

Abstract Submitted
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Shock recovery experiments on yttrium iron garnet (YIG) powder HIROAKI KISHIMURA, HITOSHI MATSUMOTO, Natl Defense Academy — Shock recovery experiments on yttrium iron garnet (YIG) powder were carried out by the impact of a flyer plate accelerated by a single-stage powder-propellant gun. Sample was encapsulated in copper container at 64% of the theoretical maximum density (TMD) of the powder. The recovered sample was characterized by X-ray diffraction (XRD) analysis and Raman spectroscopy. In contrast to hydrostatic high-pressure studies, where pressure-induced amorphization accompanied by demagnetization and metallization were observed at a pressure of around 50 GPa, YIG powders shocked at a pressure of 56 GPa were decomposed into hematite and YFeO_3 . Most of Raman spectra of sample shocked at a pressure of 24 GPa were corresponding to cubic YIG phase and some spectra obtained from the same sample were composed of peaks derived from YIG and hematite (iron oxide). The appearance of peaks originated from hematite indicated that YIG began to decompose at a pressure of 24 GPa.

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