WAVEGUIDE CHIRPED-PULSE FOURIER TRANSFORM MICROWAVE (CP-FTMW) SPECTRUM OF ORTHO-FLUOROTOLUENE

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The microwave spectrum of o-fluorotoluene has been measured at 0 °C from 8.7–18.3 GHz with waveguide chirped-pulse Fourier transform microwave spectroscopy (CP-FTMW). We have extended previous assignments of the lowest energy A- and E-states by Susskind[a] and Mäder[b] and report on preliminary assignments of vibrationally excited states. This molecule also serves as a proof-of-principle for "coarse" microwave-microwave double resonance (MW-MW DR) measurements, in which we pump all transitions within a relatively broad frequency range ($>$ 50 MHz) simultaneously. Transitions connected to peaks within the bandwidth of the coarse pulse are intensity modulated, revealing approximate connectivities that can be refined by performing "fine" MW-MW DR measurements. Prospects for using this method to perform automated, time-efficient MW-MW DR on samples with dense spectra and unknown assignments will be discussed.

[a] Susskind, J., *J. Chem. Phys.* **53**, 2492 (1970).
[b] Jacobsen, S., Andresen, U., and Mäder, H., *Struct. Chem.* **14**, 217 (2003).