

## Fe-Mg interdiffusion in magnesiowüstite at high pressure

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Fe-Mg interdiffusivities in (Fe,Mg)O magnesiowüstite have been measured at pressures of 7-35 GPa and temperatures of 1573-1973K using a Kawai type high-pressure apparatus. The diffusion profiles were obtained across the interface between MgO and (Fe<sub>0.5</sub>,Mg<sub>0.5</sub>)O samples by electron microprobe analyses, and the Fe-Mg interdiffusivities were determined. By extrapolating the results to the P-T conditions of the core-mantle boundary (CMB), we evaluated the rate of the iron enrichment in the subducted harzburgitic slabs of depleted peridotite overlying this boundary. We found that the density increase in the slab due to chemical diffusion is significantly slow compared with the density decrease caused by the thermal diffusion at these conditions. This suggests that the depleted peridotitic (harzburgitic) former slabs may become possible candidate for the rising plumes from the CMB before they reach chemical equilibrium with the iron-rich materials present near the CMB if they have buoyancy enough.