Origin of Kurouchiyama peridotite mass in the northern Kanto mountains

IZAWA, Kazuki [1,*] and TAKAZAWA, Eiichi [2]

[1] Graduate School of Science and Technology, Niigata University, Niigata 950-2181, Japan
[2] Department of Geology, Faculty of Science, Niigata University, Niigata 950-2181, Japan
[*] s11e502f@mail.cc.niigata-u.ac.jp

The Sambagawa metamorphic belt occupying the northern part of the Kanto Mountains with 60 km length in WNW-ENE and several 10's of km width. In this metamorphic belt, crystalline schists derived from the sedimentary rocks of the Chichibu belt occupy the majority, but Mikabu green rocks made of gabbro-serpentinite and a large amount of basic volcanic rocks distribute in the southern part. In the Mikabu green rocks, peridotite masses of 100m to 1km of major axis occur sporadically. Within them, Kurouchiyama mass is the largest (1km x 2km in size). This peridotite mass, consisting mainly of wehrlite, has been proposed to be a cumulate caused by crystal fractionation from magma. However, it is not clear which type of magma is responsible for the generation of peridotite mass and how the Kurouchiyama peridotite mass was taken into the Sambagawa metamorphic belt. The origin of Kurouchiyama mass is a clue to understand the formation of the peridotites in the high-pressure metamorphic belt of Japan. In this presentation, I report the results of field survey and microscopic observation for thin sections.

The Kurouchiyama peridotite appear black and massive on outcrops. The peridotites consist of olivine, clinopyroxene, amphibole, spinel with minor amount of phlogopite and secondary serpentine. Although there are some variations in modal amount of cpx and grain size of constituent minerals, it is difficult to distinguish such differences in the outcrops. In the southwestern part, the mass contacts to green schist with a low-angle fault. The fault has a strike of NNE-SSW and is inclined to west. The peridotite mass forms the hanging wall against the green schist. Moreover, picritic basalt is observed at an outcrop on the top of the Mt Kuroutiyama.

Under the microscope wehrlite shows equigranular adcumulate texture. Olivine is euhedral to half euhedral and grain boudaries are smooth. Cleavage is commonly observed in olivine. Cpx is anhedral and show poikilitic texture to fill the grain boundaries of olivine crystals. Phlogopite and amphibole also occur associated with cpx. The modal amount of amphibole is about 5%, but phlogopite is less 1%. The modal ratio between cpx and olivine seems variable at a scale of hand specimen. Therefore, the cpx-olivine ratio is a key to identify the lithological variation within the mass. Along with microscopic study we will proceed to analyze mineral and whole rock compositions for major and trace elements using EPMA, XRF, and ICP-MS, and further dicuss the origin of the Kurouchiyama mass.