Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Richtmyer-Meshkov Instability of a Membraneless, Sinusoidal Gas Interface BRADLEY MOTL, JOHN NIEDERHAUS, MARK ANDERSON, JASON OAKLEY, RICCARDO BONAZZA, University of Wisconsin — Results are presented from a series of shock tube experiments studying the Richtmyer-Meshkov instability (RMI) for the case of a 2-D single mode gas interface. The membraneless interface is formed by the head-on flow of nitrogen, seeded with acetone, and sulfur-hexafluoride which creates a stagnation surface. A sinusoidal interface is created by oscillating two rectangular pistons that are initially flush with the shock tube walls. The RMI is studied for varying incident shock strengths ($1.3 \leq M \leq 4$) by imaging the interface with planar laser-induced fluorescence, once immediately before shock arrival and at two different post-shock times. The experimental images and the growth rates of non-dimensionalized geometrical features are compared to numerical simulations using the *Raptor* code (LLNL) which takes advantage of the Piecewise Linear Method (PLM) with Adaptive Mesh Refinement (AMR) to solve the Navier-Stokes equations.

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Date submitted: 11 Aug 2005 Electronic form version 1.4