

Effect of water on the postspinel phase transformation

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Recently, it is reported the disagreement between the 660km seismic discontinuity and the pressure of postspinel transition in olivine (Irifune et al., 1998), and also reported that H₂O affects the alpha-beta-gamma phase transitions because beta and gamma-phases can contain several wt% of H₂O in their crystal structure (Inoue, 1998). Therefore H₂O may affect the postspinel transition. In this study, phase relations in the system Mg₂SiO₄-H₂O with low volatile content of H₂O (1.0-3.0wt%) was experimentally investigated at pressures of 20-23GPa and a temperatures of 1873K. As the results, hydrous gamma-phase was stable at higher pressure than anhydrous gamma-phase with increasing water content within 1.0-2.0wt%. These experimental results may cancel the above disagreement.