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call for papers

***JOM* is seeking contributions on the following topics for 2021. For the full Editorial Calendar, along with author instructions, visit www.tms.org/EditorialCalendar.**

July 2021
Manuscript Deadline: February 1, 2021

Topic: Machine Learning in Design, Synthesis, and Characterization of Composite Materials

Scope: Machine learning methods are enabling unprecedented advances in the area of composite materials. These methods are versatile in handling a large number of parameters and are helping in developing novel materials structures and compositions for the given application requirements. This topic is intended to cover all aspects of the application of machine learning methods to the field of composite materials, including design of microstructure, synthesis condition optimization, and evaluation of properties.
Editors: Nikhil Gupta, Simona Hunyadi Murph, and Ramasis Goswami
Sponsor: Composite Materials Committee

Topic: Nanomaterials and Composites for Energy Conversion and Storage

Scope: The emergence of nanostructured and composite materials has resulted in significant advancements in energy conversion and storage, such as fuel cells, photovoltaic cells, batteries, and supercapacitors. The topic scope includes the design and development of low-dimensional nanomaterials; photocatalysts and photoelectrochemical devices for solar fuel production; semiconductors nanomaterials for new-generation solar cells; computational nanomaterial science; and electrode nanomaterials for efficient energy storage systems including batteries and supercapacitors, etc.
Editors: Yu Lin Zhong, Soumendra Basu, and Ziqi Sun
Sponsor: Energy Committee and Energy Conversion and Storage Committee

Topic: Phase Transformations during Solid-phase Welding and Processing

Scope: Papers are invited covering phase transformations and interfacial phenomena during solid-phase welding and processing.
Editors: Piyush Upadhyay and Arun Devaraj
Sponsor: Shaping and Forming Committee

August 2021
Manuscript Deadline: March 1, 2021

Topic: Additive Manufacturing: Functionally Graded Alloys

Scope: Functionally graded metals, or "gradient alloys," have the potential to add a completely new dimension to metal additive manufacturing by allowing the composition of near-net-shaped parts to be strategically controlled. Successful demonstrations of applications, challenges, and paths forward for the research area are reflected. Emerging metal additive manufacturing technologies that are more conducive to functionally grading metals can be discussed, along with comments about the intersection between metal printing and metal coating.
Editors: Somayeh Pasebani and Tom Stockman
Sponsor: Additive Manufacturing Committee

Topic: Defect and Phase Transformation Pathway Engineering for Desired Microstructures

Scope: Extended defects such as dislocations and internal interfaces have been frequently utilized to tune desired phases and optimize mechanical properties. This special topic aims to publish research that brings together state-of-the-art characterization tools and computational tools for the fundamental understanding of defect-microstructure interactions and the corresponding defect engineering strategies to design new microstructures, both homogeneous and heterogeneous / hierarchical for unprecedented properties.
Editors: Yufeng Zheng, Rongpei Shi, and Rajarshi Banerjee
Sponsor: Phase Transformations Committee

Topic: Multiscale Methods for Design of High Performance Coatings

Scope: This topic emphasizes new results in the development and application of multiscale techniques (both experimental and computational) toward the design of high-performance coatings. Particular applications of

interest include thermal barrier coatings, wear coatings, and coatings for extreme environments.
Editors: William J. Joost, R. Wesley Jackson, Mark Carroll, and Pantcho Stoyanov
Sponsor: ICME Committee

September 2021
Manuscript Deadline: April 1, 2021

Topic: Computational Modeling in Pyrometallurgy

Scope: Pyrometallurgical furnace operations are typically very complex in nature and may involve tightly coupled interactions between phenomena from heat transfer, fluid flow, electromagnetics, thermochemistry, phase change, granular media, and more. Exacerbating the difficulties in understanding such phenomena are the extraordinary challenges inherent in performing measurements on pyrometallurgical processes (e.g., extreme conditions limit direct measurements). This topic will aim to cover a variety of contemporary applications of computational modeling in pyrometallurgical science and engineering.
Editors: Quinn Reynolds and M. Akbar Rhamdhani
Sponsor: Pyrometallurgy Committee

Topic: Recovery, Sorting, and Processing of Secondary Aluminum

Scope: This topic covers recycling of aluminum and its alloys, with a specific focus on managing recovery, sorting, and processing for secondary aluminum production. This may include advances in sorting technologies, pre-treatment steps, and various re-melting techniques together with, or in addition to, recovery of by-products from these techniques. Also, holistic approaches for secondary aluminum production are welcomed.
Editors: Anne Kvithyld
Sponsors: Aluminum Committee and Recycling and Environmental Technologies Committee

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