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JOM TECHNICAL TOPICS

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Health, Safety, and Environmental Sustainability in Aluminum Recovery

Scope: Nowadays, both the aluminum industry and scientific research are aiming to create a low-carbon, energy-efficient, and sustainable process with high health and safety standard. This topic covers recycling of aluminum (and its alloys), with a specific focus on managing the health safety and environmental issues for secondary aluminum production.
Editors: **Anne Kvithyld**, SINTEF, and **Hong Peng**, University of Queensland, Australia
Sponsor: Aluminum Committee

High Temperature Alloys: Manufacturing, Processing, and Repair

Scope: High-temperature alloys are crucial for allowing components in power generation and propulsion systems to operate at the highest possible temperatures and in extreme environments, for maximum efficiency. This topic explores advances in manufacturing, processing, and repair of high-temperature alloys, such as Ni- and Co- based superalloys, high entropy alloys, and refractory alloys. Areas of interests include advanced processing methodologies, novel manufacturing techniques, process-microstructure-property relationships, surface modification, repair, welding, and joining techniques.
Editor: **Benjamin Adam**, Oregon State University
Sponsor: High Temperature Alloys Committee

Interactions Between Biomaterials and Biological Tissues and Cells

Scope: This topic investigates the physical, mechanical, biological, and biochemical interactions between engineered biomaterials and biological tissues and cells. Topics of interest include but are not limited to biointerfaces, mechanobiology, biocompatibility, tissue compatibility, inflammatory responses, biodegradation, toxicity, tissue regeneration, protein-materials interactions, cell-material interactions, and biomimetic and bioinspired surfaces.
Editors: **Jing Du**, Pennsylvania State University; **Dinesh Katti**, North Dakota State University; and **Vinoy Thomas**, University of Alabama at Birmingham
Sponsor: Biomaterials Committee

Machine Learning and New Paradigms in Computational Materials Research

Scope: The field of computational materials science has been applying essential concepts of machine learning such as iteratively optimizing solutions, interpolating functions in high-dimensional space, and manipulating patterns in data, effectively since its inception. Recent developments in learning theory and practice, along with the proliferation of data and cheap computing, have resulted in promising new methods and enhanced embodiments of established techniques. This topic aims to showcase and review some of these developments.
Editors: **Sara Kadkhodaei**, University of Illinois Chicago; **Eva Zarkadoula**, Oak Ridge National Laboratory; and **James Morris**, Ames Laboratory
Sponsor: Chemistry and Physics of Materials Committee

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