High resolution analysis and quantum dynamics of fluoroform $^{12,13}CHF_3$

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The spectroscopy of $^{12}CHF_3$ has been the basis for the study of time independent and time dependent quantum dynamics for a long time [1-9]. There have also been substantial efforts concerning the *ab initio* potential hypersurface ([10, 11] and references cited therein). We present a survey of our recent analyses ranging from the Terahertz (Far infrared) spectral range to about 3000 cm^{-1}, with particular emphasis on the pure rotational (FIR) spectra measured at the infrared beamline of the Swiss synchrotron Light Source (SLS), ν_3 fundamental (700 cm^{-1} range), the ν_2, ν_5, $\nu_3+\nu_6$ polyad (1200 cm^{-1} range), the $\nu_4/2\nu_3$ dyad (1400 cm^{-1}), the $2\nu_4$ (A_1 and E) dyad and results on the $^{13}CHF_3$ isotopomer including the ν_1 fundamental. The implications for the study of intramolecular vibrational energy redistribution (IVR) will be outlined with particular emphasis on ^{13}C isotope effects.

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