

GEOCHEMICAL CHARACTERISTICS AND TECTONIC SETTING OF THE AMOLA GRANITE, WESTERNMOST BUNDELKHAND MASSIF, CENTRAL INDIA

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Abstract

The Precambrian age Bundelkhand massif is a composite body comprised of mainly felsic igneous rocks. On the basis of field relationship, two compositionally distinct suites have been identified i.e. an older grey granite-gneiss and the younger pink granite. The geochemistry of granite from the westernmost part of the massif shows that the younger pink granite is different from the older grey-gneiss as the pink granite is potassic in nature and has experienced a moderately high degree of fractionation. The large variations in incompatible elements such as Ba as compared to the compatible elements Ni and Co suggests that partial melting has played a dominant role in the evolution of the rock. The Y/Nb ratio in both the types of granites from Amola is greater than 1.2 and it has a low value of Y and Yb which is a characteristic of magma derived from sources chemically similar to an island arc. Amola granite exhibits fractionated LREE enriched and HREE depleted rare earth element pattern. All the samples of the older grey-granite gneiss plot in volcanic arc tectonic setting whereas the younger pink granites mostly correspond to syn-collisional granite and may have formed within an active continental margin setting as a result of collision tectonics with a few of them plotting near the boundary of Volcanic Arc Granite (VAG) and Within Plate Granite (WPG). The Bundhelkhand granite may have formed within an active continental margin as a result of collision tectonics.

Keywords: Bundelkhand massif, Amola, grey granite-gneiss, pink gravite.