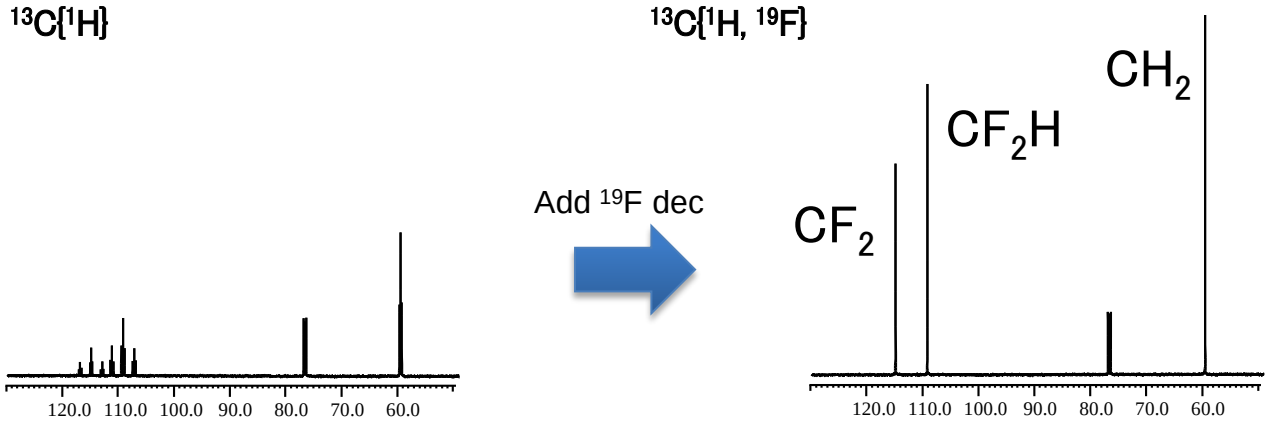
Determine number of protons attached to each carbon in fluorine-containing compounds by ^{13}C NMR spectroscopy!

Product used : Nuclear Magnetic Resonance (NMR)

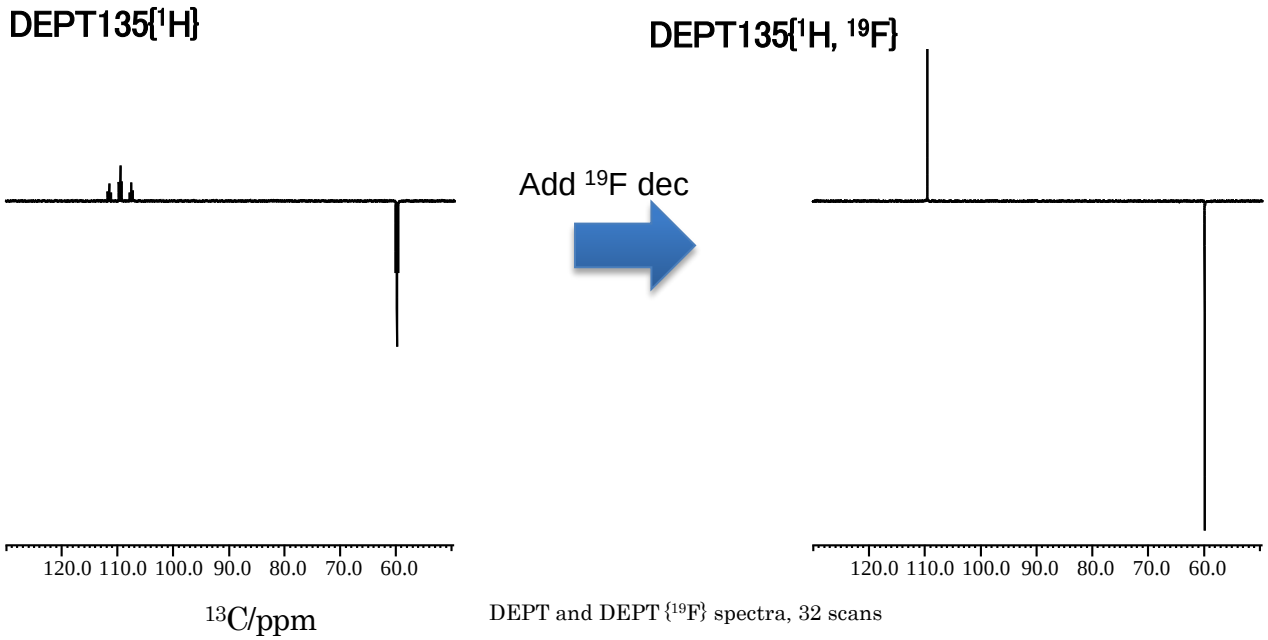
We usually use DEPT135 (Distortionless Enhancement by Polarization Transfer) experiment to analyze ^{13}C multiplicity. In the case of fluorine-containing compounds, not only ^{1}H decoupling but also ^{19}F decoupling is efficient. J_{CF} are larger than J_{CH}, and so ^{13}C peaks are often affected even by long-range couplings. In such instances, we can achieve the maximum sensitivity and singlet signals by ^{13}C measurement with simultaneous ^{1}H and ^{19}F decoupling. The figures below show ^{13}C and DEPT spectra of 20% 2,2,3,3-tetrafluoropropanol in $CDCl_3$. You can see that ^{13}C and DEPT spectra are simplified with ^{19}F decoupling.

$$CF_2H-CF_2-CH_2-OH$$

ROYALPROBE HFX can perform these ^{1}H, ^{19}F, ^{13}C triple-resonance measurement, even with a standard 2-channel console!



$^{13}C\{^{1}H\}$ and $^{13}C\{^{1}H, ^{19}F\}$ spectra, 64 scans



DEPT and DEPT $\{^{19}F\}$ spectra, 32 scans

console : JNM-ECZ500R, ROYALPROBE HFX

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