



Submission Deadline—January 1, 2018

Soft Magnetic Materials: Synthesis, Characterization, and Applications

A push for greater efficiency and decreased size in power electronics and electrical machines demands higher performing soft magnetic materials. In order to be competitive, advanced soft magnetic materials must be affordable and their production volume needs to meet the anticipated demand. This drive for higher efficiency and diminished size, weight, and power (SWaP) is fueled in part by the development and adoption of wide bandgap (WBG) semiconductors. WBG devices enable very fast switching (1 kHz to as high as 10 MHz), high voltage operation, and high temperature operation in both power electronics and electrical machine drives. Researchers in the field of soft magnetics must rise to this challenge and create soft magnetic materials with high magnetic flux densities and low electrical losses, while also improving the theoretical assessment of magnetic behavior and energy losses, at these elevated switching frequencies.

This JMR Focus Issue will include the latest research on soft magnetic materials for next-generation power electronics, as well as in electrical machines, and coverage of advanced characterization techniques that will be vital to understanding both the nanostructure and dynamical properties in soft magnetic materials. This behavior of soft magnets on small length and short time scales will ultimately govern their behavior in inductors, transformers, motors, and generators.

Contributed articles are sought in the following areas:

- ◆ New bulk and composite soft magnetic materials
- ◆ Developments in the synthesis and fabrication of soft magnetic materials
- ◆ Advanced characterization techniques relevant to soft magnets
- ◆ Implementation of soft magnetic materials in power electronics and electrical machines
- ◆ Modeling and simulation of soft magnetic materials
- ◆ Overviews of the field of soft magnetic materials
- ◆ Perspectives on future opportunities in the field of soft magnetics

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To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented.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 **January 1, 2018**. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select "Focus issue: *Soft Magnetic Materials: Synthesis, Characterization, and Applications*" as the manuscript type. **Note our manuscript submission minimum length of 5500 words, with a maximum of 8 figures. Review articles must be pre-approved by proposal to the Editor-in-Chief. The proposal form and author instructions may be found at 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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CALL FOR PAPERS



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Submission Deadline—February 1, 2018



CALL FOR PAPERS

3D Printing of Biomaterials

3D printing or additive manufacturing is a transformative technology platform that is impacting various disciplines including biomaterials and biomedical devices. This Focus Issue will capture the perspectives of professionals from different disciplines including science, engineering, and medicine towards application of 3D printing in biomaterials. More specifically, the topic will be geared towards understanding of structure–process–property relationships involving different materials under *in vitro*, *in vivo* and *in silico* environments.

Suggested Topical Areas include, but not limited to

- ◆ 3D printing of biomaterials
- ◆ Surface modification via 3D printing
- ◆ Drug delivery from 3D printed scaffolds
- ◆ Bioprinting
- ◆ Texture and microstructure in 3D printed devices
- ◆ Mechanical properties of 3D printed materials
- ◆ Process development for 3D printed devices
- ◆ Modeling and simulation involving 3D printed biomaterials and devices
- ◆ Patient specific devices

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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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