Abstract Submitted
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Effects of Shock-Breakout Pressure on Ejection of Micron-Scale Material from Shocked Tin Surfaces[1] MICHAEL ZELLNER, JAMES HAMMERBERG, ROBERT HIXSON, KEVIN MORLEY, ANDREW OBST, RUSSELL OLSON, JEREMY PAYTON, PAULO RIGG, WILLIAM BUTTLER, Los Alamos National Lab, MICHAEL GROVER, ADAM IVERSON, GREGORY MACRUM, GERALD STEVENS, WILLIAM TURLEY, LYNN VEESER, National Securities Technologies, NATHAN ROUTLEY, Atomic Weapons Establishment — Los Alamos National Lab (LANL) is actively engaged in the development of a model to predict the formation of micron-scale fragments ejected (ejecta) from shocked metal surfaces. The LANL ejecta model considers that the amount of ejecta is mainly related to the material's phase on shock release at the free-surface. This effort investigates the relation between ejecta production and shock-breakout pressure for Sn shocked with high explosives to pressures near the solid-on-release/partial-liquid-on-release phase transition region. We found that the amount of ejecta produced for shock-breakout pressures that resulted in partial-liquid-on-release increased significantly compared to that which resulted in solid-on-release. Additionally, we found that the amount of ejecta remained relatively constant within the partial-liquid-on-release, regardless of shock-breakout pressure.

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Michael Zellner
Los Alamos National Lab

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