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Modeling Shock-Induced Ejecta Production using Large-Scale Molecular Dynamics Simulations T.C. GERMANN, M.B. ZELLNER, J. QUENNEVILLE, G. DIMONTE, J.E. HAMMERBERG, Los Alamos National Laboratory — Large-scale classical molecular dynamics (MD) simulations with 10^6 to 10^9 atoms are being used to study shock ejection from a roughened surface. We employ an embedded atom method (EAM) model for copper, and are studying both single-mode and multi-mode sinusoidal surface finishes both below and above the Hugoniot melting transition. In addition, we are exploring the effect of loading conditions, utilizing both supported (infinite flyer thickness) and unsupported (thin flyer/HE) drives. Our MD results are in qualitative agreement with a similar series of LANL experiments on tin, and both simulations and experiments can be described by a model based on the Richtmyer-Meshkov fluid instability.

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