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Recent Dynamic Materials Experiments at the Trident Laser Facility ERIC LOOMIS, DAMIAN SWIFT, SHENGNIAN LUO, RICHARD KRAUS, SCOTT GREENFIELD, DENNIS PAISLEY, RANDY JOHNSON, LANL — The Trident laser facility is the primary workhorse for conducting laser-induced shock physics experiments at Los Alamos National Laboratory (LANL). The pulse shaping flexibility of the Trident laser allows us to investigate dynamic material response through different material state and timescale regimes. Recent experiments were conducted on Be foils at low to moderate pressures to investigate shock front roughening of Be for usage as an inertial confinement fusion (ICF) ablator. Simultaneous line imaging Doppler velocimetry (VISAR) and surface displacement interferometric measurements were used to observe grain motion in the direction of the shock and to calibrate numerical models. Confined laser ablation studies have also been conducted to demonstrate and refine an alternate method to direct laser ablation. In the confined laser ablation technique the laser light is shined through a transparent substrate and deposited in a thin ablating medium such as C. The expansion of the ablating material is constrained on one side by the substrate providing a greater push into the target material. Ramped and square pulses have been used to induce isentropic compression and shock waves into the target respectively. *In-situ* line VISAR measurements were made to quantify the loading history and to compare to simulations.

Eric Loomis

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