

development of major shear belts in the area. As a result of shearing and pegmatitic activity, the original dark, greenish-grey colour of the charnockites is lost with the concomitant breakdown of pyroxene to give rise to hornblende. Geochemical studies suggest enrichment of certain elements like SiO_2 , TiO_2 and K_2O and Sr, and depletion of MgO , Cr and Ni suggesting mobility of elements during retrogression of charnockites. A change in the fluid regime from the early carbonic stage during charnockite formation to $\text{CO}_2\text{-H}_2\text{O}$ to late aqueous inclusions was recorded from the study of fluid inclusions. The early carbonic inclusions show higher density of 0.91 g/cm^3 , indicating a pressure of entrapment at the order of 4–5 kb at 700°C . The change from this high density to very low density (0.6 g/cm^3) CO_2 -rich inclusions along sheared and retrogressed areas around Madukkarai suggest a drop in fluid pressure at the order of 1.5–2 Kb. Similar observations have been made in the northern part of the area, for e.g. in Nilgiri granulite terrain. High density (1.076 g/cm^3) CO_2 -rich inclusions which predominate in Nilgiris⁸ show a change in density to 0.700 g/cm^3 during shearing and retrogression along Bhavani shear belt. Such features may be related to the shearing, upliftment and erosion of the granulite terrain probably during Proterozoic times. Thus, during retrogression, apart from the substantial decrease in the density of CO_2 -rich inclusion, the composition of the fluids also

changed. The source for these aqueous fluids is the numerous pegmatites which cross-cut charnockites.

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