Geodynamics Seminar

第372回ジオダイナミクスセミナー

Sound velocities of almandine under high pressure and high temperature

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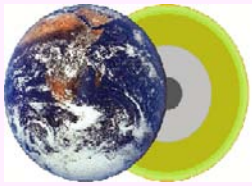
主催：愛媛大学地球深部ダイナミクス研究センター
日時：12/6（金）午後 4時30分～
場所：総合研究棟Ⅰ 4F 共通会議室



EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Garnet is an important group of minerals that exists in the Earth's upper mantle to mantle transition zone. Garnet has various end-members, whose elastic properties have been a major controversial issue, which should be addressed for interpretation of the structure and compositions of the Earth's mantle transition zone. Sound velocity measurements in conjunction with in situ synchrotron X-ray diffraction on $Fe_3Al_2Si_3O_{12}$ almandine garnet were conducted up to 19 GPa and 1700 K. The results show that V_P and V_S of almandine change linearly with pressure and temperature in this range. The elastic properties of almandine are close to those of pyrope and grossular, which are other major end-members of garnet in the upper mantle, while the elastic wave velocities (V_P and V_S) of almandine were lower than those of pyrope and grossular because of the higher density of almandine. It was also shown that the pressure and temperature dependences of all of these garnets are similar to each other. The sound velocities of majorite with a pyrolite composition were estimated based on the present results combined with those of earlier studies.

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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