

**GEOCHEMISTRY AND Sr AND Pb ISOTOPE SYSTEMATICS OF
BASEMENT GRANITOIDS FROM NORTH AND WEST OF
PALNAD SUB-BASIN, GUNTUR AND NALGONDA
DISTRICTS, ANDHRA PRADESH**

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Abstract

Basement granitoids exposed around Palnad sub-basin exhibit metaluminous, calc-alkaline nature and belong to adamellite–granodiorite–tonalite suite. They show wide variation in FeO, CaO, TiO₂ and P₂O₅ contents with an overall predominance of sodium over potassium. Besides, predominance of LREE over HREE, fractionation among LREE and strong negative Eu anomalies point towards evolved nature of granitoids. In Zr+Nb vs. Rb plot, they fall in VAG field while R1–R2 diagram exhibits their development in late orogenic–post collisional geotectonic environment in active continental margin setup. A radioactive granite phase could also be distinguished exhibiting potash rich and peraluminous nature with higher degree of differentiation, high Rb/Sr and U/Th ratios. Positive correlation of U with K and Rb suggest that uranium is concentrated in the potash-rich phases. These basement granitoids have indicated comparable Rb–Sr (2659±120 Ma) and Pb–Pb (2638±94 Ma) isochron ages probably indicating the time of their emplacements while the initial ⁸⁷Sr/⁸⁶Sr ratio of 0.7012 suggests depleted upper mantle source. However, the radioactive granite sample has shown Pb–Pb age of ca. 1545±140 Ma with model $\mu_1=8.3\pm 1.4$ and MSWD= 55. This younger Pb–Pb age with high MSWD value is presumably due to the local redistribution of U and Pb and is indicative of a younger reactivation event in the study area.

Keywords: Basement Granitoids, Geochemistry, Sr and Pb isotope systematics, Palnad sub-basin.