T223-P003 **Room: Poster Session Hall** **Time: May 18**

Thermal expansion of antigorite

Tohru Watanabe[1]; Satoru Urakawa[2]; Yosuke Nakano[3]; Takumi Kikegawa[4]

[1] Grad. Sci. Eng., Univ. Toyama; [2] Dept Earth Sci, Okayama Univ.; [3] Dept. Earth Sci., Okayama Univ.; [4] PF,KEK

Serpentines play key roles in subduction zone processes including transport of water and seismogenesis. There are three major forms in serpentine: antigorite, lizardite and chrysotile. Antigorite can persist to higher temperatures than other serpentines. It is stable up to the temperature of 600C at 1 GPa. Physical properties of antigorite are essential for good interpretation of geophysical observations. Although the thermal expansion of antigorite is critical to interpret observed seismic velocities, it has not been investigated. We determined it by in-situ synchrotron X-Ray diffraction. Measurements were carried out at a beamline of Photon Factory - Advanced Ring (KEK, Tsukuba). We used a natural antigorite sample collected from Oheyama Ophiolite (Miyadu, Kyoto Pref.). The sample was finely ground and mixed with NaCl, and pressurized in a multi-anvil type high-pressure apparatus (MAX80). Pressure medium was amorphous boron bound by an epoxy resin. Pressure was estimated from the compression of NaCl. Diffraction peaks of antigorite were indexed with the aid of indices reported by Uehara and Shirozu (1985). Antigorite has monoclinic symmetry. In order to estimate lattice parameters, we used 4 peaks: (003), (202), (330) and (060). The temperature dependence of lattice parameters provides us the information about thermal expansion. The thermal expansion coefficient at 0.8 GPa is 1.5(7) x 10^{-5}, 2.0(1) x 1^{-5}, and 2.7(5) x 10^{-5} (1/K) along a, b, and c axes, respectively. Reflecting the sheet structure of antigorite, the thermal expansion coefficient is significantly larger in c-axis than in other axes. The volumetric thermal expansivity was calculated to be 6(1) x 10^{-5} (1/K) from the temperature dependence of the unit cell volume.