

Abstract Submitted
for the SHOCK17 Meeting of
The American Physical Society

The phase transition of RDX under hydrostatic and ramp compression XIANXU ZHENG, ZHAOHUI ZHANG, JUN ZHAO, DAIPENG ZENG, YANGYANG ZENG, XU ZHANG, China Acad of Engr Phys — The thermodynamic state of explosive was highly dependent on the phase transition structure and phase transition of explosive crystal. However, the phase transition details of explosive have never been characterized sufficiently under different compression conditions. In this study, both the hydrostatic and ramp compression were performed to examine the phase transition of RDX crystal. Based on our experimental results, we confirmed the α - γ phase transition onset around 4 GPa under hydrostatic compression, which agree with the published literature very well. In the ramp compression experiment, a ~ 260 ns ramp compression up to 30 GPa was generated to compress the RDX single crystal along 020 crystal axis, the PDV signal indicated that the phase transition was induced around 2.8 GPa, and the phase transition induction time was about several tens nanoseconds. Our preliminary experiments suggest that the phase transition pressure of RDX have great relation with the compression history, that probably means the phase transition mechanism were quite different between the hydrostatic and ramp compression.

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Date submitted: 08 Mar 2017

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