

Abstract Submitted
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Laser Diagnostics for Simultaneous Measurements of Velocity and Concentration in Richtmyer-Meshkov Instabilities RICARDO MEJIA-ALVAREZ, Postdoctoral Research Associate, KATHERINE PRESTRIDGE, Team Leader, EXTREME FLUIDS TEAM - LOS ALAMOS NATIONAL LABORATORY TEAM — Most experimental studies of RMI have not addressed the detailed structure of the unstable interface at different stages of its development. Rather, its spatial development has been typically restricted to thickness growth, and turbulence studies have been usually limited to pointwise measurements. To date, the only exception to this trend is simultaneous measurements of velocity and concentration via combined PIV and PLIF. Such work has been carried out by the Extreme Fluids Team at Los Alamos National Laboratory over a curtain of heavy gas with an initial varicose instability. Since no parallel of this work has been conducted on single interface configurations, the Team is currently developing a new Vertical Shock Tube (VST) to carry out such measurements. When completed, this facility will allow the simultaneous characterization of velocity and concentration fields at different stages of development of single-interface RMI flows, including turbulent regimes. Though the new VST is innovative in many regards (its shock wave is generated by a membraneless driver and its interface may be controllably perturbed), this talk will mainly focus on the characteristics, challenges, and range of possibilities of the laser diagnostics incorporated in the VST.

Ricardo Mejia-Alvarez
Postdoctoral Research Associate

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