

Trace element contents of spinels from African mantle xenoliths

LENAZ D.¹, MUSCO M.E.^{1,2}, PETRELLI M.³, CALDEIRA R.⁴, DE IGNACIO C.⁵, DE MIN A.¹, MARZOLI A.⁶, MATA J.⁷, PERUGINI D.³, PRINCIVALLE F.¹, BOUMEHDI M.A.⁸, YOUBI N.⁸

¹University of Trieste, Italy; lenaz@units.it; demin@units.it; princiva@units.it

²OGS, Trieste, Italy; mmusco@ogs.trieste.it

³University of Perugia, Italy; maurizio.petrelli@unipg.it; diego.perugini@unipg.it

⁴LNEG – UGHC, Portugal; rita.caldeira@lneg.pt

⁵Complutense University of Madrid; cris@ucm.es

⁶University of Padova, Italy; andrea.marzoli@unipd.it

⁷University of Lisbon, Portugal; jmata@fc.ul.pt

⁸Cadi Ayyad University, Marrakech, Morocco; boumehdi@uca.ma; youbi@uca.ma

We studied the trace element chemistry of mantle xenolith spinels from Libya (LB), Morocco (MOR) and Cameroon (CAM). According to their $\text{Fe}^{2+}/\text{Fe}^{3+}$ ratio and their TiO_2 content (Lenaz et al., 2000; Kamenetsky et al., 2001) spinels from LB have been classified as peridotitic, those from MOR and CAM as magmatic (i.e. crystallized). Moreover, according to their structural parameters and cooling history it is possible to split in two groups the Libyan spinels, those with a intracrystalline closure temperature in the range 480-640°C (LB I) and those in the range 680-940°C (LB II). The trace elements content has been determined by means of LA-ICP-MS. Cobalt is the most discriminant element, being in the range 270-370 ppm for LB spinels and 200-280 ppm for MOR and CAM. Zinc can be also considered as a discriminant being comprised within 740-1580 in LB spinels and 400-820 ppm in the other spinels with a minimum overlapping of some Moroccan spinels reaching 960 ppm. Interestingly some elements are able to separate the two Libyan occurrences. In fact Sc, V, and Mn are lower in the LB I group spinels with respect to the LB II group while Ni and, in a minor extent, Li are higher in LB I with respect to LB II. Spinel from the oceanic domains of the Cameroon Volcanic Line (Sao Tomé), and of Madeira, Cape Verde and Canary Islands will also be discussed. Funding provided by FRA 2015 project of Trieste university.

Kamenetsky, Crawford & Meffre S. (2001), *J. Petrol.* 42, 655-671.

Lenaz, Kamenetsky, Crawford & Princivale (2000), *Contrib. Mineral. Petrol.* 139, 748-758.