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 can travel coaxially. This enhanced light/sample interaction geometry has previously been utilized by others to perform laser-based absorption measurements within HWGs. The current work aims to achieve HWG-enhanced infrared laser-induced fluorescence (LIF), where both the laser beam and fluorescence would be efficiently waveguided though a tube of variable length. It is hoped that HWGs could be utilized to construct sensitive, small LIF spectrometers. An instrument employing HWG-LIF could potentially be fed sample material from a GC instrument or be used in a stand-alone configuration, for example. This talk will cover our progress towards this goal, with particular attention to LIF spectroscopy of water isotopologues (H_2O and HDO) using commercial telecom lasers.