DETECTION OF ATMOSPHERICALLY RELEVANT HYDROCARBONS BY DIODE LASER CAVITY RINGDOWN SPECTROSCOPY

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The first overtones of the asymmetric CH stretch of 2-methyl-1,3-butadiene (isoprene), 2,3-dimethyl-1,3-butadiene and 1,3-butadiene were observed in gas phase. The absorption was monitored by means of continuous wave Cavity Ring Down Spectroscopy (cw CRDS) at room temperature. A near infrared diode laser was employed as a light source. The absorption cross-section was determined at 1651.5 nm. This study is a starting point for future studies of the peroxy radicals formed in the OH-initiated degradation of these atmospherically relevant compounds. The preliminary estimates of the absorption cross-section are 2.88 x 10^{-22} cm^2 for 2,3-dimethyl-1,3-butadiene and 7.22 x 10^{-22} cm^2 for isoprene, respectively. The NIR absorption cross-sections for isoprene will be calibrated using the known UV absorption cross-section.