**Recycling of Incompatible Highly Siderophile Elements into the Mantle - Implications for Peridotite Aluminochrons and Re-Os Model ages**

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Recent work on highly siderophile element (HSE) abundances in peridotite bulk rocks and experimental studies have shown that positive correlations of the abundances of the incompatible HSE Pd, Re and Au with fertility indicators such as Al cannot be easily reconciled with partial melting models. More likely, these correlations reflect refertilization of depleted peridotites by migrating silicate melts (e. g., Lorand and Alard, 2001; Pearson et al., 2004; Bockrath et al., 2004; Becker et al., 2006; Fischer-Gödde et al., this meeting). These results mesh with structural and geochemical studies of orogenic peridotite massifs (e. g., Lherz, Le Roux et al., 2007), suggesting that transformation of previously depleted peridotites to variably fertile lherzolites may be an important process near the asthenosphere-lithosphere transition. Work on fertile lherzolites and pyroxenites emplaced on Jurassic ultra-slow spreading seafloor in the Piemont-Liguria ocean basin indicate similar transformation processes (van Acken et al., 2008; van Acken et al., this meeting). Textural evidence suggests that the influx of radiogenic Os, along with Re and Pd may have been caused by melts derived from pyroxenite layers. Enrichment of these elements in the pyroxenites and their sometimes highly radiogenic $^{187}Os/^{188}Os$ (160 Ma), along with depleted mantle-like $^{143}Nd/^{144}Nd$ (160 Ma), suggest the presence of recycled MORB-like material in the source of these melts. These results warrant a re-examination of the significance of Re-Os model ages of peridotites.

Positive correlations of $^{187}Os/^{188}Os$ with alumina contents in peridotites from continental lithospheric mantle have been used as isochron proxy ("aluminochron") to date the age of melt extraction, and thus the approximate age of formation of continental lithospheric mantle (Reisberg and Lorand, 1995). Alumina is used as a more robust proxy for Re in altered peridotites. Different Re contents would lead, with time, to a variable increase of $^{187}Os/^{188}Os$. One of the key assumptions in this concept has been that suites of peridotites that show variable Al or Re content are related to each other by variable melt extraction that occurred at roughly the same time. Exactly this assumption may now be in question in places such as Lherz. While Os model ages may reflect the time of melt extraction during formation of the lithospheric mantle, another scenario is possible. Unradiogenic $^{187}Os/^{188}Os$ in harzburgitic abyssal peridotites (Parkinson et al., 1998; Harvey et al., 2006, Liu et al., 2008) suggest that the convecting mantle contains depleted lithologies that may represent old recycled and refractory lithospheric mantle. Thus, old, depleted lithospheric peridotites and their unradiogenic $^{187}Os/^{188}Os$ could be inherited from upwelling asthenospheric mantle and incorporated into lithospheric mantle that may have formed much more recently than the Os model ages would suggest.

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