1.2.P06

Lithium isotope compositions of silicate reference materials

J. BLUZTAJN[1], M. ROSNER[1,2] AND L. BALL[1]

[1] Woods Hole Oceanographic Institution, Woods Hole, MA 02543, USA (jblusztajn@whoi.edu)

[2] GeoForschungsZentrum Potsdam, Telegrafenberg, 14473 Potsdam, Germany (rosner@gfz-potsdam.de)

We present lithium isotope ratios of well distributed GSJ, USGS and NIST silicate reference materials (rock powders and artificial glasses).

Measurements of the lithium isotope compositions were done using a Finnigan NEPTUNE MC-ICP-MS at the Woods Hole Oceanographic Institution.

The NEPTUNE has a central and four moveable Faraday collectors on the low and the high mass side, each. Ion beam intensities of ^{6}Li and ^{7}Li were measured simultaneously on the L4 and H4 Faraday cups, respectively. Sample solutions were introduced to the hot Ar plasma using a high efficiency spray chamber and transferred into the mass spectrometer via a high efficiency cone. All instrument parameters were optimized to achieve maximum intensity on ^{7}Li and sufficient peak shapes. This setup usually produced a ^{7}Li ion current of about 6 pA for a 50 ppb Li solution consuming about 80µl min^{-1}. δ^{7}Li values were calculated by bracketing the sample ratio with L-SVEC lithium carbonate standard measured before and after each sample.

Our obtained δ^{7}Li values of basaltic to rhyolitic reference materials cover a range from about +3 ‰ to 32 ‰ and are in good agreement with published values. For seawater we determined a δ^{7}Li value of about 30 ‰ which fall well within the range of already published values.

The presented data contribute towards establishing well characterised reference materials for geochemical bulk and in-situ (ion probe and laser technique) analysis of lithium.

1.2.P07

Boron concentration in Neogene calc-alkaline volcanic rocks of the Carpathian-Pannonian Region: Inferences for contrasting genesis of the magmas

K. GMÉLING[1,2], S. HARANGI[1] AND Z. KASZTOVSZKY[2]

[1] Department of Petrology and Geochemistry, Budapest, 1117. Pázmány P. s. 1/C. Hungary (gmeling@alpha0.iki.kfki.hu)

[2] Department of Nuclear Research, Institute of Isotope- and Surface Chemistry, Chemical Research Centre of the Hungarian Academy of Science, Budapest, 1525. P.O. Box 77. Hungary

Miocene to Quaternary calc-alkaline volcanic rocks occur roughly parallel with the Carpathian orogenic arc and they are part of the extensive Neogene volcanism in the Carpathian-Pannonian Region. However, the genesis of the magmas is still a subject of debate, i.e. they were formed closely associating with subduction process or as a direct consequence of lithospheric extension followed by the subduction process. We carried out a detailed boron geochemical study in the two extreme segments of the volcanic arc, where the studied rocks cover the spatial and the temporal variation of the volcanism.

Boron as a highly fluid mobile and incompatible trace element is regarded as a sensitive indicator element of subduction-related fluid-flux into the mantle-wedge and usually follows a gradual decreasing concentration from the trench towards the basin areas. The boron measurements were performed using prompt gamma activation analysis (PGAA) at the Budapest Nuclear Centre (BNC). PGAA provided great sensitivity, reliability and relatively quick and non-destructive measurements following a simple sample preparation procedure.

Boron concentration is in the range from 7 to 42 ppm in the andesitic to rhyodacitic volcanic rocks of the western segment of the arc (WCVF), whereas it is between 2 and 76 ppm at the eastern segments (ECVF). No spatial relationship of the boron concentration variation has been observed across the volcanic arc, whereas the boron content shows a systematic decrease with time at the WCVF. In contrast, the boron concentration shows an increase with time at the ECVF. Thus, we suggest that calc-alkaline magmas were generated due to the direct consequence of extension at the WCVF, whereas the volcanism was closely related to subduction at the ECVF.