

MULTIPLE GRANULITE FACIES OVERPRINTING & PARTIAL MELTING IN A COMPRESSIONAL OROGEN

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The Eastern Ghats granulite terrane along the east coast of India represent a compressional orogen, as documented by detail structural investigations in several sectors. Structural studies have also demonstrated overprinting relations in abundance. Recent petrological studies have also highlighted multi-stage and / or multiple granulite facies event. Most importantly, a prograde P – T path in the northeastern sector (see abstract by Kar, R) related to second deformation, demonstrates at least two temporally distinct granulite facies events. Earlier, three phases of penetrative deformation and structural overprinting relations were documented from this granulite terrane. Recent field, petrological and geochemical investigations have revealed temporally distinct deformation related, dehydration melting events in basic, pelitic and quartzofeldspathic rocks generating charnockitic, peraluminous granitic and leucogranitic melts respectively. Isotopic results from the relevant rocks is compatible with the multiple overprinting and partial melting scenario envisaged here. The first deformation-cum-granulite-cum-partial melting is indicated by ~3.0 Ga zircon age of charnockite massif; the second event is indicated by ~1.7 Ga Sm-Nd age of metapelite-granite and a relict 1.7 Ga zircon from migmatized patchy charnockite and the third event, represented by leucogranite veins and charnockitic pods along F3 related shear fractures, is indicated by ~ 1.0 Ga zircon ages commonly recorded from migmatitic granitic and charnockitic rocks as well as Rb-Sr errorchron from pelitic-granitic rocks.