

JOM TECHNICAL TOPICS

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Biological Translation: Biological Materials Science and Bioinspired Design

Scope: The interconnected fields of biological materials science and bioinspired design offer the potential to better understand and harness lessons learned from nature. Biological materials science employs the tools and techniques of chemistry, physics, and engineering to understand how biological organisms thrive in their natural environments. Bioinspired design employs this information with advanced manufacturing techniques to fabricate advanced materials and structures. This special topic of *JOM* is focused on these two interconnected fields as well as the related fields of biomaterials, biomimetics, and experimental biology.

Editors: Steven Naleway, University of Utah; David Restrepo, University of Texas at San Antonio; Kalpana Katti, North Dakota State University; Ling Li, Virginia Tech; and Dhruv Bhate, Arizona State University

Sponsor: Biomaterials Committee

Design, Production, and Applications of Steels for a Sustainable Future

Scope: This special topic focuses on the latest advances in designing steel compositions to enable lower carbon emissions or lower energy consumption during production; steel production methods that reduce environmental impacts; and applications of steels to enable lower emissions or energy savings in power generation.

Editors: Jonah Klemm-Toole, Colorado School of Mines, and Kester Clarke, Colorado School of Mines

Sponsor: Steels Committee

Influence of Processing on Microstructure and Properties of Magnesium Alloys

Scope: Magnesium and its alloys are gaining increasing interest in structural and biomedical applications. The processing route has a pivotal effect on the microstructure and, in turn, the properties and the overall performance of the material during service. Therefore, elucidating the relationship between the processing and the property profile has a great impact on the application of magnesium-based materials.

Editors: Domonkos Tolnai, Helmholtz-Zentrum Geesthacht, and Tracy Berman, University of Michigan

Sponsor: Magnesium Committee

Instrumentation for Process Modeling and Validation

Scope: Accurate numerical modeling of operational systems requires proper validation, which is typically accomplished by comparing process measurements with calculated results. High-quality process data can be difficult to obtain, especially in systems that operate under hazardous conditions or use legacy equipment where implementation of modern instrumentation can be difficult. This special topic is intended to showcase proven methodologies for instrumenting processes, collecting data and actionably using it to validate and improve process models.

Editors: Matthew Zappulla, Los Alamos National Laboratory, and Alexandra Anderson, Los Alamos National Laboratory

Sponsor: Process Technology and Modeling Committee

Mesoscale Materials Science: Experiments and Modeling

Scope: This topic focuses on advanced mechanical testing, advanced characterization, enhancements in computational approaches, and integration of experiments and modeling for engineering the evolution of mesoscopic structures.

Editors: Saurabh Puri, Vulcan Forms Inc., and Amit Pandey, Lockheed Martin Space

Sponsor: Advanced Characterization, Testing, and Simulation Committee

Microstructural Evolution in Powder Processing

Scope: This special topic focuses on characterization of microstructural evolution during powder processing using single or combined methods involving classification, blending, thermal treatment, compaction, etc.

Editor: Zhiwei Peng, Central South University

Sponsor: Materials Characterization Committee