Geodynamics Seminar

第346回ジオダイナミクスセミナー

Lattice preferred orientation of hcp iron induced by shear deformation

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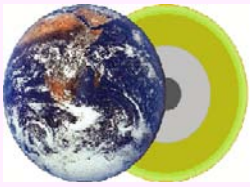
主催：愛媛大学地球深部ダイナミクス研究センター
日時：1/11（金）午後 4時30分～
場所：総合研究棟 4F 会議室



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Abstract

Many hypotheses have been proposed for origin of seismic anisotropy in the Earth's inner core. Plastic deformation of constituent material (most probably hexagonal-close-packed (hcp) iron) is one of the candidate processes to form the inner core anisotropy. Therefore knowledge of deformation induced lattice preferred orientation (LPO) of hcp iron is important for understanding of nature of the inner core. In this study, we have carried out shear deformation experiments on hcp iron at pressure of 9-18 GPa and temperature of 723 K using D-DIA apparatus installed at SPring-8 and development of LPO in the sample was observed in-situ based on two-dimensional X-ray diffraction using monochromatized synchrotron X-ray. Prior to the measurements on hcp iron, feasibility of LPO measurement was confirmed by using hcp titanium as a test sample. The results of shear deformation of hcp iron show that [0001] and [11$\bar{2}$0] axes are preferentially sub-parallel to shear plane normal and shear direction, respectively, suggesting basal slip is the dominant slip system under the studied deformation conditions.

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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