Abstract Submitted
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Three-dimensional features of shock-driven mixing flow[1] DELL OLMSTEAD, PETER VOROBIEFF, CLINT CORBIN, TENNILLE BERNARD, PATRICK WAYNE, GARRETT KUEHNER, C. RANDALL TRUMAN, The University of New Mexico — Richtmyer-Meshkov instability (RMI) is created by passing an oblique shock wave across a cylindrical column of heavy gas (sulfur hexafluoride SF_6) in air at Mach numbers ranging from 1.2 to 2.0. These initial conditions are inherently three-dimensional, unlike nominally two-dimensional conditions used in many earlier works. To capture the development of the RMI, Planar Laser Induced Fluorescence (PLIF) images were obtained in multiple planes along and across the RMI-perturbed column. The oblique shockwave is obtained in a shock tube inclined up to 30 degrees with the horizontal and using gravity-driven (vertical) flow to form the SF6 cylinder. The development of RMI for a cylindrical interface subjected to a normal shockwave is also documented. The main subject of the investigation is the role of the angle between the cylinder and the shock front in the formation and evolution of the three-dimensional features in the flow. Experiments also show that consideration must be given to the effects of the walls of the shock tube and especially of the holes in the walls used to form the heavy-gas column.

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