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The EOS of NTO through high-pressure microscopy- interferometry measurements[1] JOSEPH ZAUG, ELISSAIOS STAVROU, JONATHAN CROWHURST, SORIN BASTEA, MICHAEL ARMSTRONG, Lawrence Livermore National Laboratory — Measuring equation of state (EOS) of solid specimens under pressure usually involves the determination of the primitive cell volume using x-ray diffraction (XRD) measurements. However, in the case of low symmetry (e.g. triclinic) materials with twining features and large primitive cells, this can be problematic and ambiguous. In order to address this issue we examine the possibility of a "direct" approach which is based on measuring the surface area and thickness with microscopy and optical interferometry respectively. To test the validity of our approach, we had first compared the results of our technique in the case of the Triamino-Trinitrobenzene (TATB, SG P-1) with the published EOS, as determined with XRD measurements, by Stevens *et al.* (Propellants Explos. Pyrotech. 33, 286 (2008)). A perfect match between the two sets of data has been observed. We present also the results of our study on the energetic material 5-nitro-2,4-dihydro-1,2,4,-triazol-3-one (α-NTO) which crystallizes as a four-component twin (Bolotina *et al.* ActaCryst. B61, 577 (2008)) with triclinic symmetry (SG P-1). No high pressure XRD EOS data have been published on α-NTO, probably due to its extremely complex crystal structure; thus, this technique is a reliable alternative.

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