

Abstract Submitted
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Shock compression of iron foils to Earth core conditions with GEKKO-HIPER laser KEISUKE SHIGEMORI, Institute of Laser Engineering, Osaka Univ., TETSUO IRIFUNE, Geodynamics Research Center, Ehime University, DAIGO ICHINOSE, KAZUTO OTANI, TATSUHIRO SAKAIYA, HIROSHI AZECHI, KUNIOKI MIMA, Institute of Laser Engineering, Osaka Univ., JUSTIN WARK, University of Oxford, BRUCE REMINGTON, Lawrence Livermore National Laboratory — We have been developing an experiment to create the Earth core condition (>300 GPa, ~ 6000 K) with intense laser. Experiments were done on GEKKO-HIPER laser facility which has twelve beams from one direction for planar target experiments. We irradiated iron foils with a shaped pulse by stacking laser beams with certain time delay between the beams. Shock parameters (shock velocity, shocked temperature) were measured by velocity interferometer for any reflector (VISAR) and optical spectral pyrometer. We also measured the sound velocity of the shock compressed iron foils with side-on x-ray backlighting technique. The measured sound velocity (> 300 GPa, ~ 5000 K) shows solid sound velocity (~ 11 km/s) in good agreements with previous seismic data. We also started to measure the crystal conditions of the shocked iron with x-ray diffraction technique. Preliminary results were obtained at a pressure of >15 GPa.

Keisuke Shigemori
ILE, Osaka Univ.

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