

Monazite geochronology from the Himalaya and Bundelkhand craton and geodynamic significance

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Bouger anomaly data have revealed fault bounded ridges of Bundelkhand and Aravalli craton extend till the southern part of the Himalaya [1]. Such findings imply the northern boundary of the Bundelkhand craton is probably extended below the Himalayan belt. In spite of all the indications from zircon ages [2], the question lies what and where are the Precambrian components from Bundelkhand craton in the Himalyan belt? In this contribution, we are addressing this problem based on monazite geochronology from meta-sedimentary rocks in parts of the Himalaya and Bundelkhand craton, India.

Near Wangtu, India, mica schists interbedded with mafic schist is the dominant lithology at Lower Himalaya-Higher Himalaya interface. In-situ U-Th-Pb_{total} dating of monazite exhibit three age cluster. The oldest ages, 1701 ± 63 Ma, is obtained from a group of ~ 40 μ m sized monazites with ThO₂ < 3 wt%. A predominant set of monazites with the long axis oriented parallel to the biotite defined regional foliation yeild ages between 1455 ± 30 Ma to 1256 ± 30 Ma. A mean age 505 ± 12 Ma is obtained from another group of monazites randomly dispersed along the regional foliation.

Monazites from Banded Iron Formation in Bundelkhand craton also exhibit three age clusters [3]. The oldest ages, i.e., 3135 ± 84 Ma is obtained from monazites having ThO₂ content < 6 wt%. The second group of monazites yields an age of 2504 ± 28 Ma. The third group of monazites yields ages between 2104 ± 44 to 1269 ± 140 Ma.

The overlapping ages, i.e., 1523 ± 12 Ma from the Himalaya and 2104 ± 44 to 1269 ± 140 Ma ages from Bundelkhand craton implies that the crust beneath the Himalaya and in Bundelkhand craton has suffered metamorphism in a nearly similar time frame and is probably continuous.

[1] Kaur *et al.* (2013) *Gond. Res.* **16**, 1040–1052. [2] Miller *et al.* (2000), *Precam. Res.* **103**, 191–206. [3] Raza *et al.* (2019), *Goldschmidt 2019*, this volume.