

Geodynamics Seminar

第331回ジオダイナミクスセミナー

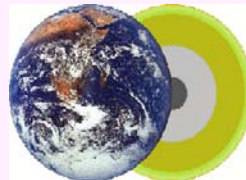
Grain boundary diffusion in MgSiO_3 perovskite reaction rims up to 50 GPa

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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: 6/15(金) 午後 4時30分～

場所: 総合研究棟 4F 会議室



Abstract

Knowledge of diffusion rate in minerals provide important constrains for understanding many physical and chemical processes in the Earth's interior, including mantle rheology and chemical transportation. In this study, growth rate of MgSiO_3 perovskite reaction rims between periclase and stishovite was investigated at 24-50 GPa and 1650-2150 K using a Kawai-type high-pressure apparatus. The textural observations of the recovered samples and kinetic data of rim growth revealed that the reaction is controlled by coupled grain boundary diffusion of MgO and grain coarsening in perovskite reaction layer. We found that the bulk diffusivity of Mg in polycrystalline perovskite is significantly affected by grain boundary when we consider the possible grain sizes and temperatures in the lower mantle. Accordingly, grain boundary diffusion in perovskite may be effective mechanism for chemical transportation in the lower mantle except for Si.

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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