Geodynamics Seminar

第354回ジオダイナミクスセミナー

Sound velocity measurements of MgSiO3 majorite garnet

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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：4/19（金）午後 4時30分～
場所：総合研究棟 4F 会議室

Abstract

Majorite-rich garnets are believed to be significant constituent minerals in the mantle transition zone. They play important roles in interpreting the seismic velocity structures in the mantle. So far, no direct elastic velocity measurement of MgSiO3 majorite has been carried out at simultaneous high pressure and high temperature conditions. Here we carried out ultrasonic experiments and the elastic velocities of majorite have been measured at 8-19 GPa and 300-900 K. The experimental results show that both Vp and Vs of majorite increase with increasing pressures and decrease with temperatures. Compared to other garnet end-members (i.e. pyrope, grossular), MgSiO3 majorite shows relative lower velocities. The derived elastic moduli and their pressure and temperature dependences by a two dimensional linear fitting are: K=162.1(5)GPa, dK/dP=4.20(4), dK/dT=-0.0167(5)GPa/K and G=86.2(2)GPa, dG/dP=1.03(1), dG/dT=-0.0084(2)GPa/K. The bulk and shear moduli of Mj-Py garnet solutions indicate a general linear trend on the composition, if present and previous ultrasonic experimental data are considered here.

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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