

Work with the Reflectron Mass Spectrometer, and Negative Ion proton transfer Mass spectroscopy.

Several months were spent testing and troubleshooting for a problem that was damaging electronic components in the signal amplifier. It was finally determined that the problem was localized to somewhere within the *reflectron* detector. The detector was removed and shipped the detector back to the vendor for repair. After a careful and through trouble shooting by the manufacturers, it was determined that the **incorrect rated capacitors installed in the detectors were the cause of the amplifier damage**. While the system is now operational in negative ion mode with the replacement of the capacitors, attempts to obtain useful ion signal for reagent ions flowing through the Polonium source was found to be a challenge.

We have now determined that the ions are lost in the walls of the flow tube because the flow tube was at ground potential. The flow tube is now being fitted with the necessary power supply to add a voltage to bias the flow tube so the ions can drift through and reach the repeller region of the time of flight instrument.

Vibrational O-H overtone absorption cross section of carboxylic acids

Findings and Results

- The CRDS instrument constructed can measure absorption coefficients as low as $3.6 \times 10^{-9} \text{ cm}^{-1} \text{ Hz}^{1/2}$ with one standard deviation of fractional uncertainty near 615 nm.
- The integrated cross section for the fourth O-H overtone in acetic acid was $2.60481 \pm 0.204 \times 10^{-22} \text{ cm}^2 \text{ molecule}^{-1} \text{ cm}^{-1}$. (See Figure-1)

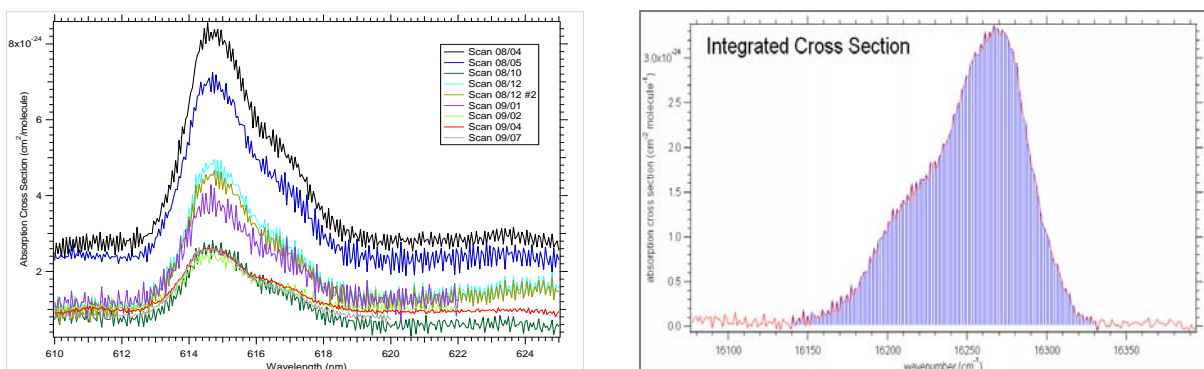


Figure 1- cross section for 5v_{OH} stretch of acetic acid

- Per acetic acid cross section results are given in Figure-2.

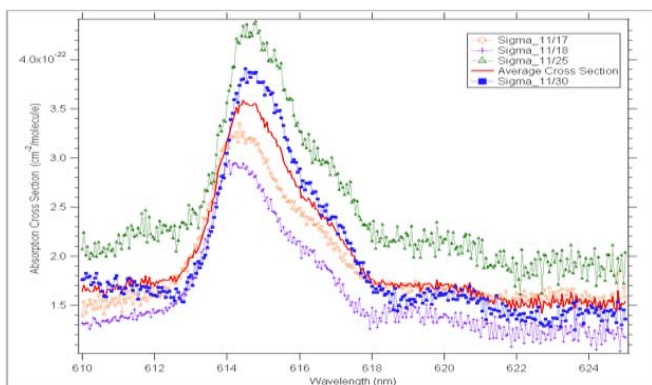


Figure 2. cross section for 5ν_{OH} stretch of peracetic acid