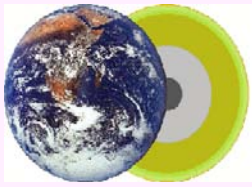
Geodynamics Seminar

第347回ジオダイナミクスセミナー

Pressure and Temperature dependences of sound velocities of minerals in the Earth's mantle transition region

Dr. Steeve Greaux (Global COE Research Fellow, GRC)

主催：愛媛大学地球深部ダイナミクス研究センター
日時：1/18（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

Elastic properties of mantle minerals are essential to picture the structure and mineralogy inside of the Earth by interpreting seismic observations. Using ultrasonic interferometry techniques combined with high-pressure and high-temperature experiments on synchrotron we are now able to measure simultaneously the pressure and temperature dependences of both P- and S- wave velocities in situ at middle-to-lowermost transition zone P and T conditions. Using this technique we have reported elastic properties of garnets, stishovite and hollandite phases up to 24 GPa and 1700 K. Here we present our recent measurements of sound velocities of CaSiO3 perovskite (CPv) up to 21 GPa and 1700 K. To determine the elastic properties of CPv by ultrasonic interferometry is an experimental challenge since it is unquenchable to room P,T. Thus, to this day, there is no accurate experimental determination of Ks,Ks',dKs/dT and G, G', dG/dT simultaneously at high-P,T. CPv is considered as an important mineral in the Earth's transition zone and lower mantle as it is substantially present in pyrolitic mantle and subducted mid-oceanic ridge basalts (MORB). Therefore the present determination of its elastic properties is of great importance to discuss seismic structure in mantle transition zone and lower mantle regions.

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：桑山 靖弘（TEL:089-927-8408,e-mail:kuwayama@sci.ehime-u.ac.jp）