

**BES Materials Chemistry Agenda – 2026 PI Meeting****July 7-9, 2026**

Event Chairs	Dr. Karen Winey; winey@seas.upenn.edu Dr. Xueli (Sherry) Zheng; xuelizh8@stanford.edu Website: https://www.ornl.gov/2026MatChem	
Registration Open: until June 15, 2026		
Requested	Date/Deadline	Comment
Project Abstract	Submit by May 31, 2026	Requesting a long abstract (2-page format) from each research project in the current Materials Chemistry program
Meeting Location and Registration	Register by June 15, 2026	Please use the website link above to register for the meeting which will be held at: Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, Bethesda, MD, 20852

Tuesday, July 7, 2026		
7:00 – 8:30 AM	Breakfast (<i>White Oak Room</i>)	
8:30 – 8:50 AM	Opening Remarks	BES Materials Chemistry Program Managers
Technical Session A: Polymers (Salon F,G,H) <i>Session Chair: Tomonori Saito (Oak Ridge National Laboratory)</i>		
8:50 – 9:10 AM	A1 – Predicting and Controlling Ion Mobility in Polymer Blend and Composite Electrolytes - Joint Experiment and Modeling Effort in Biasing Ion Conduction	Epps University Of Delaware
9:10 – 9:30 AM	A2 – Molecular and Network Design of Liquid Crystal Elastomer Elastocalorics	Davidson Princeton



9:30 – 9:50 AM	A3 – Organic Crystallites and Crystalline Domains: Synthesis and Fundamental Understanding in Conjugated Polymers for Optoelectronic Energy Management	Katz Johns Hopkins University
9:50 – 10:10 AM	A4 – Chemical Upcycling of Polyolefins into Functionalized Polyolefins	Winey University of Pennsylvania
10:10 – 10:25 AM	A5 – Rigid Polynorbornenes Prepared by Vinyl Addition Polymerization for Gas Separation Membranes	Martin (Matson) Virginia Tech
10:25- 10:50 AM	BREAK	
Technical Session B: Inorganic Materials I (Salon F,G,H) <i>Session Chair:</i> Ram Seshadri (UC Santa Barbara)		
10:50– 11:10 AM	B1 – Modular Intermetallics: Materials Discovery from Chemical Pressure-Derived Principles for the Formation and Morphology of Complex Metallic Structures	Fredrickson University of Wisconsin-Madison
11:10 – 11:30 AM	B2 – Crystal Growth of New Complex Actinide Containing Chalcogenides and Oxychalcogenidess	zur Loye University of South Carolina
11:30 – 11:50 AM	B3 – Solid State Chemistry of Novel Pnictides with Complex Structures	Bobev University Of Delaware
11:50 – 12:05 PM	B4 – Designing Chemical Disorder in Solid-State Superionic Conductors	Kim, Jae Chul Stevens Institute of Technology
12:05 – 1:00 PM	Lunch Break (<i>White Oak Room</i>)	
1:00 – 1:15 PM	Materials Chemistry Program Update Presentation - <i>Craig Henderson</i>	
Technical Session C: Cluster Chemistry (Salon F,G,H) <i>Session Chair:</i> Andrea Tao (UC San Diego)		
1:15 – 1:35 PM	C1 – Discovering Dopable, Next Generation Defect Tolerant Hybrid Semiconductors	Neilson Colorado State University



1:35 – 1:55 PM	C2 – Molecular Mo Sulfide Clusters for H ₂ -Evolution: Surface Immobilization and Water Solubility, Composition-Function Relationships, and Probes of Mechanism	Donahue Tulane University
1:55 – 2:10 PM	C3 – Multifunctional carbon-based clathrate materials with versatile physical properties	Strobel Carnegie Institution of Washington
2:10 – 2:25 PM	C4 – Intrinsically Porous Polyoxometalate-Based Frameworks for Critical Metal Recovery	Peng University of Missouri-Kansas City
2:25 – 2:50 PM	Break	
Technical Session D: Energy Storage I (Salon F,G,H) Session Chair: Xiulei “David” Ji (Oregon State University)		
2:50 – 3:10 PM	D1 – Understanding the Impact of Intrinsic Structural Vacancies on Reversible Fluoride Insertion	Melot Binghamton University
3:10 – 3:30 PM	D2 – Emerging Properties through Controlled Phase Transformations for High Energy Sodium Ion Batteries	Xiong Boise State University
3:30 – 3:45 PM	D3 – Uncovering the mechano-electro-chemo mechanism of fresh Li in sulfide based all solid-state batteries through operando studies	Zhu Northeastern University
3:45 – 4:00 PM	D4 – Broadening Accessibility & Training to Emerging Researchers for Innovative Energy Storage (BATTERIES)	So CSU Chico
Poster Session I (Salon E)		
4:00 – 6:00 PM	Poster Session I (see below)	4:00 – 6:00 PM
6:00 – 9:00 PM	Poster “After Hours” – Poster from Session I may remain on display, but will be unmanned, for additional viewing.	6:00 – 9:00 PM



Poster Session I	I-1 – Towards Facile Synthesis of High-Entropy-Alloy Complex Concentrated Alloy Nanoparticles	Kou (Abdul-Aziz) University of Southern California
Poster Session I	I-2 – Fundamental Studies of the Influence of Ligands on the Molecular Structure of Noble Metal Nanoclusters	Hernandez Grinnell College
Poster Session I	I-3 – Development of Recyclable Thermosets for Additive Manufacturing	Chowdhury New Mexico Tech
Poster Session I	I-4 – Enabling Complex Energy Materials by Comprehensive Exploration of Structure-Synthesis Relationships through Computations and Experiments	Donadio University of California, Davis
Poster Session I	I-5 – Understanding the Supramolecular Nature of the Nanocrystal Ligand Shell	Tao UC San Diego
Poster Session I	I-6 – A New Paradigm for Water Splitting in Layered Materials by Modulation of Catalyst Oxidation State	Zdilla Temple University
Poster Session I	I-7 – Autoxidation Mechanisms and Methods for Plastics Upcycling	Hermans University of Wisconsin-Madison
Poster Session I	I-8 – Bimolecular Interactions in Organic Semiconductors	Baldo Massachusetts Institute of Technology
Poster Session I	I-9 – Block Copolymers for Advanced Lithography	Bates (Fredrickson) UC Santa Barbara
Poster Session I	I-10 – Building the Infrastructure for Physical Property Measurements Toward Design of Organic-Inorganic Hybrid Materials with Geometric Frustration	Pham CSU San Bernardino
Poster Session I	I-11 – Chemistry of γ -Graphyne: Exfoliation, Intercalation, and Pathways to Novel Carbon Phases	Ma Rice University
Poster Session I	I-12 – Designing Twisted Two-Dimensional Halide Perovskite as a Tunable Moire Materials Platform	Dou Purdue University
Poster Session I	I-13 – Electron-Deficient Conjugated Polymers with Prototypical Bond Topologies	Chiechi North Carolina State University



Poster Session I	I-14 – Energy Flow in Polymers with Mixed Conduction Pathways	Segalman UC Santa Barbara
Poster Session I	I-15 – Exploration of Radial Conjugation Pathways in PI-Electron Materials	Tovar Johns Hopkins University
Poster Session I	I-16 – Factors Controlling Stability of Hydrated Amorphous Materials Formed from Aqueous Solution at Interfaces	Weber Oak Ridge National Laboratory
Poster Session I	I-17 – Fundamental Studies of Charge Transfer in Nanoscale Heterostructures of Earth-Abundant Semiconductors for Solar Energy Conversion	Jin University of Wisconsin-Madison
Poster Session I	I-18 – Fundamental Understanding of Electrochemical - Mechanical Driven Instability of Sodium Metal	Vishnugopi (Mukherjee) Purdue University
Poster Session I	I-19 – Harnessing Extreme Electric Fields to Control Anisotropic Ion Transport near Toughened Ceramic Interfaces	Xu Arizona State University
Poster Session I	I-20 – Harnessing the catalytic promise of molybdenum chalcogenides to enable aqueous zinc sulfur batteries	Marschilok Brookhaven National Laboratory
Poster Session I	I-21 – High Electron Affinity Conjugated Polymers: Synthesis, Electron Transport and Discovery of New Class of Two-Dimensional Organic Solid-State Materials	Jenekhe University of Washington
Poster Session I	I-22 – Impacts of Dynamic Bonding on the Properties of Porous Materials	Brozek University of Oregon
Poster Session I	I-23 – Interrogation of charge transport in electrolytes containing charge-transfer complexes	Schaefer University of Notre Dame
Poster Session I	I-24 – Ionic-dipolar interactions in poly(ionic liquids)	Urban Clemson University
Poster Session I	I-25 – Leveraging Radical Dynamics to Generate Nuclear Spin Hyperpolarization	Perras (Constantinides) University of Michigan - Dearborn
Poster Session I	I-26 – Liquid-metal electrodes for low-cost and low temperature solid state batteries for long duration energy storage	Hatzell Princeton



Poster Session I	I-27 – Lone-Pair Driven Phenomena in Optoelectronic Halide Materials	Seshadri UC Santa Barbara
Poster Session I	I-28 – Materials and Interfacial Chemistry for Next-Generation Electrical Energy Storage	Manthiram The University of Texas, Austin
Poster Session I	I-29 – Modifying the Surfaces and Interiors of Porous Solids for Energy Science	Cohen UC San Diego
Poster Session I	I-30 – Modulating Complex Chemical Conversion with Multi-site Electrocatalyst for Energy Dense Liquids	Cheng The University of Tennessee

Wednesday, July 8, 2026

7:00 – 8:30 AM	Breakfast (<i>White Oak Room</i>)	
8:30 – 8:35 AM	Opening Remarks	BES Materials Chemistry Program Managers
Technical Session E: General Session I (Salon F,G,H) <i>Session Chair:</i> Brett Helms (Lawrence Berkeley National Laboratory)		
8:35 – 8:55 AM	E1 – iClick Enabled Synthesis of Porous Organometallic Polymers (POMPs) and Soft Materials	Veige University of Florida
8:55 – 9:15 AM	E2 – Thermodynamics, Electroosmosis, and Electrokinetic Energy Generation in Nanochannels Functionalized with Anionic and Cationic Polyelectrolyte Brushes in Presence of Multivalent Counterions	Das University of Maryland, College Park
9:15 – 9:35 AM	E3 – Dynamic Properties of Nanostructured Porous Materials	Matzger University of Michigan
9:35 – 9:50 AM	E4 – Investigating Multi-Particle States in Semiconducting Polymers	Spano (Salleo) Stanford
9:50 – 10:05 AM	E5 – Chemistry of γ -Graphyne: Exfoliation, Intercalation, and Pathways to Novel Carbon Phases	Rodionov Case Western



10:05 -10:30 AM	BREAK	
Technical Session F: Energy Storage II (Salon F,G,H) <i>Session Chair:</i> Chibueze Amanchukwu (The University of Chicago)		
10:30 – 10:50 AM	F1 – Center for STrain Optimization for Renewable Energy (STORE)	Tolbert University of California, Los Angeles
10:50 – 11:10 AM	F2 – Materials and Interfacial Chemistry for Next Generion Electrical Energy Storage	Dai Oak Ridge National Laboratory
11:10 – 11:30 AM	F3 – Thin Film Platforms to Advance Scientific Frontiers in Solid State Energy Storage	Stewart (Rubloff) University of Maryland
11:30 – 11:45 PM	F4 – Understanding Solid-Solution-Reaction vs. Solid-Phase-Transformation Competition of Complex Conversion Materials Dominated by Interfacial Kinetics	Lin Catholic University of America
11:45 – 12:00 PM	F5 – Nature-Derived Materials for Redox Flow Batteries	Hematian Virginia Tech
12:00 – 12:45 PM	Lunch Break (<i>White Oak Room</i>)	
12:45 – 1:25 PM	Materials Chemistry Lunch Talk - <i>Navigating the AI Frontier in Materials Chemistry</i> : Ram Seshadri (UC Santa Barbara) and Yi Cui (SLAC National Accelerator Laboratory)	
Technical Session G: Direct Air Capture and Critical Minerals (Salon F,G,H) <i>Session Chair:</i> Jeffrey Long (Lawrence Berkeley National Laboratory)		
1:25 – 1:45 PM	G1 – Reversible Electrochemical Capture/Release of Carbon Dioxide Mediated by Electrostatically-Enhanced Charge Transfer	Rodríguez-López University of Illinois, Urbana-Champaign
1:45 – 2:00 PM	G2 – Novel Strategies for Direct Air Capture and Conversion of CO2 Using Dual-Function Materials	Kuila North Carolina A&T State University
2:00 – 2:15 PM	G3 – Designing Photoresponsive Nanosponges for Efficient and Reversible Capture and Release of Carbon Dioxide	Liu CSU - Los Angeles



2:15 – 2:30 PM	G4 – Li-Ion Battery Critical Metal Recycling Using Sugars	Amarasekara Prairie View A&M University
2:30 – 2:45 PM	G5 – Direct Reduction of Metal Oxides to Metals for Electrowinning and Energy Storage	Kempler University of Oregon
2:45 – 3:05 PM	BREAK	
Technical Session H: Two-dimensional Materials & Hybrid Perovskites (Salon F,G,H) Session Chair: Song Jin (University of Wisconsin – Madison)		
3:05 – 3:25 PM	H1 – Compositional Control of Fundamental Electronic and Magnetic Properties of Ordered Layered Multielemental MXenes	Stach (Gogotsi) Drexel University
3:25 – 3:40 PM	H3 – Molecular Insights into Structure and Function of Doping in Hybrid Metal Halides for the Rational Design of Optoelectronic Materials	Gangishetty Mississippi State University
3:40 – 3:55 PM	H4 – Synthesis and Structure-Property Relationships in the New Family of Porous Metal Halide Semiconductors (PMHS)	Spanopoulos University of South Florida
Poster Session II (Salon E)		
4:00 – 6:00 PM	Poster Session II (see below)	4:10 – 6:00 PM
6:00 – 9:00 PM	Poster “After Hours” – Poster from Session II will remain on display, but will be unmanned, for additional viewing.	6:00 – 9:00 PM
Poster Session II	II-1 – Multilength-Scale Synthesis of Silicon Materials	Klausen Johns Hopkins University
Poster Session II	II-2 – Multi-scale Study of Self-Healing Polymers to Enhance Carbon Dioxide Removal	Ma The University of Vermont
Poster Session II	II-3 – New Cooperative Adsorbents and Regeneration Methods for the Efficient Removal of Carbon Dioxide from Air	Long Lawrence Berkeley National Laboratory



Poster Session II	II-4 – New Paradigms for Controlling Transport in Dynamic Polymer Networks	Evans (Braun) University of Illinois, Urbana-Champaign
Poster Session II	II-5 – Understanding and Discovering New Oxygen Interstitial Conductors with Machine Learning, Molecular Computation, and Experiments	Jacobs University of Wisconsin-Madison
Poster Session II	II-6 – Resolving Kinetics in Solid-State Synthesis for Materials Discovery	Chapman Ston Brook University
Poster Session II	II-7 – New Synthetic Approaches Towards Atomically Precise p-d Conjugated Materials	Xiao University of Washington
Poster Session II	II-8 – Passive and Enhanced Capture and Conversion of CO ₂ by d/f ⁰ Molecules and Materials	Nyman Oregon State University
Poster Session II	II-9 – Permanent Magnets Featuring Heavy Main Group Elements for Magnetic Anisotropy	Freedman Massachusetts Institute of Technology
Poster Session II	II-10 – Advancing Fundamental Synthetic and Structural Chemistry for the Design of High-Performance Metal-Organic Framework Materials	Feng University of California, Riverside
Poster Session II	II-11 – Precise Polymeric Patch Design on Anisotropic Nanorings to Realize Controlled Orientation in Self-Assembled Photonic	Zhou South Dakota School of Mines & Technology
Poster Session II	II-12 – Precision Deconstruction of Polymers by Tailored Ionic Liquids	Saito Oak Ridge National Laboratory
Poster Session II	II-13 – Precision Synthesis and Assembly of Ionic and Liquid Crystalline Polymers	Montes de Oca (Nealey) Argonne National Laboratory
Poster Session II	II-14 – PREDICT (Probing and Regulating Electrochemical Dynamics at Interfaces for Correlation and Tunability)	Zheng SLAC National Accelerator Laboratory
Poster Session II	II-15 – Probing the hydrogen bonded networks and ion interactions in deep eutectic solvents (DESs) through solute molecules.	Suarez CUNY - Brooklyn College



Poster Session II	II-16 – Rational Synthesis of Superconductors	Kanatidis Argonne National Laboratory
Poster Session II	II-17 – The Role of Local Structure and Dynamics on Proton and Hydroxide Transport in Ion-Conducting Polymers	Kennemur (Winey) University of Pennsylvania
Poster Session II	II-18 – Enabling energy-dense grid scale batteries with earth abundant materials	Amanchukwu The University of Chicago
Poster Session II	II-19 – Transforming Critical Materials Separation using Precision Control	Jansone-Popova Oak Ridge National Laboratory
Poster Session II	II-20 – Two-Dimensional Chalcogenide Nanomaterials 2D Nano	Cui SLAC National Accelerator Laboratory
Poster Session II	II-21 – Understanding Degradation Mechanisms of Aminopolymers Used in Direct Air Capture	Pang Lawrence Livermore National Laboratory
Poster Session II	II-22 – Understanding Interfacial Chemistry and Cation Order-Disorder in Mixed-Phased Complex Sodium Metal Oxide Cathodes for Sodium Ion Batteries	Xiong Boise State University
Poster Session II	II-23 – Understanding the Interfaces for High-Energy Batteries Using Anions as Charge Carriers	ji Oregon State University
Poster Session II	II-24 – Unlocking Chemical Circularity in Recycling by Controlling Polymer Reactivity Across Scales	Helms Lawrence Berkeley National Laboratory
Poster Session II	II-25 – Using Nanoporous and Nanostructured Materials to Understand and Optimize Pseudocapactive Charge Storage	Tolbert University of California, Los Angeles
Poster Session II	II-26 – When Covalent Organic Frameworks Meet Cross-coupling Reactions: Directed Synthesis, Mechanistic Investigation, and Energy Application	Li Clark Atlanta University
Poster Session II	II-27 – Porous, Lightweight, and Semiconducting Chalcogel as High Energy Density Electrode for Li- and Na-ion Batteries	Islam George Mason



Poster Session II	II-28 – Multidimensional Phase Maps for the Accelerated Synthesis and Study of Metastable Materials	Brutchey University of Southern California
Poster Session II	II-29 – Chain Exchange in Block Copolymer Micelles, Vesicles, and Melts	Lodge University of Minnesota
Poster Session II	II-30 – Inorganic/Organic Nanocomposites	Xu Lawrence Berkeley National Laboratory

Thursday, July 9, 2026		
7:00 – 8:30 AM	Breakfast (<i>White Oak Room</i>)	
Technical Session I: Inorganic Materials II (Salon F,G,H) Session Chair: Joyce Pham (California State University – San Bernardino)		
8:30 – 8:50 AM	I1 – Synthesis and Properties of High Quality Crystals of Spin Orbit Coupled Pyrochlores	Kolis Clemson University
8:50 – 9:10 AM	I2 – Materials Chemistry of Ternary Nitride Synthesis	Zakutayev National Laboratory of the Rockies
9:10 – 9:30 AM	I3 – Janus 2D Material Platform Enabled by Atomic-Layer Substitution	Kong MIT
9:30 – 9:45 AM	I4 – Epitaxially-Fused Quantum Dot Superlattices with Collective Electronic and Magnetoelectronic Properties	Law University of California, Irvine
9:45 – 10:00 AM	I5 – Unraveling Assembly and Charge Dynamics of Asymmetric Metal Complexes in Aqueous Solution	Zhu The University of Akron
10:00 – 10:30 AM	Break	



Technical Session J: General Session II (Salon F,G,H) <i>Session Chair: Saiful Islam (George Mason University)</i>		
10:30 – 10:50 AM	J1 – New Horizons In Thermal And Charge Transport In Complex Narrow Gap Semiconductors	Dravid Northwestern
10:50 – 11:10 AM	J2 – Elucidating the Electrochemically Enhanced Surface Diffusion Mechanism in Materials for Clean Energy	Pietro Papa Lopes Argonne National Laboratory
11:10 – 11:30 AM	J3 – Solid-State NMR Spectroscopy for Advanced Energy Materials	Frédéric Perras (Rossini) Ames Laboratory
11:30 – 11:45 AM	J4 – Unraveling the Mysteries of the Platinum Group Elements	Jochen Autschbach (Hu) Florida State University
11:45 – 12:00 PM	J5 – A New Approach to Discerning Transport of Gases in MOFs	Ajoy UC Berkeley
12:00 – 12:10 PM	BES Program Manager Comments and Closeout of Meeting	
12:10 PM	Adjourn	