

## **P-T conditions and fluid inclusion study of the M.M. Hill granulites, Karnataka, Southern India**

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The M.M. Hill granulites are composed of medium- to coarse-grained charnockites (qtz + plag + kfs + gar + opx + bio ± cpx), basic granulites (plag + cpx + gar + opx + hbl ± qtz) and pyroxenites (opx + cpx + hbl). They are interbanded with metasediments like pelites (qtz + kfs + bio + plag + gar + sill + cord ± grap), ironstones (qtz + mag + gar + grun + opx) and calc-silicates (cal + dol + cpx + hbl ± gar). These are cut by late dolerite dykes.

All the lithological units were metamorphosed to granulite-facies conditions around 2.5 b.y. (?) ago. Metamorphic conditions evaluated for the charnockitic and pelitic assemblages indicate temperatures of  $810 \pm 40^{\circ}\text{C}$  and pressures of 6.5 to 7.8 kb. Microthermometric data and Laser-Raman analyses of fluid inclusions in quartz and garnet grains show presence of pure CO<sub>2</sub> inclusions. The density of CO<sub>2</sub> inclusions increases in order of increasing deformation from 0.93 to 0.97 g/cc in garnet, 1.03 g/cc in qtz I (occur as inclusions in garnet) and 1.11 g/cc in qtz II (strained quartz in the matrix).

The occurrence of coronitic garnet around orthopyroxene in charnockites, cordierite rims around garnet in metapelites and the presence of high-density CO<sub>2</sub> inclusions in qtz II indicate that cooling and decompression of the granulite complex took place along a counterclockwise P-T path.