2023 NASA Aerospace Battery Workshop

Tuesday, November 14

8:30 **SAFT VL10ES Space Cell/Battery Qualification Update**
Dr. Chengsong Ma, Dr. Yannick Borthomieu, Saft

9:00 **Rechargeable Li-metal Cell Development for High Power and Low Temperature Applications**
Pasha Nikolaev, John Hondred, Ph.D., Frank Zalar Ph.D., Brian Henslee, Cornerstone Research Group

9:30 **Silicon Enabled Energy Storage with Extreme Energy and Power Density**
Ionel Stefan, Ph.D., Amprius Technologies, Inc.

10:00 **Break**

10:15 **High-Energy Dense Betavoltaics for Unattended Operation in Extreme Environments**
Tom Adams, Scientist, NSWC Crane & Adjunct Professor, Nuclear Engineering, Purdue University; Shripad Revankar, Professor, Nuclear Engineering, Purdue University; Peter Cabauy, CEO & Lead Scientist, City Labs, Inc.; Vilas G. Pol, Professor, Chemical Engineering, Purdue University; Darrell Cheu, Scientist, Los Alamos National Laboratory

10:45 **Advanced Li-CF_x Technologies for Space Applications**
Mario Destephen, David Darch, Owen Crowther, Ernest Ndzebet, Matt Schmidt, EaglePicher Technologies

11:15 **Investigating Novel Battery Cooling Strategies Using Phase-Change Materials Through Detailed 3D CFD Simulations**
Kislaya Srivastava, Tristan Burton, Convergent Science

11:45 **Lunch**

1:30 **Benefits of Statistically Significant Quantities of Cell Level Abuse Test Data**
Will Walker, KULR Technology

2:00 **In-Operando Variable Charge Rate Monitoring and Prognostics for Battery Safety**
Jaya Vikeswara Rao Vajja, Meghana Sudarshan, Vikas Tomar, School of Aeronautics and Astronautics, Purdue University

2:30 **New LiB Technology Trends and their Impact on Battery Performance and Safety**
Jaesik Chung Ph.D., Hwa Jin Shin, Brianna Kenney, Andy Tinio, Element Material Technology

3:00 **Break**

3:15 **Charging Ahead/All Charged Up: New Technology Goes The Extra Mile for Extreme-Fast Charging**
Zhijia Du, R&D Staff Scientist, Oak Ridge National Laboratory

3:45 **Performance and Safety of Lyten Li-S Pouch and Cylindrical 18650 Cells**
Dr. Babu Ganguli, Ratnakumar Bugga, Celina Mikolajczak, Zach Favors, Dan Cook, Lyten Incorporated

4:15 **Real Time Measurement of Heat Generation Rates and Entropy Coefficient of Lithium-Ion Batteries Under Operation Conditions – Pouch Type and Cylindrical Cells**
Song-Yul (Ben) Choe, Ph.D., Auburn University

4:45 **SOC-Dependent Internal Short Circuit Mechanism Upon Mechanical Abuse Loading**
Dr. Jun Xu, Associate Professor, Department of Mechanical Engineering, University of Delaware

Wednesday, November 15

8:00 **Smart Battery Management Systems: Internal State Estimation of Lithium-Ion Batteries Under Thermal Faults**
Avimanyu Sahoo, Assistant Professor, Electrical and Computer Engineering, The University of Alabama in Huntsville

8:30 **Scale Up of PPR Battery Design for 21700 Cells**
David Petrushenko, NASA, Johnson Space Center

9:00 **Side Wall Rupture Characterization for 18650 at Lower SOC and for 21700 Cells**
Jesus E. Trillo, David Petrushenko, Zoran Bilc, Eric Darcy, NASA, Johnson Space Center

9:30 **Thermal Runaway Characterization of Batteries Using Thermal Runaway Calorimeter (TRC)**
Surendra K. Singh, Ph. D., Belmont Scientific

10:00 **Break**

10:15 **Ram-Dent TR Trigger Method Development**
Vincent Glover, NASA, Johnson Space Center

10:45 **Passive Prevention of Thermal Runaway and Fire Propagation in Lithium-Ion Batteries**
Vijay V. Devarakonda, Ph.D., Michael D. Hogue, Ph.D., Analytical Scientific Products

11:15 **Investigating the Ability of Plastic Current Collectors to Isolate Internal Shorts in High Energy Cells**
Eric Darcy, NASA, Johnson Space Center

11:45 **Lunch**

1:30 **Investigation of Electrically Conductive Aqueous Solutions for De-Energizing Lithium-Ion Batteries**
Alex Di Sciullo Jones, R&D Engineer, UL Solutions

2:00 **GS Yuasa Generation 4 Li-Ion Cell and Battery Performance Update**
Tom Pusateri, GS Yuasa Lithium Power

2:30 **Nanostructured Germanium thin fills as anode material for Lithium-Ion Batteries for Aerospace Applications**
Valentina Diolaiti, A. Andreoli, G. Mangherini, D. Vincenzi, Physics and Earth Science Department, University of Ferrara; S. Chauque, M. Ricci, R.Z. Proietti, Italian Institute of Technology

3:00 **Break**

3:15 **Studies on Zero-Voltage Stability of ALE 4 Ah 18650 Cylindrical Cells for NASA Applications**
Linhua (Steven) Hu, Ph.D., Jiang Fan, Ph.D., American Lithium Energy Corporation

3:45 **Cell Design Factors and Their Impact on Thermal Runaway Outcomes**
William Huang, Ph.D., Archer Aviation

4:15 **A Comprehensive Approach to Thermal Runaway Characterization of Batteries using Calorimeters**
Surendra K. Singh, Ph.D., Belmont Scientific

4:45 **Flexible-Demand Space Station Power System Capabilities and Characteristics**
Mark Miner, Ph.D., P.E., Gravitics Inc.

2023 NASA Aerospace Battery Workshop

Thursday, November 16

8:30 **Wide Temperature Battery Development for CADRE Lunar Rovers**
John-Paul Jones, Hui Li Seong, Randy Ballat, Molly Shelton, Jet Propulsion Laboratory

9:00 **Identification of Weak Cell Blocks in Electric Aircraft Battery Packs**
Robert Masse, Shrilakshmi Bonageri, Daniel E. Shea, Astrolabe Analytics, Inc.

9:30 **Improving the Predictive Accuracy of Battery Models using Targeted Experiments, Advanced Statistical Analysis and First Principle Calculations**
David S. Mebane, West Virginia University/KBR Wyle Services LLC; Mohit R. Mehta, Junsoo Park, Joakim Halldin Stenlid, Computational Materials Group, NASA Ames RC/ KBR Wyle Services, LLC; John W. Lawson, Computational Materials Group, NASA Ames RC

10:00 **Thermal Data-Driven Model Reduction for Enhanced Battery Health Monitoring**
Michael Khasin, John Lawson, NASA, NASA Ames RC; Mohit R. Mehta, Chetan Kulkarni, KBR INC., NASA Ames RC

10:30 **Discerning Cell Surface Defects with 3D Optical Profilometry**
Brenda Esparza, Chris Blackwell, Jacobs Technology, Inc., NASA, Johnson Space Center

11:00 **Effects of Lithium Plating on High Temperature Degradation of Lithium-Ion Cells**
Muriel Carter, Pragati Poudel, Takuto Iriyama, Guangsheng Zhang, Department of Mechanical and Aerospace Engineering, The University of Alabama in Huntsville; Zhijia Du, Electrification and Energy Infrastructures Division, Oak Ridge National Laboratory; Boryann Liaw, High Power Research Laboratory