

Submission Deadline—July 1, 2019



## Advances in Battery Technology: Material Innovations in Design and Fabrication

The increasing demand for clean energy is a primary force driving the battery industry's innovations in such aspects as long cycle life, wide working temperature, and the search for inexpensive materials with high energy density. Developing novel materials and scalable production processes is essential for the advancement of battery technologies. High-performance materials fabricated by processes with high production yield, repeatable product quality, and facile equipment requirement are greatly favored in both scientific exploration and practical applications. Production of components including electrodes, electrolytes, and separators, is another area of rapid advancement in the field's technology.

This *JMR* Focus Issue is designed to report the latest advances in battery material innovations and process developments across the industry.

### Manuscripts are solicited in the following areas:

- ◆ New design for battery materials: cathodes, anodes, electrolytes
- ◆ New process development of the material synthesis
- ◆ Chemical process simulation
- ◆ Process utilizes inexpensive and nontoxic raw materials
- ◆ Advanced material characterizations
- ◆ New chemistries for energy storage
- ◆ Beyond lithium ion

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To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented.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 July 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*.

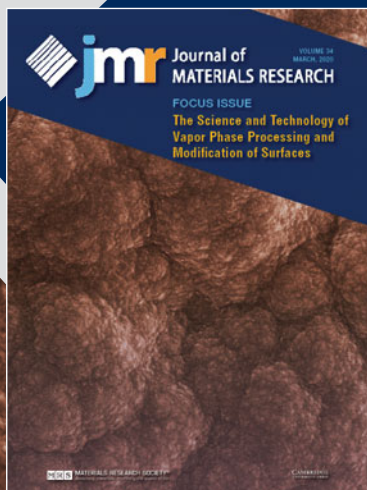
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Submission Deadline—August 1, 2019



## The Science and Technology of Vapor Phase Processing and Modification of Surfaces

Surface modification tools such as plasma enhanced physical vapor deposition and chemical vapor deposition processes, high energy ion implantation, high-power impulse magnetron sputtering, plasma electrolysis and discharge deposition have resulted in significant improvements in material properties for biomedical devices, MEMS, bearings, and cutting tools. These advances have been enabled by the development of new thin film deposition approaches, epitaxial schemes, multi-structured buffer layers, computation simulations, and new analytical probes to investigate the details of interface chemistry and structure. While many advances have been empirical, scientific understanding of the behavior of such surface modified materials is needed to accelerate further progress.

This *JMR* Focus Issue solicits papers that report advances in the synthesis, processing, and performance of materials enhanced by vapor phase processes. Special attention will be given to papers focused on surface reaction dynamics and film growth, the science and technology of surfaces and interfaces, and the mechanism of property enhancement.

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

- ◆ Plasma Surface treatment
- ◆ High energy ion implantation
- ◆ Utilization of novel buffer layers
- ◆ High-power impulse magnetron sputtering
- ◆ Plasma electrolysis and discharge deposition
- ◆ Novel technologies for hard and super-hard thin films
- ◆ Applications of computational modeling
- ◆ Analytical tools for interface characterization

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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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**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.

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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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