

P-Li-Be Bearing Pegmatites of the South East Brazil

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ABSTRACT

The P-Li-Nb pegmatites are located in the south of Brazil, in the states of Minas Gerais and Espirito Santos. They represent the largest pegmatite fields of Brazil and the richest in precious stones. Two types of pegmatites are characterized by their mineralogical characteristics and tectonic and magmatic relations. The first group occurred during a compressive deformation phase D1 about 582 Ma and 550°C - 700°C and 4 - 5 kb. The second pegmatites group was formed during the decompression phase D2 (520 - 500 Ma) of the Brasiliano metamorphic rock fusion. The geochemical parameters of the P-Li-Be bearing pegmatites of the first group show the same trend fractionation, as suggested by the mineralogical composition. The variation of tourmaline and columbite-tantalite composition of the first group again applies a change of melt composition during the regional development of the pegmatites. A systematic compositional trend seems to suggest a petrogenetic link between the pegmatites of the region. The Fe/Mn ratio of tourmaline in samples of the first group shows the same behavior as in columbite-tantalite and garnets. The simple pegmatites are transiting north in the gem-rich pegmatites. The Fe/Mn ratio not only shows qualitatively the fractionation index, the degree of regional development, but also the internal development of the body. The ratio shows a negative correlation with lithium. The Co, Zn and Nb contents are rising at first group, but falling when starting crystallization of garnet, columbite-tantalite, and Behierit.

KEYWORDS

Gem Rich Pegmatite; Phosphate; Li; Tourmaline; Beryl; Triphylite; Ferrisiklerite; Heterosite

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