KHONDALITE-CHARNOCKITE ASSEMBLAGES OF SOUTH KERALA, INDIA: MAJOR ELEMENT GEOCHEMISTRY- P-T ESTIMATES AND IMPLICATIONS ON THERMO-TECTONIC EVOLUTION OF THE REGION

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ABSTRACT

The khondalite-charnockite terrain of south Kerala,south of the Achamkovil shear zone presents field and textural evidences of a major episode of granulite facies metamorphism, possibly during late proterozoic times. However, arrested charnockite development also indicates existence of granulite facies P-T conditions at a later period in an atectonic environment, and there exists a difference in field and age relations and geochemical features of arrested charnockite and charnockite enclaves in garnet-quartz-feldspar neosomes. Major element geochemistry of various lithological units of the south Kerlala rocks attriubutes a sedimentary parentage for the khondalites cordierite gneiss and arrested charnockite while it is equivocal in respect of charnockite enclaves in garnet-quartz-feldspar neosomes. P-T estimates of 750 $\pm$ 50°C and 5$\pm$1 Kb for most of the lithological units is consistent with other reported values for these rocks from south Kerala while the slightly higher pressure value of 7kb for the charnockite enclave may be suggestive of its formtion at a deeper crustal level, waranting further detailed studies. Field observations, the available carbon isotope ratios of graphite mineralization of south Kerala and fluid inclusion data are indicative of the major granulite facies metamorphism to have been brought about by a combination of melt removal and concomitant 'CO_2 -streaming from an internal buffering system.