

Abstract Submitted  
for the SHOCK11 Meeting of  
The American Physical Society

**The Study of High-Speed Surface Dynamics Using a Pulsed Proton Beam** WILLIAM BUTTLER, Los Alamos National Laboratory, BENJAMIN STONE<sup>1</sup>, DAVID ORO, GUY DIMONTE, DEAN PRESTON, FRANK CHERNE, TIMOTHY GERMANN, GUILLERMO TERRONES, DALE TUPA, LANL — Los Alamos National Laboratory is presently engaged in development and implementation of ejecta source term and transport models for integration into LANL hydrodynamic computer codes. Experimental support for the effort spans a broad array of activities, including ejecta source term measurements from machine roughened Sn surfaces shocked by HE or flyer plates. Because the underlying postulate for ejecta formation is that ejecta are characterized by Richtmyer-Meshkov instability (RMI) phenomena, a key element of the theory and modeling effort centers on validation and verification RMI experiments at the LANSCE Proton Radiography Facility (pRad) to compare with modeled ejecta measurements. Here we present experimental results used to define and validate a physics based ejecta model together with remarkable, unexpected results of Sn instability growth in vacuum and gasses, and Sn and Cu RM growth that reveals the sensitivity of the RM instability to the yield strength of the material, Cu. The motivation of this last subject, RM growth linked to material strength, is to probe the shock pressure regions over which ejecta begins to form.

<sup>1</sup>Presenter

William Buttler  
Los Alamos National Laboratory

Date submitted: 23 Mar 2011

Electronic form version 1.4