

## **Petrogenesis of A-Type Granitoids in the Chotanagpur Granite-Gneiss Complex (CGGC): Evidence for Mesoproterozoic Crustal Extension in the Indian Shield**

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Ferroan A-type granitoids are commonly thought to be formed during high temperature melting of crust or fractionation of mantle melt in the zones of continental extension [1]. Hence, formation of A-type granitoids is deemed to be a marker of super continent break-up. In the north-eastern part of the Chotanagpur Granite Gneiss Complex (CGGC), a suite of A-type granitoids show extreme iron enrichment ( $Mg\#0.10$ ) with high concentration of alkali elements and HFSE. Trace element modelling coupled with Zr content of the rocks suggest that the A-type granitoids were dominantly produced by low-pressure anhydrous melting of middle- to lower-crust at temperatures above  $900^{\circ}\text{C}$ . U-Pb zircon geochronology dates their igneous crystallization to *ca.* 1450 Ma, while Lu-Hf isotope systematics suggests that their preceding magmas were sourced from melting Palaeoproterozoic crust with limited contribution of contemporary depleted mantle material. Combining all this information, it is proposed that extension and melting of the Palaeoproterozoic basement of the CGGC, triggered by mantle upwelling during the break down of Columbia Supercontinent, was responsible for the formation of the A-type granitoids.

[1] Frost & Frost (2011) *Journal of Petrology* **52(1)**, 39-53