

Geology and geochemistry of the Fenghuangshan skarn Cu deposit at Tongling area, Anhui Province, East China

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The Fenghuangshan skarn Cu deposit at Tongling area, Anhui Province, is a component of the Middle-Lower Yangtze River metallogenic belt. The Xinwuli quartz monzodiorite and granodiorite related to mineralization at Fenghuangshan are intermediate-acidic intrusive rocks derived from alkali basalt of upper mantle and contaminated by crust materials during magma evolution. We carried out key study for this deposit. Geochemical features, ore-forming fluids and chronology have been studied to understand ore-forming mechanism. Carbon, hydrogen and oxygen isotopes indicate that ore-forming fluids in the deposit mainly are derived from the magma with input of minor amount of meteoric water at the late stage of the mineralization. Sulfur and lead isotopic analysis indicate that ore-forming materials are from the mantle source. Re-Os isotopic dating of molybdenite from the Fenghuangshan Cu deposit yielded an isochronal age of 141.1 ± 1.4 Ma with the model ages ranging from 139.1 ± 2.4 to 142.0 ± 2.2 Ma, which is consistent to zircon SHRIMP U-Pb ages of the related quartz monzodiorite and granodiorite. Dating analysis yielded ages of 136.0 ± 2.0 to 143.0 ± 2.4 Ma for the quartz monzodiorite (a weighted average of 139.4 ± 1.2 Ma) and ages from 136.7 ± 2.0 to 145.3 ± 2.4 Ma for granodiorite (a weighted average of 141.0 ± 1.1 Ma). These studies discuss that the relationship between mineralization and intrusion, helping to understand other skarn Cu deposits which have similar ore-forming settings.

Classification of gemstone tourmalines from Central Brazil by chemistry nomenclature

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Several handpicking mines were important gemstone sources, mainly tourmalines, during the 1970's and 80's in Tocantins State, Central Brazil.

The studied tourmalines exhibit a wide range of colours, black, dark and light blue, dark and light green, pink, purple and colourless, sometimes exhibiting zonation. Classification of tourmalines based on colour, for instance rubellite, indicolite, verdelite, was substituted by chemical nomenclature accordingly Henry *et al.* [1], based on crystal microprobe analysis and the cation distribution.

In colored crystals there are solid-solutions between four species, schorl, elbaite, liddicoatite and rossmanite. Dark-blue and dark-green crystals are examples of schorl-elbaite series; light green, pink and colourless are either elbaite-rossmanite or elbaite-liddicoatite series. Apparently, the calcic tourmaline liddicoatite occurs more frequently in pegmatites hosted in Ca-rich rocks, in a similar way of those from Anjanabonoina, Madagascar [2].

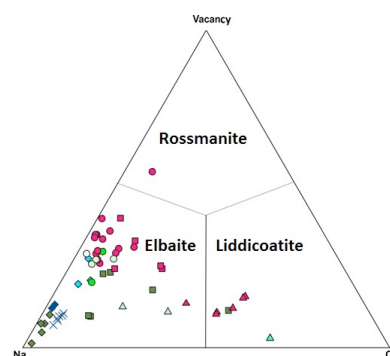


Figure 1: Colored tourmaline species by X site occupancy. The color of each data point is indicative of the color of tourmaline.

[1] Henry *et al.* (2011) *American Mineral.*, **96**, 895-913. [2] Dirlam *et al.* (2002) *Gems & Gemology*, **38**, 28-53.