

## Reaction between iron and silicate at core mantle boundary

# Tadashi Kondo[1], Eiji Ohtani[2], Naohisa Hirao[3], Takeshi Sakai[1], Tomoaki Kubo[4], Takumi Kikegawa[5]

[1] Sci., Tohoku Univ., [2] Institute of Mineralogy, Petrology, and Economic Geology, Tohoku University, [3] Tohoku Univ., [4] Tohoku Univ, [5] IMSS, KEK

<http://rance.ganko.tohoku.ac.jp/>

The chemical reaction and structure of the core-mantle boundary has been one of key interests in the earth's deep interior. A couple of experimental works using laser heated diamond anvil cell have been performed so far, but the results were not consistent with each other. Here, we will report new experimental results of in-situ x-ray diffraction study and chemical analysis of the recovered samples for MORB-iron system and garnet-iron system. Starting materials were silicate powder (synthetic MORB glass and pyrope garnet) and iron foil or powder. We tried both dry and wet conditions. A Mao-Bell type diamond anvil cell was used with an improved laser heating system and synchrotron radiation in KEK-PF, Tsukuba. The sample was confined in the hole of Re gasket without pressure medium. The experimental pressure range was from 30-80 GPa, which was measured by the ruby fluorescence method. Temperatures of heated spot were measured by the pyrometric method. The results indicate a reaction occurred only when the temperature of the sample exceeds the melting point in the system or wet condition. No reaction was observed in the iron - garnet system up to the melting temperature of iron at about 60 GPa. The results of the X-ray and EPMA analysis of the reaction products will be presented in detail.