

## Phase transition of FeO under high pressure and temperature conditions.

# Nobuyoshi Miyajima[1]; Takehiko Yagi[2]

[1] ISSP, Univ. of Tokyo; [2] Inst. Solid State Phys, Univ. Tokyo

The phase transition of  $\text{Fe}_x\text{O}$  ( $X = 0.94$ ) has been investigated under high pressure and temperature conditions to pressures between 60 and 72 GPa at temperatures up to 2000 K, using combined systems of a laser heated diamond anvil cell and a synchrotron X-ray beam on the BL13A beam line at KEK, Tsukuba. At ambient conditions, FeO is paramagnetic and in the NaCl (B1) structure. At pressures up to 20 GPa and room temperature, a phase transition to a distorted (rhombohedral) NaCl structure were observed. In the progress of investigation, the rhombohedral phase transformed into the B1 structure at 65 GPa and above 1400 K. On the other hand, at approximately 70 GPa and temperature less than 1000 K, the NiAs (B8) structure phase appeared in addition to the rhombohedral phase. However, at the same pressure and higher temperature than 1500 K, the B1 phase became more stable than the B8 phase and the rhombohedral phase. The preliminary results are inconsistent with FeO becoming metallic under conditions of the Earth's lower mantle.