Abstract Submitted
for the SHOCK15 Meeting of
The American Physical Society

Large-scale molecular dynamics simulations of the Richtmyer-Meshkov instability in aluminum[1] FRANK J. CHERNE, WILLIAM D. WOLFS, WX-9 Shock and Detonation Physics, Los Alamos National Laboratory — Several embedded atom method (EAM) potentials for aluminum were evaluated looking at the shock behavior. A potential was selected to study the characteristics of the growth of a Richtmyer-Meshkov instability in shock melted state with varying the amplitude of the surface while shocking into a vacuum. A brief look at the shock behavior of the potential will also be discussed. The evolution of the growth of the bubble and the spike as a function of time and kh_0 will be compared with the existing empirical models of G. Dimonte, et. al. [J. Appl. Physics **113**, 024905 (2013)] and K. Mikaelian, et. al. [Phys. Rev. Lett **80**, 508, (1998), J. Fluid Mech. **703**, 60 (2012)]. Molecular dynamics was selected for this study, in part, because the atomic representation is able capture secondary hydrodynamic effects such as viscosity and surface tension.

[1]Support for this work was done under US DOE contract DE-AC52-06NA25396.

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Date submitted: 02 Feb 2015 Electronic form version 1.4