

Special Issue

Methods and Applications of Hyperspectral Imaging that Rapidly Identify and Differentiate Geological Minerals and Biominerals

Message from the Guest Editor

Mineral identification and characterization work has benefited in recent years from advances in spectral and hyperspectral imaging methods that provide compositional information at high spatial resolution. Imaging methods based on Raman scattering, infrared and near infrared absorption and reflectance, and X-ray fluorescence have been used to study the mineral composition in both geological and biological samples. While these advances have been transformative, many challenges remain. For example, the complexity of spectral shape variation due to sample heterogeneity, nonuniform illumination, noise, and system-based artifacts make it difficult to quantitate sample composition. These same agents ultimately decrease the reliability of qualitative results. While many spectral imaging methods have the advantage of not requiring sample preparation, the development of training samples that adequately encompass the range of variation encountered in samples is exceedingly challenging.

Guest Editor

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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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