



# 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](http://www.tms.org/EditorialCalendar).**



## 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 Detriou

**Sponsors:** High Temperature Alloys Committee

#### Topic: Emerging Mechanisms for Enhanced Plasticity in Magnesium

**Scope:** This 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:** This topic focuses on 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 Committee

**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:** Quantum materials hold great potential for becoming crucial components of future generations of computers. 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

**July 2020****Manuscript Deadline: February 1, 2020****Topic: Characterization of Amorphous Materials**

**Scope:** This topic will include, but is not limited to, characterization of amorphous solids and possibly liquids using advanced analytical techniques such as electron microscopy, x-ray radiation, thermal analyses, spectroscopy, atom probe tomography, etc. Particular emphasis will be paid to lesser-known characterization techniques used for amorphous materials.

**Editors:** Yunus Eren Kalay, Rajiv Soman, and Zhiwei Peng

**Sponsors:** Materials Characterization Committee

**Topic: Machine Learning Applications in Advanced Manufacturing Processes**

**Scope:** This special topic focuses on reducing waste, energy usage and carbon emissions, and spurring innovation in materials development and production. Advances in digital manufacturing, process control, predictive maintenance, and automation can be realized by integration of data analytics and validated models to ensure product quality, optimize operations, enhance productivity, and improve efficiency.

**Editors:** Donna Guillen, Judy Schneider, and Srikanth Patala

**Sponsors:** Energy Committee; Additive Manufacturing Committee; Computational Materials Science and Engineering Committee

**Topic: Recycling Silicon and Silicon Compounds**

**Scope:** Silicon and silicon compound recycling is needed for a cleaner and greener environment. These materials can be reused in the manufacturing of solar cells and panels and other industries such as electronic industries. The scope of this special topic is concerned with recycling of all types of

silicon, silicon products, and silicon compounds including silicon wafers, silicon poly chunk, IC grade, ingots, IC flakes, etc.

**Editor:** Shadia Ikhmayies

**Sponsors:** Recycling and Environmental Technologies Committee

**Topic: Thermodynamic Modeling of Sustainable Non-Ferrous Metals Production**

**Scope:** Papers covering experimental investigations, thermodynamic modeling, metallurgical process optimization, resource efficiency and environmental issues, particularly those pertaining to non-ferrous metallurgical processes, are invited. Manuscripts intended for a broad readership and review papers are especially encouraged.

**Editors:** Fiseha Tesfaye, Allie Anderson, and Mingming Zhang

**Sponsors:** Process Technology and Modeling Committee; Recycling and Environmental Technologies Committee

**August 2020:****Manuscript Deadline: March 1, 2020****Topic: Additive Manufacturing: Beyond the Beam Technology**

**Scope:** This invited topic will explore print process and post-print processing variables of non-beam solid state print technologies, which determine the properties, application performance, economics and enable component functionality. These processes include but are not limited to: binder jetting, material extrusion, filament process, nano-inkjet printing and sintering.

**Editors:** Paul Prichard, Peeyush Nandwana, Matt Dunstan, James Paramore, and Kathy Lu

**Sponsors:** Powder Materials Committee; Additive Manufacturing Committee

**Topic: Advanced Processing and Additive Manufacturing of Functional Magnetic Materials**

**Scope:** Papers are invited on advanced processing and advanced manufacturing of functional materials with particular emphasis on magnetic materials. In particular, papers addressing permanent magnets, magnetocaloric materials, soft magnets, magnetic shape memory alloys, and multiferroics are welcome. Additive approaches to similar classes of functional materials are invited as well.

**Editors:** Scott McCall and Ikenna Nlebedim

**Sponsors:** Magnetic Materials Committee

**Topic: Metastable Phases and Phase Equilibria**

**Scope:** Invited authors will provide original research submissions on next-generation alloys enabled by the design and control of metastable phases. In these alloys, outstanding properties are achieved through a combination of carefully tailored chemical composition and thermal processing. Examples include metastable austenite in TRIP, TWIP and Q&P steels, beta-stabilized titanium alloys, gamma double prime precipitates in nickel superalloys, high entropy alloys, and spinodal decomposition during aging of aluminum alloys.

**Editors:** Gregory Thompson, Raj Banerjee, Eric Lass, and Bij-Na Kim Lee

**Sponsors:** Phase Transformations Committee