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Mixture fraction and its Dissipation in a turbulent flame by using Krypton PLIF VENKAT NARAYANASWAMY, The University of Texas at Austin, Austin, TX, ANDREA HSU, Combustion Research Facility, Sandia National Laboratory, Livermore, CA, NOEL CLEMENS, The University of Texas at Austin, Austin, TX, JONATHAN FRANK, Combustion Research Facility, Sandia National Laboratory, Livermore, CA, THE UNIVERSITY OF TEXAS AT AUSTIN COLLABORATION, COMBUSTION RESEARCH FACILITY, SANDIA NATIONAL LABORATORY, LIVERMORE, CA COLLABORATION — Simultaneous conserved scalar and temperature imaging was performed in turbulent non-premixed jet flames (TNF DLR-A and -B) by using two-photon PLIF of Krypton and planar Rayleigh scattering, respectively. The motivation is to study the scalar and thermal dissipation characteristics of the flames. The experiments were performed at axial distances of 10 and 20 tube diameters (D) from the jet exit. The mixture fraction (f) field was calculated from the Kr LIF and the temperature images using a combination of the state relationship and an iterative technique. The mean and *RMS* of the f and T compared very well with those of the point measurements made by previous researchers. The mixture fraction and thermal dissipation field appeared very similar away from the flame and less similar close to the flame. Mixture fraction diffusion and thermal diffusion conditioned on f and T reveal a linear trend, whose slope is very similar to the time scale estimated by the ratio of the respective dissipation to the variance.

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