

Hook-shaped type-3 superposed fold in granulite, Badarama complex, Rengali province, India



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Photograph description

An eye-catching hook-shaped fold in the granulite of Badarama Complex, Rengali Province (Crowe et al. 2003; Dobmeier and Raith 2003) is sandwiched between North Odisha-Singhbhum Craton (NOSC) to the north and the Eastern Ghats Mobile Belt (EGMB) to the south. Badarama complex mountains expose high grade granulite facies rocks essentially charnockites, pink granitic gneiss, and mafic granulite with minor association of pelitic gneiss surrounded by low-medium Palahara Complex and medium grade Kansal Complex (Crowe et al. 2003). Deformational pattern of Rengali Province shows WNW–ESE structural trend detached from adjacent surrounding provinces by major Northern Barakot shear zone and Southern Kerajang fault zone (Crowe et al. 2003). The Type-3 superposed folding pattern (e.g., Fossen 2016) is produced by interference of two generations of folding: where F_1 and F_2 fold axial planes are orthogonal to each other, but F_1 and F_2 axes are parallel. The first phase gives rise to tight/isoclinal fold and the second phase generating open to tight fold (see inset sketch). The hook-shaped fold of Badarama complex reveals two generations of deformation preserved in the granulite gneissic terrain. Recently, the phrase ‘hook-geometry’ has also been used to describe superposed shear related complicated structures as well (Mukherjee 2013, 2015; Mukherjee and Koyi 2010, etc.). We emphasize

here that this Geosite is a classical hook folding, and not a superposed shear product. This fold is located close to Bhulki village, central part of Badarama Complex (Rengali Province, India). The foliation of gneissic layer is $65^\circ/75^\circ\text{NW}$ and fold axes lineation are $72^\circ \rightarrow 65^\circ$. Location: $21^\circ 19' 42''\text{N}$, $84^\circ 23' 13''\text{E}$. Photograph by Anil Kanta Champati, Indian Institute of Technology Bombay.

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