

## **Evidences for Mesoarchean subduction, collisional and accretionary events from the Mercara Suture Zone between Southern Granulite Terrain and Western Dharwar Craton, southern India**

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The Mercara Shear Zone is sandwiched between the Western Dharwar Craton and the Coorg Block of the Southern Granulite Terrain. The shear zone includes metaigneous suite and metasedimentary rocks. The present study brings out novel data on the geochemistry, P-T, geochronology (from Zircon U-Pb) and the genetic history (from Lu-Hf systematics) of the Mercara Shear Zone. The whole rock geochemical data from the magmatic suite implies an arc magmatic formation through subduction, whereas the metasedimentary rocks represent volcano-sedimentary trench sequences accreted onto the continent. The thermodynamic modeling suggests high-grade metamorphism in the terrain. The zircon U-Pb age data from the metaigneous suite gives crystallization ages between 3.1 Ga to 3.2 Ga, whereas the detrital zircons from the sedimentary sequences provide an age range of 3.1 Ga to 3.5 Ga. The metamorphic overgrowths in the zircons ca. 3.0 Ga indicate the collisional event timing. Hf isotope features indicates magma derived from juvenile sources and the Lu-Hf model ages suggest the crust building might have also involved partial recycling of basement rocks as old as ca. 3.8 Ga. Thus it envisages that the Mercara Shear Zone a possible suture formed as a collisional event between the Coorg Block and the Western Dharwar Craton in the southern peninsular India.