Explore the TMS2022 Proceedings Volumes

Megan Enright

Registrants of the TMS 2022 Annual Meeting & Exhibition (TMS2022) will have free, online access to the meeting's proceedings publications as a benefit of attending. For those who are unable to register for TMS2022, the proceedings volumes, as well as individual papers, can be purchased through the TMS Bookstore portal at www.tms.org/Bookstore. All 10 publications will be available by the start of the meeting.

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12th International Symposium on High-Temperature Metallurgical Processing

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12th International Symposium on High-Temperature Metallurgical Processing

This collection includes the analysis, development, and operation of high-temperature processes that involve the extraction and processing of material resources, production, and treatment of metals, alloys, and ceramic materials. Contributions describe innovative methods for achieving property enhancement, impurity segregation and removal, byproduct recovery, waste minimization, energy efficiency, and utilization of complex ores. Also included are various technical, economic, and environmental issues associated with commercial-scale high-temperature processing methods.

Characterization of Minerals, Metals, and Materials 2022

EDITED BY

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Characterization of Minerals, Metals, and Materials 2022

This collection focuses on the advancements of characterization of minerals, metals, and materials and the applications of characterization results on the processing of these materials. Advanced characterization methods, techniques, and new instruments are emphasized. Areas of interest include, but are not limited to: novel methods and techniques for characterizing materials across a spectrum of systems and processes; characterization of mechanical, thermal, electrical, optical, dielectric, magnetic, physical, and other properties of materials; characterization of structural, morphological, and topographical natures of materials at micro- and nanoscales; characterization of extraction and processing including process development and analysis; advances in instrument developments for microstructure analysis and performance evaluation of materials, such as computer tomography (CT), X-ray and neutron diffraction, electron microscopy (SEM, FIB, TEM), and spectroscopy (EDS, WDS, EBSD) techniques; and 2D and 3D modelling for materials characterization.

Furnace Tapping 2022

No pyrometallurgical smelter can operate without some form of tapping system. It is the one thing all smelters have in common. This collection discusses this meeting point of the science, technology, and skill involved in this process. The tap-hole design process includes a set of design criteria, which need to be revised as the results of laboratory, computational fluid dynamics (CFD), and time-and-motion studies become available. The tap-hole life cycle is considered in this volume, with authors addressing the requirements for installation and operability as well as for maintenance. Matters such as online monitoring of the tap-hole wear, handling of liquid products, and extraction of fumes are all discussed.

Light Metals 2022

The annual *Light Metals* volume has become the definitive reference in the field of aluminum production and related light metal technologies. The 2022 collection includes contributions from the following symposia: Alumina and Bauxite; Aluminum Alloys, Processing, and Characterization; Aluminum Reduction Technology; Aluminum Reduction Technology Joint Session with REWAS: Decarbonizing the Metals Industry; Cast Shop Technology; Electrode Technology for Aluminum Production; Primary Aluminum Industry – Energy and Emission Reductions: An LMD Symposium in Honor of Halvor Kvande; and Recycling and Sustainability in Cast Shop Technology: Joint Session with REWAS 2022.

Magnesium Technology 2022

Magnesium Technology 2022 is a definitive reference that covers a broad spectrum of current topics, including novel extraction techniques; primary production; alloys and their production; integrated computational materials engineering; thermodynamics and kinetics; plasticity mechanisms; cast products and processing; wrought products and processing; forming, joining, and machining; corrosion and surface finishing; fatigue and fracture; dynamic response; structural applications; degradation and biomedical applications; emerging applications; additive manufacturing of powders; and recycling, ecological issues, and life cycle analysis.

Metal-Matrix Composites: Advances in Processing, Characterization, Performance and Analysis

This collection brings together engineers, scientists, scholars, and entrepreneurs to present their novel and innovative contributions in the domain specific to metal-matrix composites and on aspects specific to processing, characterization, mechanical behavior, measurements, failure behavior, and kinetics governing microstructural influences on failure by fracture. Topics include but are not limited to: metals and metal-matrix composites; nano-metal based composites; and intermetallic-based composites. Contributions in the above topics connect to applications in industry-relevant areas: automotive; nuclear and clean energy; aerospace; failure analysis; biomedical and healthcare; and heavy equipment, machinery, and goods.

Rare Metal Technology 2022

This collection presents papers from a symposium on extraction of rare metals from primary and secondary materials and residues as well as rare extraction processing techniques used in metal production. Authors cover the extraction of less common or minor metals. Contributions also discuss rare metals of low-tonnage sales compared to high-tonnage metals. Authors also cover biometallurgy, hydrometallurgy, and electrometallurgy while novel high-temperature processes such as microwave heating, solar-thermal reaction synthesis, and cold crucible synthesis of rare metals are addressed. Also included in this collection is the design of extraction equipment used in these processes from suppliers as well as laboratory and pilot plant studies.

REWAS 2022: Developing Tomorrow's Technical Cycles (Volume I)

The papers in this collection explore the latest technical and societal developments enabling sustainability within our global economy with an emphasis on recycling and waste management. The 2022 collection includes contributions from the following symposia: Coupling Metallurgy and Sustainability: An EPD Symposium in Honor of Diran Apelian; Recovering the Unrecoverable; Sustainable Production and Development Perspectives; Automation and Digitalization for Advanced Manufacturing; and Decarbonizing the Materials Industry.

REWAS 2022: Energy Technologies and CO₂ Management (Volume II)

This collection, with authors representing industry, government, and academia, focuses on energy efficient technologies including innovative ore beneficiation, smelting technologies, recycling and waste heat recovery, and emerging novel energy technologies. The symposium also covers various technological aspects of sustainable energy ecosystems, processes that improve energy efficiency and reduce thermal emissions. Topics include renewable energy and combustion technologies; energy efficiency, decarbonization, and CO₂ management; and thermal management and hydrogen technology.

TMS 2022 151st Annual Meeting & Exhibition Supplemental Proceedings

This collection features papers presented at the 151st Annual Meeting & Exhibition of The Minerals, Metals & Materials Society. The contributions represent 71 symposia from the meeting.

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