

## Fluid activity during corona formation in ultramafic gneisses of Lutzow-Holm Complex, East Antarctica

IKEDA, Takeshi<sup>1\*</sup> ; SHIMADA, Asami<sup>1</sup>

<sup>1</sup>Kyushu University

In Lutzow-Holm Complex, East Antarctica, it is common that symplectic intergrowth of spinel, orthopyroxene and plagioclase occurs between garnet and hornblende in mafic to ultramafic gneisses. This reaction microstructure has suggested that the complex experienced decompression after peak of metamorphism. In contrast, this study found a corona that is composed of biotite and plagioclase around garnet in ultramafic gneisses. This study describes the mode of occurrence and discusses its significance.

Garnet in the centre of the corona shows convavo-convex shape. Some isolated grains of garnet also occur that have coloded form. Biotite and plagioclase constituent of the corona are euhedral, in contrast to the common occurrence of symplectic intergrowth of spinel, orthopyroxene and plagioclase. Chemical composition of these minerals show almost constant range irrespective of distance from the garnet. Grain size of biotite in the corona represents lognormal distribution. The corona has a bulk composition equivalent to the sum of garnet and matrix plagioclase and biotite together with additional  $K_2O$  and  $H_2O$ .

These features suggest that  $K_2O$ -bearing  $H_2O$  fluid infiltrated during corona formation. Absence of the common symplectite in spite of the presense of hornblende in the matrix implies the fluid infiltration preceded the reaction to form symplectite. The shape and size distribution of corona minerals suggest that the corona minerals crystalized in a melt phase of which degree of supersaturation decreased with time. This study concludes that the complex experienced an infiltration of  $K_2O$ -bearing  $H_2O$  fluid at early stage after peak metamorphism, which caused partial melting and following crystallization with relative rapid cooling rate without significant annealing.

Keywords: corona, metamorphic fluid, Lutzow-Holm Complex