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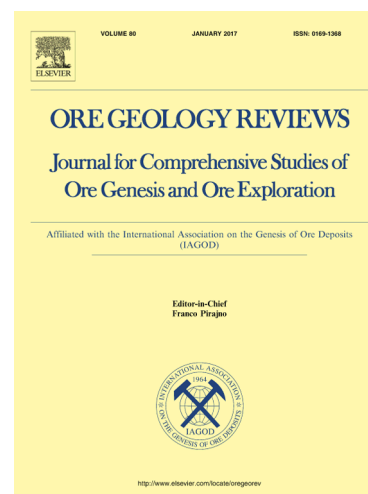
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**Application of SWIR Spectrometry to the Determination of Biotite
Compositions in Hydrothermally Altered units of
the Yangyang Iron-Oxide-Apatite (IOA) Deposit, South Korea**

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Abstract

The Yangyang iron oxide-apatite deposit in South Korea has gone through multiple events for igneous activity, structural evolution, hydrothermal alteration, and mineralization. Trioctahedral mica is indicative of potassic alteration in the Yangyang IOA deposit and its mineral chemistry is quite variable. The variability can be described in terms of biotite colors and short wavelength infrared (SWIR) reflectance spectra. Brown to greenish brown biotite displays lower values of Mg# (0.48–0.58) than green biotite (0.62–0.78), whereas colorless phlogopite related to Fe–P mineralization has the highest values of Mg# (0.85–0.95). To compare Mg# values with the positions and intensities of absorption in the trioctahedral micas, we used three types of spectrum: reflectance, hull quotient, and Gaussian. Brown biotite produces a short Mg–OH peak near 2340 nm, green biotite has a peak near

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