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# A geochemical and Sr-Nd and stable Ca isotopic study of Wajrakarur Kimberlites, India.

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The ~1.1 Ga old Wajrakarur Kimberlites from the Eastern Dharwar Craton occur in four clusters [1-3]. While the depth of origin of these magmas are often debated (SCLM [3] versus asthenospheric mantle [4]), their compositions reflect limited crustal contamination [3, 4]. Calcium isotopic composition of the bulk silicate Earth (BSE, $\delta^{44/40}Ca_{SRM915a}$, 0.94 ‰) is primarily estimated from mantle xenoliths [5]. However, large variability in $\delta^{44/40}Ca$ values exists in mantle derived rocks which reflects magmatic processes as well as crustal recycling [6]. Here we present Ca isotopic compositions of whole-rock kimberlites from Wajrakarur. These samples have also been analysed for their geochemical and Nd, Sr isotopic compositions. The $\delta^{44/40}Ca_{SRM915a}$ values were measured using a double spike-TIMS [7] while Sr and Nd isotopic compositions were determined using TIMS; geochemical compositions were determined using a quadrupole ICPMS, all at the Centre for Earth Sciences, IISc, Bangalore.

The Wajrakarur kimberlite pipes display enriched trace element concentrations (e.g., [La] = 200-1300 times Chondrite) and light-REE enrichment with high La/Sm (5-15) and La/Yb (50-200). The $^{87}Sr/^{86}Sr_{(t)}$ (t = 1.1 Ga) of most samples, screened for alteration, ranges from 0.70147 to 0.70391; these samples show mostly mantle-like Ce/Pb and Nb/U, consistent with their mantle derivation and minimal crustal contamination. The kimberlite sample KL2 displays radiogenic $^{87}Sr/^{86}Sr_{(t)}$ (0.70830), as well as low Ce/Pb (4.4) and Nb/U (0.8), all indicating crustal contamination. The $\delta^{44/40}Ca_{SRM915a}$ values (0.99-1.42 ‰), measured in selected samples thus far, are higher than BSE. Such high $\delta^{44/40}Ca_{SRM915a}$ values could reflect the role of garnet and/or orthopyroxene in the origin of these rocks.

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