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An experimental study of the turbulent development of Richtmyer-Meshkov instability prior to, and following, reshock JEFFREY JACOBS, OLEG LIKHATCHEV, VLADIMER TSIKLASHVILI, University of Arizona — Richtmyer-Meshkov instability is investigated utilizing shock tube experiments. The instability is generated by the impulsive acceleration of the interface between two gases of different densities by an incident plane shock wave. The interface is created by forcing air seeded with smoke through a plenum at the top of the driven section, and SF_6 through a plenum at the bottom of the test section. Random, multi-mode, initial perturbations are imposed on the interface by the excitation of Faraday internal waves using two synchronized loudspeakers that oscillate the gases vertically. The study focuses on the late-time growth of the turbulent mixing zone after shock interaction and the growth of the mixing zone following reshock. The objective of these experiments is to determine the dependence of the post reshock growth rate on the reflected shock strength and whether the growth rate is independent of the mixing zone characteristics immediately before the reflected shock wave impacts the layer. A systematic study is made for the different Mach numbers and different reflected shock arrival times. It is found that the growth rate of the mixing zone is constant immediately after reshock. However, a noticeable reduction in the growth rate occurs after a very short period of time.

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