Special Issue

Smelting Process of Metals

Message from the Guest Editors

Smelting remains the cornerstone of extractive metallurgy, transforming ores into pure metals through high-temperature chemical reduction. The topics of interest of this Special Issue include, but are not limited, to the following:

- Fundamental Mechanisms: Reaction kinetics, slag chemistry, impurity behavior, and phase equilibria in pyrometallurgical systems.
- Energy and Emissions: Strategies for carbon footprint reduction (e.g., hydrogen-based reduction and electrification), waste heat recovery, and emission control technologies.
- Process Optimization: AI-driven process control, refractory material advancements, and reactor design innovations for base metals (Cu, Ni, Zn, and Pb) and ferrous alloys.
- Circular Economy: Smelting of complex secondary resources (e.g., e-waste and tailings) and urban mining integration.
- Emerging Techniques: Novel approaches in flash smelting, suspension roasting, and hybrid hydrometallurgical–pyrometallurgical flowsheets.

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About the Journal

Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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