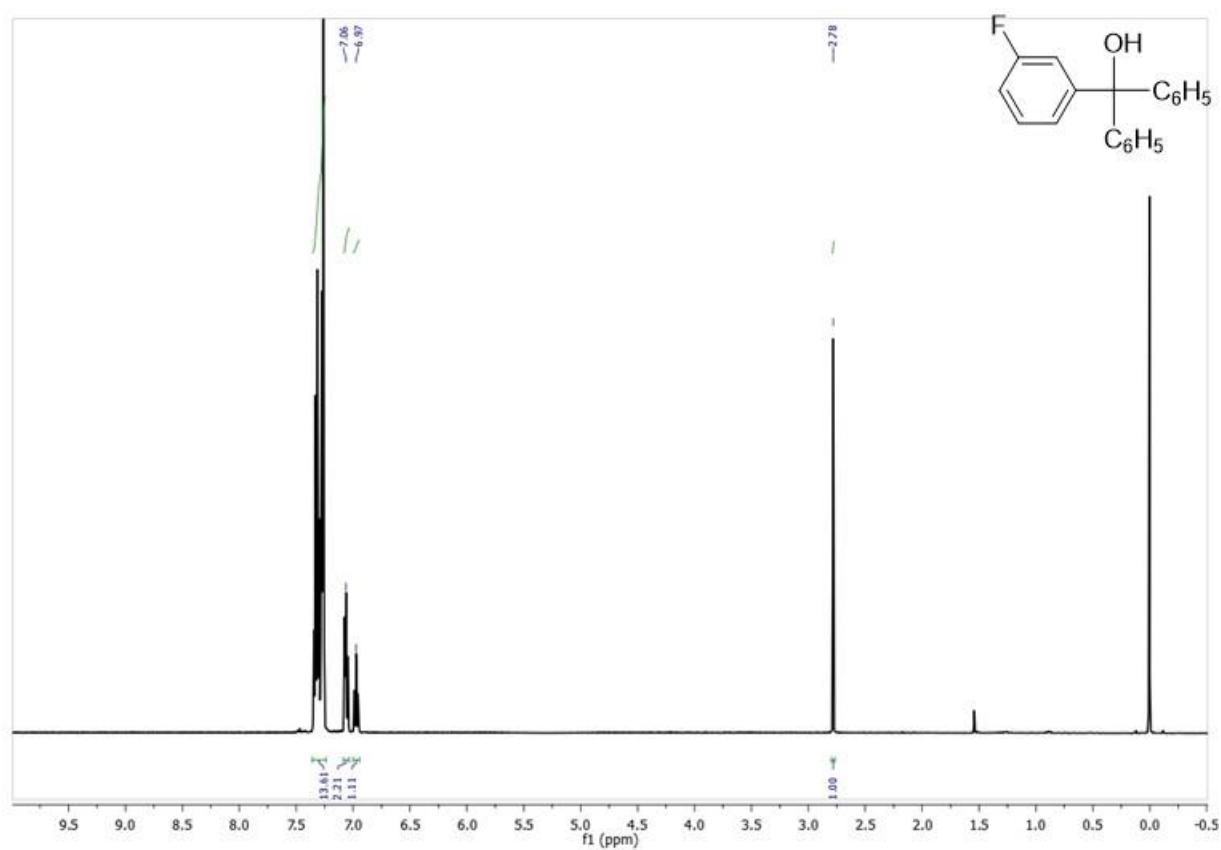
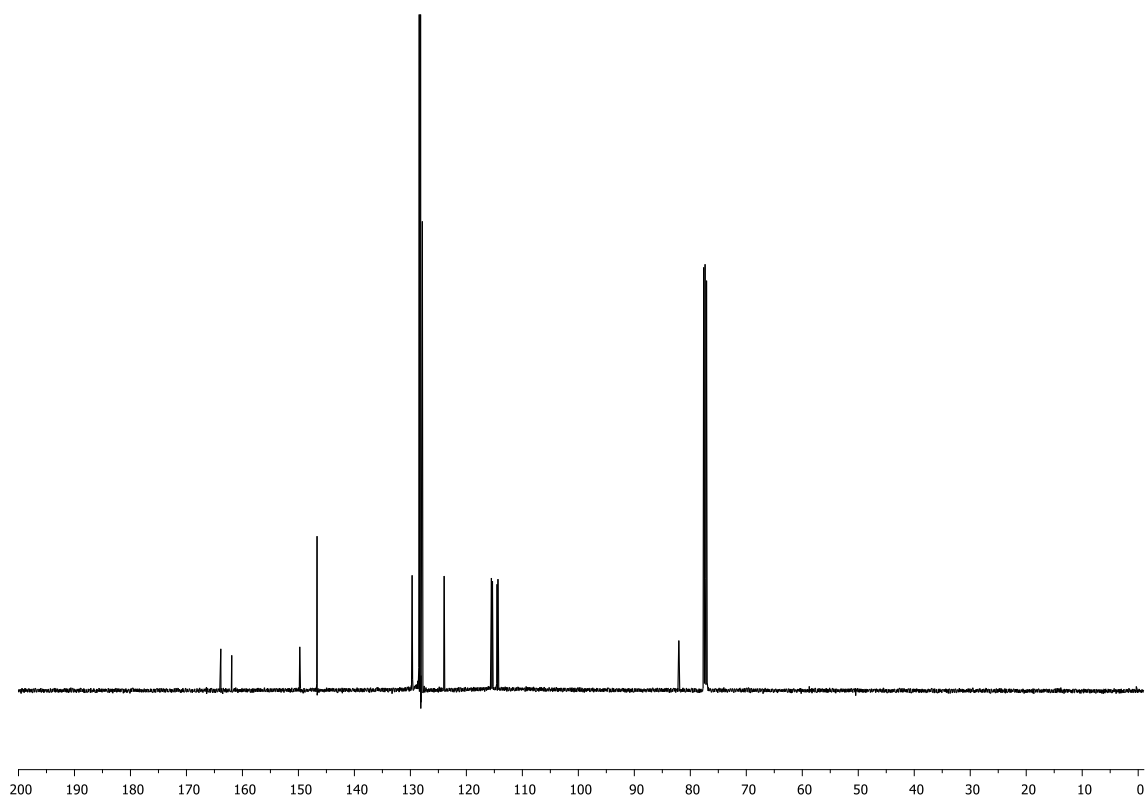


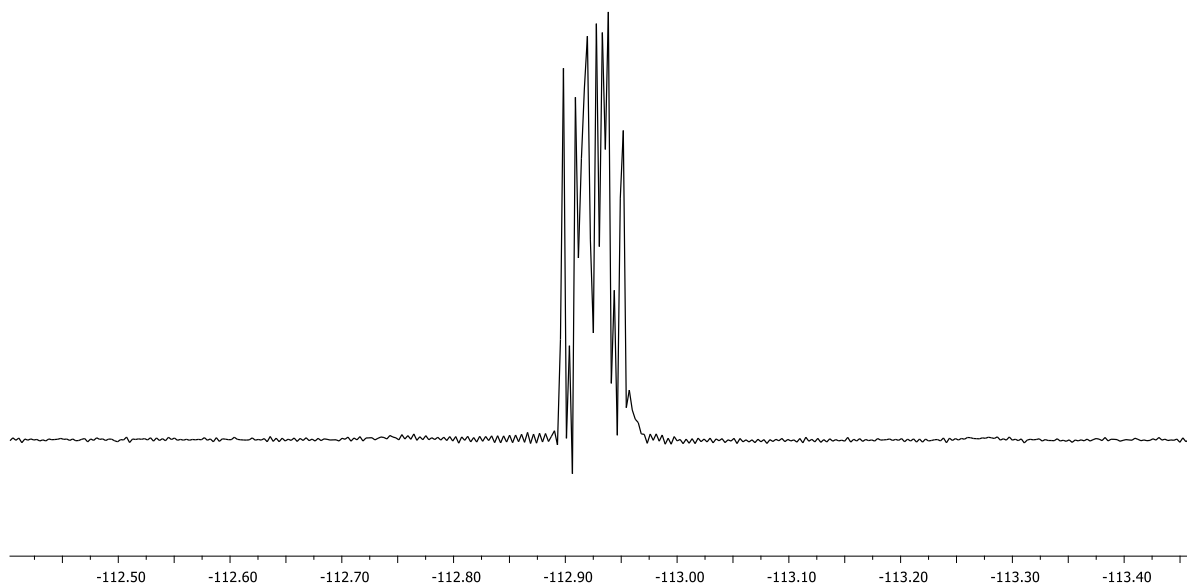
^1H , ^{13}C and ^{19}F NMR Spectra



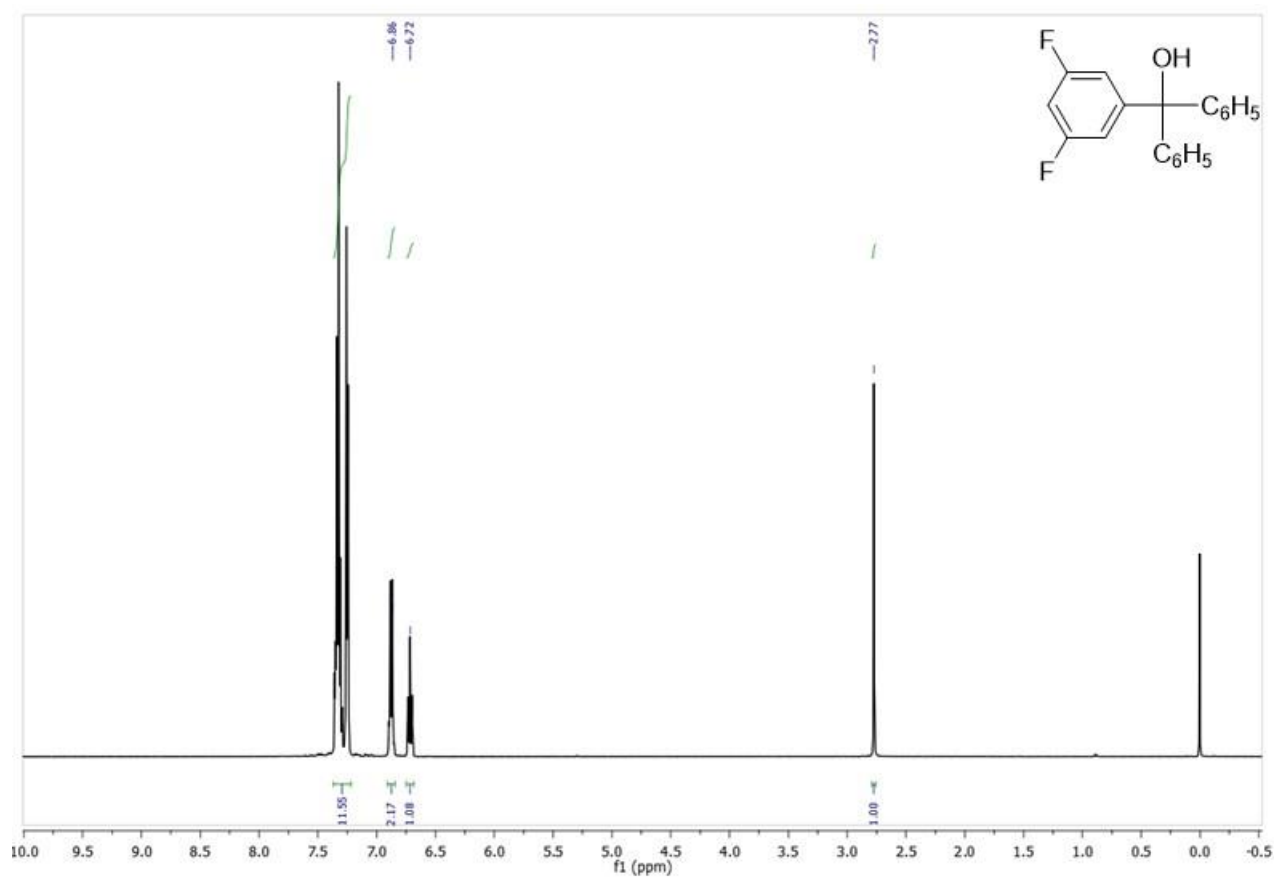
^1H NMR (500 MHz, CDCl_3) **3a**



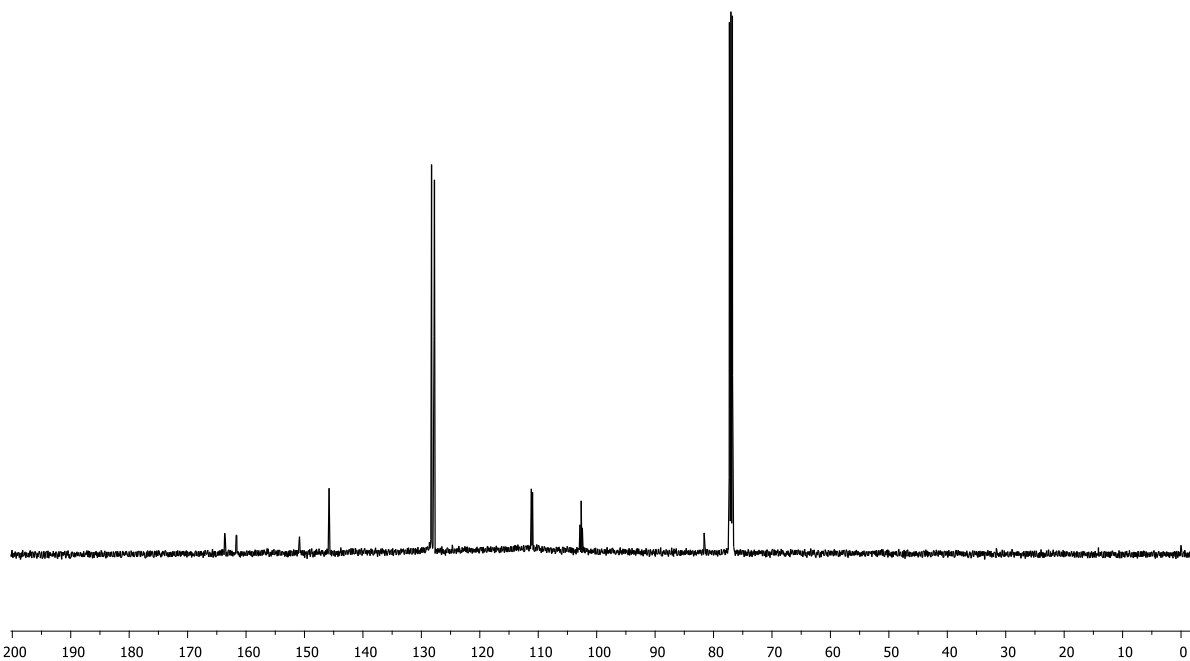
^{13}C NMR (126 MHz, CDCl_3) **3a**



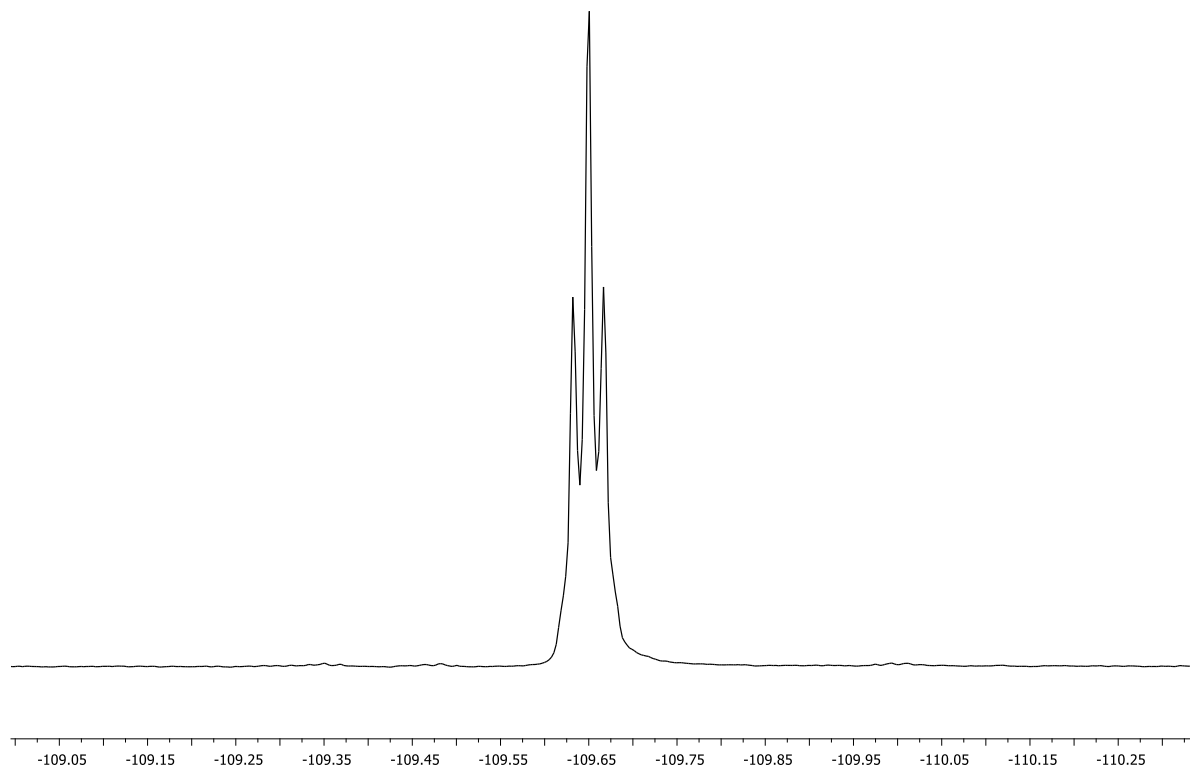
^{19}F NMR (470 MHz, CDCl_3) **3a**



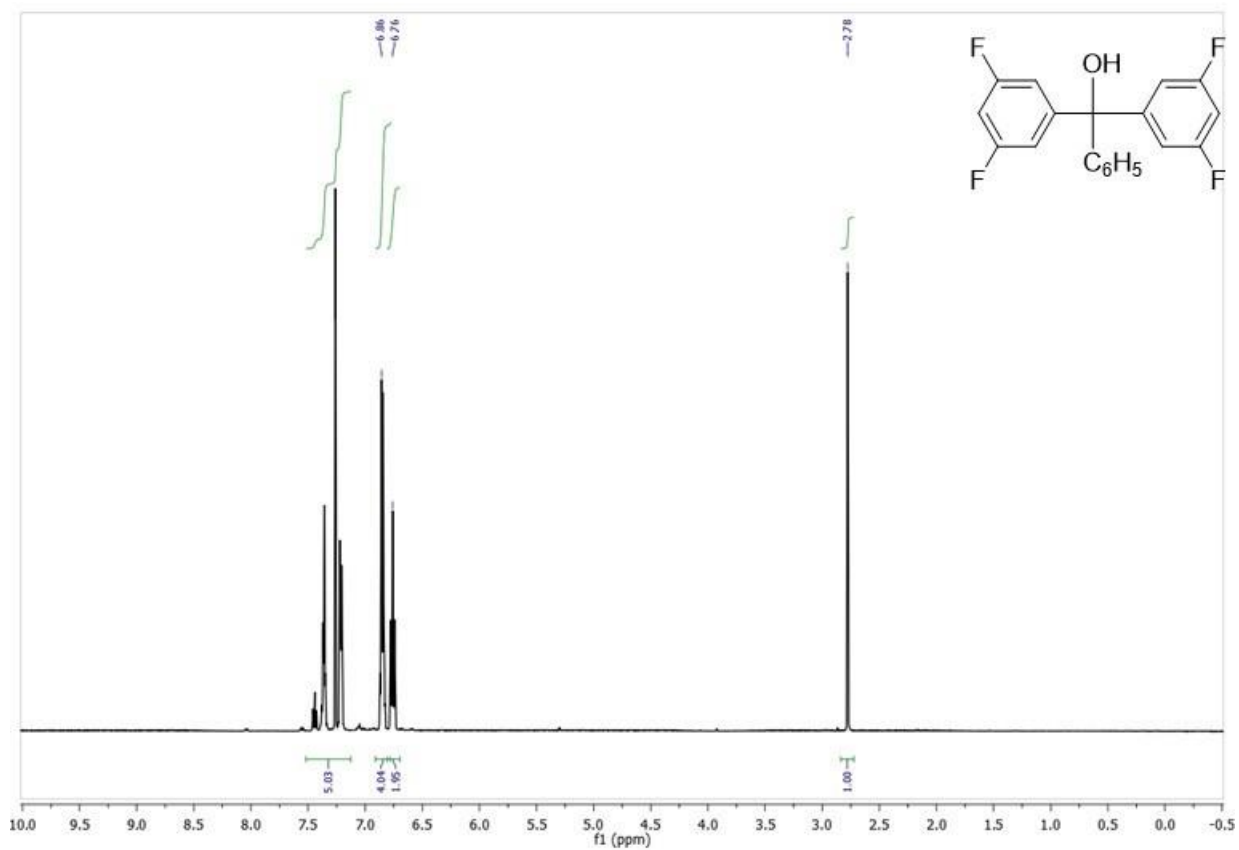
^1H NMR (500 MHz, CDCl_3) **3b**



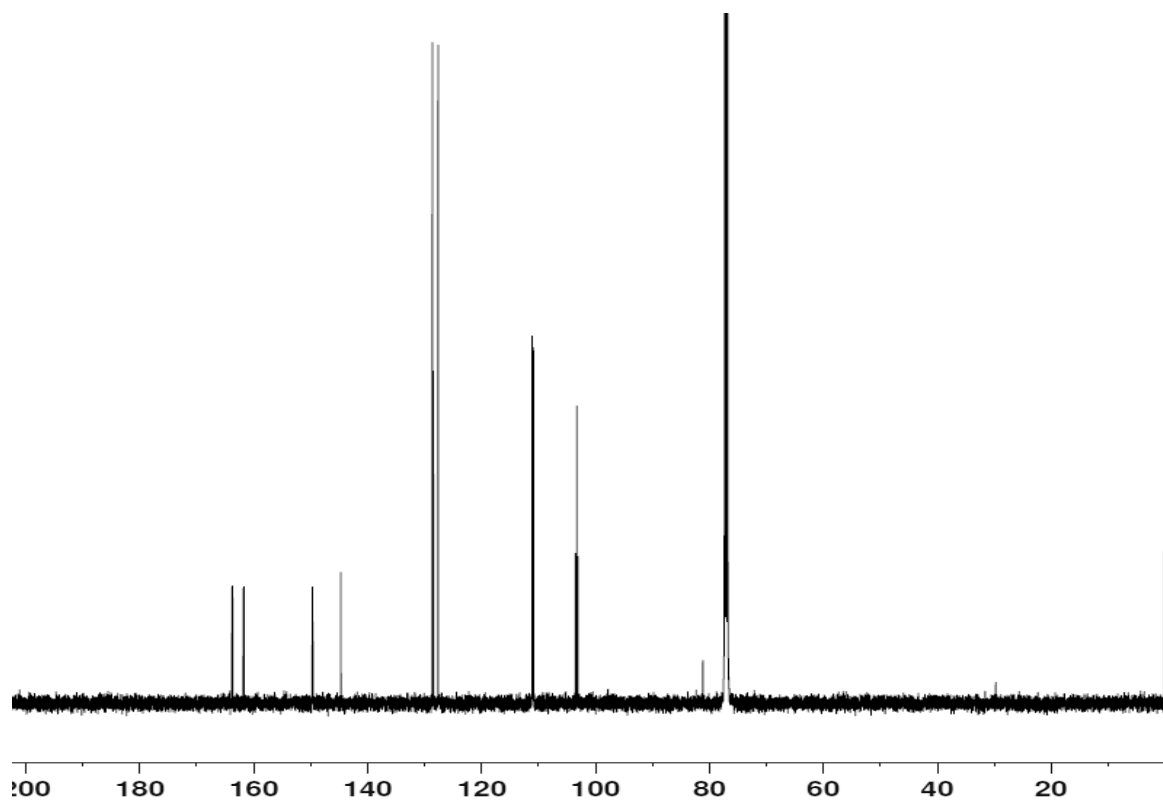
^{13}C NMR (126 MHz, CDCl_3) **3b**



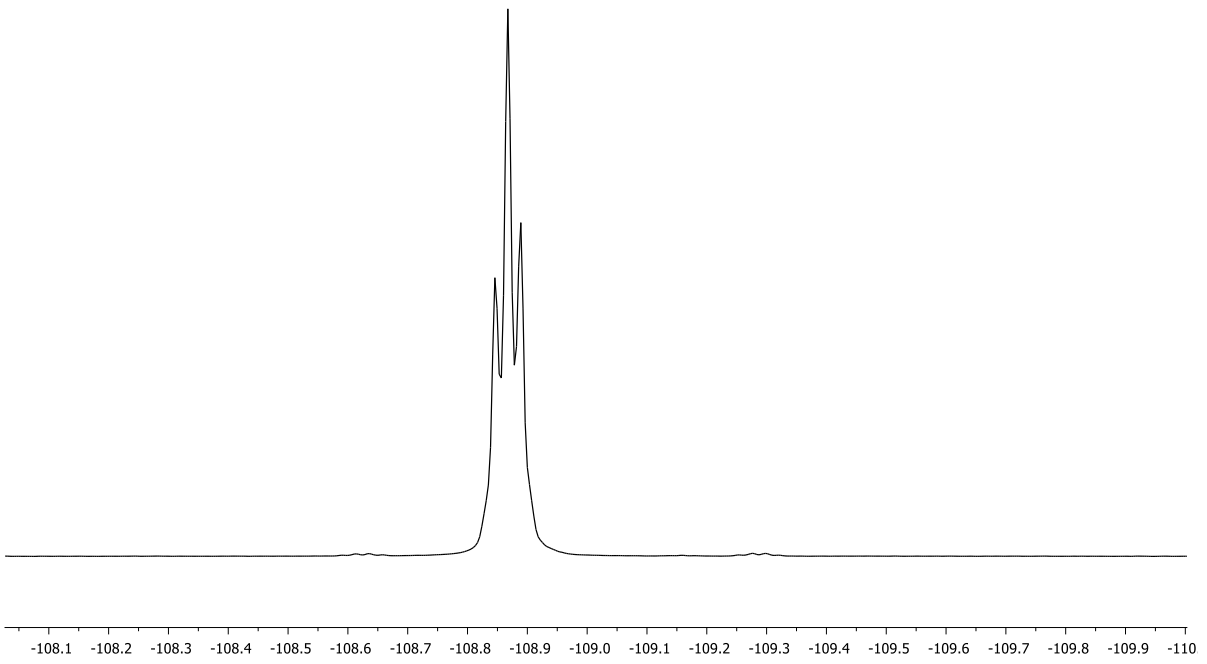
^{19}F NMR (470 MHz, CDCl_3) **3b**



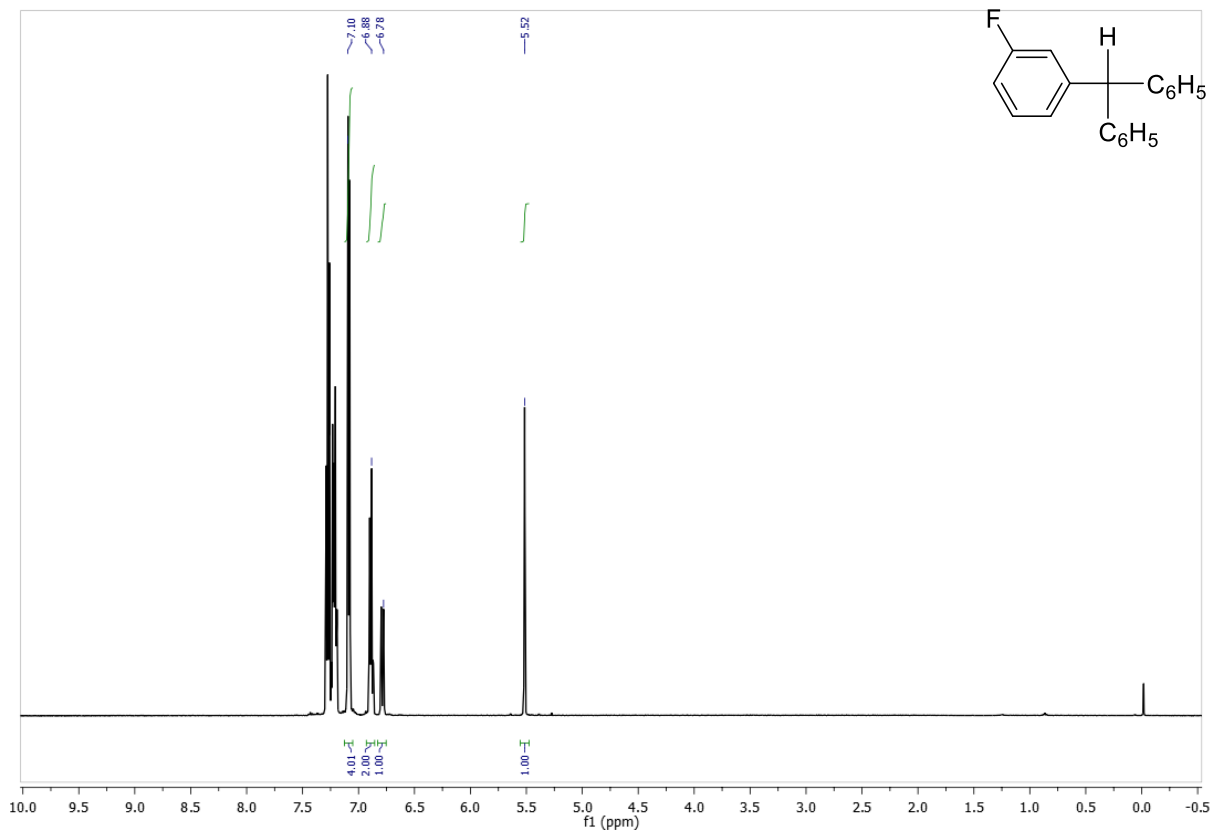
^1H NMR (400 MHz, CDCl_3) **3c**



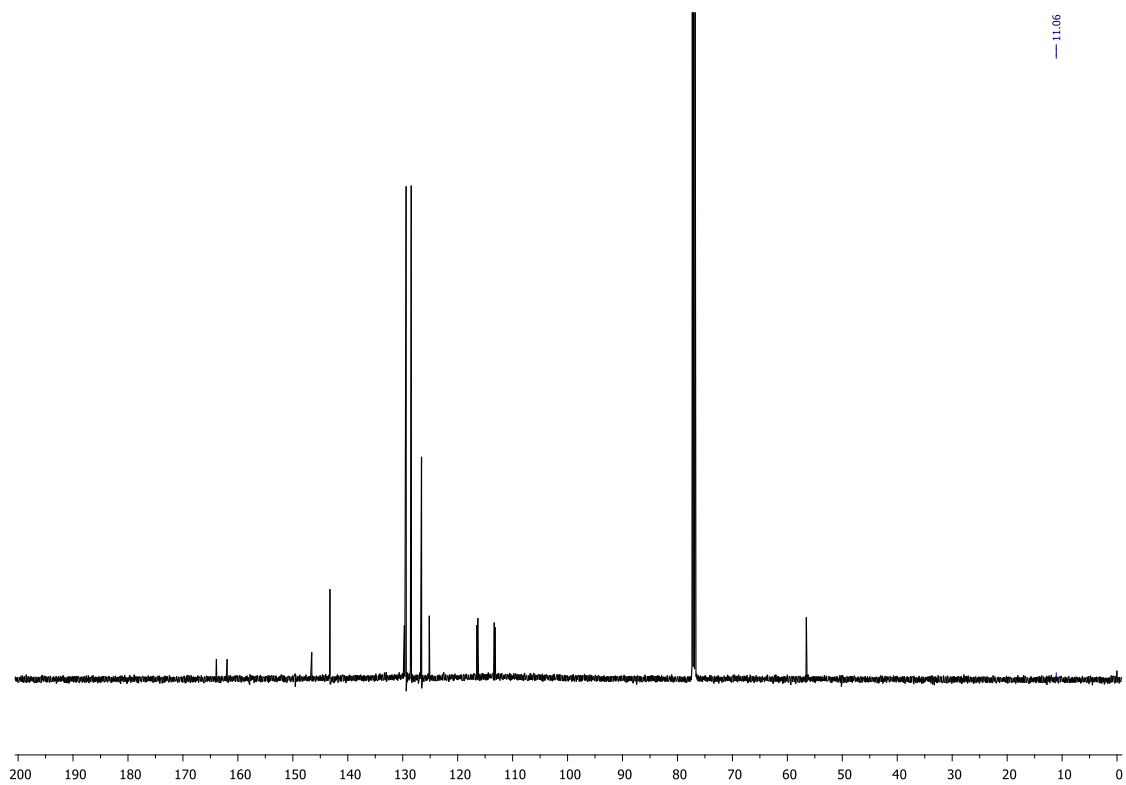
^{13}C NMR (126 MHz, CDCl_3) **3c**



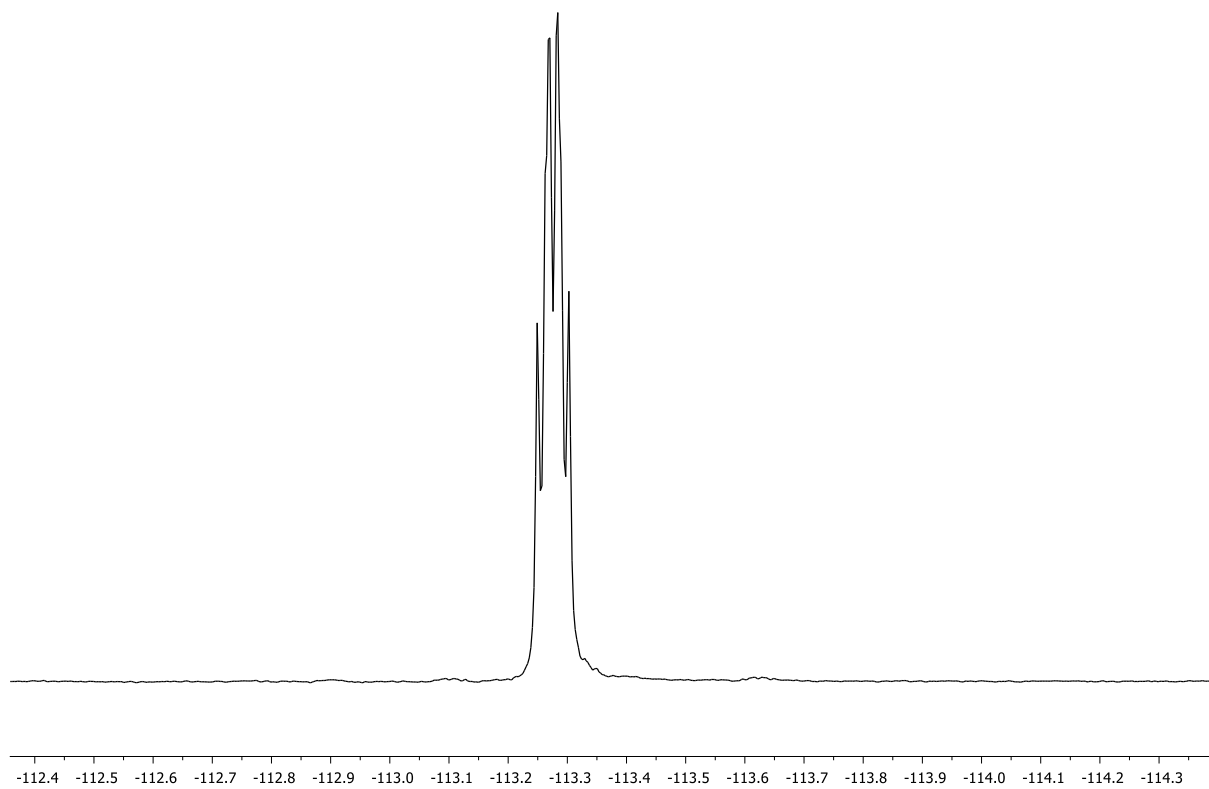
^{19}F NMR (376 MHz, CDCl_3) **3c**



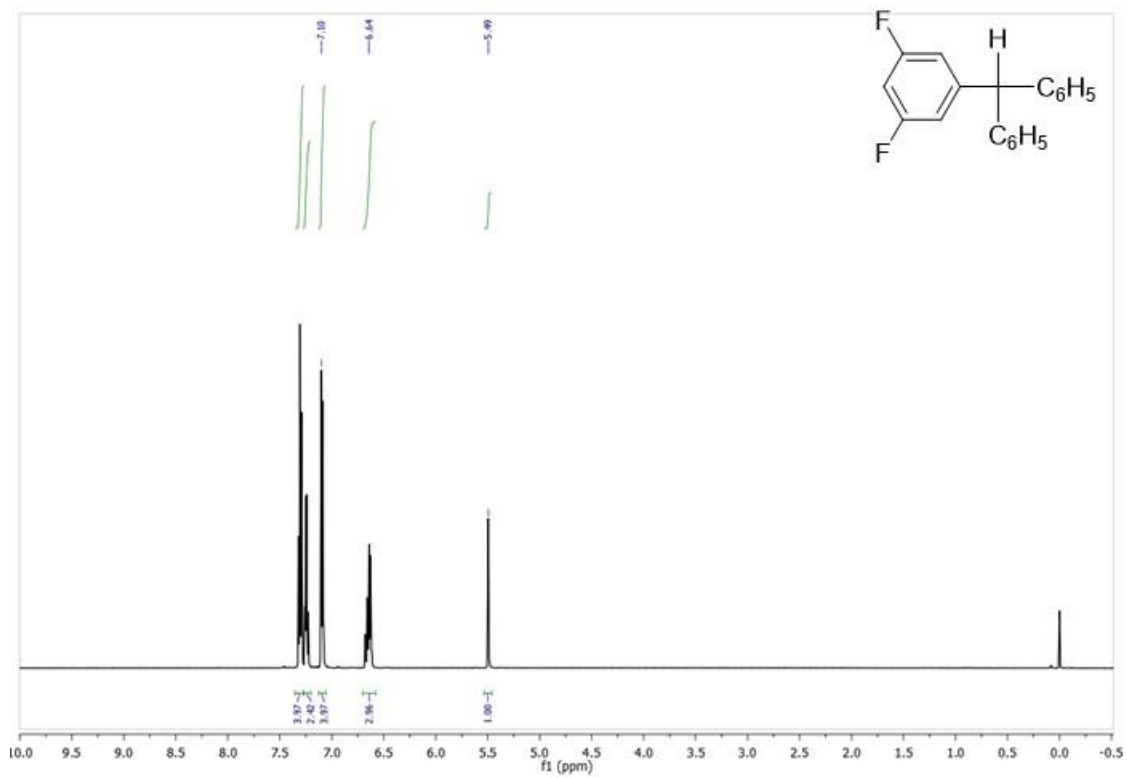
^1H NMR (400 MHz, CDCl_3) **4a**



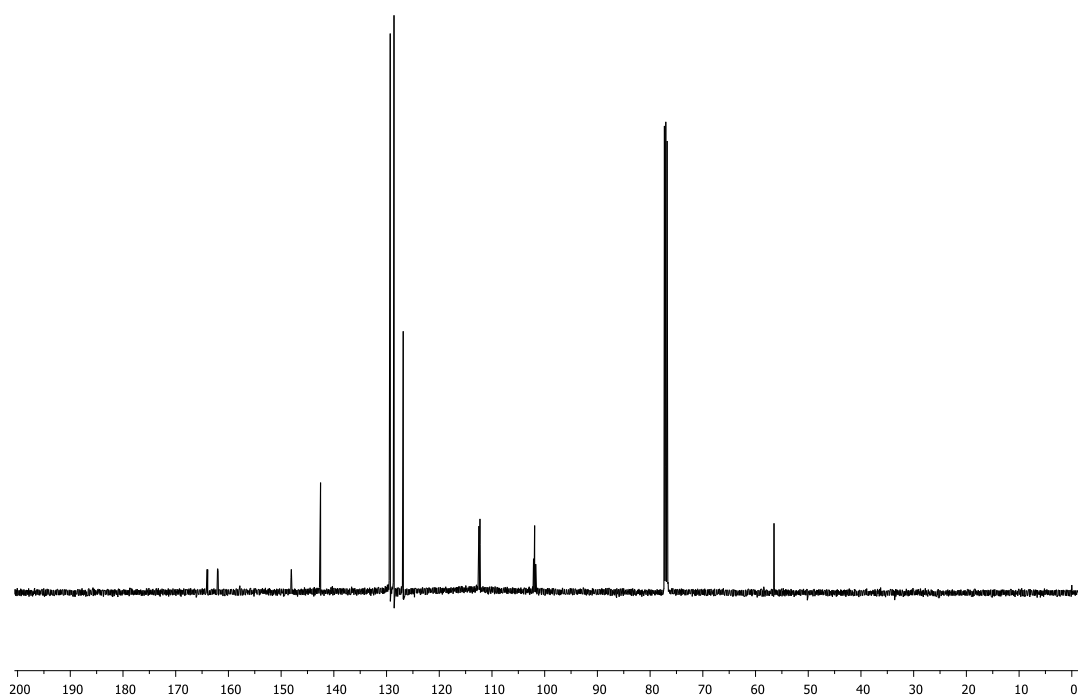
^{13}C NMR (126 MHz, CDCl_3) **4a**



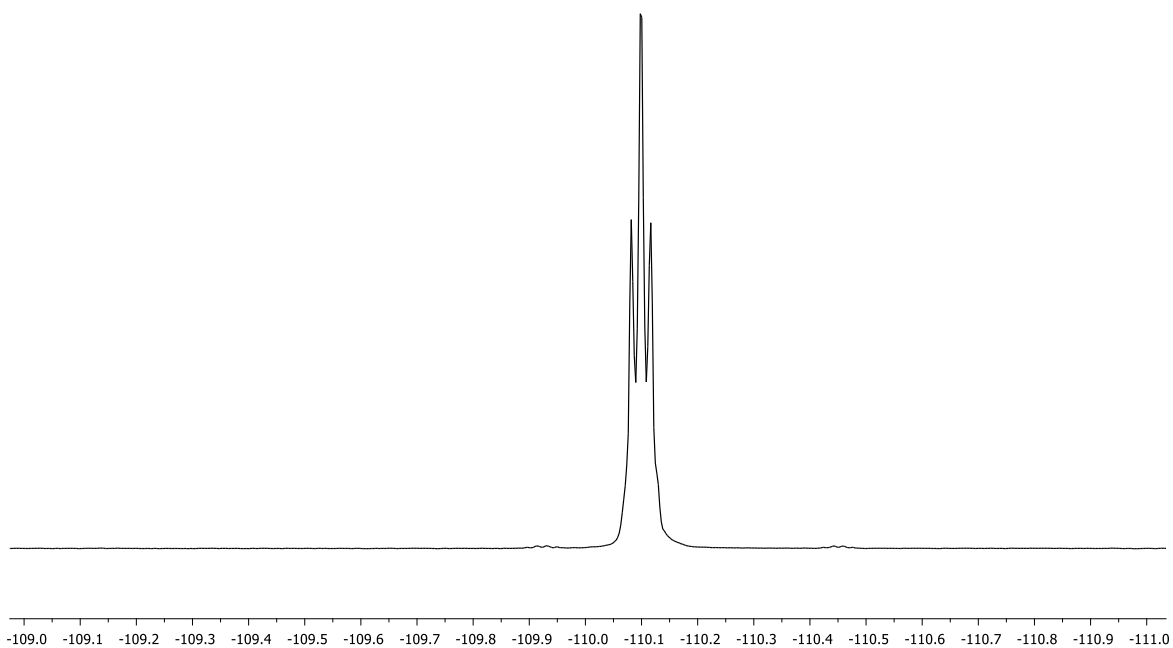
^{19}F NMR (470 MHz, CDCl_3) **4a**



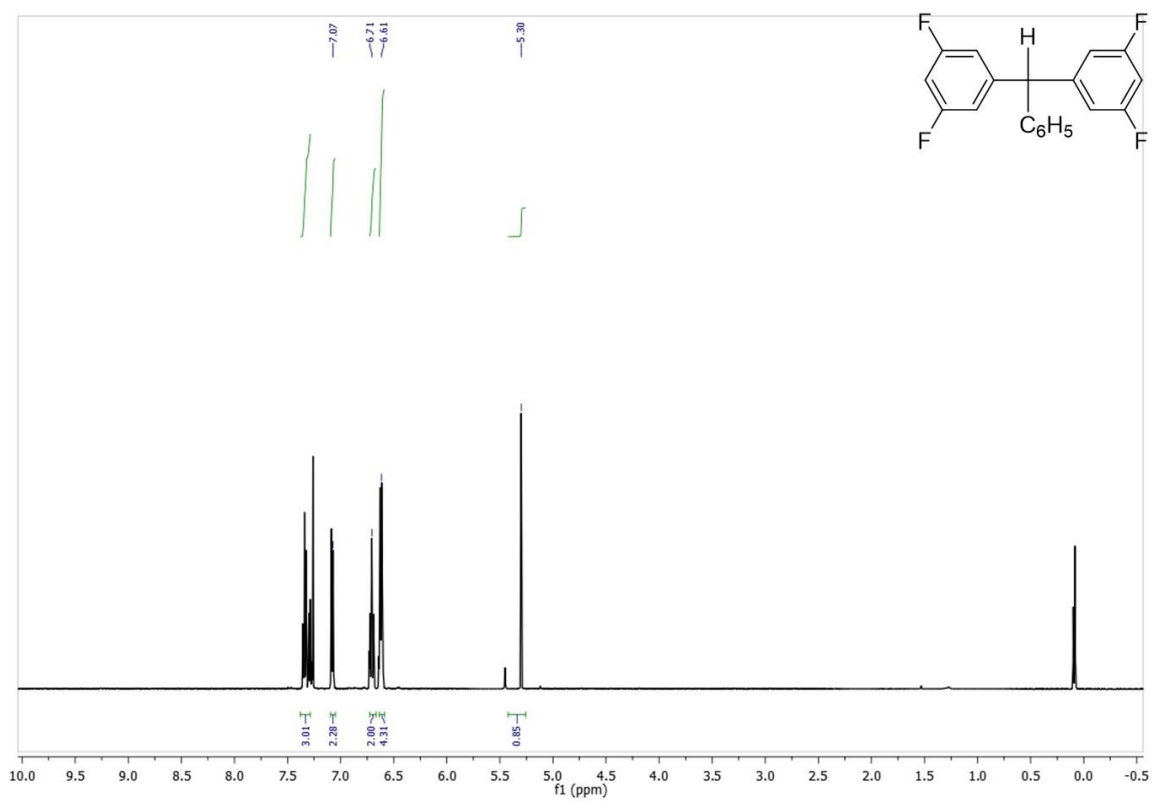
^1H NMR (500 MHz, CDCl_3) **4b**



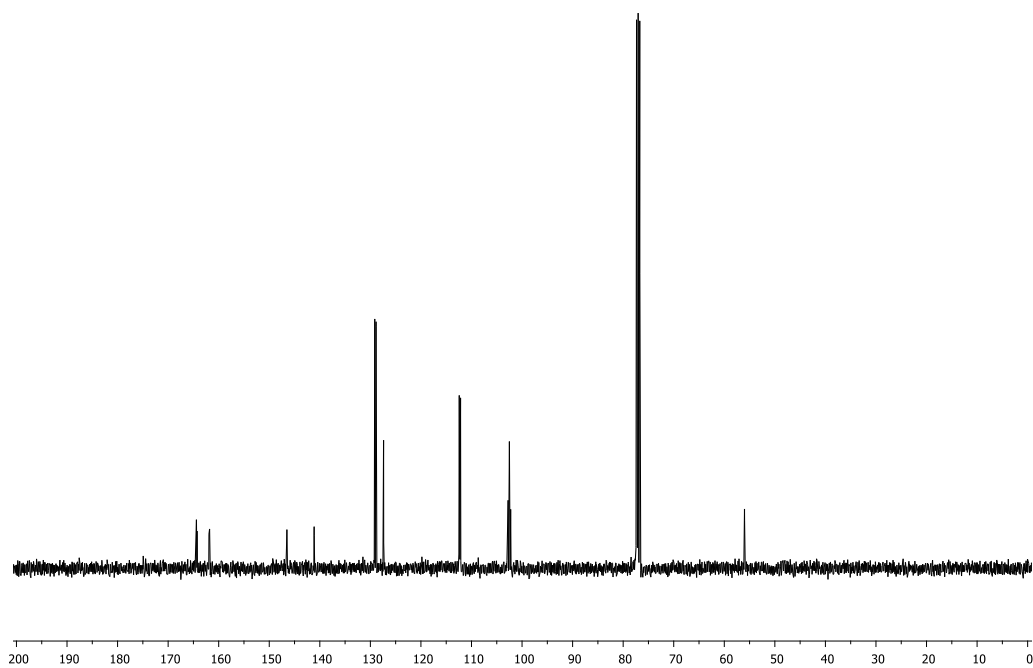
^{13}C NMR (126 MHz, CDCl_3) **4b**



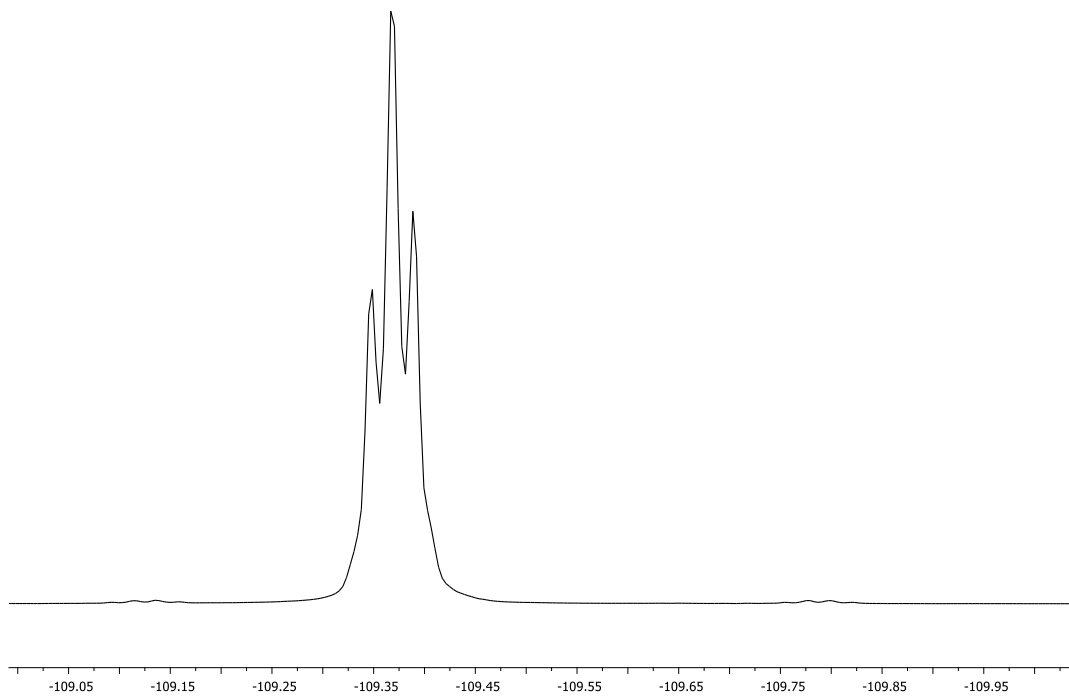
^{19}F NMR (470 MHz, CDCl_3) **4b**



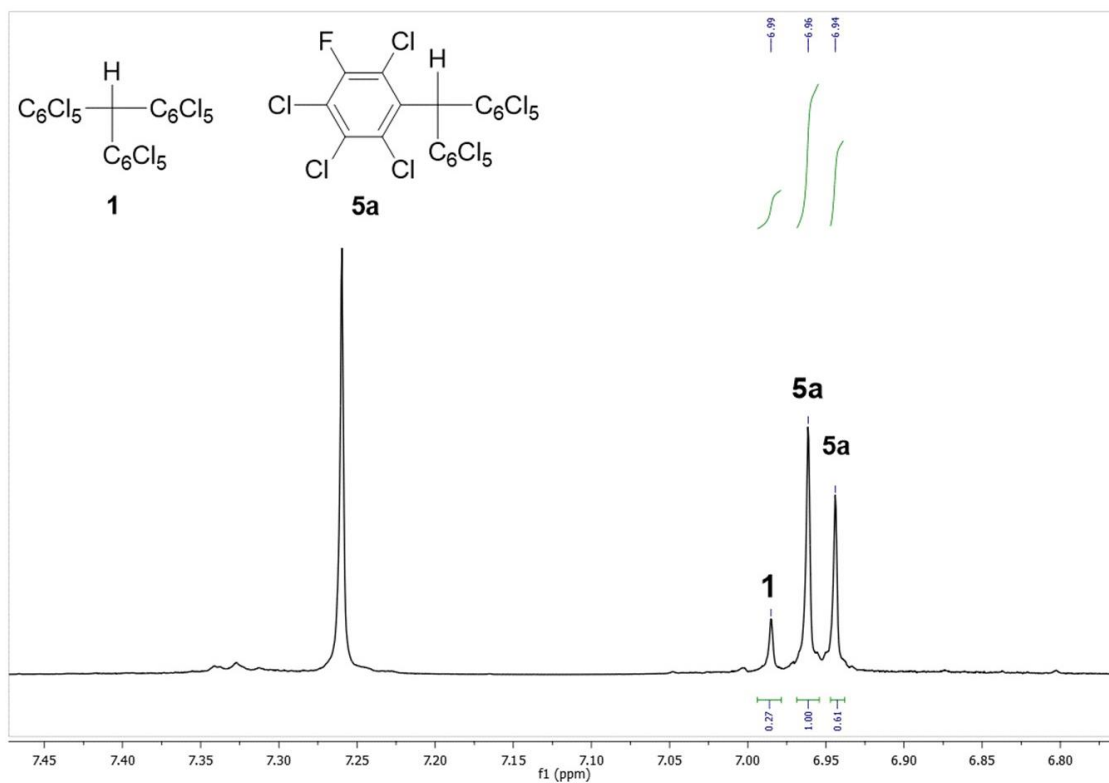
^1H NMR (400 MHz, CDCl_3) **4c**



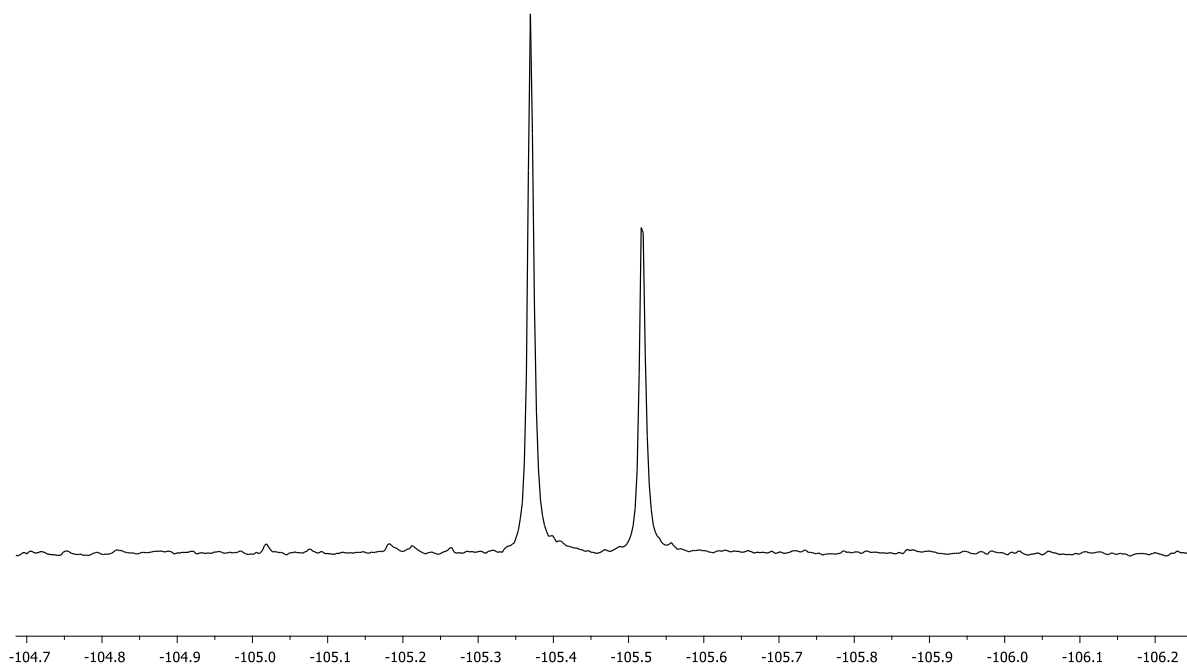
^{13}C NMR (101 MHz, CDCl_3) **4c**



^{19}F NMR (376 MHz, CDCl_3) **4c**

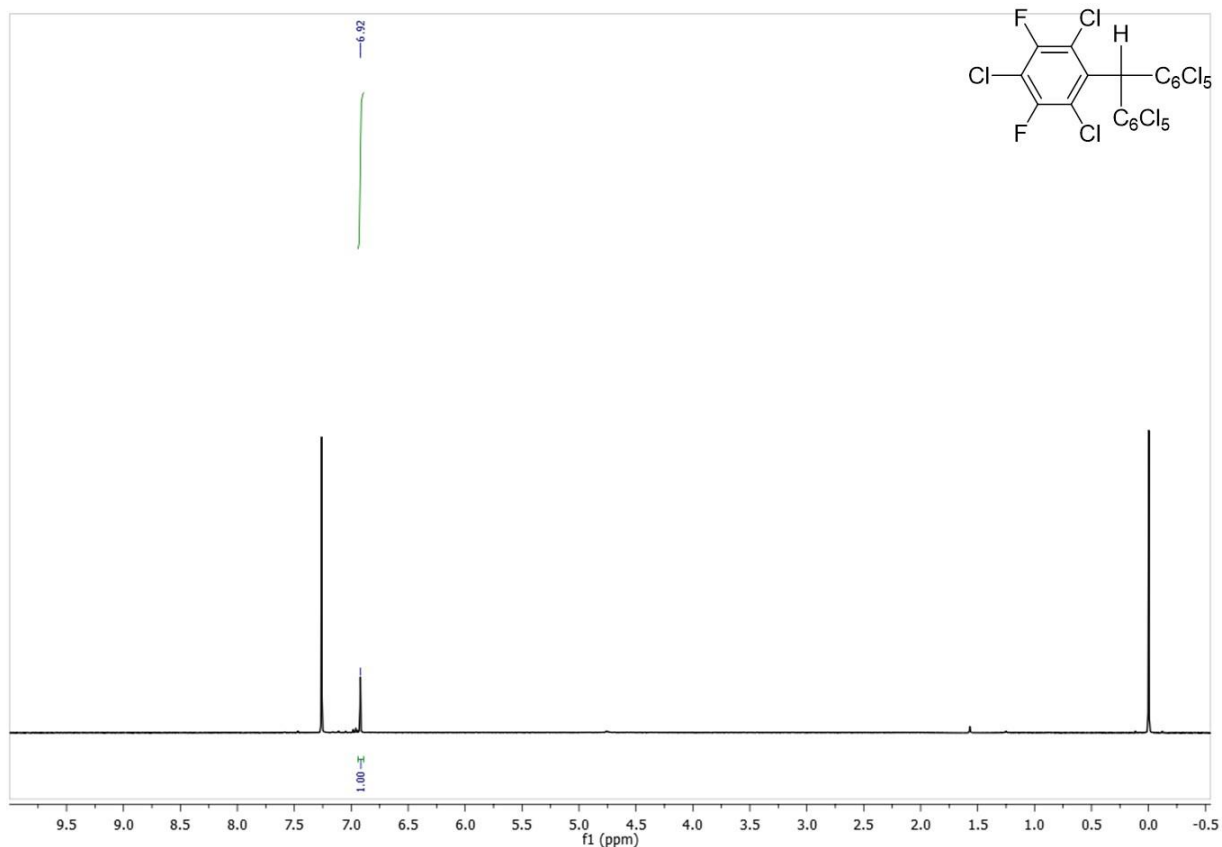


¹H NMR (500 MHz, CDCl₃, expansion) saturated solution of the crude product of chlorination of **4a**. (a mixture of **5a** *syn* and *anti* isomers and **1**)

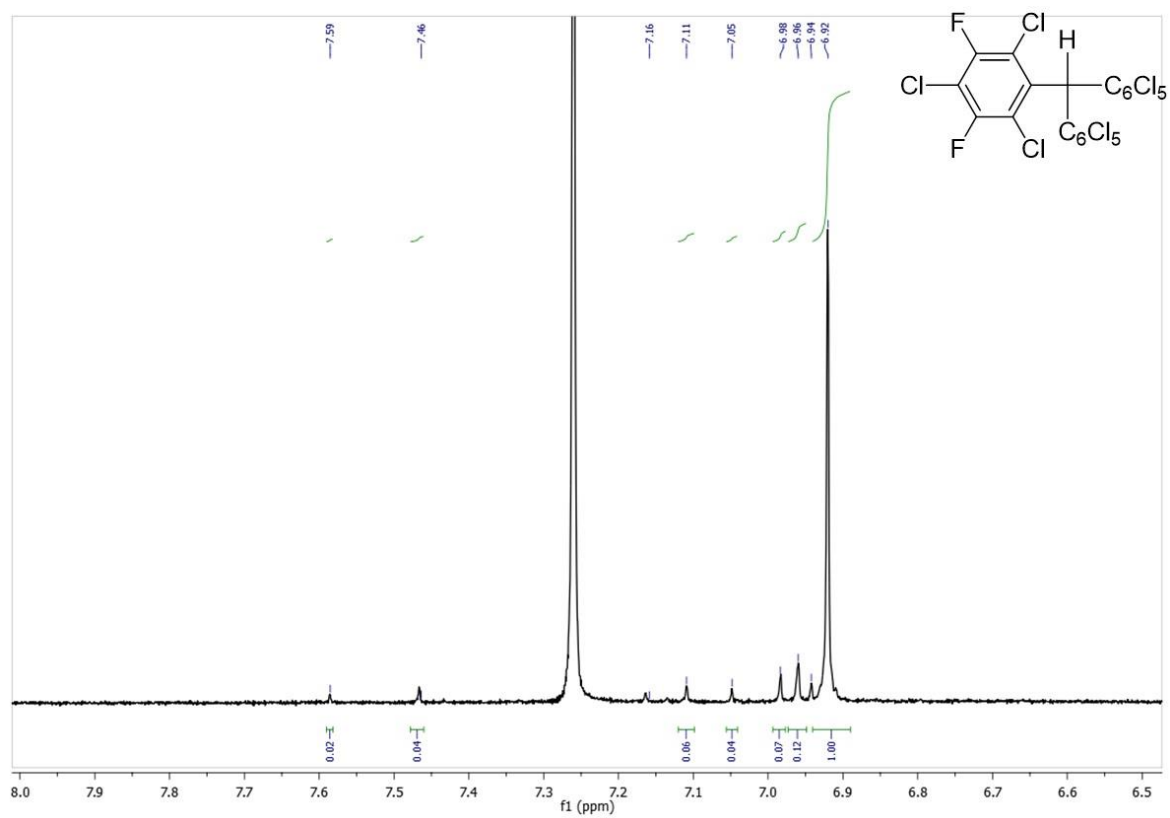


¹⁹F NMR (470 MHz, CDCl₃) saturated solution of the crude product of chlorination of **4a**.

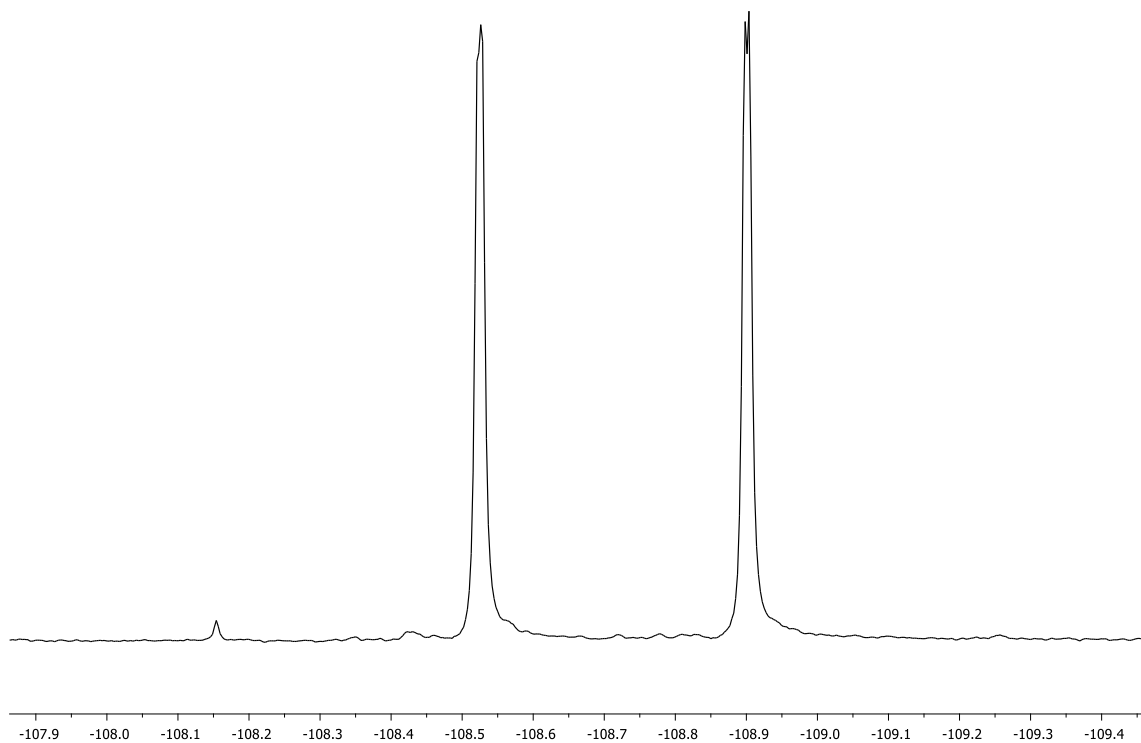
(*syn* and *anti* isomers)



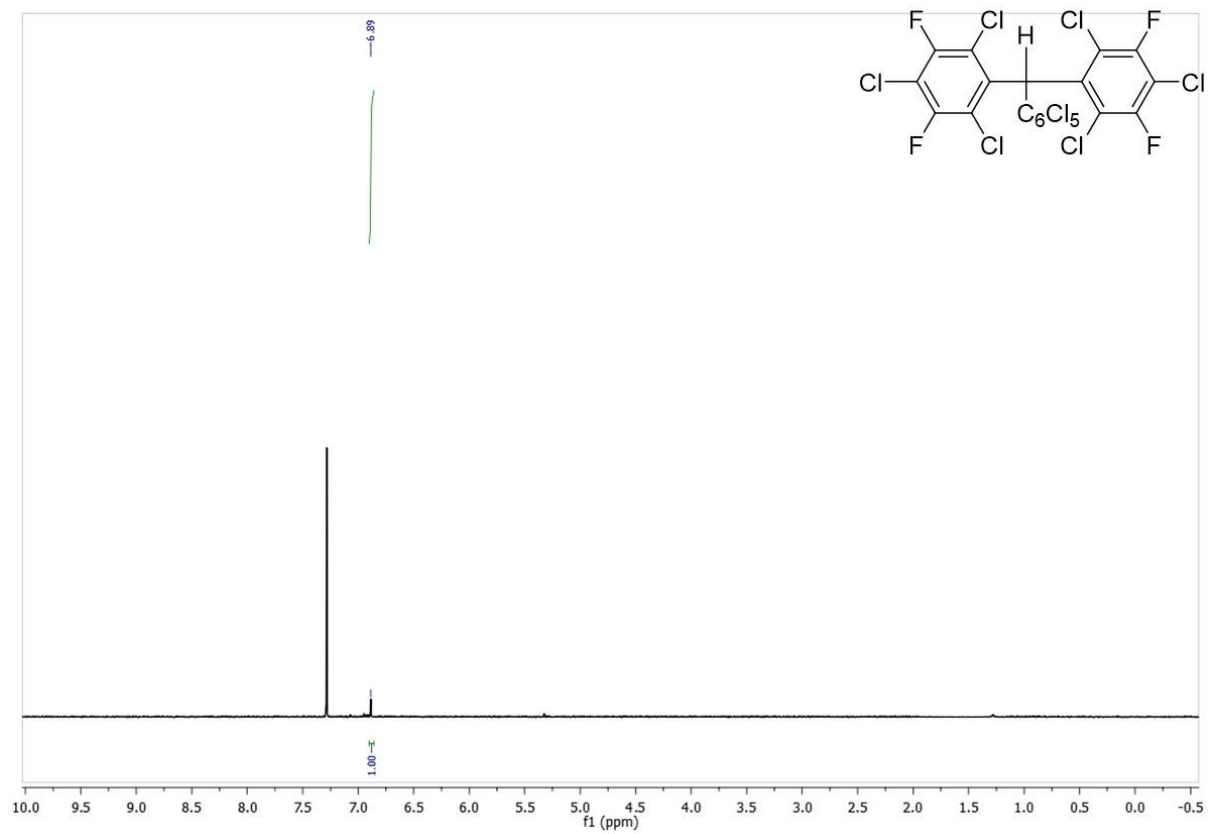
¹H NMR (500 MHz, CDCl₃) crude product, saturated solution, **5b**.



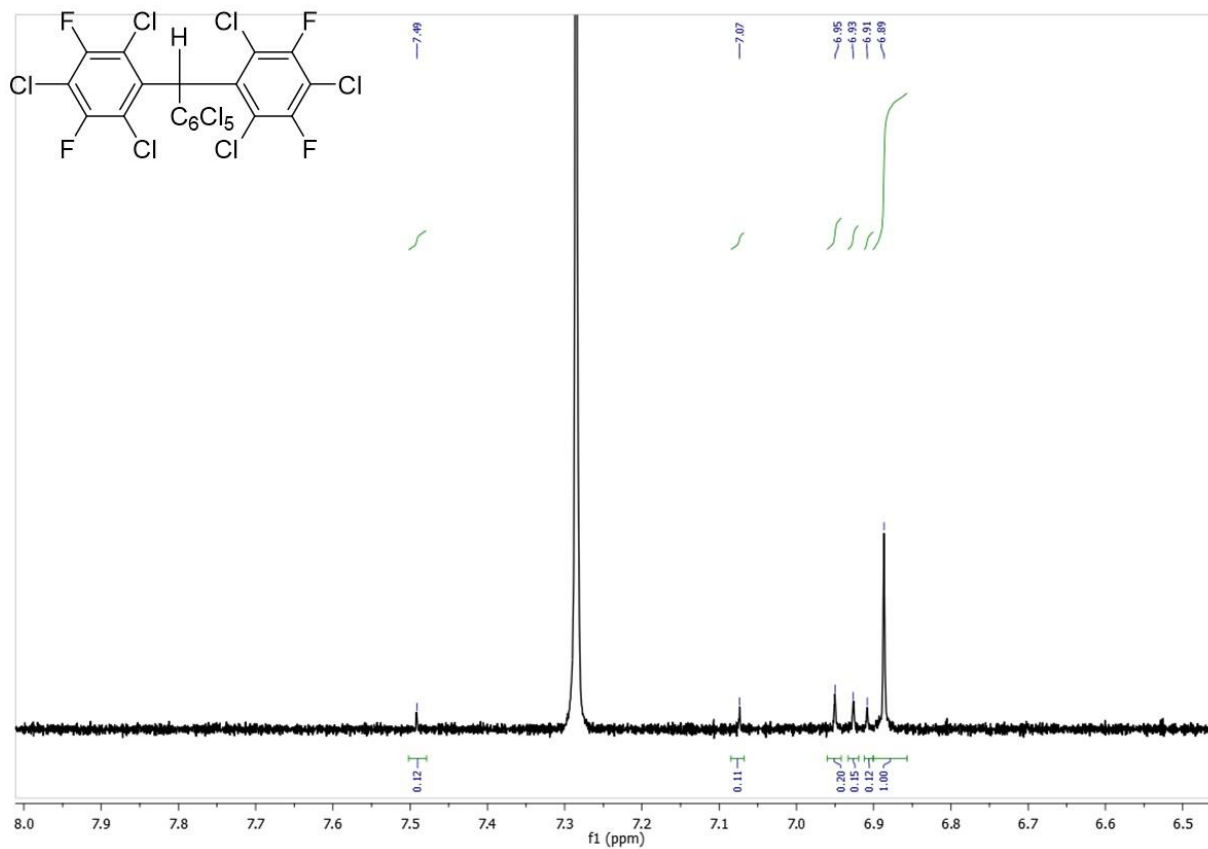
¹H NMR (400 MHz, CDCl₃) **5b**, expansion showing ArH impurities in the crude product.



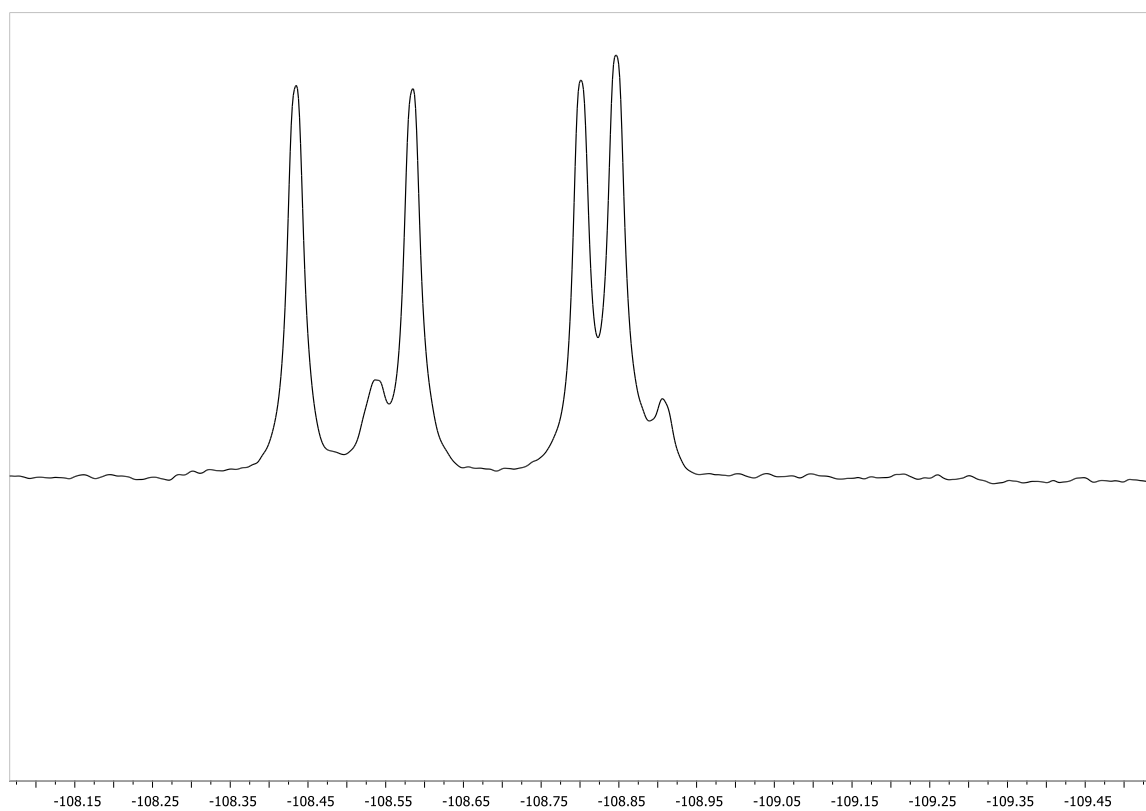
^{19}F NMR (470 MHz, CDCl_3) crude product, saturated solution, **5b**



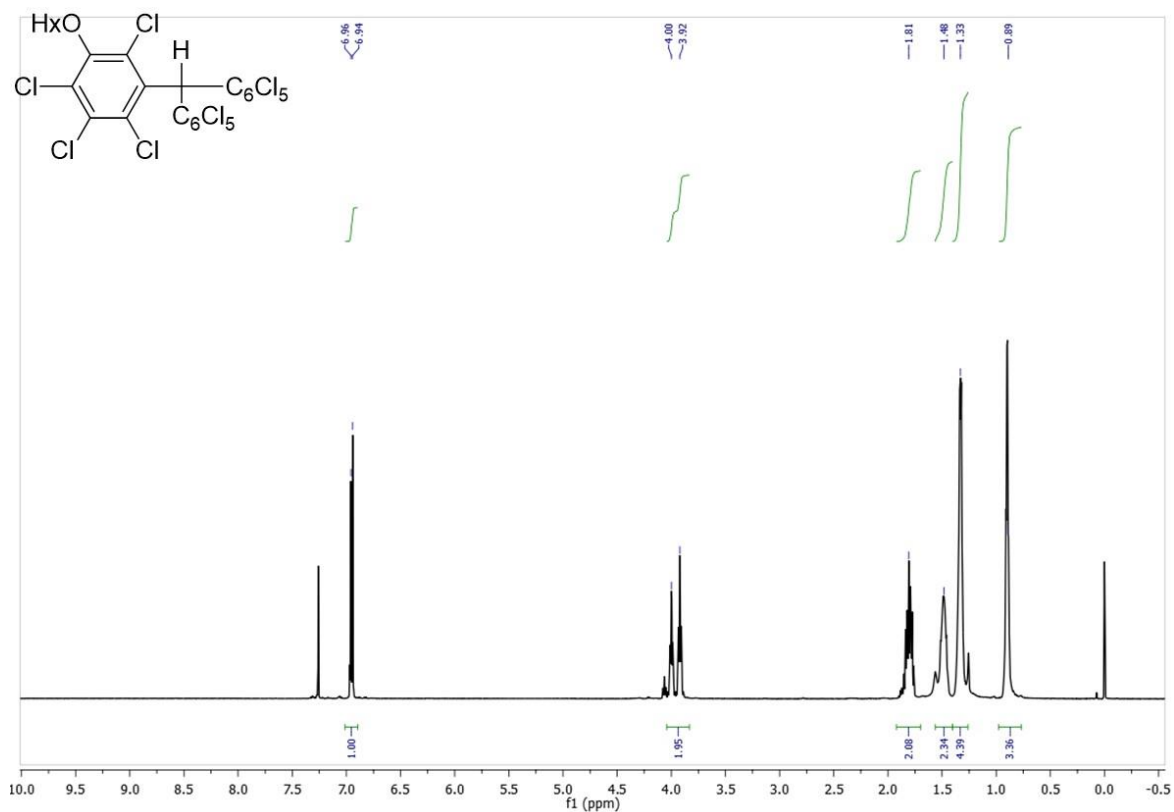
^1H NMR (400 MHz, CDCl_3) crude product, saturated solution, **5c**



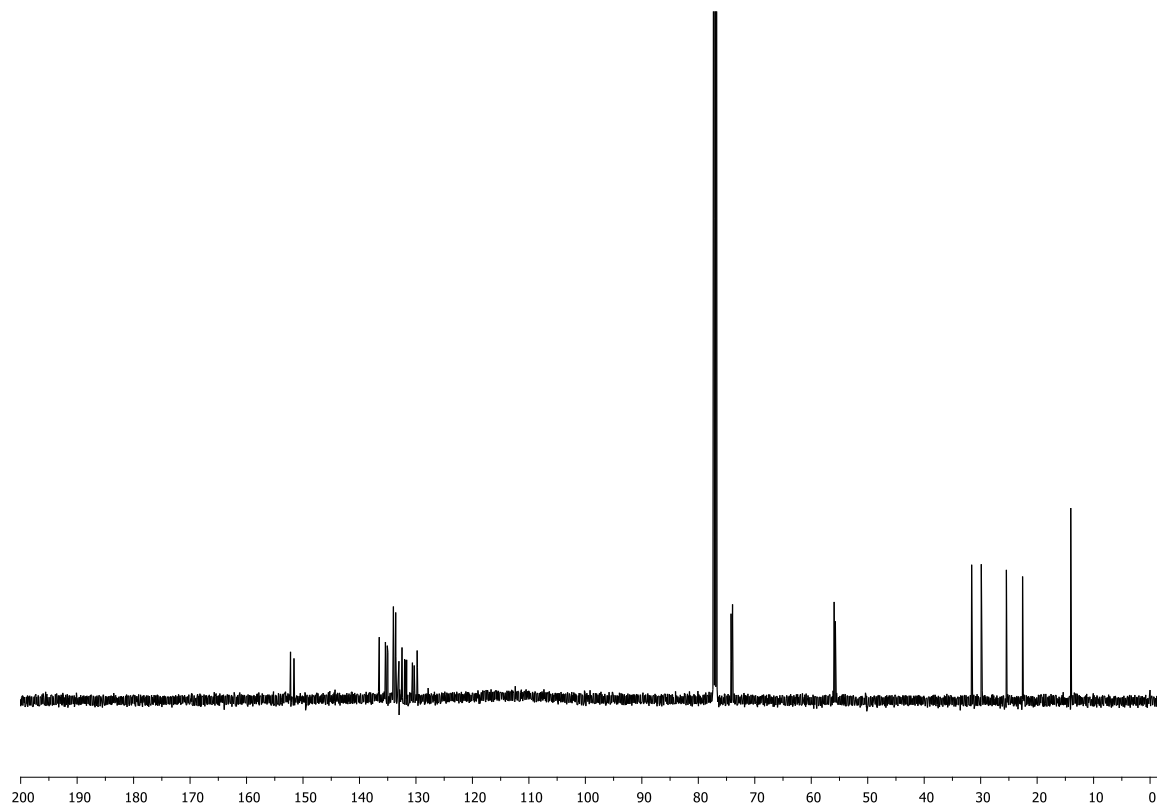
^1H NMR (400 MHz, CDCl_3) **5c**, expansion showing ArH impurities in the crude product.



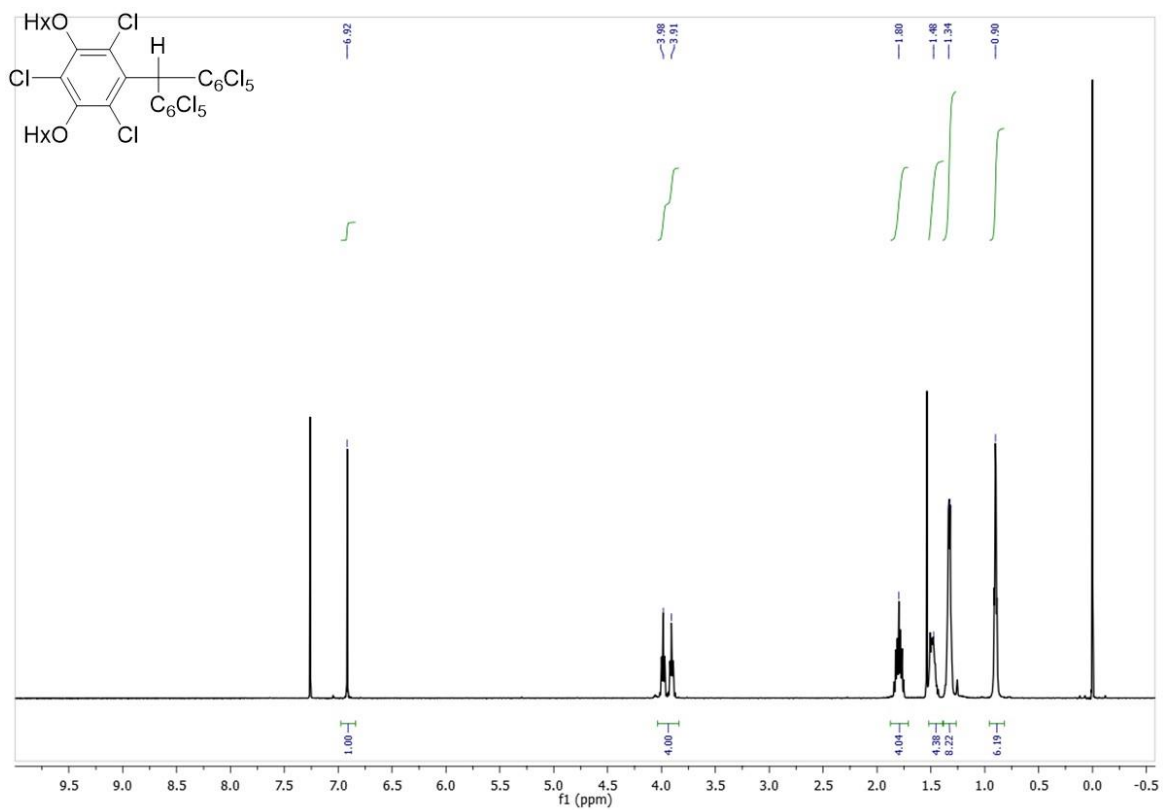
^{19}F NMR (376 MHz, CDCl_3) crude product, saturated solution, **5c**



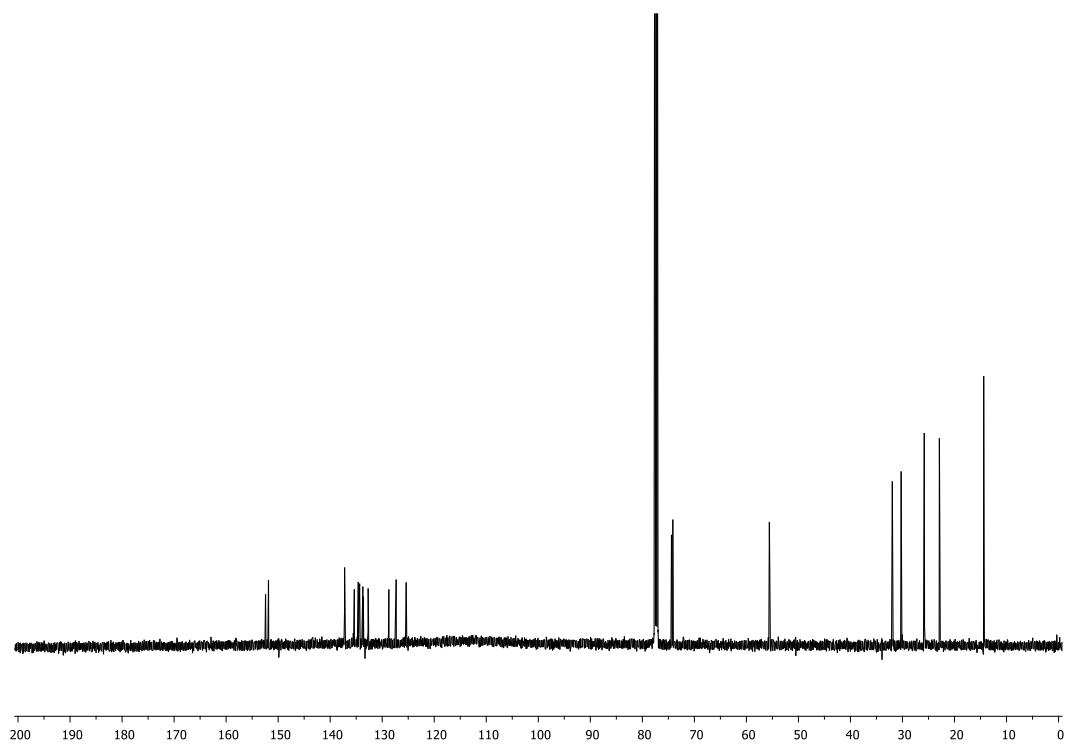
¹H NMR (500 MHz, CDCl₃) **6a** (syn and anti isomers)



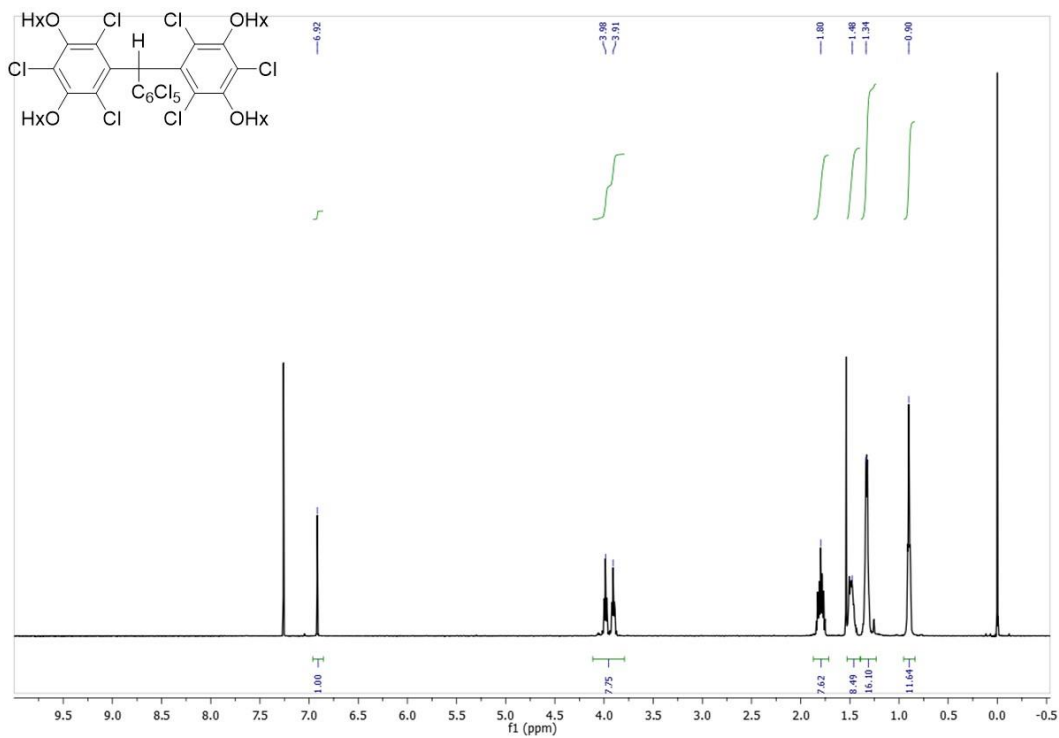
¹³C NMR (126 MHz, CDCl₃) **6a** (syn and anti isomers)



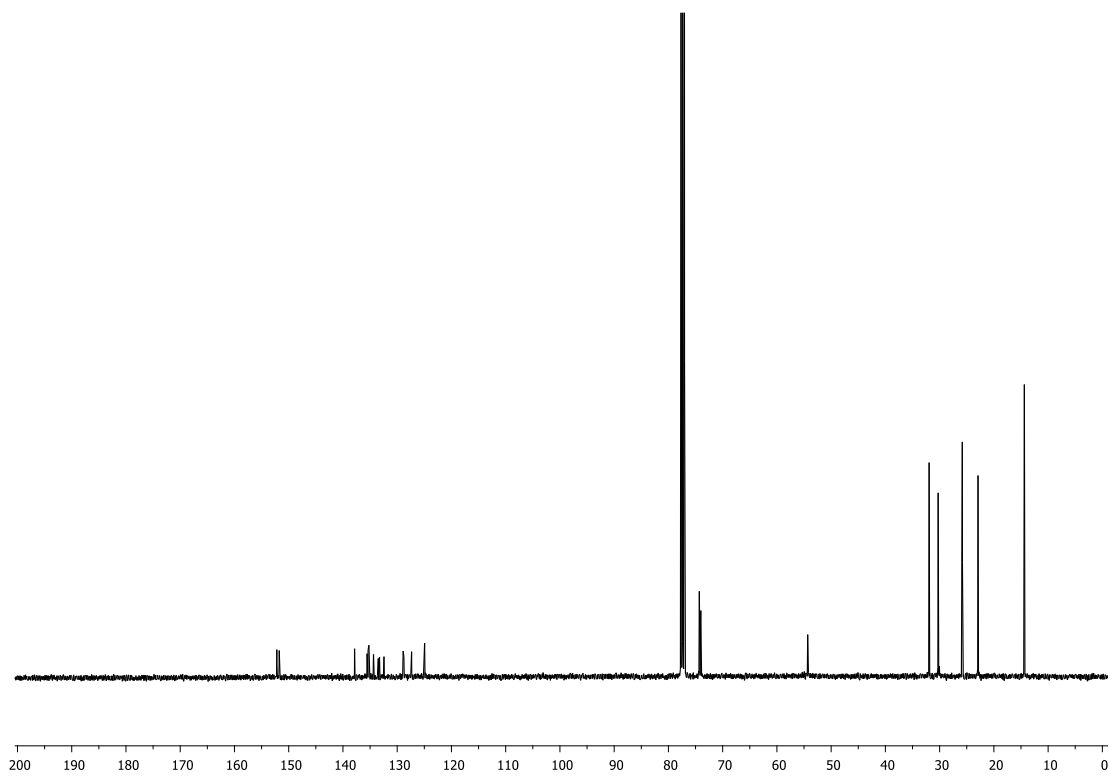
$^1\text{H NMR}$ (500 MHz, CDCl_3) **6b**



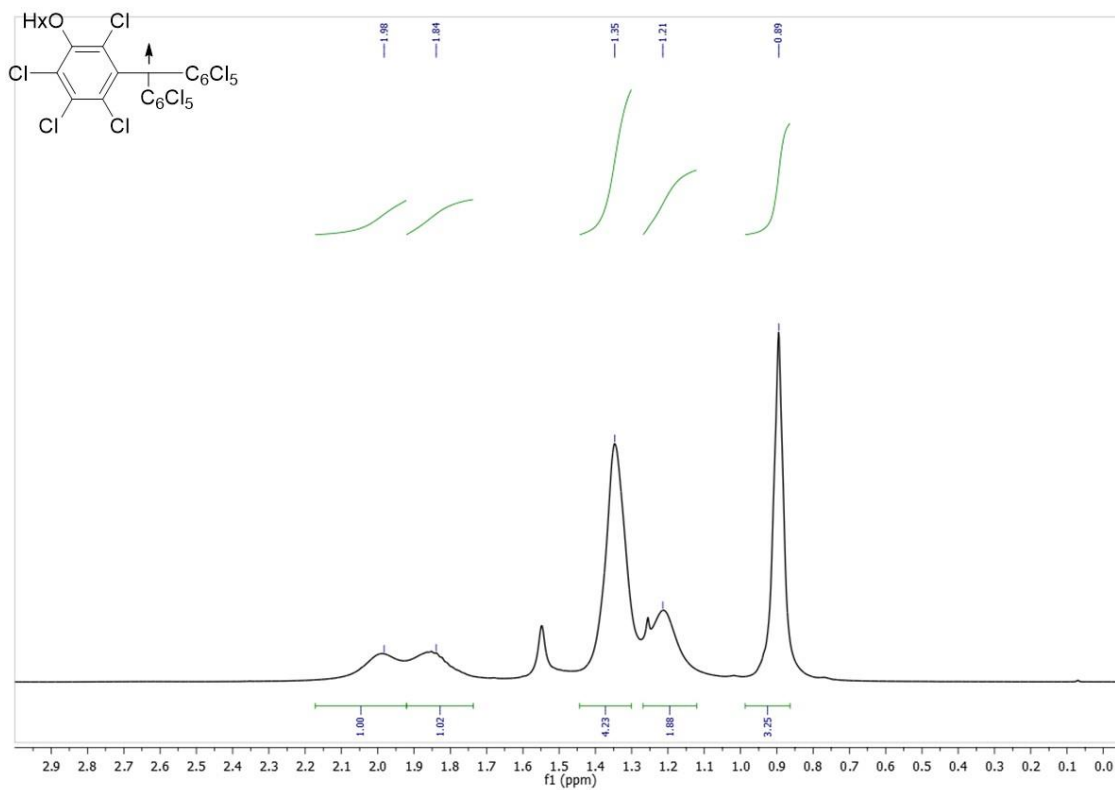
$^{13}\text{C NMR}$ (126 MHz, CDCl_3) **6b**



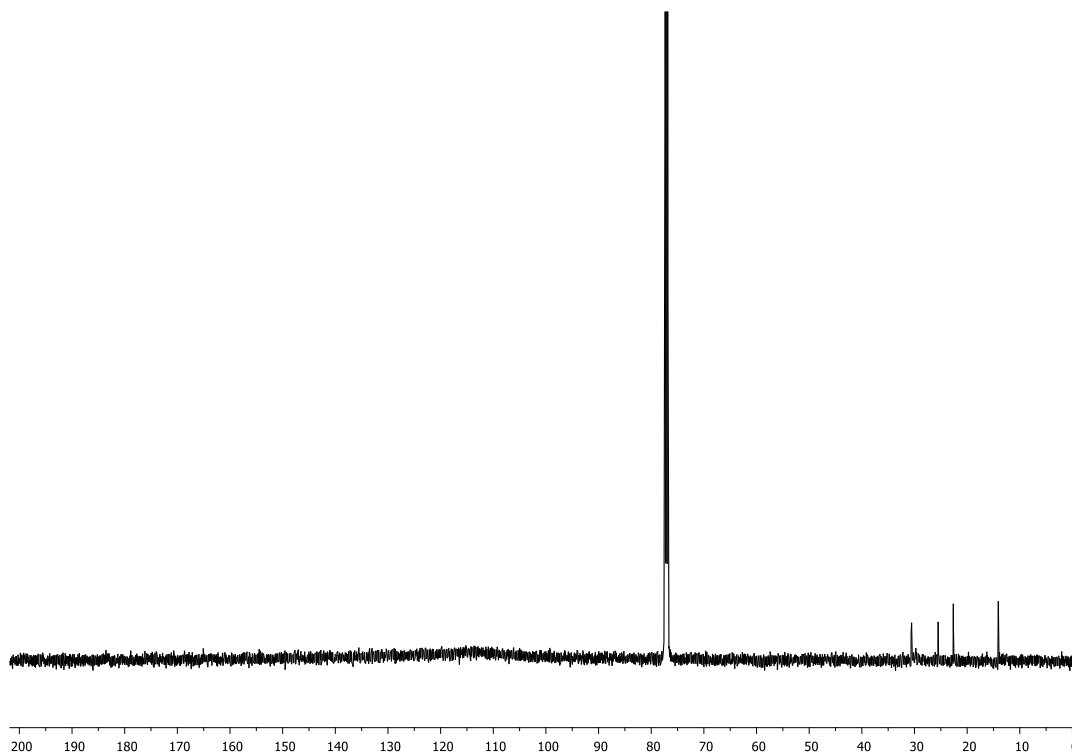
¹H NMR (500 MHz, CDCl₃) **6c**



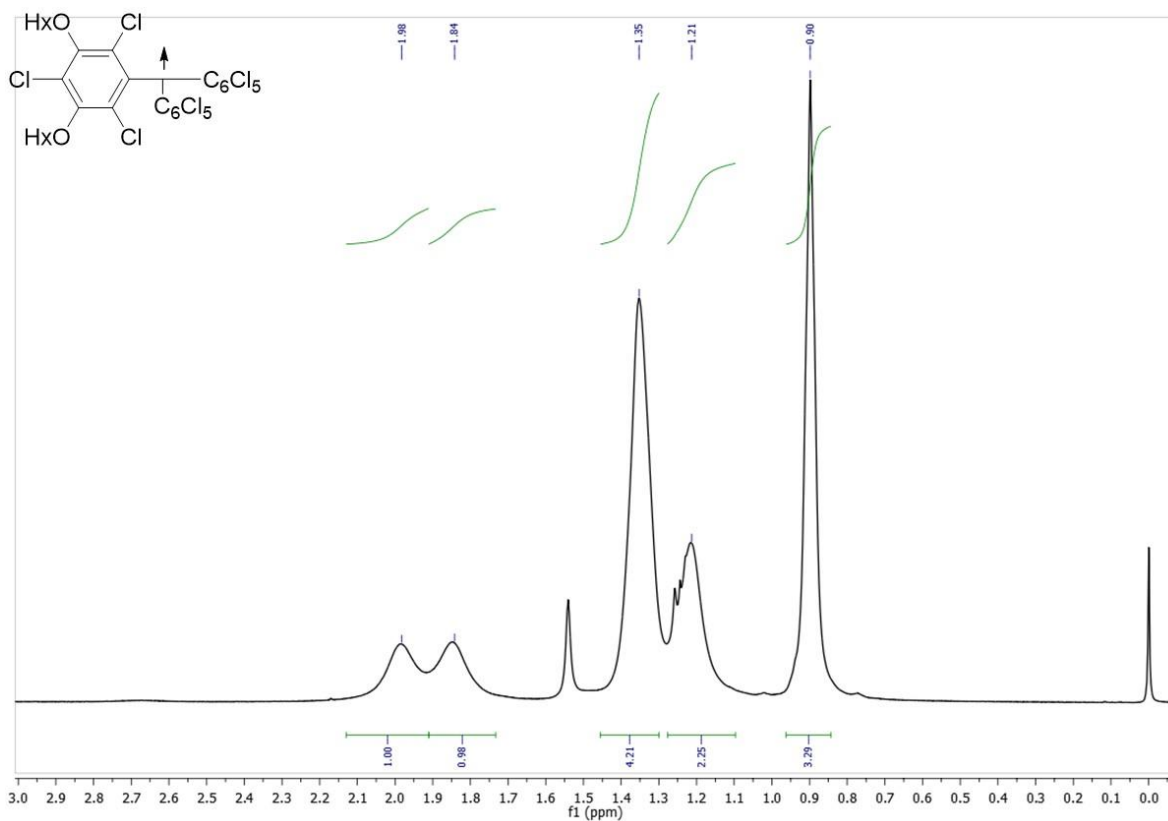
¹³C NMR (101 MHz, CDCl₃) **6c**



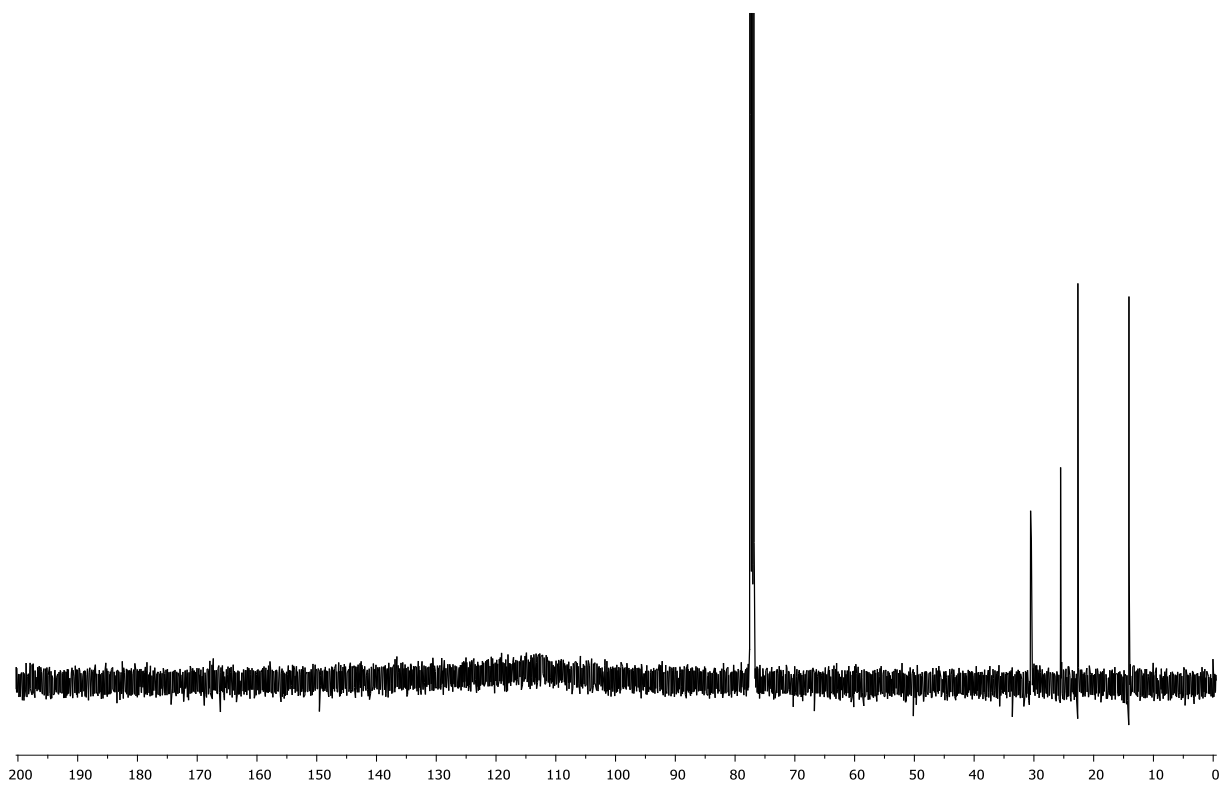
$^1\text{H NMR}$ (500 MHz, CDCl_3) **7a**



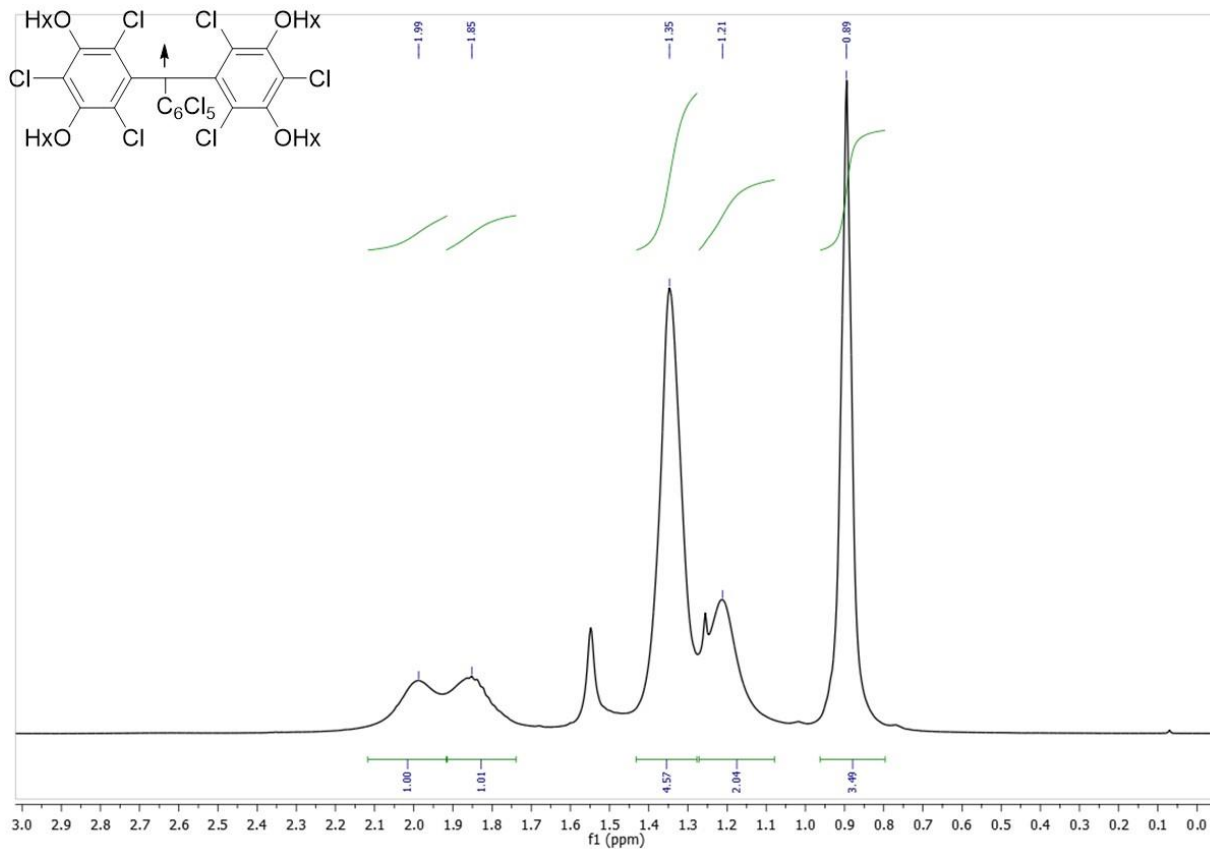
$^{13}\text{C NMR}$ (126 MHz, CDCl_3) **7a**



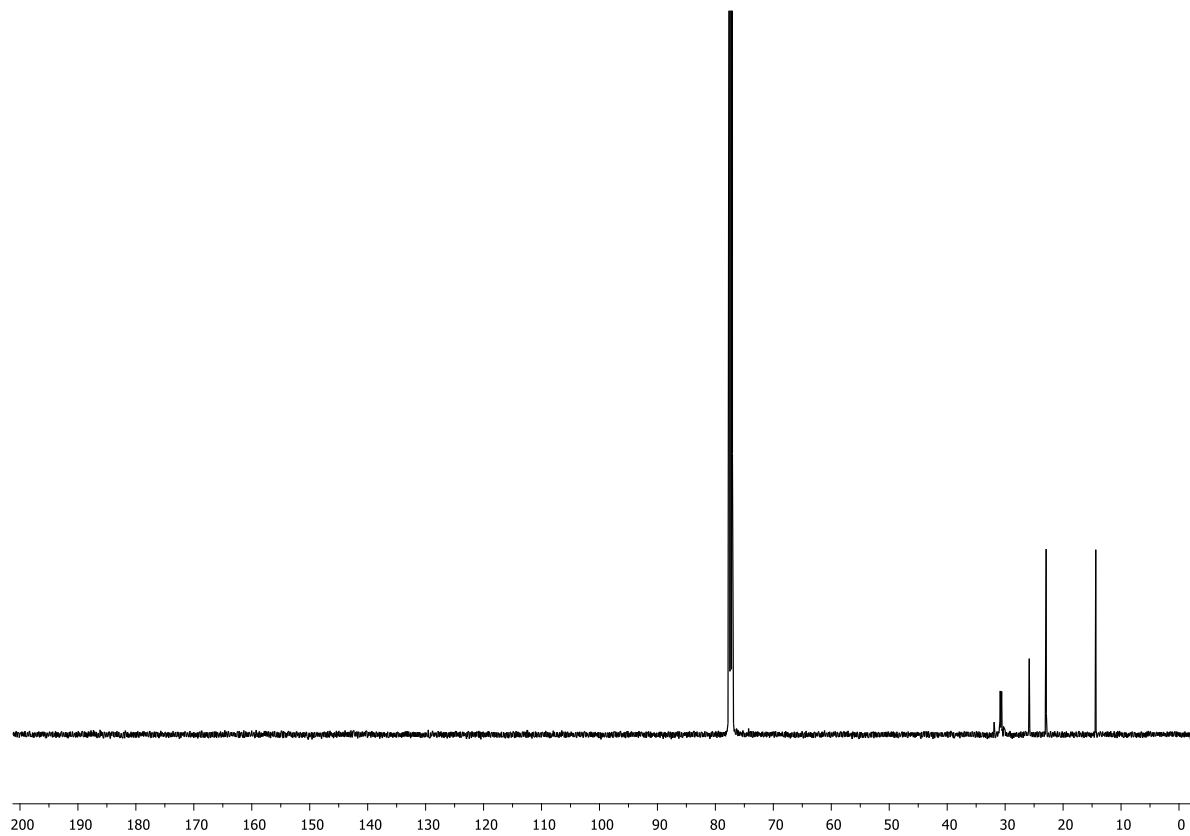
^1H NMR (500 MHz, CDCl_3) **7b**



^{13}C NMR (126 MHz, CDCl_3) **7b**

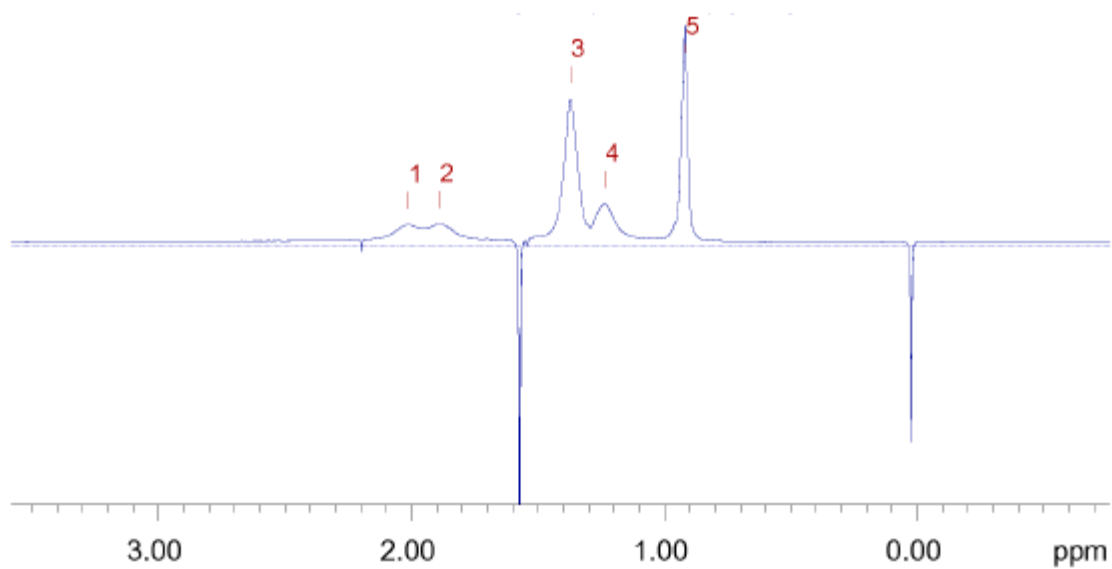


$^1\text{H NMR}$ (500 MHz, CDCl_3) **7c**

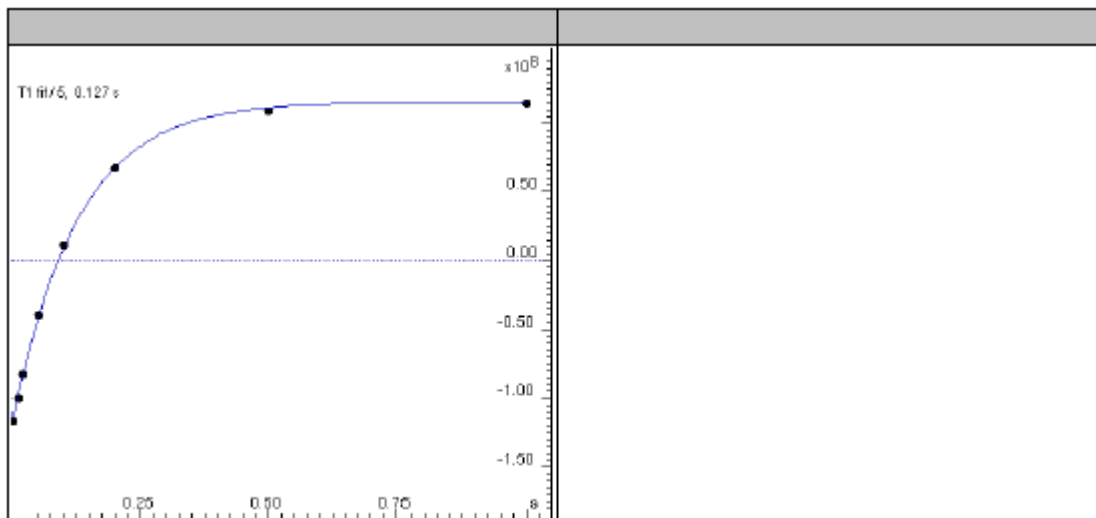
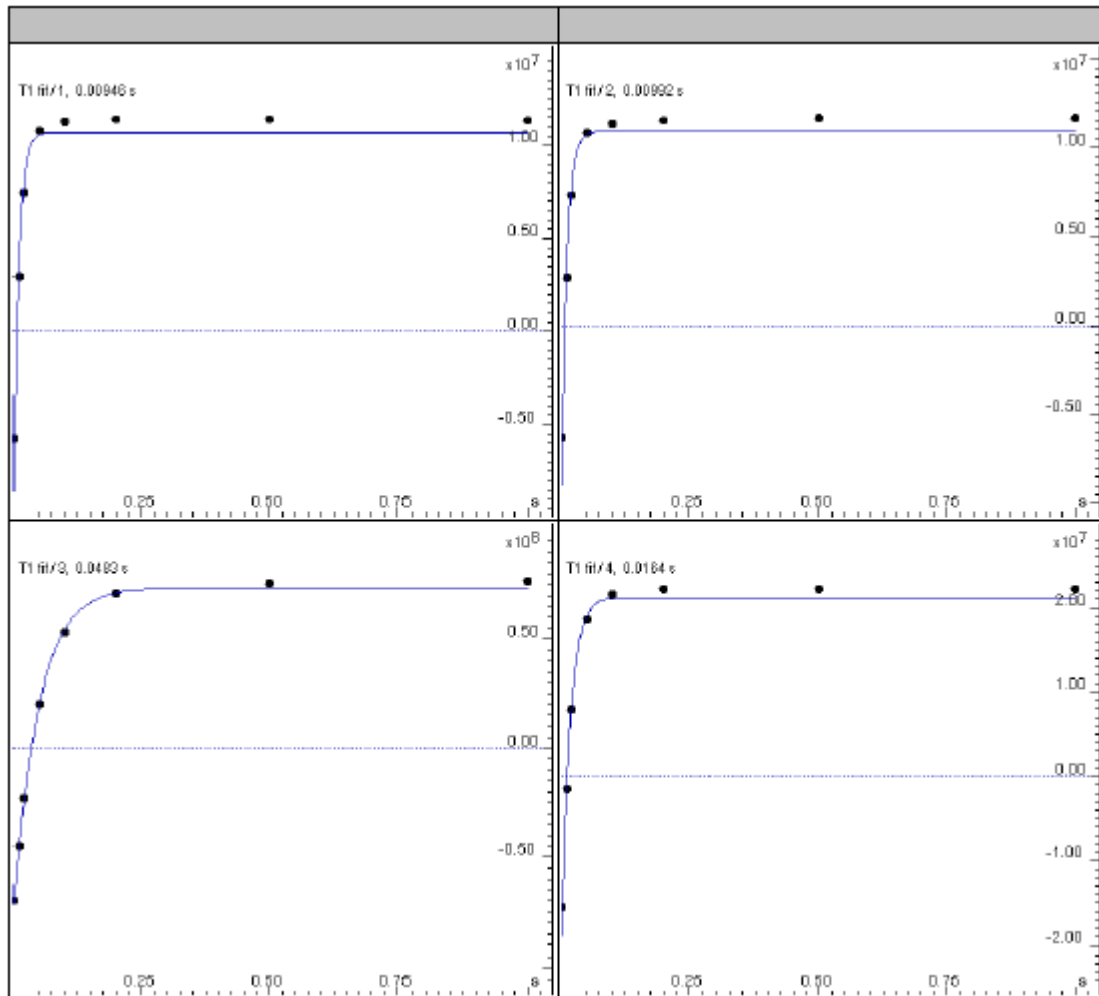


$^{13}\text{C NMR}$ (101 MHz, CDCl_3) **7c**

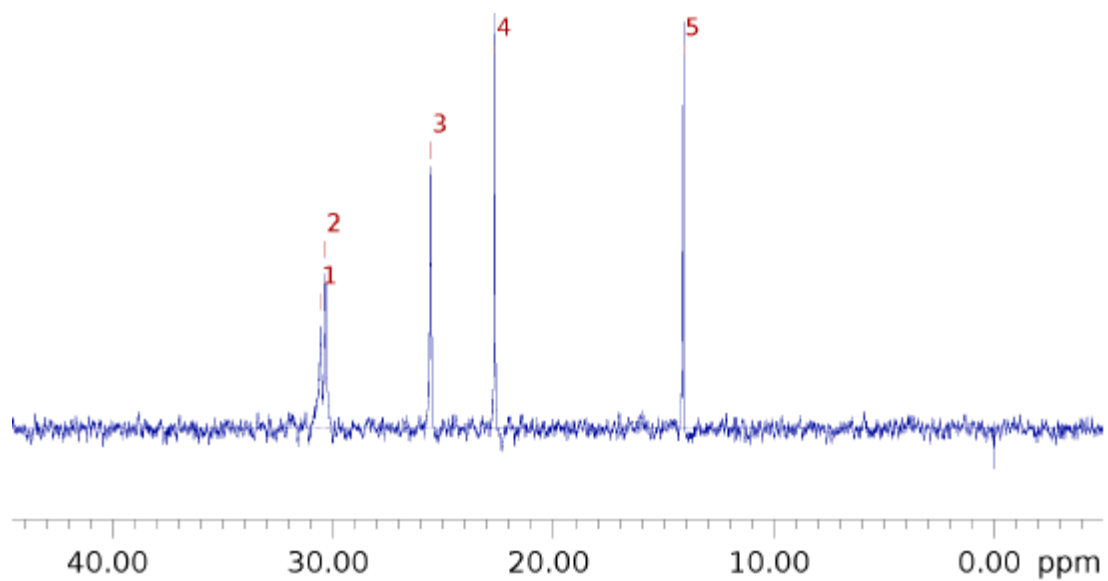
^1H T_1 Relaxation Time Measurements



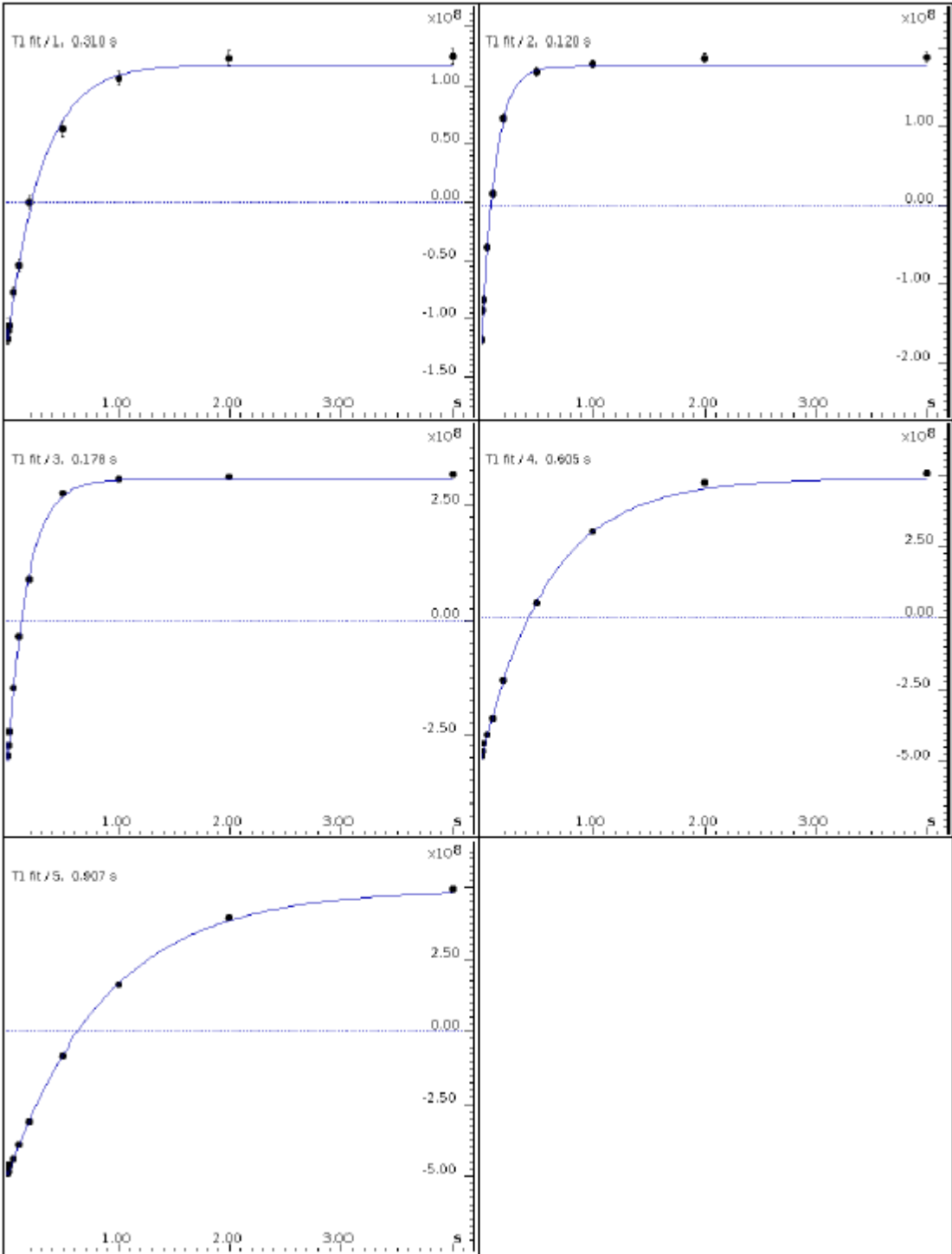
Peak name	F2 [ppm]	T1 [s]	error	fitInfo
1	2.013	0.00946	0.003171	Done
2	1.889	0.00992	0.003021	Done
3	1.371	0.0483	0.002746	Done
4	1.236	0.0164	0.002935	Done
5	0.919	0.127	0.003996	Done



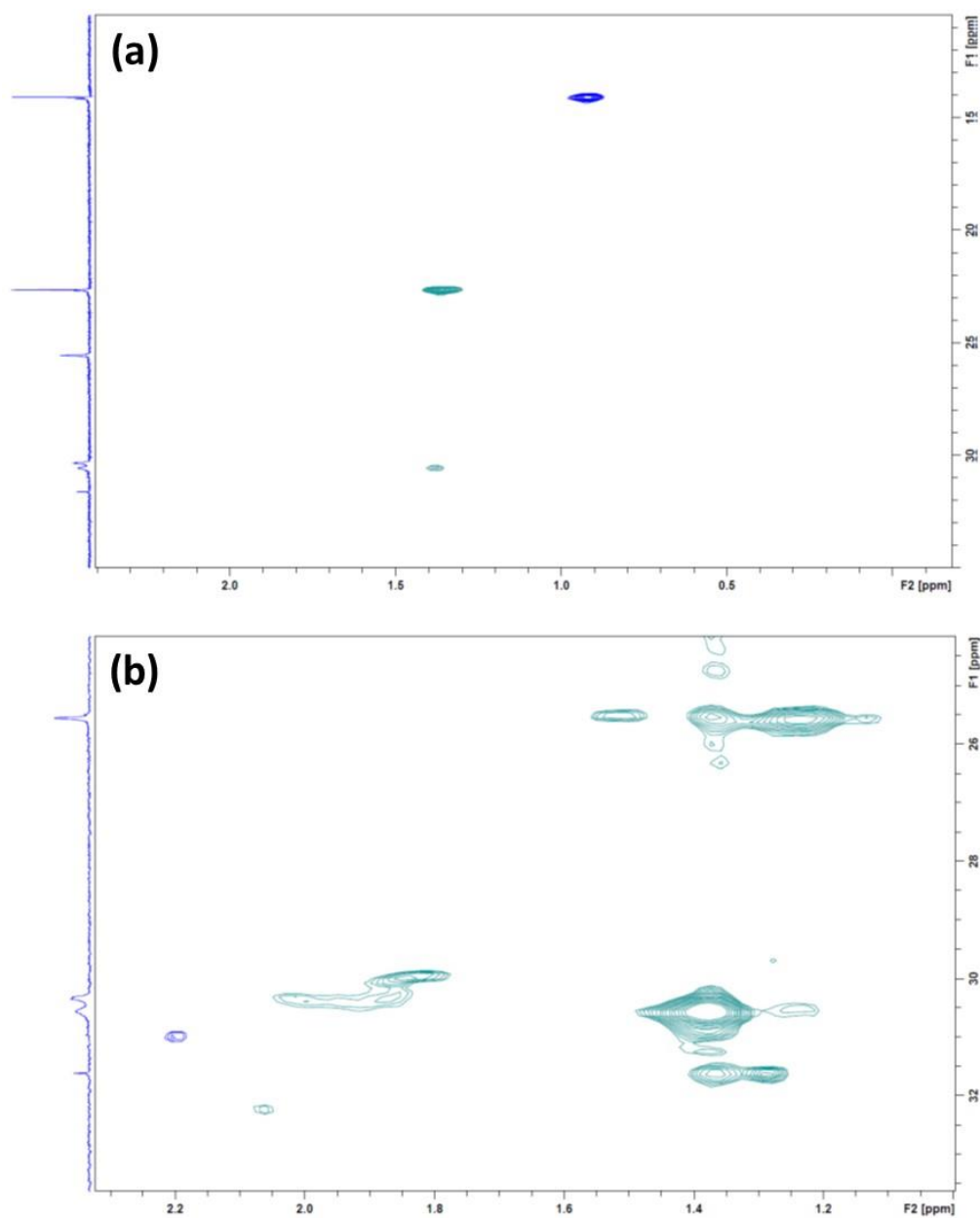
^{13}C T_1 Relaxation Time Measurements



Peak name	F2 [ppm]	lo	error	T1 [s]	error
1	30.546	1.18e+08	4.811e+06	0.310	0.02881
2	30.333	1.77e+08	7.855e+06	0.120	0.01176
3	25.548	3.08e+08	9.198e+06	0.178	0.01194
4	22.632	4.89e+08	1.322e+07	0.605	0.03616
5	14.077	4.95e+08	8.446e+06	0.907	0.03337



HSQC NMR



HSQC NMR **7c** (CDCl₃)

(a) Correlations: assignment/ δ_H / δ_C : CH₃-6 / 0.87 / 14.37 : CH₂-5 / 1.35 / 22.91 :

CH₂-4 / 1.35 / 30.84.

(b) Enhanced sensitivity : CH₂-4 / 1.35 / 30.84 : CH₂-3 / 1.21 / 25.84 :

CH₂-2 / 1.99, 1.85 / 30.61