CAVITY ENHANCED ABSORPTION SPECTROSCOPY USING A BROADBAND PRISM CAVITY AND A SUPER-CONTINUUM SOURCE

PAUL S. JOHNSTON, ; KEVIN K. LEHMANN, *Department of Chemistry, University of Virginia, Charlottesville VA, 22904-4319*.

The multiplex advantage of current cavity enhanced spectrometers is limited by the high reflectivity bandwidth of the mirrors used to construct the high finesse cavity. Previously, we reported the design and construction of a new spectrometer that circumvents this limitation by utilizing Brewster's angle prism retroreflectors. The prisms, made from fused silica and combined with a supercontinuum source generated by pumping a highly nonlinear photonic crystal fiber, yields a spectral window ranging from 500 nm to 1750 nm. Recent progress in the instruments development will be discussed, including work on modeling the prism cavity losses, alternative prism material for use in the UV and mid-IR spectral regions, and a new high power supercontinuum source based on mode-locked picosecond laser.