

## The occurrence of preiswerkite in a tourmaline-biotite-scapolite rock from Blengsvatn, Norway

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### ABSTRACT

We report paragenesis and chemistry of a new occurrence of the rare trioctahedral Al-rich sodium mica preiswerkite. The preiswerkite occurs in a tourmaline-biotite-scapolite rock in the contact zone of a gabbroic boudin surrounded by Proterozoic metasediments near the Blengsvatn, Bamble sector, southern Norway. The preiswerkite occurs as subhedral crystals or is intergrown with biotite in a polygonal fabric together with Cl-rich scapolite + tourmaline ± ilmenite ± plagioclase ± corundum. Accessory minerals are hematite, högbomite, spinel, allanite, apatite, and zircon, with relic calcite. Preiswerkite has the compositional range:

$(\text{Na}_{1.84-2.02}\text{K}_{0.02-0.10}\text{Ca}_{\leq 0.04})(\text{Mg}_{3.13-3.42}\text{Fe}_{0.63-0.77}^{\text{VI}}\text{Al}_{1.87-2.07})(^{\text{IV}}\text{Al}_{3.58-3.96}\text{Si}_{4.04-4.29}\text{S}_{\leq 0.02})\text{O}_{20}[\text{Cl}_{\leq 0.03}(\text{OH})_{\geq 3.97}]$   
and coexists with Na-Al-rich biotite, with the composition:

$(\text{K}_{1.38-1.61}\text{Na}_{0.18-0.45}\text{Ca}_{\leq 0.03})(\text{Mg}_{3.72-3.88}\text{Fe}_{1.38-1.43}\text{Ti}_{0.10-0.16}^{\text{VI}}\text{Al}_{0.63-0.85})(^{\text{IV}}\text{Al}_{2.71-2.93}\text{Si}_{5.07-5.29})\text{O}_{20}[\text{Cl}_{0.02}(\text{OH})_{\geq 3.98}]$ .

We suggest that the assemblage preiswerkite + biotite + tourmaline + scapolite ± ilmenite ± plagioclase ± corundum was formed during prograde or peak metamorphism in the area, at ~700 °C and 7 kb.