

SIT002-P06

Room:Convention Hall

Time:May 27 14:00-16:30

Micro-inclusions in spinel in concordant and discordant chromitites from Wadi Hilti, northern Oman ophiolite.

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Podiform chromitites (PDC) occur in the Moho transition zone to the mantle section in ophiolites. There are two kinds of podiform chromitites; concordant PDC (C-PDC) is concordant to the foliation of surrounding harzburgites, discordant PDC (D-PDC) is discordant to that. We examined minute inclusions in spinel of chromitites to understand origins of the chromitites from Wadi Hilti, northern Oman ophiolite.

The Hilti C-PDC has a lensoidal shape enveloped by a dunite envelope (< several meters) in thickness mantle harzburgite. The boundary with dunite envelope is mostly sharp, and sometimes gradual. Chromitite is overall massive and homogeneous in C-PDC. D-PDC is dike-like in appearance with a dunite envelope (several meters), and chromitite is heterogeneous in D-PDC.

We found 2 types of inclusions in chromian spinel: (1) Needle-like inclusions (<1 micron, tens of microns), and (2) globular inclusions (several to tens of microns across). The needle-like inclusions were found only in C-PDC. The Cr# (Cr/(Cr+Al) atomic ratio) of host spinel is different between the two types of chromitites; 0.62 in C-PDC and 0.70 in D-PDC (Ahmed et al., 2002). Raman spectroscopy and FE-EPMA analysis indicate that the needle-like inclusions are mainly pyroxenes and the globular inclusions are composed of clinopyroxene, pargasite and Na-phlogopite. The former inclusions suggest subsolidus exsolution of silicate components from spinel during cooling and decompression for the C-PDC.

Keywords: Podiform Chromitite, Inclusion, Chromite, Oman Ophiolite