（ ※本報告書は英語で記述してください。ただし、産業利用課題として採択されている方は日本語で記述していただいても結構です。 ）

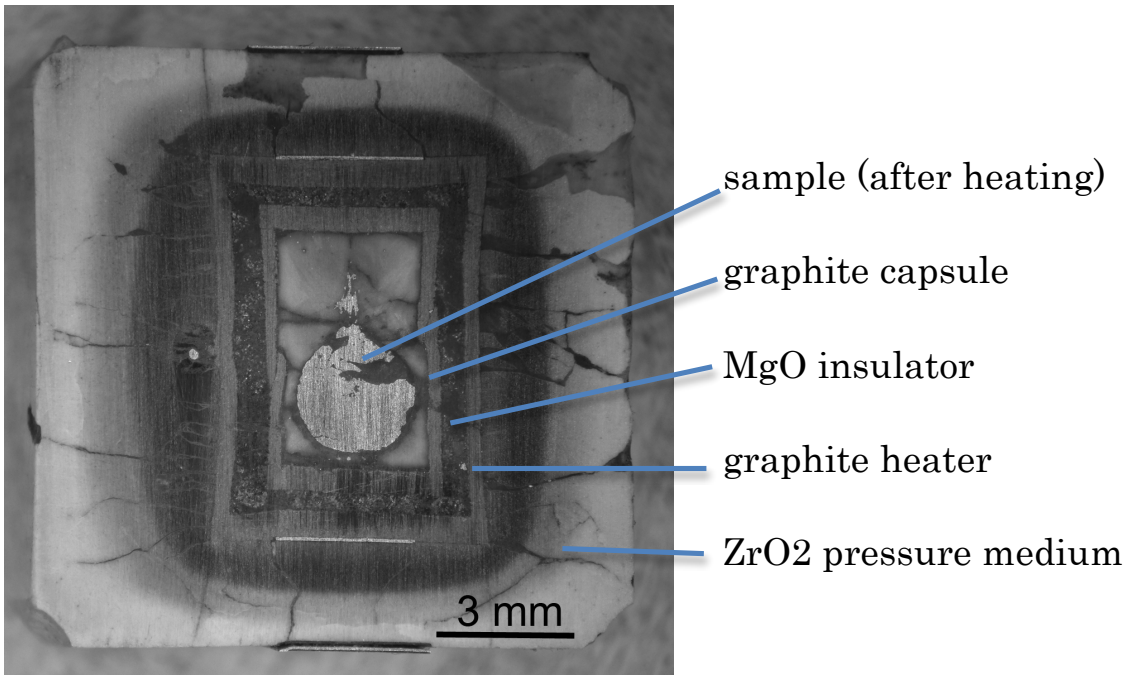
| CROSS TOKAI Experimental Report J-PARC | 承認日Date of Approval 2014/3/25<br>承認者Approver Takanori Hattori<br>提出日Date of report 2014/3/24 |
|---|---|
| 課題番号 Project No. : **2013B0034**<br>実験課題名 Title of experiment : **Hydrogen in Iron Formed by the Reaction of Iron, Silicate, and Water under High-Pressure and High-Temperature Conditions**<br>実験責任者名 Name of principal investigator : **Takehiko Yagi**<br>所 属 :Affiliation: **Geodynamics Research Center, Ehime University** | 装置責任者 Name of responsible person<br>Takanori Hattori<br>装置名 Name of Instrument/（BL No.）<br>PLANET, BL-11<br>実施日 Date of Experiment<br>**12/03/2014 – 16/03/2014** |

試料、実験方法、利用の結果得られた主なデータ、考察、結論等を、記述して下さい。（適宜、図表添付のこと）

Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. 試料 Name of sample(s) and chemical formula, or compositions including physical form.

Starting sample was a mixture of the powders of Fe, Mg(OD)2, and SiO2 placed in graphite capsule. Sample assembly is shown below. It was compressed using 6-ram press “ATSUHIME”. (The photo below was taken from the sample assembly used in the preliminary experiment.)



2. 実験方法及び結果（実験がうまくいかなかった場合、その理由を記述してください。）

Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.

First run was made by compressing the sample to 4.6 GPa at room temperature, heated up to 1800 K, and then quenched to room temperature. Neutron diffraction measurement was made, after quenching, for 7 hours at room temperature. After that the sample was recovered to room pressure. Then two reference data were taken for 7 hours each. Results indicate that the iron sample was mainly transformed into bcc phase, not the dhcp phase we expected, because the pressure was too low.

The second run was made by compressing the sample to 5.5 GPa. Unfortunately the anvil was broken when the temperature was increased to about 1500 K. The reason remains unclear. From the fact that the sample assembly we used was quite stable and no problems have happened when we repeated preliminary experiments for more than 15 times in other places, it is very likely that the anvils we used at the PLANET has some problem. As a result, we could not get any data in run 2.

2. 実験方法及び結果（つづき） Experimental method and results (continued)

Diffractions obtained by run 1 and reference data are shown below.