

Highly siderophile element (HSE) and Hf-Os isotope signatures of carbonatites

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Carbonatites are carbonate-rich and SiO₂-poor magmas with a low viscosity and low melting temperature (see [1]) making them amongst the most mobile and unusual melts produced on Earth. They occur worldwide in a range of tectonic settings, including continental rift (e.g. Tanzania, Kaiserstuhl), oceanic intraplate (e.g. Cape Verde), convergent margins (e.g. Italy) and cratons (e.g. Canada), with eruption ages spanning from 3 Ga (3007 Ma Tupertalik, Greenland, [2]) to present day (Oldoinyo Lengai, Tanzania).

Nevertheless, their genesis and source remain poorly understood and the subject of much debate. They are considered to be either products of direct low-degree partial melting of a carbonated mantle source, products of immiscible separation from a carbonated silicate melt or formed by fractional crystallisation from a carbonated alkali-rich silicate melt (see [1] and references therein).

In order to gain further insight into the genesis and mantle source of these unusual magmas, we will present the first combined HSE and Os-Hf isotope systematics on a suite of carbonatites representative of their large age span and compositional range (Ca, Mg, Fe and Na-rich).

[1] Jones *et al.* (2013) *Mineralogy & Geochemistry* **75**, p. 289-322. [2] Bizzaro *et al.* (2002) *Geology* **30**, p. 771-774.