

Submission Deadline—June 1, 2019



## Early Career Scholars in Materials Science 2020

The Fifth 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 not yet achieved full professorship, 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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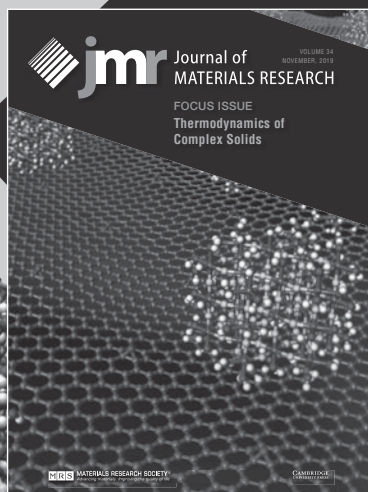
To be considered for the issue, the Early Career Scholar must not yet be a full professor at the time of submission. The manuscript must report new and previously unpublished results. Review articles are invited but must be approved by the editors before submission (see [www.mrs.org/jmr-manuscript-types/](http://www.mrs.org/jmr-manuscript-types/) regarding review articles). Manuscripts must be submitted via the *JMR* electronic submission system by **June 1, 2019**. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Submission instructions can be found at [www.mrs.org/jmr-instructions](http://www.mrs.org/jmr-instructions). Please select "ANNUAL ISSUE: *Early Career Scholars in Materials Science 2020*" 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

Submission Deadline—April 1, 2019



## Thermodynamics of Complex Solids

Thermodynamics forms the fundamental underpinning of reactivity, transformation, and stability, which places controls on processes such as synthesis, corrosion and degradation, environmental transport, catalysis, and biological reactivity. Rapid developments in industry have resulted in an increasing need to develop and study the properties of improved and new materials, and for better ways to understand a series of phenomena and process failure on a large scale.

Substantial improvements in the range, accuracy, and convenience of thermal analysis equipment, the development of a commercial calorimeter, and the ability to make accurate cryogenic heat capacity measurements, have renewed interest for thermodynamic measurements. Developments in experimental thermochemistry are paralleled by rapid progress in computational methods, integrating calculations based on density functional theory (DFT) and new molecular dynamics simulation methods for characterizing energy and free energy landscapes. There are strategies for coupling DFT results and experimental data within the framework of free energy modeling of phase diagrams and thermochemistry in complex multicomponent systems (e.g., the CalPhaD approach).

This Focus Issue will bring together experimentalists in thermodynamics and their interactions with a wider circle of computational and structural scientists to understand the fundamental science of complex materials, and apply this understanding to a rich variety of scientific and technological problems.

### Manuscripts are solicited in the following areas:

- ◆ Catalysts
- ◆ Functional materials
- ◆ Soft and hybrid materials
- ◆ High temperature refractories
- ◆ Environmental and geological materials

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### MANUSCRIPT SUBMISSION

To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented. The manuscripts must be submitted via the JMR electronic submission system by April 1, 2019. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select "Focus issue: Thermodynamics of Complex Solids" 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 of *JMR*.**

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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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