Journal of MATERIALS RESEARCH
FOCUS ISSUE • JANUARY 2014

Submission Deadline—May 15, 2014

CALL FOR PAPERS

The Synthesis of Nanostructured Functional Oxide Materials

The driving force for research activities in the synthesis of nanostructured functional materials is the ability to control a material's properties by controlling the size and shape of the crystals and their arrangement into 1-, 2- and 3- dimensional structures extending over several length scales. These developments can lead to new applications in diverse fields including energy conversion and storage. The future of these technologies is strictly dependent on the availability of optimized synthesis routes that allow the processing and manipulation of functional metal oxides in a precise manner. Functional metal oxides represent an important class of materials with a wide spectrum of applications in energy conversion devices such as solar cells, fuel cells and photo- and photoelectrochemical cells for water splitting. This class of materials is fundamental also to the development of new storage devices, such as batteries and supercapacitors. This Focus Issue is dedicated to the most recent advances in the synthesis of nanostructured functional metal oxides and their applications in energy conversion and storage.

Contributed papers are solicited in the following areas:

- Colloidal synthesis of nanostructured functional oxide materials
- Assembly of nanostructured functional oxide materials into 1-, 2- and 3-dimensional superstructures
- Advances in morphological, structural and chemical characterization
- Applications in hydrogen generation by water splitting
- Applications in batteries and supercapacitors
- Applications in solar cells

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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To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented.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 May 15, 2013. 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: *Synthesis of Nanostructured Functional Oxides Materials*" as the manuscript type. 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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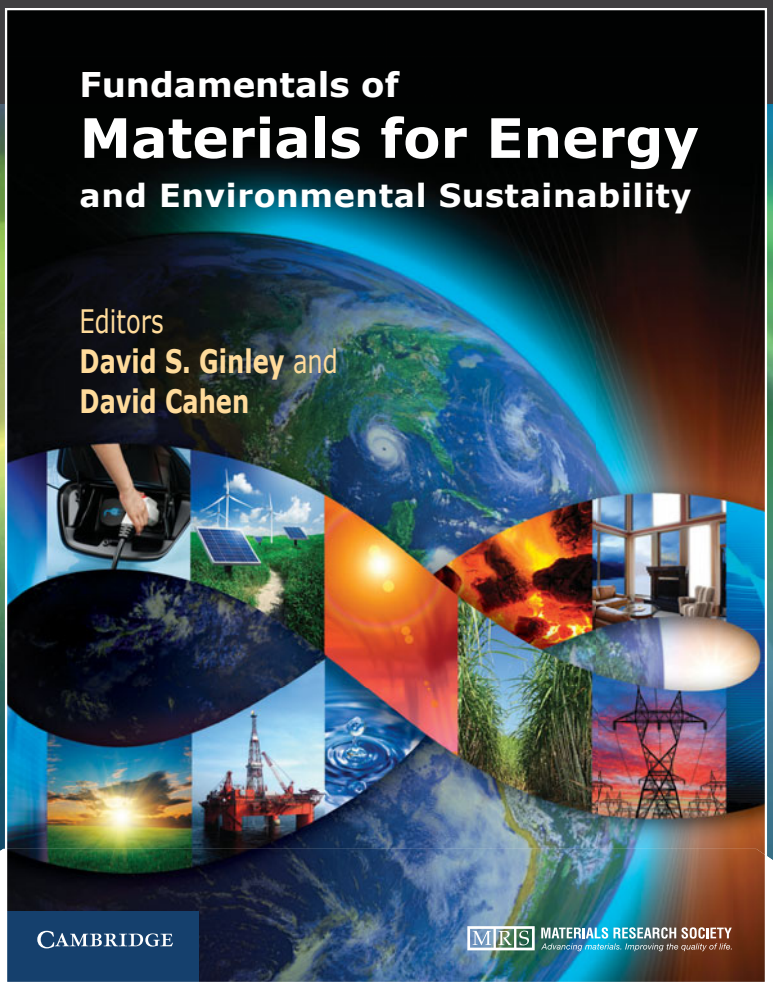

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Published in partnership by the **Materials Research Society** and **Cambridge University Press**

Journal of MATERIALS RESEARCH
FOCUS ISSUE • FEBRUARY 2014

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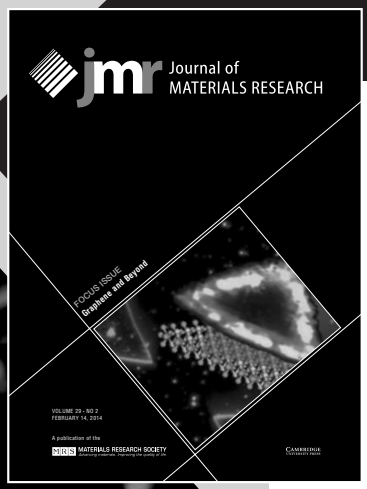

CALL FOR PAPERS

Graphene and Beyond

The discovery of graphene, i.e., a single atomic layer of carbon, can be considered a defining point in the research and development of stable, truly 2D material systems. This breakthrough has opened up the possibility of isolating and exploring the fascinating properties of atomic layers of several other layered materials, which upon reduction to single/few atomic layers, will offer functional flexibility, new properties, and novel applications. Today, the materials research community continues to discover and harness new low-dimensional allotropes, perhaps at an historically unprecedented rate. In this context, graphene and other 2D material systems (i.e., MoS_2, WS_2, WSe_2, $MoSe_2$, etc.) have become versatile platforms for new materials research and device architectures, and are finding their way into nearly every facet of the research world, including conductive polymers, transparent electrodes, chemical sensors, high-frequency devices, optoelectronic sensors, alternative energy, and bio-inspired systems, to name a few. At the same time, researchers from diverse disciplines are pushing the frontiers of these materials by developing innovative arrays of ribbon, hybrid, functionalized, doped, and heterostructures, often resulting in dramatically new scientific and engineering directions.

Abstracts related to experimentally demonstrated and theoretically predicted properties, including details of the synthesis, structure, chemistry, stacking sequence, and transport manipulation of these materials, are solicited. This includes interdisciplinary topics related to the materials science, chemistry, physics, mechanics, and engineering of 2D materials such as graphene, graphane, transistion-metal dichalcogenides, silicene, and others.

Contributed papers are solicited in the following areas:

- Graphene and related carbon nanomaterials
- 2D-layered oxides, nitrides, and sulfides
- General properties of flat and tubular 1D-layered systems: nanotubes and nanoribbons
- Creation of atomic layers from layered materials by exfoliation and unzipping
- Creation of atomic layers from layered materials by chemical vapor deposition
- Chemical modification of 2D-layered materials and derivatives
- Structural and electronic characterization of 2D-layered materials including sheets, nanoribbons, and concentric tubules
- New physics of layered systems: sheets, tubules, and nanoribbons
- Applications of 2D-layered materials and derivatives

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https://doi.org/10.1557/jmr.2013.49

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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 three 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.

MRS publishes symposia proceedings, the *MRS Bulletin,* and other volumes on current scientific developments. The *Journal of Materials Research,* the archival journal spanning fundamental developments in materials science, is published twenty-four times a year by Cambridge University Press for the MRS. *MRS Communications* is a full-color letters and prospectives journal focused on groundbreaking work across the spectrum of materials research.

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Journal of MATERIALS RESEARCH

A publication of the
MRS MATERIALS RESEARCH SOCIETY
Advancing materials. Improving the quality of life.

Periodical Rate Postage Paid at New York, NY
and Additional Mailing Offices

Postmaster—Send change of address notice to:

Cambridge University Press
100 Brook Hill Drive
West Nyack, NY 10994-2113, USA

ISSN: 0884-2914