Abstract Submitted
for the SHOCK17 Meeting of
The American Physical Society

Correlation Between Hot Spots and 3-d Defect Structure in Single and Polycrystalline High-explosive Materials[1] CAMERON HAWKINS, National Security Technologies, OLIVER TSCHUANER, ZACHARY FUSSELL, University of Nevada, Las Vegas, JESSE SMITH, Advanced Photon Source — A novel approach that spatially identifies inhomogeneities from microscale (defects, con-formational disorder) to mesoscale (voids, inclusions) is developed using synchrotron x-ray methods: tomography, Lang topography, and micro-diffraction mapping. These techniques pro-vide a non-destructive method for characterization of mm-sized samples prior to shock experiments. These characterization maps can be used to correlate continuum level measurements in shock compression experiments to the mesoscale and microscale structure. Specifically examined is a sample of C4. We show extensive conformational disorder in gamma-RDX, which is the main component. Further, we observe that the minor HMX-component in C4 contains at least two different phases: alpha- and beta-HMX.

[1]This work supported by National Security Technologies, LLC, under Contract No. DE-AC52-06NA25946 with the U.S. Department of Energy and by the Site-Directed Research and Development Program. DOE/NV/25946–3071.

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Date submitted: 27 Feb 2017 Electronic form version 1.4