

Abstract Submitted
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Detonation in Pre-Compressed Nitromethane AKIO YOSHINAKA, DRDC Suffield, ANDREW J. HIGGINS, OREN E. PETEL, VINCENT TANGUAY, McGill University, FAN ZHANG, DRDC Suffield — Detonation propagation in liquid nitromethane (NM) that has been pre-compressed by multiple shock waves was investigated experimentally. An explosively driven flyer plate is allowed to impact a thin NM sample encapsulated between two higher impedance metallic plates. Resulting multiple shock reverberations between the two plates quasi-isentropically compresses the NM to densities 1.5 times its initial value, with pressure plateaus typically ranging between 5 and 8 GPa. A secondary event then initiates detonation in a direction perpendicular to that of the reverberating shock wave. Light emitted from the detonation front is recorded through the use of photodiodes monitoring discrete locations along the detonation path. The results are compared with previous investigations of incident and reflected shock initiation of detonation to explore the detonation initiation mechanism of liquid explosives.

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