

Stability field of dense hydrous magnesium silicate phases and mobility of water in the earth's interior

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The stability of hydrous minerals in the Earth's mantle has been studied by many recent experimental investigations. DHMS could remain stable within cold regions of subducting oceanic lithosphere and carry water down to depths exceeding 150 km into the mantle. Phase G and super hydrous B is the candidates for the hydrous phase in a cold slab descending into the base of the transition zone and the uppermost part of the lower mantle. In addition, In situ X-ray diffraction measurement was carried out using synchrotron radiation. I used MAX-III

cubic anvil systems at the National Laboratory for High Energy Physics. Super hydrous B decomposes into an assemblage of phase G, periclase, and perovskite at pressure above 30 GPa and temperatures 700C.