

Li-DISTRIBUTION IN THE CENTRAL IBERIAN ZONE (SPAIN AND PORTUGAL): GEOLOGICAL IMPLICATIONS

E. Roda-Robles, A. Pesquera, P. Gil-Crespo, I. Garate-Olave
Dpto. Mineralogía y Petrología, Univ. País Vasco/EHU, Apdo. 644, 48080-Bilbao, Spain,

Lithium \pm Sn, Nb, Ta mineralizations are common in the Central Iberian Zone (CIZ) of the Iberian Massif (Spain and Portugal). These mineralizations mainly appear in aplo-pegmatitic bodies and, in a much lesser extent, in hydrothermal dykes with quartz and phosphates. The main Li-rich minerals occurring in these mineralizations are the silicates spodumene, petalite, and Li-rich micas, and the phosphates amblygonite-montebbrasite and triphylite-lithiophilite, whereas elbaite is only found as a minor mineral in a few localities.

Pegmatites are rocks commonly characterized by their coarse, sometimes giant, grain size, and by an internal zoning often with the development of a massive quartz-core. Pegmatitic bodies showing these features are not uncommon in the CIZ. However, the Li-richest bodies occurring in this region are texturally and chemically significantly different from these more “common” pegmatites. Most of these Li-rich bodies show an aplitic texture, frequently with the development of line-rock units, and no internal zoning. The Li-rich bodies usually show an important overall enrichment in this element in the whole dyke, with no evidence of internal fractionation. This suggests that the pegmatitic melts were already enriched in incompatible elements from their source. The most accepted model for the origin of the pegmatitic melts is derivation from granitic magmas, via igneous differentiation processes. The CIZ is characterized by extensive granitic magmatism. In its southern regions the Li-mineralizations seem to be mainly related to highly fractionated leucogranitic facies of late to post-tectonic, S-type, allochthonous granitic units. However, in the northern part of the CIZ the affiliation of the Li-rich rocks is more difficult to establish. The late to post-tectonic granites are less abundant, whereas syn- to late-tectonic, S-type granites are common. A petrogenetic relationship among the Li-aplo-pegmatites and these granites would imply a significant mobilization of Li along the Variscan orogeny in the CIZ, with the generation of quite similar Li-mineralizations associated with granites of different ages. Another possibility is that the Li-mineralizations occurring in the northern parts of the CIZ are just spatially related to the syn- to late-tectonic granitoids; no-outcropping, late to post-tectonic granites being the actual parental melts.