EXPERIMENTAL PROGRESS FOR HIGH RESOLUTION CAVITY RINGDOWN SPECTROSCOPY OF JET-COOLED REACTIVE INTERMEDIATES

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Over the last few years, we have developed our capability to obtain narrow-bandwidth, near infrared (NIR) radiation for performing high resolution cavity ringdown spectroscopy. Previously, our best spectral resolution in the NIR was obtained by using stimulated Raman shifting of the pulsed amplified output of a cw Ti:Sa ring laser resulting in an instrumental linewidth of 200-250 MHz. Using the same Ti:Sa laser source and mixing it with the second harmonic of a Nd:YAG laser in a BBO crystal, we are now able to generate laser radiation in the NIR with a bandwidth of $\leq$100 MHz, resulting in an experimental resolution of $\sim$ 150 MHz at 7300 cm^{-1} including the Doppler broadening in our slit jet expansion. In addition to improved resolution, this new laser source allows us to cover broader frequency ranges with our jet cooled cavity ringdown spectroscopy chamber. This talk will focus on the description of this newly improved apparatus as illustrated with selected spectra of reactive organic peroxy radicals.