

Abstract Submitted  
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**Raman Spectroscopy of RDX Single Crystals under Static Compression** ZBIGNIEW DREGER, YOGENDRA GUPTA, Washington State University — To gain insight into the high pressure response of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), an energetic crystal, Raman spectroscopy results were obtained for hydrostatic (up to 15 GPa) and non-hydrostatic (up to 22 GPa) compressions. These results are needed to properly interpret the shock data. Several distinct changes in the spectra were found at  $4.0 \pm 0.3$  GPa, confirming the  $\alpha - \gamma$  phase transition previously observed in polycrystalline samples. Symmetry correlation analyses indicate that the  $\gamma$ -polymorph may assume a space group isomorphous with a point group  $D_{2h}$  with eight molecules occupying the  $C_1$  symmetry sites, similar to the  $\alpha$ -phase. It is also proposed that the factor group splitting can account for the observed increase in the number of modes in the  $\gamma$ -phase. Spatial mapping of Raman modes in a non-hydrostatically compressed crystal up to 22 GPa revealed a large difference in mode position indicating a pressure gradient across the crystal. No apparent irreversible changes in the Raman spectra were observed under non-hydrostatic compression. Work supported by DOE and ONR.

James Patterson  
Washington State University

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