

Abstract Submitted
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A Comparison of Entrainment Characteristics Between Reacting and Nonreacting Countercurrent Shear Layers¹ ANDREW STUNTZ, DAVID FORLITI, State University of New York at Buffalo — Countercurrent shear layers are known to have higher turbulence levels and entrainment rates compared to single stream and coflowing shear layers. The current work is motivated to understand the affect of heat release on the countercurrent shear layer. Heat release in the shear layer is created through igniting the shear layer formed between a rich methane/air primary stream and a counterflowing air stream. Countercurrent shear applied to a reacting shear layer suppresses flame liftoff and enhances combustion rates. The current focus is to document the entrainment characteristics of the reacting and nonreacting countercurrent shear layer, in particular the shear layer spreading rate and entrainment ratio as a function of velocity ratio will be described. Heat release is known to suppress shear layer growth for coflowing and single stream shear layers. The results will provide important insight into the potential benefit of using countercurrent shear for enhancing shear flows containing heat release.

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