

Abstract Submitted
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Vibrational Spectroscopic Studies of Reduced-Sensitivity RDX under Static Compression CHAK WONG, JARED GUMP, Indian Head Division, Naval Surface Warfare Center — Explosives formulations with Reduced-Sensitivity RDX showed reduced shock sensitivity using NOL Large Scale Gap Test, compared with similar formulations using normal RDX. Molecular processes responsible for the reduction of sensitivity are unknown and are crucial for formulation development. Vibrational spectroscopy at static high pressure may shed light to the mechanisms responsible for the reduced shock sensitivity as shown by the NOL Large Scale Gap Test. SIRDX, a form of Reduced-Sensitivity RDX, was subjected to static compression at ambient temperature in a Merrill-Bassett sapphire cell from ambient to about 6 GPa. The spectroscopic techniques used were Raman and Fourier-Transformed IR (FTIR). The pressure dependence of the Raman mode frequencies of SIRDX was determined and compared with that of normal RDX. The behavior of SIRDX near the pressure at which normal RDX, at ambient temperature, undergoes a phase transition from the α to the γ polymorph will be presented. Implications to the reduction in sensitivity will be discussed.

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