Special Issue

The Application of Machine Learning in Mineral Processing

Message from the Guest Editors

Many opportunities and challenges exist for the application of machine learning in mineral processing. Recent research publications include data-based modelling, machine vision and fault diagnosis applications, but predominantly on simulated, laboratory scale, or (to a much lesser extent) historical industrial data. We would like to specifically invite contributions of machine learning applications in industrial contexts (opportunity identification from historical data, design of digital systems that include machine learning models/results and reporting on embedded industrialized machine learning solutions). To let machine learning provide sustainable value to the mineral processing industry, machine learning best practices from other fields need to gain traction in mineral processing machine learning research. Such best practices include partitioning of historical data into training/ validation/testing sets; discussions on hyperparameter sensitivity and selection; comparisons to simple models to ensure added value of complex models; domain knowledge guided interpretation of machine learning results; consideration of deployment practicalities, and cost–benefit analysis.

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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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