Tectono-Metamorphic Evolution of Southern Granulite Terrain, South India: Geochronological Constraints

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Southern Granulite Terrain (SGT), in southern India is believed to have participated in several orogenic events during Late-Archean to Late-Proterozoic as manifested in exposures of multi-deformed and poly-metamorphosed lower crust, transected by several crustal scale shear zones. Several recent geochronological studies of southern granulite terrain largely yielded the evidences of a prominent event during Late-Proterozoic probably related to the culmination of Gondwana assembly. However the complete tectono-metamorphic evolution of SGT starting from Archean has still remained to be understood.

We have undertaken a systematic geochronological study across Cauvery Shear Zone CSZ) in northern part of Madurai block of SGT using multi-chronometers, some of those results have been presented earlier [1,2]. Our results and that of the other studies indicate that there has been widespread equilibration of most of the radio-isotope systems at ~2.5 Ga across the CSZ. We interpret that there has been simultaneous magmatism and metamorphism at this time. While the new crust was being generated to the south of CSZ the older crust was being metamorphosed to the north of CSZ at ~ 2.5 Ga ago. Our studies further reveal that there have been at least two more events of regional metamorphism, at ~880 Ma and ~540 Ma ago within SGT. Though ~540 Ma is supposed to be at the time of final stage of Gondwana assembly, we here propose that this tectono-metamorphic event caused lower grade metamorphism compared with the earlier events.

Keywords: Southern Granulite Terrain; Geochronology; Cauvery Shear Zone; Tectonics; Metamorphsim;

References

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