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Simultaneous PLIF/PIV measurements for a single-mode inclined interface MOHAMMAD MOHAGHAR, DAVID REILLY, JOHN CARTER, Georgia Inst of Tech, JACOB MCFARLAND, University of Missouri, DEVESH RANJAN, Georgia Inst of Tech — The Shock Tube and Advanced Mixing Laboratory (STAML) at Georgia Institute of Technology is using a newly established inclined shock tube facility to study an inclined interface perturbation. This facility allows for simultaneous characterization of density and velocity fields by employing high-resolution, full-field Planar Laser-Induced Fluorescence (PLIF) and Particle Image Velocimetry (PIV), respectively. The incident shock strength of Mach 1.55 was used to impulsively accelerate a N₂-Acetone mixture over CO₂ inclined interface with an Atwood number of 0.23 and an 80° angle of inclination. This angle of inclination results in a linear perturbation as defined by the amplitude-to-wavelength ratio ($\eta/\lambda = 0.097$). The development of the turbulent mixing layer for both pre- and post-reshock is determined by measuring several quantities, including two BHR model parameters: density self-correlation and turbulent mass flux.

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