



PLUGVOLT

July 2019 Battery Seminar

July 16, 2019: Day 1 – Exponent Lithium Ion Battery Training

8:00 am – 5:00 pm	Registration Open
8:00 am – 8:25 am	Breakfast with Networking Sponsored by EXPONENT
8:25 am – 8:30 am	Welcome Note
8:30 am – 9:00 am	Lithium Ion Cell Construction – Beyond the Standards John McGann, Ph.D. Several industry standards have guidance on aspects of lithium-ion cell construction. Depending on the form factor and use profile, certain aspects of cell construction not discussed in standards may take on increasing importance. This session will discuss lithium-ion cell construction basics covered by industry standards as well as other noteworthy construction aspects for improved safety, reliability and performance.
9:00 – 9:30 am	Cell Cycling and Stress Testing Joel Forman, Ph.D., P.E. Understanding long term cell performance and aging is critical for many applications. Often times, judgments about long term performance have to be made in a relatively short period of time. This session discusses a variety of tools to accelerate this testing including 24/7 cycling, elevated/sub ambient temperature testing, increased electrical load, and Arrhenius chemical modeling.
9:30 am – 10:00 am	The Effects of Cycling Protocols on Internal Cell Structures Rachel Licht, Ph.D. The natural expansion and contraction experienced by the active materials during cycling, as well as undesired side reactions, produce mechanical stresses in the cell winding that can lead to millimeter-scale morphological changes. In cylindrical cells, these stresses drive changes to the electrode layer curvature, which can ultimately result in core collapse. The layer curvature can be monitored and quantified via analysis of X-ray computed tomography (CT) data taken periodically throughout a cell's lifetime. In this session, we discuss this evolution of internal cell structure with cycling, and the effect that cycling conditions (e.g. currents, voltage cutoffs) have on these changes.
10:00 am – 10:30 am	Coffee with Networking Sponsored by PEC
10:30 am – 11:15 am	Service Life Prediction for Lithium Ion Batteries Samuel Madden, Ph.D. In a reactive setting, one major goal of service life prediction is to identify a time- and environment-dependent degenerative mechanism governed by a statistical process (i.e. material decomposition in response to temperature and humidity cycling) to provide actionable guidance regarding usable system lifetime. The degenerative mechanism is generally not understood during system design (or is misunderstood) and must be evaluated in a realistic exposure context based on the best-available information. The development process for an experimentally-justified prediction model generally involves a combination of experimental and theoretical tools including failure analysis, dynamical modeling, accelerated aging, and field-return analysis. This segment will discuss a typical sequence of activities in response to unexpected failure modes.
11:15 am – 12:00 pm	Lithium Ion Cell Response to Controlled Abuse Johanna Goodman, Ph.D. Cells integrated into consumer devices are subject to physical abuse. Such abuse can result in a variety of failure modes including capacity loss, swelling, or thermal runaway. This session discusses features observed as a result of controlled mechanical abuse to lithium-ion pouch cells. The subsequent electrical performance and failure modes observed will also be discussed.
12:00 pm – 1:30 pm	Lunch with Networking
1:30 pm – 2:15 pm	Basic Electronic Protection for Lithium Ion Batteries Jeremiah Stepan, P.E., CFEI We will discuss the basic electronic designs used to protect lithium ion batteries against overcharge, overdischarge, overcurrent, undervoltage lockout, and operation outside their acceptable temperature range. Aspects of the physical assembly considerations including circuit board layout, wiring harness design, and prevention of coupling heat from failure to additional cells in the pack will be discussed.
2:15 pm – 3:00 pm	Advanced Concepts for Lithium Ion Battery Electronics Daren Slee, P.E., CFEI We will discuss additional protection and data preservation methods used to further reduce the likelihood of lithium ion battery failure due to electrical or thermal stress and to preserve data for failure analysis in the event of battery failures. These include communications with the host, charger, and/or load, transmittal of critical data to external systems, telemetry, active thermal management, and energy absorption materials.
3:00 pm – 3:30 pm	Coffee with Networking Sponsored by PEC
3:30 pm – 4:15 pm	Hazards due to Thermal Runaway Michael Barry, Ph.D., P.E. Discussion of hazards due to thermal runaway failures in lithium-ion cells. We'll discuss abuse testing (external heating, nail penetration, overcharge, etc) and the quantification of gas species evolved as a result, including the attendant hazards (heat, explosions, toxic gases).
4:15 pm – 5:00 pm	Thermal Runaway Onset Jonathon Harding, Ph.D. This talk will discuss the conditions in which lithium-ion batteries do or don't enter thermal runaway when they experience a catastrophic failure. This depends on many factors, including cell chemistry, state-of-charge, ambient temperature, and the nature of the failure. We'll explore how these factors interact to determine conditions where the onset of thermal runaway is more likely, and how this information can be used to aid in improving the safety of products.
5:00 pm – 5:30 pm	Wrap-Up (Summary & Conclusions)

*Agenda subject to change without notice

All Day 1 presentations by Exponent
Chairperson: Dr. John Warner

July 17, 2019: Day 2 – Energy Storage Systems in Automotive Applications

8:00 am – 6:00 pm	Registration Open
8:00 am – 8:30 am	Breakfast with Networking Sponsored by EXPONENT
8:30 am – 9:00 am	Porsche Charging Strategy for the Future Chad Bass – Porsche Cars North America
9:00 am – 9:30 am	Batteries for Electric Transportation and Sustainability Tobias Glossmann – Mercedes-Benz R&D North America
9:30 am – 10:00 am	Electrified Vehicle Development & Challenges at GM Fan Xu – General Motors (GM)
10:00 am – 10:30 am	Coffee with Networking Sponsored by MACCOR
10:30 am – 11:00 am	Electrified Vehicle Battery Design for Repurposing Oliver Gross – Fiat Chrysler Automobiles
11:00 am – 11:30 am	Future Vehicle & Battery Technology Jeff Yambrick – Great Wall Motor
11:30 am – 12:00 pm	Solid State Batteries – Status, Opportunities, and Challenges in EV Applications Venkat Anandan – Ford
12:00 pm – 1:30 pm	Lunch with Networking
1:30 pm – 2:00 pm	Platform Polymer Matrix Electrolyte (PME®) Technology for Solid State Batteries Anaba Anani – BrightVolt
2:00 pm – 2:30 pm	Toward Automotive Standards – Development of Bulk-Type All Solid State Batteries Dean Frankel – Solid Power
2:30 pm – 3:00 pm	Next Generation Battery and Low Voltage Network Needs in Context of Vehicle SDS/ADAS Functionality Mark Johnson – Clarios (Johnson Controls)
3:00 pm – 3:30 pm	Coffee with Networking Sponsored by MACCOR
3:30 pm – 4:00 pm	48V Battery for Mild Hybrid & Beyond Carlton Brown – Robert Bosch Battery Systems
4:00 pm – 4:30 pm	48V Battery Architecture of Continental and CALB Joachim Kupe – Continental Automotive
4:30 pm – 5:00 pm	Technology Advancements in Battery Electric Vehicles Harsha Nanjundaswamy – FEV North America
5:00 pm – 5:30 pm	Battery Transportation Updates and UN 38.3 Interpretations Rich Byczek – Intertek
6:00 pm – 8:00 pm	Intertek Facility Tours with Cocktails Reception Exclusive opportunity to tour Intertek's 100,000+ square-foot Battery Testing Center of Excellence to learn about the latest testing methods for batteries of all sizes from coin-cell through electric vehicles. Intertek performs a variety of tests out of this facility, to industry and global standards, including life-cycling, vibration, environmental, abuse and safety certifications. See this facility firsthand and ask questions to resident experts, and enjoy some light appetizers and beverages while networking with industry peers.

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July 18, 2019: Day 3 – Energy Storage Systems in Stationary Grid/Utility Applications

8:00 am – 5:00 pm	Registration Open
8:00 am – 8:30 am	Breakfast with Networking Sponsored by EXPONENT
8:30 am – 9:00 am	High Speed EV Charging – Working With the Grid to Accelerate Integration and Enable Energy Freedom Jeff Wolfe – Tritium Technologies
9:00 am – 9:30 am	DC Fast Charging with Battery Energy Storage Systems John Hissong – Shell (Greenlots)
9:30 am – 10:00 am	Utility Approach to NYS Energy Storage Goals Mohamed Kamaludeen – Consolidated Edison (ConEdison)
10:00 am – 10:30 am	Coffee with Networking Sponsored by DIGATRON
10:30 am – 11:00 am	Renewables, Energy Storage and Transportation Convergence – Challenges and Opportunities Kurt Waldner – General Electric (GE)
11:00 am – 11:30 am	Energy Storage Compliance Requirements With a Focus on Battery Management Systems Jim Green – CSA Group
11:30 am – 12:00 pm	UL 1973 and Functional Safety – Impacts on BMS Design Michael Worry – Nuvation Energy
12:00 pm – 1:30 pm	Lunch with Networking
1:30 pm – 2:00 pm	The Coming Divergence of Battery Technology – Mobile vs. Stationary Ashok Saraswat – NEC Energy Solutions
2:00 pm – 2:30 pm	Growth of the Energy Storage Market and Next Steps Kevin Fok – LG Chem
2:30 pm – 3:00 pm	Solid-State Technology for Energy Storage Systems Tomasz Poznar – A123 Systems
3:00 pm – 3:30 pm	Coffee with Networking Sponsored by DIGATRON
3:30 pm – 4:00 pm	Disruptive Energy Storage Solutions for Microgrids, Telecom and C&I Applications Ramkumar Krishnan – NantEnergy
4:00 pm – 4:30 pm	How to Choose the Right Energy Storage Solution for Every Project Troy Daniels – SimpliPhi Power
4:30 pm – 5:00 pm	Go With the Flow – Making the Case for Long-Duration Storage Bill Sproull – ESS, Inc.
5:00 pm – 5:15 pm	Closing Comments / End of Seminar

**Agenda subject to change without notice*

Register Online: [PlugVolt July 2019 Battery Seminar Online Registration Form](#)

Location – Battery Seminar

The Inn at St. John's
44045 Five Mile Road
Plymouth, MI 48170 USA
Tel.: (001) 734-414-0600

Location – Facility Tour

Intertek
45000 Helm St. #150
Plymouth, MI 48170 USA
Tel.: (001) 734-582-2900

Pricing

January 7, 2019	Registration Opens
January 7, 2019 – May 11, 2019	Early Bird: \$699/day, \$1099/2 days or \$1399/3 days
May 12, 2019 – July 15, 2019	Regular: \$799/day, \$1199/2 days or \$1499/3 days
July 16 – 18, 2019	On-Site: \$899/day, \$1299/2 days or \$1599/3 days
Networking Pass – access to evening cocktails reception and Day 2 Intertek facility tour (no access to seminar)	\$200/person* *already included with minimum 1-day event registration

- 10% group discount for 3+ attendees from the same corporation/institution (all attendees must register and pay at the same time)
- 10% discount for attendees from a government agency (copy of a valid government ID is required)
- 10% discount for attendees from an academic institution (copy of a valid academic institution ID is required)
- Contact us for additional attractive group discounts for parties of 5+ people attending from the same corporation/institution

PlugVolt discounted room rate is available at The Inn at St. John's until June 30, 2019, following which rooms may not be available and/or available at the prevailing rate. Reservations can be made directly at:

[PlugVolt July 2019 Battery Seminar Hotel Bookings](#)

Program Outline

This seminar will provide an entire day of in-depth training by Exponent on battery design considerations, manufacturing best practices, thermal runaway events, failure analyses, battery management systems, etc.

These presentations will be accompanied by complementary industry updates offered by subject matter experts from major multinational OEMs, Tier 1 suppliers, and battery manufacturers. Topics will cover several existing battery chemistries and their application to stationary/grid storage and automotive xEVs, along with recent advances in some Li Ion technologies, challenges in bringing these batteries to volume production, and any specific performance requirements driven by such applications.

The seminar will also offer attendees an exclusive opportunity to take a tour of the 100,000+ square-foot Intertek Battery Testing Center of Excellence to learn about the latest testing methods for batteries of all sizes from coin-cell through electric vehicles. Intertek performs a variety of tests out of this facility, to industry and global standards, including life-cycling, vibration, environmental, abuse and safety certifications. See this facility firsthand and ask questions to resident experts, and enjoy some light appetizers and beverages while networking with industry peers.

Questions?

Contact JC Soman at 1-877-PLUGVOLT or juratesoman@plugvolt.com for more details, or visit our website www.plugvolt.com or www.batteryseminars.com

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