

## PGE AND OS-ISOTOPIC IMPLICATIONS FOR CHROMITE FORMATION IN THE SHEBENIKU COMPLEX, ALBANIA

Kocks, H. <sup>1</sup>, Burgath, K-P. <sup>1</sup>, Melcher, F. <sup>1</sup>, Meisel, T. <sup>2</sup>, Mohr, M. <sup>1</sup> & Bosniaku, B. <sup>3</sup>

<sup>1</sup> Federal Institute for Geosciences and Natural Resources, Stilleweg 2, 30161 Hanover, Germany

<sup>2</sup> General and Analytical Chemistry, University of Leoben, A-8700 Leoben, Austria

<sup>3</sup> Geological Survey of Albania, Tirana, Albania

e-mail: h.kocks@bgr.de

The Shebeniku Complex (SE Albania) is part of the eastern belt of the Jurassic Mirdita ophiolite. Its harzburgite-dominated mantle sequence is overlain by a plutonic sequence of interlayered mafic to ultramafic rocks and banded and isotropic gabbroic cumulates. Chromitites within the mantle sequence occur as disseminated ores in dunite lenses or form massive podiform deposits. In the mantle crust transition zone disseminated and ribbon like chromitites in cumulus dunite are common. Pyroxenites assigned to the lower cumulate sequence contain accessory spinel. Geochemical and mineralogical investigations of chromitites from well defined stratigraphic positions within the mantle and plutonic sequence reveal significant differences throughout the complex. In #Cr-#Mg space, the chromites fall within the range of alpine-type peridotites defined by DICK & BULLEN (1984). Although total PGE concentrations are low ( $\Sigma\text{PGE} < 500\text{ppb}$ ), distinct chondrite normalised PGE patterns can be correlated with chromite chemistry. The most primitive chromites (#Mg 68-78, #Cr 76-79) from both mantle and transition zone show negatively sloped IPGE enriched patterns<sub>[cn]</sub> with a small but consistent positive Ru anomaly that correlates well with observed laurite<sub>[cn]</sub> inclusions. High #Cr (84-89) disseminated ores from cumulus dunite of the transition zone have lower #Mg (52-60) and exhibit contrasting PPGE enriched, positively sloped, S-shaped patterns<sub>[cn]</sub> with  $\text{Pt}_{\text{cn}} > \text{Pd}_{\text{cn}}$ . Observed sperrylite and (Pt,Rh,Ir)-sulfarsenides are compatible with these patterns. However, densely disseminated chromite from comparable stratigraphic level is Al-rich (#Cr 52, #Mg 74) and also exhibits negatively sloped PGE patterns<sub>[cn]</sub>. Spinel from websterites assigned to the lower crustal sequence have high but variable #Cr (~80) with #Mg of 40-50. Within the Shebeniku Complex, chromitites with typical ophiolitic geochemical characteristics can be distinguished from chromitites with Pt- & Pd enrichment situated in the mantle-crust transition zone. PGE enrichment does correlate with chromite mineralogy and observed platinum group minerals. Ongoing studies will further delineate petrogenetic processes involved in the generation of these variably PGE enriched chromites and investigate if the distinction based on PGE pattern is reflected in the Os isotopic composition and the tectonic setting.

### References

DICK, H.J.B. & BULLEN, T. (1984). Chromian spinel as a petrogenetic indicator in abyssal and alpine-type peridotites and spacially associated lavas. *Contrib. Mineral. Petrol.* 86, 54-76.