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High-Speed OH* Chemiluminescence Imaging of Shock Tube End-Wall V.A. TROUTMAN, V.A. MILLER, C.S. STRAND, A.M. TULGESTKE, M.F. CAMPBELL, D.F. DAVIDSON, R.K. HANSON, Stanford University — We have developed a high-speed OH* chemiluminesence imaging diagnostic and a transparent end-wall for the Stanford Aerosol Shock Tube to better understand the structure and homogeneity of the combustion event behind a reflected shock wave. We use an intensified high repetition rate imaging system to acquire images of OH* chemiluminescence (near 308 nm) at 10-33 kHz from n-heptane combustion. Case studies are presented to illustrate the power of this novel imaging diagnostic: first, we infer the temperature homogeneity of the ignition event; then we image the effect of surface imperfections in the wall of the shock tube; lastly, we visualize the effect of particulates in the shock tube and verify the importance of shock tube cleaning routines.

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