



call for papers

JOM is seeking contributions on the following topics for 2020. For the full Editorial Calendar, along with author instructions, visit www.tms.org/EditorialCalendar.



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.

Editor: Judy Schneider

Sponsors: Additive Manufacturing Committee

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. 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 Committee

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*.

Editor: 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.

Editor: Dmitry Eskin

Sponsors: Aluminum Committee

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.

Editor: Vilupanur Ravi

Sponsors: Corrosion and Environmental Effects Committee

Topic: Characterization of Advanced Biomaterials

Scope: Papers are invited on advances in processing or relevant property measurement of novel biomaterials, particularly those on synthesis, processing, and characterization. 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 Committee

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 Committee

May 2020:

Manuscript Deadline: December 1, 2019

Topic: Advancing Development and Application of Superalloys

Scope: 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.

Editor: Martin Detrois

Sponsors: High Temperature Alloys Committee

Topic: Emerging Mechanisms for Enhanced Plasticity in Magnesium

Scope: 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 Committee

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 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 Committee

Topic: In-Situ Characterization Techniques for Investigating Nuclear Materials

Scope: 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 Committee

June 2020

Manuscript Deadline: January 1, 2020

Topic: Advanced Characterization of Interfaces and Thin Films

Scope: The focus of this topic is the advanced characterization of materials interfaces at atomic and nanoscales in metal, alloys, ceramics, and polymers by various in-situ and ex-situ experimental techniques such as x-ray and neutron diffraction, scanning electron microscopy, transmission electron microscopy, and atomic force microscopy. This topic also involves the understanding of materials interfaces by theoretical modeling approaches that allow the study of these processes on the atomic and molecular level.

Editors: Ritesh Sachan, Manuel Roldan Gutierrez, and Amit Pandey

Sponsors: Thin Films and Interfaces Committee

Topic: Electrochemical Energy Conversion and Storage

Scope: Papers are sought on topics related to, but not restricted to: solid oxide and proton exchange membrane fuel cells, electrolyzers, batteries for energy storage, and hydrogen storage. Papers can address issues related to electrode, electrolyte and interconnection materials, electrochemical processes at electrodes and electrolyte interfaces, catalysts and catalytic mechanisms, infiltration to enhance catalytic activity and reduce poisoning effects, durability issues, and advances in characterization and modeling techniques.

Editors: Soumendra N. Basu and Partha P. Mukherjee

Sponsors: Energy Conversion and Storage

Topic: Metal and Polymer Matrix Composites

Scope: This topic will cover recent progress in metal and polymer matrix composites, including: fiber-reinforced composites; natural fiber reinforced composites; solid and hollow particle reinforced composites; nanocomposites; fabrication methods and surface modification of micro- and nanoscale reinforcements; development of processing methods for composite materials; and modeling and simulation.

Editors: Nikhil Gupta and Tomoko Sano

Sponsors: Composite Materials Committee

Topic: Quantum Materials for Energy-Efficient Computing

Scope: A significant portion of electricity consumption in the U.S. is due to the usage of computers. Quantum materials hold great potential for becoming crucial components of future generations of computers, which will be more energy-efficient. This special topic covers various state-of-the-art computational techniques, such as density-functional theory calculations that provide deeper understanding of quantum materials and accelerate their discovery.

Editors: Houlong Zhuang, Shawn Coleman, Srikanth Patala, Jacob Bair, and Sugata Chowdhury

Sponsors: Computational Materials Science and Engineering Committee