Journal of MATERIALS RESEARCH
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Submission Deadline—October 1, 2016

CALL FOR PAPERS

Microstructural Characterization for Emerging Photovoltaic Materials

Emerging solar cell technologies, in particular those based on organic molecules and polymers, inorganic-organic perovskites, and kesterite-based semiconductors have begun demonstrating their potential for inexpensive solar energy on a terawatt scale. Increasing the power conversion efficiency and device lifetimes of these materials requires exercising nanoscale control over thin film microstructure and device interfaces across large areas. Each of these systems has presented unique challenges to their full morphological and microstructural characterization, with issues ranging from poor scattering contrast between layers (organics) to overlapping diffraction features (kesterites). Advances in x-ray and neutron scattering methods have enabled breakthroughs in understanding the relationship between thin film microstructure and device-level properties in these emerging energy materials, findings which have propelled photovoltaic performance over the last decade. Increased access to synchrotron and neutron sources, coupled with the development of new tools and techniques that merge scattering and spectroscopic information, are providing exciting opportunities to probe the microstructural evolution of these materials from fabrication through to fully operational devices subject to real-world environments.

Research papers are solicited in the use of x-ray and neutron characterization methods to monitor microstructure of these emerging energy materials, in particular methods that enable thin-film monitoring under fabrication and/or operational conditions. Approaches that demonstrate applications to the improved design and fabrication of materials and devices—affording insights into the underlying chemistry, materials science, and photophysics—are highly encouraged.

The issue will have a special emphasis on:

- Techniques that enable quantitative correlation between electronic performance and bulk microstructural evolution of emerging solar cell technologies, highlighting X-ray and neutron tools, but not excluding other approaches
- *In-situ* and *in-operando* techniques for monitoring physico-chemical interactions during photovoltaic device operation, including spectroscopic methods
- New experimental and computational approaches for classifying and quantifying structural properties in molecular and disordered electronic materials
- Integration of characterization tools in process monitoring for scalable module fabrication

GUEST EDITORS

Moritz Riede, University of Oxford, United Kingdom
Chris Nicklin, Diamond Light Source, United Kingdom
Dean M. DeLongchamp, National Institute of Standards and Technology, USA

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 **October 1, 2016.** Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. **Submission instructions may be found at www.mrs.org/jmr-instructions.** Please select "Focus issue: *Microstructural Characterization for Emerging Photovoltaic Materials*" as the manuscript type. **Note our manuscript submission minimum length of 6,000 words.** 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 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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