Abstract Submitted
for the SHOCK15 Meeting of
The American Physical Society

Nucleation and Evolution of Dynamic Damage at Cu/Pb Interfaces using Molecular Dynamics S.J. FENSIN, S.M. VALONE, E.K. CERRETA, P.A. RIGG, G.T. GRAY III, Los Alamos National Laboratory — For ductile metals, the process of dynamic fracture occurs through nucleation, growth and coalescence of voids. For high purity single phase metals, it has been observed by numerous investigators that voids tend to heterogeneously nucleate at grain boundaries and all grain boundaries are *not* equally susceptible to void nucleation. However, for materials of engineering significance, especially those with second phase particles, it is less clear if the type of bi-metal interface between the two phases will affect void nucleation and growth. To approach this problem in a systematic manner two bi-metal interfaces between Cu and Pb have been investigated: {111} and {100}. Qualitative and quantitative analysis of the collected data from the spall simulations suggests that Pb becomes disordered during shock compression and is the preferred location for void nucleation under tension. Despite the interfaces being aligned with the spall plane (by design), they are not the preferred location for void nucleation *irrespective* of interface type.

Saryu Fensin
Los Alamos Natl Lab

Date submitted: 29 Jan 2015 Electronic form version 1.4