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Turbulent mixing induced by Richtmyer-Meshkov instability JEFFREY JACOBS, VITALIY KRIVETS, ROBERT MORGAN, EVEREST SEWELL, University of Arizona — A vertical shock tube is used for experiments on the Richtmyer-Meshkov instability. A membrane-less interface is formed by opposed gas flows in which the light and heavy gases enter the shock tube from the top and from the bottom of the driven section. An air/SF_6 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 either horizontally to produce standing internal waves having sinusoidal shape, or vertically, using two loudspeakers mounted in the shock tube wall, to produce Faraday resonance resulting in more random short wavelength perturbations. Planar Mie scattering is used to visualize the flow using a laser sheet to illuminate smoke particles seeded in the air. Image sequences are captured using high-speed video cameras. New experiments are presented in which the full three-dimensional initial perturbation is recorded immediately prior to shock interaction using a galvanometer to sweep the laser sheet across the test section, producing a volumetric image of the initial perturbation. Comparisons are made between experimental measurements and numerical simulations.

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