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SIT040-15

Room:104

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## Reaction of hydrogen molecule and olivine under high pressure and high temperature condition

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The oxidation state of the Earth's mantle is reduced with depth, and the composition of C-O-H fluids is controlled by the oxidation state. In the deeper part of the upper mantle, H<sub>2</sub>-fluids exist in addition to H<sub>2</sub>O fluids. Many previous studies showed that influence of H<sub>2</sub>O to olivine. However, influence of H<sub>2</sub> to olivine was not studied. High-pressure and temperature experiments of forsterite-hydrogen system were performed using Laser heated diamond anvil cell. A lever- and spring-type diamond anvil cell (DAC) was used in the high pressure experiment. For pressure measurements, a ruby fluorescence method was used. Heating experiments were performed with CO<sub>2</sub> laser heating systems. After quenching, XRD and Raman spectroscopy measurements were performed at high pressure and room temperature.

Keywords: upper mantle, hydrogen, olivine, laser heated diamond anvil cell