

REE Mobility in Metasomatic and Anatectic Processes: The Emerald-Bearing Biotitites and the Pegmatoids of the Borrachudos Granitic Gneisses of Belmont and Capoeirana (Minas Gerais, Brazil).

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REE distribution patterns of emerald-bearing biotitite, of apatite coexisting with emerald, and of the banded Monlevade and Borrachudos granitic country gneisses of the emerald deposits of Capoeirana and Belmont reveal the genesis of the rocks. Low total-REE contents in biotitite result from a metasomatic reaction between REE-poor ultrabasic protoliths with REE-rich country gneisses. High HREE contents in apatite, LREE enrichment in coexisting emerald with low total-REE contents, and tetrad effects in both apatite and emerald indicate regional metamorphic remobilisation and precipitation processes in a fluid-rich system which is a prerequisite for the crystallisation of emerald.

Feldspar and calcite from an anatectic pegmatoid vein, found in the Borrachudos granitic gneisses from the quarry at Belmont emerald mine, are depleted in LREE and enriched in HREE as compared to the country rock. Such a depletion is typical of remobilised calcite and due to different REE mobility in fluid-rich systems. The HREE enrichment in the Borrachudos granitic gneisses is due to progressive medium to high grade regional metamorphism and anatexis which formed also a second emerald generation at Capoeirana.