

## **PETROGRAPHY, CLAY MINERALOGY AND GEOCHEMISTRY OF CLASTIC SEDIMENTS OF PROTEROZOIC BHIMA GROUP, EASTERN DHARWAR CRATON, INDIA: IMPLICATIONS FOR PROVENANCE AND TECTONIC SETTING**

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### **Abstract**

Mesoproterozoic Bhima basin is one of a series of Proterozoic basins that overlie the Archaean Dharwar craton of South India and is comprised of alternate clastic and carbonate sequences. In the present study, we have sampled clastic rocks from three stratigraphic horizons, and carried out mineralogical and geochemical study in order to constrain provenance and tectonic setting. Some samples show typical volcanoclastic textures and characterized by presence of cusped shaped glass, elongated quartz rods, bipyramidal quartz and sanidine feldspars. Predominance of smectite group clay minerals over illite, low CIA index (~70) and textural patterns suggest moderate weathering conditions under an active tectonic regime. Geochemical data suggest intermediate source rock composition for Bhima Clastic rocks (BC). The petrological and geochemical data collectively indicate derivation of clastic sediments from an exotic orogenic source and active tectonic conditions of deposition of BC. We propose that the NE-SW trending, linear Bhima basin might have opened as a strike-slip basin in a back-arc zone in a minor compressive to extensive regime behind the ~1.6 Ga Krishna orogen.

*Keywords:* Sedimentary geochemistry, provenance, tectonic setting, Bhima Basin, Dharwar Craton