

CUDDAPAH URANIUM PROVINCE, ANDHRA PRADESH ROLE OF BASEMENT GRANITES, TECTONISM AND GEOCHEMISTRY

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Abstract

The Cuddapah Uranium Province encompasses two economically viable genetic types of uranium deposits as the carbonate-hosted stratabound uranium deposits around Tummalapalle-Rachakuntapalle area, and the unconformity-proximal type in basement granitoids and overlying Srisailem/ Banganapalle quartzite in the Lambapur-Peddagattu-Chitrial-Koppunuru area. Besides, the basin characteristically hosts important occurrences, of fracture controlled uranium mineralisation in Gulcheru quartzite near Gandhi and in basement granitoid around Lakkireddipalle-Rayachoti; shear-controlled along the thrust eastern margin of Cuddapah basin in basic metavolcanics and schists at Gudarukoppu and Kasturigattu. In the northern part of the basin, uranium deposits of Lambapur, Peddagattu, Chitrial, and Koppunuru area characteristically show association of ore bodies along structures formed by intersection of prominent basement fractures with the unconformity separating Srisailem and Palnad sediments from the basement. In the southwestern part of the basin, potential carbonate-hosted, stratabound uranium mineralisation extends over a 160 km long belt from Chelumpalli to Maddimadugu with large-tonnage, low-grade, uranium deposits in Tummalapalle-Rachakuntapalle area. The unconformity-proximal and fracture controlled deposits/prospects characteristically share a common source for uranium, repeated tectonism, weathering of the basement granitoids and episodic, epigenetic hydrothermal processes of uranium mineralisation. This paper evaluates the role of granitoids spatially and temporally associated with uranium mineralisation in making the Cuddapah Basin a unique uranium province.

Keywords: Cuddapah Basin, Uranium Mineralisation, Granites, Tectonics, Geochemistry