The 434th Geodynamics Seminar

Elastic properties of hydrous bridgmanite

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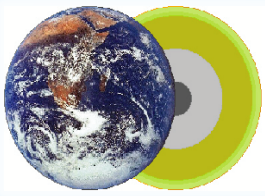

EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Our group has clarified that Al-bearing bridgmanite can contain significant amount of H (water) in its crystal structure, and the possible H substitution mechanism has been proposed by means of chemical compositional relationship between Mg, Si, Al and H. In addition, we clarified the possible H position in the bridgmanite by means of the powder neutron diffraction analysis in J-PARC, together with the single crystal X-ray structural analysis in PF. This shows that the significant amount of H (water) can be stored in the Earth's lower mantle.

Because of the H in the bridgmanite, the physical properties of the bridgmanite should be changed. The information is very important to discuss the water content and the composition in the lower mantle. So we are conducting the ultrasonic wave velocity measurements of the bridgmanite in BL04B1, SPring-8 to determine the elastic wave velocities and the elastic properties under high pressure and temperature. The related forms of the bridgmanite ("Tschermakite" substitution type and "Oxygen vacancy" substitution type) have also been measured to compare the difference. In this talk, I will introduce the recent progress of those projects.

詳細は当センターホームページ：http://www.grc.ehime-u.ac.jp/ をご覧ください
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