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Vertical Shock Tube for simultaneous velocity and concentration measurements of Richtmyer-Meshkov Instabilities R. MEJIA-ALVAREZ, K. PRESTRIDGE, M.C. LEFTWICH, Los Alamos National Laboratory — Most experimental studies on Richtmyer-Meshkov Instabilities (RMI) have been restricted to mixing layer growth and pointwise turbulence characterization. To date, the only exception to this trend encompasses simultaneous measurements of velocity and concentration via combined PIV and PLIF over a curtain of heavy gas with initial varicose perturbations.¹ Since no parallel of this work has been conducted on single interface configurations, the Extreme Fluids Team at Los Alamos National Laboratory has developed a new Vertical Shock Tube (VST) to carry out such measurements. When fully operational, this facility will allow simultaneous characterization of velocity and concentration fields at different stages of development of single-interface RMI flows. The extraction of turbulence statistics from velocity measurements will not only be instrumental in understanding the basic physics behind the single-interface RMI, but also the benchmark for RANS models and ILES. We present a description of the breadth of functionality and diagnostic capabilities of LANL's new Vertical Shock Tube facility.

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