

Abstract Submitted
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Separating Particulate Scattering from Molecular Absorption in Radiative Transmission Measurements of a High-Speed, Two-Phase, Reacting Flow¹ JONATHAN HERLAN, NATHAN MURRAY, University of Mississippi — Radiative transmission through a two-phase, reacting fluid is extinguished by a combination of absorption and scattering effects due to the reaction product molecules and the bulk particles. If the particle scattering coefficient is slowly varying with wavelength, the scattering effect can be removed from the transmission spectra. To verify this, we have studied the near UV spectral extinction due to scattering in a two-phase, high speed jet with various mass loadings of Alumina particulate (Al_2O_3). Then, in the high-speed, reacting flow of a lab scale rocket exhaust plume, we have measured the transmission spectra with and without the alumina particulate added. The particle scattering effect in the transmission spectra is removed so that the difference between the flows with and without particles can be observed in the absorption spectra of Hydroxyl (OH).

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