

Geochemical evidence for magmatic origin of the Paleoproterozoic Kandra mafic-ultramafic suite, SE India - Implications from REE studies of troctolite and ultramafic

V. V. SETHA SAI*

Geological Survey of India Training Institute, Hyderabad-68,
India (*Correspondence: seshubb@yahoo.co.in)

The WNW-ESE trending Paleoproterozoic Kandra Ophiolite Complex (KOC) is located in the southern part of the Neoproterozoic Nellore Schist Belt (NSB) in Eastern Dharwar Craton (EDC), South India. The 18 km long KOC with maximum width of 5 km is constituted by (i) Northern dyke Complex (sheeted) traversed by plagiogranite [1] and (ii) Southern gabbro Complex. The present studies deal with the petrology and geochemistry of the troctolite and ultramafic that form part of southern gabbro Complex of KOC. Troctolite is mainly composed of olivine, cumulus plagioclase with subordinate augite; while ulvospinel, titanomagnetite and ilmenite are the accessory oxides. Ultramafic is chiefly composed of magnesio-hornblende, sub-ordinate chlorite and accessory ilmenite. Geochemically troctolite analysed SiO_2 - 43.1%, FeO - 10.44%, Fe_2O_3 - 5.56%, CaO - 7.96% and MgO - 13.08%, while ultramafic analysed SiO_2 - 28.6 %, FeO - 6.84%, Fe_2O_3 - 6.88% and MgO - 26.84. EPMA studies reveal that olivine in troctolite is hyalosiderite (Fo_{62}) and plagioclase is bytownite ($\text{An}_{71.21}$). Mafic magmas from the 1.85 Ga KOC show high LILE/HFSE, positive Ba and Pb anomalies and negative anomalies for Nb, Zr and Hf in spidergrams; suggesting a suprasubduction-zone setting [2]. In chondrite normalized REE diagram both troctolite and ultramafic show depleted REE patterns. However, troctolite with fractionated bytownite exhibits a low magnitude positive Eu anomaly, while the ultramafic exhibit a contrasting negative Eu anomaly, providing geochemical evidence for magmatic origin of the spatially co-existing mafic-ultramafic suite in the Paleoproterozoic KOC of SE India.

[1] Setha Sai (2009) *Jour. Geol. Soc. India* **74**, 509-514. [2] Vijaya Kumar *et al.* (2010) *Tectonophysics* **487**, 22-32.