

CHEMICAL CHARACTERISTICS OF BIOTITES IN POST-KINEMATIC GRANITES AND ASSOCIATED PEGMATITES OF NAGAMALAI-PUDUKOTTAI AREA, MADURAI DISTRICT, TAMIL NADU, SOUTH INDIA

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Abstract

Biotite is a ubiquitous mineral in granitoid rocks. Biotite composition in granitoids rocks is a useful tool to investigate and characterise the magma types and tectonic setting. The present study relates to electron microprobe analysis of biotites from A-type granites and the associated pegmatites of Nagamalai-Pudukottai area, Madurai block in the Southern Granulite Terrain. The biotites in both granites and pegmatites are Fe-rich. The Fe/(Fe+Mg) content in granites is higher than that in pegmatites. Higher Mg concentration is noticed in biotites of pegmatites. The Al^{VI} values of both the rocks are < 1 , indicating their magmatic nature. A low Ti content is also found in these rocks. The X_{Mg} value of biotites in granites and pegmatites is low. The low Ti and X_{Mg} values of biotites in both granites and pegmatites indicate prevalence of low oxygen fugacity and the origin of these biotites as products derived from a reduced magma. The high MgO content in the biotites of pegmatite may be due to the close association of hornblende. The petrogenetic diagram MgO-FeO-Al₂O₃, indicates an anorogenic tectonic setting for the emplacement of granites and pegmatites in the study area.

Keywords: Southern Granulite Terrain, Madurai Block, Biotite, A-type granite.