



High- P - T early Palaeoproterozoic metamorphism in southern India

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ABSTRACT

Southern India is comprised of granulite facies metamorphosed crustal blocks, separated by crust penetrating shear zones that have experienced a diverse tectonothermal history from the Archaean to Cambrian. The early Palaeoproterozoic metamorphosed Salem Block in southern India preserves felsic and mafic gneisses ideal for investigating the aerial extent of the preserved Archaean-Palaeoproterozoic southern Indian crust and the metamorphic rock record in the Archaean-Palaeoproterozoic transition. U-Pb zircon, *in situ* monazite geochronology and zircon REE analysis obtained using Laser-Ablation Inductively-Coupled-Plasma Mass-Spectrometry (LA-ICP-MS), and *P-T* phase equilibria and average *P-T* conventional thermobarometry calculated using THERMOCALC from the Kanja Malai Hills, demonstrate that the Salem Block extends south to at least the northern Palghat-Cauvery Shear System. Peak *P-T* estimates of ~800-850 °C and 14-16 kbar at *ca.* 2490 Ma were attained in the southern Salem Block and suggest decompression followed peak metamorphism. The *P-T-t* constraints in the southern Salem Block are anomalously high pressure compared to other Archaean-Palaeoproterozoic metamorphic events and require thermal regimes that are typically generated in convergent plate margin settings.

Keywords: Southern Granulite Terrane, Salem Block, metamorphism, LA-ICP-MS, U-Pb geochronology, Palaeoproterozoic.

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