Special Issue

Recent Developments in Sensors, Machine Learning, Data Analytics, and Process Optimisation in Minerals Processing and Extractive Metallurgy

Message from the Guest Editors

Integration of advanced sensors and machine learning techniques is crucial in mineral processing and extractive metallurgy, especially considering the increasing demand for highly valued, precious, and critical metals and the production of big-scale processing equipment. Advanced sensors are required to maximise process efficiencies and avoid instabilities due to changing ore characteristics and concomitant process variables. Integrated machine learning, data analytics, and process optimisation strategies are also required for rapid decision making together with apt process control both at the micro and macro scales. This Special Issue is organised into three sections and invites contributions accordingly: Section 1: Advanced sensors, machine learning, and data analytics in the processing of various metal commodities. A critical focus will be on highly valued precious and critical metals;
Section 2: Advanced sensors, machine learning, and data analytics in the (bio)hydrometallurgical extraction of metals;
Section 3: Process optimisation and integration across the mineral processing and extractive metallurgy value chain.

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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 17.7 days after submission; acceptance to publication is undertaken in 2.6 days (median values for papers published in this journal in the second half of 2025).

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