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call for papers

***JOM* is seeking contributions on the following topics for 2021 and 2022. For the full Editorial Calendar, along with author instructions, visit www.tms.org/EditorialCalendar.**

December 2021

Manuscript Deadline: July 1, 2021

Topic: 2D Materials – Preparation, Properties & Applications

Scope: Since the discovery of graphene, interest in basic and applied research in 2D materials is on the rise. Challenges and opportunities continue to grow in the areas of process-property-performance correlations in 2D materials. Efforts to transfer technology from fundamental R&D to prototyping to manufacturing are being pursued rigorously on a global scale. Studies on carbon nanotubes, graphene, hexagonal boron nitride, perovskites, phosphorene, transition metal dichalcogenides, xenes (germanene, silicene, stanene) are of interest for this topic.
Editors: Nuggehalli M. Ravindra, Ramana Chintalapalle, Gerald Ferblantier, Sufian M. Abedrabbo, and Amber Shrivastava
Sponsor: Thin Films and Interfaces Committee

Topic: Advanced Casting and Melt Processing Technology for Light Alloys

Scope: This topic covers the newly developed or significantly improved casting and melt processing technologies applicable to light alloys. This may include advanced studies on the improvement of structure; optimization of phase composition, mitigation of casting defects as well as advances in casting and melt treatment technology. Also considered is the extension of the technology to recycled alloys. Both experimental and modelling studies will be considered, the latter requiring experimental validation.
Editor: Dmitry Eskin
Sponsor: Aluminum Committee

Topic: Advances in Processing, Manufacturing, and Applications of Magnetic Materials

Scope: We welcome the submission of papers on advances for synthesizing, processing, and characterization of magnetic materials including permanent and soft magnets, energy conversion, and multiferroic materials (such as magnetocaloric, magnetoelastic, magnetoelectric and magnetoresistive materials). Applications of interest include biological applications of magnetism, sensors and actuators, energy harvesting, motor-generators, transformers and inductors, and memory applications. Work on discovery, advanced manufacturing, processing and characterization techniques applied to the relevant magnetic materials and their applications, is strongly encouraged.
Editors: Scott McCall and Ikenna Nlebedim
Sponsors: Magnetic Materials Committee

Topic: Corrosion and Protection of Materials at High Temperatures

Scope: Papers on all aspects of high-temperature corrosion and protection of materials are invited. Examples of topics include oxidation in different atmospheres, molten salt corrosion, metal dusting, halogen attack, etc. Papers dealing with surface modification for high-temperature corrosion protection are also invited.
Editors: Vilupanur Ravi and Ramprashad Prabhakaran
Sponsor: Corrosion and Environmental Effects Committee

Topic: Surface Engineering for Improved Corrosion or Wear Resistance

Scope: Corrosion and wear are surface phenomena and therefore, surface engineering has been used to improve both properties. Coatings, surface alloying, gradient structures, nanocrystallization, and inhibitors have been applied to tailor the surfaces for improved corrosion and wear resistance. This special topic focuses on capturing recent advancements in: 1) surface engineering technologies to improve corrosion and/or wear resistance and 2) theoretical understanding of corrosion and/or wear behavior of the surfaces.
Editors: Tushar Borkar, Arif Mubarok, and Rajeev Gupta
Sponsor: Surface Engineering Committee

January 2022

Manuscript Deadline: August 1, 2021

Topic: New and Novel Laboratory and Pilot Techniques for Pyrometallurgy

Scope: Laboratory and pilot testing is critical for advancing our understanding of pyrometallurgical processes. Due to advances in analytical techniques and our understanding of pyrometallurgy, laboratory and pilot testing is advancing as well. This topic focuses on describing new and novel piloting and laboratory techniques, illustrating their use and the advances that have been made.
Editors: Stuart Nicol and Will Hanneman
Sponsor: Pyrometallurgy Committee

Topic: Technology Metals in the Circular Economy of Cities

Scope: The need for technology metals such as precious metals, rare earths, and minor metals (Sb, Co, etc.) will continue to increase. However, the recycling rate of these metals is inadequate. This special topic focuses on innovative recycling technologies that would improve recovery rate of these technology metals from municipal waste streams (MWSs). Manuscripts that address waste treatment and life cycle assessments pertaining to the (potential) recovery of technology metals from MWSs are welcome.
Editors: Fiseha Tesfaye, Joseph Hamuyuni, Chukwunwike Iloeje, and Alexandra Anderson
Sponsors: Recycling and Environmental Technologies Committee; Energy Committee; Process Technology and Modeling Committee

Topic: 4IR in Extractive Metallurgy

Scope: With the advent of the fourth industrial revolution, advanced digital technologies that facilitate engineering, design, optimization, and management are becoming increasingly pervasive across a wide range of industries. In extractive metallurgy, large processing plants often combine many unit operations together into highly complex and interdependent flowsheets, making them a rich field for potential application of 4IR technologies. This topic will explore past, present, and future research and development into the use of 4IR in the extractive metallurgy.
Editors: Chris Aldrich, Quinn Reynolds, and M. Akbar Rhamdhani
Sponsor: Pyrometallurgy Committee

February 2022

Manuscript Deadline: September 1, 2021

Topic: Characterization of Waste-Derived Materials

Scope: Papers are invited on the latest achievements in exploration of novel value-added materials derived from various wastes. In particular, papers on characterization and modification for those originated from mineral/metallurgical/material processing are welcome. Of interest are multifunctional slag/tailing-based materials with unique combinations of desirable thermo-mechanical-chemical performance for sustainable industrial and municipal applications.
Editors: Zhiwei Peng, Yunus Eren Kalay, Rajiv Soman, and Jian Li
Sponsor: Materials Characterization Committee

Topic: Artificial Intelligence and Machine Learning in Energy Storage and Conversion Materials

Scope: Artificial intelligence (AI) and machine learning (ML) have emerged as important tools for material scientists aimed at finding optimum solutions to complex scientific dilemmas. This special topic invites papers from industry, academia, and national labs that focus on AI and ML advances in field of materials design, characterization, and applications for energy storage and conversion.
Editors: Simona Hunyadi Murph and Surojit Gupta
Sponsor: Energy Conversion and Storage Committee

Topic: Bauxite to Aluminum: Automation, Data Analytics and New Processes

Scope: This topic covers automation and data analytics, fostered by developments and implementations of Industry 4.0, and also new processes or engineering technologies used throughout the primary aluminum production chain, from bauxite to aluminum. Papers are invited focusing on novel developments aiming to improve those processes, or on scientific/innovative approaches within these areas.
Editors: Jayson Tessier and Hong Peng
Sponsor: Aluminum Committee

Topic: Plasmonics in Nanocomposite Materials

Scope: Plasmonic nanocomposites are an emerging class of materials that integrate a plasmonic metallic nanoparticle with an assortment of other similar/dissimilar nanostructures leading to new multifunctional systems with improved functionalities and properties. This special topic will cover recent achievements in the design, fabrication, and application of plasmonic nanocomposites in different fields of science including material science, medicine, and industry, and it will cover their impact on global society.
Editors: Nasrin Hooshmand and Simona Hunyadi Murph
Sponsor: Composite Materials Committee