution of ZEV infrastructure. This presentation will discuss the key SDOs in electric transportation, recent changes in electric transportation standards, effects on the supply chain, and current challenges and future trends.

9:30 Improving the Fleet Infrastructure Timeline—Regulations and Public and Private Factors

Leslie Goodbody, Engineer, California Air Resources Board

CARB has zero-emission (ZE) regulations in place for heavy-duty trucks and buses and is exploring ZE regulations for off-road vehicles and equipment. While OEMs can produce and deliver ZE trucks and buses, establishing charging infrastructure for large fleets has been challenging. This talk will focus on factors causing infrastructure project delays and what the public and private entities are doing to improve the pace and timing of charging infrastructure installations.

9:50 MODERATED Q&A: Session Wrap-Up

Moderator: Anusha Pillay, Product Manager - Busways & Busplugs for Datacenters, Electrical Products, Siemens

Panelists:

Ralph Troute, Principal Engineer, Ralph Troute Consulting

Leslie Goodbody, Engineer, California Air Resources Board

10:25 Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline. Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford
Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

2:00 Close of Conference



xEV Battery Technology, Application, and Market

Driving the Future Growth of Electric Vehicles Globally

WEDNESDAY, DECEMBER 11

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelty, Vice President, Battery Cell & Pack, General Motors

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Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing *(Sponsorship Opportunity Available)*

xEV MARKET EXPANSION

2:00 Organizer's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech

2:05 Chairperson's Remarks

John Kwon, General Counsel of Global Legal & Strategy, Contemporary Amperex Technology Limited (CATL)

2:10 Battery Market Trends and Impact of Policy

Evelina Stoikou, Senior Associate, Energy Storage, Bloomberg New Energy Finance

Policies in the the US and Europe—such as the Inflation Reduction Act and the Net Zero Industry Act—are forcing battery manufacturers and automakers to rethink their battery supply chains. Meanwhile, battery prices in China are rapidly

falling to new record lows, making it harder for Western players to compete. This presentation will cover the latest battery market, technology, supply chain ,and policy trends.

2:30 USABC Battery Development Program Overview

Matt Denlinger, Battery Research Engineer, Energy Storage Research, Ford Motor Company

The United States Advanced Battery Consortium (USABC) is a subsidiary of USCAR. The organization supports advanced battery technology development and commercialization for electric vehicles via funding through a cooperative agreement with the Department of Energy. This talk will give an overview of current and past USABC programs, as well as future funding opportunities for US battery developers.

2:50 Towards Pragmatic Electrochemical Impedance Spectroscopy for Automotive Application

Nasser Azad, Professor, University of Waterloo

Yasaman Masoudi, Engineer, BMS Algorithm, Stellantis

Electrochemical Impedance Spectroscopy (EIS) is a powerful characterization technique, widely applied in many disciplines. Despite the great potential of EIS, its implementation for automotive applications remains challenging. Towards the ultimate goal of making EIS more accessible, this presentation proposes a framework for optimizing the design of EIS experiments, wherein the advantages of the proposed methodology are demonstrated against the conventional experimentation through numerical examples.

3:10 MODERATED Q&A: Session Wrap-Up

Moderator: John Kwon, General Counsel of Global Legal & Strategy, Contemporary Amperex Technology Limited (CATL)

Panelists:

Evelina Stoikou, Senior Associate, Energy Storage, Bloomberg New Energy Finance

Matt Denlinger, Battery Research Engineer, Energy Storage Research, Ford Motor Company

Nasser Azad, Professor, University of Waterloo

Yasaman Masoudi, Engineer, BMS Algorithm, Stellantis

3:25 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

4:10 Assessing the Impact of Advancements in Battery Technology on Testing Protocols

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

Advanced battery technologies are increasingly moving towards commercialization. As battery cell sizes and maturity levels continue to grow, the significance of testing and evaluation methods becomes more pronounced. In this exploration, we delve into several aspects of Li-ion testing that require attention to align with upcoming battery technologies.

4:30 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.

4:50 Electrolyte Motion Induced Salt Inhomogeneity in Large Lithium-Ion Cells

Frederik Morgenstern, Senior Battery Technology Engineer, BMW Group

In 2023, the Dalhousie group demonstrated that expansion of active materials causes electrolyte flow in cylindrical cells upon cell cycling. We show that this electrolyte motion can cause severe inhomogeneity in the spatial distribution of conducting salt inside the jelly roll/stack. We discuss the influence of this electrolyte inhomogeneity on cell performance and lifetime.



xEV

xEV Battery Technology, Application, and Market

Driving the Future Growth of Electric Vehicles Globally

5:10 Paraclete Energy's Polymer Matrix Silicon vs. Graphite: >253% Energy Density, 45% Cost Reduction, 61% Lighter Pack



Paul Jones, VP Corp Strategy, Corp Strategy, Paraclete Energy Inc

Discover Paraclete Energy's polymer matrix technology. Our high-capacity silicon anode material boosts energy density by 253%, reduces battery pack weight by 61%, and cuts costs by 45%. This scalable, eco-friendly, and carbon-neutral solution meets DOE cycle stability requirements and eliminates reliance on dangerous silane gas, revolutionizing battery manufacturing for next-gen electric vehicles. Learn how our technology accelerates plant setup and enhances sustainability.

5:30 Nyobolt 35kWh EV Road/Track Demonstration and 4.5 Minute Charging

Brian Barnett, PhD, CTO, Nyobolt

Shane Davies, Director, Vehicle Battery Systems, Nyobolt

Nyobolt has developed fast-charge battery technology capable of full SOC fast charging in five minutes or less. To demonstrate this battery technology, Nyobolt designed and built an electrified "update" of the Lotus Elise based on a 35 kWh, 800V fast-charge battery capable of 250 km range. This talk will detail the battery technology, pack design, how the vehicle was built, successfully tested and charged in 4.5 minutes, and lessons learned.

5:50 MODERATED Q&A: Session Wrap-Up

Moderator: John Kwon, General Counsel of Global Legal & Strategy, Contemporary Amperex Technology Limited (CATL)

Panelists:

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

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

Frederik Morgenstern, Senior Battery Technology Engineer, BMW Group

Paul Jones, VP Corp Strategy, Corp Strategy, Paraclete Energy Inc

Brian Barnett, PhD, CTO, Nyobolt

Shane Davies, Director, Vehicle Battery Systems, Nyobolt

6:05 Close of Day

THURSDAY, DECEMBER 12

8:00 am Registration and Morning Coffee

xEV MARKET EXPANSION

8:35 Chairperson's Remarks

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

8:40 Advancing the 3.7 V K-Ion Battery for Electric Vehicles



Alexander Girau, Co Founder & CEO, Group1

The shift to LFP-based LIBs by major OEMs highlights the adaptation to integrating LFP cathodes into prismatic cells to compete with NCM. This shift focuses on low-cost and safety, avoiding Co and Ni. Group1's KIB advances sustainable battery tech, eliminating Li and Cu while maintaining energy density and improving charging rates. We'll update on our progress toward a 3.7V KIB battery with potential to achieve 200 Wh/kg, using a 4V KPW cathode, organic electrolyte, and graphite anode.

9:00 Debondable Adhesives as Key Technology for Enabling EV Battery Circularity



William Brown, Business Development Manager, Henkel Corp.

Enabling a circular economy for EV batteries is becoming an increasingly important topic around the world. The European Union is establishing a holistic framework for battery ecology. China has already set specific battery recycling targets. In the United States, no explicit federal policies currently exist; however,

ongoing discussions are taking place for potential LIB recycling. This presentation will explore the crucial role debondable adhesives play in the 4Rs—Repair, Reuse, Repurpose, Recycling, and review key triggers to enable debonding.

9:20 The Rechargeable Battery Market & Main Trends

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

This presentation will cover the battery market analysis and forecast application by application, its impact on raw material demand with major technical trends in cost structure and trends, and will include the global market forecast.

9:40 Optimizing Battery Sustainability and Cost-Effectiveness in Electrified Vehicle Technologies

Amirmasoud Lanjan, Battery Cell Application Engineer, Stellantis

Zahra Moradi, Battery Cell Lead, Stellantis

This presentation explores vital minerals for traction batteries, comparing LFP, LMFP, Na-ion, and Li-S, and emphasizing alternatives to rare minerals. It highlights eco-friendly material production, advances in low-emission cathodes, and natural graphite. The talk covers energy-intensive cell manufacturing processes, including coatings and waste management. It stresses the importance of smaller, longer-lasting batteries, increased infrastructure, and longevity, offering engineers practical insights for sustainable battery technology.

10:00 The Imperatives for EV Scale-Up and the Challenges of Integrating Innovations into the Supply Chain



Kenan Sahin, President & Founder, CAMX Power

While the environmental benefits of scaling up EVs globally may have been a major motivation initially, the current drivers are the cost parity between manufacturing an EV and an internal combustion vehicle, as well as the military's need for a reliable battery supply and innovation chain in North America. As a result, a massive scale-up by the industry is now underway. This impending expansion of EV production has stimulated a significant rise in innovations, the formation of numerous startups, and substantial investments in R&D. However, the scale-up presents serious challenges for integrating these innovative technologies into the EV supply chain, particularly regarding warranty costs and compatibility testing. We will propose suggestions to help reduce these barriers.

10:20 MODERATED Q&A: Session Wrap-Up

Moderator: Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

Panelists:

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

Amirmasoud Lanjan, Battery Cell Application Engineer, Stellantis

Zahra Moradi, Battery Cell Lead, Stellantis

William Brown, Business Development Manager, Henkel Corp.

Alexander Girau, Co Founder & CEO, Group1

10:45 Coffee & Bagel Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

11:50 xEV Battery Industry Implementation: 2025 Camry HEV

Tina Singh, Principal Engineer, Sustainability & Regulatory Affairs, Toyota Motor North America

HEVs have a role in this transition to a sustainable, decarbonized future—why we went 100% hybrid with the 2025 Camry HEV, our best-selling sedan for 22 years. The Camry touts the TNGA 2.5L 4-cylinder engine, offering more power in a smaller package, paired with the latest Toyota hybrid system. This results in the most horsepower offered on a Camry, with a light, compact electric motor to enhance performance.

12:10 pm CATL's 21st Century Lab: The Current State of Research on Lithium Metal

Ulderico Ulissi, PhD, Manager, 21C Lab, Contemporary Amperex Technology Limited (CATL)

Hansen Wang, PhD, Special Technology Officer, Advanced Metal Anodes, 21C Lab, CATL



xEV

xEV Battery Technology, Application, and Market

Driving the Future Growth of Electric Vehicles Globally

21C is a crossroad for academic research and industrial development, and in this presentation will offer insight into its latest research while providing an industrial perspective on the development of lithium metal batteries. For the first time, we will introduce a bottom-up design methodology that helped us achieve longer cycle life under lean electrolyte conditions, where electrolyte formulations are iterated based on a clear understanding of cell failure mechanisms.

INNOVATIONS IN BATTERIES FOR xEVs

12:30 Li-ion Battery Design for Electric Vertical Takeoff and Landing (eVTOL) Platforms

Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory

The development of robust and high-performance battery systems is crucial for the advancement of Electric Vertical Takeoff and Landing (eVTOL) vehicles for urban air mobility. This presentation embarks on a systematic investigation into the behavior of standard lithium-ion battery chemistries with two exemplary liquid electrolytes under eVTOL load profiles. The eVTOL load profiles are established by analyzing the power profile of actual eVTOL platforms undergoing specific missions.

12:50 Role of the Positive Electrode during Fast Charging of Lithium-ion Batteries

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

Fast charging is known to degrade performance of lithium-ion batteries containing layered oxide cathodes and graphite anodes. This degradation is typically attributed to lithium plating that occurs at the graphite anode at high currents. In this presentation, we will describe the role of the oxide cathode in battery degradation. Results from electrochemical tests, X-ray measurements, and electron microscopy studies will be presented to illustrate our conclusions.

1:10 MODERATED Q&A: Session Wrap-Up

Moderator: Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

Panelists:

Tina Singh, Principal Engineer, Sustainability & Regulatory Affairs, Toyota Motor North America

Ulderico Ulissi, PhD, Manager, 21C Lab, Contemporary Amperex Technology Limited (CATL)

Ilias Belharouak, PhD, Section Head, Electrification and Energy Infrastructure Division, Oak Ridge National Laboratory

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

1:25 Casual Networking Luncheon

2:15 Chairperson's Remarks

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

2:20 Technological Breakthrough Driven by Electrolyte with High Ionic Conductivity

Naoki Matsuoka, General Manager, R&D Center, Asahi Kasei Europe GmbH

AsahiKASEI

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.

2:40 Material Science Solutions for Advanced Mobility Applications

Saikat Banerjee, PhD, Senior Scientist & Analytical Lab Leader, DuPont

DuPont is focused on developing and delivering the best-in-class solutions the industry needs for auto electrification and sustainability. We have a robust portfolio providing solutions to a wide range of challenging areas. For this presentation, we are excited to focus on adhesive technologies that build a

better battery, create durable body structures, secure and protect drivers and passengers, and help ensure the same durability and safety through aftermarket repair.

3:00 Liquefied Gas Electrolyte for Next-Generation Li-ion Batteries



Cyrus Rustomji, Co-Founder and CSO, South 8 Technologies

South 8 Technologies has developed a novel Liquefied Gas Electrolyte (LiGas) to power the next generation of Li-ion batteries and advance a clean energy future. The LiGas electrolyte has been validated with OEMs and demonstrated to meet or exceed automotive cell performance requirements. In this talk, South 8 will provide an update on advanced cell chemistries to power the automotive future and on LiGas scale-up operations to meet growing demand from customers.

3:20 MODERATED Q&A: Session Wrap-Up

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

Panelists:

Saikat Banerjee, PhD, Senior Scientist & Analytical Lab Leader, DuPont

Naoki Matsuoka, General Manager, R&D Center, Asahi Kasei Europe GmbH

Cyrus Rustomji, Co-Founder and CSO, South 8 Technologies

3:35 Session Break

CLOSING PLENARY PANEL DISCUSSION

3:45 PANEL DISCUSSION: U.S. Post Election EV Landscape: Opportunities & Illusions



Moderator: Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

With the turbulent U.S. presidential elections now over, what are the implications for the global battery industry and what are the prospects for growth going forward. As the world transitions to electrification, many challenges and market corrections lay ahead. This panel of experts will discuss forecasts and insights about opportunities, challenges, barriers, and key factors shaping the roadmap and where the industry is going in the near and long term.

Panelists:

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

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

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

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

4:45 Close of Conference

Global Battery Raw Materials

Balancing Supply, Demand, and Costs for Battery Component Materials

WEDNESDAY, DECEMBER 11

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelty, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline.

Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kelty, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (*Sponsorship Opportunity Available*)

GLOBAL DEMAND FOR BATTERY RAW MATERIALS

2:00 Organizer's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech

2:05 Chairperson's Remarks

Michael Wang, PhD, Group Center Director & Distinguished Fellow, Systems Assessment Center, Argonne National Lab

2:10 The Top 11 Trends in the Lithium Industry in 2025 and Beyond

Lukasz Bednarski, Associate Director, Battery Raw Materials, IHS Markit

In this presentation I will discuss the top 11 trends that are expected to affect the lithium market and industry in 2025 and beyond, divided into "main trends," with the biggest impacts, and "emerging trends," with limited impacts next year, but with potential to shape the lithium industry in the years to come.

2:30 The Race to Secure Critical Metals

Frank Nikolic, Vice President, Base & Battery Metals, CRU Group

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The Chinese value chain has had a decade-long lead and has grown to become dominant and low-cost while Western value chains are struggling to compete. The United States and The European Union are both responding with regulations to protect and incentives to encourage their value chains. This talk will explore the raw-materials side of the battery value chain and the emerging complexity it finds itself in.

2:50 Battery Raw Material Supply Response after Shortages

Andrew Saucer, Battery Raw Materials Analyst, Fastmarkets

What should the market expect in terms of a supply response from battery raw material producers? What is the outlook for supply, demand, and prices in these complicated and fast-moving markets? The talk will look at recent developments in battery raw materials, the impact they've had on the supply chain, and the underlying trends in lithium, cobalt, and nickel.

3:10 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Wang, PhD, Group Center Director & Distinguished Fellow, Systems Assessment Center, Argonne National Lab

Panelists:

Lukasz Bednarski, Associate Director, Battery Raw Materials, IHS Markit

Frank Nikolic, Vice President, Base & Battery Metals, CRU Group

Andrew Saucer, Battery Raw Materials Analyst, Fastmarkets

3:25 Refreshment Break in the Exhibit Hall with Poster Viewing

(*Sponsorship Opportunity Available*)

4:10 Building Resilient Battery Supply Chains in the West

Max Reid, Principal Analyst, Battery & Raw Materials, Wood Mackenzie

Policies have entered force which aim to reduce the European Union's and US's reliance on China for their battery supply chains. However, with uncertainty in the electric vehicle outlook and volatile battery raw material prices, there is uncertainty in achieving these targets. Attend this presentation to hear coverage of the latest EU and US policies, their impacts across the battery value chain, and outlook for net-zero targets.

MARKET OPPORTUNITIES IN BATTERY RAW MATERIALS

4:30 Lack of Upstream Development Will Hinder the EV Industry Development

Kimberly Berman, Independent Consultant

Building out a low-risk EV supply chain to support the energy transition goals of the auto industry begins with securing the necessary critical minerals. However, despite extensive legislation supporting the development of the North American battery industry, there is little-to-no domestic mine production of critical metals. Therefore, the industry will be increasingly dependent on geopolitically sensitive countries, unless crucial upstream development occurs.

4:50 Navigating the Emerging Complexities of the Raw-Materials Side of the Battery Value Chain

Taylor Shively, Principal Consultant, CRU Group

Recent supply responses have shifted many critical metals markets into surplus, but beyond the near-term, significant investments are needed to keep pace with demand. However, recent geopolitical developments and net-zero aspirations are impacting how the value chain from ore to EV door is developing. Taylor will explore CRU's outlook and the emerging complexity of the raw-materials side of the battery value chain.

5:10 New Sustainable Production of IRA-Compliant NMC811

Jayse Langdon, Senior Scientist, Science, 6K Energy

Production processes for battery materials must evolve to create a sustainable manufacturing ecosystem in the US. New cathode manufacturing processes must be cost-effective with limited environmental impact and reliably produce high-performance materials to meet changing market demands. In this presentation, you will learn about the 6K plasma-based manufacturing process for producing state-of-the-art, IRA-compliant, single-crystal NMC811 material while eliminating sodium sulfate waste streams.



Global Battery Raw Materials

Balancing Supply, Demand, and Costs for Battery Component Materials

5:30 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Wang, PhD, Group Center Director & Distinguished Fellow, Systems Assessment Center, Argonne National Lab

Panelists:

Max Reid, Principal Analyst, Battery & Raw Materials, Wood Mackenzie

Kimberly Berman, Independent Consultant

Taylor Shively, Principal Consultant, CRU Group

Jayse Langdon, Senior Scientist, Science, 6K Energy

5:50 Close of Day

THURSDAY, DECEMBER 12

8:00 am Registration and Morning Coffee

ADVANCEMENTS IN R&D FOR BATTERY RAW MATERIALS

8:30 Organizer's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech

8:35 Chairperson's Remarks

Lukasz Bednarski, Associate Director, Battery Raw Materials, IHS Markit

8:40 PANEL DISCUSSION: Demystifying Precursor Cathode Active Materials and Sodium Sulfate

Moderator: Marco Romero, Founder & CEO, Positive Materials

Precursor cathode active materials are the weakest link in the North American battery supply chain, despite being critical components. Currently, China produces around 96% of the world's pCAM. To localize and strengthen the continent's battery and EV industry, new pCAM manufacturing capacity needs to be built. Producing these specialized products can pose environmental challenges, with success largely dependent on the methods and locations of production.

Panelists:

Mervyn Stevens, Vice President, Battery Minerals & Materials, Worley

Karel Vratny, Thermal Domain and Battery Materials Sales, Veolia Water Technologies & Solutions

9:20 High-Performance, Resilient and Sustainable Graphite Supply for a Carbon Neutral E-Mobility

Stefan Bergold, Chief Commercial Officer, Vianode

Electric vehicles reduce CO2 emissions during driving, but the manufacturing process also impacts the overall CO2 balance, especially in the battery anode. This presentation covers how Vianode produces high-performance, competitive anode materials in North America and Europe with a proprietary process that improves product consistency, energy efficiency, and reduces CO2 emissions. Vianode's first large-scale plant in Norway opened in 2024, with a full-scale North American plant set for 2027 SOP.

Vianode

9:40 Process Enablers for LIB: Lowering Costs & Increasing Performance

Benjamin Brehmer, Global Segment Manager, Evonik Corporation

Evonik's Tego Surten E processing additives can reduce processing costs and increase the power output of lithium ion batteries. These surfactants (wetting agents, dispersants, rheology modifiers, antifoams, etc.) are employed in a variety of paste and slurry production configurations from cathodes, anodes and ceramic separators to conductive pastes like carbon nanotubes. By adding small quantities, significant savings can be achieved through improved rheology, viscosity, and other attributes in the production process. Improved coating quality can also lead to lower defects and increased compact density with higher solids content.



10:00 J-GRAPHENE: Advancing Energy Materials with Superior Quality

Yuya Katano, International Department, JOKOH CO., LTD.



Low-defect graphene offers transformative potential in energy storage applications, unlocking superior conductivity, thermal management, and mechanical properties. While not yet at mass-production scale, our innovative approach ensures consistent quality and demonstrates scalability potential. This presentation highlights the outstanding properties of our "J-GRAPHENE" enabled by advanced manufacturing methods and its important role in enhancing battery performance. Join us to explore how our innovations address industry challenges and set new material standards.

10:20 Lithium Production in Chile: A Personal Point of View

Emilio Bunel, PhD, Professor, Catholic University of Chile

Lithium producers are focusing their efforts on ensuring that the lithium production processes are sustainable, as production is scaled up to meet the demand. I will discuss the National Lithium Strategy in Chile, which is a set of measures that seek to incorporate capital, new technology, sustainability, and value to the productive sector. In harmony with communities and with the commitment to create a network of protected salaries.

10:40 MODERATED Q&A: Session Wrap-Up

Moderator: Lukasz Bednarski, Associate Director, Battery Raw Materials, IHS Markit

Panelists:

Stefan Bergold, Chief Commercial Officer, Vianode

Benjamin Brehmer, Global Segment Manager, Evonik Corporation

Yuya Katano, International Department, JOKOH CO., LTD.

Emilio Bunel, PhD, Professor, Catholic University of Chile

10:45 Coffee & Bagel Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

ADVANCEMENTS IN R&D FOR BATTERY RAW MATERIALS

11:50 Recent North-American Lithium-ion Battery Supply Chain Growth

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.

12:10 pm Easier Said than Done? Sourcing IRA-Compliant Electric Vehicle Battery Materials

Thomas Frey, Head of Marketing & Communication, Ascend Elements

The EV battery materials landscape saw incredible change in 2024. New laws and guidelines. Evolving terminology and definitions. International tensions and presidential elections. How will tariffs on Chinese products impact the U.S. and European markets? What counts as IRA-compliant material? What role will recycled material play in the global supply chain? This presentation explores the fast-changing critical materials ecosystem with insights from North America's largest manufacturer of sustainable cathode materials.

12:30 Meeting Global Demand for High-Performance, Low-Cost Carbon Nanotubes

David Arthur, CEO, CHASM Advanced Materials

With carbon nanotubes (CNTs) becoming critical for today's EV batteries, sustainable, scalable approaches to meet expected global demand are needed, including US and European production. In the past, commercial application has been hindered by the practical obstacles of scaling manufacturing at viable cost. In this talk, we'll discuss the key properties of carbon nanotubes that make them a superior carbon additive for Li-ion batteries and present CHASM's unique approach, which produces low-cost, tunable, and high-purity CNT materials.



Global Battery Raw Materials

Balancing Supply, Demand, and Costs for Battery Component Materials

12:50 MODERATED Q&A: Session Wrap-Up

Moderator: Lukasz Bednarski, Associate Director, Battery Raw Materials, IHS Markit

Panelists:

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

Thomas Frey, Head of Marketing & Communication, Ascend Elements

David Arthur, CEO, CHASM Advanced Materials

1:05 Casual Networking Lunch

ADVANCEMENTS IN R&D FOR BATTERY RAW MATERIALS

2:15 Chairperson's Remarks

Moderator: Taylor Shively, Principal Consultant, CRU Group

2:20 Innovative Cathode Process Technologies to Address the Demands of the Terawatt-Hour Era

Moderator: Yuan Gao, Independent Board Director, Nano One

With the rise of EVs and energy storage, the lithium-ion battery industry is entering the terawatt-hour era. At this conference we will give an update on progress in addressing these issues and in make cathode production more sustainable for the terawatt-hour era.

2:40 Life-Cycle Analysis of Batteries with the GREET Model

Moderator: Michael Wang, PhD, Group Center Director & Distinguished Fellow, Systems Assessment Center, Argonne National Lab

Advances continue to be made in battery chemistries, materials, and manufacturing processes. The GREET life-cycle analysis model that is developed at Argonne National Laboratory continues to be expanded and updated to reflect the advances for environmental performance, especially greenhouse gas reductions. In this presentation, we will cover the battery technology coverage in the GREET model and updated LCA results of different battery technologies.

3:00 Analytical Testing Instruments for R&D and Battery Raw Materials

Moderator: Chady Stephan, Dir Applied Markets, Analytical & Enterprise Solutions, PerkinElmer Inc

The battery and energy storage markets are fast evolving with a focus on reduced cost and increased safety. This is driving a constant change in battery chemistry and its raw materials supply chain. In this talk, I will discuss how various laboratory analytical instruments are used to advance battery R&D and ensure battery QA/QC across its manufacturing process. I will describe



different approaches to identifying and quantifying impurities in various battery materials, assessing cathode metals blending accuracy and electrolyte mixtures consistency. I will also discuss tools for battery safety testing.

3:20 MODERATED Q&A: Session Wrap-Up

Moderator: Taylor Shively, Principal Consultant, CRU Group

Panelists:

Yuan Gao, Independent Board Director, Nano One

Michael Wang, PhD, Group Center Director & Distinguished Fellow, Systems Assessment Center, Argonne National Lab

Chady Stephan, Dir Applied Markets, Analytical & Enterprise Solutions, PerkinElmer Inc

3:35 Session Break

CLOSING PLENARY PANEL DISCUSSION

3:45 PANEL DISCUSSION: U.S. Post Election EV Landscape: Opportunities & Illusions



Moderator: Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

With the turbulent U.S. presidential elections now over, what are the implications for the global battery industry and what are the prospects for growth going forward. As the world transitions to electrification, many challenges and market corrections lay ahead. This panel of experts will discuss forecasts and insights about opportunities, challenges, barriers, and key factors shaping the roadmap and where the industry is going in the near and long term.

Panelists:

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

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

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

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

4:45 Close of Conference

Battery Intelligence for Automotive Applications

Using Machine Learning and Artificial Intelligence to Optimize Battery Development from Materials to Manufacturing

WEDNESDAY, DECEMBER 11

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kely, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline.

Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus

which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kely, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing *(Sponsorship Opportunity Available)*

MATERIALS DEVELOPMENT

2:00 Organizer's Remarks

Victoria Mosolgo, Conference Producer, Cambridge EnerTech

2:05 Chairperson's Remarks

Austin Sendek, PhD, Founder/CEO, Aionics, Inc.; Adjunct Professor, Stanford University

2:10 Machine Learning and Robotic Experimentation to Accelerate Battery Materials Innovation

Shashank Sripad, PhD, Co-Founder & CTO, And Battery Aero

This presentation discusses leveraging machine learning and robotic experimentation to accelerate innovation in battery materials. It explores how these advanced techniques streamline material discovery, optimize properties, and expedite the development of next-generation battery technologies.

2:30 From Machine Learning Prediction to Commercialized Product: A Case Study on the Lithium Thioborates

Austin Sendek, PhD, Founder/CEO, Aionics, Inc.; Adjunct Professor, Stanford University

In this talk, we will discuss how new computational approaches enabled by high-performance computing and machine learning algorithms are accelerating the traditional materials design and commercialization process for battery materials. As a case study, we present our recent positive results on a new, record-breaking, solid Li-ion conductor material Li8B10S19, which embodies the new data-driven R&D paradigm of machine learning-based discovery and human-based synthesis and scale-up.

2:50 Safer, More Reliable Batteries—Faster: Leveraging AI-Guided Testing to Accelerate Battery Innovation

Richard Ahlfeld, PhD, Founder & CEO, Monolith AI

When developing new electric vehicles, OEMs consistently face major challenges with battery testing; the need to maximize range and charging efficiency can present blockers to rapid development, and remove OEMs' competitive advantage. OEMs desperately need new ways to accelerate product development. Using AI-guided battery testing, they can change the game—reducing testing, enhancing learning, and maximizing product quality to supercharge innovation.

3:10 MODERATED Q&A: Session Wrap-Up

Moderator: Austin Sendek, PhD, Founder/CEO, Aionics, Inc.; Adjunct Professor, Stanford University

Panelists:

Shashank Sripad, PhD, Co-Founder & CTO, And Battery Aero

Richard Ahlfeld, PhD, Founder & CEO, Monolith AI

3:25 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

MATERIALS TO MANUFACTURING

4:10 Silicon-Based Anodes: Emerging Challenges in Automotive Batteries

Jin-Hyung Lim, Technical Specialist, Powertrain, Lucid Motors Inc.

This presentation will share emerging challenges associated with the implementation of high silicon content cells in automotive battery systems, and discuss solutions to these challenges that utilize multiphysics modeling and insights to improve BMS predictions.

4:30 Battery Brain: Generative AI for Factory Knowledge Management

Matthew Gordon, PhD, Senior Manager, Advanced Manufacturing Research, Toyota Research Institute

Amalie Trewartha, PhD, Senior Research Scientist, Energy and Materials, Toyota Research Institute

Scaling battery production to full capacity at a new plant can often take years, but effective knowledge management can allow new plants to reduce costs and improve yield. LLMs are ushering in a new era of knowledge management with potentially huge impacts on efficiency improvements. Battery Brain is a tool to radically transform how battery plants search, use, and visualize information, giving advanced root-cause analysis tools to non-technical users.

4:50 AI Driven Digital Twin for Improved Battery Performance and Predictive Maintenance

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

It will be shown how data analytics and artificial intelligence can enhance battery design, testing, and management, and the goal of a comprehensive approach that considers the whole value chain and life cycle of batteries, from raw materials to recycling.

5:10 Overview of Research and Development of Materials for Electric Vehicles with AI and Big Data

Masanobu Uchimura, Senior Manager, Nissan Advanced Technology Center Silicon Valley, Nissan North America Inc

Battery Intelligence for Automotive Applications

Using Machine Learning and Artificial Intelligence to Optimize Battery Development from Materials to Manufacturing

Nissan, the company that launched the world's first mass-produced electric vehicle, announced its goal to achieve carbon neutrality by 2050 throughout the vehicle's lifecycle in 2021. To achieve this goal, there are four challenges: 1) Data-driven chemistry design, 2) Material recycle, 3) Cell design optimization, 4) Battery diagnosis/prognosis. This presentation will provide an overview of our approach using materials informatics technology in data-driven chemistry design.

ANODE POTENTIAL FOR BMS

5:30 Anode Potential for Better BMS: Optimizing Battery Management Systems for Performance and Longevity

Matthias Lex, Senior Battery Engineer, Customer Success, TWAICE Technologies GmbH

Learn how the cutting-edge anode-potential simulation model can be seamlessly integrated into your battery development process to enhance performance and longevity. This session will provide an in-depth look at how the model works to prevent lithium plating, avoid battery fires, and mitigate non-linear aging. Attendees will learn how this innovation supports faster, safer charging and extends battery lifespan.

5:50 MODERATED Q&A: Session Wrap-Up

Moderator: Austin Sendek, PhD, Founder/CEO, Aionics, Inc.; Adjunct Professor, Stanford University

Panelists:

Jin-Hyung Lim, Technical Specialist, Powertrain, Lucid Motors Inc.

Matthew Gordon, PhD, Senior Manager, Advanced Manufacturing Research, Toyota Research Institute

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

Matthias Lex, Senior Battery Engineer, Customer Success, TWAICE Technologies GmbH

6:10 Close of Day



THURSDAY, DECEMBER 12

8:00 am Registration and Morning Coffee

MACHINE LEARNING AND DIAGNOSTICS

8:30 Organizer's Remarks

Victoria Mosolgo, Conference Producer, Cambridge EnerTech

8:35 Chairperson's Remarks

Weihan Li, Research Group Leader, RWTH Aachen University

8:40 Discover Tomorrow's Battery Materials Today with Large Quantitative Models (LQMs)

Ang Xiao, Technical Lead, AI for Materials Science, SandboxAQ

In this presentation, we will discuss the development and application of the Large Quantitative Models (LQMs), a transformative tool for accelerating automotive battery materials and technology R&D. The LQMs integrate comprehensive datasets from experimental results, numerical equations, and first-principle calculations, enabling precise predictions of material behavior, such as electrode compositions and electrolyte performance, under various conditions. By providing rapid insights into key properties like cycle life, energy density, and degradation patterns, this model significantly reduces the time and cost associated with material discovery and optimization. Our discussion will highlight how LQMs can drive innovation in automotive battery technology and materials discovery, leading to the creation of more efficient and durable energy storage.



9:00 Digital Twin for Design and Test

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



When designing and validating new batteries, testing can be time-consuming, energy-intensive, hazardous, and require expensive DUT and capital test assets. Using simulation and modeling, a digital twin of both the DUT and the test system provides virtual testing to shorten the time and expense of design verification.

This presentation describes a software framework to achieve lower costs and faster design cycles with reduced real testing when taking new designs to completion.

9:20 Machine Learning

Noah Paulson, PhD, Computation Scientist, Data Science and Learning, Applied Materials, Argonne

Optimal deployment and accelerated development of batteries requires a deep understanding of battery performance and health alongside methods to predict the evolution of these quantities with respect to historical and anticipated stressors. In this presentation, we discuss the recontextualization of diverse health metrics as an advanced state of health (A-SOH) and introduce deep learning algorithms that show promise in predicting the future A-SOH for both real and simulated datasets.

9:40 Diagnostics Using Pulse Tests and Machine Learning

Paul J. Gasper, PhD, Staff Scientist, Energy Conversion & Systems Center, National Renewable Energy Laboratory

Rapid diagnostic tests use short (10s-100s) alternating- or direct-current signals to probe a battery, from which battery capacity, state-of-charge, or safety may be estimated. Many methods have been proposed, but a holistic evaluation of these techniques has not yet been presented. Here, we will present a study on the effectiveness of using rapid diagnostics for state-of-charge and temperature agnostic battery state estimation, using both previously published and newly collected data.

10:00 Enhancing Battery Safety: AI-combined Ultrasonic Testing in Automotive Battery Manufacturing, deployment, and Secondary Life Applications

Yong Xiang, Founder & CEO, Tsing Bosch Zhuhai Technology Ltd

The importance of battery safety in EVs necessitates advanced inspection methods. Ultrasonic testing (UT) is a non-destructive, cost-effective alternative to X-ray CT. It's applied in manufacturing to detect issues like electrode folding and sealing problems. During deployment, it monitors gas evolution and lithium plating. In second-life utilization, UT evaluates battery quality for repurposing. Integrating UT with AI enhances diagnostic accuracy, optimizing battery health analysis and safety protocols in the automotive industry.



10:20 MODERATED Q&A: Session Wrap-Up

Moderator: Weihan Li, Research Group Leader, RWTH Aachen University

Panelists:

Yong Xiang, Founder & CEO, Tsing Bosch Zhuhai Technology Ltd

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

Noah Paulson, PhD, Computation Scientist, Data Science and Learning, Applied Materials, Argonne

Paul J. Gasper, PhD, Staff Scientist, Energy Conversion & Systems Center, National Renewable Energy Laboratory

Ang Xiao, Technical Lead, AI for Materials Science, SandboxAQ

10:45 Coffee & Bagel Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

AGING AND SECOND-LIFE

11:45 Chairperson's Remarks

Tal Sholklipper, CEO & Co-Founder, Executive, Voltaiq

11:50 Characterization of Cell Aging with High-Resolution, High-Throughput CT Scanning

Peter Attia, PhD, Department of Materials Science, Stanford University

Cell degradation is commonly characterized and quantified by various electrochemical signals. However, there is more to the story than meets the eye. We investigate the impact of aging parameters on cell internal changes characterized through high-resolution, high-throughput CT scanning with the goal of improving cell performance and durability.

Battery Intelligence for Automotive Applications

Using Machine Learning and Artificial Intelligence to Optimize Battery Development from Materials to Manufacturing

12:10 pm Accelerating Battery Characterization and Aging Test with Machine Learning

Weihan Li, Research Group Leader, RWTH Aachen University

Battery characterization and aging tests span several months to years, posing significant challenges for manufacturers and OEMs seeking to accelerate testing and extract comprehensive insights, particularly on battery aging. This work addresses these challenges by integrating physical modeling with machine learning to analyze battery performance at the parameter level. Leveraging robotics and high-throughput testing platforms, we develop a framework that digitalizes and automates the testing process, enabling faster battery evaluation.

12:30 Calendar and Cycle Life Aging Analysis Using Pseudo-EIS

Daniel Juarez Robles, PhD, Research Engineer, Powertrain Engineering Division, Southwest Research Institute

Pseudo-Electrochemical Impedance Spectroscopy (pseudo-EIS) is a technique used to estimate the state of health of lithium-ion batteries (LIBs). Unlike EIS, pseudo-EIS can be implemented in a battery management system for real-time battery health diagnostics. This study uses pseudo-EIS applied to large-format pouch-type LIBs subject to both calendar and cycle life aging. The results correlated capacity and resistance changes with degradation mechanisms and the evolution of the parameters with aging.

12:50 MODERATED Q&A: Session Wrap-Up

Moderator: Tal Sholkapper, CEO & Co-Founder, Executive, Voltaiq VOLTAIQ

Panelists:

Peter Attia, PhD, Department of Materials Science, Stanford University

Daniel Juarez Robles, PhD, Research Engineer, Powertrain Engineering Division, Southwest Research Institute

Weihan Li, Research Group Leader, RWTH Aachen University

1:05 Casual Networking Lunch

BATTERY MANAGEMENT SYSTEMS AND ARTIFICIAL INTELLIGENCE

2:15 Chairperson's Remarks

Tal Sholkapper, CEO & Co-Founder, Executive, Voltaiq

2:20 Building the Foundation for Battery AI

Tal Sholkapper, CEO & Co-Founder, Executive, Voltaiq

The promise of AI has captivated the battery industry, but many are seeing underwhelming results. Recommended systems produce inaccuracies, lifetime predictions miss critical failures, and complex models require weeks of manual data entry. Learn why AI in batteries is underdelivering. The key to next-level insights lies in building a sound foundation of clean, formatted, featurized data, updated in real time. As other industries have learned, clean data is the fuel for effective AI. In the battery space, where chemistries, supply chains, and production processes vary significantly, standardized data collection is even more crucial. Learn how to support your AI initiatives with the data they need to run at scale and in production.

2:40 Li-Metal Batteries of Active Battery Management Systems

Kostyantyn Khomutov, Co-Founder and CEO, GBatteries

This presentation explores the integration of active battery management systems in Li-metal batteries, enhancing safety and performance. It discusses innovations in management strategies, including monitoring, regulation, and fault detection, crucial for advancing the reliability and efficiency of next-generation energy storage solutions.

3:00 State-of-the-Art Battery System Design and Its Test Data for Both at LVS and HVS for Automotive Batteries



Sungbin Lim, Managing Director, Development Division, Sebang Lithium Battery

LVS battery requirements and product relationships are utilizing various cell form factors. LVS battery use cases are extending from OTA and add-on power to redundancy power. HVS batteries which are using pouch form factors require high packing ratio to decrease cost and increase mileage, which can be achieved using new materials. Also, it requires a faster charging rate, which can be realized

through high pressure cooling plates. New approaches to achieve no thermal propagation using pouch cells. Accuracy of SoX and diagnostic functions will be presented.

3:20 MODERATED Q&A: Session Wrap-Up

Moderator: Tal Sholkapper, CEO & Co-Founder, Executive, Voltaiq VOLTAIQ

Panelists:

Kostyantyn Khomutov, Co-Founder and CEO, GBatteries

Sungbin Lim, Managing Director, Development Division, Sebang Lithium Battery

3:35 Session Break

CLOSING PLENARY PANEL DISCUSSION

3:45 PANEL DISCUSSION: U.S. Post Election EV Landscape: Opportunities & Illusions



Moderator: Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

With the turbulent U.S. presidential elections now over, what are the implications for the global battery industry and what are the prospects for growth going forward. As the world transitions to electrification, many challenges and market corrections lay ahead. This panel of experts will discuss forecasts and insights about opportunities, challenges, barriers, and key factors shaping the roadmap and where the industry is going in the near and long term.

Panelists:

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America
Ahmad Pesaran, PhD, Chief Energy Storage Engineer, National Renewable Energy Laboratory

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

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

4:45 Close of Conference

Advanced Battery Manufacturing Production

Maximizing Production Efficiency & Quality to Deliver on Global Demand

WEDNESDAY, DECEMBER 11

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline.

Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus

which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

SCALING GLOBAL BATTERY PRODUCTION

2:00 Organizer's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech

2:05 Chairperson's Remarks

Michael Collarin, Senior Mechanical Engineer, Gresham Smith



2:10 FEATURED PRESENTATION: LG, Leading the Battery Expansion in North America

Robert Lee, Corporate Executive Vice President and Head of North America, LG Energy Solution

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.

2:30 Development of High-Voltage, High-Energy-Density LNMO/Si Solid-State Li-ion Batteries: From R&D to Scale-Up Manufacturing

Tim Lin, PhD, CTO and Founder, Solid Energies

This presentation will review recent advancements in LNMO/Si SSLIB technology and related challenging issues so far encountered, highlighting the progress having been made in Solid Energies Inc. (SEI) including R&D and technical commercialization geared toward scaled-up manufacturing.

2:50 Building a (Li-)Bridge: Revolutionizing the U.S. Battery Supply Chain

Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

Li-Bridge, a public-private alliance convened by the U.S. DOE and managed by Argonne National Laboratory, outlined steps for the U.S. to double annual lithium-battery revenues to \$33 billion and provide 100,000 jobs by 2030. An industry-first battery collaboration, Li-Bridge delivered its action plan in the report, "Building a Robust and Resilient U.S. Lithium Battery Supply Chain," which includes 26 recommended actions to bolster the domestic lithium battery industry.

3:10 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Collarin, Senior Mechanical Engineer, Gresham Smith

Panelists:

Robert Lee, Corporate Executive Vice President and Head of North America, LG Energy Solution

Tim Lin, PhD, CTO and Founder, Solid Energies

Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

3:25 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

4:10 Evolution & Future Possibilities of Asian Advanced LIB Manufacturing and Production

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

Asian LIB manufacturers are used to satisfy end-customer needs to improve their battery production to actively invest in the European and American markets. This presentation will give you the analysis of the integration trend of battery cell manufacturing equipment, how the new composite battery materials affects the LIB manufacturing process, various efforts to reduce carbon emission production, and the development of Chinese rapidly emerging semi-solid battery *in situ* solidification.

4:30 Utilizing State and Local Government Resources: What to Know before You Grow

Nathaniel Dick, Business Development Manager, Economic Development Partnership of North Carolina EDPNC

Economic developers play a crucial role in the growth and success of new and established companies by providing a comprehensive range of support services designed to foster innovation, competitiveness, and sustainability. This talk will cover the free resources available on the state and local economic development level for companies by diving into site selection timelines, workforce development programs, nondiscretionary/discretionary incentives, and realistic expectations.

4:50 Successful Scale-Up of Gigafactories to Optimize Cost and Weather-Demand Fluctuations

Hany Ahmed, PhD, Expert Engagement Manager, McKinsey & Company

With evolving demand for mobility driven by passenger vehicles in North America, it is critical to install the necessary gigafactory capacity to meet demand. This talk will share a perspective on building gigafactory capacity to optimize cost structure in an uncertain market demand while maintaining the capability to scale up.

5:10 Learning to Listen: Pitfalls to Avoid & Opportunities to Thrive Using ML in Battery Metrology

Nicolina Nanni, Head of Product, Liminal

liminal

Advanced Battery Manufacturing Production

Maximizing Production Efficiency & Quality to Deliver on Global Demand

There is a pressing need for novel inspection methods and advanced data utilization strategies as battery demand and production grow rapidly. This talk will focus on some of the challenges and learnings around introducing machine learning-based inspection solutions into battery manufacturing.

5:30 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Collarin, Senior Mechanical Engineer, Gresham Smith

Panelists:

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

Nathaniel Dick, Business Development Manager, Economic Development Partnership of North Carolina EDPNC

Hany Ahmed, PhD, Expert Engagement Manager, McKinsey & Company

Nicolina Nanni, Head of Product, Liminal

5:50 Close of Day

THURSDAY, DECEMBER 12

8:00 am Registration and Morning Coffee

SCALING GLOBAL BATTERY PRODUCTION

8:35 Chairperson's Remarks

Nathaniel Dick, Business Development Manager, Economic Development Partnership of North Carolina EDPNC

8:40 The Application of Composite Current Collectors in Lithium-ion Battery Manufacturing Production



Jack Xia, Director of Materials Research, Nanopore Innovative Materials

As a novel type of battery material, composite current collectors have progressed from laboratory development to large-scale industrialization. They have garnered significant attention from battery manufacturers due to their ability to enhance battery safety during mechanical abuse, improved energy density, and reduced usage of metal resources. However, because the physical properties of composite current collectors lie between conventional metal foils and plastic films, corresponding adjustments are necessary in battery production processes such as coating, calendaring, tab welding, etc. This presentation will share Nanopore's experiences in the research, development, and production of composite current collectors, as well as their application in downstream process of battery industries. Furthermore, we will provide a novel interpretation of the safety improvement mechanisms of composite current collectors during mechanical abuse.

9:00 Binder Materials for Fast Charging and High Energy Density Anode



Shoudai Kurosumi, Sr Engineer High Performance Chemicals Dev, Applications R&D, ENEOS Materials Corp

ENEOS Materials Corporation is a manufacturer of binder materials for lithium ion battery and has a large variety of binder products for anode, cathode and solid state battery. Currently, the improvements of fast charging performance and high energy density are drawing strong attention for the market expansion of electric vehicles. This presentation will show anode binder products for these technical demands and the improvement mechanism from the aspects of the binder and electrode properties.

9:20 Battery Manufacturing Excellence: Closing the Loop on Safety, Efficiency, and Quality



JR Klein, Battery Technology Manufacturing Specialist | Driving Innovation in Energy Storage, Honeywell

Battery manufacturers are faced with many challenges on their journey to mass production: from the day-to-day reality of operations, to detecting and preventing safety events, and ensuring a reliable supply of materials. Manufacturing inefficiencies can contribute to low yields which often correlate to safety-related defects. All layers of the manufacturing operating system need to work seamlessly from the hardware on the plant floor to the corrective actions in the

quality system to achieve battery manufacturing excellence. Join this session to learn how Honeywell is able to vertically integrate data into insight and build a closed loop adaptive system for safe, efficient and high-quality battery production.

9:40 Powering-Up EV Battery Plant Design

Michael Collarin, Senior Mechanical Engineer, Gresham Smith

Johnathan Woodside, Mechanical Engineer, Gresham Smith

In the fast-paced world of electric vehicle (EV) battery manufacturing, the urgency to build more plants often leads to ambitious and challenging timelines. This presentation will examine the key mechanical system considerations in detail, emphasizing their role in differentiating a successful project from one with setbacks that could potentially prolong a project timeline significantly.

10:00 GigaFab's in the U.S.—Are You Ready?

Klaus Eberhardt, Sr Dir Technology Mgmt, ATF, Exyte Central Europe GmbH



Speed (time-to-market) and cost competitiveness are the key factors for battery cell manufacturing in the EV market in North America. To win in the market and lead in the EV battery industry, the battery manufacturers should have both speed and cost competitiveness.

The presentation will, firstly, highlight the challenges and obstacles of EV battery gigafactory facility development, and secondly, analyze both reason and consequences of those challenges & obstacles. Finally, the presentation will share suggested solutions for EV battery cell manufacturers to overcome the challenges in the EV battery market.

10:20 MODERATED Q&A: Session Wrap-Up

Moderator: Nathaniel Dick, Business Development Manager, Economic Development Partnership of North Carolina EDPNC

Panelists:

Jack Xia, Director of Materials Research, Nanopore Innovative Materials

Shoudai Kurosumi, Sr Engineer High Performance Chemicals Dev, Applications R&D, ENEOS Materials Corp

Michael Collarin, Senior Mechanical Engineer, Gresham Smith

Johnathan Woodside, Mechanical Engineer, Gresham Smith

Klaus Eberhardt, Sr Dir Technology Mgmt, ATF, Exyte Central Europe GmbH

10:45 Coffee & Bagel Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

11:50 Blueprint as an Enabler to Fast and Cost-Efficient Scale-Up for Gigafactories

Kiwook Jung, PhD, Associate Partner, Digital Advisory, MHP a Porsche Company

This session will present how battery cell producers implemented the integrated engineering process and digital levers to enable productization of factory ("Blueprint"), enabling parallel, consistent, and fast industrialization.

12:10 pm Lessons Learned from 10 Years of Gigafactory Design Projects

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

Accelerated gigafactory design and construction projects are underway across the globe to support the transition to electrification. Our experienced project managers share their knowledge in fast track permitting, design and construction management for battery cell, EV, and photovoltaic manufacturing. We'll discuss key pitfalls to avoid in order to stay on schedule and control costs, with real examples based on gigafactory projects in North America and Europe completed by Jacobs Engineering.

12:30 SiFAB—An Advanced Fiber-Based Silicon Anode Material Designed for Performance and Scalability

Cameron Peebles, PhD, Battery Technical Manager, Alkegen

To address the major remaining challenges (i.e., fast charge, energy density) of lithium-ion batteries, advanced anode technologies, such as silicon, are necessary. This talk will focus on how Alkegen's SiFAB silicon anode active material can address various market needs in the US and beyond.

Advanced Battery Manufacturing Production

Maximizing Production Efficiency & Quality to Deliver on Global Demand

12:50 MODERATED Q&A: Session Wrap-Up

Moderator: Nathaniel Dick, Business Development Manager, Economic Development Partnership of North Carolina EDPNC

Panelists:

Kiwook Jung, PhD, Associate Partner, Digital Advisory, MHP a Porsche Company

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Cameron Peebles, PhD, Battery Technical Manager, Alkegen

1:05 Casual Networking Lunch

SCALING GLOBAL BATTERY PRODUCTION

2:15 Chairperson's Remarks

Cameron Peebles, PhD, Battery Technical Manager, Alkegen

2:20 What 110+ Battery Lines Taught Us About Design for Manufacturing

Cameron Bruce, Director of Engineering, ATS Automation

What is the Design for Manufacturing (DfM) methodology, and how can it be applied throughout the EV battery production lifecycle? In this session, we'll outline Design for Manufacturing, and discuss its advantages for designing and building battery production lines that factor in costs, quality, and timelines in the face of market shifts, supply chain disruptions, regulatory changes, and emerging battery technologies.

INNOVATION IN R&D AND SOFTWARE DEVELOPMENT FOR MANUFACTURING

2:40 Software-Defined Imaging: AI Visual Inspection for Improved Quality & Yield

Keven Wang, Co-Founder & CEO, UnitX

Battery defects have a severe impact on function, performance, and safety. Defects can lead to yield-loss and safety recalls. The knowhow of critical defects and their consequences is important to battery manufacturing, especially as they ramp up production volume. In this talk, we will cover major defects in the battery manufacturing process, and ways to illuminate and detect them.

3:00 Sponsored Presentation (Opportunity Available)

3:20 MODERATED Q&A: Session Wrap-Up

Moderator: Cameron Peebles, PhD, Battery Technical Manager, Alkegen

Panelists:

Cameron Bruce, Director of Engineering, ATS Automation

Keven Wang, Co-Founder & CEO, UnitX

3:35 Session Break

CLOSING PLENARY PANEL DISCUSSION

3:45 PANEL DISCUSSION: U.S. Post Election EV Landscape: Opportunities & Illusions



Moderator: Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

With the turbulent U.S. presidential elections now over, what are the implications for the global battery industry and what are the prospects for growth going forward. As the world transitions to electrification, many challenges and market corrections lay ahead. This panel of experts will discuss forecasts and insights about opportunities, challenges, barriers, and key factors shaping the roadmap and where the industry is going in the near and long term.

Panelists:

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

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

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

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

4:45 Close of Conference

Official Media Partner



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HYDROGEN & FUEL CELLS

CO-LOCATED WITH **aabc** advanced automotive battery conference

WEDNESDAY, DECEMBER 11

PLENARY KEYNOTE

10:55 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:00 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply

chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:20 Steps to Increase EV Sales with V2G Enabled Battery Packs

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Electricity prices are rising faster than gasoline.

Simultaneously, clean solar energy is becoming available but remains underutilized. EV sales growth is flat. Why not charge EVs with excessive solar and then support the grid in times of challenge? Government policy and battery cycle life hinder the rollout of existing vehicle-to-grid (V2G) technology. This paper explores necessary electricity price changes and battery cycle life requirements needed to increase EV sales growth.



11:40 How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

In this talk, Colin will discuss Redwood's technology and commercial strategy, highlighting the company's Nevada campus

which today is recycling the equivalent of 250,000 EVs worth of material a year and manufacturing cathode active material in the U.S. for the first time.

12:00 pm MODERATED Q&A: Session Wrap-Up



Moderator: Craig Wohlers, General Manager, Cambridge EnerTech

Panelists:

Kurt Kelly, Vice President, Battery Cell & Pack, General Motors

Anil Paryani, Executive Engineering Director, Advanced EV Program, Ford

Colin Campbell, CTO, Redwood Materials

12:15 Roaming Networking Lunch in the Exhibit Hall

1:15 Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

FUEL-CELL VEHICLES

2:00 Organizer's Remarks

Victoria Mosolgo, Conference Producer, Cambridge EnerTech

2:05 Chairperson's Remarks

Nicholas M. Josefik, Mechanical Engineer, US Army Construction Engineering Research Lab

2:10 Fuel-Cell World View

Melody Lyu, Hydrogen & Fuel Cell Engineer, Toyota R&D

Advancing the energy transition from the front lines of the Automotive and Regulatory Advocacy space, and helping Toyota achieve its environmental and sustainability targets.

2:30 Real World Experience of Operating Class 8 FCET (Hyundai XCIENT)—A Technical and Social Impact Analysis

Vishnu Vijayakumar, PhD, Senior Engineer, ZEV Energy & Infrastructure Strategy, Commercial Vehicles Hyundai-Kia America Technical Center, Inc.

This presentation provides a comprehensive analysis of the technical and social impacts based on real-world operations of the Hyundai XCIENT Class 8 FCET. It examines performance metrics, operational challenges, and societal implications, offering insights into the future of hydrogen fuel cell electric trucks.

2:50 Fuel-Cell-Powered Emergency Vehicle

Nicholas M. Josefik, Mechanical Engineer, US Army Construction Engineering Research Lab

H2@Rescue, our zero-emission fuel cell-powered emergency vehicle, is capable of driving 180 miles round trip, providing 25 kW load-following exportable power for 72 hours on a single tank of hydrogen. The boxed bed is climate-controlled and acts as a mobile command center or warming/cooling shelter. H2@Rescue, which produces water for use during the emergency, is a class 7 medium-duty truck weighing ~33,000 lbs. carrying 176kg of hydrogen at 700bar.

3:10 MODERATED Q&A: Session Wrap-Up

Moderator: Nicholas M. Josefik, Mechanical Engineer, US Army Construction Engineering Research Lab

Panelists:

Melody Lyu, Hydrogen & Fuel Cell Engineer, Toyota R&D

Jerome Gregeois, Director Commercial Vehicles Development, Hyundai-Kia America Technical Center

3:25 Refreshment Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

HYDROGEN & TRANSPORTATION

4:10 Revolutionizing Heavy-Duty Fueling: Cavendish Hydrogen's NextGen Solutions for a Sustainable Future

Eddy Nupoort, Director of Sales and Business Development, Cavendish Hydrogen Americas Inc.

Cavendish Hydrogen will discuss their innovative hydrogen refueling stations and NextGen High-Capacity developments for heavy-duty vehicles, aiming to set a new standard in reliable fueling solutions. With over two decades of experience, their mission is to eliminate emissions and deliver safer, faster, and more dependable hydrogen fueling solutions.

4:30 Transportation and Regulations of Fuel Cells

James E. Powell, President & Founder, Consulting, Transportation Development Group LLC

This presentation explores the transportation logistics and regulatory landscape governing fuel cell technologies. It examines key regulatory frameworks, logistical challenges, and technological advancements shaping the adoption and integration of fuel cells in transportation systems globally.

4:50 H2LA - Houston to Los Angeles Hydrogen I-10 Corridor Planning

Bart Sowa, Research and Development, Manager, GTI Energy

HYDROGEN & FUEL CELLS

CO-LOCATED WITH **aabc** advanced automotive battery conference

The project will identify hotspots of potential hydrogen supply and demand along Interstate 10 (I-10) between Houston and Los Angeles with the Texas Triangle Megaregion (Dallas, Houston, San Antonio) as the anchor region. The collaboration with industry partners will ensure that the plan is practical and investment-ready.

5:30 MODERATED Q&A: Session Wrap-Up

Moderator: Nicholas M. Josefik, Mechanical Engineer, US Army Construction Engineering Research Lab

Panelists:

Eddy Nupoort, Director of Sales and Business Development, Cavendish Hydrogen Americas Inc.

James E. Powell, President & Founder, Consulting, Transportation Development Group LLC

Bart Sowa, Research and Development, Manager, GTI Energy

5:50 Close of Day

THURSDAY, DECEMBER 12

8:00 am Registration and Morning Coffee

HYDROGEN ECONOMY

8:30 Organizer's Remarks

Victoria Mosolgo, Conference Producer, Cambridge EnerTech

8:35 Chairperson's Remarks

Michael Harenbrock, PhD, Principal Expert, Engineering Electric Mobility, MANN+HUMMEL GmbH

8:40 Sponsored Presentation (Opportunity Available)

9:00 Sponsored Presentation (Opportunity Available)

9:20 Hydrogen Value Chain

Tyler Huckaby, Principal Consultant, Hydrogen, Wood Mackenzie

Wood Mackenzie's Tyler Huckaby will share insights into the current state and future of the hydrogen economy, and how this might effect the deployment of Fuel Cell Electric Vehicles.

9:40 Innovative Balance-of-Plant (BoP) Components for PEM Fuel Cell Systems

Michael Harenbrock, PhD, Principal Expert, Engineering Electric Mobility, MANN+HUMMEL GmbH

BoP components are essential to achieve fuel cell system cost, lifetime and energy efficiency targets. As the interest in systems with more than 200 kW power rises, they must be adapted to higher functional requirements. This presentation highlights new solutions for BoP components in cathode air paths and cooling loop of systems with 200 - 400 kW power and provides an overview on new humidifier and anode water separator designs.

10:00 Sponsored Presentation (Opportunity Available)

10:20 MODERATED Q&A: Session Wrap-Up

Moderator: Michael Harenbrock, PhD, Principal Expert, Engineering Electric Mobility, MANN+HUMMEL GmbH

Panelists:

Tyler Huckaby, Principal Consultant, Hydrogen, Wood Mackenzie

10:45 Coffee & Bagel Break in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

ELECTROLYSIS

11:45 Chairperson's Remarks

Iryna V. Zenyuk, Professor, Chemical & Biomolecular Engineering, University of California Irvine

11:50 Enhanced Water Electrolysis Using Layered Coaxial Nanowire Electrodes

Jacob S. Spendelow, Scientist, Los Alamos National Laboratory

To enhance hydrogen production efficiency in PEM water electrolyzers, the innovative Layered Coaxial Nanowire Electrode (LCANE) has surfaced. LCANE electrodes incorporate vertically-aligned coaxial nanowires adorned with Pt and IrO₂ clusters on the Pt shell, improving electronic conductivity and transport efficiency. Remarkably, LCANE achieves a significant reduction in Ir loading, as low as 0.1 mg/cm², without compromising performance, offering a compelling avenue for advancing PEM electrolysis technology.

12:10 pm PEM Electrolyzers

Iryna V. Zenyuk, Professor, Chemical & Biomolecular Engineering, University of California Irvine

US Department of Energy (DOE) has issued Hydrogen Shot aiming to produce 1 kg of hydrogen for \$1 in 1 decade (by 2030). Proton exchange membrane water electrolyzers (PEMWEs) are promising technologies and are considered to dominate the electrolysis market. This work will focus on materials design and integration needs to reach GW-scale electrolyzer deployment. I will discuss materials and system-level challenges and strategies to overcome them.

12:30 Presentation to be Announced

12:50 MODERATED Q&A: Session Wrap-Up

Moderator: Iryna V. Zenyuk, Professor, Chemical & Biomolecular Engineering, University of California Irvine

Panelists:

Jacob S. Spendelow, Scientist, Los Alamos National Laboratory

1:05 Casual Networking Lunch

FUEL-CELL APPLICATIONS

2:15 Chairperson's Remarks

Iryna V. Zenyuk, Professor, Chemical & Biomolecular Engineering, University of California Irvine

2:20 A Poly-Generative ICE/Electrolyser System to Support the Green Mobility in a Countryside Building

Giuseppe De Lorenzo, PhD, Department of Mechanical Engineering, University of Calabria

This study is focused on the energy analysis of a poly-generative system integrating an Internal Combustion Engine (ICE) fed by syngas produced by gasification of woody biomass and an electrolyzers-fed renewable energy for sustainable energy generation to support the new green mobility in a countryside building.

2:40 Applications of Fuel Cells for the Synthesis of E-Fuels

Jaroslav Milewski, PhD, Assoc Prof, Power Engineering, Warsaw Univ of Technology

The talk by Prof. Jaroslav Milewski from Warsaw University of Technology focuses on using High Temperature Fuel Cells for synthesizing e-fuels. It highlights methane's 96% efficiency in fuel cells and the potential of ethanol and methanol. The discussion covers optimizing CO concentrations in hydrogen-rich

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gases, improving fuel cell performance, and integrating fuel cells into sustainable energy systems. These advancements position fuel cells as crucial in future clean energy applications.

3:20 MODERATED Q&A: Session Wrap-Up

Moderator: Iryna V. Zenyuk, Professor, Chemical & Biomolecular Engineering, University of California Irvine

Panelists:

Giuseppe De Lorenzo, PhD, Department of Mechanical Engineering, University of Calabria

Jaroslav Milewski, PhD, Assoc Prof, Power Engineering, Warsaw Univ of Technology

3:35 Session Break

CLOSING PLENARY PANEL DISCUSSION

3:45 PANEL DISCUSSION: U.S. Post Election EV Landscape: Opportunities & Illusions



Moderator: Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

With the turbulent U.S. presidential elections now over, what are the implications for the global battery industry and what are the prospects for growth going forward. As the world transitions to electrification, many challenges and market corrections lay ahead. This panel of experts will discuss forecasts and insights about opportunities, challenges, barriers, and key factors shaping the roadmap and where the industry is going in the near and long term.

Panelists:

Tobias Glossmann, Principal Systems Engineer, HV Battery Research and Test Lab, Mercedes-Benz Research and Development North America

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

Michael Sanders, Senior Advisor, Energy, Avicenne Energy

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

4:45 Close of Conference



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