Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Experimental Study of a Shock-Accelerated Gas Flow Non-Uniformly Seeded With Droplets[1] JOSEPH CONROY, MICHAEL ANDERSON, ROSS WHITE, PETER VOROBIEFF, C. RANDALL TRUMAN, The University of New Mexico, SANJAY KUMAR, University of Texas-Brownsville — We present an experimental study of a gas flow which is partially seeded with a modest volume fraction of submicron-sized droplets and subjected to shock acceleration. Under these conditions an instability similar to Richtmyer-Meshkov develops. In our experiments, a planar shock front traveling horizontally through air meets a vertical column of gas (either air or SF6) that is seeded with particles. After shock interaction, the column is compressed and deformed, and a pair of counter-rotating vortices forms. The evolution of the flow is tracked with a multiple-CCD digital camera, allowing to capture up to four laser sheet-illuminated images per single experiment. We discuss the flow features in shocked and reshocked flows at a range of Mach numbers from 1.2 to 2.

[1]We thank Prof. S. "Bala" Balachandar (U. of Florida) for providing the suggestions that led to the experiments described here. This research is funded by NNSA through DOE Grant DE-PS52-08NA28920 and by DTRA awards HDTRA1-07-1-0036 and HDTRA1-08-1-0053.

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Date submitted: 10 Aug 2010 Electronic form version 1.4