



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.



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

Sponsor: Thin Films and Interfaces Committee

Topic: Dry Metal Shaping and Forming (Invited)

Scope: In view of the 2 degree target for climate change, sustainable manufacturing processes are playing an increasingly important role. In order to save energy-intensive cleaning and drying processes in forming production, new approaches to carrying out forming processes are the focus of research in which lubricants, their application and removal can be dispensed with. This is based on various tool and process modifications that have become possible using new technologies in forming tool manufacturing. This invited special topic will feature papers presented at the Recent Developments in Biological, Structural and Functional Thin Films and Coatings symposium at the TMS 2020 Annual Meeting & Exhibition.

Editors: Soumendra N. Basu and Partha P. Mukherjee

Sponsor: Energy Conversion and Storage 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

Sponsor: 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

Sponsor: 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

Sponsor: 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

Sponsor: 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 for Energy Applications (Invited)

Scope: Exploration of additive manufacturing (AM) techniques within energy sectors has shown an increase of applications, a large variety of materials, and industry specific design and qualification requirements. This invited topic will feature manuscripts based on experimental and computational approaches in the following topic areas:

- Processing-microstructure-property relationship of AM fabricated materials for structural components in energy sectors
- In-situ sensor development and in-situ processing and characterization

- Advances in AM design methodologies, new material designs and AM techniques
- Modeling and simulations for design of high-performance AM fabricated materials
- Qualification approaches
- Economic advantages: Case studies

Only papers presented at the Additive Manufacturing for Energy Applications II symposium at the TMS 2020 Annual Meeting & Exhibition will be considered for this topic.

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

Sponsor: Additive Manufacturing Committee

Topic: Additive Manufacturing: Beyond the Beam Technology (Invited)

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

Sponsor: 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

Sponsor: Phase Transformations Committee