

## **Scheelite-powellite and paraniite-(Y) from the Fe-Mn deposit at Fianel, Eastern Swiss Alps**

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### **ABSTRACT**

Small syngenetic exhalative Fe-Mn deposits embedded in Triassic marbles of the Suretta, Starlera, and Schams nappes (Eastern Swiss Alps) were subjected to a Tertiary regional metamorphism under blueschist- to greenschist-facies conditions. In one of the deposits (at Fianel, Val Ferrera), this polyphase metamorphism led to the formation of quartz+dolomite veinlets containing beryl, scheelite-powellite, paraniite-(Y), monazite-(Ce), fluorapatite, bergslagite, fluor-roméite, and antimonian betafite; these veinlets crosscut dolomite breccia lenses that are embedded in hematite-quartz-carbonate ores. Scheelite-powellite displays a continuous range of compositions between 28 and 70 mol% CaMoO<sub>4</sub>; its As<sub>2</sub>O<sub>3</sub> contents range from 0.73 to 3.96 wt%, and are positively correlated with the Y<sub>2</sub>O<sub>3</sub> contents that vary between 0.33 and 2.47 wt%. The scheelite-powellite grains display a two-stage chemical zoning: stage A generally produced a core and a rim that, relative to the core, is richer in W, As, and Y. During the second stage (stage B), W-rich scheelite-powellite replaces stage-A grains along fractures and rims. Crystals of paraniite-(Y), ideally (CaWO<sub>4</sub>)<sub>2</sub>·YAsO<sub>4</sub>, occur as small inclusions (=1 μm) in stage-B scheelite-powellite. The Fianel deposit is only the second locality where paraniite-(Y) has been reported. The paraniite-(Y) from Fianel displays, like the type material, no polysomatic stacking fault in the scheelite-YAsO<sub>4</sub> layering. At Fianel, paraniite-(Y) is characterized by elevated Mo contents, and seems to have crystallized under influence of W- and LREE-rich fluids during stage B, i.e., during the metasomatic replacement of Y- and As-rich scheelite-powellite produced in stage A.