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Experimental Study of the Richtmyer-Meshkov Instability for a He – SF₆ Interface BRADLEY MOTL, DEVESH RANJAN, JASON OAKLEY, MARK ANDERSON, RICCARDO BONAZZA, University of Wisconsin - Madison — Results are presented from a series of experiments studying the Richtmyer-Meshkov (RM) instability for the case of a perturbed gas interface at the Wisconsin Shock Tube Laboratory. A membraneless interface is formed by the head-on flow of helium and sulfur-hexafluoride (seeded with smoke) which creates a stagnation surface. A sinusoidal interface is created at the gas stagnation plane in the test section by oscillating pistons that are initially flush with the shock tube walls. Flow visualization for the initial condition and post-shock images is carried out using Mie scattering from a planar laser sheet. The RM instability is studied for varying incident shock wave strengths ($1.1 \leq M \leq 2$), and results are reported in the form of experimental images and perturbation growth rates which are compared to several analytic models.

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