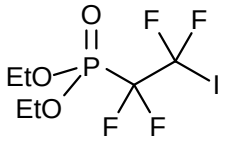
Exercise: Analyze the partial ^{13}C {^{1}H} NMR spectrum of the phosphonate below. Estimate J-values.

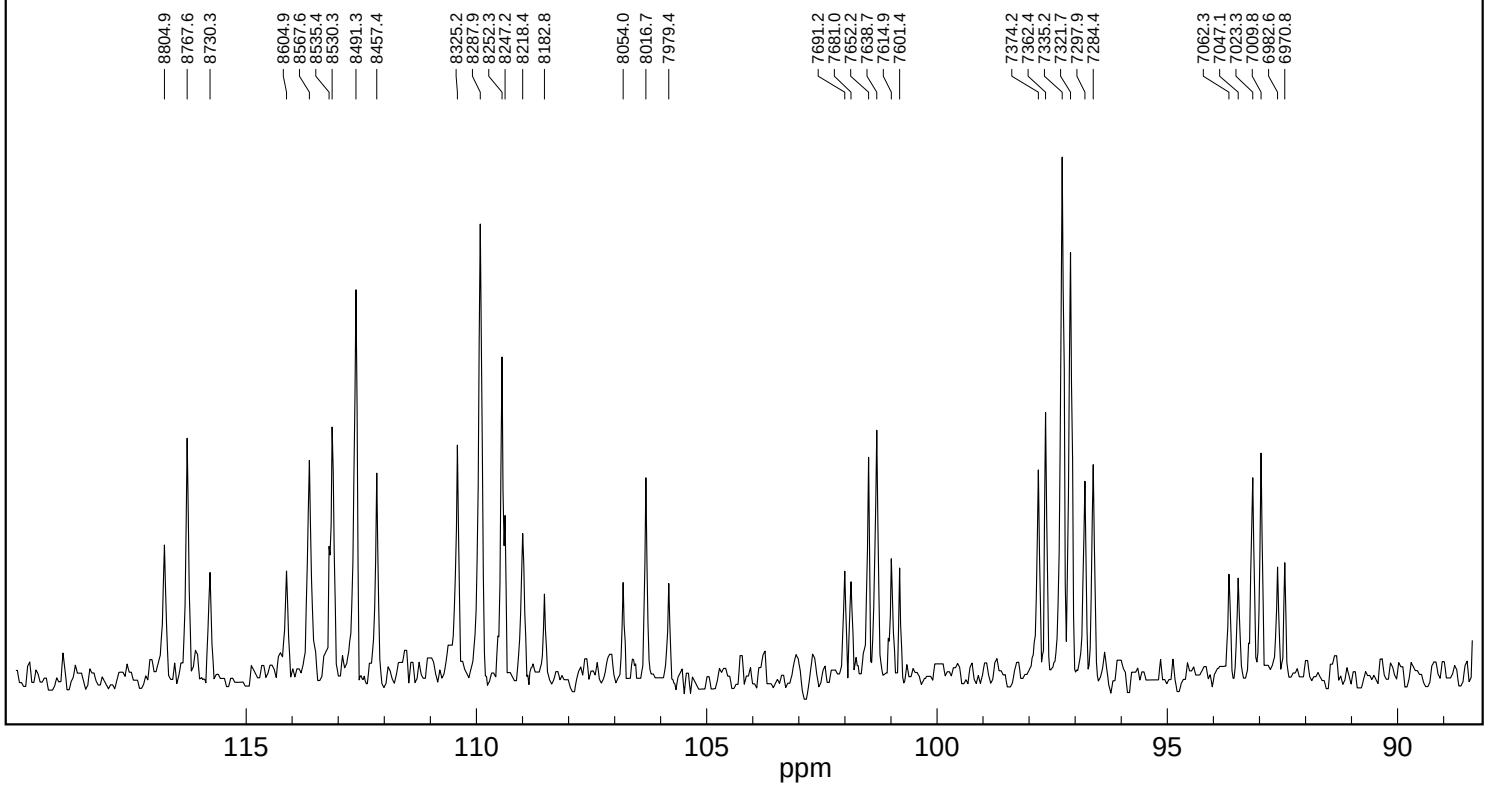
$C_6H_{10}F_4IO_3P$

75.4 MHz ^{13}C {^{1}H} NMR spectrum in $CDCl_3$

Source: Nair, Burton *JACS* 1997, *119*, 9137.



Partial ^{13}C NMR spectrum. In addition to the peaks below, there is: 16.2 (d, *J* = 5 Hz), 65.9 (d, *J* = 6 Hz)



PLT NMR-phosphonate-diethyl-CF2CF2I.plt

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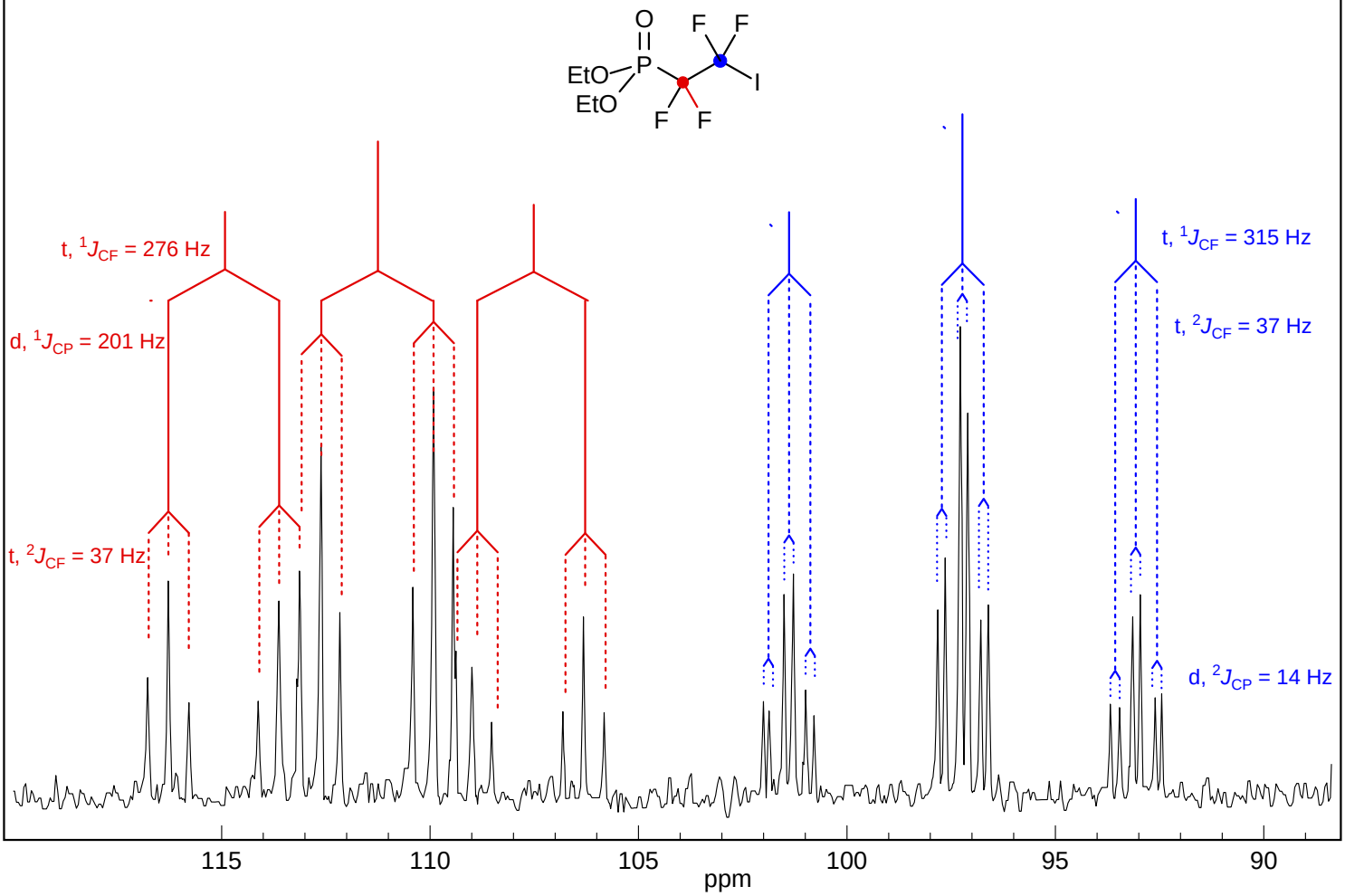

These are the values measured from the digitized spectrum above. The more accurate values reported in the paper are:

t, $^{1}J_{CF}$ = 273 Hz	t, $^{1}J_{CF}$ = 317 Hz
d, $^{1}J_{CP}$ = 201 Hz	t, $^{2}J_{CF}$ = 37 Hz
t, $^{2}J_{CF}$ = 37 Hz	d, $^{2}J_{CP}$ = 14 Hz

PLT NMR-phosphonate-diethyl-CF2CF2I.plt