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LATE ARCHAEOAN - PALAEOPROTEROZOIC SYENITE MAGMATIC ACTIVITY IN THE EASTERN DHARWAR CRATON OF INDIA

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Abstract: Alkaline magmatism did not carry out its activities on the planet Earth until the beginning of late-Archaeoan age although the manifestations of which are found in very few parts including India where the Dharwar Craton in Peninsular India offered the platform to host a late-Archaeoan syenite body at Koppal in the state of Karnataka. The oblong syenite pluton, trending in the NE-SW direction, occupies an area of about 115 sq kms and it has a sharp contact with the surrounding granite gneisses. In the chondrite normalized REE plot, all the Koppal syenites, without exception, show a contrasting pattern of LREE enrichment and HREE depletion. A sample of Koppal syenites has given the SHRIMP U/Pb age Zircon age of 2528 ± 9 Ma (Chadwick et al, 2001).

The Palaeoproterozoic Dancherla syenite body is located to the west of the Proterozoic Cuddapah sedimentary basin in Anantapur district of Andhra Pradesh. This heart shaped syenite body occupies an area of 15 km^2 trending in the NNW-SSE direction. Rb-Sr whole rock isochron age of 2211 ± 110 Ma was indicated for the Dancherla syenite body with low initial $^{87}\text{Sr} / ^{86}\text{Sr}$ ratio of 0.7004 ± 0.00046 (Suresh et al., 2010). The Dancherla syenite was itself derived from an REE enriched metasomatised source in the mantle. Plagioclase fractionation did not play any role in the evolution of these rocks as indicated by the absence of Eu anomaly.

Keywords: Late-Archaeoan, Palaeoproterozoic, Eastern Dharwar Craton, Syenite, Koppal, Dancherla