Abstract Submitted
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Toluene PLIF temperature and pressure imaging in supersonic flows[1] VICTOR MILLER, Stanford University, MIRKO GAMBA, University of Michigan, M. GODFREY MUNGAL, University of Santa Clara, Stanford University, RONALD K. HANSON, Stanford University — Planar laser-induced fluorescence (PLIF) of toluene is used to image temperature, T, and pressure, P, in supersonic flows. Toluene fluorescence is broadband and exhibits a red-shift at elevated temperatures, enabling two-camera, dual-band imaging of temperature. With the temperature field known, the original LIF signal from a single camera is converted to pressure. This technique is demonstrated by imaging Mach 2.3 flow of nitrogen seeded with 0.5% toluene (by volume) over a wedge and a cylinder; PLIF-imaged T and P fields are compared to computed solutions of these flowfields, and preliminary comparisons show promise.

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