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Sound Velocity Of ($Mg_{0.92}$, $Fe_{0.08}$)Sio_3 Perovskite up to 140 Shock Pressure and Its Geophysical Implications[1] ZIZHENG GONG, LIN HE, LI ZHANG[2], LIWEI DENG, Institute of Physics, Southwest Jiaotong University, Chengdu 610031, P.R. China, YINGWEI FEI, Geophysical Laboratory, Carnegie Institution of Washington, Washington DC 20015, USA, FUQIAN JING, Laboratory for Shock Wave and Detonation Physics Research, Institute of Fluid Physics, P.O.Box 919, Mianyang, Sichuan 621900, China — New experimental data of compressional sound velocity for polycrystalline enstitate ($Mg_{0.92}$, $Fe_{0.08}$)SiO_3initial specimens were measured up to 140 GPa shock pressure using the optical analyzer techniques. The results confirm the discontinuity and negative jump of compressional sound velocity between 70-85GPa. This pressure range is comparable with that of the HS to LS transition of iron in ($Mg_{0.92}$, $Fe_{0.08}$)SiO_3 Perovskite. Moreover, the estimated phase boundary dT/dP, 66$\sim$92 K/GPa, is consistent with that of spin transition estimation. The corresponding depth in the lower mantle of 70-85GPa just is 1600-1800km, so, the radial anomaly of seismic wave velocity in this region of the lower mantle is possible a result of solid to solid structure transition of ($Mg_{0.92}$, $Fe_{0.08}$)SiO_3 Perovskite.

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