

レーザー駆動超高压下の鉄に関するその場 X 線構造解析 In-situ X-ray structural analysis on laser-shock compressed iron

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The knowledge of high pressures ($P > 1$ Mbar) behavior of materials as iron is crucial for modeling the planetary interiors. Despite important progress obtained in the last decade on macroscopic characterization including equation of state (EOS), microscopic studies are necessary to investigate finely the structure changes. Here we present recent studies to obtain information on solid-solid phase transformation of iron under laser-driven shock compression using picosecond time-resolved x-ray diffraction technique. BCC-HCP phase transformation was observed at dynamic high pressure of ~ 180 GPa.

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