E134-P016 **Room: Poster Session Hall** **Time: May 16**

Distribution of magnetite grains in serpentinites

Hisanori Oguri[1]; Tohru Watanabe[2]

[1] Grad. School. Sci. Eng., Toyama Univ.; [2] Dept. Earth Sciences, Toyama Univ.

Serpentinites are an important transport medium of water in subduction zones. Mapping their distributions is essential to good understanding of subduction zone processes: earthquakes, volcanism, etc. The electrical conductivity is one of observable physical properties, which provides us information on materials in the Earth's interior.

Serpentinites contain highly conductive (˜1e4 S/m) magnetite grains, which are produced during serpentinization. When they are interconnected, dry serpentinites will show high conductivity (˜1e-2 S/m) even at the room temperature [Stesky and Brace, 1973]. The distribution of magnetite grains is highly heterogeneous. The conductivity of specimens (˜mm) cut from one rock sample varies by orders.

A good understanding of the distribution and connectivity of magnetite grains is required to evaluate the conductivity values expected on the rock formation scale (a few ˜a few tens km). In order to clarify the distribution and connectivity of magnetite grains, we have been conducting microstructural observation and image analysis.

Antigorite-bearing serpentinites were collected in Hida outer-belt (Toyama, Niigata and Nagano prefectures). Microstructures are systematically studied on specimens with various degrees of serpentinization and deformation. Morphology of magnetite is classified into three types: (1) blob type, (2) particle type, and (3) line type. The abundance of magnetite and the ratio of three types are measured through the image analysis on HPS-D and HPS-I.

HPS-D HPS-I (1) HPS-I (2)

Serpentine (%) 68.1 42.7 42.7

Deformation structure strong undeveloped undeveloped

Studied area (mm2) 353 279 334

Magnetite grains (%) 0.89 0.54 0.29

Blob type (%) 16 8 18

Particle type (%) 53 71 65

Line type (%) 31 21 17

The line type magnetite is more abundant in a more deformed specimen. This suggests that the deformation contributes to the interconnection of magnetite grains. We are now trying to evaluate the deformation of a specimen, the heterogeneity of magnetite distribution, and the connectivity of magnetite grains.