

ROTATIONAL STUDY OF ATMOSPHERIC VOCS USING THE NEW CP-FTMW SPECTROMETER OF LILLE

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The introduction of the CP-FTMW technique by Pate and co-workers has revolutionized the rotational spectroscopy field providing rapid acquisition of broadband spectra.^a The design of a newly constructed chirped-pulse Fourier transform microwave spectrometer CP-FTMW covering the range of 6-18 GHz will be presented. In particular, the chirped pulse (6-18 GHz, 4 μ s) is generated by a fast-arbitrary waveform generator (AWG, Keysight M8195A 65 GSa/s). Free Induction Decays (FID) are detected and collected on a recent generation of a fast oscilloscope (Keysight DSOZ634A 160 GSa/s). The high speed of the oscilloscope allows to achieve a high spectral resolution (FWHM better than 40 kHz) by recording the FID during 80 μ s. Up to three pulsed nozzles can be used simultaneously.^b The CP-FTMW spectrometer is currently used to study volatile organic molecules of atmospheric interest. The results of this work will be discussed in detail.

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^bSeifert, N. A.; Steber, A. L.; Neill, J. L.; Pérez, C.; Zaleski, D. P.; Pate, B. H.; Lesarri, A. *Phys. Chem. Chem. Phys.* 2013, 15 (27), 11468–11477