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Launch Characterization of Laser-Driven Flyer Plates STEVEN DEAN, FRANK DE LUCIA, JENNIFER GOTTFRIED, US Army Research Laboratory — Laser-driven flyer plates represent a bench-scale means of studying shock impact of energetic materials. The flyer plates are formed by means of a focused Nd:YAG laser. The laser pulse generates a rapidly expanding plasma between the flyer plate foil and the substrate to which it is adhered. As the plasma grows, a section of the metal foil is ejected at high speed, forming the flyer plate. Simultaneously, many small particles are also ejected that travel in the direction of the flyer plate. We term these particles "launch products". This hot, fast moving debris can create an environment adverse to the study of impacting energetic materials at longer time scales (100s of ns to μs). High speed video and schlieren imaging were used to examine the formation of launch products. Control of launch product formation through altering the driving laser energy, the spatial energy profile of the laser pulse, and the flyer plate foil thickness and composition has been investigated.

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