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Influence of shockwave profile on ejecta: An experimental and computational study MICHAEL ZELLNER, TIMOTHY GERMANN, JAMES HAMMERBERG, PAULO RIGG, Los Alamos National Laboratory, GERALD STEVENS, WILLIAM TURLEY, National Security Technologies, WILLIAM BUTTLER, Los Alamos National Laboratory — This effort investigates the relation between shock-pulse shape and the amount of micron-scale fragments ejected (ejecta) upon shock release at the metal/vacuum interface of shocked Sn targets. Two shock-pulse shapes are considered: a supported shock created by impacting a Sn target with a sabot that was accelerated using a powder gun; and an unsupported or Taylor shockwave, created by detonation of high explosive that was press-fit to the front-side of the Sn target. Ejecta production at the back-side or free-side of the Sn coupons were characterized through use of piezoelectric pins, Asay foils, optical shadowgraph, and x-ray attenuation. In addition to the experimental results, SPaSM, a short-ranged parallel molecular dynamics code developed at Los Alamos National Laboratory, was used to investigate the relation between shock-pulse shape and production of ejecta from a first principles point-of-view.

Michael Zellner
Los Alamos National Laboratory

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