Special Issue

Microwave Treatment of Minerals and Ores: Heating Behaviours, Applications and Future Directions

Message from the Guest Editors

The numerous processing parameters and heterogeneity of ores cause complications in the development of feasible novel processes. The attempt to find an alternative means of providing microwave energy, such as via solid-state radio frequency (SSRF), is a new area of research. While the conversion of electrical to microwave energy is relatively inefficient in comparison to magnetrons, SSRF may be beneficial in microwave-assisted comminution via pulsing. This Special issue is organized into three sections:

- Section 1 Microwaves in mining: Advancements in the field of rock excavation at the mine face using microwaves include open waveguide systems and powerful numerical models.
- Section 2 Microwave pre-treatment in mineral processing: This includes studies involving microwave pre-treatment to assist in grinding, sorting, and other downstream unit operations such as flotation, gravity, electrostatic, magnetic separation, etc.
- Section 3 Microwaves in extractive metallurgy: Papers, where microwaves have been used to improve hydrometallurgy and/or pyrometallurgical unit operations, are welcomed.

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About the Journal

Message from the Editor-in-Chief

Minerals welcomes submissions that report basic and applied research in mineralogy. Research areas of traditional interest are mineral deposits, mining, mineral processing and environmental mineralogy. The journal footprint also includes novel uses of elemental and isotopic analyses of minerals for petrology, geochronology and thermochronology, thermobarometry, ore genesis and sedimentary provenance. Contributions are encouraged in emerging research areas such as applications of quantitative mineralogy to the oil and gas, manufacturing, forensic science, climate change, geohazard and health sectors.

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 18.2 days after submission; acceptance to publication is undertaken in 2.6 days (median values for papers published in this journal in the first half of 2025).

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