PROGRESS TOWARDS HOLLOW WAVEGUIDE-ENHANCED LASER-INDUCED FLUORESCENCE

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Hollow waveguides (HWGs), essentially hollow fiber optics, have an open central core through which light and sample gas travel coaxially. This enhanced light/sample interaction has previously been utilized by others to perform laser-based absorption measurements within HWGs. The current work aims to achieve HWG-enhanced laser-induced fluorescence, where both the laser beam and fluorescence would be efficiently waveguided though a tube of variable length. HWGs have the advantage of often being physically rugged and flexible; a spectrometer's pathlength could literally be rolled-up. It is hoped that HWGs could be utilized to construct small, portable, yet sensitive LIF spectrometers. This talk will cover progress towards this goal, with particular attention to LIF spectroscopy of water isotopologues using commercial telecom lasers.