

## DEVELOPMENT OF A NEAR-IR CAVITY ENHANCED ABSORPTION SPECTROMETER FOR THE DETECTION OF ATMOSPHERIC OXIDATION PRODUCTS AND ORGANOAMINES

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An estimated 10,000 to 100,000 different compounds have been measured in the atmosphere, each one undergoes many oxidation reactions that may or may not degrade air quality. To date, the fate of even some of the most abundant hydrocarbons in the atmosphere is poorly understood. One difficulty is the detection of atmospheric oxidation products that are very labile and decompose during analysis. To study labile species under atmospheric conditions, a highly sensitive, non-destructive technique is needed. Here we describe a near-IR incoherent broadband cavity enhanced absorption spectroscopy (IBBCEAS) setup that we are developing to meet this end. We have chosen to utilize the near-IR, where vibrational overtone absorptions are observed, due to the clean spectral windows and better spectral separation of absorption features. In one spectral window we can simultaneously and continuously monitor the composition of alcohols, hydroperoxides, and carboxylic acids in an air mass. In addition, we have used our CEAS setup to detect organoamines. The long effective path length of CEAS allows for low detection limits, even of the overtone absorption features, at ppb and ppt levels.