A K-BAND MICROWAVE SPECTROMETER FOR STUDYING ATMOSPHERIC REACTIONS

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A segmented Chirped Pulse Fourier Transform Microwave (CP-FTMW) spectrometer has recently been installed in the Molecular Photonics Laboratories at UNSW Sydney. It covers the K-band (18-26 GHz) with an 18 MHz per segment bandwidth. This frequency range permits probing samples at room temperature and in a supersonic expansion. The stable products of atmospheric oxidation reactions of biological and anthropogenic volatile organic carbons (VOCs) will probed in a room temperature cell. Reactive and transient species will be probed in a supersonic expansion using a custom discharge mixing nozzle. The nozzle combines a standard high voltage discharge source with a secondary source introduced into the expansion via a capillary gas line. This secondary source is pulsed to reduce gas load and improve sample density. Performance and preliminary results will be presented along with supporting *ab initio* calculations.