

Submission Deadline—June 1, 2020



## Early Career Scholars in Materials Science 2021

The Sixth Annual *JMR* Issue to promote outstanding research by future leaders in materials science

*JMR* invites research and review articles by materials researchers who have completed their Ph.D. but have not yet been appointed as full professor, or equivalent position in non-academic organizations, at the time of submission, for peer review and publication in this special issue. The Annual Issue provides a unique opportunity to be highlighted and promoted early in one's research career. To increase attention, the issue will be published on an **open access** basis. Although papers may have multiple authors, only the Early Career Scholar submitting the paper will be identified with a photo and brief bio on publication.

*JMR* publishes the latest advances about the creation of new materials and materials with novel functionalities, fundamental understanding of processes that control the response of materials, and development of materials with significant performance improvements relative to state of the art materials. *JMR* welcomes papers that highlight novel processing techniques, the application and development of new analytical tools, and interpretation of fundamental materials science to achieve enhanced materials properties and uses.

- ◆ Novel materials discovery
- ◆ Electronic, photonic and magnetic materials
- ◆ Energy conversion and storage materials
- ◆ New thermal and structural materials
- ◆ Soft materials
- ◆ Biomaterials and related topics
- ◆ Nanoscale science and technology
- ◆ Advances in materials characterization methods and techniques
- ◆ Computational materials science, modeling and theory

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### MANUSCRIPT SUBMISSION

To be considered for the issue, the Early Career Scholar must not yet be a full professor at the time of submission. The manuscript must report new and previously unpublished results. Review articles are invited but must be approved by the editors before submission (see [mrs.org/jmr-manuscript-types/](https://mrs.org/jmr-manuscript-types/) regarding review articles). Manuscripts must be submitted via the *JMR* electronic submission system by **June 1, 2020** to be considered for the issue due to time constraints on the review process. Submission instructions can be found at [mrs.org/jmr-instructions](https://mrs.org/jmr-instructions). Please select "ANNUAL ISSUE: *Early Career Scholars in Materials Science 2021*" as the manuscript type. **Note our manuscript submission minimum length of 3250 words, with at least 6 and no more than 10 figures and tables.** (Additional figures and tables may be submitted as supplemental material.) All manuscripts will be reviewed in a normal but expedited fashion. Papers submitted by the deadline and subsequently accepted will be published in the Special Issue. Other manuscripts that are acceptable but cannot be included in the issue will be scheduled for publication in a subsequent issue of *JMR*.

**Papers must be accompanied by a photo (uploaded as a high resolution TIF or EPS file) and 200-300 word bio of the Early Career Scholar only.** (Bios should NOT include reference to one's publication record nor rationalization of the research area or paper submitted.) These materials must be submitted along with the original submission of the paper.

**[jmr@mrs.org](mailto:jmr@mrs.org)**  
Please contact [jmr@mrs.org](mailto:jmr@mrs.org) with questions.

CALL FOR PAPERS



# CALL FOR PAPERS

**Abstract Submission Opens**  
May 11, 2020**Abstract Submission Deadline**  
June 11, 2020**Fall Meeting registrations include MRS Membership January – December 2021****BROADER IMPACT**

BI01 Early-Career Development—Insights from Academia and Industry

**ELECTRONICS AND OPTICS**

- EL01 Diamond and Diamond Heterojunctions—From Growth to Applications
- EL02 Emerging Light-Emitting Materials and Devices—Halide Perovskites, Quantum Dots and Other Nanoscale Emitters
- EL03 Emerging Low-Dimensional Chalcogenides for Electronics and Photonics
- EL04 Beyond Graphene 2D Materials—Synthesis, Properties and Device Applications
- EL05 Putting Photons to Work—Progress in Photomechanical Materials and Applications
- EL06 Contacting Materials and Interfaces for Optoelectronic Devices
- EL07 Coulomb Interactions in Functional Organic Materials and Devices—A Curse or a Blessing?
- EL08 Frontiers of Halide Perovskites—Linking Fundamental Properties to Devices

**ENERGY**

- EN01 Emerging Dielectric Materials—Applications in Energy Transmission, Storage and Conversion
- EN02 Silicon for Photovoltaics
- EN03 Overcoming the Challenges with Metal Anodes for High-Energy Batteries
- EN04 Beyond Lithium-Ion Batteries—Materials, Architectures and Techniques
- EN05 Redox Flow Batteries—Materials, Methods and Devices
- EN06 Advancement of Lithium-Based High-Energy Density Batteries at Multiple Scales, Factoring in Safety
- EN07 Innovative Materials and Cell Design, Processing and Manufacturing Strategies for Solid-State Batteries
- EN08 Scientific Basis for Nuclear Waste Management
- EN09 Developing *In Situ* and *Operando* Methodology for Observation of Energy Conversion, Storage and Transport Processes in Materials and Devices

**FLEXIBLE, WEARABLE ELECTRONICS, TEXTILES AND SENSORS**

- FL01 Bioelectronic Materials for Neural Interfaces—Stimulation, Sensing, Power and Packaging
- FL02 Advanced Neural Interfacing Materials, Devices and Microsystems
- FL03 Flexible, Wearable Electronics and Textiles

**MATERIALS THEORY, CHARACTERIZATION AND DATA SCIENCE**

- MT01 Advanced *In Situ* Characterization of Materials Kinetics
- MT02 Multimodal, Functional and Smart Scanning Probe Microscopies for Characterization and Fabrication
- MT03 Frontiers of Imaging and Spectroscopy in Electron Microscopy
- MT04 Using Machine Learning and Multiscale Modeling to Study Soft Materials and Interfaces
- MT05 Advancing Materials Characterization Through Atom Probe Tomography
- MT06 Strain and Defect-Driven Transport Properties in van der Waals Solids
- MT07 Data Science and Automation to Accelerate Materials Development and Discovery

**NANOMATERIALS AND QUANTUM MATERIALS**


- NM01 Nanophotonics—Emerging Hybrid Platforms, Materials and Functions
- NM02 Advanced Linear/Nonlinear, Tunable and Quantum Materials for Metasurfaces, Metamaterials and Plasmonics
- NM03 Nanotubes, Graphene and Related Nanostructures
- NM04 Material Systems for Manipulating and Controlling Magnetic Skyrmions
- NM05 Emerging Materials for Quantum Information Technologies
- NM06 Spin Dynamics in Materials for Quantum Sensing, Optoelectronics and Spintronics
- NM07 Progress in Neuromorphic Computing Materials, Devices and Systems

**SOFT MATERIALS AND BIOMATERIALS**

- SM01 Lessons from Nature—From Biology to Bioinspired Materials
- SM02 Hydrogel Technology for Humans and Machines
- SM03 Materials and Mechanics Challenges in Haptics for Human–Machine Interfaces
- SM04 Degradable and Self-Healing Electronic Materials for Biological Interfaces
- SM05 Brain-Inspired Information Processing—From Novel Material Concepts for Neuromorphic Computing to Sensing, Manipulation and Local Processing of Biological Signals
- SM06 Biofabrication for Emulating Biological Tissues
- SM07 Biomaterials for Studying and Controlling the Immune System
- SM08 Regenerative Engineering and Synthetic Biology

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- SF05 Advanced Materials for Additive Manufacturing
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- SF07 Processing Structure–Property Relationship of Advanced Intermetallic-Based Alloys for Structural and Functional Applications
- SF08 Defect-Dominated Plasticity and Chemistry in Metals and Alloys

**FOLLOW THE MEETING!**#F20MRS  **MRS** MATERIALS RESEARCH SOCIETY®  
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**Don't Miss These Future MRS Meetings!****2021 MRS Spring Meeting & Exhibit**  
April 18–23, 2021, Seattle, Washington**2021 MRS Fall Meeting & Exhibit**  
November 28–December 3, 2021, Boston, Massachusetts

**Submission Deadline—August 14, 2020**



CALL FOR PAPERS

## Advanced Nanomechanical Testing

Small-scale mechanical characterization is essential for ensuring the service performance and lifetime of small components, such as thin films and coatings, electronic sensors, and MEMS. The first mechanical measurements on the submicrometer scale were enabled by the development of nanoindentation in the 1980s. *JMR* has long been the flagship journal for this field. In addition to countless contributed articles, previous Focus Issues published over the past two decades have disseminated the latest in method developments and trends in the field.

In addition to providing a long-expected update, this Focus Issue will expand the scope of nanomechanical testing methods beyond classical nanoindentation. Recent years have seen numerous attempts to access specific materials parameters and to better account for the typical operational conditions of the sample of interest. We therefore welcome contributions related to, but not limited to, focused ion beam (FIB) enabled methods, complex loading conditions, *in-situ* testing, and testing in extreme environments. Application of nanomechanical testing methods to new types of materials are also encouraged. This Focus Issue is a unique opportunity to highlight and share recent significant developments and achievements with the greater nanomechanics community.

### Contributing papers are solicited in the following areas:

- ◆ Nanoindentation, micromechanical, and nanomechanical testing
- ◆ New developments, e.g., for the acquisition of the full stress-strain response
- ◆ Application to new types of materials
- ◆ Complex loading conditions (cyclic fatigue, fracture testing)
- ◆ Extreme testing environments (high and low temperatures, irradiation, high strain rates)
- ◆ *In-situ* testing (in scanning electron microscope, transmission electron microscope, or synchrotron)

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### MANUSCRIPT SUBMISSION

To be considered for this issue, new and previously unpublished results or review articles significant to the development of this field should be presented. The manuscripts must be submitted via the *JMR* electronic submission system by August 14, 2020. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select “*Advanced Nanomechanical Testing*” as the Focus Issue designation. **Note our manuscript submission minimum length of 3250 words, excluding figures, captions, and references, with at least 6 and no more than 10 figures and tables combined. Review articles may be longer but must be pre-approved by proposal to the Guest Editors via [jmr@mrs.org](mailto:jmr@mrs.org). The proposal form and author instructions may be found at [www.mrs.org/jmr-instructions](http://www.mrs.org/jmr-instructions).** All manuscripts will be reviewed in a normal but expedited fashion. Papers submitted by the deadline and subsequently accepted will be published in the Focus Issue. Other manuscripts that are acceptable but cannot be included in the issue will be scheduled for publication in a subsequent issue.

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The Materials Research Society (MRS®) is a not-for-profit scientific association founded in 1973 to promote interdisciplinary goal-oriented basic research on materials of technological importance. Membership in the Society includes over 14,000 scientists from industrial, government, and university research laboratories in the United States and abroad.

The Society's interdisciplinary approach to the exchange of technical information is qualitatively different from that provided by single-discipline professional societies because it promotes technical exchange across the various fields of science affecting materials development. MRS sponsors two major international annual meetings encompassing many topical symposia, as well as numerous single-topic scientific meetings each year. It recognizes professional and technical excellence, conducts tutorials, and fosters technical exchange in various local geographical regions through Section activities and Student Chapters on university campuses.

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