

2025 Vehicle Technologies Office Annual Merit Review

Batteries R&D (BAT) Posters (1/2)

Tuesday, June 3 at 6:00-8:00 PM

BAT317: Progress and Status of Battery500 Program, Jun Liu, Pacific Northwest National Laboratory	BAT424: Multiscale Modeling of Solid-State Electrolytes for Next-Generation Lithium Batteries, Anh Ngo, Larry A. Curtiss, and Venkat Srinivasan, Argonne National Laboratory
BAT359: Status and Challenges of Electrode and Electrolyte Materials for High Energy Cells, Stanley Whittingham, Binghamton University	BAT427: In Situ and Operando Thermal Diagnostics of Buried Interfaces in Beyond Lithium-Ion Cells, Sumajeet Kaur, Lawrence Berkeley National Laboratory
BAT360: Cathodes Beyond Lithium Nickel Manganese Cobalt Oxide (NMC) 811, Arumugam Manthiram, University of Texas at Austin	BAT584: Integrated Atomic-, Meso-, and Micro-Scale Diagnostics of Solid-State Batteries, Yi Cui and William Chueh, Stanford University/SLAC National Accelerator
BAT361: Understanding and Improving Lithium Anode Stability, Yi Cui, Stanford University / SLAC National Accelerator Laboratory	BAT585: Anode-Free Lithium Batteries, Xia Cao, Pacific Northwest National Laboratory
BAT523: Development of Long Life Lithium and sulfurized polyacrylonitrile (SPAN) Cells, Ping Liu, University of California-San Diego	BAT030: Electrode Prototyping Activities in ANL's Cell Analysis, Modeling and Prototyping (CAMP) Facility, Steve Trask, Argonne National Laboratory
BAT364: Synergistic Effects of Electrode and Electrolyte Materials for High Energy Lithium Cells, Jihui Yang, University of Washington	BAT232: High Energy Density Electrodes via Modifications to the Inactive Components and Processing Conditions, Vincent Battaglia, Lawrence Berkeley National Laboratory
BAT365: Stabilizing Lithium Metal Anodes by Interfacial Layer and New Electrolytes, Zhenan Bao, Stanford University / SLAC National Accelerator Laboratory	BAT632: Engineering Electrode Interfaces without Solvents, Jianlian Li and Andrew Jansen, Argonne National Laboratory
BAT367: Multiscale Characterization Studies of Lithium Metal Batteries, Peter Khalifah, Brookhaven National Laboratory	BAT475: E-Beam Cured Electrolyte Enables Stable Cycling of Li Metal Batteries with NMC 811 cathode, Georgios Polyzos & Jaswinder Sharma, Oak Ridge National Laboratory
BAT369: High Energy Rechargeable Lithium-Metal Cells: Design, Fabrication and Testing, Jie Xiao, Pacific Northwest National Laboratory	BAT183: In Situ Spectroscopies of Processing Next-Generation Cathode Materials, Feng Wang, Argonne National Laboratory
BAT368: Full Cell Diagnostics and Validation to Achieving High Cycle Life, Eric Dufek, Idaho National Laboratory	BAT402: Improving Battery Performance through Structure-Morphology Optimization, Venkat Srinivasan, Argonne National Laboratory
BAT524: Advanced Electrolytes for Lithium Metal Batteries, Chunsheng Wang, University of Maryland	BAT633: Five MT per year Supercritical Hydrothermal Continuous One-Step Manufacturing Process, Youngho Shin, Argonne National Laboratory
BAT553: Understanding solid electrolyte interphase (SEI) reactions in Lithium metal and Lithium-Sulfur batteries, Perla Balbuena, Texas A&M University	BAT637: Spinel and Layered Cathode Materials for Next-Generation Batteries: Synthesis and Structural Investigations, Amy Marschlok, Brookhaven National Laboratory
BAT362: High Capacity S Cathode Materials, Prashant Kumta, University of Pittsburgh	BAT594: New Engineering Concepts to High Energy Density Li-S Batteries, Prashant Kumta, University of Pittsburgh
BAT272: Pre-Lithiation of High-Capacity Battery Electrodes, Yi Cui, Stanford University	BAT595: Development of Li-S Battery Cells with High Energy Density and Long Cycling Life, Daiwei Wang, Pennsylvania State University
BAT275: Lithium Dendrite Prevention for Lithium Batteries, Wu Xu, Pacific Northwest National Laboratory	BAT596: Development of a High-Rate Li-Air Battery using a Gaseous CO ₂ Reactant, Amin Salehi-Khojin, University of Illinois at Chicago
BAT282: Development of High-Energy Lithium-Sulfur Batteries, Dongping Lu, Pacific Northwest National Laboratory	BAT599: Fluorinated Glyme Solvents to Extend Lithium-Sulfur Battery Life, Thomas Vaid, Navitas Systems
BAT286: Lithium-Air Batteries, Khalil Amine, Argonne National Laboratory	BAT601: Development of Functional Electrolytes for Li-S Battery Cells, Guoxing Li, Penn State University
BAT287: Advanced In Situ Diagnostic Techniques for Battery Materials, Xiao-Qing Yang, Brookhaven National Laboratory	BAT602: Extending the Operating Range and Safety of Li-Ion Batteries with New Fluorinated Electrolytes, Sarah Guillot, Koura
BAT230: Nanostructured Design of Sulfur Cathode for High-Energy Lithium-Sulfur Batteries, Yi Cui, Stanford University	BAT603: Fluorinated Ester Local High Concentration Electrolytes for Operation of Li-Ion Batteries under Extreme Conditions, Esther Takeuchi, Stony Brook University
BAT225: Model System Diagnostics for High-Energy Cathode Development, Guoying Chen, Lawrence Berkeley National Laboratory	BAT604: Novel Organosulfur-Based Electrolytes for Safe Operation of High Voltage Li-Ion Batteries Over a Wide Operating Temperature, Meinan He, General Motors
BAT420: Lithium Oxygen Battery Design and Predictions, Larry A. Curtiss, Argonne National Laboratory	
BAT423: Development of New Electrolytes for Lithium-Sulfur Batteries, Gao Liu, Lawrence Berkeley National Laboratory	

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BAT536: Polyester-Based Block Copolymer Electrolytes for Lithium Metal Batteries, Nitash Balsara, Lawrence Berkeley National Laboratory	BAT639: Advanced Separation and Processing Technologies for an Integrated Lithium-Ion Battery Recycling System, Ryan Melsert, American Battery Technology Company
BAT538: Ion conductive high Li ⁺ transference number polymer composites for solid-state batteries, Bryan McCloskey, Lawrence Berkeley National Laboratory	BAT640: Expanding Consumer Participation in Consumer Electronics Battery Recycling Programs, Roopali Phadke, Macalester College
BAT539: 3D Printing of All-Solid-State Lithium Batteries, Jianchao Ye, Lawrence Livermore National Laboratory	BAT641: ZEEBRA: Zoos Educating on Electronics and Battery Recycling Awareness, Lisa Lin, Harris Co. Texas
BAT540: Synthesis of Composite Electrolytes with Integrated Interface Design, Sanja Tepavcevic, Argonne National Laboratory	BAT642: Expanding Consumer Participation in Consumer Electronics Battery Recycling Programs, David Hirschler, Electronic Recyclers International
BAT541: Optimizing Sulfide based Solid-State Batteries and Cathode Interfacesubstituted Argyrodite Solid Electrolytes and High Capacity Conversion Cathodes for All-Solid-State Batteries, Jagjit Nanda, SLAC	BAT643: Low-Cost Modular System for Collecting and Recycling Consumer Batteries from MSW Using Artificial Intelligence, Isha Maun, UHV Technologies
BAT542: Polymer Electrolytes for Stable Low Impedance Solid State Battery Interfaces, Chelsea Chen, Oak Ridge National Laboratory	BAT644: Shredding and Electrolyte Removal System for Consumer Electronics Battery Transportation and Recycling, Weikang Li, ExPost Technology
BAT543: Integrated Multiscale Model for Design of Robust 3-D Solid-state Lithium Batteries, Brandon Wood, Lawrence Livermore National Laboratory	BAT645: Novel Design for Disassembly Toolchains and Deployable Robotic Cells, Rob Lawson Shanks, MORGAN
BAT590: Lithium Halide-Based Superioric Solid Electrolyte and High-Voltage Cathode Interfaces, Robert Sacci, Oak Ridge National Laboratory	BAT646: Low-Temperature Thermal Method to Preprocess the End-of-Life Lithium-Ion Batteries from Consumer Devices, Zhonghua Zhan, Reaction Engineering
BAT591: High-Conductivity and Electrochemically Stable Thioborate Solid-State Electrolytes for Practical All-Solid-State Batteries, Yi Cui, SLAC National Accelerator Laboratory	BAT647: Demonstrating the Techno-Economic Viability of Automated Characterization and Sorting of Batteries within E-Waste, Carson Potter, AMP Robotics
BAT606: VTO High-Performance Computing Cluster, Ray Grout, National Renewable Energy Laboratory	BAT648: Integrated Automated Sorting and Battery Neutralization to Reduce End-of-Life Logistics Costs for Lithium-Ion Battery Recycling, Zheng Li, Li Industries
BAT634: A Novel Integrated End-to-end Processing of End-of-Life EV Batteries for Remanufacturing of New EV Cells, Anthony Roger, Cirba Solutions	BAT649: Enhanced Validation of Advanced Battery Supply Chains (EVALs) Overview Eric Dufek, Idaho National Laboratory
BAT636: An Environmentally Sustainable Solution to Completely Recycle and Upcycle Lithium-Ion Battery Components, Xiaofang Yang, Princeton NuEnergy	BAT650: Comparing strategies to collect battery-containing devices in states with and without electronics recycling laws Ruby Nguyen, Idaho National Laboratory
ELT305: Second-life Battery in Mobile EV Charging Application for Rural Transportation (SMART), Ping Chen, Tennessee Tech University	BAT496: Silicon Consortium Project: Advanced Characterization of Silicon Electrodes, Robert Kostecki, Lawrence Berkeley National Laboratory
ELT307: 13MW Pilot Second-Use Batteries Incorporating Module Level Power Conversion to Improve Battery Safety/Performance, Seth Kahn, Element Energy	BAT497: Silicon Consortium Project: Electrochemistry of Silicon Electrodes, Christopher Johnson, Argonne National Laboratory
ELT304: Low-Cost and Scalable Second use Battery Demonstration in Central California for Equitable Domestic Manufacturing and Job Growth, Antoni Tong, Smartville	BAT498: Silicon Consortium Project: Next-Gen Materials for Silicon Anodes, Nathan Neale, National Renewable Energy Laboratory
ELT306: Adaptive Second-Use Battery Utilization with Different Degradation Levels for EV Charging Stations and Power Grid, Jaber Abu Qahouq, University of Alabama	BAT499: Silicon Consortium Project: Mechanical Properties of Silicon Anodes, Katherine Harrison, National Renewable Energy Laboratory
ELT303: Second-Life Battery Solar and Storage Facility Demonstration Enabled by Advanced State of Health Tracking, Joe Lacap, RePurpose Energy	BAT605: Silicon Consortium Project: Next Generation Electrolytes for Silicon Anodes, Gabe Veith, Oak Ridge National Laboratory
BAT638: Supplying Refined Battery Materials into the U.S. EV Battery Supply Chain by Synergizing Lithium-Ion Battery Recycling with Mine Waste Reclamation, Lei Pan, Michigan Technical University	BAT501: Integrated Modeling and Machine Learning of Solid-Electrolyte Interface Reactions of the Si Anode, Kristin Persson, Lawrence Berkeley National Laboratory
BAT600: Liquid Electrolytes for Lithium-Sulfur Batteries with Enhanced Cycle Life and Energy Density Performance, Gai nd P. Pandey, Giner Inc	BAT587: Earth-abundant Cathode Active Materials for Li-Ion Batteries: Theory and Modeling, Hakim Iddir, Argonne National Laboratory
	BAT588: Earth-abundant Cathode Active Materials for Li-Ion Batteries: System Analysis, Daniel Abraham, Argonne National Laboratory

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Batteries(BAT) Posters

Wednesday, June 4 at 6:00-8:00 PM

BAT652: BES01: Aqueous Battery Consortium (ABC) Hub: Probing hydrotrope-driven high concentration aqueous electrolytes for reversible metal anodes using advanced X-ray spectroscopy, Xueli (Sherry) Zheng, SLAC (ABC Hub)

BAT653: BES02: Energy Storage Research Alliance (ESRA) Hub: Accelerating solid state electrochemistry with correlative characterization and machine learning, Shirley Meng, ANL (ESRA Hub)

BAT654: BES 03: Fast and Cooperative Ion Transport in Polymer Electrolytes (FaCT): Mechanistic Studies of Ion Transport Enhancement in Composite Polymer Electrolytes; Chelsea Chen, ORNL (FaCT EFRC)

BAT655: BES04: Mechano-chemical Understanding of Solid Ion Conductors (MUSIC): Bridging mechano-chemical knowledge gaps to enable advanced energy storage solutions, Jeff Sakamoto, Michigan (MUSIC EFRC)

BAT656: BES05: Center for Mesoscale Transport Properties, Amy Marschilok, BNL (m2M EFRC)

BAT657: BES06: Direct Reduction of Metal Oxides to Metals for Electrowinning and Energy Storage, Paul Kempler, University of Oregon

BAT658: BES07: Interrogating chemo-mechanics interactions in Na metal electrodes, Bairav S. Vishnuopi, Purdue

BAT659: BES08: Chalcogels and Chalcocarbogels: High-Performance Electrode Materials for Lithium-Ion Batteries, Saiful M. Islam, Jackson State University

BAT660: BES09: Understanding Electrochemical Reactivity under Confinement in Molecularly Pillared Oxides, Veronica Augustyn NCSU

BAT661: BES10: Understanding Solid-Solution-Reaction vs. Solid-Phase-Transformation Competition of Complex Conversion Materials Dominated by Interfacial Kinetics, Chuan-Fu Lin, Catholic University

BAT608: Cathode-Electrolyte Interphase (CEI) Consortium (Thrust 1): Model cathode materials for next-generation Li-ion batteries, Jie Xiao Pacific Northwest National Laboratory

BAT609: Cathode-Electrolyte Interphase (CEI) Consortium (Thrust 2): Electrolytes and CEI at high voltages, Jordi Cabana, Argonne National Laboratory

BAT610: Cathode-Electrolyte Interphase (CEI) Consortium (Thrust 3): Characterization and modeling to understand CEI, Amy Marschilok, Brookhaven National Laboratory

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Electrification R&D (ELT) Posters

Wednesday, June 4 at 6:00-8:00 PM

ELT332 Magnetic component innovation through modeling, Todd Monson, SNL
ELT333: Embedded Sensors for Diagnostics and Prognostics, Jason Neely, SNL
ELT334: Power Module Reliability, Paul Paret, NREL
ELT335: High-Voltage High-Power Traction Inverter Thermal Management, Gilbert Moreno, NREL
ELT329: High-Torque Heavy-Rare-Earth-Free Electric Motor Thermal Management, Bidzina Kekelia, NREL
ELT330: Digital Twin Diagnostics and Prognostics, Shuofeng Zhao, NREL
ELT331: Electric Drives Components: Advancements in Power Module Design for Improved Reliability and Extended Lifespan, Shajjad Chowdhury, ORNL

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Materials Technology R&D – Joining, Metals, Propulsion Materials (MAT) Posters Wednesday, June 4 at 6:00-8:00 PM

MAT323: CCP 2.0, Thrust 1.6 - Natural Fiber Composites with Low Carbon Resin Matrix; Wenbin Kuang, Pacific Northwest National Laboratory

MAT324: CCP 2.0 Thrust 2.5 - Electrospun Nanofiber Networks for Multifunctional Composites; Christopher Bowland, Oak Ridge National Laboratory

MAT325: CCP 2.0 Thrust 2.6 - Sensing and Fatigue Behavior Characterization of Multifunctional Composites; Maria Feng, Columbia University

MAT326: CCP 2.0 Thrust 4.4 - 3D Printing of High-fidelity Heteroatom Containing Functional Carbons for Thermal Management; Joshua Damron, Oak Ridge National Laboratory

MAT204: New Frontier in Polymer Matrix Composites via Tailored Vitrimer Chemistry; Tomonori Saito, Oak Ridge National Laboratory

MAT174: Carbon-Fiber Technology Facility (CFTF), Daniel Webb, Oak Ridge National Laboratory

MAT211: Sustainable Lightweight Intelligent Composites (SLIC) for Next-Generation Vehicles, Masato Mizuta, Newport Sensors, Inc.

MAT212: Integrated Self sufficient Structurally Integrated Multifunctional Sensors for Autonomous Vehicles, Serena Wang, Acellent Technologies, Inc.

MAT254: Conductive Lightweight Hybrid Polymer Composites from Recycled Carbon Fibers
Conductive Lightweight Hybrid Polymer Composites from Recycled Carbon Fibers, Yinghua Jin, Rocky Tech Ltd.

MAT257: Changing the Design Rules of Rubber to Create Lighter Weight, More Fuel Efficient Tires, Kurt Swogger, Molecular Rebars, LLC

MAT267: Multiscale Bioinspired Enhancement of Natural-Fiber Composites for Green Vehicles, Lorenzo Mencattelli, Helicoid Industries, Inc.

MAT328: High Performance Polymeric Fibers from Renewables; Logan Kearney, Oak Ridge National Laboratory

MAT340: CCP 2.0, Thrust 1.1 - Synthesis and Melt Spinning of Renewable Pitch for Low-Cost Carbon Fiber Precursor Michael Toomey, Oak Ridge National Laboratory

MAT329: Cost Efficient Bio-derivable and Lightweight Materials for Vehicle Thermal Management; Robert Allen, National Renewable Energy Laboratory

MAT330: Low-cost Highly Recyclable Structures composites Utilizing Vitrimers and Natural Fibers (Basalt) Manufactured via a Novel Pultrusion Method for High-volume Applications; Wenbin Kuang, Pacific Northwest National Laboratory

MAT331: Design of Additive Manufacturable Dual Curing Resin Systems Enabling Circular Composites; Robert Allen, National Renewable Energy Laboratory

MAT332: Recyclable-by-Design Carbon Fiber Composites for Battery Enclosures; Nicholas Rorrer, National Renewable Energy Laboratory

MAT333: Tunable PAS Polymer System for Thermalplastic Reinforced Reinforced Body Panels; Erik Rognerud, National Renewable Energy Laboratory

MAT334: Textile Reinforced Composites with Improved Dynamics Load Management and Flame-Retardancy for Electric Vehicle Battery Enclosures, Christopher Bowland, Oak Ridge National Laboratory

MAT335: Plasma Surface Treatment, a Technical Implementation for Carbon Fiber Composites; Michael Toomey, Oak Ridge National Laboratory

MAT336: Multifunctional SMC/BMC Formulation for Low-Cost Manufacture of Fire Resistant EMI Shielded battery Lids; Henry Sodano, Trimer Technologies, LLC

MAT337: Multi-Functional Adaptive Biomimetic High Energy-Density Battery Enclosure; Lorenzo Mencattelli, Helicoid Industries, Inc.

MAT338: Multifunctional Composite Laminate Based Structural Battery for Vehicle Applications; Salah Hamim, Structured Ions, LLC

MAT339: Functionalized 3D Carbon Nanofiber Composites for High-Performance Autonomous Aerial Vehicles; Wonbong Choi, Ark Power Tech., Inc.

2025 Vehicle Technologies Office Annual Merit Review Vehicle Analysis (VAN) Posters Wednesday, June 4 at 6:00-8:00 PM

VAN032: Tracking Evolution of Electric Vehicles and New Mobility Technologies, Yan (Joann) Zhou, Argonne National Laboratory
VAN017: ANL VTO Analysis Modeling Program, Michael Wang, Argonne National Laboratory
VAN021: Transportation Energy Evolution Modeling (TEEM) Program, Ruixiao Sun, Oak Ridge National Laboratory
VAN047: Integrated Modeling and Technoeconomic Assessment of Electric Vehicle Community Charging Hubs, Eleftheria Kontou, University of Illinois
VAN059: Deploying Charging Infrastructure to Analyze Market Adoption of Electric Vehicles and Improve Mobility, Health, and Economic Outcomes in Disadvantaged Communities, Corey Harper, Carnegie Mellon University
VAN060: Quantifying New and Used Plug-in Electric Vehicle Market Dynamics in Different Communities, John Helveston, George Washington University

2025 Vehicle Technologies Office Annual Merit Review Super Track Posters (Technology Integration) Wednesday, June 4 at 6:00-8:00 PM

TI162: San Francisco and Bay Area Regional Medium- and Heavy-Duty Electrification Roadmap, Lynn Daniels, Rocky Mountain Institute

TI159: First to Last Mile: Creating an Integrated Goods Movement Charging Network Around the I-710 Corridor, Jack Symington, Los Angeles Cleantech Incubator

TI163: Houston to Los Angeles (H2LA) - Interstate 10 (I-10) Hydrogen Corridor Plan, Bart Sowa, Gas Technology Institute

TI161: MD-HD ZEV Infrastructure Planning with Focus on I-80 Midwest (IN-IL-OH) Corridor, Daniel O'Connor., Cummins Inc.

TI160: Northeast Electric Highways Study, Pedro Jardim, National Grid USA Service Company Inc.

2025 Vehicle Technologies Office Annual Merit Review Energy Efficient Mobility Systems (EEMS) Wednesday, June 4 at 6:00-8:00 PM

EEMS148: Blueprinting Electrified Transit System Implementation, Noah Horesh, Colorado State University

EEMS149: Next Generation Transit Mobility System, Jason Hanlin, Flow State Tech

EEMS150: Offline Reinforcement Learning-Based Traffic Management to Improve System Wide Energy Efficiency, Lokendra Pratap Singh Chauhan, Gen AI

EEMS151: Sustainable means of urban transportation for cities, Tony Gale, Swift Trails