Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Phase transition and electrical resistivities of $PrBa_2Cu_4O_8$ under high pressures YUH YAMADA, Dept. of Physics, Niigata Univ., AKIHIRO KOBAYASHI, NAOYA EGUCHI, Graduate School of Science and Technology, Niigata Univ., FUMIHIRO ISHIKAWA, Dept. of Physics, Niigata Univ., ATSUKO NAKAYAMA, AYAKO OHMURA, Center for Transdisciplinary Research, Niigata Univ., SATOSHI NAKANO, AKIYUKI MATSUSHITA, National Institute for Materials Science — $PrBa_2Cu_4O_8$(Pr124) dose not exhibit superconductivity but its resistivity shows a metallic behavior below 170 K. This behavior is a sharp contrast to semiconducting one of $PrBa_2Cu_3O_7$(Pr123). In this work, we have measured is the temperature dependence of the electrical resistivities in the Pr124 under pressures up to 13 GPa by using a modified Bridgman anvil type cell. The metallic region is found to be extended toward high temperatures with increasing pressure up to 5 GPa. The pressure dependence of the resistivity in room temperature is positive up to 10 GPa while that is negative above 10 GPa. We have also studied the crystal structure of Pr124 means of the synchrotron radiation X-ray powder experiment under high pressure. High-pressure X-ray powder diffraction was performed at PF, BL-18C beamlines at room temperature using a diamond anvil cell (DAC). Up to 10 GPa, the diffraction patterns were fitted using the tetragonal *Ammm* symmetry model. The continuous change of lattice parameters as a function of pressure was observed. Futhermore, we were confirmed the phase transition in Pr124 over 10 GPa. More detail results will be reported in this conference.

Yuh Yamada
Dept. of Physics, Niigata Univ.

Date submitted: 21 Feb 2013 Electronic form version 1.4