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Ganterite, the barium mica $Ba_{0.5}K_{0.5}Al_2(Al_{1.5}Si_{2.5})O_{10}(OH)_2$, from Oreana, Nevada

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ABSTRACT

The barium dioctahedral layer silicate, ganterite, was identified from the Lincoln Hill dumortierite deposit near Oreana, Nevada, based on electron microprobe, electron-backscatter diffraction (EBSD), and Raman spectrum microanalyses. This phase occurs with dumortierite, barite, and muscovite in a vein specimen formed by hydrothermal alteration. Back-scattered electron images of the muscovite from this locality show extensive zonation of the BaO content with regions of high Ba concentrations up to 15 μm in dimension. Electron microprobe analyses of these regions reveal a composition $(Ba_{0.53}K_{0.37}Na_{0.05})_{\Sigma=0.95}(Al_{2.00}Ti_{0.01})_{\Sigma=2.01}[Al_{1.51}Si_{2.49}O_{10}](OH)_2$ or, ideally, $(Ba_{0.5}K_{0.5})Al_2(Al_{1.5}Si_{2.5})O_{10}(OH)_2$. This composition corresponds to the recently described mica, ganterite. Complete solid solutions between muscovite and ganterite were observed that range from 0.60% up to 18.12 wt% BaO. The electron-backscatter diffraction and Raman spectra of this phase are essentially indistinguishable from those of muscovite confirming that ganterite has a mica structure.

Keywords: Ganterite, mica, barium, Oreana, Nevada