

## THE KERALA KHONDALITE BELT. S. INDIA: PETROLOGY AND TECTONICS

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The Kerala khondalite belt (KKB) is one of the large sequence of granulite grade supracrustal rocks in Southern India. By similarity of regional geological setting and field relationship, KKB appears to be a probable north western extension of Sri Lankan high land series. A wide range of rock types made up of garnet-biotite+graphite gneiss, garnetiferous charnockite, khondalite (garnet-sillimanite-biotite-graphite + cordierite), cordierite gneiss ( $\pm$  orthopyroxene), quartzites, calc-silicates and basic granulites, occupy the belt. Arrested conversion of biotite gneiss to charnockite is seen through out the KKB. Northern and Southern boundaries of KKB are terminated at the contact with non garnetiferous massive charnockites. The understanding of nature of protoliths of supracrustals of KKB and massive charnockites and their tectono-metamorphic relations are important problems in the Precambrian geology of Southern India.

The major lithologies of KKB are interlayered both on outcrop and map scale. The protoliths of KKB appear to be pelitic to semi pelitic sediments and sand stones with calcareous units. The peraluminous composition, rounded zircons, presence of graphite support metasedimentary origin. The lower ratios of MgO/FeO and Ni/V are suggestive of sialic source region.

The sequence of events in the development of KKB, worked out based on field and laboratory studies, suggest derivation of protoliths of KKB from high lands dominated by rocks of 'granitic' composition (pre metamorphic equivalent of massive charnockites); deposition in a cratonic rift basin; uniform burial of sediments, as indicated by relatively uniform P-T of 5-7 kbar and 650-850°C over a vast area; migmatization accompanied by deformation; paracharnockites and cordierite symplectites development with isostatic uplift.