Geodynamics Seminar

第340回ジオダイナミクスセミナー

Phase changes of hydrogen hydrate under low - temperature and high – pressure

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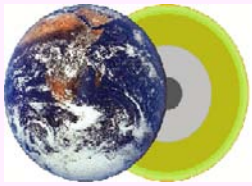
主催：愛媛大学地球深部ダイナミクス研究センター
日時：10/26（金）午後 4時30分～
場所：総合研究棟 4F 会議室



EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Hydrogen hydrate is composed of hydrogen-bonded host water molecules forming cages or frameworks that include guest hydrogen molecules. Hydrogen and water are the most abundant materials in the universe. Recently, hydrogen hydrate has been reported to exist in proto-star and extra-solar planets. Thus, high pressure experiments of hydrogen hydrate is important to estimate the formation and evolution process of the proto-star and extra-solar planets. One type of hydrogen hydrate, filled-ice Ic structure (HH-C2), is thought to have cubic structure. However, ab initio calculation predicted that the cubic structure of HH-C2 transforms to tetragonal under high-pressure and low-temperature. Such thing has not yet been experimentally clarified. Then, low-temperature and high-pressure experiments were performed to clarify the phase changes of HH-C2 in the previously unexplored region. In situ X-ray diffractometry revealed that the cubic structure of HH-C2 transforms to a tetragonal structure at low-temperatures and high-pressures. In addition, in order to estimate the reasons for the transformation to the tetragonal structure, Raman measurements for the vibrational and rotational modes of the hydrogen molecules under low-temperature and high-pressure were performed. The results will be reported.

詳細は当センターホームページ: http://www.ehime-u.ac.jp/~grc/をご覧ください
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