DEUTERIUM QUADRUPOLE COUPLING IN PROPIOLIC ACID AND FLUOROBENZENES MEASURED WITH FTMW SPECTROMETER USING MULTIPLE FIDS [a]

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Rotational spectra of deuterated propiolic acids (Pro-OD and Pro-CD), 1-fluorobezence (4-D), and 1,2-difluorobezence (4-D) in their ground states have been measured using the newly constructed Fourier transform microwave (FTMW) spectrometer with 12" dia. mirrors and 5 kHz resolution. Multiple Free Induction Decays (FIDs) [up to 15] as well as background subtraction can be achieved with each beam pulse. For 1-fluorobezence (4-D), three hyperfine lines from the lowest J=1-0 transition were measured to check the synthesis method. For 1,2-difluorobezence (4-D), we obtained 35 hyperfine transitions from 3 to 12 GHz, including four different $\Delta$J transitions. Deuterium quadrupole coupling along three the inertia axes was well resolved. For deuterated propiolic acids, 37 hyperfine lines of Pro-OD and 59 hyperfine lines of Pro-CD, both including four different $\Delta$J transitions, were obtained from 5 to 16 GHz. Deuterium quadrupole coupling along three the inertia axes was well resolved for Pro-OD. For Pro-CD, only the $eQq_{aa}$ was determined due to the near-coincidence of the CD bond and the a inertial axis.

[a] Supported by THE NATIONAL SCIENCE FOUNDATION