

The 401th Geodynamics Seminar

Stability of (Mg,Fe)SiO₃ perovskite at high pressure and high temperature

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Abstract

MgSiO₃ perovskite (Mg-Pv or bridgmanite) is the most abundant mineral constituent in the Earth's lower mantle. Mg-Pv can accommodate no more than ~12 mol.% FeSiO₃ at top of the lower mantle (Fei et al., 1996). Fe solubility of Pv increases greater than ~40% at 60 GPa with increasing pressure and temperature (Dorfman et al., 2013). However, the pressure dependence of Fe solubility in Pv above 40 GPa is not well constrained. In this study, high pressure experiments were conducted using *in situ* synchrotron X-ray diffraction in the DIA-type multi anvil apparatus at BL04B1 beamline, at SPring-8 as well as another apparatus installed at GRC, Ehime University. I will talk about effect of Fe on phase boundaries in the (Mg,Fe)SiO₃ system.