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ロシア極東，ウスチベラヤ・オフィオライトのマントルかんらん岩の岩石学；特に初生的な鉱物化学組成について

Petrology of mantle peridotites from the Ust'-Belaya ophiolite, Far East Russia; with emphasis on the primary mineral

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Ust'-Belaya ophiolite is exposed in the 80 km x 40 km area on the south of Ust'-Belaya (N65 30', E173 17'), Far East Russia (Sokolov et al., 2003 Geol. Soc. London, Spec. Publ. 218, 619-664). The associated limestone suggests Devonian or older age of this ophiolite. Here we report the petrographical features and mineral chemistry of the peridotite from Ust'-Belaya ophiolite and discuss about the origin of the ophiolite.

The peridotite from the Ust'-Belaya ophiolite is characterized by significant multiple hydration, which causes formation of secondary olivine, secondary cpx, amphibole, chlorite, antigorite, and opaque minerals. For example, olivine partly replaced by antigorite is along with secondary olivine, and primary pyroxene is replaced by the aggregate which is composed of amphibole, secondary olivine, chlorite and antigorite. In some of antigorite-bearing peridotites, olivine shows an apparent "cleavage". Such petrographical features resemble those of the antigorite-bearing serpentinite from Mariana forearc (Ohara & Ishii, 1998 Island Arc 7, 541-558; Murata et al., 2009 Geosphere 5, 90-104). Spinel composition shows their protoliths are very fertile lherzolite (Mg# = Mg/[Mg+Fe^{2+}] = 0.75; Cr# = Cr/[Cr+Al] = 0.1) to moderately depleted harzburgite (Mg# = 0.45; Cr# = 0.6). In terms of Cr# of these spinels, Ust'-Belaya peridotites are similar to common abyssal peridotites from mid-oceanic ridges. On the other hand, Ust'-Belaya peridotite is characterized by low Mg# at a given Cr# of chromian spinel compared to common abyssal peridotites. This feature is similar to forearc peridotite; spinel from forearc peridotites shows low Mg# at a given Cr# of chromian spinel compared to common abyssal peridotites, which may be due to lower equilibrium temperature of the forearc peridotite (Okamura et al., 2006 Min. Mag. 70, 15-26; Yanagida et al. 2 007 Chikyu Monthly, 29, 615-626).

Ust'-Belaya peridotite may represent a fragment of the Early Paleozoic forearc mantle wedge, which has been effectively cooled and metasomatized by H_2O-rich fluids released from the subducting slab.

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