Melt extraction and metasomatism recorded in basal peridotites, Oman ophiolite

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The Oman ophiolite is one of the best preserved sections of oceanic lithosphere and has been largely studied in order to understand melt generation processes at mid-ocean ridge (e.g. [1]). On the other hand, this ophiolite and its underling metamorphic sole have been regarded as direct analogues of oceanic lithosphere and subducted oceanic crust that formed by overthrusting (e.g. [2]).

Geochemical and Sr-Nd isotopic data from clinopyroxene (cpx) within basal cpx-rich peridotites from the Fizh and Hilti masifs in the Oman ophiolite suggest the following processes.

Melt extraction at mid ocean ridge: Light rare earth element depleted chondrite-normalized patterns of cpxs can be explained by melt extraction left after 4-12% fractional melting of MORB-type mantle, mainly in the spinel stability field. Their Sm-Nd isotopic systematics and previously reported gabbros data in the Fizh massif [3] infer a genetic link between crustal and mantle rocks in this area.

Metasomatism during the initial stages of subduction: Highly incompatible element (Rb, Ba and Nb) enrichments can be explained by mixing with residual cpx and fluid dehydrated from the metamorphic sole presented by [4]. Variable Sr isotopic ratios with narrow initial Nd isotopic ratios are also consistent with mixing with Cretaceous seawater and MORB-type oceanic crust.

[1] Nicolas, Boudier & Misseri (1988), *Tectonophysics* **151**, 27-56. [2] Boudier, Ceuleneer & Nicolas (1988), *Tectonophysics* **151**, 275–296. [3] McCulloch, Gregory, Wasserburg & Taylor (1980), *EPSL* **46**, 201-211. [4] Ishikawa, Fujisawa, Nagaishi & Masuda (2005), *EPSL* **240**, 355-377.