

Synthesis of helium hydrate, filled ice II structure, and phase transitions under high pressure.

Akiko Umeda[1]; Hisako Hirai[2]; Shin-ichi Machida[3]; Taro Kawamura[4]; Yoshitaka Yamamoto[4]; Takehiko Yagi[5]

[1] Education, Tsukuba Univ.; [2] Geoscience, Tsukuba Univ.; [3] Life and Environmental Sci., Tsukuba Univ; [4] MHRL, AIST; [5] Inst. Solid State Phys, Univ. Tokyo

High pressure synthesis of helium hydrate, filled ice II structure, was performed using diamond anvil cell, and the stable region was examined under a pressure range of 0.2 to 5GPa and temperature range of 100K to 300 K using a cryostat system. Helium hydrate has been reported to form filled ice II structure under 195K-262K,0.28GPa-0.480GPa. The present X-ray diffractometry using synchrotron radiation revealed that the stable region was wider than that reported previously. The detailed stable region and phase transitions will be shown in a poster.