ACerS SPRING MEETING

MAY 23-28, 2027

SAN FRANCISCO, CALIFORNIA
Hilton Union Square

CALL FOR PAPERS

ABSTRACTS DUE JANUARY 1, 2027

ceramics.org/ACERSSPRING2027

Organized by:
The Basic Science, Electronics, Energy Materials and Systems, Glass and Optical Materials, Bioceramics, Manufacturing Divisions of The American Ceramic Society

WELCOME

We would like to warmly welcome you

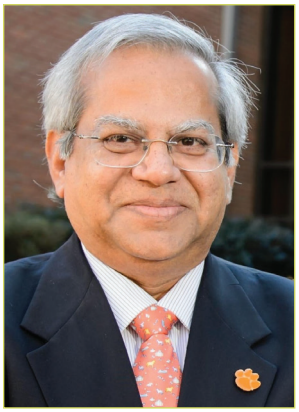
to the second annual ACerS Spring Meeting, in San Francisco, California, USA. This meeting is a follow-up to our successful inaugural Spring Meeting in Bellevue, Washington and is again a product of close collaboration among six Divisions of the American Ceramic Society (ACerS) - the Basic Science, Bioceramics, Electronics, Energy Materials and Systems, Glass and Optical Materials, and Manufacturing Divisions.

The ACerS Spring Meeting provides a platform for state-of-the-art presentations and information exchange on cutting-edge ceramics and glass science and technologies, across many disciplines. The technical program of ACerS Spring Meeting 2027 consists of a total of 42 Symposia—including 28 joint symposia, 3 of which engage all participating divisions—as well as a number of special and networking events. The program includes symposia on a wide range of exciting and emerging topics including sustainability, extreme environments, AI and ML, low dimensional materials and oxide quantum materials. These will complement long-running symposia that have been successfully organized by the participating Divisions in their annual meetings and at MS&T. We expect to build upon the success of the 2026 Spring Meeting with even stronger and broader participation from the worldwide membership of ACerS and the glass and ceramics community.

ACerS Spring Meeting 2027 will host several special events in conjunction with its technical program. These events welcome members of all Divisions and include the beloved "Failure: The Greatest Teacher" event, and two incredible tutorials, sponsored by the Electronics Division and the Basic Science Division. Complementing the technical programming are a number of networking and mentoring events including those for students and young professionals to engage and promote future leaders of the Divisions. **We encourage participants to submit abstracts to the symposium that best aligns with their research. All symposia welcome submissions from any Spring Meeting attendee, regardless of Division affiliation or membership in ACerS.**

On behalf of the organizing committee, the leaders of the participating Divisions and the staff of The American Ceramic Society, we invite you to actively participate in and contribute to the new tradition of the Spring Meeting of ACerS. It is an excellent opportunity to meet and network with friends and colleagues across multiple ACerS Divisions and the broader glass and ceramics community in a very attractive location. We look forward to welcoming you to San Francisco, CA in May 2027!

On behalf of the ACerS Spring Meeting organizing committee, we sincerely thank our industrial sponsors and other partners and exhibitors.



Rajendra K. Bordia
Clemson University
Program Co-Chair,
ACerS Spring Meeting 2027

Geoff Brennecka
Colorado School of Mines
Program Co-Chair,
ACerS Spring Meeting 2027

SPRING MEETING 2027
ORGANIZING COMMITTEE

Rajendra K. Bordia
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Geoff Brennecka
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Conference Co-Chair

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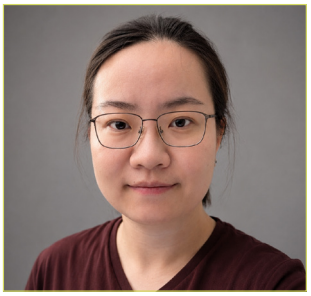

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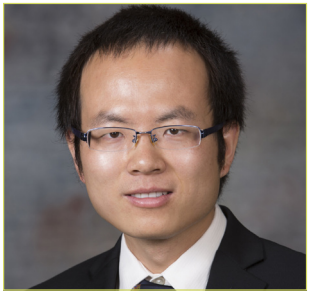


Bai Cui
University of Nebraska-Lincoln
Manufacturing Division

Chao Ma
Arizona State University
Manufacturing Division

IMPORTANT INFORMATION
SPRING MEETING 2027

HOTEL INFORMATION

Hilton San Francisco Union Square
333 O'Farrell St.
San Francisco, CA 94102

https://book.passkey.com/e/51272679

ABSTRACT SUBMISSION INSTRUCTIONS

Submit your abstract by
January 1, 2027:

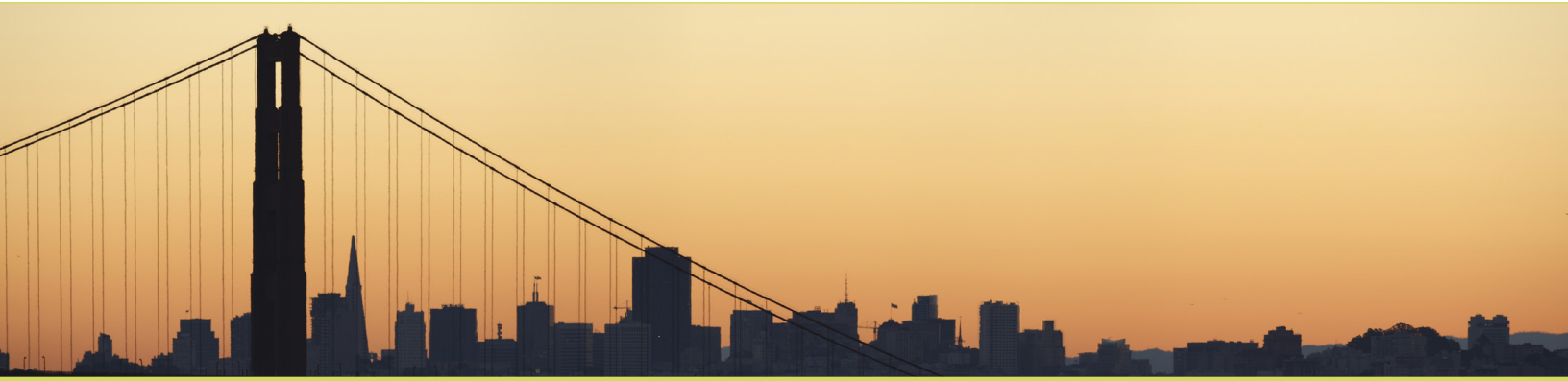
https://springmeeting2027.abstractcentral.com/

If you have questions, please contact:
Karen McCurdy at kmccurdy@ceramics.org

NOTE TO PRESENTERS

It is unavoidable that some symposia and presentations will be scheduled for the last day of the conference. Please refrain from making flight reservations or travel arrangements until your presentation has been scheduled. If you are unable to present on your assigned day, ACerS cannot guarantee we will be able to reschedule your presentation. Special requests for specific presentation times and dates are discouraged.

Due to costs associated with hosting a professional scientific conference, ACerS does not offer complimentary or discounted registration for this meeting. All attendees, to include our invited speakers and students, are expected to register for the event through our registration system at the appropriate rate. All student attendees will be asked to show valid student id to retrieve their badges on site.



SPRING MEETING 2027

TABLE OF CONTENTS

SYMPOSIUM 1:

Outreach and Engagement: STE(A)M Outreach, Education, Engagement and Retention

Organized by All Participating Divisions

Participants in this symposium will highlight efforts related to awareness and interest in science, technology, engineering, art, and mathematics [STE(A)M] topics as well as approaches for educating and retaining the next generation of STE(A)M individuals in glass and ceramics research. Work that reaches one's country and/or a global audience is highly encouraged. Presentations should focus on outreach activities related to glass or ceramics-related topics, including exploration of STEAM essentials and best practices for developing and disseminating activities and tools to prepare students for technical careers; supporting K–12 STEM programs through outreach to teachers and schools; development of curricula and/or courses to support STEAM in schools and universities; and the importance of addressing the imminent gap in a qualified STEAM workforce.

Symposium Organizer(s)

- Charmayne Lonergan, Missouri University of Science and Technology
- Kathryn Goetschius, Corning Inc., USA
- Casey Schwarz, Ursinus, USA

Point(s) of Contact

- Charmayne Lonergan; clonergan@mst.edu

Symposium Sponsor(s)

- All Participating Divisions

SYMPOSIUM 2:

Symposium of Frontier Ceramics Engineering Science and Technology

Organized by All Participating Divisions

Ceramics have played and continue to play an essential role in modern society, propelling the advancement of science and technology. Historically, ceramics research has led to the creation of new theories, innovative processes, novel materials, and advanced functionalities. In recent years, remarkable innovations in ceramic materials have inspired a large number of research efforts pursuing new knowledge. This symposium aims to provide a dedicated forum to discuss the fundamental and frontier science of advanced ceramics, as well as emerging applications of new processing technologies and ceramic materials. The symposium will cover all aspects of basic ceramic sciences and the utilization of new technologies, processing methods, and materials, including but not limited to: High-entropy ceramics; Novel sintering technologies; Optical ceramics; Lead-free piezoelectric ceramics; Interface and grain boundary engineering; Atomic-level materials design; Advanced characterization techniques. Our focus will be on emerging processing technologies and novel ceramic materials. Topics will cover all aspects of basic ceramic sciences, as well as the utilization of new technologies, processing methods, and materials for applications in key fields such as sustainable environment, healthcare, and energy.

Symposium Organizer(s)

- Yiquan Wu, Alfred University, USA
- Rajendra Kumar Bordia, Clemson University, USA
- Amanda R. Krause, Carnegie Mellon University, USA
- Fahrenholtz, William, Missouri University of Science and Technology, USA

Point(s) of Contact

- Yiquan Wu; wuy@alfred.edu

Symposium Sponsor(s)

- All Participating Divisions

SYMPOSIUM 3:

Interfaces, Grain Boundaries, and Surfaces in Ceramics: Experiments and Modeling from Atomistic to Macroscopic Scales

Organized by All Participating Divisions

The properties of ceramics are strongly influenced by interfaces, including grain boundaries and free surfaces. Interfaces involve complex 2-D atomistic structures and chemistries which can undergo transitions driven by thermodynamic parameters. Interface states can critically affect mass transport, densification, and grain growth.

This symposium will address atomistic and continuum approaches to ceramic interfaces, linking fundamental interface science with engineering properties. Topics include interface thermodynamics, chemistry, structure and bonding, adsorption, morphological kinetics, atomistic simulations, and interface engineering for applications.

A significant portion of the invited talks will feature early-career researchers, with input from senior scientists to identify promising candidates. The symposium aims to foster in-depth discussion connecting interface thermodynamics, microstructural evolution, and structure-dependent properties at the atomistic scale.

Proposed Session Topics

- Interface thermodynamics (energy, wetting, equilibrium shapes)
- Interface chemistry (segregation, adsorption, charge transfer)
- Interface structure and bonding via atomic-level characterization
- Kinetics of morphological changes (grain growth, faceting)
- Atomistic simulations linking interface structure and properties
- Interface engineering for applications

Symposium Organizer(s)

- Wayne Kaplan, Technion - Israel Institute of Technology, Israel
- Fadi Abdeljawad, Northwestern University, USA
- Klaus van Benthem, University of Alabama, USA
- Catherine Bishop, University of Canterbury, New Zealand
- W. Craig Carter, Massachusetts Institute of Technology, USA
- R. Edwin Garcia, Purdue University, USA
- Ming Tang, Rice University, USA
- Wenchao (Mark) Du, Argonne National Laboratory, USA

Point(s) of Contact

- Wayne Kaplan; kaplan@technion.ac.il

Symposium Sponsor(s)

- All Participating Divisions

SYMPOSIUM 4:

Recent Developments in Microelectronics Energy Efficiency Research Center for Advanced Technologies (MEERCAT)

Organized by BSD and ED

The Microelectronics Energy Efficiency Research Center for Advanced Technologies (MEERCAT) is one of the U.S. Department of Energy (DOE) Microelectronics Science Research Centers (MSRCs) established under the CHIPS and Science Act. MEERCAT focuses on advancing the foundational science and technology needed for the next generation of energy-efficient microelectronics and intelligent computing systems. MEERCAT brings together national laboratories, universities, and interdisciplinary researchers to develop transformative innovations spanning materials, devices, architectures, and manufacturing approaches for future microelectronics. The center emphasizes integrated co-design across the entire information-processing chain, including sensing, data transport, edge computing, artificial intelligence, neuromorphic systems, and high-performance computing. A central goal of MEERCAT is to address the rapidly increasing energy demands of modern computing driven by AI, advanced sensing, and data-intensive technologies. Research within the center explores emerging materials, heterogeneous integration, novel device concepts, in-memory and in-transit computing, and advanced fabrication and characterization techniques to enable scalable, sustainable, and highly energy-efficient information processing systems. The MEERCAT program supports collaborative, multidisciplinary research efforts across DOE national laboratories and academic institutions, with strong emphasis on translating fundamental discoveries into enabling technologies for future microelectronics platforms relevant to scientific computing, energy systems, and national security applications. Abstract submissions from colleagues who are not part of the center are also encouraged.

Sessions/Topics

- Functional materials for next-generation microelectronics
- Advanced packaging and heterogeneous integration
- Materials and devices for energy-efficient computing, ai, and neuromorphic hardware
- Co-design of materials, devices, architectures, and algorithms
- Intelligent sensing: Materials, fabrication, modeling, and optimization of sensors and detectors
- Advanced characterization, metrology, and multi-scale modeling for microelectronics
- CMOS+X technologies: Design, integration, simulation, and system-level demonstrations

Symposium Organizer(s)

- Aiping Chen, Center for Integrated Nanotechnologies, Los Alamos National Laboratory, USA
- Arianna Gleason-Holbrook, SLAC National Accelerator Laboratory, Stanford University, USA
- Jeffrey Nelson, Center for Integrated Nanotechnologies, Los Alamos National Laboratory, USA
- Tzu-Ming Lu, Sandia National Laboratories USA
- Grant Johnson, Pacific Northwest National Laboratory, USA

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- Jeffrey Nelson; jsnelson0630@gmail.com
- Tzu-Ming Lu; tlu@sandia.gov
- Grant Johnson; grant.Johnson@pnnl.gov

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 5:

Electronic and Ionic Materials in Energy Storage and Conversion Systems

Organized by BSD, ED, and EMSD

The continued advance of energy systems hinges on the scientifically informed innovation of key electronic and ionic materials across the entire energy storage and generation system assembly. Understanding the fundamental materials properties and dynamic, multiscale electrochemical phenomena that govern performance is key to the innovation and design of the next generation of safe, cost-effective, and high-performance energy storage and conversion systems. Abstracts are solicited that describe innovative electronic and ionic materials advances for a wide range of applications, including but not limited lithium-ion, beyond lithium-ion (e.g., sodium, zinc, potassium, magnesium, calcium), redox flow, metal-air, and solid-state batteries, solid-state fuel cells, and other emerging systems. We are interested in fundamental experimental investigations of electronic and ionic phenomena, computational modeling and predictions of materials behavior, advanced characterization techniques, and assessments of energy storage system performance.

Sessions/Topics

- Electrodes (anodes and cathodes)
- Interfaces
- Current collectors/electrode supports
- Next-generation electrolytes (including solid-state)
- Separators

Symposium Organizer(s)

- Hui Xiong, Boise State University, USA
- Hua Zhou, Argonne National Lab, USA
- Nicola Perry, University of Illinois Urbana-Champaign, USA
- Ming Tang, Rice University, USA
- Laisuo Su, The University of Texas at Dallas, USA
- Joshua Tong, Clemson University, USA

Point(s) of Contact

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- Nicola Perry; nhperry@illinois.edu
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- Joshua Tong; jianhut@clemson.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division
- Energy Materials and Systems Division

SYMPOSIUM 6:

Advanced Functional Ceramics for Solid-State Energy Conversion, Energy Storage, and GHz/THz Electronics

Organized by BSD, ED, and EMSD

Advanced functional ceramics are central to emerging solid-state technologies for energy conversion, energy storage, and high-frequency information systems, yet progress across these fields is increasingly limited by common materials challenges. This symposium will bring together researchers working on dielectric, ferroelectric, electrocaloric and thermoelectric ceramics, solid-state electrolytes, microwave/GHz-THz dielectrics, and ceramic-based electro-/acousto-optic materials and devices. The focus will be on how composition, defects, microstructure, interfaces, phase transitions, texture, processing, and device architecture govern functional response, reliability, and scalability. By connecting communities that often meet separately, the symposium aims to identify transferable design principles across energy and electronic ceramics, from fundamental mechanisms to device-level performance. Contributions spanning experiment, theory, computation, advanced characterization, and manufacturing are encouraged, with particular emphasis on emerging materials concepts and cross-cutting strategies for next-generation ceramic technologies.

Sessions/Topics

- Defects, interfaces, and microstructure engineering in functional ceramics
- Phase transitions and coupled electromechanical, thermal, and optical responses in functional ceramics
- Ceramics for energy storage, conversion, and solid-state ionics
- High-frequency, photonic, and information-system ceramics
- Advanced characterization, modeling, and data-driven ceramics design
- Reliability, processing, and scalable manufacturing of functional ceramics

Symposium Organizer(s)

- Mengfan Guo, University of Cambridge, UK
- Jiamian Hu, University of Wisconsin-Madison, USA
- Michael Reece, Queen Mary University of London, UK
- Kai He, University of California, Irvine, USA

Point(s) of Contact

- Mengfan Guo; mg2129@cam.ac.uk
- Jiamian Hu; jhu238@wisc.edu
- Michael Reece; m.j.reece@qmul.ac.uk
- Kai He; kai.he@uci.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division
- Energy Materials and Systems Division

SYMPOSIUM 7:

Oxide Quantum Materials

Organized by BSD and ED

The interplay between charge, spin, orbital, and lattice in strongly correlated oxide materials leads to a plethora of implications in both scientific research and technological applications. Emergent phenomena in oxide quantum materials, exhibited across a diverse array of material forms, offer novel functional properties of ceramics that extend beyond conventional electronic applications. This symposium covers recent advances in the synthesis and characterization of oxide quantum materials, encompassing thin film heterostructures, bulk crystals, membranes, and nanomaterials. Topics of interest include epitaxial growth of complex oxides, exploration of new materials, investigation of quantum/electronic/magnetic properties, advanced characterization techniques, theory and computation, and device applications.

This symposium aims to bring together scientific experts and young scientists with an interest in oxides, fostering interactions and advancing knowledge of emergent functional properties and related hardware concepts for unconventional computing.

Sessions/Topics

- Superconductivity in nickelates
- Oxide materials for novel computing devices
- Epitaxial design of novel oxide quantum materials
- Freestanding oxide membranes
- Twisted oxide and moiré-oxide platforms, and correlated phenomena arising from moiré superlattices

Symposium Organizer(s)

- Seung Sae Hong, University of California, Davis, USA
- Jennifer Fowlie, Northwestern University, USA
- Changhee Sohn, UNIST
- Elizabeth Nowadnick, University of California, Merced, USA
- Sebastian Reyes Lillo, Andres Bello University, Chile

Point(s) of Contact

- Seung Sae Hong; sshong@ucdavis.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 8:

Complex Oxide Thin Films and Heterostructures

Organized by BSD and ED

Complex oxide thin films and heterostructures have emerged as a fertile platform for discovering and engineering novel electronic, magnetic, ferroic, and optical properties. This symposium aims to showcase cutting-edge advances in the synthesis and characterization of complex oxide thin films, and heterostructures. Contributions that connect strain, defect engineering, and interfacial control to structure and property trends are of particular interest, as are those which link theoretical/computational and experimental efforts. The use of AI-driven autonomous synthesis and machine learning–accelerated material discovery and data analysis to advance complex oxide thin film towards scalable manufacturing are also strongly encouraged. The goal of this symposium is to bring together researchers working across synthesis, characterization, theory, and device integration of complex oxide thin films and heterostructures grown by epitaxial techniques such as pulsed laser deposition (PLD), molecular beam epitaxy (MBE), and sputtering to exchange ideas and foster collaboration. The topics listed for this symposium reflect the needs and opportunities of oxide thin films towards applications in microelectronics (memory and logic), optics, energy, and electrocatalysis.

Sessions/Topics

- Epitaxial growth and controlled synthesis of complex oxide thin films, superlattices, and nanocomposites
- Functional oxide thin films for device applications
- Strain, defect, and interface engineering via epitaxy
- Synthesis and functional properties of high-entropy and metastable oxide thin films
- In-situ and operando characterization: probing growth mechanisms, defect dynamics, and related functionalities
- Theory and modeling of complex oxides: from strain and interface control to defect chemistry and electronic structure
- AI/ML-driven autonomous thin film synthesis for accelerated discovery, growth, and characterization

Symposium Organizer(s)

- Sundar Kunwar, Los Alamos National Laboratory, USA
- Le Wang, Pacific Northwest National Laboratory, USA
- James Rondinelli, Northwestern University, USA
- Judith L. MacManus-Driscoll, University of Cambridge, UK
- Hyoungjeen Jeen, Pusan National University, Korea

Point(s) of Contact

- Sundar Kunwar; sundar@lanl.gov

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 9:

Interfacial Superconductivity, Magnetism, and Spin-Orbit Transport in Oxide Interfaces

Organized by BSD and ED

This symposium will focus on low-temperature interfacial physics in oxide materials, with emphasis on how superconductivity, magnetism, spin–orbit coupling, electronic correlations, and broken-symmetry states interact at engineered interfaces. Topics will include interfacial superconductivity in $KTaO^{3-}$, $SrTiO^{3-}$, nickelate-, and related oxide systems; oxide two-dimensional electron gases; magnetic proximity and exchange effects; spin–orbit-coupled transport; nonreciprocal and superconducting diode responses; anomalous Josephson effects; and possible helical or topological superconducting states. The symposium aims to bring together researchers working across quantum transport, superconductivity, magnetism, spintronics, spectroscopy, microscopy, and theoretical modeling to discuss how interfacial symmetry, orbital character, magnetic exchange, electronic correlations, and spin–orbit coupling give rise to macroscopic electronic responses. By connecting device measurements, interfacial control, and theory, this symposium will highlight oxide interfaces as a platform for superconducting spintronics and interfacial quantum devices.

Sessions/Topics

- Interfacial superconductivity in oxide two-dimensional electron systems, including $KTaO^{3-}$, $SrTiO^{3-}$, nickelate-, and related interfaces
- Coexistence, competition, and coupling between superconductivity and magnetism at oxide interfaces
- Magnetic proximity effects, exchange coupling, and superconducting spintronics in oxide-based platforms
- Spin-orbit-coupled quantum transport in oxide interfaces and low-dimensional superconductors
- Nonreciprocal transport, superconducting diode effects, finite-momentum pairing, and anomalous Josephson phenomena
- Candidate helical, topological, and unconventional superconducting states at oxide interfaces
- Spectroscopic, microscopic, and scanning probes of interfacial electronic, magnetic, and superconducting order
- Theory and modeling of interfacial superconductivity, spin textures, proximity effects, and spin-orbit-coupled pairing

Symposium Organizer(s)

- Changjiang Liu, University at Buffalo, USA
- Ludi Miao, New Mexico State University, USA
- Hui Cao, University at Buffalo, USA

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- Changjiang Liu; changjia@buffalo.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 10:

Characterization of Structure–Property Relationships in Functional Ceramics

Organized by BSD and ED

Probing structure–property relationships in functional ceramics demands integrated approaches combining complementary experimental probes (e.g., light, X-ray, electron, neutron) with theory and simulation. Spatially and temporally resolved multiscale state-of-the-art scattering, imaging, and/or spectroscopy techniques can capture the dynamic material structure, composition and microstructure under external stimuli (e.g., electric/magnetic and stress/strain fields), which are necessary to answer open questions in this field.

This symposium bridges the Basic Science and Electronics Divisions, focusing on rapidly developing experimental and computational-imaging techniques, big-data analysis, and modeling approaches, to answer open structure–property relationship questions in functional ceramics, and demonstrate use cases of these methods.

The symposium will demonstrate new characterization techniques and stimulate new research questions and collaborations. Methods for approaching challenging problems spanning from functional interfaces to structural ordering will be featured. Contributions integrating novel applications of computational tools to predict and interpret scattering, diffraction, and microscopy data (e.g., Ptychography, Molecular-Dynamics) are encouraged.

Sessions/Topics

- Advances in scattering, imaging, and analytical techniques
- Integrating computational-imaging techniques and machine-learning into the structural measurement workflow
- Advances in connecting local and global structure to properties
- Addressing open questions in functional ceramics

Symposium Organizer(s)

- Hadas Sternlicht, The Pennsylvania State University, USA
- Christopher Fancher, Oak Ridge National Laboratory, USA
- James LeBeau, Massachusetts Institute of Technology, USA
- Igor Levin, National Institute of Science and Technology, USA
- Mehmet Gulgun, Sabancı University, Turkey
- Yu-Tsun Shao, University of Southern California, USA

Point(s) of Contact

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- Igor Levin; igor.levin@nist.gov
- Mehmet Gulgun; mehmet.gulgun@sabanciuniv.edu
- Yu-Tsun Shao; yutsunsh@usc.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 11:

Materials and Devices for Extreme Environment Microelectronics

Organized by BSD and ED

This symposium focuses on recent advances and developments in materials and devices for extreme environments microelectronics. Topics of interest include materials and devices for memory and data storage, power electronics, optoelectronics, and detectors for extreme environments that include temperature, pressure, radiation, and chemical stress factors. Contributions that connect material process/structure to device performance are of particular interest.

The goal is to create an international and interdisciplinary forum for researchers from academia, national laboratories, and industry to exchange ideas and foster collaborations. Broad areas of interest include: modeling and simulation to predict device degradation, studies on the role of defects and interfaces in extreme environments, synthesis and fabrication process for environmentally resilient integration. Specific application areas of interest are memory and data storage devices, logic, neuromorphic devices, power electronic devices, and detectors.

Sessions/Topics

- Defects and interfaces in extreme environments
- Synthesis, fabrication, and characterization of extreme environment devices
- Application-driven properties at high temperature (e.g. non-volatile memory, piezoelectric actuators, power devices, sensors, etc.)
- Semiconductors in radiation-heavy environments
- Modelling and prediction of properties and degradation in extreme environments

Symposium Organizer(s)

- Keisuke Yazawa, University of Arkansas, USA

Point(s) of Contact

- Keisuke Yazawa; kyazawa@uark.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 12:

Materials for the Computing Revolution

Organized by BSD and ED

As AI and data volumes surge across the economy, the energy demand for computation imposes a defining constraint on technological progress. Conventional digital architectures are approaching fundamental limits in compute per watt, creating urgent demand for materials-grounded breakthroughs.

This symposium brings together the materials communities from across emerging computing paradigms: analog and in-memory computing, neuromorphic, photonic, probabilistic, stochastic, quantum-inspired architectures. Each domain exploits distinct materials physics — resistive switching, ionic transport, optical nonlinearity, spin torque, quantum tunneling, phase transitions, non-linear dynamics — that place precise and demanding requirements on composition, microstructure, and dynamical response. In many cases the property-performance relationships in candidate materials are under or unestablished, complicating targeted materials design.

The symposium emphasizes: translating next-generation computing requirements into the language of materials physics; identifying new or optimal materials for memory and computation with high retention, reliability, fast response or stochastic tunability; developing strategies to transition materials discoveries to scalable, manufacturable hardware.

Sessions/Topics

- Resistive and phase-change materials for in-memory computing
- Neuromorphic materials and spiking architectures
- Photonic and optical computing materials
- 2D and Van der Waals materials for computing elements
- Stochastic, probabilistic, and bio-inspired material responses
- Superconducting and cryogenic computing materials
- Heterogeneous integration, scalability, and manufacturability

Symposium Organizer(s)

- Petro Maksymovych, Clemson University, USA
- Timothy Brown, Oklahoma State University, USA
- Karsten Beckmann, NY-Creates/SUNY Albany, USA
- Aiping Chen, Los Alamos National Laboratory, USA

Point(s) of Contact

- Petro Maksymovych; pmaksym@clemson.edu

Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 13:

Semiconductors and Microelectronics in Metal Halide, Chalcogenide and Oxide Perovskites

Organized by BSD and ED

This symposium focuses on recent advances and developments in perovskite-based (including metal halide, chalcogenide, and oxide) semiconductors and microelectronics, including their synthesis, device fabrication and application. Metal halide perovskites are emerging low-cost, high-performance semiconductors with great application potential in a wide range of microelectronic applications. Chalcogenide perovskites have also attracted significant attention recently in energy generation and optoelectronics. Research in oxide perovskites is also experiencing a resurgence in the past few years thanks to new techniques for growth and device integration. The goal is to create an international and interdisciplinary forum for researchers from industry, academia, and national laboratories to exchange ideas and foster collaborations among different perovskite communities. We believe such collaborations can spark new ideas and drive new developments, given the same perovskite structure shared by these materials and similar engineering methods used by different perovskite communities.

Session Topics:

- Theory and modeling of device performance and properties in perovskites
- Synthesis and characterization of metal halide, chalcogenide and oxide perovskite nanomaterials and thin films (e.g., low-dimensional perovskites, glassy perovskites, perovskite heterostructure/heterointerfaces)
- Device contacts in perovskites
- Structure-property correlation in perovskites
- Role of defects, interface and synthesis/fabrication process on perovskite properties and device performance
- Perovskites for emerging optoelectronics and detectors
- Autonomous and high throughput characterization and fabrications
- ML/AI enabled materials design and characterizations
- Perovskite devices for extreme environments
- Perovskite for flexible electronics
- Perovskites for resistive switching and novel computing

Symposium Organizer(s):

- Qing Tu, Texas A&M University, USA
- Aiping Chen, Los Alamos National Laboratory, USA
- Yuxuan Cosmi Lin, Texas A&M University, USA
- Mythili Surendran, Lawrence Berkeley National Laboratory, USA
- Wanyi Nie, SUNY Buffalo, USA

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Symposium Sponsor(s)

- Basic Science Division
- Electronics Division

SYMPOSIUM 14:

From Atoms to Applications of Wurtzite and Fluorite Ferroelectrics

Organized by BSD and ED

Ferroelectric materials have shown promise in a variety of fields, including data storage, transducers, and optoelectronics. This symposium will explore the fundamental science and applications of wurtzite and fluorite ferroelectrics, with a focus on bridging atomic-scale properties to devices. Sessions will explore the latest developments in the synthesis, characterization, and computational modeling of these materials. The symposium will welcome experimental and computational contributions, including the use of data-driven and machine-learning approaches to discover and design new wurtzite and fluorite ferroelectrics. The symposium will delve into the switching mechanisms of these materials, examining how defects, interfaces, and synthesis methods influence their ferroelectric properties. Discussions will focus on the atomic- to device-scale design of wurtzite and fluorite ferroelectrics with an emphasis on integration and co-design.

Session Topics:

- Domain walls and switching mechanisms
- Defects and disorder in wurtzite and fluorite ferroelectrics
- Interfaces and epitaxial heterostructures
- Extreme environments

Symposium Organizer(s):

- Prashun Gorai, Rensselaer Polytechnic Institute, USA
- Geoff Brennecka, Colorado School of Mines, USA
- Georg Schönweger, Kiel University, Germany

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- Georg Schönweger; gmsc@tf.uni-kiel.de

Division Sponsor(s):

- Basic Science Division
- Electronics Division

SYMPOSIUM 15:

Emergent Phases in Strongly Correlated Crystals and Bulk Quantum Materials

Organized by BSD and ED

Emergent phenomena in strongly correlated electron systems arise from the interplay of charge, spin, orbital, and lattice degrees of freedom, producing collective states that lie beyond the single-particle framework. This symposium will explore the basic science of correlation-driven phases across diverse material platforms, including oxides, intermetallics, and low-dimensional systems. Topics span quantum magnetism, topological band structure, and electronic phases near quantum criticality, with emphasis on the mechanisms governing competing orders and emergent properties. The symposium will also highlight advantages offered by synthesis and structural control, including crystal growth, thin films, and engineered heterostructures, that enable precise tuning of correlated states. Finally, connections between basic science and functionality in computing and sensing will be examined, harnessing the underlying dynamics of emergent phenomena in quantum materials. This program aims to bridge experiments and theory toward a predictive understanding of correlated materials.

Session Topics:

- Synthesis, structure, and symmetry of correlated materials
- Quantum magnetism and emergent behavior in correlated oxides
- Topological phases in strongly correlated materials
- Emergent functionality of quantum materials

Symposium Organizer(s):

- Christopher Broyles, Los Alamos National Laboratory, USA
- Mengke Liu, The University of Texas at Dallas, USA
- Christopher A. Lane, Los Alamos National Laboratory, USA
- Junyeong Ahn, The University of Texas at Austin, USA

Point(s) of Contact:

- Christopher Broyles; cbroyles@lanl.gov

Division Sponsor(s):

- Basic Science Division
- Electronics Division

SYMPOSIUM 16:

Two-Dimensional Materials: Synthesis, Theories, Properties, and Applications

Organized by BSD and ED

Two-dimensional (2D) materials—including graphene, transition metal dichalcogenides, MXenes, and emerging layered compounds—continue to drive transformative advances across electronics, energy storage, catalysis, and sensing. This symposium brings together experimentalists, theorists, and computational scientists to discuss the latest breakthroughs in scalable synthesis methods such as chemical vapor deposition, liquid-phase exfoliation, and atomic layer processing; first-principles and machine-learning-guided predictions of structure–property relationships; characterization of electronic, optical, thermal, and mechanical properties at the atomic scale; and integration of 2D materials into functional devices and systems. By fostering interdisciplinary dialogue among chemists, physicists, materials scientists, and engineers, this symposium aims to accelerate the translation of fundamental 2D materials research into scalable technologies and real-world applications.

Session Topics:

- Synthesis of 2D quantum materials and their bulk counterparts
- Novel 2D heterostructures with emergent electronic, photonic, and magnetic properties
- Electronic, optoelectronic, and spintronic 2D devices
- Structural characterization of 2D materials
- Quasiparticles (e.g., phonons, magnons, excitons) in 2D materials and heterostructures
- Theoretical simulation of 2D material and device properties
- Quantum defects in 2D materials
- Neuromorphic computing via 2D devices
- 2D semiconductors, 2D magnets, 2D ferroelectrics, and 2D semimetals

Symposium Organizer(s):

- Haozhe “Harry” Wang, Duke University, USA
- Cheng Gong, University of Maryland, USA
- Chenglin Wu, Texas A&M University, USA
- Sang-Hoon Bae, Washington University in St. Louis, USA

Point(s) of Contact:

- Haozhe “Harry” Wang; haozhe.wang@duke.edu

Division Sponsor(s):

- Basic Science Division
- Electronics Division

SYMPOSIUM 17:

Additive Manufacturing of Ceramic and Glass Materials: New Frontiers and Industrial Applications

Organized by BSD, BIO, GOMD, and MFD

Additive manufacturing (AM), or 3D printing, is transforming the design and fabrication of ceramic and glass materials by enabling unprecedented geometric complexity, process flexibility, customization, and material efficiency. A wide range of AM techniques have been developed for ceramic and glass materials, including vat photopolymerization, material extrusion, binder jetting, material jetting, powder bed fusion, directed energy deposition, laminated object manufacturing, and other emerging processes. These technologies offer new opportunities to overcome key limitations of conventional processing, such as long fabrication cycles, tooling constraints, material waste, and the difficulty of producing complex or architected structures.

Recent advances in feedstock processing, process modeling and simulation, in-situ monitoring, in-situ and ex-situ characterization, nondestructive evaluation, qualification, certification, and scale-up are accelerating the development of additively manufactured ceramic and glass materials for demanding industrial applications. This symposium will provide a forum for researchers, engineers, and industry practitioners to exchange recent progress, identify critical challenges, and discuss emerging opportunities in AM of ceramic and glass materials, from fundamental process understanding to practical deployment. Topics of interest include, but are not limited to, feedstock design; AM process development; printing, debinding, sintering, and post-processing strategies; multiscale characterization; process-structure-property relationships; computational modeling; nondestructive evaluation; standards, qualification, and certification; manufacturing scale-up; cost and productivity; reliability and performance validation; and industrial implementation.

The symposium welcomes contributions on both ceramic and glass materials, including theoretical, computational, and experimental advances in processing, characterization, property control, and application development. Contributions highlighting industrial applications are highly encouraged. Applications of interest include biomedical devices, optical components, energy systems, electronics, aerospace, defense, chemical processing, thermal management, architecture, art and design, and other emerging technological areas.

Session Topics:

- Additive manufacturing of glass
- Novel feedstock design and preparation strategies
- New additive manufacturing approaches
- Printing and post-processing
- Modeling, simulation, and artificial intelligence
- In-situ and ex-situ characterization
- Microstructure evolution, phase transformation, texture, and defects
- Mechanical, thermal, electrical, magnetic, optical, biological, and chemical properties
- Process-structure-property relationships
- Standardization, qualification, and certification
- Industrial implementation

Symposium Organizer(s):

- Chao Ma, Arizona State University, USA
- Bai Cui, University of Nebraska-Lincoln, USA
- Joel Destino, Creighton University, USA
- Fei Peng, Clemson University, USA
- Kalpana S. Katti, North Dakota State University, USA

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Division Sponsor(s):

- Basic Science Division
- Bioceramics Division
- Glass and Optical Materials
- Manufacturing Division

SYMPOSIUM 18:

Accelerating Discovery and Design of Structural and Functional Ceramics through Computational Modeling, Data Science, and AI/ML

Organized by BSD, ED, EMSD, and MFD

This symposium will highlight advances in computational modeling, big data, and AI/ML approaches for accelerating the discovery, design, and understanding of structural and functional ceramics. Topics will include multiscale computational modeling, data-driven materials discovery, property prediction, digital materials design, and the integration of AI/ML with computational modeling across different length and time scales. While experimental validation and autonomous experimentation are within the scope, the primary emphasis of this symposium is on theory and computational methods rather than AI-enabled manufacturing or experimental workflows. A joint session on closed-loop autonomous ceramic discovery integrating AI/ML, computational modeling, and self-driving laboratories may also be organized if there is sufficient interest.

Session Topics:

- Innovations in theoretical methods for structural and functional materials
- High throughput and AI/ML aided ceramic materials discovery
- Advances in multiscale modeling and the expansion of modeling limits across length and time scales
- Close-loop design of ceramic discovery and understanding
- Integration of artificial intelligence (AI), machine learning (ML), large language models (LLM), and laboratory automation to accelerate ceramic design
- Development of validated physical and digital twins that integrate predictive modeling with experimental workflows

Symposium Organizer(s):

- Bin Ouyang, Vanderbilt University, USA
- Jiayu Peng, University at Buffalo, USA
- Maria Chan, Argonne National Laboratory, USA
- Mina Yoon, Oak Ridge National Laboratory, USA
- Daniele Vivona, University of Connecticut, USA
- Robert B. Wexler, Washington University in St. Louis, USA
- Bai Cui, University of Nebraska-Lincoln, USA

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Energy Materials and Systems Division
- Manufacturing Division

SYMPOSIUM 19:

Emergent Quantum Phases and Correlated Phenomena in 2D Magnets/Ferroics and Van der Waals Heterostructures

Organized by BSD, GOMD, AND EMSD

This symposium will broadly cover the latest advances in low dimensional quantum materials research including, but not limited to, van der Waals solids, cuprates, perovskites, etc. We explicitly encourage submissions focusing on the correlations among spin, charge, and orbital order parameters, as well as electro-optic and light-matter interactions in these materials. Relevant work encompassing theory, synthesis, and advanced characterization of new materials and emergent phenomena is highly welcomed. The primary goal is to create an interdisciplinary forum where stakeholders from academia, industry, and national laboratories can discuss cutting-edge research and foster new collaborations to drive the field of superconductivity, magnetism and ferroelectricity forward.

The foundational focus in this symposium centers on materials discovery, novel synthesis pathways, and advanced characterization of novel materials platforms. This includes deepening the theoretical and experimental understanding of both superconducting and normal-state properties in novel superconductors, investigating interactions with charge, spin, and lattice order parameters, and developing innovative heterostructure devices to enable emergent functionalities. We are also interested in single-crystal and large-area thin-film growth of 2D magnets and ferrolectric materials, device fabrication, and the exploration of structures, dynamics, and emergent properties in moiré superlattices. Additionally, we will emphasize the electronic, optical, and/or magnetic properties of 2D ferroics and van der Waals heterostructures.

Session Topics:

- Superconductors: Fundamental science to applications
- 2D ferroic materials: Synthesis, physics, and devices
- Cross-cutting topics: Quantum materials and computational discovery

Symposium Organizer(s):

- Bing Lv, University of Texas at Dallas, USA
- Michael A. Susner, Air Force Research Laboratory, USA
- Jun Xiao, University of Wisconsin, USA
- Janice Musfeldt, University of Tennessee, Knoxville, USA
- Rahul Rao, Air Force Research Laboratory, USA

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Energy Materials and Systems Division

SYMPOSIUM 20:

High-Entropy Materials

Organized by BSD, ED, and EMSD

High-entropy materials have emerged as a transformative platform for designing functional matter through controlled disorder and extensive elemental mixing. This symposium will explore how configurational complexity, chemical randomness, and competing interactions give rise to novel structural, electronic, magnetic, ionic, and catalytic properties unattainable in conventional compounds. With a primary focus on high-entropy oxides, the program will bring together researchers working across theory, computation, synthesis, advanced characterization, and device-oriented applications. Topics include entropy stabilization, defect engineering, emergent phases, transport phenomena, energy conversion and storage, and disorder-driven functionality. By integrating experimental discoveries with theoretical insight, the symposium aims to establish disorder as a powerful materials design strategy and foster interdisciplinary collaboration toward the development of next-generation multifunctional materials.

Session Topics:

- Disorder, Entropy Stabilization, and Emergent Phenomena in High-Entropy Oxides
- Synthesis, Characterization, and Functional Applications of High-Entropy Oxides

Symposium Organizer(s):

- Alan Farhan, Baylor University, USA

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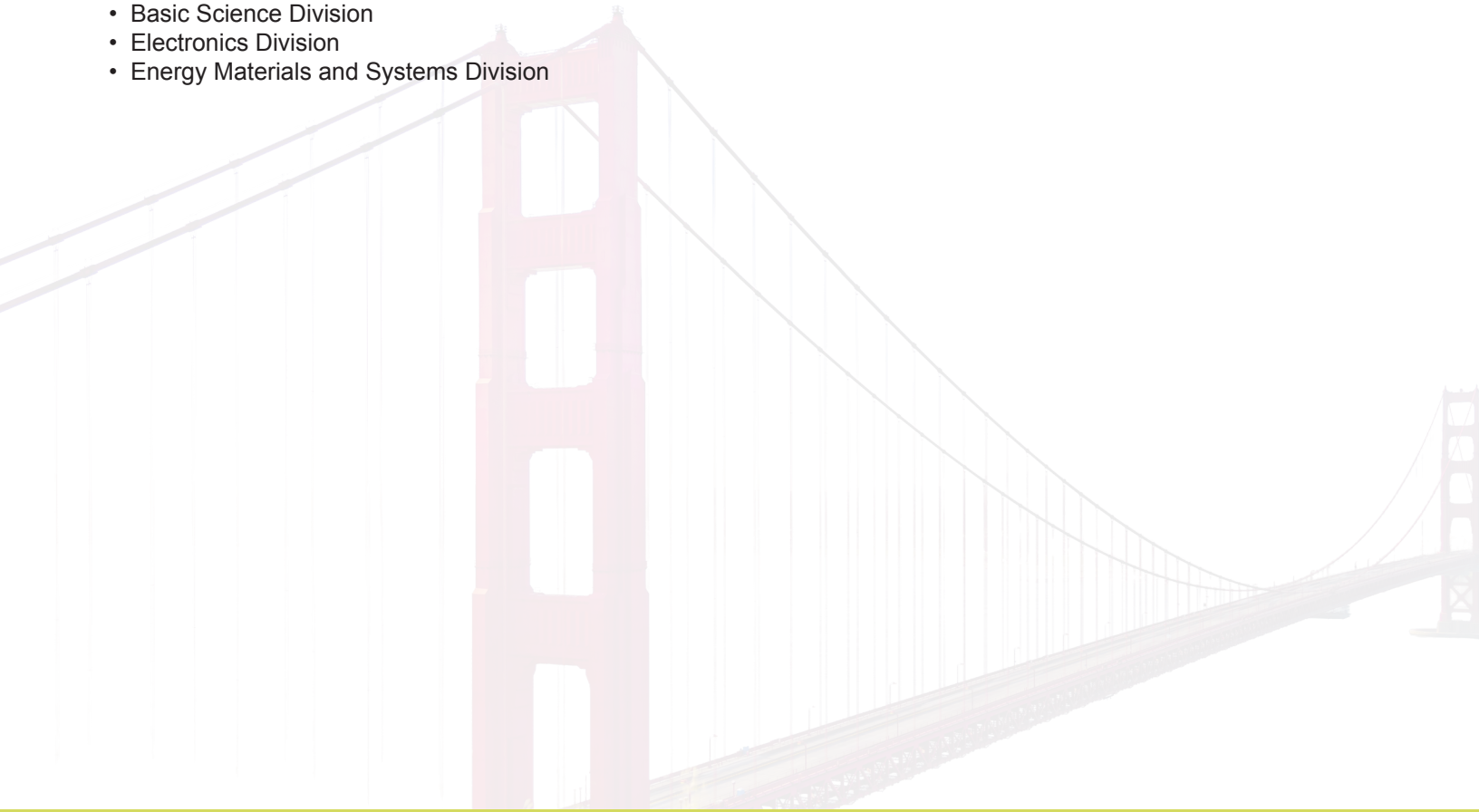
- Energy Materials and Systems Division



SYMPOSIUM 21:

Defects and Transport in Ceramics

Organized by BSD, ED, EMSD, and MFD

This symposium highlights experimental and computational research aimed at understanding point defect equilibria and kinetics in ceramic materials. Defect chemistry governs conductivity and impacts interfacial reaction kinetics in electronic, ionic, and mixed-conducting ceramics. These materials are important for numerous applications, including solid-state batteries, memristors, dielectrics, solid oxide fuel/electrolysis cells, catalysts, and sensors. Many operate under extreme electrochemical conditions to gain higher energy, power density, and novel properties. In addition, defect transport is intimately related to microstructure evolution and many material degradation phenomena. We encourage symposium contributions that help establish a greater understanding of our ability to predict, design, and control defects to enhance ceramic properties and performance, including under extreme far-from-equilibrium conditions. This symposium furthermore includes the influence of dislocations and grain boundaries as higher-dimensional defects.

Session Topics:

- Predictive bulk and interfacial point defect energetics and equilibria from density functional theory, molecular dynamics, and other computational methods
- Structure, stability, and concentration of defects and defect complexes via in-situ and ex-situ measurement (e.g., EPR, TSDC, EXAFS, STEM, Positron)
- Defect-mediated transport & reaction kinetics, including concerted/cooperative effects, via advanced in-situ and ex-situ measurement (e.g., QENS, NMR, isotope-APT, Raman)
- High-throughput, screening, and combinatorial methods applied to the study of defect equilibria and point defect-mediated properties
- Point defect segregation to or depletion from dislocations, surfaces, grain boundaries, and interfaces
- Defect mobility and transport behavior, including under operando or in extreme environments (e.g., temperature, chemical reactions, stress, high E-fields, irradiation)
- Defect-mediated properties (e.g., conductivity, surface oxygen or proton exchange kinetics, optical absorption, grain growth, creep, magnetism, ferroelectric imprint, dielectric degradation)
- Impact of dislocations and grain boundaries on ceramic functional properties
- Defect-phonon, Defect-photon, defect-electron, and defect-polaron interactions in functional ceramics
- Coupled transport phenomena: ion, electron, heat, and stress interactions in ceramics
- Transient defect dynamics and kinetic limitations during fast charging, pulsed fields, and ultrafast thermal processing
- Defect control in quantum, correlated, and topological oxide systems
- AI/ML-assisted defect discovery

Symposium Organizer(s):

- Xin Xu, Arizona State University, USA
- Till Frömling, Technical University of Darmstadt, Germany
- Tiffany Kaspar, Pacific Northwest National Laboratory, USA
- Nicola Perry, University of Illinois Urbana-Champaign, USA
- Yanhao Dong, Tsinghua University, China

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Energy Materials and Systems Division

SYMPOSIUM 22:

Advanced Manufacturing and Processing of Ceramic Materials

Organized by BSD, ED, GOMD, and MFD

Processing and manufacturing routes play a critical role in determining the microstructure, performance, and reliability of advanced structural and functional ceramics. Nearly every stage of ceramic manufacturing can influence the mechanical, electrical, thermal, optical, and chemical properties of the final product. Key processing variables—including powder composition, purity, particle size distribution, mixing and milling procedures, shaping methods, and densification conditions—affect microstructural evolution through phase transformations, grain growth, porosity development, defect formation, and residual stress generation.

The purpose of this symposium is to provide an international forum for researchers, engineers, and industry professionals to discuss recent advances in the processing and manufacturing of advanced ceramic materials. The symposium welcomes experimental, computational, and data-driven studies related to ceramic synthesis, powder processing, shaping and forming, sintering, additive manufacturing, machining, welding and joining, surface engineering, and multiscale modeling of ceramic manufacturing processes. Contributions that advance the understanding, optimization, and scale-up of ceramic processing technologies are particularly encouraged.

Session Topics:

- Synthesis of ceramic powders, including sol-gel, molten salt, hydrothermal, combustion, and other chemical synthesis methods
- Preparation and processing of ceramic powders, including mixing, milling, dispersion, granulation, agglomeration control, and feedstock development
- Sintering and densification of ceramics, including pressureless sintering, hot pressing, hot isostatic pressing, spark plasma sintering, microwave sintering, flash sintering, cold sintering, laser sintering, and related advanced sintering technologies
- Welding, joining, and assembly methods for ceramics and ceramic-based composites
- Machining and finishing of ceramics, including laser drilling, laser cutting, grinding, polishing, and other advanced manufacturing processes
- Surface engineering and surface modification of ceramics, including coatings, thermal spray, shot peening, laser peening, and related surface treatments
- Multiscale modeling, simulation, digital twins, artificial intelligence, machine learning, and in-situ/operando experimental techniques for understanding, predicting, and optimizing ceramic processing and manufacturing mechanisms

Symposium Organizer(s):

- Bai Cui, University of Nebraska-Lincoln, USA
- William Headrick, RHI Magnesita, USA
- James Hemrick, Oak Ridge National Laboratory, USA
- Reeja Jayan, Carnegie Mellon University, USA
- Katie Goetschius, Corning Inc., USA
- Keith DeCarlo, Blasch Precision Ceramics, Inc., USA
- Max Modugno, Oak Ridge National Laboratory, USA
- Lionel Vargas-Gonzalez, DEVCOM Army Research Laboratory, USA
- Eric J. Faierson, Iowa State University, USA
- Klaus van Benthem, University of Alabama, USA

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Glass and Optical Materials Division
- Manufacturing Division

SYMPOSIUM 23:

AI/ML for Materials Discovery and Intelligent Manufacturing

Organized by BSD, ED, and MFD

The symposium focuses on AI/ML applications in autonomous experimentation and self-driving laboratories for materials discovery and manufacturing. Special attention will be given to synergistic human–AI interactions, where domain expertise and AI capabilities jointly accelerate scientific discovery; explainable and interpretable AI approaches that enhance reliability and scientific understanding; AI-assisted scientific reasoning; and agentic AI systems and digital twins.

This joint symposium, spanning multiple ACerS divisions, is designed to provide a collaborative platform for researchers to share advances in integrating AI/ML and data science methodologies across materials synthesis, device fabrication, characterization, processing, and intelligent manufacturing. By fostering interdisciplinary exchange among different ACerS divisions, this symposium aims to bridge expertise across materials science, ceramics and glass processing, manufacturing, computation, and data science . This cross-cutting forum will encourage collaborative research efforts, and inspire transformative approaches to scientific exploration, autonomous experimentation, and intelligent manufacturing. While the intersection of AI and modeling is of interest, the symposium's primary focus is on AI-driven experimentation. Depending on participant interest, a joint session on closed-loop autonomous experimentation that integrates AI/ML, modeling, and self-driving laboratories may also be organized.

Session Topics:

- Autonomous experimentation and self-driving laboratories
- Materials informatics and multimodal data fusion
- AI-guided approaches for material discovery, inverse design, and optimization
- Human–AI collaborative frameworks for self-driving labs
- Explainable and interpretable AI for materials science and manufacturing
- Open-ended and no-boundary AI-driven discovery
- Agentic AI systems and digital twins
- AI-assisted scientific reasoning and decision support

Symposium Organizer(s):

- Yongtao Liu, Oak Ridge National Laboratory, USA
- Wei Chen, Texas A&M University, USA
- Fei Peng, Clemson University, USA
- Aiping Chen, Los Alamos National Laboratory, USA
- Bai Cui, University of Nebraska-Lincoln, USA

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Manufacturing Division

SYMPOSIUM 24:

Ceramic and Composite Materials and Systems for a Sustainable and Resilient Energy Future

Organized by BSD, ED, and MFD

The symposium aims to cover the role of ceramic and composites in advancing next-generation technologies for energy efficiency, and industrial innovation and enabling next generation energy technologies. Despite tremendous progress in the innovation of new materials, systems, and technologies, many challenges remain in achieving enhanced energy security and industrial competitiveness. Technical communities will collaborate to advance the ceramic and composite materials, components, processes, and systems that will strengthen the energy sector, optimize resource use, and develop practical solutions for emissions control, utilization, and valorization. The challenges relating to material systems, integration with energy and industrial platforms, performance under demanding conditions, and long-term durability will be discussed along with future research and development directions.

Session Topics:

- General perspectives of a sustainable and resilient energy future
- Role of ceramics and composites in manufacturing technologies for increased operational survivability, emission control, and energy system resilience
- Ceramics and composites for various technologies, including electrochemical methods, for gas separation, carbon management, and emissions mitigation
- Ceramics and composites for energy production, refining, chemical processing, and associated harsh environment survivability
- Manufacturing and process control of battery-grade ceramics and composites
- Role of ceramic processing for carbon dioxide mineralization, valorization, and utilization
- Ceramic materials and processes in various infrastructures for carbon capture and reuse to strengthen domestic material supply chain.
- Degradation issues for industrial and environmental applications
- Recycling, sustainability, safety and reliability for energy material and systems
- Advances in characterization tools and property evaluation techniques
- Advances in computational methods and approaches, data science, and theoretical approaches for predictive design of novel high performance stable materials and components to address industrial challenges relating to sustainability
- Perspectives for future R&D directions

Symposium Organizer(s):

- Manoj Mahapatra, University of Alabama at Birmingham, USA
- John S. Hardy, Pacific Northwest National Laboratory, USA
- James G. Hemrick, Oak Ridge National Laboratory, USA
- Tianyu Zhu, Clemson University, USA

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Manufacturing Division

SYMPOSIUM 25:

Nickelates: Superconductivity, Correlations, and Emergent Phenomena

Organized by BSD, ED, and EMSD

This symposium focuses on recent advances in nickelates, with emphasis on synthesis, structure–property relationships, magnetism, and the roles of strain, dimensionality, and oxygen nonstoichiometry in superconductivity and other emergent correlated phases. As complex oxide ceramics with strongly coupled electronic, magnetic, and structural degrees of freedom, nickelates lie at the intersection of superconductivity, functional ceramics, and perovskite oxide science.

The recent discovery of ambient-pressure superconductivity in nickelate at temperatures comparable to other high-temperature superconductors has generated significant excitement and established nickelates as a rapidly emerging platform for exploring strongly correlated phenomena. This symposium aims to provide a forum for researchers working on bulk and thin-film synthesis, post-growth reduction treatments, defect and interface engineering, advanced structural, spectroscopic, and electronic characterization, and theoretical modeling of nickelates. By bringing together the condensed matter physics, materials science, ceramics, and theory communities, the symposium will foster interdisciplinary collaborations that leverage expertise in oxide synthesis, processing, characterization, and computational and theoretical approaches to accelerate the discovery and understanding of emergent phenomena in nickelate materials.

Session Topics:

- Thin films and epitaxial engineering in nickelates
- Topotactic reduction and oxygen control in nickelate materials
- Magnetism, spin fluctuations, density waves, and competing orders

Symposium Organizer(s):

- Km Rubi, Los Alamos National Laboratory, USA
- Elizabeth Krenkel, Los Alamos National Laboratory, USA
- Julia Mundy, Harvard University, USA
- Sangjae Lee, Yale University, USA

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Division Sponsor(s):

- Basic Science Division
- Electronics Division
- Energy Materials and Systems Division

SYMPOSIUM 26:

Materials and Devices for Sustainable IoT Systems

Organized by ED and EMSD

By 2030, society will deploy 10 trillion sensors, 75 billion connected objects, and 110 billion IoT devices. Powering these systems will drive the future increase in electricity demand, making IoT sustainability critical. A sustainable IoT ecosystem requires efficient energy storage, harvesters, power management interfaces, and low-power consumers.

Session Topics:

- Energy harvesters: Turning ambient energy (solar/indoor light, thermal, kinetic/vibration, and RF/Wi-Fi/cellular) into usable electricity
- Intermediate energy storage: Rechargeable batteries, supercapacitors, and high-capacitance capacitors
- Low-power energy consumers: Energy-efficient/self-powered sensors, microcontrollers, memories, and light sources
- Power management: Ultralow-power electronic components supporting efficient energy management
- Other materials & devices: Novel innovations benefiting sustainable IoT systems

Symposium Organizer(s):

- Neamul Khansur, Case Western Reserve University, USA
- Yang Bai, University of Oulu, Finland

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Division Sponsor(s):

- Electronics Division
- Energy Materials and Systems Division

SYMPOSIUM 27:

Ceramics and Glasses for Nuclear Energy Applications

Organized by EMSD and GOMD

Advanced ceramics and glasses are attractive for next generation nuclear energy as they help technological advances that enable more efficient and robust systems. Ceramics increase the operating temperature window to allow higher thermal efficiency, and exposure to variable environments. Glasses offer opportunities for waste treatment solutions, in-situ monitoring via newly designed windows or sensors, and coatings. Ceramic and glass materials can also contribute to enhanced safety of nuclear systems such as neutron moderation and shielding materials.
High entropy ceramics and advanced composites are promising options for advanced nuclear applications. Moreover, glass, ceramic, cement, and/or geopolymer compounds have been applied in long-term waste disposal. Processing, properties, testing and accelerated qualification of these materials should be expanded to meet the future needs of the nuclear industry. This symposium focuses on experimental and computational studies of ceramics and glasses for nuclear energy research and applications.

Session Topics:

- Materials design, synthesis/processing, additive manufacturing
- Accelerated materials qualification (including ceramic fuels, ceramic coatings, glass/ceramic waste forms and inert matrix fuels)
- Vitrification technologies and radioactive waste immobilization
- Radiation damage effects, chemical compatibility and corrosion, thermophysical properties
- High-entropy ceramics and advanced composites for next-generation nuclear applications
- Materials for molten salt reactor application
- Neutron moderation and shielding materials
- Synergistic multi-scale modeling and experimental study on microstructure evolution, mechanical and physical properties of ceramics in nuclear energy environments
- High-temperature ceramics for fusion applications

Symposium Organizer(s):

- Charmayne Lonergan, Missouri University of Science and Technology, USA

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Division Sponsor(s):

- Energy Materials and Systems Division
- Glass and Optical Materials Division

SYMPOSIUM 28:

Raw Materials Innovation for Glass and Ceramic Manufacturing

Organized by GOMD and MFD

Raw materials underpin the performance, cost, and sustainability of glass and ceramic products, yet the industry faces increasing challenges related to resource availability, quality variability, and environmental impact. This symposium will explore advances in the selection, processing, and utilization of raw materials across glass and ceramic systems, from traditional oxides (e.g., silica, alumina, feldspar) to alternative and recycled feedstocks. Emphasis will be placed on how raw material characteristics—including purity, particle size, and impurity content—affect melting/sintering behavior, microstructure, and final properties.

The session will also address emerging strategies for sustainable sourcing, circular material flows, and supply chain resilience in response to global cost pressures and environmental regulations.

By integrating industrial and academic perspectives, this symposium aims to identify pathways for robust, cost-effective, and low-carbon material solutions.

Session Topics:

- Fundamental roles of raw materials in glass and ceramics
- Raw material quality, variability, and process control
- Alternative and non-traditional raw materials
- Recycling, circularity, and secondary feedstocks
- Sustainability and decarbonization through materials
- Supply chain, cost, and resource security
- Advanced characterization and modeling

Symposium Organizer(s):

- Kathryn Goetschius, Corning Inc., USA
- Jorgen Rufner, Idaho National Laboratory, USA
- Chao Ma, Arizona State University, USA
- Rob Thompson, Corning Inc., USA

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- Jorgen Rufner; Jorgen.Rufner@inl.gov
- Chao Ma; chao_ma@asu.edu
- Rob Thompson; ThompsonR3@corning.com

Division Sponsor(s):

- Glass and Optical Materials Division
- Manufacturing Division

SYMPOSIUM 29:

Frontiers in Ferroic and Multiferroic Ceramics: Fundamentals, Synthesis, and Quantum Functionalities

Organized by BSD

Ferroic ceramics, encompassing magnetic oxides, ferroelectrics, and multiferroics, exhibit a vast array of physical properties critical for future information storage, sensing, and energy harvesting technologies. Recent breakthroughs in atomic-scale digital synthesis, in-situ characterization under extreme stimuli, and predictive multiscale modeling have enabled unprecedented control over the coupling between spin, charge, and lattice degrees of freedom. These advancements have led to the discovery of emergent phenomena such as exotic topological spin textures and quantum magnetism in complex oxide heterostructures and bulk framework materials, opening a new era for fundamental ceramic research.

This symposium will focus on interdisciplinary topics across physics, materials science, and engineering dedicated to the study of ferroic and multiferroic ceramics. Our goal is to bring together leading scientific experts and young researchers to advance fundamental understanding, develop cutting-edge characterization techniques, and explore novel device architectures based on these functional inorganic materials.

Session Topics:

- Magnetoelectric coupling and multiferroicity in complex oxides and perovskites
- Stimuli-responsive control of ferroic states via pressure, strain, and optical drives
- Emergent magnetism, topological spin textures, and spin-transport in ceramic systems
- Fundamental physics of phase transformations and the origins of hysteresis

Symposium Organizer(s):

- Jian Liu, University of Tennessee, Knoxville, USA
- Ruijuan Xu, North Carolina State University, USA
- Yu-Tsun Shao, University of Southern California, USA
- Phillip Ryan, Argonne National Laboratory, USA pryan@aps.anl.gov)

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- Ruijuan Xu; rxu22@ncsu.edu
- Yu-Tsun Shao; yutsunsh@usc.edu
- Phillip Ryan; pryan@aps.anl.gov

Division Sponsor(s):

- Basic Science Division

SYMPOSIUM 30:

Bulk Microstructure Design of High-Interfacial Materials for Extreme Environment Applications

Organized by BSD

The macroscopic functional properties of ceramic materials—such as strength, toughness, thermal conductivity, electrical behavior, and resistance to degradation—are profoundly governed by the density, structure, chemistry, and stability of internal interfaces, including grain boundaries, phase boundaries, and defect networks. This symposium focuses on the intentional design and synthesis of bulk nanostructured materials, composites, and multiphase architectures with high volumetric interfacial density as a strategy to engineer superior, tailored bulk properties for demanding applications. Central to this theme is understanding how advanced processing techniques (e.g., spark plasma sintering, severe plastic deformation, additive manufacturing, reactive infiltration, and vapor-phase synthesis) control the formation, evolution, and long-term stability of these internal interfaces under extreme conditions of temperature, mechanical stress, and aggressive environments.

See Symposium 3 for similar topics.

Session Topics:

- Interface structure and chemistry: Atomic structure, chemistry, bonding configuration, defect and segregation behavior, in-situ microscopy evaluation
- Microstructure evolution: Thermal stability, chemical stability, material properties
- Processing parameters: Mechanical and electric fields (SPS, FAST, HIP, etc.), extreme temperatures (cold sintering, SPS, etc.), environments (oxygen, hydrogen, etc.)

Symposium Organizer(s):

- James Wollmershauser, U.S. Naval Research Laboratory, USA
- Edward Gorzkowski, U.S. Naval Research Laboratory, USA
- Amanda Krause, Carnegie Mellon University, USA
- Hadas Sternlicht, Pennsylvania State University, USA

Point(s) of Contact:

- James Wollmershauser; james.a.wollmershauser.civ@us.navy.mil
- Edward Gorzkowski; edward.p.gorzkowski.civ@us.navy.mi
- Amanda Krause; amandakr@andrew.cmu.edu
- Hadas Sternlicht; hsternlicht@psu.edu

Division Sponsor(s):

- Basic Science Division

SYMPOSIUM 31:

In-Situ Materials Characterization in Extreme Environments

Organized by BSD

This symposium focuses on advancing the understanding of materials behavior under extreme conditions through cutting-edge in-situ characterization techniques. As engineered ceramics and composites are increasingly pushed to their operational limits, probing their chemical and structural evolution across multiple length and time scales becomes critical.

We welcome presentations highlighting innovative methodologies, including X-ray and neutron diffraction/scattering, advanced imaging and spectroscopy, and related techniques, specifically tailored for high temperatures (> 1500°C) and/or pressures (> 10 MPa), corrosive atmospheres, radiation and other harsh environments. This symposium will highlight new and emerging characterization methods and state-of-the-art user facilities, alongside their direct scientific and engineering applications. By bridging the gap between fundamental materials science and real-world extreme environment performance, this symposium aims to foster collaboration among scientists and researchers probing and developing the next generation of resilient materials.

Session Topics:

- Non-ambient diffraction and scattering techniques
- In-situ imaging and spectroscopy in extremes
- Artificial intelligence and data analytics for in-situ science

Symposium Organizer(s):

- David Lipke, Missouri University of Science and Technology, USA
- S.J. McCormack, University of California, Berkeley, USA
- Chris Benmore, APS, Argonne National Laboratory, USA

Point(s) of Contact:

- David Lipke; Lipke@mst.edu

Division Sponsor(s):

- Basic Science Division

SYMPOSIUM 32:

Robert B. Sosman Award and Lecture (Invitation Only)

Organized by BSD

The Robert B. Sosman Award is the highest recognition of scientific accomplishment given by the Basic Science Division and is given in recognition of outstanding achievement in basic science of an area that results in a significant impact to the field of ceramics. The awardee presents a plenary lecture at the ACerS Annual Meeting, receives a certificate commemorating the event and a piece of glassware. The lecture is given each year by the awardee who has been deemed by the award committee to have made the most significant contribution to the field of ceramics. This symposium will consist of invited speakers only.

Symposium Organizer(s):

- TBD

Point(s) of Contact:

- TBD

Division Sponsor(s):

- Basic Science Division

SYMPOSIUM 33:

Mechanobiology and Cell-Substrate interactions at Biointerfaces in Bioceramics: Theory and Experiments

Organized by BIO

The unique properties and organized structures of bioceramics and bioceramic composites have resulted in their multitude of applications in biomedical engineering that include dental, hard and soft tissues, drug delivery, disease modeling, and wound healing, among others. In addition, the biological responses at the interfaces of these biomaterials with the biological world is a topic that is extensively investigated through experiments and modeling. This symposium will attempt to bring together experimentalists in the area of materials design of bioceramics and bioceramic composites for a variety of biomedical applications with modelers who bring a simulation-guided materials design as well as modelers and experimentalists who investigate cell-cell and cell-substrate interfaces. Novel experimental characterization of mechanics of cellular and tissue systems using AFM and nanoindentation based experimentation as well as biological, genetic, biomechanical and molecular characterization of biointerfaces will be covered. New advanced multiscale mothods in bioceramics design as well as molecular, cell and tissue level modeling of biointerfaces will be presented. Recent evaluations that use machine learning-based approaches to evaluate these interfaces will also be represented.

Session Topics:

- Experimental evaluation of bio-nanointerfaces of bioceramic composites with substrates
- Multiscale modeling of bioceramics and bioceramic composites
- Novel characterization methods for evaluating mechanical behavior from nano to macro scale for bioceramics and bioceramic composites through experiments such as nanoindentation, biochemical characterization, spectroscopies, electron microscopy, etc.
- Multiscale and molecular mechanics of interface proteins for evaluation of cell-cell and cell-substrate adhesions with bioceramics
- Cellular and tissue mechanics on bioceramics and its role in disease
- Bioceramics based human in vitro disease models
- Predictive modeling and machine learning on biodesign and evaluations
- Advanced 3D manufacturing using bioceramics for biomedical applications

Symposium Organizer(s):

- Kalpana S. Katti, North Dakota State University, USA
- Hrishikesh Kamat, James R. Glidewell Dental Ceramic Incorporated, USA
- Annabel Braem, KU Leuven, Belgium
- Ashutosh Kumar Dubey, Indian Institute of Technology, India
- Anamika Prasad, Florida International University, USA

Point(s) of Contact:

- Kalpana S. Katti; Kalpana.Katti@ndsu.edu

Division Sponsor(s):

- Bioceramics Division

SYMPOSIUM 34:

Compositional Design and Advanced Manufacturing & Characterization of Bioceramics

Organized by BIO

This symposium focuses on recent advances in the design, characterization and manufacturing of bioceramics, as well as bioceramic-based composites, hybrids and coatings, for healthcare applications, including scalable, reproducible, and high-performance fabrication routes and data-driven/AI-enabled approaches. We welcome topics from conventional and emerging techniques such as additive manufacturing, sintering science, biomimetic processing, and processing-structure-property relationships. In these and related areas, we encourage submissions on the use of data-driven methods and Artificial Intelligence (AI), including machine learning (ML), to optimize and design, as well as on the standardization of data generation, to drive future innovations in this space. The overall goal is to bring together people working in academia, industry, and national labs to foster discussion and collaboration in bioceramic-based devices, scaffolds, composites, hybrids, and coatings.

Session Topics:

- Processing-structure-property relationships in bioceramics
- Data-driven/AI-enabled approaches in bioceramic processing and design
- Bioceramic fabrication and scale-up challenge
- Advanced characterization tools

Symposium Organizer(s):

- Anamika Prasad, Florida International University, USA
- Maziar Montazerian, The Pennsylvania State University, USA
- Artemis Stamboulis, University of Birmingham, USA
- Hrishikesh Kamat, James R. Glidewell Dental Ceramic Incorporated, USA
- Kalpana S. Katti, North Dakota State University, USA
- Ashutosh Kumar Dubey, Indian Institute of Technology, India

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- Kalpana Katti; kalpana.katti@ndsu.edu
- Ashutosh Kumar Dubey; akdubey.cer@itbhu.ac.in

Division Sponsor(s):

- Bioceramics Division

SYMPOSIUM 35:

Advanced Electronic Materials: Processing, Structures, Properties, and Applications

Organized by ED

This symposium brings together materials and engineering researchers to present the latest advances in electronic materials, including synthesis, especially powder processing derived techniques. This includes compositional and microstructure analysis with regards to characterization of dielectric, piezoelectric, pyroelectric, and ferroelectric properties in the form of bulk ceramics, single crystals, thick films, and multilayers (MLCC). These materials have tremendous impact on a variety of technologies, including ultrasonic transducers, memories, MEMS devices, actuators, sensors, and tunable microwave devices. Other topics of interest include nanoscale domain phenomena, low temperature powder processing) and electric-field-induced phase transitions.

Session Topics:

- Advanced electronic materials, including dielectric, ferroelectric, piezoelectric, electrocaloric, and pyroelectric materials
- Materials design, new materials and structures, or non-conventional methods
- Reliability and fatigue of ferroelectric materials or related properties

Symposium Organizer(s):

- Eric Patterson, U.S. Naval Research Lab, USA
- Hana Uršič, Jozef Stefan Institute, Slovenia
- Satoshi Wada, University of Yamanashi, Japan
- Shujun Zhang, University of Wollongong, Australia

Point(s) of Contact:

- Eric Patterson; eric.a.patterson12.civ@us.navy.mil

Division Sponsor(s):

- Electronics Division

SYMPOSIUM 36:

Protonic Ceramic Cells for Sustainable Energy

Organized by EMSD

Protonic ceramic cells (PCCs) allow for versatile electrochemical reactions to occur efficiently, selectively, cost-effectively, and environment-benignly at intermediate temperatures, which have been extensively used for energy devices such as fuel cells for electricity generation, electrolysis cells for hydrogen production, electrochemical cells for carbon dioxide to fuels and fuel upgrading, solid-state chemical manufacturing (e.g., electrochemical ammonia production, catalytic membrane reactors for natural gas conversion), hydrogen separation/purification, and isotope separator for nuclear reactors. The PCC symposium is trying to provide an annual get-together platform for global leading PCC experts and to engage in the design, discovery, characterization, understanding, and application of protonic ceramic cell materials, the fabrication/processing, characterization/understanding, testing/demonstration of solid oxide cell devices, and design/modeling of the solid oxide cell systems. Simultaneously, it will provide chances for young participants or beginners in this field to learn more about PCC. Researchers from academic institutions, national laboratories, and industries are invited to participate in this symposium. The ACerS Energy Materials & Systems Division sponsors this symposium.

Session Topics:

- PCC materials discovery and characterization
- PCC fabrication and processing
- PCC device and system demonstration
- PCC modeling/simulation
- PCCs for power or hydrogen production
- PCCs for CO2 reduction
- PCCs for chemical manufacturing
- PCCs for energy storage
- Isotope separation by PCCs for nuclear energy
- Challenges and new opportunities for PCCs

Symposium Organizer(s):

- Joshua Tong, Clemson University, USA
- Kevin Huang, University of South Carolina, USA
- Yoshihiro Yamazaki, Kyushu University, Japan
- Zeyu Zhao, Idaho National Laboratory, USA

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- Zeyu Zhao; Zeyu.Zhao@inl.gov

Division Sponsor(s):

- Energy Materials and Systems Division

SYMPOSIUM 37:

Optical and Electronic Materials and Devices

Organized by GOMD

The field of light interaction with matter has attracted increased attention with advances in ultrashort pulse lasers and high-power fiber lasers, along with the need to design and fabricate structures for use in low-loss applications and laser damage resistance. New phenomena have been observed and new applications have been developed, whereby lasers are employed in diverse areas, such as cutting, welding, and engraving of glass; fabrication of waveguides, gratings and micro-channels inside the bulk of glass; and, most recently, 3D printing through additive or subtractive laser-assisted processing. Lasers have been shown to be versatile in other applications of phase change, whereby glass or amorphous media are "converted" in a controlled way to crystalline or composites (glass ceramics) material. These advances have been realized in optical phase-change materials; laser-induced crystallization, such as seen in the fabrication of active single crystal architecture, GRIN lenses; and strengthening of glass and other applications, where a knowledge of not only the material but the light/matter interaction mechanism is required. This session will focus on the most recent and advanced issues pertaining to the science and applications of laser–glass interactions, such as laser irradiation effects, compositional and structural changes, and dynamics and mechanisms of laser-induced modifications.

The session "Glasses for energy applications" invites researchers to share their discoveries about the new and transformative ways glass materials are used in the energy sector. Focusing on theoretical advancements and practical implementations, the session will cover innovative uses of glass in photovoltaic systems, energy storage solutions, thermal insulation, smart technologies, hydrogen production and utilization, and transport phenomenal in the disordered media, involving electronic, ionic, or molecular transport.

Glasses are important materials for optical components and devices given their excellent optical transparency and versatile processing. Novel oxide and non-oxide glass compositions and fabrication technology development have further enabled emerging applications such as light emission, infrared imaging, nonlinear optical signal processing, and sensing. This session will cover material synthesis and processing as well as device fabrication and applications of innovative device architectures including, but not limited to molded optics, diffractive optics, thin film optical coatings, metamaterials/metasurfaces and integrated photonic components. Special attention will be paid to innovative optical fibers and waveguides, with topics of interest including, but not limited to: microstructure optical fibers, infrared fibers, multimaterial fibers, optical fibers for health, novel processes of fiber fabrication Rare earth and transition-metal doped materials play fundamental roles in many applications, such as optical communication, sensing, medical diagnosis, or clean energy systems. These roles are the result of intense research efforts on the development of new materials, material platforms, and designs. A deep understanding of the underlying science that determines the optical properties of these dopants has been achieved over the years.

Session Topics:

- Laser interactions with glasses
- Glasses for energy applications
- Optical fibers and waveguides, optoelectronic glass-based devices
- Rare-earth and transition metal-doped glasses and ceramics for photonics

Symposium Organizer(s):

- Shiv Prakash Singh, Liaoning Academy of Materials, China
- Myungkoo Kang, Alfred University, USA
- Casey Schwarz, Ursinus College, USA
- Rashi Sharma, University of Central Florida, USA

Point(s) of Contact:

- Shiv Prakash Singh; spsingh67@gmail.com

Division Sponsor(s):

- Glass and Optical Materials Division

SYMPOSIUM 38:

Challenges in Glass Manufacturing and Scale-Up

Organized by GOMD

The translation of novel glass compositions from laboratory discovery to industrial manufacturing remains a central challenge in glass science and engineering. While small-scale experiments enable rapid exploration of composition–structure–property relationships, industrial production introduces constraints related to furnace design, energy consumption, process variability, and product uniformity. This symposium focuses on bridging these scales by examining how laboratory insights can be effectively translated into robust, high-throughput manufacturing processes. Emphasis will be placed on scale-dependent phenomena in melting, fining, redox control, and defect prevention, as well as the impact of processing pathways on performance in optical, fiber, additive manufacturing and emerging glass applications. Contributions from academia, industry, and national laboratories are encouraged to highlight both fundamental understanding and practical solutions that enable scalable, sustainable, and high-quality glass manufacturing.

Session Topics:

- Scale-up of glass melting: Batch vs. continuous processing, pilot-to-production transitions
- Linking laboratory experiments to industrial manufacturing constraints
- Melt chemistry and process control: Redox, volatilization, fining, and homogenization
- Furnace technologies and manufacturing infrastructure (electric, hybrid, alternative fuels)
- Glass fiber and optical manufacturing: Preforms, draw stability, defect control
- Manufacturing challenges for novel glass applications (photonics, additive manufacturing, hybrid systems)
- Process modeling, simulation, and data-driven approaches to scale-up
- Sustainability and decarbonization in glass production

Symposium Organizer(s):

- Kathryn Goetschius, Corning Inc., USA
- Joel Destino, Creighton University, USA
- Madeleine Schmidlin, Corning Inc., USA
- David Dobesh, GKN Aerospace Transparency Systems, USA
- Nicholas Tostanoski, Corning Inc., USA

Point(s) of Contact:

- Kathryn Goetschius; goetschik@corning.com

Division Sponsor(s):

- Glass and Optical Materials Division

SYMPOSIUM 39:

Glass Surfaces, Interfaces, and Interactions with its Environment

Organized by GOMD

Surfaces and interfaces are critical to nearly every modern application of glass, as they mediate interactions with light and the environment, and dictate its practical durability and functionality over its lifetime. New approaches to thus understand and customize surface and interfacial behaviors—by predicting glass degradation, making glass surface modifications, or applying value-added coatings—all represent critical directions for the future of technical glass. This session will focus on the surfaces and interfaces of glass and glass-ceramic systems, including dissolution and interfacial reactions of glass in aqueous environments (e.g. hydrolysis, interdiffusion, interfacial structures and alteration layers); surface sorption and transport phenomena; innovations in glass surface characterization; novel methods for modifying glass surfaces and measuring dissolution and interfacial reactions; glasses from waste immobilization to bioactive glasses; and all manner of functional coatings on glass. Particularly encouraged are studies combining both modeling and experimental methodologies to understand interfacial mechanisms or predict degradation kinetics.

Session Topics:

- Glass surface and interfaces - fundamentals and applications
- Glass and glass-ceramics for waste immobilization
- Modeling glass corrosion and surface phenomena
- Glass coatings and surface modification

Symposium Organizer(s):

- Nicholas Smith, Corning Inc., USA
- Joelle Reiser, Pacific Northwest National Laboratory
- Maziar Montazerian, The Pennsylvania State University, USA

Point(s) of Contact:

- Nicholas Smith; smithnj@corning.com

Division Sponsor(s):

- Glass and Optical Materials Division

SYMPOSIUM 40:

Fundamentals of the Glassy State

Organized by GOMD

This symposium will provide a forum for discussing the fundamental principles of glass science, covering both experimental and theoretical advances. Topics of interest include glass formation and structural relaxation, crystallization and glass-ceramics, structural characterization of glasses and melts, mechanical properties, behavior under non-ambient conditions, and chalcogenide and other amorphous materials. The symposium welcomes contributions that advance the understanding of the relationships among composition, structure, processing, and properties across diverse glassy systems. Particular emphasis will be placed on studies that connect atomic- and microscopic-scale structures with macroscopic properties and performance. Recent progress in characterization techniques, in-situ measurements, computational modeling, and structure-property analysis will also be highlighted. By bringing together researchers from different areas of glass science, this symposium aims to promote interdisciplinary discussion and support the design and development of advanced functional glasses and glass-ceramics for emerging technologies.

Session Topics:

- Glass formation and structural relaxation
- Glass crystallization and glass-ceramics
- Structural characterizations of glasses and melts
- Mechanical properties of glasses
- Glass under non-ambient conditions
- Chalcogenide glasses and amorphous materials

Symposium Organizer(s):

- Yueh-Ting Shih, National Cheng Kung University, Taiwan
- Liping Huang, Rensselaer Polytechnic Institute

Point(s) of Contact:

- Yueh-Ting Shih; ytshih@gs.ncku.edu.tw

Division Sponsor(s):

- Glass and Optical Materials Division

Symposium Sponsor(s)

- Glass and Optical Materials Division

SYMPOSIUM 41:

Modeling, Simulations and Data-Driven Approaches of Glass and Amorphous Materials

Organized by GOMD

Modeling and simulation play an increasingly important role in advancing glass science, particularly for understanding the complex structures, properties, and behaviors of glasses, ceramics, amorphous, and nanostructured materials. This symposium will highlight recent advances in computational modeling, simulations, and data-driven approaches for glass science and engineering, including first-principles, classical, mesoscale, and machine-learning-based methods. Topics of interest include composition–property modeling, glass structure prediction, machine-learned interatomic potentials, accelerated glass simulations, AI-guided glass design and optimization, additive manufacturing and 3D printing of glasses, image processing and data analytics, and numerical approaches that support interpretation and validation of experimental data from techniques such as diffraction, spectroscopy, and solid-state NMR. The symposium also welcomes studies focused on understanding the fundamental nature of glass formation and the glassy state through integrated computational and experimental approaches.

Symposium Organizer(s):

- Jincheng Du, University of North Texas, USA
- Xiaonan Lu, Pacific Northwest National Laboratory, USA

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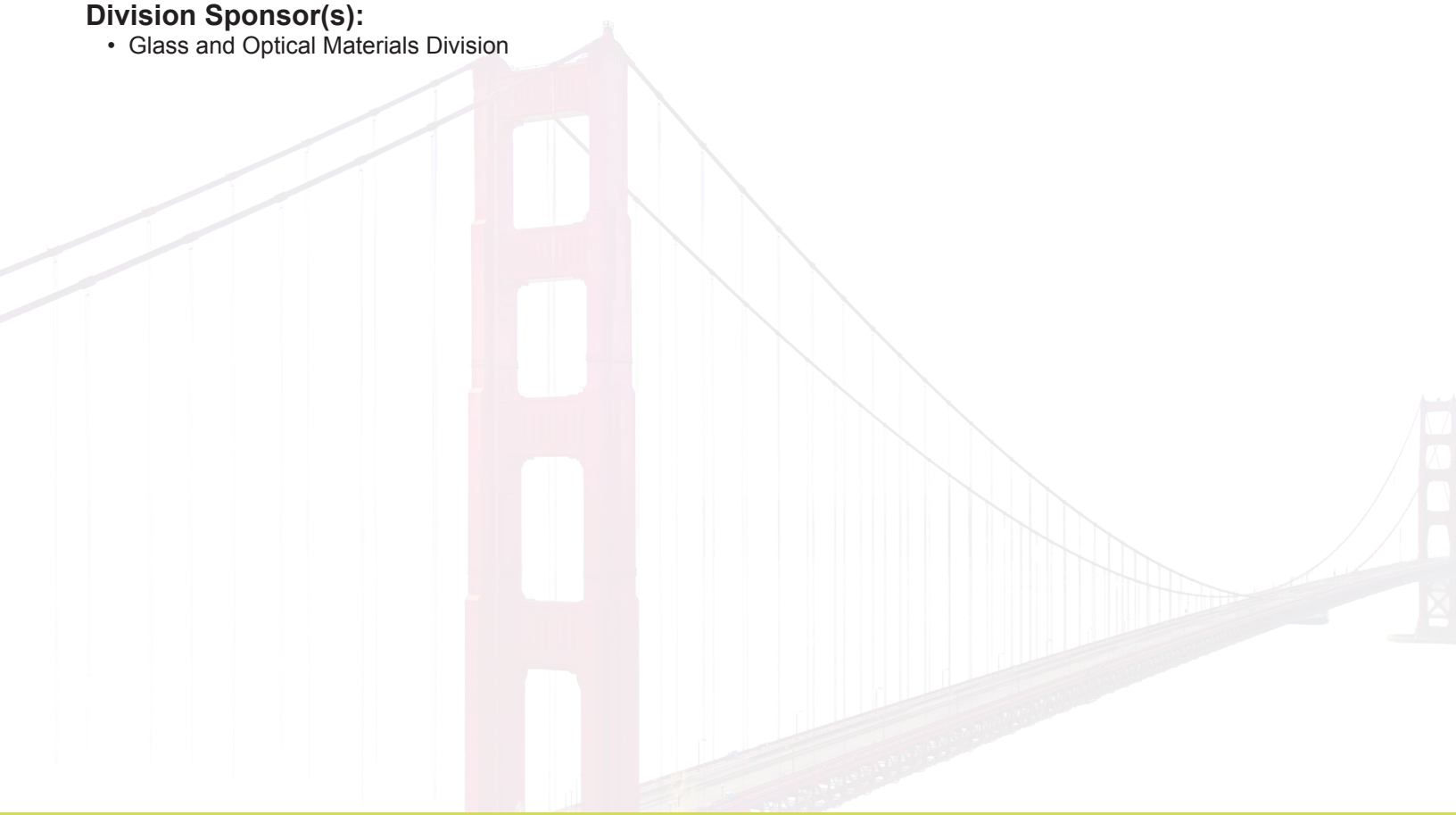
- Jincheng Du; jincheng.du@unt.edu

Division Sponsor(s):

- Glass and Optical Materials Division



SYMPOSIUM 42:

Glass Relaxation & Dynamics: A Celebration of David Sidebottom's Career

Organized by GOMD

The symposium Glass Relaxation & Dynamics: A Celebration of David Sidebottom's Career will honor the profound scientific contributions and lasting impact of David Sidebottom on the field of glass science. Spanning fundamental studies of ion transport, glass relaxation, fragility, and dynamic processes in disordered materials, Sidebottom's work has shaped modern understanding of structure–property relationships in glasses and inspired generations of researchers. This symposium will bring together leading scientists from academia, industry, and national laboratories to highlight recent advances in glass dynamics, transport phenomena, spectroscopy, modeling, and emerging functional glass systems. Invited presentations from distinguished researchers will celebrate both the scientific work and collegiality of David Sidebottom while fostering new collaborations across the glass research community.

Session Topics:

- Glass relaxation & dynamics

Symposium Organizer(s):

- Joel Destino, Creighton University, USA

Point(s) of Contact:

- Joel Destino; joeldestino@creighton.edu

Division Sponsor(s):

- Glass and Optical Materials Division