Re–Os and HSE distributions in Mohelno–Biskoupky peridotites, Gföhl Unit, Bohemian Massif

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The Gföhl Unit is the uppermost tectonic unit in the Moldanubian Zone of the Bohemian Massif (BM). It consists of HT-HP felsic rocks (gneisses, granulites), but also hosts abundant bodies of peridotites that have different sources, histories and P-T-t paths. Based on major and trace elements, P–T conditions and cooling rates, three types of peridotites were identified [1]. We investigated HSE distribution and Os isotope compositions in “Type I” rapidly cooled garnet and spinel peridotites from Mohelno and Biskoupky, equilibrated in low P–T regime and most likely representing suboceanic mantle lithosphere [1]. Most samples have uniformly high I-PGE (Os–Ir–Ru) contents similar to PUM estimates [2] with no obvious fractionation (Ru_N/Ir_N = 0.9–1.1). Platinum and palladium contents are variable, but generally significantly lower than PUM, as a result of variable degree of partial melting. In contrast, Re contents vary from 157 to 400 ppt. Rhenium is more incompatible during mantle melting than Pd-Pt and should thus be more depleted. However, variable Re contents found in peridotites could indicate melt–rock interaction and/or metasomatic overprint. A significant scatter in $^{187}Os/^{188}Os$ ratios (0.1196–0.1333; γOs from –5.0 to +5.5, calculated at 330 Ma) could be explained by combined process of partial melting, melt-rock reactions and/or metasomatism by slab-derived fluid/melt rich in radiogenic Os. The depletion model ages (T_{RD}) calculated using PUM estimate range from 0.5 to 1.1 Ga, corresponding to other peridotite localities from the BM [3,4], but are resolvedly younger than those of peridotites from lower Austria in the southern BM [5]. The addition of Re and radiogenic Os could shift Re–Os model ages in peridotites towards younger ages. We argue that the effect of metasomatism in the Moldanubian zone of the BM has increased northwards.

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[1] Medaris et al. (2005) *Lithos* **82**, 1-23; [2] Becker et al. (2006) *GCA* **70**, 4528-4550; [3] Medaris et al. (in press) *Lithos*; [4] Ackerman et al. (2009) *GCA* **73**, 2400–2414; [5] Becker et al. (2001) *EPSL* **188**, 107-121