

## **Geochemistry of Archean and Post Archean Sediments from Rajasthan and Karnataka: Evidence for Early Crustal Stability and Implications on Archean Proterozoic Boundary**

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The clastic enclave population from Peninsular Gneiss Complex (PGC) in Karnataka and Banded Gneiss Complex (BGC) of Rajasthan have been studied for their major, trace and REE geochemistry. Similar studies have also been carried out for clastics of younger Bababudan Schist belt (BSB) in Karnataka and Paleoproterozoic Aravalli/ Jahajpur fold belts of Rajasthan. The Archean Sargur supracrustals of Karnataka are characterized by slight enrichment of LREE  $(La/Sm)_N$  ranging from 0.39 to 3.58 and  $Eu/Eu^*$  vary between 0.49 to 0.91. The clastic sediments from the basal conglomerates and overlying quartzite's of BSB exhibit enrichment of  $(La/Sm)_N$  from 2.66 to 7.07 with significant Eu depletion and  $Eu/Eu^*$  ratio ranging from 0.34 to 0.85. The BSB sediments are enriched in Th, U and HFSE like Zr, Hf, Hf and Y. These geochemical signatures signify the dominance of mafic-ultramafic provenance for Sargur supracrustals and Tonalite-Trondjemite-Granite (TTG) for the BSB. Thus in terms of geological setting the gold-uranium bearing oligomict conglomerate occurring at the base of BSB has striking resemblances to Quartz Pebble Conglomerate (QPC) defining the Archean Proterozoic Boundary of Witwatersrand in South Africa.

On the other hand the geochemistry of clastic rocks from the enclaves of Neoproterozoic BGC and Paleoproterozoic Aravalli/ Jahajpur groups of Rajasthan do not exhibit any wide variations. It is possible that the so called enclaves may sensu stricto represent small shallow basin fills occurring as embayments of the linear Aravalli/ Jhajpur rift basins. These were perhaps detached from the main basin due to later orogenic movements and presently occur as dismembered lithopackage within BGC. This is further supported by the field evidence where primary bedding in these enclave suite of quartzite is still retained and they have no imprints of migmatization or deformations as suffered by the host gneisses. Moreover many basic dykes piercing through the host migmatites, terminate against the enclave suites, suggesting that the latter are either tectonic slivers or younger basin fills. Therefore the rigidity, cratonization process, vis-à-vis stratigraphic position of APB and their crustal components, differ in southern and northwestern parts of Peninsular shield.