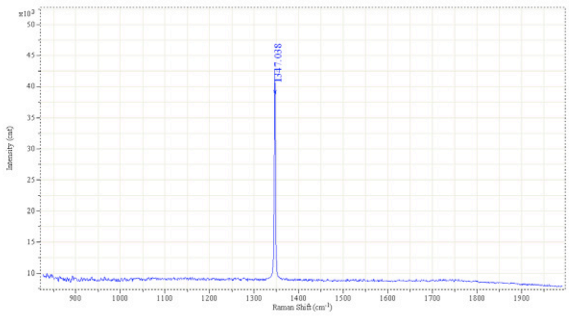
Diamond Bearing Mantle Xenoliths in Alkaline Basalts: Karacadağ Volcano, South East Anatolia, Turkey

YUSUF KAĞAN KADIOĞLU[12]

[1]Ankara University. Faculty of Engineering Department of Geological Engineering, Ankara, Turkey and kadi@ankara.edu.tr
[2]Ankara Uni. Earth Sciences Application and Research Center, Ankara, Turkey

Small Diamond crystals are determined by Raman spectroscopy within the mantle xenoliths from alkali basalts in Karacadağ Volcanic province South East Turkey. The peridotite mantle xenoliths are in the compositions of dunite and pyroxene bearing dunite and they are ranging from 1 cm up to 30 cm in size. The purpose of this contribution is to review the nature of the latest Cenozoic alkaline magmatism with respect to the geochemistry of mantle xenoliths. Diamond bearing Peridotite xenoliths in basalts of Karacadağ provide snapshots of the lithospheric mantle beneath particular regions at the time of their eruption and hence are crucial direct evidence of the nature of the mantle beneath regions. The diamond bearing peridotite mantle xenoliths suggests that these diamonds might be cogenetic with old rock provinces in the subcontinental mantle and then erupted with the latest events of the alkaline magmatism.



Raman Shift value of the diamond crystals within mantle xenolites of Karcadağ Basalts

HSE and S-Se-Te fractionation in components of enstatite chondrites

YOGITA KADLAG[1] AND HARRY BECKER[1]

[1]Institut für Geologische Wissenschaften, Freie Universität Berlin, Germany. yogita@zedat.fu-berlin.de, hbecker@zedat.fu-berlin.de

Enstatite chondrites show distinct fractionations of the highly siderophile elements (HSE) that may reflect volatility control or other types of partition processes [1, 2]. To investigate the origin of the fractionation of the HSE, S, Se and Te in enstatite chondrites, we have separated the components from the unequilibrated enstatite chondrites (EH3) Sahara 97072 and Kota Kota: magnetic, slightly magnetic and nonmagnetic components in five different grain size fractions, matrix, chondrules, CAIs (Ca-Al rich inclusions) and dark inclusions. Samples were analyzed following established techniques [2, 3].

Magnetic components of both meteorites (and the chondrule fraction of Sahara 97072) are enriched in HSE, S, Se and Te compared to the bulk rocks. Au is more enriched relative to the PGE and Re in the magnetic fractions, compared to non-magnetic fractions. In contrast, S, Se and Te in the magnetic fractions are always depleted compared to the HSE. The CAI fraction and a dark inclusion from Sahara 97072 are depleted in all elements (0.3*bulk) and show a similar abundance pattern as CI chondrites. Magnetic fractions display higher Re/Os (0.08-0.19) than most non-magnetic fractions, which have Re/Os lower than Re/Os of CI chondrites.

The relative enrichments, depletions and element fractionation in the components allow some preliminary conclusions: (1) Because metal rich components display strong enrichment of Au and Pd relative to refractory HSE, but depletion of Te-Se-S (with ratios relatively close to CI), the different groups of moderately volatile elements in metal rich components are decoupled. (2) In non-magnetic silicate rich fractions, Se and S are less depleted than HSE and Te, likely reflecting low-pressure metal-silicate-sulfide partitioning [4,5].

[1] Horan, M. *et al*. (2003) *Chem. Geol*. **196**, 5-20 [2] Fischer-Gödde M. *et al*. (2010) *GCA* **74**, 356–379. [3] Wang *et al*. (2013) *GCA* **108**, 21-44. [4] Rose-Weston *et al*. (2009) *GCA* **73**, 4598-4615. [5] Mann *et al*. (2012) *GCA* **84**, 593-613.

www.minersoc.org
DOI:10.1180/minmag.2013.077.5.11