

Abstract Submitted
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Dual-Pump CARS Thermometry in Highly Luminous Flames

SEAN KEARNEY¹, Sandia National Laboratories — Dual pump coherent anti-Stokes Raman scattering (CARS) investigations have been conducted in highly luminous flames. While the spatial coherence of the CARS signal permits efficient rejection of many optical background sources, spatially incoherent and spectrally broad interference from highly luminous flames can still be problematic. We have compared two approaches for time-resolved gating of the CARS signal beam against the luminous background from heavily sooting flames; (1) a fast liquid crystal shutter in conjunction with a standard unintensified CCD and (2) an interline-transfer CCD with reduced dynamic range. The fidelity of the dual-pump CARS facility for temperature measurements in these extremely hostile environments is evaluated and the relative merits of both detection approaches are discussed.

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