

Frist report of Paleoproterozoic HP/LT metamorphism from Bastar Craton, India

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HP/LT metamorphism is typical in modern type plate tectonism, although rare in Precambrian supercontinent assembly due to high geothermal gradient. At the eastern margin of a Bastar craton, India, a small lenticular unit of meta-sedimentary rock is composed of chlorite, mica (Si 3.1-3.5 p.f.u 11O), Fe-Mg carpholite, with volumetrically subordinate K-feldspar, kaolinite, quartz. Alternate domains of quartz + K-feldspar aggregates and mica (I) ± chlorite aggregates impart penetrative foliation (S₁) in the studied sample. Locally, S₁ is folded with development of axial planer Si rich mica (II) ± carpholite bearing fabric. Monazite occurs as discrete grains within the S₁ and S₂ foliation. P-T pseudosection suggest mica (I) ± chlorite rich domain (S₁) developed at pressure (P) = 0.2-0.3 GPa and temperature (T) = 300-320°C. Phase topologies in the P-T pseudosection [1] aslo suggest the rock has experienced peak metamorphic condition (M₂) at pressure (P) = 1.5-1.7 GPa and temperature (T) = 300-320°C. Insitu U-Th-Pb dating of monazites exhibit two distinct age populations. The oldest age (2148.24 ± 188.11 Ma) obtained from the monazite grains with S₁ foliation is correlated with the LT metamorphism in the Bastar craton. Monazite grains within S₂ foliation yield age 1515.31 ± 47.017 Ma is correlated with HP/LT metamorphic event during formation of Columbia supercontinent [2].

[1] Connolly (2005) *EPSL* **236**, 524–541. [2] Rogers & Santosh (2002) *Gondwana Research* **5**, 5–22.