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CHIRPED-PULSE MICROWAVE SPECTRA OF 4-FLUOROPHENOL, 1-BROMO-2-FLUOROBENZENE, AND 1-BROMO-3-FLUOROBENZENE

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The microwave spectra of three unique chemicals have been measured and assigned for the first time. The spectra of 4-fluorophenol, 1-bromo-2-fluorobenzene, and 1-bromo-3-fluorobenzene were measured with a chirped-pulse Fourier transform microwave (CP-FTMW) spectrometer in the 8 – 18 GHz range. The spectrometer employs an Analog Devices AD-9914 direct digital synthesizer to generate a chirped pulse with a bandwidth of 1 GHz. The chirped pulse is mixed with a tunable carrier frequency and the spectrum is measured in 2 GHz (the output of the mixer includes the lower and upper sidebands) sections. Chemical samples are introduced through a small hole in a spherical mirror in order for the pulsed molecular beam to be coaxial with the microwave pulse. Experimental rotational parameters of the three chemical species will be presented along with a description of the spectrometer.