Abstract Submitted
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Using laser-driven flyer plates to study the shock initiation of nanoenergetic materials WILLIAM SHAW, DANA DLOTT, University of Illinois at Urbana — A tabletop system has been developed to launch aluminum laser-driven flyer plates at speeds up to 4 km/s. The flyer plates are used to initiate a variety of nanoenergetic materials including aluminum/iron oxide particles produced by arrested ball milling, and multi-layer nano-thermites produced by sputtering. The initiation process is probed by a variety of high-speed diagnostics including time-resolved emission spectroscopy. Impact velocity initiation thresholds for different thickness flyer plates, producing different duration shocks, were determined. The durations of the emission bursts and the effects of nanostructure and microstructure on these bursts were used to investigate the fundamental mechanisms of impact initiation.

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