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MAFIC DYKES FROM THE BHAVANI SHEAR ZONE: EVIDENCES TO SUPRA-SUBDUCTION TECTONICS IN THE SOUTH INDIAN GRANULITE TERRAIN

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Abstract

The Bhavani Shear Zone (BSZ) of South Indian Granulite Terrain (SIGT) bears evidences of extensive magmatic activity ranging from acidic to ultramafic intrusives. The dykes belong to two sets (Group I and Group II dykes) with sub-alkaline to calc-alkaline nature and NE-SW or NW-SE trend. Group I belongs to high-Mg tholeiites while most of Group II show a high-Fe tholeiitic nature. Incompatible elements suggest a depleted mantle source for both the Groups and REE distribution indicates considerable fractionation and possible crustal contamination along with probable elemental mobility in the presence of an aqueous solution during high temperature metamorphism. Elemental ratios like K/P, La/Ta and Th/Ta are indicative of probable supra-subduction-mantle source characteristics. Tectonic discriminations imply MORB-CAB-IAT nature for Group I, while Group II dykes show MORB like signatures.

Keywords: Mafic dykes, calc-alkaline, sub-alkaline tholeiitic, MORB, supra-subduction, Bhavani Shear Zone.

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