

Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

Hugoniot measurement and high-pressure phase transition of beta-SiAlON TOSHIMORI SEKINE, TAKAMICHI KOBAYASHI, National Institute for Materials Science, ADVANCED MATERIALS LABORATORY TEAM — We have measured Hugoniot of beta-Si₄Al₂O₂N₆ ceramics up to about 120 GPa. The HEL and the onset pressure of phase transformation is smaller than those of beta-Si₃N₄. According to shock recovery results of beta-SiAlON, the recovered high-pressure phases are a cubic spinel and amorphous phase. The amount of amorphous phase increases with increasing pressure. Analysis of the high-pressure region of Hugoniot suggests a series of phase transitions with increasing pressure. A comparison of Hugoniot measurement and recovery results of beta-SiAlON indicates the post-spinel phase will not be quenchable. The partially released states have been determined by the buffer method and the results indicate a large hysteresis.

Toshimori Sekine
National Institute for Materials Science

Date submitted: 16 Mar 2005

Electronic form version 1.4