

Two types of websterite from the Ust'-Belaya ophiolite, Far East Russia: Origins and implications

MACHI, Sumiaki^{1*} ; ISHIWATARI, Akira² ; MORISHITA, Tomoaki¹ ; HAYASAKA, Yasutaka³ ; ARAI, Shoji¹ ; TAMURA, Akihiro¹

¹Natural Sci & Tec., Kanazawa Univ., ²NE Asia Center, Tohoku Univ., ³Earth & Planet. Sys. Sci., Hiroshima Univ.

The Ust'-Belaya ophiolite is located in the Koryak Mountains, Far East Russia. We report two types of websterite in the mantle section of the ophiolite.

The lithology of the mantle peridotites from the ophiolite is variable from very fertile lherzolite to moderately depleted harzburgite. The mineral chemistry of the very fertile lherzolite shows similar signature to those of the subcontinental peridotite. The two types of websterite (type1 and type2) occur in them as dikes/veins. Type1 is composed of brownish colored cpx, opx and Al-spinel. On the other hand, type2 is composed of green colored cpx, opx and Cr-spinel.

Type2 websterite is similar to those reported from many other ophiolites. Websterites, which are characterized by extremely aluminous spinel similar to the type1 websterite, are never found in ophiolitic peridotites but are described in passive margin peridotites (e.g. Zabargad Island in Red Sea and Iberia Abyssal plain peridotites). These websterites are generally interpreted as high-pressure cumulates and the host peridotites are considered as fragments of subcontinental mantle.

The mantle section of the Ust'-Belaya ophiolite represents, at least partly, fragments of subcontinental mantle. The two types of websterite might be related to two different magmatisms in two different tectonic settings; type1 is formed former subcontinental to oceanic environment and then type2 is formed later oceanic to arc environment.

Keywords: Ust'-Belaya ophiolite, websterite, subcontinental mantle