

# The 443rd Geodynamics Seminar

Determination of pressure effect on thermocouple electromotive force using multi-anvil apparatus

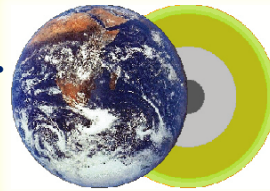
**Dr. Yu Nishihara (Associate Professor, GRC)**

**Date: 20 May (Fri.) 2016, 16:30 ~**

**Venue: Meeting Room #486, Science  
Research Bldg. 1, Ehime Univ.**

**日時 : 2016年5月20日 (金) 16:30~**

**場所 : 愛媛大学 総合研究棟 I  
4階共通会議室**



## Abstract

Our understanding of Earth's interior highly depends on physical and chemical properties of Earth materials which were determined based on high-pressure and high-temperature experiments in which temperature is mostly determined using a thermocouple without any pressure correction. This may lead to erroneous results in estimated temperature and thus physical and chemical properties of Earth materials due to significant pressure effects of the thermocouple electromotive force (EMF). In this study, we developed a method to determine the absolute pressure effect on thermocouple EMF up to 7 GPa and 600°C, based on a single wire method using Kawai-type multi-anvil apparatus in conjunction with synchrotron radiation. Since the multi-anvil apparatus is capable of achieving much higher pressure and temperature, the method presented in this study promises to reveal absolute temperature correction for thermocouples over a wide range of pressure and temperature conditions.