Abstract Submitted
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1,1-Diamino-2,2-Dinitroethylene Under High-Pressure-High-Temperature[1] MATTHEW BISHOP, University of Alabama at Birmingham, NENAD VELISAVLJEVIC, Los Alamos National Laboratory, ZHENXIAN LIU, Carnegie Institution of Washington, MATRIN GALLEY, University of Nevada Las Vegas — 1,1-Diamino-2,2-dinitroethylene (FOX-7) is an insensitive high explosive (IHE) which shows promise for use in low vulnerability ammunitions. With performance comparable to RDX and HMX, there is a growing interest in understanding the behavior under denotation conditions. Through the use of diamond anvil cell (DAC) technology and electrical resistive heating, the vibrational behavior of FOX-7, in both the mid and far-IR, were recorded at multiple isotherms under elevated pressure-temperature (PT). Energy-dispersive x-ray diffraction (XRD) was also employed along with a multi-anvil press for further investigating pressure-temperature phase space. Future planned experiments will focus on using high-resolution angular-dispersive XRD and neutron diffraction techniques to resolve high pressure-temperature structural information and obtain P-V-T data. The experiments on FOX-7 have revealed previously uninvestigated knowledge on the elevated-PT decomposition and phase boundaries allowing for a more developed basis for the behavior of FOX-7 under detonation conditions.

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