

Abstract Submitted
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High-Speed Photography of Detonation Propagation in Dynamically Precompressed Liquid Explosives OREN PETEL, ANDREW HIGGINS, McGill University, AKIO YOSHINAKA, FAN ZHANG, DRDC Suffield — The propagation of detonation in shock compressed nitromethane was observed with a high speed framing camera. The test explosive, nitromethane, was compressed by a reverberating shock wave to pressures on the order of 10 GPa prior to being detonated by a secondary detonation event. The pressure and density in the test explosive prior to detonation was determined using two methods: manganin strain gauge measurements and LS-DYNA simulations. The velocity of the detonation front was determined from consecutive frames and correlated to the density of the explosive post-reverberating shock wave and prior to being detonated. Observing detonation propagation under these non-ambient conditions provides data which can be useful in the validation of equation of state models.

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