



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.



September 2020

Manuscript Deadline: April 1, 2020

Topic: Aluminum: Recycling and Carbon / Environmental Footprint

Scope: This topic covers recycling of aluminum (and its alloys), as well as mitigating the carbon footprint and/or environmental ramifications of both primary and secondary aluminum production.

Editors: David S. Wong and Anne Kvithyld

Sponsors: Aluminum Committee and Recycling and Environmental Technologies Committee

Topic: High Temperature Processing of Complex Ores (By Invitation Only)

Scope: Invited papers only will be published in this topic covering pyrometallurgical processes developed to recover metals from complex ores. The term complex refers to multi-metal sulfide resources, which often present inclusions and intricate structural or alteration patterns. Also included are orebodies such as multi-metal oxide ores that complicate processing due to the diversity of minor elements they contain. This topic will present a state-of-the-art picture of the high-temperature processing of complex ore, from historical to best available technologies.

Editors: Leili Tafaghodi, Camille Fleuriaux, and Joseph Grogan

Sponsor: Pyrometallurgy Committee

Topic: Materials Research in Reduced Gravity

Scope: Reduced-gravity experiments can isolate phenomena otherwise obscured in ground-based experiments, leading to new discoveries. Ground-based facilities for reduced-gravity experiments include drop tubes and towers that provide seconds of reduced gravity, aircraft that provide tens of seconds, and suborbital rockets that provide hundreds of seconds. Manuscripts are solicited in all areas of materials research employing reduced gravity, including crystal growth, containerless processing, materials processing and properties, and experimental facilities for materials research.

Editors: Douglas M. Matson, Robert W. Hyers, Michael Sansoucie, Jonghyun Lee, and Shaun McFadden

Sponsors: Process Technology and Modeling Committee and Solidification Committee

October 2020

Manuscript Deadline: May 1, 2020

Topic: Electrometallurgical Processing

Scope: Industrial electrochemistry has made great strides in the manufacture of base, precious, refractory and reactive metals and their alloys/compounds. Significant improvements have been made to obviate some of the process challenges that include energy-efficiency, often complex process chemistry, throughput, and safety. Manuscripts covering current practices and future projections of electrometallurgy including advanced materials, materials recycling, nuclear materials, secondary recovery, contaminated water and waste treatments, and design of process equipment are invited.

Editors: Prabhat K. Tripathy, Takanari Ouchi, Hojong Kim, Hong (Marco) Peng, and Gisele Azimi

Sponsors: Hydrometallurgy and Electrometallurgy Committee and Pyrometallurgy Committee

Topic: Interfacial Stability in Multi-component Systems

Scope: Papers are invited for this special topic covering interfacial bonding, interfacial stability, reaction kinetics, phase formation and characterization, and complex interfacial phenomena in various applied fields, including advanced microelectronics packaging, semiconductor systems, thermoelectric modules, and energy materials.

Editors: Chao-hong Wang and Shih-Kang Lin

Sponsor: Alloy Phases Committee

Topic: Practical Research in Processing Science (By Invitation Only)

Scope: A primary objective of research is the eventual reduction to practice and use by industry. Papers for this topic were solicited from "Purveyors of Processing Science and ICME: A Symposium to Honor the Many

Contributions of Taylan Altan, Wei Tsu Wu, Soo-Ik Oh, and Lee Semiatin," who devoted their careers to understanding processes and developing practical simulations of them. This special topic pays homage to the lifelong work of these researchers.

Editors: Adam Pilchak and Ed Herderick

Sponsors: Titanium Committee, Shaping and Forming Committee, and ICME Committee

Topic: Solidification Behavior in the Presence of External Fields

Scope: The introduction of external fields, including electromagnetic fields, ultrasonic excitation, and mechanical shearing to solidification processes can significantly alter solidification behavior. This encompasses a wide range of applications in casting, welding, remelting, and additive manufacturing processes that have been explored in industry to refine grains, homogenize segregation, prevent defect formation, and break up agglomeration of particles. Publications focused on new scientific discoveries, engineering advancement and industrial applications are solicited under this topic.

Editors: Lang Yuan and Andrew Kao

Sponsor: Solidification Committee

November 2020

Manuscript Deadline: June 1, 2020

Topic: Aluminum and Magnesium: Casting Technology and Solidification

Scope: This topic covers the formation of structure, defects, and properties during casting and solidification of aluminum and magnesium alloys, with technologies including shape, continuous, direct-chill casting, and rapid solidification. The topic also covers new technological approaches to improve the quality of cast metal through optimization or changing of casting hardware or procedures. Both experimental and modelling papers are welcome for submission, though the modeling papers need to contain experimental validation.

Editor: Dmitry Eskin

Sponsor: Aluminum Committee

Topic: In Situ Synchrotron and Neutron Characterization of Additively Manufactured Alloys

Scope: This special topic focuses on the in situ characterization of additively manufactured alloys using synchrotron- and neutron-based scattering, diffraction, and imaging techniques. Papers are solicited in areas including phase transformation and microstructure evolution during post-build heat treatment or mechanical testing, time-resolved x-ray imaging or diffraction during the build stage, residual stress evolution, and defect monitoring.

Editors: Fan Zhang, Dhriti Bhattacharyya, and Lianyi Chen

Sponsor: Advanced Characterization, Testing, and Simulation Committee

Topic: Nanomechanics of Low-dimensional Materials

Scope: Low-dimensional materials, such as nanoparticles, nanofibers, and nanotubes have at least one dimension small enough for their physical properties to lay somewhere between individual atoms and the bulk material. The dimensional constraints of these materials result in a large surface-area-to-volume ratio that allows free surface and nanoscale structural features to dominate their physical response to mechanical deformation. Papers are invited covering experimental fabrication, characterization and testing, and computational modeling of mechanical behaviors of low-dimensional materials.

Editors: Jiyoung Chang and Wei Gao

Sponsor: Nanomaterials Committee

Topic: Nanostructured Materials under Extreme Environments (By Invitation Only)

Scope: This invited topic focuses on the response of nanostructured metals, ceramics, and composite materials in extreme environments (radiation, temperature, and mechanical loading). Materials with designed micro- and nanostructures may have unusual responses to such extreme environments. The investigation of the microstructural evolution in nanostructured materials through combined experimentation and modeling/simulation has proven crucial in establishing the understanding and design of this novel class of materials for future engineering applications under extreme conditions.

Editors: Youxing Chen and Jin Li

Sponsor: Invited

Topic: Process Design and Materials Development for High-Temperature Applications

Scope: Due to their unique characteristics, refractory materials are of specific interest for functional and structural high-temperature applications. The focus of this special topic includes the design, development, and processing of refractory metals, alloys, and compounds. Contributions are invited from authors working on high-temperature materials to share and discuss their latest experimental and theoretical results and advancements.

Editors: Ravi Enneti and Chai Ren

Sponsor: Refractory Metals and Materials Committee

Topic: Silicon Production, Refining, Properties, and Photovoltaics (By Invitation Only)

Scope: This invitation-only topic focuses on silicon for solar cells, energy production, and other technologies. All technologies of Si production, refining, and characterization are covered. Life-cycle assessment of solar silicon processing, recycling of solar silicon components, solar cells and electronic components, and characterization of silicon materials for solar cells and other technologies are subjects of great interest for this collection.

Editor: Shadia Ikhmayies

Sponsors: Recycling and Environmental Technologies Committee and Materials Characterization Committee