



# call for papers

**JOM is seeking contributions on the following topics for 2019 and 2020. For the full Editorial Calendar, along with author instructions, visit [www.tms.org/EditorialCalendar](http://www.tms.org/EditorialCalendar).**



## February 2020:

**Manuscript Deadline: September 1, 2019**

**Topic: 7th European Conference on Renewable Energy Systems**

**Scope:** This special topic will publish invited papers presented at the 7th European Conference on Renewable Energy Systems. The areas of coverage will include semiconducting materials, alloys, and composites in energy applications. In addition, submissions related to synthesis and characterization of materials for solar energy, wind energy, fuel cells, and energy storage materials are welcome.

**Editors:** Shadia Ikhmayies and H. Hilal Kurt

**Sponsors:** Invited

**Topic: Cleaner Manufacturing of Critical Metals**

**Scope:** Research that aims at preventing or reducing the generation of industrial waste while increasing resource and energy efficiency in critical metals production is invited for this special topic. Waste minimization from both primary and secondary sources will be considered. Manuscripts intended for a broad readership are especially encouraged.

**Editors:** Fiseha Tesfaye, Naiyang Ma, and Mingming Zhang

**Sponsors:** Recycling and Environmental Technologies

**Topic: Mechanical Properties of Metastable Materials Containing Strong Disorder**

**Scope:** Metastable systems have received considerable attention because, as thermodynamically non-equilibrium states of matter, they provide ample opportunities for properties control, and have found applications in structural and functional materials. This special topic focuses on advances in the fundamental understanding of mechanical properties of metastable systems containing disorder (e.g., grain boundaries, glass-crystal interfaces, amorphous solids). Papers are invited on topics including state-of-the-art characterization of disordered materials, advanced computation and modeling, non-equilibrium thermodynamics, and/or kinetic theory.

**Editors:** Yue Fan, Liang Qi, and Amanda Krause

**Sponsors:** Mechanical Behavior of Materials

## March 2020:

**Manuscript Deadline: October 1, 2019**

**Topic: Additive Manufacturing: Validation and Control**

**Scope:** While research continues on the fundamental aspects of additive manufacturing (AM), it is the ability to produce repeatable properties and microstructures that is required to incorporate AM as a primary manufacturing process. Modeling and simulation strategies are being developed to provide benchmarks for the validation and control of the AM process. Manuscripts are solicited that address approaches toward validating process modeling and incorporation into process control.

**Editors:** Judy Schneider

**Sponsors:** Additive Manufacturing

**Topic: Advanced Manufacturing for Biomaterials and Biological Materials**

**Scope:** Manufacturing and processing are becoming increasingly important for biomaterials, bioinspired materials, and biological materials. This includes additive manufacturing techniques like 3D printing, which allow for increasing degrees of complexity to mimic the structures observed in nature. However, this special topic welcomes any other processing and manufacturing techniques applicable for these materials, such as plasma treatments.

**Editors:** Hannes C. Schniepp, Steven Eric Naleway, Vinoy Thomas, and David Restrepo

**Sponsors:** Biomaterials

**Topic: Solid Freeform Fabrication 2019**

**Scope:** This special topic will feature invited papers from the 2019 Solid Freeform Fabrication symposium, covering all aspects of additive manufacturing. Best papers from the symposium dealing with materials issues will be recommended for publication in *JOM*.

**Editors:** David Bourell

**Sponsors:** Invited

**April 2020:****Manuscript Deadline: November 1, 2019****Topic: Aluminum and Magnesium: New Alloys and Applications**

**Scope:** This topic covers the development of new alloys, optimization of commercial alloys, additions for structure modification, and improvement of mechanical and functional properties, as well as new applications of aluminum and magnesium alloys. Papers are invited that contain essentially new data based on advanced characterization and analysis techniques as well as thermodynamic analysis and testing for properties.

**Editors:** Dmitry Eskin**Sponsors:** Aluminum**Topic: Biologically Induced Corrosion**

**Scope:** Papers in all areas of biologically induced or influenced corrosion are welcome. Examples include microbially induced corrosion, corrosion in biomedical devices, etc.

**Editors:** Vilupanur Ravi**Sponsors:** Corrosion and Environmental Effects**Topic: Characterization of Advanced Biomaterials**

**Scope:** Papers are invited on advances in processing or relevant property measurement of novel biomaterials. In particular, papers on synthesis, processing, and characterization of biomaterials are welcome. Of interest are multifunctional nanomaterials and modified mineral-based biomaterials with unique combinations of desirable mechanical performance, biocompatibility, and bioactivity for clinical applications.

**Editors:** Zhiwei Peng, Rajiv Soman, and Yunus Eren Kalay**Sponsors:** Materials Characterization**Topic: Hydrogen Effects on Material Performance**

**Scope:** Numerous energy generation and transportation systems constructed of high-performance metal alloys are routinely exposed to hydrogen. The integrity of these systems is often challenged by a variety of hydrogen degradation modes. The hydrogen-material interactions that ultimately lead to degradation occur across multiple length scales. Therefore, of particular interest for this special topic are studies involving multiscale experimental and theoretical methods for probing hydrogen-materials interactions in complex materials systems.

**Editors:** Janelle Wharry and Samantha Lawrence**Sponsors:** Nanomechanical Materials Behavior**May 2020:****Manuscript Deadline: December 1, 2019****Topic: Advancing Development and Application of Superalloys**

**Scope:** Superalloys are essential components of propulsion and power generation systems due to their unique combination of strength, creep, and fatigue resistance at elevated temperatures or in demanding environments. This topic focuses on the current advances in the development and application of Ni- and Co-based superalloys. Areas of interest may include (but are not limited to): alloy development, advanced processing, deformation behavior, structure-property relationships, long-term stability, environmental damage, and joining.

**Editors:** Martin Detroy**Sponsors:** High Temperature Alloys**Topic: Emerging Mechanisms for Enhanced Plasticity in Magnesium**

**Scope:** Inadequate ductility often hinders the application of magnesium alloys, which otherwise offer an excellent lightweight alternative for increasing energy efficiency. This special topic covers emerging methods that overcome this limitation. The scope is inherently multi-scale; ranging from fundamental mechanisms at the atomic/crystal defect level, up to large-scale production techniques. Optimizing mechanical properties via microstructure and crystallographic texture modification are considered; chemistry control and alloying, casting, powder-based strategies, as well as thermomechanical processing are addressed.

**Editors:** Petra Maier and Jishnu J. Bhattacharyya**Sponsors:** Magnesium**Topic: Heat Transfer Utilization in Pyrometallurgy**

**Scope:** This topic covers some of the fundamentals and applications of heat transfer in pyrometallurgy. In particular, this topic aims to highlight how the knowledge and investigation of heat transfer modes drive furnace design and operation. Included in this topic are practical applications to industrial furnaces, with an emphasis on furnace heat management and heat utilization for process optimization.

**Editors:** Camille Fleuriault and Joseph Grogan**Sponsors:** Pyrometallurgy**Topic: In-Situ Characterization Techniques for Investigating Nuclear Materials**

**Scope:** In the last few years, in-situ characterization techniques have taken off as a way to directly observe the evolution and evaluate the damage in nuclear materials under pertinent reactor conditions. For this topic, we are soliciting papers on in-situ experimental techniques at all length scales probing mechanical, chemical, thermal, or electrical responses, as well as irradiation damage. Papers that include modeling and simulation are welcome, though computational-only papers will not be accepted.

**Editors:** Clarissa Yablinsky, Peter Hosemann, David Frazer, and Shradha Agarwal**Sponsors:** Nuclear Materials**Tools for JOM Authors and Volunteers**

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