

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Turbulent Mixing in Late-Time Richtmyer-Meshkov Instability Experiments CHRIS WEBER, NICK HAEHN, JASON OAKLEY, DAVID ROTHAMER, RICCARDO BONAZZA, University of Wisconsin — The Richtmyer-Meshkov instability is experimentally investigated in a vertical shock tube using a broadband initial condition imposed on an interface between a helium-acetone mixture and argon ($A=0.7$). The initial condition is created, first by setting up a gravitationally stable stagnation plane between the gases, and then injecting the same two gases horizontally at the interface to create a shear layer. The perturbations along the shear layer create a statistically-repeatable broadband initial condition. The interface is accelerated by a $M = 1.6$ or $M = 2.2$ planar shock wave and develops into a fully-developed turbulent state. Mixing measurements are made using planar laser-induced fluorescence (PLIF). The spectra, length scales, and isotropy after the turbulent mixing transition are presented.

Chris Weber
University of Wisconsin

Date submitted: 03 Aug 2012

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