HiPeR
Hiroshima Institute of Plate ConvErgence Region Research

プレート収束域の物質科学研究拠点

特別セミナー

$(Mg,Fe)_2SiO_4$二成分系の　ポストスピネル転移の相平衡関係 – 極めて鋭い660km 地震学的不連続の原因について

2018年 **8月2日 木 16:20–17:30**

広島大学理学部B305室

講師　桂 智男　教授

（バイエルン州立バイロイト大学　バイエルン地球科学研究所）

Binary phase relations of the postspinel transition in the system $(Mg,Fe)_2SiO_4$- interpretation of extremely thin 660-km seismic discontinuity

≪概要≫

Short wave-length seismic reflections from the 660-km discontinuity indicate that the 660-km discontinuity is extreme sharp, namely less than 2 km thick. Since the Earth's mantle is considered to consist of ferromagnesian silicates, and the 660-km discontinuity is usually attributed to dissociation of ringwoodite (Rw) to bridgmanite (Brg) + ferropericlase (fPc), the extreme sharpness of the 660-km discontinuity must be explained by the pressure interval of the Rw + Brg + fPc three-phase region.

However, the thickness less than 2 km corresponds to a pressure interval less than 0.1 GPa. Such a small pressure interval was difficult to investigate by means of high-pressure experiments. In this study, we have determined the binary loop of Rw + Brg + fPc at 1700 K by means of in situ X-ray diffraction in a multi-anvil press with special attention and thermochemical calculation. Our result shows the thickness of the Rw + Brg + fPc binary loop is essentially zero at mantle temperatures, which explains the sharpness of the 660-km discontinuity.