

Electrical Conductivity Measurement of Higo Metamorphic Rocks

Kiyoshi Fuji-ta[1]; Tomoo Katsura[2]; Masahiro Ichiki[3]; Tomoyuki Kobayashi[4]; Masaaki Obata[4]

[1] Earth and Planetary Sci, Kobe Univ; [2] ISEI, Okayama Univ.; [3] JAMSTEC; [4] Earth and Planetary Sci., Kyoto Univ

Research on electrical conductivity measurements for minerals of deep interiors of the earth has been carried out by many authors. However, former experiments have not simulated the conditions pertaining to crust. In addition, most of former experiments could not account for electrical conduction mechanism due to the complexity of minerals in the rock. Although it is considered that minerals play essential roles in electrical conduction in the mid- to lower crustal rocks, our experiments suggest that conductivities of basic rocks can explain results from magneto-telluric (MT) soundings. To estimate electrical conductivity structure of crust, we can throw light on tectonics of unknown regions. In this paper, will report on electrical properties of gneiss under conditions in the mid- to lower crust. Small and homogenous grain rock sample was obtained from Higo-metamorphic belt in Kyushu in Japan was utilized for electrical conductivity measurements. The P-T conditions of metamorphism for Higo terrane are estimated to be 4.5 - 7.5 Kb and 750 - 900 degree. Thus, pressure for measurement is up to 1GPa, which represents that of lower crust. The temperature range is from ca. 300 to 1000K. We will introduce more detailed experiments procedure and results from electrical conductivity of gneiss. Stability for long-term conductivity measurements and comparison with MT field data will be discussed.