## 2023 Vehicle Technologies Office Annual Merit Review Batteries R&D (BAT) Posters (1/2)

BAT359: Status and Challenges of Electrode and Electrolyte Materials for High Energy	BAT054: Modeling of Amorphous Solid-State Conductors, Gerbrand Ceder, UC-Berkeley
Cells, Stanley Whittingham, Binghamton U.	BAT309: Electrode Materials Design and Failure Prediction, Venkat Srinivasan, ANL
BAT360: Scale-up, Optimization and Characterization of High-nickel Cathodes, Arumugam	BAT091: Characterization and Modeling of Lithium-Metal Batteries: First-Principles
Manthiram, UT-Austin	Modeling and Machine Learning, Kristin Persson, LBNL
BAT361: Understanding and Improving Li Anode Stability, Yi Cui, Stanford University/SLAC	BAT225: Model System Diagnostics for High-Energy Cathode Development, Guoying
BAT362: High Capacity S Cathode Materials, Prashant Kumta, U. Pittsburgh	Chen, LBNL
BAT523: Development of Long Life Li/SPAN Cells, Ping Liu, UC-San Diego	BAT085: Interfacial Processes, Robert Kostecki, LBNL
BAT364: Synergistic Effects of Electrode and Electrolyte Materials for High Energy Li Cells,	BAT226: Probing Interfacial Processes Controlled Electrode Stability in Rechargeable
Jihui Yang, U. of Washington	Batteries, Chongmin Wang, PNNL
BAT365: Stabilizing Li Metal Anodes by Interfacial Layer and New Electrolytes, Zhenan Bao,	BAT420: Lithium Oxygen Battery Design and Predictions, Larry A. Curtiss, ANL
Stanford University/SLAC	BAT423: Development of New Electrolytes for Lithium-Sulfur Batteries, Gao Liu, LBNL
BAT366: Manufacturing and Validation of Li Pouch Cells, Mei Cai, GM	BAT424: Multiscale Modeling of Solid-State Electrolytes for Next-Generation Lithium
BAT367: Multiscale Characterization Studies of Li Metal Batteries, Peter Khalifah, BNL	Batteries, Anh Ngo, Larry A. Curtiss, and Venkat Srinivasan, ANL
BAT368: Full Cell Diagnostics and Validation to Achieving High Cycle Life, Eric Dufek, INL	BAT427: In Situ and Operando Thermal Diagnostics of Buried Interfaces in Beyond
BAT369: High Energy Rechargeable Lithium-Metal Cells: Design, Fabrication and Testing,	Lithium-Ion Cells, Sumajeet Kaur, LBNL
Jie Xiao, PNNL	BAT428: High-Capacity, Low-Voltage Titanate Anodes for Sodium-Ion Batteries, Marca
BAT524: Advanced Electrolytes for Li Metal Batteries, Chunsheng Wang, University of	Doeff, LBNL
Maryland	BAT429: Electrolytes and Interfaces for Stable High Energy Sodium-Ion Batteries, Phung
BAT553: Understanding SEI reactions in Li metal and Li-S Batteries, Perla Balbuena, Texas	Le, PNNL
A&M University	<b>BAT430</b> : Development of a High-Energy Sodium-Ion Battery with Long Life, Chris Johnson
BAT272: Pre-Lithiation of High-Capacity Battery Electrodes, Yi Cui, SLAC	and Khalil Amine, ANL
BAT275: Lithium Dendrite Prevention for Lithium Batteries, Wu Xu, PNNL	<b>BAT584</b> : Integrated Atomic-, Meso-, and Micro-Scale Diagnostics of Solid-State Batteries,
BAT280: Novel Chemistry: Lithium-Selenium and Selenium-Sulfur Couple, Khalil Amine,	Yi Cui, William Chueh, Stanford University/SLAC
ANL	BAT585: Anode-Free Lithium Batteries, Ji-Guang Zhang and Xia Cao, PNNL
BAT282: Development of High-Energy Lithium-Sulfur Batteries, Dongping Lu, PNNL	BAT586: Earth-abundant Cathode Active Materials for Li-Ion Batteries: Cathode Design
BAT285: Investigation of Sulfur Reaction Mechanisms, Enyuan Hu, Brookhaven National	and Synthesis, Arturo Gutierrez, ANL
Laboratory	<b>BAT587</b> : Earth-abundant Cathode Active Materials for Li-Ion Batteries: Theory and
BAT286: Lithium-Air Batteries, Khalil Amine, ANL	Modeling, Hakim Iddir, ANL
<b>BAT287</b> : Advanced In Situ Diagnostic Techniques for Battery Materials, Xiao-Qing Yang,	<b>BAT588</b> : Earth-abundant Cathode Active Materials for Li-Ion Batteries: System Analysis,
BNL	Daniel Abraham, ANL
BAT230: Nanostructured Design of Sulfur Cathode for High-Energy Lithium-Sulfur Batteries,	
Yi Cui, Stanford University	

## 2023 Vehicle Technologies Office Annual Merit Review Batteries R&D (BAT) Posters (2/2)

BAT589: Cation-disordered Cathode Materials (DRX+) - Synthesis, Scale-up and Cell Testing, Guoying Chen, LBNL BAT597: Cation-disordered Cathode Materials (DRX+) - Electrolyte Innovation and High-voltage Stability, Bryan McCloskey, LBNL BAT598: Cation-disordered Cathode Materials (DRX+) - Coatings and Electrode Design Robert Kostecki, LBNL **BAT028**: Materials Benchmarking Activities for Cell Analysis, Modeling, and Prototyping (CAMP) Facility, Wenguan Lu, ANL BAT030: Electrode Prototyping Activities in ANL's Cell Analysis, Modeling and Prototyping (CAMP) Facility, Steve Trask, ANL BAT411: Aerosol Manufacturing Technology for Production of Cathode Materials, Peter Aurora, Cabot Tepavcevic, ANL BAT413: High-Performance, Low-Cobalt Cathode Materials for Lithium-Ion Batteries, Donghai Wang, Penn State University BAT414: Enhancing Oxygen Stability in Low-Cobalt, Layered-Oxide Cathode Materials, Huolin Xin, UC-Irvine Chelsea Chen, ORNL **BAT415**: High-Nickel, Cobalt-Free Cathode Materials for Lithium- Ion Batteries, Aramugam Manthriram, UT-Austin Batteries, Brandon Wood, LLNL BAT416: Cobalt-Free Cathode Materials and Their Novel Architectures, Shirley Meng, UC-San Diego Interfaces, Robert Sacci, ORNL BAT417: Cobalt-Free Cathodes for Next-Generation Lithium-Ion Batteries, Neil Kidner, Nexceris **BAT402**: Improving Battery Performance through Structure-Morphology Optimization, Venkat Srinivasan, ANL BAT183: In Situ Spectroscopies of Processing Next-Generation Cathode Materials, Feng Wang, ANL Kumta, University of Pittsburgh BAT528: Structurally and Electrochemically Stabilized Silicon-rich Anodes for Electric Vehicle Applications, John Thorne, Enovix **BAT529**: Rationally Designed Lithium-Ion Batteries Towards Displacing Internal Combustion Engines, Rick Costantino, Group 14 Technologies **BAT531**: Solid State Lithium-ion Batteries Using Silicon Composite Anodes, Pu Zhang, Solid Power Battery Kristina Butler, Albemarle

BAT532: Electrolytes with Lithium-ion Batteries with Micro-sized Silicon Anodes, Chunsheng Wang, University of Maryland **BAT533**: Fluorinated Local High Concentration Electrolytes Enabling High Energy Density Silicon Anodes, Amy Marschilok, Stony Brook University BAT534: Devising mechanically compliant and chemically stable synthetic solidelectrolyte interphases on silicon, Pierre Yao, University of Delaware **BAT536**: Polyester-Based Block Copolymer Electrolytes for Lithium Metal Batteries, Nitash Balsara, Lawrence Berkeley National Laboratory **BAT538**: Ion conductive high Li+ transference number polymer composites for solidstate batteries, Bryan McCloskey, LBNL BAT539: 3D Printing of All-Solid-State Lithium Batteries, Jianchao Ye, LLNL BAT540: Synthesis of Composite Electrolytes with Integrated Interface Design, Sanja **BAT541**: Substituted Argyrodite Solid Electrolytes and High Capacity Conversion Cathodes for All-Solid-State Batteries, Jagjit Nanda, ORNL BAT542: Polymer Electrolytes for Stable Low Impedance Solid State Battery Interfaces, BAT543: Integrated Multiscale Model for Design of Robust 3-D Solid-state Lithium **BAT590**: Lithium Halide-Based Superionic Solid Electrolyte and High-Voltage Cathode **BAT591**: High-Conductivity and Electrochemically Stable Thioborate Solid-State Electrolytes for Practical All-Solid-State Batteies, Yi Cui, SLAC BAT593: Strategies to Enable Lean Electrolytes for High Loading and Stable Lithium-Sulfur Pouch, Shirley Meng, UC-San Diego **BAT594**: New Engineering Concepts to High Energy Density Li-S Batteries, Prashant BAT595: Development of Li-S Battery Cells with High Energy Density and Long Cycling Life, Donghai Wang, Pennsylvania State University BAT596: Development of a High-Rate Li-Air Battery using a Gaseous CO2 Reactant, Amin Salehi-Khojin, University of Illinois-Chicago BAT522: Thin-film Lithium Metal Manufacture by Room Temperature Electrodeposition,

## 2023 Vehicle Technologies Office Annual Merit Review Electrification R&D (ELT) Posters

ELT212: Non-Heavy Rare-Earth High-Speed Motors, Vandana P Rallabandi, ORNL

ELT214: Electric Motor Thermal Management, Emily Cousineau, NREL

ELT218: Advanced Power Electronics Packages, Douglas DeVoto, NREL

ELT292: Module Precursors and Prognostics, Faisal Khan, NREL

ELT217: Integrated/Traction Drive Thermal Management, Bidzina Kekelia, NREL

ELT222: High-Reliability Ceramic Capacitors to Enable Extreme Power Density Improvements, Jack Flicker, SNL

**ELT210**: Development of Next-Generation Vertical Gallium-Nitride Devices for High-Power Density Electric Drivetrain, Andrew Binder, SNL

**ELT242**: Heterogeneous Integration Technologies for High-Temperature, High-Density, Low-Profile Power Modules of Wide Bandgap Devices in Electric-Drive Applications, G.Q. Lu, Virginia Tech

ELT243: Integrated Motor and Drive for Traction Applications Bulent Sarlioglu, University of Wisconsin

**ELT244**: Next-Generation, High-Temperature, High-Frequency, High-Efficiency, High-Power Density Traction System, Robert Pilawa, UC-Berkeley

ELT245: Integration Methods for High-Density Integrated Electric Drives, Alan Mantooth, University of Arkansas

**ELT246**: Implementation of Wide-Bandgap Devices in Circuits, Circuit Topology, System Integration as well as Silicon Carbide Devices, Anant Agarwal, Ohio State University

**ELT247**: Cost-Competitive, High-Performance, Highly Reliable Power Devices on Silicon Carbide and Gallium Nitride, Woongje Sung, State University of New York Polytechnic Institute

**ELT248**: Multi-Objective Design Optimization of 100-kW Non-Rare-Earth or Reduced-Rare Earth Machines, Scott Sudhoff, Purdue University

**ELT249**: Rugged Wide Bandgap Devices and Advanced Electric Machines for High-Power Density Automotive Electric Drives, Victor Veliadis, North Carolina State University

**ELT250**: Design, Optimization, and Control of a 100-kW Electric Traction Motor Meeting or Exceeding DOE 2025 Targets, Ian Brown, Illinois Institute of Technology

**ELT251**: Device- and System-Level Thermal Packaging for Electric-Drive Technologies, Yogendra Joshi, Georgia Institute of Technology

**ELT275**: Low-Cost Rare-Earth-Free Electric Drivetrain Enabled by Novel Permanent Magnets, Inverter, Integrated Design and Advanced Thermal Management, Ayman El-Refaie, Marquette

**ELT283**: A Solid State Technology Enabled Compact, Modular Design to Reduce DC Fast Charging Cost and Footprint, Vijay Bhavaraju, Eaton

## 2023 Vehicle Technologies Office Annual Merit Review Analysis (VAN) Posters

VAN016: Transportation Data Program, Stacy Davis, ORNL

**VAN032**: Tracking Evolution of Vehicle Technologies with a Focus on E-drive and Shared Mobility, Joann Zhou, ANL

VAN017: Energy, Emissions, and Environmental Modeling of Vehicle/Fuel Technologies with the GREET Life-Cycle Analysis Model, Michael Wang, ANL

VAN023: Applied Vehicle Modeling and Simulation, Ram Vijaygopal, ANL

**VAN047**: Integrated Modeling and Technoeconomic Assessment of Electric Vehicle Community Charging Hubs, Eleftheria Kontou, UIUC

**VAN044**: Micromobility Screening for City Opportunities Online Tool, Don MacKenzie, UW

**VAN045**: Analysis of Electric Heavy-Duty Driving and Infrastructure Requirements Within a Regional Area, Marcus Alexander, EPRI

VAN048: Heavy-Duty Electric Vehicle Integration and Implementation (HEVII) Tool, Will Northrop, UMN