

Abstract Submitted  
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**Experimental investigation of combined Rayleigh-Taylor instability and Kelvin-Helmholtz instability at different Atwood numbers**  
BHANESH AKULA, TOM FINN, Texas A&M University, MALCOLM ANDREWS, Los Alamos National Laboratory, DEVESH RANJAN, Texas A&M University — Combined Rayleigh-Taylor instability (RTI) and Kelvin-Helmholtz instability (KHI) is studied at three different Atwood numbers using the multilayer gas tunnel facility Texas A&M University. S3WCA (Simultaneous 3 wire and cold wire anemometry) and Particle Image Velocimetry (PIV) are used to measure instantaneous velocities and densities at different locations along and across the mix layer. High resolution digital imaging is performed during the experiments by injecting smoke into one of the streams and collecting the scattered light from the fog particles illuminated by the back lighting of the channel. Different parameters obtained from measurements including, molecular mixing parameter  $\theta$ ,  $u_{rms}$ ,  $v_{rms}$  velocity profiles, velocity correlations, vertical turbulent mass flux  $\overline{\rho'v'}$  and their effect on mixing is discussed.

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