

EVIDENCE OF METAMORPHIC REWORKING FROM THE EASTERN GHATS GRANULITE BELT, INDIA.

RAJIB KARGSU, ISI, 203 B T ROAD, CALCUTTA 700 035, INDIA

The Eastern Ghats granulite belt, along the east coast of India, is characterised by polyphase deformation and development of pervasive foliations. A three-phase folding has been described from several sectors, however, two early ones (F1 and 2) are regionally extensive and produced pervasive foliations (S1 and S2) in the dominant lithologies – metapelites and charnockitic gneisses. Moreover, multi-stage P-T-t path has been described; the lowest P-T record ~600C, 4-4.5kbar lies still within granulite-facies conditions. An up-pressure cum heating prograde reaction in the metapelites in S2 dominated domains is indicated by profuse garnet growth, Alm76 (core) to Alm79 (rim), replacing ilmenite, sillimanite and quartz and magnesian garnet overgrowth (Alm75) on relict S1 garnet (Alm79). Similarly, garnet porphyroblasts, Py21 (core) to Py23 (rim), with clinopyroxene and plagioclase inclusions in the charnockitic rocks depict the prograde reaction. The P-T trajectory from 590C, 6kbar to 650C, 7.2kbar marks the prograde cycle. Following the prograde reaction, decompression cum heating (~720C) sense is indicated by growth of ilmenite, sillimanite and quartz on garnet, Py20 (core) to Py23 (rim), in metapelites and replacement of garnet by clinopyroxene, XMg79 (near) to XMg75 (away), and plagioclase in charnockitic rocks. The early granulite event associated with S1 follows a post-peak IBC from 950C at 9.5kbar to 600C at 8.5kbar followed by ITD (8.5 to 6kbar). Most importantly, the prograde cycle reaching higher temperatures delinks this from the earlier (S1) cycle. Thus, at least two temporally distinct granulite facies imprints are documented from the Eastern Ghats, indicating metamorphic reworking.