# GEOLOGY AND STRUCTURE OF THE PUNALUR - ACHANKOVIL SECTOR: IMPLICATIONS FOR THE EVOLUTION OF THE ARCHAEAN GRANULITE TERRAIN OF SOUTH INDIA

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The Punalur-Achankovil sector is a southwestern segment of the high grade granulite terrain of south India. It is characterised by charnockite and garnet-biotite-quartz-feldspar gneiss with minor sillimanite and graphite bearing gneiss and basic granulite. Structurally, the terrain has undergone three phases of intense deformation and metamorphism and a late less intense deformation similar to those in the Eastern Ghat belt of India and in the Fyfe Hills (part of tre Napier Complex) of Antarctica. Circumstantial evidence shows that the early deformations are of Archaean age whereas the later non penetrative deformation is of Late Proterozoic-Early Palaeazoic age. The first deformation ($D_1$) has disrupted original depositional layering with development of quartzo-fel[1]dspathic band; the accompanying metamorphism (M) $_2$is represented by high granulite facies sillimanite-bearing gneiss and basic granulite, The second deformation ($D_2$) resulted in isoclinal folding of the quatzofeldspathic bands and the corresponding metamorphism ($M_2$) produced large neosome now represnted by garnet-biotite-quartz-feldspar gneiss. Lithologies representing the $D_3$-$M_3$ event developed under slightly lower grade granulite conditions then $M_1$ and $M_2$; open to tight nasymmetric folds are characteristic of this deformation, The final deformation ($D_4$) is ctha-eracterised by less penetrative open folds, Charnockite has developed, coeval with $D_3$-$M_3$ event, within the gneiss as well as the basic granulite under anhydrous conditions achieved by the removal of partial melts rather than by '$CO_2$ flushing.'