

Comparison between Portuguese granites associated with Sn-W mineralizations and with Au mineralization

NEIVA, A.M.R. Department of Earth Sciences, Coimbra University, Coimbra, Portugal

In northern and central Portugal, cassiterite occurs mainly in granitic pegmatites, quartz veins and greisenized granites, while wolframite and scheelite occur in quartz veins and skarns. These ore deposits are mainly associated with S-type granites. At Jales and Gralheira, in northern Portugal, gold, electrum and auriferous silver occur as inclusions in sulphides, sulphosalts and quartz and also in veinlets cutting these minerals from hydrothermal gold-quartz veins. Silver was also found in tetrahedrite, freibergite and owyheeite from these veins which are associated with S-type granites.

These S-type granites are commonly two-mica granites and muscovite granites. They are Hercynian, peraluminous ($A/CNK \geq 1.1$) with $(^{87}\text{Sr}/^{86}\text{Sr})_0 \geq 0.708$, enriched in Rb, Li, F and impoverished in Ti, Cr, V, Ni, Sr and Ba. They contain ilmenite and are characterized by f_{O_2} lower than that of Ni-NiO. The Sn

content of tin-bearing granites generally ranges between 18 and 100 ppm and is mainly retained in micas and ilmenite. Locally, values of 519-806 ppm Sn were found in a microgranite containing cassiterite. W content is low, about 3 ppm. The granites associated with gold-quartz veins have up to 7 ppb Au and < 5-7 ppm Sn, but in related aplites and pegmatites Au reaches 1710 ppb and Sn 21 ppm. However in aplites and pegmatites related to tin-bearing granites, Sn content ranges between 18 and 220 ppm, but reaches 1250 ppm in greisenized granites.