G122-P003 **Room: Poster Session Hall** **Time: May 25**

Compressional and shear wave velocities in serpentinized peridotites

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Serpentinized peridotites in wedge mantle play key roles in the transport of water and the slab-mantle coupling. Geophysical mapping of serpentinized regions is essential for good understanding of subduction zone processes. Tomographic studies have related low-velocity and high Poisson's ratio (high Vp/Vs) to serpentinized peridotites [e.g., Kamiya and Kobayashi (2000)]. Their interpretations are based on velocity measurements mostly on Low-T type (containing lizardite and/or chrysotile) serpentinized peridotites [e.g., Christensen (1996)]. However, it is questionable whether velocities of Low-T type are applicable to warm subduction zones like Costa Rica, where the other serpentine mineral antigorite is expected. From crystallographic studies, higher elastic stiffness is expected in antigorite. Watanabe et al. (2007) have shown that antigorite-bearing serpentinized peridotites have higher velocity and lower Poisson's ratio than Low-T type serpentinized peridotites. High-T type properties should be applied to warm subduction zones, while Low-T type properties to cool subduction zones.

Elastic properties of an antigorite single crystal are critical for the study of warm subduction zones. However, from the crystallographic structure of antigorite, we cannot expect an antigorite single crystal suitable for velocity measurements. We have a serpentinite sample from Miyadu, Kyoto Pref., which is mostly composed of antigorite. Antigorite grains seem to be well aligned. The sample shows numerous parallel lines and weak cleavages. Parallel lines are interpreted to be parallel to b-axis of antigorite grains, cleavages normal to c-axis. Using this sample, we are now trying to estimate elastic moduli of an antigorite single crystal and their temperature dependence. Elastic moduli of an antigorite single crystal can be inversely calculated from velocities measured in various directions.

The pulse reflection method was employed to velocity measurements. Measurements were made at the pressure of 1 GPa and the temperature up to 550 C by using a high-pressure apparatus in Okayama University. The velocity of compressional wave propagating in a, b, c-axes was already reported by Oguri et al. (2007). We are now measuring the velocity of shear wave propagating in a, b, c-axes. From temporary analysis, the shear wave velocity in b-axis at 550 C is 3.1-3.3 km/s. In our poster, we will report the shear wave velocity and its temperature dependence.