

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Fragmentation of Structural Energetic Materials: Implications for Performance¹ BRADY AYDELOTTE, School of Materials Science and Engineering: Georgia Institute of Technology, CHRISTOPHER BRAITHWAITE, Fracture and Shock Physics Group: Cavendish Laboratory, NARESH THADHANI, School of Materials Science and Engineering: Georgia Institute of Technology — Fragmentation results for structural energetic materials based on intermetallic forming mixtures are reviewed and the implications of the fragment populations are discussed. Cold Sprayed Ni+Al and explosively compacted mixtures of Ni+Al+W and Ni+Al+W+Zr powders were fabricated into ring shaped samples and subjected to fragmentation tests. Ring velocity was monitored and fragments were soft captured in order to study the fragmentation process. It was determined that the fragments produced by these structural energetic materials are much smaller than those typically produced by ductile metals such as steel or aluminum. This has implications for combustion processes that may occur subsequent to the fragmentation process.

¹ONR/MURI grant No. N00014-07-1-0740 Dr. Cliff Bedford PM

Brady Aydelotte
School of Materials Science and Engineering:
Georgia Institute of Technology

Date submitted: 25 Feb 2013

Electronic form version 1.4