Geodynamics Seminar

第369回ジオダイナミクスセミナー

Dihedral angles of aqueous fluid in eclogite in the deep upper mantle

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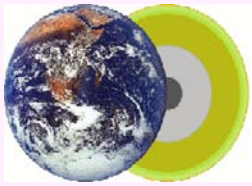
主催：愛媛大学地球深部ダイナミクス研究センター
日時：11/1（金）午後 4時30分～
場所：総合研究棟Ⅰ 4F 共通会議室



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Abstract

Seismological studies suggest the presence of the low shear-wave velocity region at 330 km depth in some of wedge mantle, where mantle rock is considered to contain small amount of aqueous fluid (or hydrous melt) in the grain boundary of minerals. The behavior of fluid bearing system is highly influenced by a connectivity of fluid. Dihedral angles, what is controlled by the solid-liquid interfacial energy, determine the connectivity of aqueous fluid in a rock under the mantle condition. When the dihedral angle is less than 60°, a small amount of fluid connect along grain boundaries and can migrate easily. To investigate connectivity of aqueous fluid in garnet-rich rocks, I measured the dihedral angle for the garnet-garnet-aqueous fluid, the garnet-pyroxene-aqueous fluid and the pyroxene-pyroxene-aqueous fluid in eclogite bulk composition at the upper mantle conditions. The results suggest that garnet and pyroxene rich rocks are possible to keep fluid in a rock at ~10 GPa (= ~300 km depth). Therefore decrease and attenuation of the shear wave velocity may result from the presence of garnet and pyroxene rich rocks in the lowermost upper mantle.

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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