

## Measurements of physical parameters on laser-irradiated iron foils relevant to Earth's core condition

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Strong shock wave generated by intense laser can create extremely high pressure condition beyond the Earth core conditions. By means of multiple shock compression, we can obtain many pressure-temperature conditions below the principal Hugoniot temperature.

We have been developing an experiment on compression of iron relevant to Earth core condition at ILE, Osaka University. We have done measurements of sound velocity of laser-irradiated iron foils relevant to Earth's core condition. We also did a development of velocity interferometer system for any reflector. In addition to these measurements, we have started to develop an in situ x-ray diffraction technique of shock compressed single crystals.

X-ray source foils (Cu, Fe) were placed besides the laser-irradiated single crystal iron foils. The diffracted x-ray from the shock-compressed iron target was measured by an imaging plate. We observed alpha - epsilon iron phase transition at around 16 GPa. We also obtained diffraction pattern of shock-compressed iron at around 300 GPa