

**2024**

November 19-21, 2024

**Holiday Inn – Research Park**

**5903 University Dr. NW, Huntsville AL**

**AGENDA**

**Tuesday, November 19, 2024**

7:30 – 8:30 Registration

8:30 Introductory and Welcome Remarks

 *Jeff Brewer:* NASA

8:35 Modeling, Simulation and Physical Validation of Passive Battery Thermal Management Systems for Extreme Temperatures in Space Applications

*Dr. David Noye*: Nano Research Inc. Dr. Carol O Putman, NASA

9:05 Predicting Rapid Degradation Onset in Lithium-Ion Batteries during Real-Time Operation Using Machine Learning

*Jaya Vikeswara Rao Vajja:* Purdue University, Meghana Sudarshan, Brian Chuanyu Chang, Vikas Tomar

9:35 Analyzing Battery Performance in Electric Aircraft with Coupled Modeling of Flight Dynamics, Battery Physics, and Temperature

*Lukas Kiesewetter:* University of Alabama, Krishna Shah

**10:05 – 10:20 Break**

10:20 Addressing Challenging Thermal Runaway Simulation Requirements through detailed 3D CFD Models

*Kislaya Srivastava,* Tristan Burton : Convergent Science Inc.; Alexander Fandakov, Lorenz von Roemer, Marc Sens, Marcus Woebke : IAV GmbH

10:50 A Novel Way to Design and Parameterize Battery Packs

*Javier Gazzarri: MathWorks*

11:20 Systematic Model Reduction for Battery Health Monitoring: A Physics-Based Approach Applied to X-57 Battery Packs

*Michael Khasin*: NASA, Mohit Mehta, Katelyn Jarvis Griffith, John Lawson

**11:50 – 1:30 Lunch**

1:30 Deconfounding Cell Failure Effects and improving Outcomes: Early Monitoring, Detection, and Countermeasures

*Brian Engle:* Amphenol

2:00 Effect of Thermal Inertia On Accelerating Rate Calorimeter Results

*Surendra Singh:* Belmont Scientific

2:30 Correlating Cell Failing Delta OCV Testing with Cell Defects

*Ruth Young, NASA-JSC*

**3:00 – 3:15 Break**

3:15 Lyten’s Advanced Lithium-Sulfur Cells for Aerospace and DoD Applications

*Yongtao Meng*: Lyten, Ratnakumar Bugga, Zach Favors, Arjun Mendiratta, Babu Ganuguli, Jeffrey Bell, Karel Vanheusden and Celina Mikolajczak

3:45 Material Engineering of Anodes for Aqueous Batteries with Enhanced Performance and Stability under Aerospace Environmental Conditions

*Nian Liu:* Georgia Institute of Technology

4:15 ThermoArc: A new method of trigger thermal runaway in Li-ion like an ISCD but with a fraction of the cost

 *Thuong Nguyen:* NASA, David Delafuente

4:45 Battery quality control via high-throughput CT scanning

*Peter Attia: Glimpse*

**Special Workshop / Tutorial – Requires separate registration from Battery Workshop**

When: November 19th ~ 30 minutes after the final presentation

Title: **China Battery Industry Technology Innovation Trends 2024**

Speaker: Shmuel De-Leon, Shmuel De-Leon Energy, Ltd.

***Separate registration is required at this link:***     [China Battery Industry Technology Innovation Trends 2024](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.sdle.co.il%2Fproduct%2Fnasa-battery-workshop-2024-china-battery-industry-technology-innovation-trends-2024-workshop%2F&data=05%7C02%7Crobert.a.price%40nasa.gov%7C44bcf811f79d463dff6c08dcf8258047%7C7005d45845be48ae8140d43da96dd17b%7C0%7C0%7C638658087154055953%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=%2F650gEfkG6849GGF0mUxx2EK5ZhsQmTZvRDQjf9NmsM%3D&reserved=0)

**Wednesday, November 20, 2024**

8:30 China Battery Industry – Rechargeable Cells Technology Innovations Trends 2024

*Shmuel De-Leon:* Shmuel De-Leon Energy, Ltd

9:00 Cracking the graphite-free Silicon Battery Code for market-leading Performance

*Karthik Ramaswami:* Sionic Energy, Derek Weber

9:30 Anode free Na batteries for Next - Generation Aerospace Applications

*Reena Pachal:* Rensselaer Polytechnic Institute, Joy Datta, Vrushali Varude, Kevin Bhimani, Varad Mahajani, Mithil Kamble, Apurva Anjan, Rohit M. Manoj, Helen Zha, Dibakar Datta, and Nikhil Koratkar

**10:00 – 10:15 Break**

10:15 20 years mission return experience on W3A first GEO satcom satellite ever launched with Li-Ion batteries.

*Yannick Borthomeiu:* SAFT, Max Montagne

10:45 UL 9540A Safety Standard Testing Requirements for Lithium-ion Batteries

*Surendra Singh:* Belmont Scientific, Derek Lovejoy

11:15 Enhanced COTS Cell Qualification with Electrochemical Pulsing Protocols

*Blake Hawley:* Voltaiq, Kevin N. Wood, Joseph R. Gallegos, Gregory B. Less

**11:45 – 1:30 Lunch**

1:30 Updated cylindrical pack design using non-metallic cell capture for JSC-20793 compliance

*Richard Coffin:* EaglePicher Technologies

2:00 Streamlining Energy Storage Solutions for CubeSats and Small Sats: Pre-Certified 20793 Compliant Battery Systems for NASA’s Artemis Missions

*William Walker:* KULR

2:30 Fast Charging Protocols Considering Safety based on Electrochemical-Thermal-Life model for Lithium-Ion Batteries

*Kyungjin Yu*, Adekanmi Miracle Adeyinka, Song-Yul Choe (Auburn University), Wooju Lee (Hyundai Motor Company)

**3:00 – 3:15 Break**

3:15 Optimizing Gravimetric Energy Density in PPR Battery Packs by Integrating Spine Heat Sinks with 21700 Cells

*David Petrushenko:* NASA, Jesus E. Trillo, Eric C. Darcy, Paul T. Coman, Ralph E. White, Zoran M. Bilc

3:45 Correlative Microscopy and AI-assisted Image Analysis Synergetic Approach on NMC Cathodes

*Hughes “H” Francois-Saint-Cyr:* Thermo Fisher Scientific, Chengge Jiao, Chris Stevens, Rengarajan Pelapur, Luigi Raspolini

4:15 Sidewall Rupture Characterization of 21700 Lithium-Ion Cells

*Jesus Trillo: NASA,* Eric C. Darcy, David Petrushenko, Zoran M. Bilc

4:45 Precursor Reaction Pathway Leading to BiFeO3 Formation: Insights from Text-Mining and Chemical Reaction Network Analyses

*Viktoriia Baibakova:* Lawrence Berkeley National Laboratory, Kevin Cruse, Michael Taylor, Carolin M. Sutter-Fella, Gerbrand Ceder , Anubhav Jain , and Samuel Blau

**Special Workshop / Tutorial – Requires separate registration from Battery Workshop**

When: November 20th ~ 30 minutes after the final presentation

Title: **Battery Safety – Reducing Battery Safety Risks**

Speaker: Shmuel De-Leon, Shmuel De-Leon Energy, Ltd.

***Separate registration is required at this link:***     [Battery Safety - Reducing Battery Safety Risks](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.sdle.co.il%2Fproduct%2Fnasa-battery-workshop-2024-china-battery-industry-technology-innovation-trends-2024-workshop%2F&data=05%7C02%7Crobert.a.price%40nasa.gov%7C44bcf811f79d463dff6c08dcf8258047%7C7005d45845be48ae8140d43da96dd17b%7C0%7C0%7C638658087154077887%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=OcRZ2rQeOiG6Dc7F1X%2B26arITlx8mv4tMz%2Bn0tpw%2BAg%3D&reserved=0)

**Thursday, November 21**

8:30 Liquefied Gas Electrolyte for Next-Generation Li-Ion Batteries

*Charlie Krause:* South 8 Technologies

9:00 Build Long-Term Stable High-Energy Lithium Metal Batteries

*Xiangbo (Henry) Meng: University of Arkansas*

9:30 Development Analysis and Test Results for The Newly Designed Large-Capacity Li-Ion Battery

*Ittetsu Ohira:* Mitsubishi Electric Corporation, Kentaro Marutani, Takeshi Kiyokawa, Shintaro Hamada, and Seiichi Handa: Japan Aerospace Exploration Agency (JAXA) Hitoshi Naito, Makoto Kawase

10:00 Design Driving Factors for Allowing Metallized Plastic Current Collectors to Isolate Internal Short Circuit in High Energy Li-ion Cells

*Eric Darcy:* NASA-JSC

10:30 De-orbit and re-fuel missions using Li-CFx battery technology

*Greg Miller: EaglePicher Technologies*

11:00 Sodium-Ion Batteries in Aerospace Applications

*Frank Oliver: Airtronics*

12:00 Closing Statements, Conference Conclusion