

SMP055-07

Room: Function Room B

Time: May 23 15:30-15:45

## Microstructural observation of naturally deformed antigorite serpentine

Yoshito Urata<sup>1\*</sup>, Yusuke Soda<sup>2</sup>, Jun-ichi Ando<sup>3</sup>

<sup>1</sup>Hiroshima University, <sup>2</sup>Waseda University, <sup>3</sup>Hiroshima University

Antigorite serpentinite is an important rock for understanding the dynamics of descending oceanic plate. However, the plasticity of antigorite serpentinite under mantle/crust conditions has not been fully understood so far. Here we studied the microstructures mainly using a transmission electron microscope (TEM) in order to survey the deformation mechanism of antigorite that controls the plasticity of antigorite serpentinite.

We observed the antigorite grains of serpentinite that was collected from the Sashu Fault in the Saganoseki Peninsula of Oita Prefecture. This serpentinite shows the microstructures that were induced by plastic deformation, such as undulose extinction, lattice preferred orientation and "S-C" fabric of antigorite grains. Therefore, we can probably understand the deformation mechanism of antigorite through examination of the microstructures within the antigorite grains.

They include many defects. The most typical microstructures are (001) twins and damaged layers parallel to (001) planes. The mirror plane of the twin is always parallel to (001) plane. The (100) planes between the (001) mirror planes are shifted by a half wave length of [100] unit. The (001) twins make twin lamella throughout the samples. The serious damage of (001) planes leads to amorphization of the layers. It seems like that (001) planes are more damaged by approaching the amorphous layers.

All of these defects described above can be created by slip of (001) planes. We can also observe "modulation dislocation", but its number is much smaller than those defects described above. These facts indicate that the antigorites were deformed plastically by (001) plane slip.

Keywords: Antigorite, Microstructure, Deformation mechanism, TEM