

Abstract Submitted
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Measurements of the turbulent development of Richtmyer-Meshkov instability VITALIY KRIVETS, EVEREST SEWELL, QIAN XU, JEFFREY JACOBS, University of Arizona — A vertical shock tube is used for experiments on the Richtmyer-Meshkov instability in which a membrane-less interface is formed by opposed gas flows where the light and heavy gases enter the shock tube from the top and from the bottom of the driven section. An air/SF₆ gas combination is used and an $M = 1.2$ incident shock wave impulsively accelerates the interface. Initial perturbations are generated by harmonically oscillating the gases vertically, using two loudspeakers mounted in the shock tube walls, to produce Faraday resonance resulting in a random short wavelength perturbation. Planar Mie scattering is used to visualize the flow using a laser sheet to illuminate smoke particles seeded in one of the two gases. In addition, particle image velocimetry is used to obtain velocity measurements in which both gases are seeded. Image sequences are captured using high-speed video cameras. New experiments are presented quantifying the growth of the integral mixing layer width in addition to the molecular mixing evolution produced by the instability.

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