

Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Grain Scale Discrete Element Simulation of Shock Responses of Explosives WENQIANG WANG, JIDONG YU, HUA FU, CANGLI LIU, FENG ZHAO, CHENGWEI SUN, Laboratory for Shock Wave and Detonation Physics, Institute of Fluid Physics, China Academy of Engineering Physics, Mianyang, Sichuan 621900, China — The bulk mechanical and chemical responses of explosives are largely determined by microstructures. Here we present some recent progress in grain-scale discrete element simulation of shock responses of granular explosives and PBXs. The discrete element models can be built based on Voronoi tessellation as well as real micrographs. Our studies have been focused on the damage and fracture issues and the evolution of hot spots. The results are roughly in agreement with those from mesh-based simulation techniques. We will discuss the newly developed discrete element force models. Some preliminary 3D work will also be presented.

Wenqiang Wang
Laboratory for Shock Wave and Detonation Physics,
Institute of Fluid Physics, China Academy of Engineering Physics,
Mianyang, Sichuan 621900, China

Date submitted: 20 Feb 2007

Electronic form version 1.4