

Abstract Submitted
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Time-resolved Raman spectroscopy of diamond crystals shocked to 60 GPa and above J.M. LANG, Y.M. GUPTA, Institute for Shock Physics and Department of Physics, Washington State University — Changes in the diamond Raman spectrum were measured under shock wave induced uniaxial strain. Time-resolved spectroscopy was used to observe the splitting of the triply degenerate 1332.5 cm^{-1} Raman line for crystals shocked along [100] and [110] crystallographic orientations. Both natural and synthetic diamond samples were shocked to longitudinal stresses ranging from 20 GPa to 60 GPa. A spectrometer calibration error in the literature data (to 45 GPa) was discovered and corrected. After the calibration correction, the literature data and the present results are in good agreement. At 60 GPa, the Raman spectrum showed a decrease in the signal to noise ratio. Further experiments are planned to measure the splitting at stresses approaching and beyond the diamond HEL. Work supported by the DOE.

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