

Abstract Submitted
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Shock compression of magnesium silicon nitride TOSHIMORI SEKINE, TAKAMICHI KOBAYASHI, National Institute for Materials Science, BERT HINTZEN, Eindhoven University of Technology — Magnesium silicon nitride is a ternary nitride compound with an orthorhombic, distorted wurtzite structure at ambient condition. There is no study on this material at high pressures, but a recent theoretical work predicts phase transitions at ~ 17 GPa. We have determined Hugoniot for magnesium silicon nitride ceramics up to 150 GPa and performed recovery experiments up to ~ 50 GPa. The Hugoniot measurement indicates HEL of 15-17 GPa and a compression curve with no clear phase transition. The compression curve, however, showed a gradual deviation from the compression curve calculated for the low-pressure phase with increasing pressure. If this is the case, there would be a sluggish phase transition at high pressure. We carried out a series of recovery shots on the powders mixed with copper, but the results indicated no additional phase. We compared the results with the theoretical prediction.

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