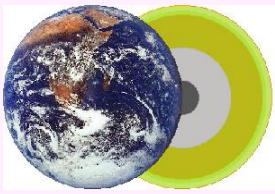
The 384th Geodynamics Seminar

Pressure-induced metallization in group III-V and II-VI semiconductors and its applications to pressure fixed point for high-pressure experiment by multianvil apparatus

Dr. Takehiro Kunimoto (Postdoctoral Researcher, GRC)

Date: 05.16.2014 (Fri) 16:30 ~
Venu: Meeting Room #486, Science Research Bldg 1, Ehime Univ.

日時：2014年5月16日(金)16:30～
場所：愛媛大学 総合研究棟Ⅰ 4階共通会議室



EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Calculations of generated pressures and temperatures in high-pressure apparatus are of essential importance when we apply experimental results to the study of the Earth's interior. Some of semiconductors were expected to transform to metallic states under high-pressure (Piermarini and Block (1975), Bundy et al. (1975), Yagi and Akimoto (1977), Onodera and Ohtani (1980)). In laboratory experiments, change in electrical resistance originating in metallization is commonly used for the measurement of generated pressure. In this study, pressure-induced metallization and phase transition in the group III-V and II-VI semiconductors have been studied by detecting the change in electrical resistance of the samples with in situ-X-ray diffraction measurements. In the results, transformation of many zincblende type semiconductors to rocksalt type ones with metallic states have been occurred. The metallization pressures have been decided from the unit cell volumes of pressure standard materials (Au, MgO and NaCl) and its equations of state (Au; Anderson et al., 1989 and Tsuchiya et al., 2003, MgO; Speziale 2001, Jamieson 1981 and Kono et al 2008, NaCl; Decker 1971).

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
問い合わせ先：出倉 春彦（TEL:089-927-8408, e-mail:dekura@sci.ehime-u.ac.jp）