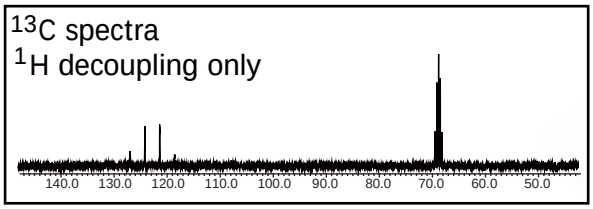
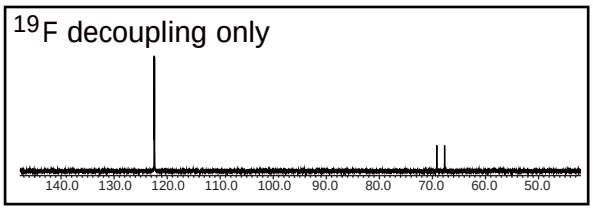
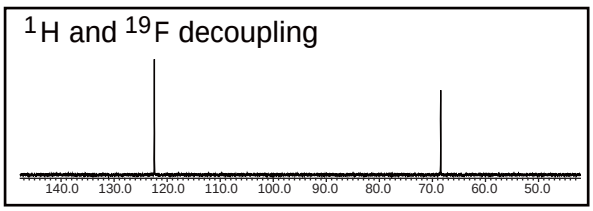
5mm FG/TFH probe

for two-channel CFH measurements

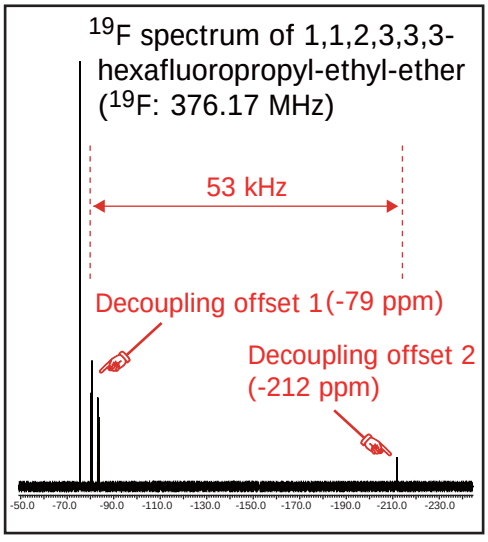




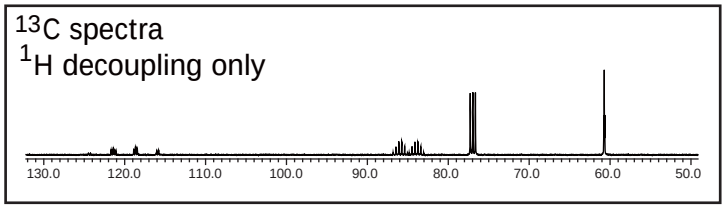


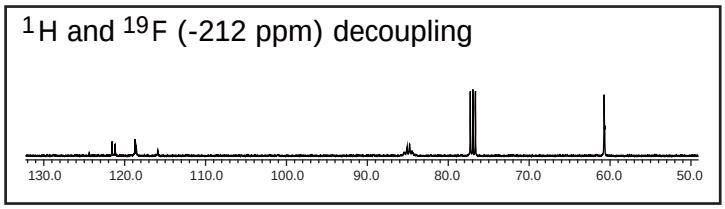
^{13}C spectra of 1,1,1,3,3,3-hexafluoro-2-propanol. Simultaneous decoupling for ^{1}H and ^{19}F can realize line narrowing.

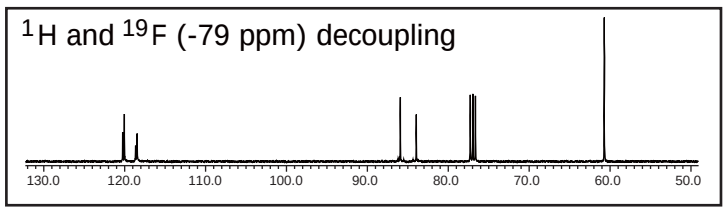
A TFH probe realizes CFH triple-nucleus measurements with a two-channel spectrometer because of ^{1}H- ^{19}F dual tune system. Also, multiple-site decoupling using multiple transmitters enables the probe to apply to all kinds of fluorine-containing organic compounds, similarly to the conventional CFH triple-channel probe.

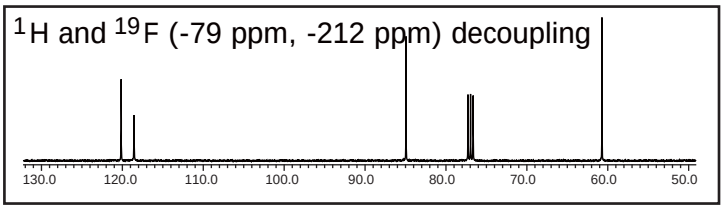


Using multiple transmitters, simultaneous irradiation at different offsets of ^{19}F (-79 ppm and -212 ppm) realizes wide-range decoupling for 1,1,2,3,3,3-hexafluoropropyl-ethyl-ether.









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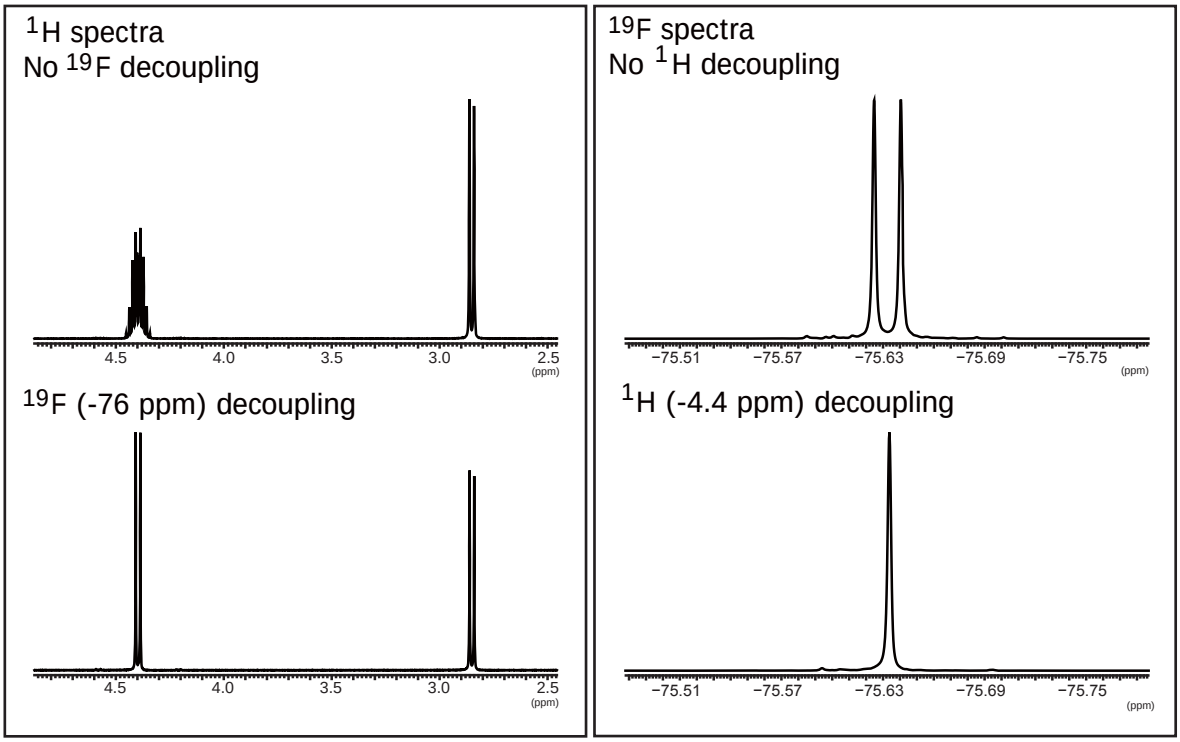
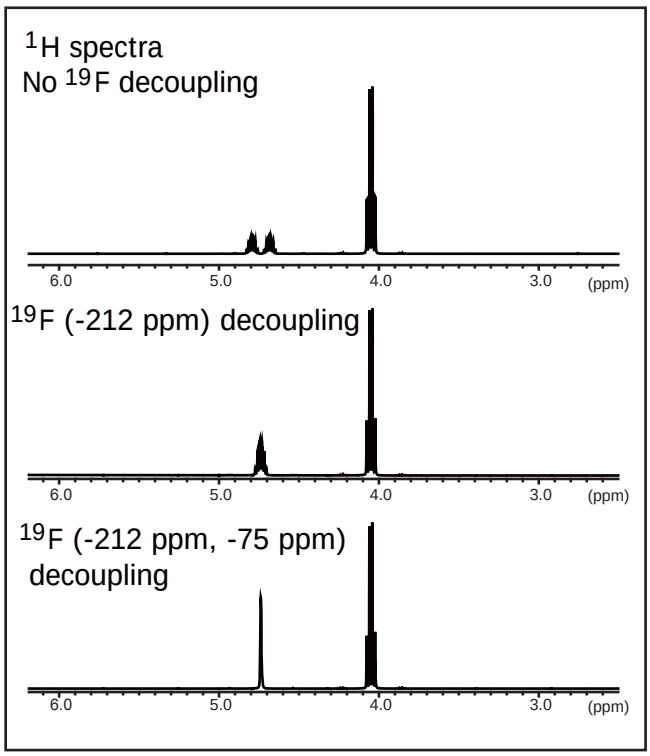
A TFH probe enables "^{19}F observation under ^{1}H decoupling" and "^{1}H observation under ^{19}F decoupling" by executing time-shared decoupling. Examples of decoupling at a single offset are shown below.



^{1}H (left) and ^{19}F (right) spectra of 1,1,1,3,3,3-hexafluoro-2-propanol. ^{19}F decoupling simplifies the ^{1}H splittings, and ^{1}H decoupling removes the ^{19}F splitting.



NMR spectra of fluorine-containing organic compounds are often complicated because of ^{1}H-^{19}F couplings, which are generally large and so effective in the long range. ^{1}H signals around 4.7 ppm (left) split in a complicated way due to couplings with multiple ^{19}F nuclei. A TFH probe, however, can simplify the spectrum by simultaneous irradiation at several ^{19}F offsets. This technique is useful in measurements and analyses of fluorine-containing organic comounds.

^{19}F decoupled ^{1}H spectra of 1,1,2,3,3,3-hexafluoropropyl-ethyl-ether. Time-shared composite pulse decoupling at two different offsets realizes complete decoupling for ^{19}F nuclei.

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