

幌満かんらん岩のスピネルの形態変化について Shape evolution of spinel grains in the Horoman Peridotite Complex, Hokkaido

小出 聡子^{1*}; 柴田 有毅²; 道林 克禎¹
KOIDE, Satoko^{1*}; SHIBATA, Tomoki²; MICHIBAYASHI, Katsuyoshi¹

¹ 静岡大学理学研究科地球科学専攻, ² 静岡大学理学部地球科学科

¹Institute of Geosciences, Shizuoka University, ²Institute of Geosciences, Shizuoka University

We present the evolution of spinel grains in the Horoman Peridotite Complex, Hokkaido. For deformation under differential stresses at high temperature conditions, both diffusion processes including diffusion creep and annealing process and dislocation creep will affect shape change of a crystal inclusion (Okamoto and Michibayashi, 2005 JGR). Grain size and grain shape are related to the shape change of the crystal with respect to given temperature and differential stress conditions. We applied this theory to spinel grains in the Horoman Peridotite Complex, Hokkaido. As a result, grain shapes of coarser spinel grains more than 100 micron are dominantly controlled by dislocation creep, whereas those of smaller spinel grains less than 100 micron are influenced by both diffusion processes and dislocation creep. Moreover, we found that grain shapes of the smaller spinel grains can be only explained by post-tectonic annealing process after their intense deformation. Our result will provide a new insight to understand the deformation processes in mantle.

Keywords: spinel, grain shape, diffusion process, dislocation creep, Horoman