Electronic Supplementary Information

Facile synthesis of acyl fluorides through deoxyfluorination of carboxylic acids

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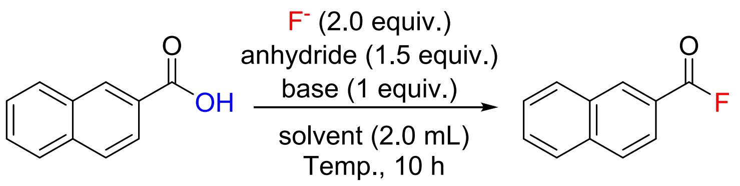
1. General Information

The reactions were carried out in Schlenk tubes under N_2 atmosphere. For reactions that required heating, a heating mantle was used as the heat source. All solvents and reagents were purchased from Tansoole, Meryer, Heowns, Energy Chemical, Alfa Aesar, and Aladdin. Solvents were purified according to standard operation procedures and reagents were used as received unless otherwise noted. The absorbent materials like KF are stored in the glove box after purchase without any special treatment. Column chromatography was performed using Silica Gel 60 (300-400 mesh). The reactions were monitored by GC and GC-MS; GC-MS results were recorded on a GC-MS QP2010 instrument, and GC analysis was performed on a GC 2014 instrument. The ^{1}H, ^{13}C, and ^{19}F NMR spectra were recorded on a Bruker ADVANCE III spectrometer at 400, 100, and 376 MHz. HRMS were recorded on a LCMS-IT-TOF instrument by the ESI or APCI technique. Infrared spectrum was recorded on a Nicolet 6700 spectrometer.

2. Optimization of Reaction Conditions

Table S1 Reaction Optimization



1a (0.2 mmol) **2a**

entry	base		anhydride		F$^-$		solvent	Temp.	yield
1	$NaHCO_3$	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	26%
2	$KHCO_3$	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	22%
3	K_2CO_3	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	22%
4	Et_3N	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	84%
5	DPIEA	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	23%
6	DBU	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	20%
7	DMAP	1 eq.	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	44%
8	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	86%
9	Et_3N	none	TFAA	1.5 eq.	KF	2.0 eq.	DME	100 °C	35%
10	Et_3N	0.5 eq	Ac2O	1.5 eq.	KF	2.0 eq.	DME	100 °C	Trace
11	Et_3N	0.5 eq	Piv2O	1.5 eq.	KF	2.0 eq.	DME	100 °C	42%
12	Et_3N	0.5 eq	Boc2O	1.5 eq.	KF	2.0 eq.	DME	100 °C	4%
13	Et_3N	0.5 eq	TFAA	1.2 eq.	KF	2.0 eq.	DME	100 °C	67%
14	Et_3N	0.5 eq	TFAA	1.5 eq.	LiF	2.0 eq.	DME	100 °C	Trace
15	Et_3N	0.5 eq	TFAA	1.5 eq.	NaF	2.0 eq.	DME	100 °C	40%
16	Et_3N	0.5 eq	TFAA	1.5 eq.	CsF	2.0 eq.	DME	100 °C	57%
17	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	1.5 eq.	DME	100 °C	63%
18	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.5 eq.	DME	100 °C	72%
19	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	THF	100 °C	62%
20	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	dioxane	100 °C	53%
21	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DMF	100 °C	35%
22	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	Cy	100 °C	50%
23	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	toluene	100 °C	30%
24	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	none	100 °C	44%
25	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DME	RT	30%
26	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DME	40 °C	32%
27	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DME	60 °C	43%
28	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DME	80 °C	52%
29	Et_3N	0.5 eq	TFAA	1.5 eq.	KF	2.0 eq.	DME	120 °C	75%

3. Characterization Data for the Products

2-Naphthoyl fluoride (2a)[1]. The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 76% yield (26.5 mg). $V_{(CO)}$ = 1705 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.64 (s, 1H), 8.01–7.91 (m, 4H), 7.68 (t, *J* = 7.1 Hz, 1H), 7.61 (t, *J* = 7.4 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 157.7 (d, *J* = 343.5 Hz), 136.5 (s), 134.1 (d, *J* = 3.3 Hz), 132.3 (s), 129.7 (s), 129.7 (s), 129.1 (s), 128.0 (s), 127.4 (s), 125.6 (d, *J* = 4.2 Hz), 122.0 (d, *J* = 60.6 Hz); ^{19}F NMR (376 MHz, $CDCl_3$) δ 18.08.

6-Methoxy-2-naphthoyl fluoride (2b). The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 69% yield (28.0 mg). mp 109.7−113.0 °C. $V_{(CO)}$ = 1796 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.58 (s, 1H), 8.00 (dd, *J* = 8.6, 1.2 Hz, 1H), 7.91 (d, *J* = 9.0 Hz, 1H), 7.85 (d, *J* = 8.6 Hz, 1H), 7.30–7.25 (m, 1H), 7.22 (d, *J* = 2.4 Hz, 1H), 4.01 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 160.7 (s), 157.9 (d, *J* = 341.8 Hz), 138.4 (s), 133.8 (d, *J* = 3.3 Hz), 131.3 (s), 127.8 (s), 127.7 (s), 126.5 (d, *J* = 4.1 Hz), 120.4 (s), 119.6 (d, *J* = 60.7 Hz), 105.9 (s), 55.6 (s); ^{19}F NMR (376 MHz, $CDCl_3$) δ 16.7 (s). HRMS (ESI, negative mode): $C_{12}H_9FO_2$ for $[M - H]^-$, calculated 203.0514, found 203.0519.

6-Bromo-2-naphthoyl fluoride (2c). The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 61% yield (30.9 mg). mp 160.1−162.0 °C. $V_{(CO)}$ = 1726 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.60 (s, 1H), 8.10 (d, *J* = 1.6 Hz, 1H), 8.03 (dd, *J* = 8.6, 1.2 Hz, 1H), 7.87 (d, *J* = 2.7 Hz, 1H), 7.85 (d, *J* = 2.7 Hz, 1H), 7.69 (dd, *J* = 8.8, 1.9 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 157.3 (d, *J* = 343.8 Hz), 137.3 (s), 133.8 (d, *J* = 3.2 Hz), 131.1 (s), 131.0 (s), 130.7 (s), 130.2 (s), 128.2 (s), 126.8 (d, *J* = 4.1 Hz), 124.4 (s), 122.5 (d, *J* = 61.2 Hz); ^{19}F NMR (376 MHz, $CDCl_3$) δ 18.3 (s). HRMS (APCI, negative mode): $C_{11}H_6BrFO$ for $[M - H]^-$, calculated 250.9513, found 250.9511.

1-Naphthoyl fluoride (2d)[2]. The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 60% yield (20.9 mg). $V_{(CO)}$ = 1811 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.07 (d, *J* = 8.7 Hz, 1H), 8.41 (dd, *J* = 7.4, 1.2 Hz, 1H), 8.24 (d, *J* = 8.2 Hz, 1H), 8.00 (d, *J* = 8.2 Hz, 1H), 7.80–7.75 (m, 1H), 7.70–7.65 (m, 1H), 7.65–7.60 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 156.5 (d, *J* = 344.6 Hz), 136.7 (s), 133.9 (d, *J* = 4.0 Hz), 133.7 (d, *J* = 1.7 Hz), 132.2 (d, *J* = 7.2 Hz), 129.3 (s), 129.0

(s), 127.0 (s), 125.2 (s), 124.5 (s), 120.4 (d, *J* = 55.9 Hz); ^{19}F NMR (376 MHz, CDCl$_3$) δ 30.4.

4-methyl-1-naphthoyl fluoride(2e) [1]. The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a yellow solid in 89% yield (33.5 mg). V$_{(CO)}$ = 1793 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 9.08 (d, *J* = 8.6 Hz, 1H), 8.27 (d, *J* = 7.5 Hz, 1H), 8.12 (d, *J* = 8.4 Hz, 1H), 7.74–7.70 (m, 1H), 7.66–7.62 (m, 1H), 7.43 (d, *J* = 7.5 Hz, 1H), 2.81 (s, 3H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 156.5 (d, *J* = 340.8 Hz), 144.4 (s), 133.6 (d, *J* = 2.1 Hz), 132.9 (d, *J* = 4.1 Hz), 132.2 (d, *J* = 7.4 Hz), 128.7 (s), 126.8 (s), 125.7 (s), 125.6 (s), 124.8 (s), 118.5 (d, *J* = 55.6 Hz), 20.5 (s); ^{19}F NMR (376 MHz, CDCl$_3$) δ 28.7 (s).

Anthracene-9-carbonyl fluoride (2f) [3]. The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a yellow solid in 87% yield (39.0 mg). V$_{(CO)}$ = 1830 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 8.70 (s, 1H), 8.41–8.28 (m, 2H), 8.10 (d, *J* = 8.5 Hz, 2H), 7.72–7.62 (m, 2H), 7.62–7.52 (m, 2H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 158.5 (d, *J* = 353.8 Hz), 133.2 (s), 130.8 (s), 130.2 (s), 129.0 (s), 128.6 (s), 125.9 (s), 124.7 (d, *J* = 3.5 Hz), 120.1 (d, *J* = 54.8 Hz); ^{19}F NMR (376 MHz, CDCl$_3$) δ 59.64 (s).

[1,1'-Biphenyl]-4-carbonyl fluoride (2g) [4]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 84% yield (33.6 mg). V$_{(CO)}$ = 1709 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 8.14 (d, *J* = 8.4 Hz, 2H), 7.77 (d, *J* = 7.5 Hz, 2H), 7.68–7.64 (m, 2H), 7.55–7.50 (m, 2H), 7.49–7.45 (m, 1H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 156.4 (d, *J* = 343.2 Hz), 147.1 (s), 138.2 (s), 131.0 (d, *J* = 3.9 Hz), 128.1 (s), 127.8 (s), 126.6 (s), 126.3 (s), 122.5 (d, *J* = 61.2 Hz); ^{19}F NMR (376 MHz, CDCl$_3$) δ 18.1 (s).

[1,1'-Biphenyl]-3-carbonyl fluoride (2h) [3]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 67% yield (18.9 mg). V$_{(CO)}$ = 1815 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 8.18 (dd, J_1 = J_2 = 1.7 Hz, 1H), 7.94 (d, *J* = 7.8 Hz, 1H), 7.83 (ddd, *J* = 7.8, 1.8, 1.2 Hz, 1H), 7.54–7.48 (m, 3H), 7.44–7.37 (m, 2H), 7.35–7.31 (m, 1H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 157.4 (d, *J* = 344.8 Hz), 142.4 (s), 139.2 (s), 134.9 (s), 130.1 (d, *J* = 4.2 Hz), 130.0 (s), 129.6 (s), 129.1 (s), 128.3 (s), 127.2 (s), 125.5 (d, *J* = 60.5 Hz); ^{19}F NMR (376 MHz, CDCl$_3$) δ 18.7

(s).

[1,1'-Biphenyl]-2-carbonyl fluoride (2i)[4]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a transparent liquid in 75% yield (30.2 mg). $V_{(CO)}$ = 1802 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 8.02 (d, *J* = 7.9 Hz, 1H), 7.67–7.63 (m, 1H), 7.47 (t, *J* = 7.7 Hz, 1H), 7.45–7.36 (m, 4H), 7.32–7.31 (m, 2H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 157.6 (d, *J* = 348.1 Hz), 145.5 (d, *J* = 2.5 Hz), 140.2 (s), 134.0 (s), 132.2 (d, *J* = 2.8 Hz), 131.8 (d, *J* = 2.4 Hz), 128.5 (s), 128.3 (s), 128.0 (s), 127.7 (s), 124.2 (d, *J* = 56.9 Hz); ^{19}F NMR (376 MHz, CDCl$_3$) δ 35.1 (s).

4-Cyclohexylbenzoyl fluoride (2j)[4]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 69% yield (28.4 mg). $V_{(CO)}$ = 1821 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.96 (d, *J* = 8.3 Hz, 2H), 7.35 (d, *J* = 7.5 Hz, 2H), 2.66–2.54 (m, 1H), 1.89–1.86 (m, 4H), 1.81–1.71 (m, 1H), 1.47–1.35 (m, 4H), 1.29–1.26 (m, 1H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 157.6 (d, *J* = 344.4 Hz), 156.4 (s), 131.7 (d, *J* = 4.1 Hz), 127.6 (s), 122.4 (d, *J* = 60.9 Hz), 44.9 (s), 34.0 (s), 26.6 (s), 26.0 (s); ^{19}F NMR (376 MHz, CDCl$_3$) δ 17.5 (s).

4-Phenoxybenzoyl fluoride(2k)[5]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 78% yield (33.7mg). $V_{(CO)}$ = 1695 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.94–7.87 (m, 2H), 7.38–7.30 (m, 2H), 7.17 (ddd, *J* = 9.7, 5.5, 4.2 Hz, 1H), 7.03–6.98 (m, 2H), 6.94 (dd, *J* = 8.9, 1.1 Hz, 2H); ^{13}C NMR (100 MHz, CDCl$_3$) 164.1 (s) , 158.7 (d, *J* = 342.4 Hz), 154.7 (s), 133.8 (d, *J* = 3.9 Hz), 130.3 (s), 125.3 (s), 120.6 (s), 118.5 (d, *J* = 62.1 Hz), 117.4 (s); ^{19}F NMR (376 MHz, CDCl$_3$) δ 17.0 (s).

4-(Dimethylamino)benzoyl fluoride (2l)[1]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 49% yield (16.4 mg). $V_{(CO)}$ = 1786 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.79 (d, *J* = 9.0 Hz, 2H), 6.59 (d, *J* = 8.0 Hz, 2H), 3.02 (s, 6H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 158.2 (d, *J* = 334.9 Hz), 154.6 (s), 133.5 (d, *J* = 4.3 Hz), 111.0 (d, *J* = 1.0 Hz), 110.3 (d, *J* = 61.3 Hz), 40.0 (s); ^{19}F NMR (376 MHz, CDCl$_3$) δ 12.4 (s).

4-Iodobenzoyl fluoride (2m)[6]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 50% yield (25.0 mg). $V_{(CO)}$ = 1821 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 7.90–δ 7.82 (m, 2H), 7.72–7.63 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 157.1 (d, *J* = 343.9 Hz), 138.6 (s), 132.5 (d, *J* = 3.7 Hz), 124.4 (d, *J* = 62.4 Hz), 104.0 (s); ^{19}F NMR (376 MHz, $CDCl_3$) δ 18.3 (s).

2-Iodobenzoyl fluoride (2n) [1]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 48% yield (24.0 mg). $V_{(CO)}$ = 1819 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 8.06 (d, *J* = 8.0 Hz, 1H), 7.96 (dd, *J* = 7.9, 1.6 Hz, 1H), 7.44 (ddd, *J* = 7.9, 7.9, 1.0 Hz, 1H), 7.23 (ddd, *J* = 7.7, 7.7, 1.7 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 155.3 (d, *J* = 345.1 Hz), 142.7 (d, *J* = 3.7 Hz), 135.2 (s), 133.4 (d, *J* = 1.8 Hz), 128.4 (s), 128.4 (d, *J* = 61 Hz), 97.1 (d, *J* = 5.9 Hz); ^{19}F NMR (376 MHz, $CDCl_3$) δ 28.7 (s).

4-Nitrobenzoyl fluoride (2o) [2]. The title compound was prepared according to procedure II (BDMA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 71% yield (24.0 mg). $V_{(CO)}$ = 1830 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 8.41 (d, *J* = 8.0 Hz, 2H), 8.28 (d, *J* = 8.8 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 155.5 (d, *J* = 346.4 Hz), 151.8 (s), 132.6 (d, *J* = 3.6 Hz), 130.3 (d, *J* = 63.3 Hz), 124.2 (s); ^{19}F NMR (376 MHz, $CDCl_3$) δ 21.34 (s).

4-Benzoylbenzoyl fluoride (2p) [7]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 62% yield (28.3 mg). $V_{(CO)}$ = 1827 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 8.18 (d, *J* = 8.3 Hz, 2H), 7.91 (d, *J* = 7.6 Hz, 2H), 7.84–7.77 (m, 2H), 7.69–7.60 (m, 1H), 7.56–7.48 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 195.4 (s), 156.6 (d, *J* = 345.4 Hz), 143.5 (s), 136.4 (s), 133.4 (s), 131.4 (s), 131.4 (s), 130.1 (s), 128.6 (s), 127.8 (d, *J* = 61.7 Hz); ^{19}F NMR (376 MHz, $CDCl_3$) δ 19.9 (s).

Benzofuran-2-carbonyl fluoride (2q) [7]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 50% yield (16.4 mg). $V_{(CO)}$ = 1732 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 7.77–7.75 (m, 2H), 7.63 (d, *J* = 8.5 Hz, 1H), 7.57 (dd, $J_1 = J_2$ = 8.0 Hz, 1H), 7.38 (dd, $J_1 = J_2$ = 8.0 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 156.9 (d, *J* = 2.3 Hz), 149.4 (d, *J* = 329.9 Hz), 139.8 (d, *J* = 89.5 Hz), 129.5 (s), 126.3 (s), 124.6 (s), 123.6 (s), 119.4 (s), 112.7 (s); ^{19}F NMR (376 MHz, $CDCl_3$)

δ 17.4 (s).

Benzo[b]thiophene-2-carbonyl fluoride (2r) [2]. The title compound was prepared according to procedure II (DMCHA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 64% yield (23.0 mg). $V_{(CO)}$ = 1670 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 8.26 (s, 1H), 8.02–7.92 (m, 2H), 7.63–7.57 (m, 1H), 7.50–7.50 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 153.2 (d, J = 335.3 Hz), 143.7 (s), 138.2 (s), 135.2 (d, J = 1.4 Hz), 128.5 (s), 126.5 (s), 126.4 (s), 125.7 (s), 123.0 (s); ^{19}F NMR (376 MHz, $CDCl_3$) δ 25.1 (s). HRMS (ESI, positive mode): $C_{12}H_{27}FO$ for $[M + H]^+$, calculated 303.2119, found 303.2120.

(E)-3-(p-tolyl)acryloyl fluoride(2s) [8]. The title compound was prepared according to procedure II (BDMA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 50% yield (16.4 mg). $V_{(CO)}$ = 1694 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 7.81 (d, J = 15.9 Hz, 1H), 7.46 (d, J = 8.0 Hz, 2H), 7.24 (d, J = 8.0 Hz, 2H), 6.31 (dd, J = 15.9, 7.4 Hz, 1H), 2.40 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 157.3 (d, J = 335.6 Hz), 151.4 (d, J = 6.0 Hz), 142.6 (s), 130.4 (s), 129.9 (s), 128.7 (s), 110.8 (d, J = 69.6 Hz), 21.6 (s); ^{19}F NMR (376 MHz, $CDCl_3$) δ 25.0 (s).

(E)-3-(4-methoxyphenyl)acryloyl fluoride(2t) [8]. The title compound was prepared according to procedure II (BDMA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 85% yield (30.0 mg). $V_{(CO)}$ = 1690 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 7.79 (d, J = 15.9 Hz, 1H), 7.56–7.46 (m, 2H), 7.01–6.87 (m, 2H), 6.22 (dd, J = 15.9, 7.3 Hz, 1H), 3.86 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.6 (s), 157.6 (d, J = 334.7 Hz), 151.1 (d, J = 6.3 Hz), 130.6 (s), 125.9 (s), 114.6 (s), 109.1 (d, J = 66.7 Hz), 55.5 (s); ^{19}F NMR (376 MHz, $CDCl_3$) δ 24.4 (s).

(E)-3-(4-bromophenyl)acryloyl fluoride (2u) [8]. The title compound was prepared according to procedure II (BDMA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 65% yield (29.4 mg). $V_{(CO)}$ = 1790 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ 7.77 (d, J = 16.0 Hz, 1H), 7.62–7.52 (m, 2H), 7.45–7.38 (m, 2H), 6.37 (dd, J = 16.0, 7.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 156.8 (d, J = 336.7 Hz), 149.9 (d, J = 6.0 Hz), 132.5 (s), 132.0 (s), 130.0 (s), 126.4 (s), 112.8 (d, J = 67.3 Hz); ^{19}F NMR (376 MHz, $CDCl_3$) δ 26.0 (s).

(2E,4E,6E,8E)-3,7-dimethyl-9-(2,6,6-trimethylcyclohex-1-en-1-yl)nona-2,4,6,8-tetraenoyl fluoride (2v). [9] The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford white oil in 72% yield (43.5 mg). $V_{(CO)}$ = 1848 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.09 (dd, *J* = 15.0, 11.5 Hz, 1H), 6.31–6.24 (m, 2H), 6.11 (s, 1H), 6.08 (d, *J* = 4.4 Hz, 1H), 5.62 (s, 1H), 2.32 (s, 3H), 1.95 (s, 5H), 1.65 (s, 3H), 1.59–1.51 (m, 2H), 1.44–1.35 (m, 2H), 0.96 (s, 6H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 161.1 (d, *J* = 17.9 Hz), δ 156.9 (d, *J* = 331.3 Hz), 142.3 (s), 137.6 (s), 137.0 (s), 134.2 (s), 133.4 (d, *J* = 3.3 Hz), 130.7 (s), 130.2 (s), 129.0 (s), 111.5 (d, *J* = 74.3 Hz), 39 .6 (s), 34.3 (s), 33.2 (s), 29.7 (s), 28.9 (s), 21.8 (s), 19.2 (s), 14.6 (s), 13.1 (s); ^{19}F NMR (376 MHz, CDCl$_3$) δ 42.2 (s).

Benzo[d][1,3]dioxole-5-carbonyl fluoride (2w) [2]. The title compound was prepared according to procedure I and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 78% yield (26.2 mg). $V_{(CO)}$ = 1730 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.67 (dd, *J* = 8.2, 1.7 Hz, 1H), 7.42 (d, *J* = 1.7 Hz, 1H), 6.91 (dd, *J* = 8.2, 0.9 Hz, 1H), 6.11 (s, 2H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 156.9 (d, *J* = 338.1 Hz), 153.7 (s), 148.3 (s), δ 128.3 (d, *J* = 4.1 Hz), 118.4 (d, *J* = 62.4 Hz), 110.7 (d, *J* = 4.1 Hz), 108.6 (s), 102.4 (s); ^{19}F NMR (376 MHz, CDCl$_3$) δ 16.4 (s).

2-(Naphthalen-2-yl)acetyl fluoride (2x)[2]. The title compound was prepared according to procedure II (BDMA) and purified by column chromatography on silica gel and eluted with petroleum ether to afford a white solid in 32% yield (12.0 mg). $V_{(CO)}$ = 1719 cm^{-1}. ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.74–7.70 (m, 3H), 7.65 (s, 1H), 7.42–7.35 (m, 2H), 7.32 (dd, *J* = 8.4, 1.4 Hz, 1H), 3.73 (s, 2H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 161.3 (d, *J* = 377.9 Hz), 133.1 (d, *J* = 58.4 Hz), 128.8 (s), 128.5 (s), 128.1 (d, *J* = 2.4 Hz), 127.8 (s), 126.8 (s), 126.6 (s), 126.4 (s), 39.2 (d, *J* = 54.6 Hz); ^{19}F NMR (376 MHz, CDCl$_3$) δ 45.2 (s).

morpholino(naphthalen-2-yl)methanone (3). ^{1}H NMR (400 MHz, CDCl$_3$) δ 7.83–7.76 (m, 4H), 7.49–7.45 (m, 2H), 7.41 (dd, *J* = 9.6, 1.6 Hz, 1H), 3.57 (m, 8H); ^{13}C NMR (100 MHz, CDCl$_3$) δ 169.4 (s), 132.7 (s), 131.6 (s), 132.5 (s), 127.4 (s), 127.3 (s), 126.8 (s), 126.2 (s), 126.0 (s), 125.8 (s), 123.2 (s), 76.5 (s), 76.1 (s), 75.8 (s).

S-(pyridin-4-yl) naphthalene-2-carbothioate (4). ^{1}H NMR (400 MHz, CDCl$_3$) δ 8.62 (d, *J* = 6.0 Hz, 2H), 8.51 (s, 1H), 7.91 (dd, *J* = 8.8, 2.4 Hz, 2H), 7.83 (m, 2H), 7.60–7.48 (m, 2H), 7.44 (dd, *J* = 4.4, 2.8 Hz, 2H). ^{13}C NMR (100 MHz, CDCl$_3$) δ 187.5 (s), 145.0 (s), 138.9 (s), 136.1 (s), 133.4 (s), 132.4 (s), 129.7 (s), 129.4 (s), 129.1 (s), 128.9 (s), 128.6 (s), 127.9 (s), 127.3 (s), 123.1 (s).

naphthalen-2-yl(perfluorophenyl)methanone (5). ^{1}H NMR (400 MHz, CDCl$_3$) δ 8.13 (s, 1H), 7.91

(dd, J = 8.8, 2.0 Hz, 1H), 7.87–7.78 (m, 3H), 7.56 (m, 1H), 7.51–7.44 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 184.1 (s), 144. 2–143.9 (m), 143.9–142.6 (m), 141.7–141.5 (m), 140.3–140.0 (m), 138.1–137.8 (m), 135.4 (s), 132.4 (s), 131.9 (s), 131.3 (s), 128.8 (s), 128.7 (s), 128.2 (s), 126.9 (s), 126.3 (s), 122.7 (s), 113.3–112.9 (m).

2-(naphthalen-2-yl)benzo[d]oxazole (6). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.70 (s, 1H), 8.23 (dd, *J* = 8.6, 1.6 Hz, 1H), 7.89 (dd, *J* = 8.8, 5.3 Hz, 2H), 7.84–7.77 (m, 1H), 7.73 (dd, *J* = 6.2, 3.0 Hz, 1H), 7.58–7.43 (m, 3H), 7.34–7.24 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.2 (s), 150.9 (s), 142.2 (s), 134.8 (s), 133.0 (s), 128.9 (s), 128.8 (s), 128.2 (s), 127.9 (s), 127.9 (s), 126.9 (s), 125.2 (s), 124.7 (s), 124.4 (s), 123.9 (s), 120.04 (s), 110.64 (s).

triisopropyl(naphthalen-2-ylethynyl)silane (7). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.9 (s, 1H), 7.70–7.65 (m, 3H), 7.43 (dd, *J* = 8.4, 1.2 Hz, 1H), 7.40–7.37 (m, 2H), 1.08 (s, 18H), 1.00 (s, 3H); ^{13}CNMR (100 MHz, $CDCl_3$) δ 132.9 (s), 132.8 (s), 131.9 (s), 128.9 (s), 127.9 (s), 127.8 (s), 127.7 (s), 126.7 (s), 126.5 (s), 120.9 (s), 107.5 (s), 90.9 (s), 18.6 (s), 11.4 (s).

cyano(phenyl)methyl-2-naphthoate (8). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.54 (s, 1H), 7.95 (dd, *J* = 8.4, 1.6 Hz, 1H), 7.85 (d, *J* = 8.4 Hz, 1H), 7.79 (dd, *J* = 8.8, 4.4 Hz, 2H), 7.60–7.55 (m, 2H), 7.55–7.50 (m, 1H), 7.49–7.44 (m, 1H), 7.40 (m, 3H), 6.66 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.9 (s), 135.9 (s), 132.4 (s), 132.1 (s), 131.9 (s), 130.5 (s), 129.5 (s), 129.4 (s), 128.9 (s), 128.6 (s), 127.9 (s), 127.9 (s), 127.1 (s), 125.3 (s), 125.1 (s), 116.3 (s), 63.5 (s).

4 References

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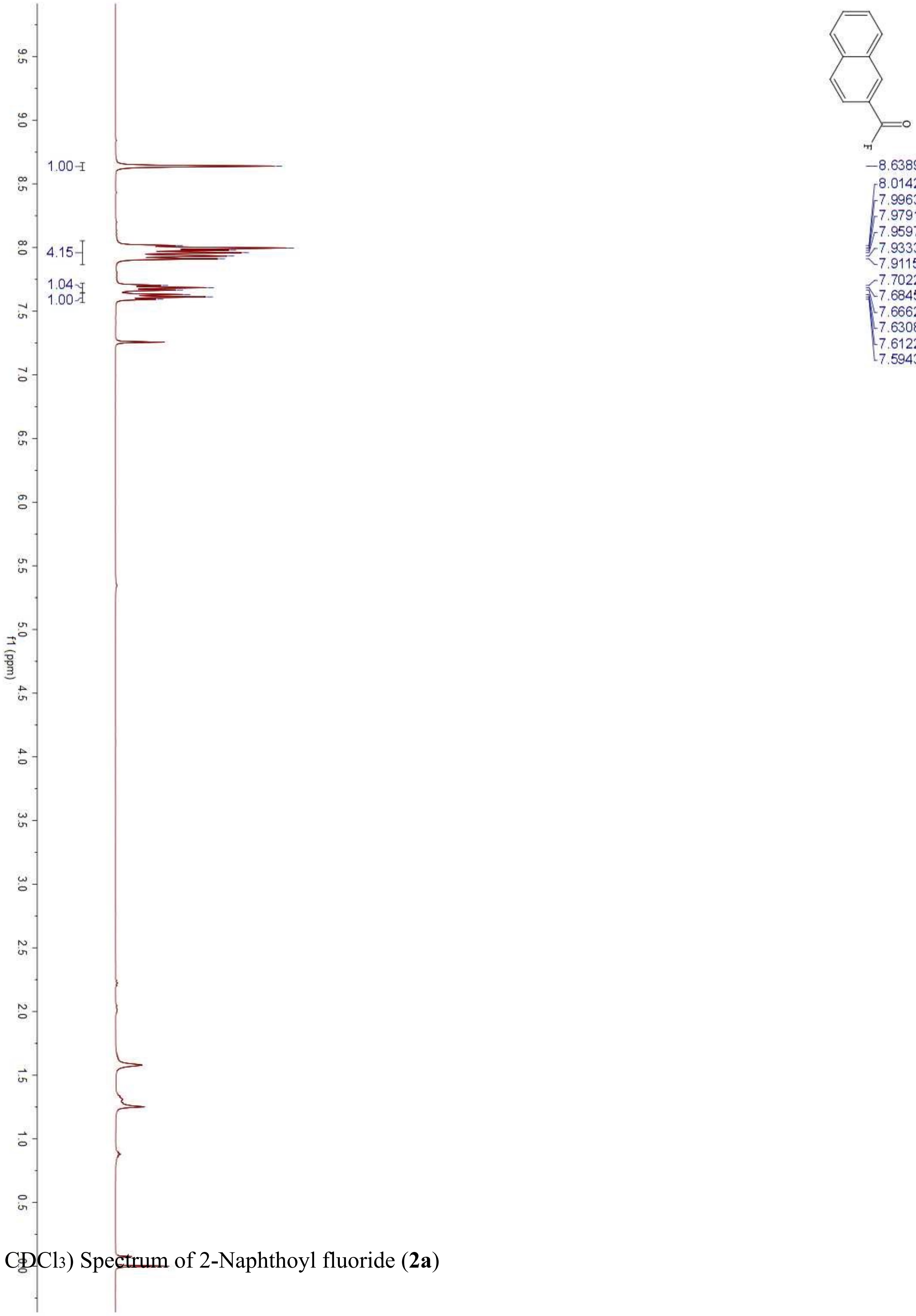
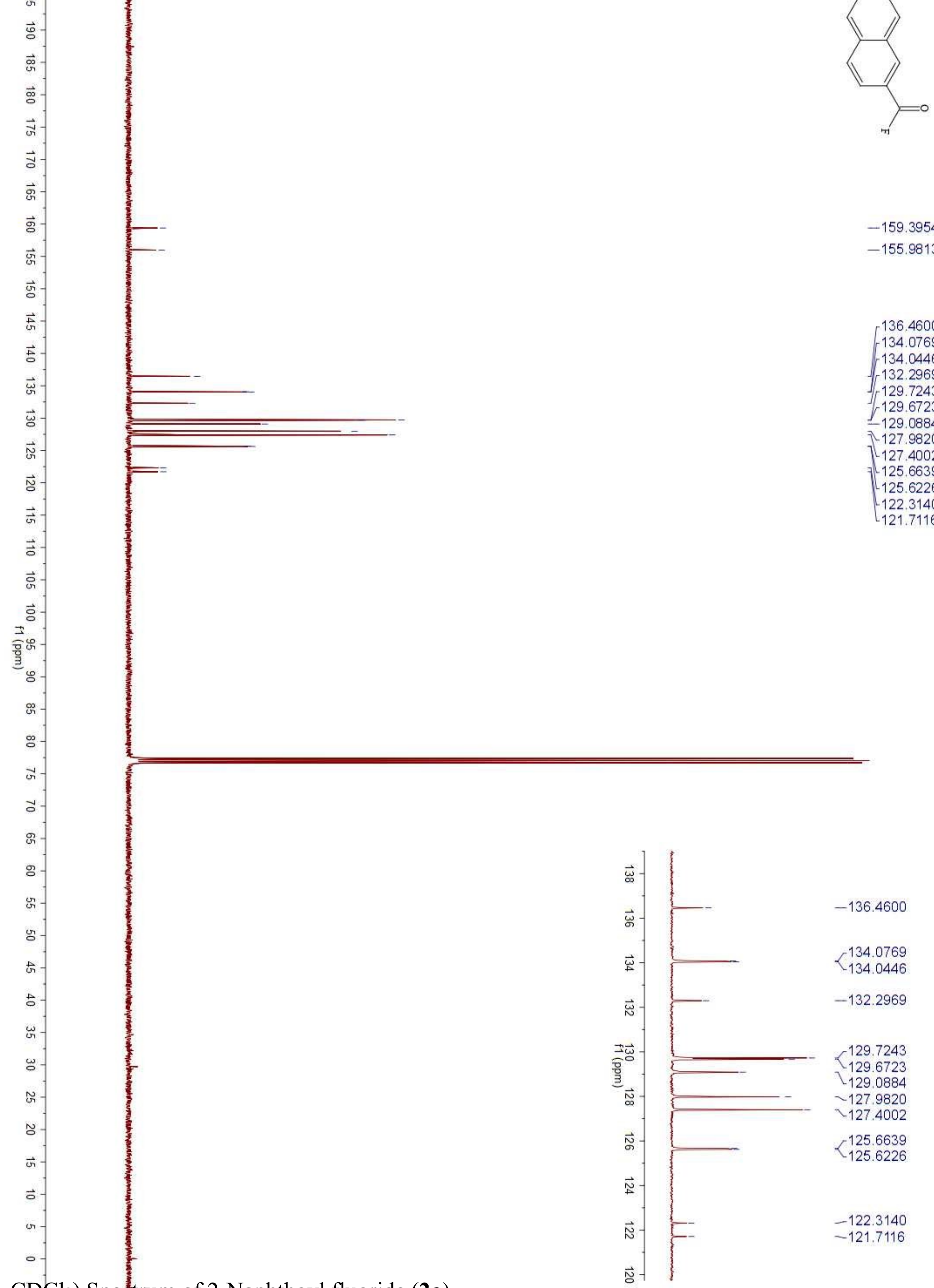
5. Copies of ^{1}H, ^{13}

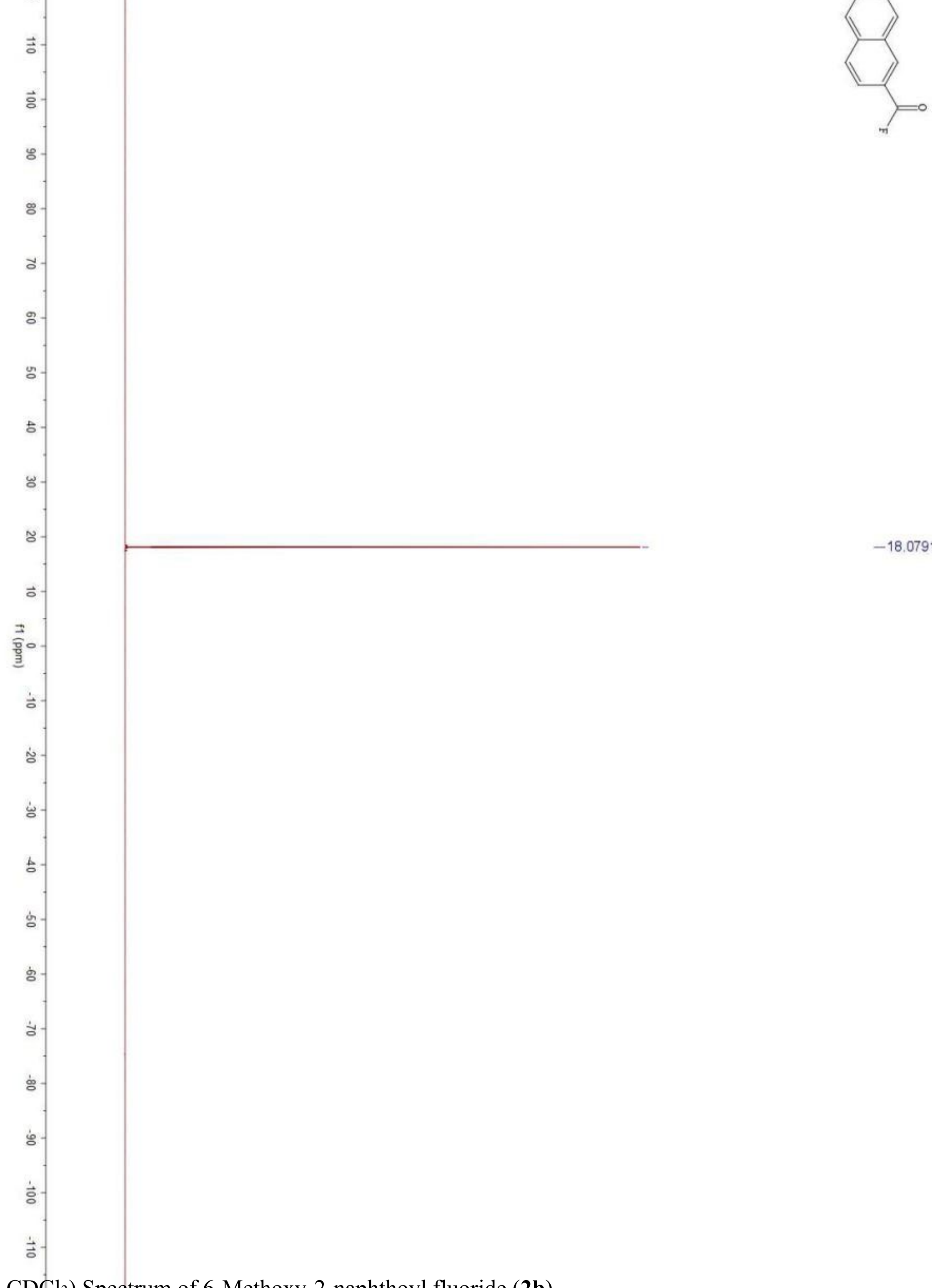
^{1}H NMR (400 MHz,



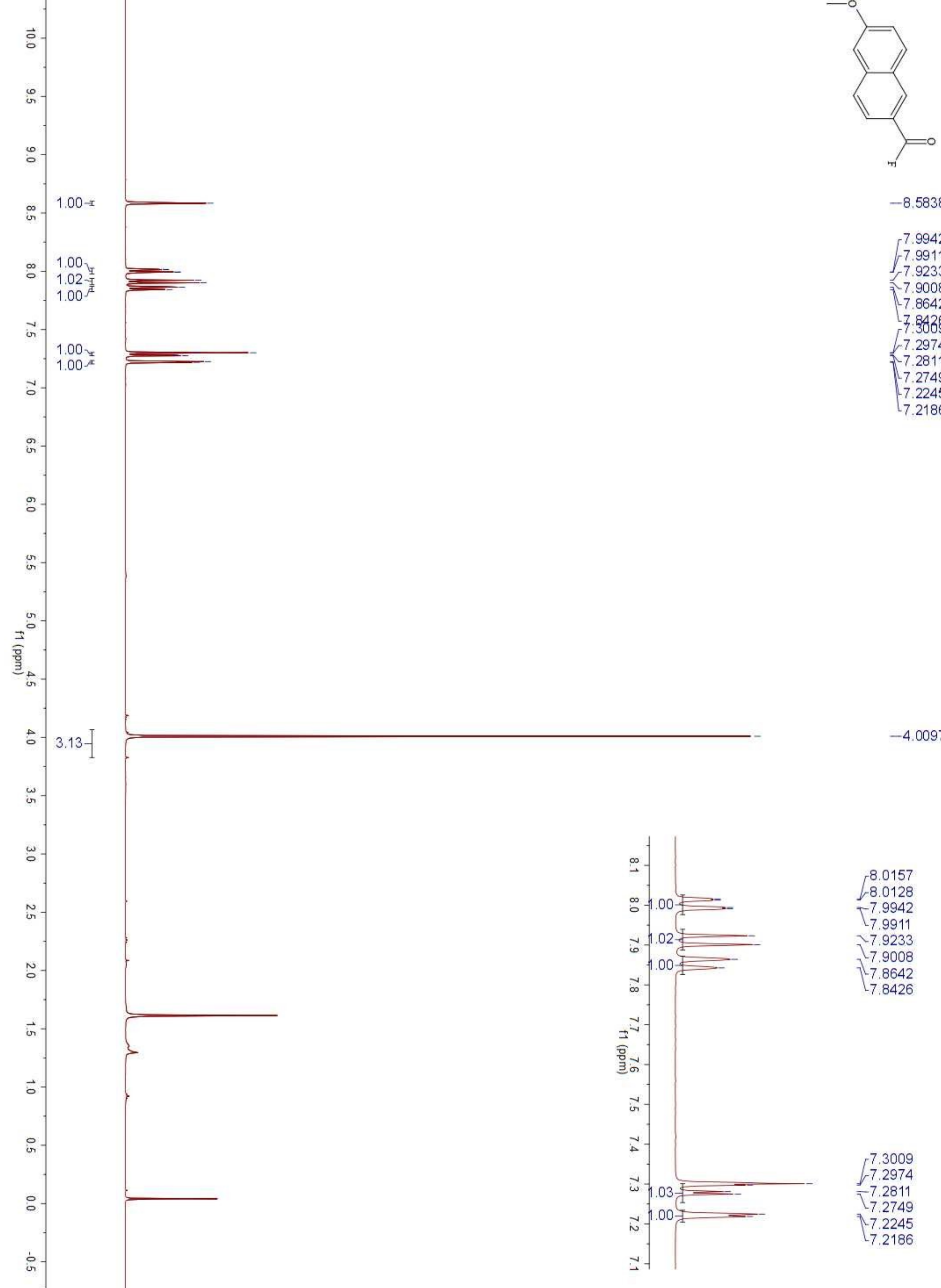
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 2-Naphthoyl fluoride (**2a**)



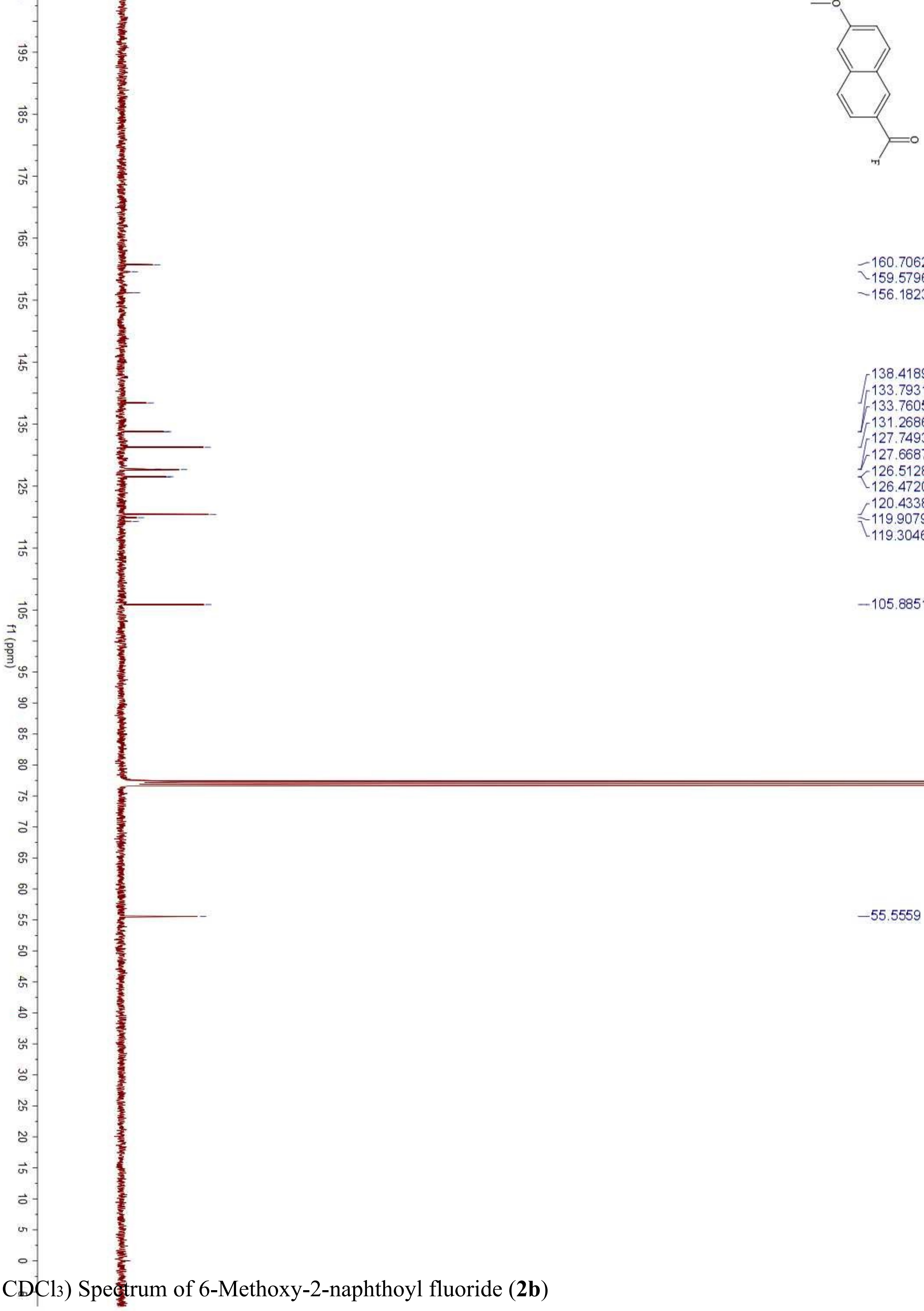
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of 2-Naphthoyl fluoride (**2a**)



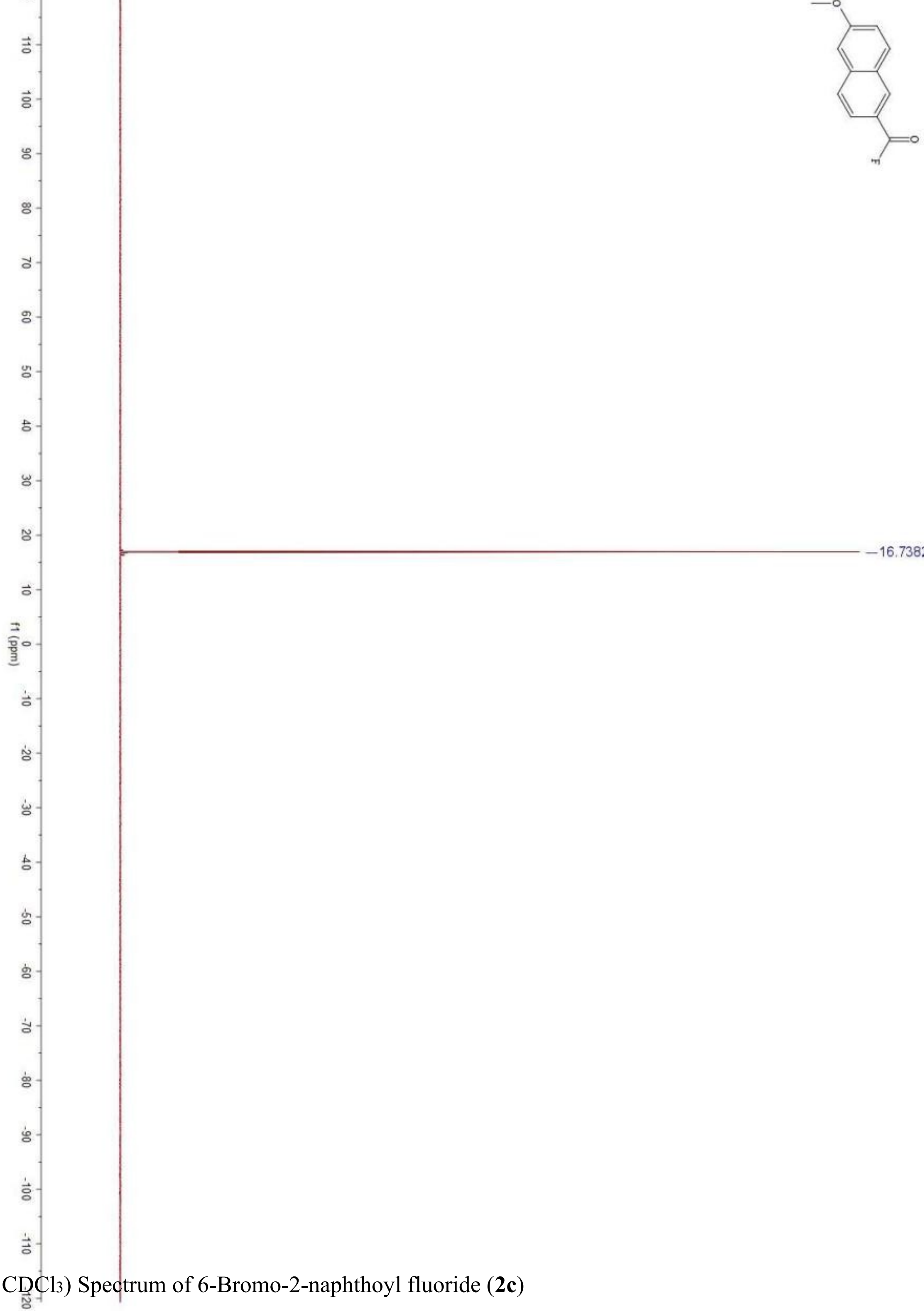
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of 6-Methoxy-2-naphthoyl fluoride (**2b**)



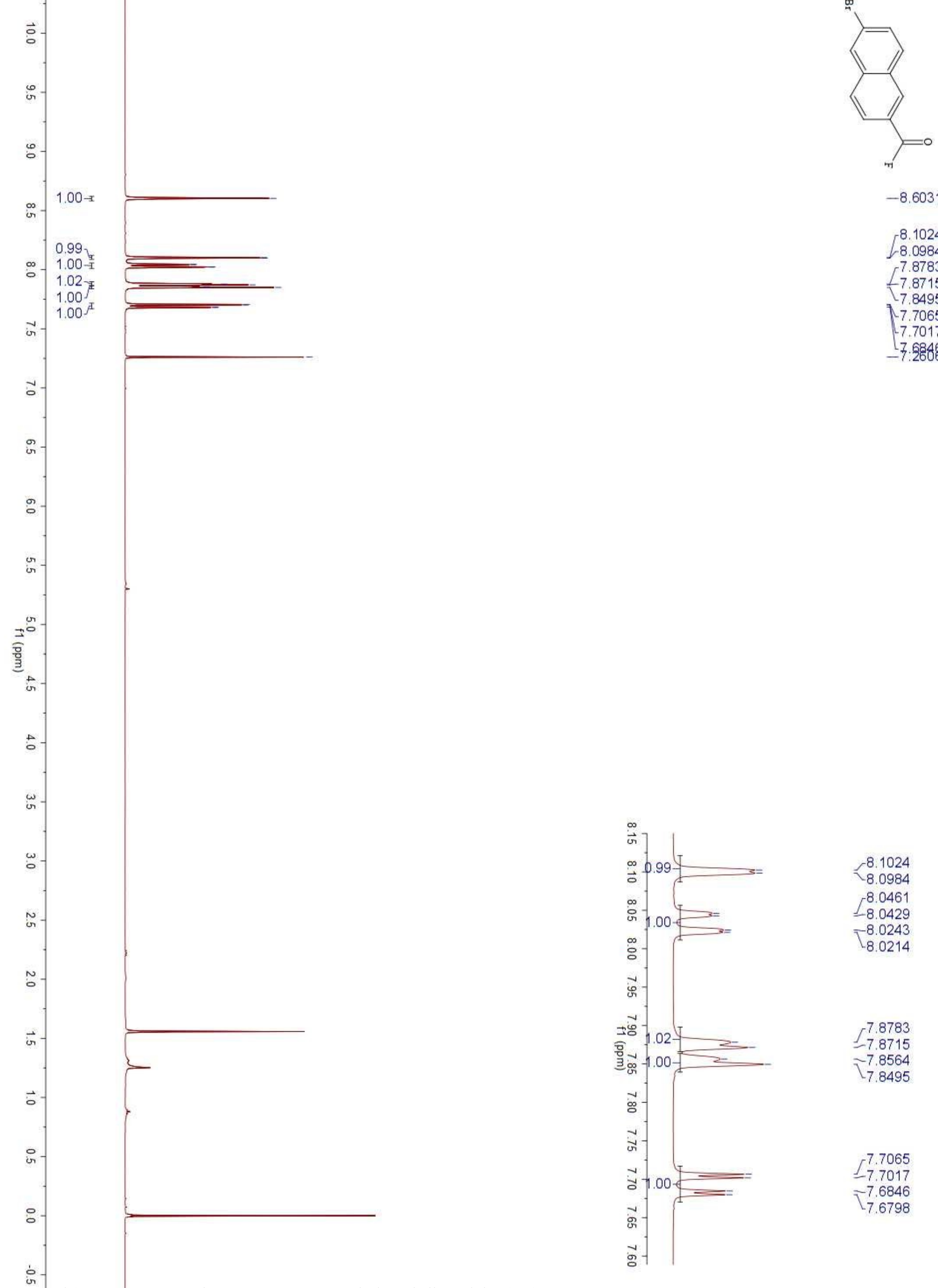
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 6-Methoxy-2-naphthoyl fluoride (**2b**)



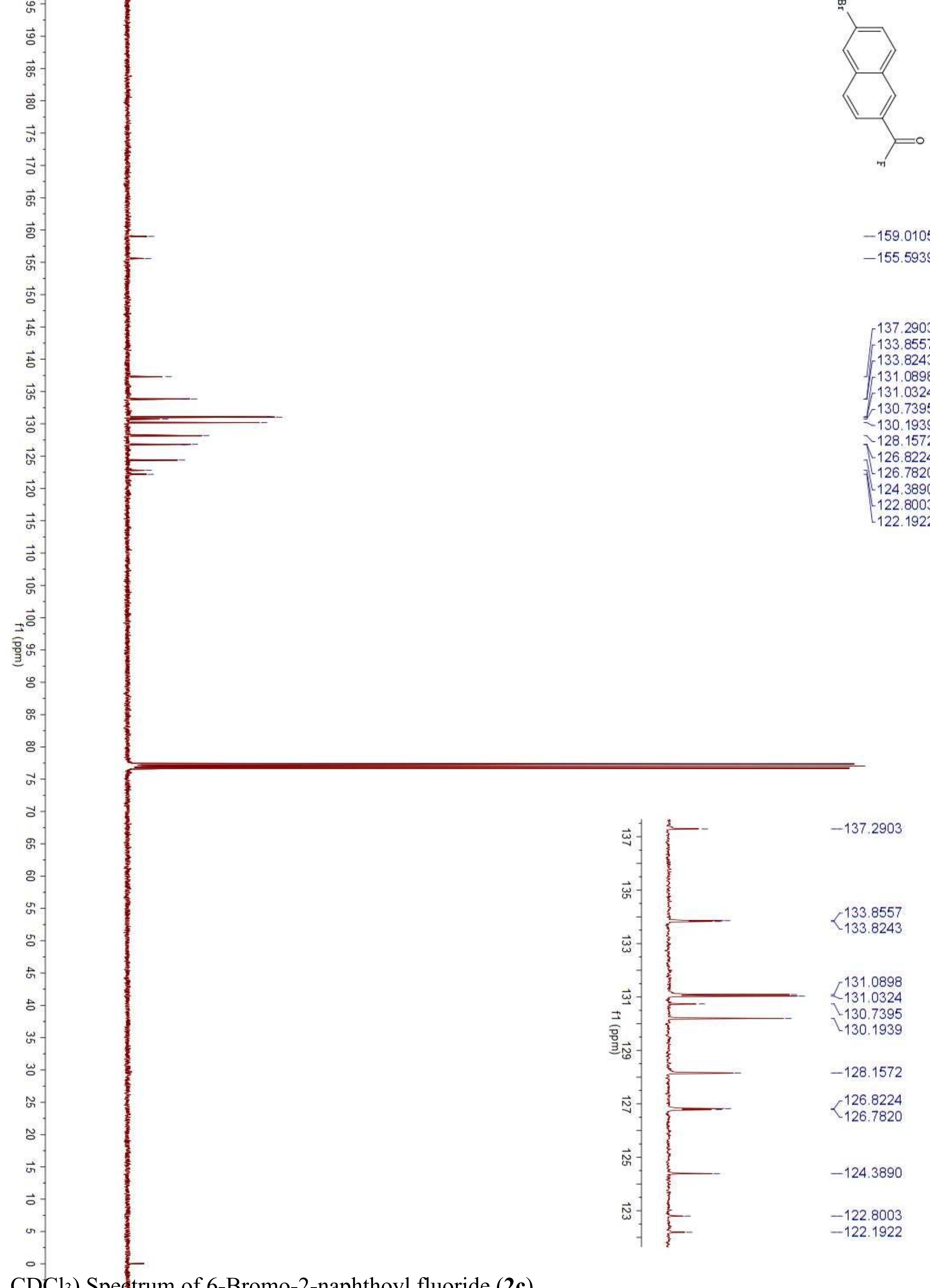
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of 6-Methoxy-2-naphthoyl fluoride (**2b**)



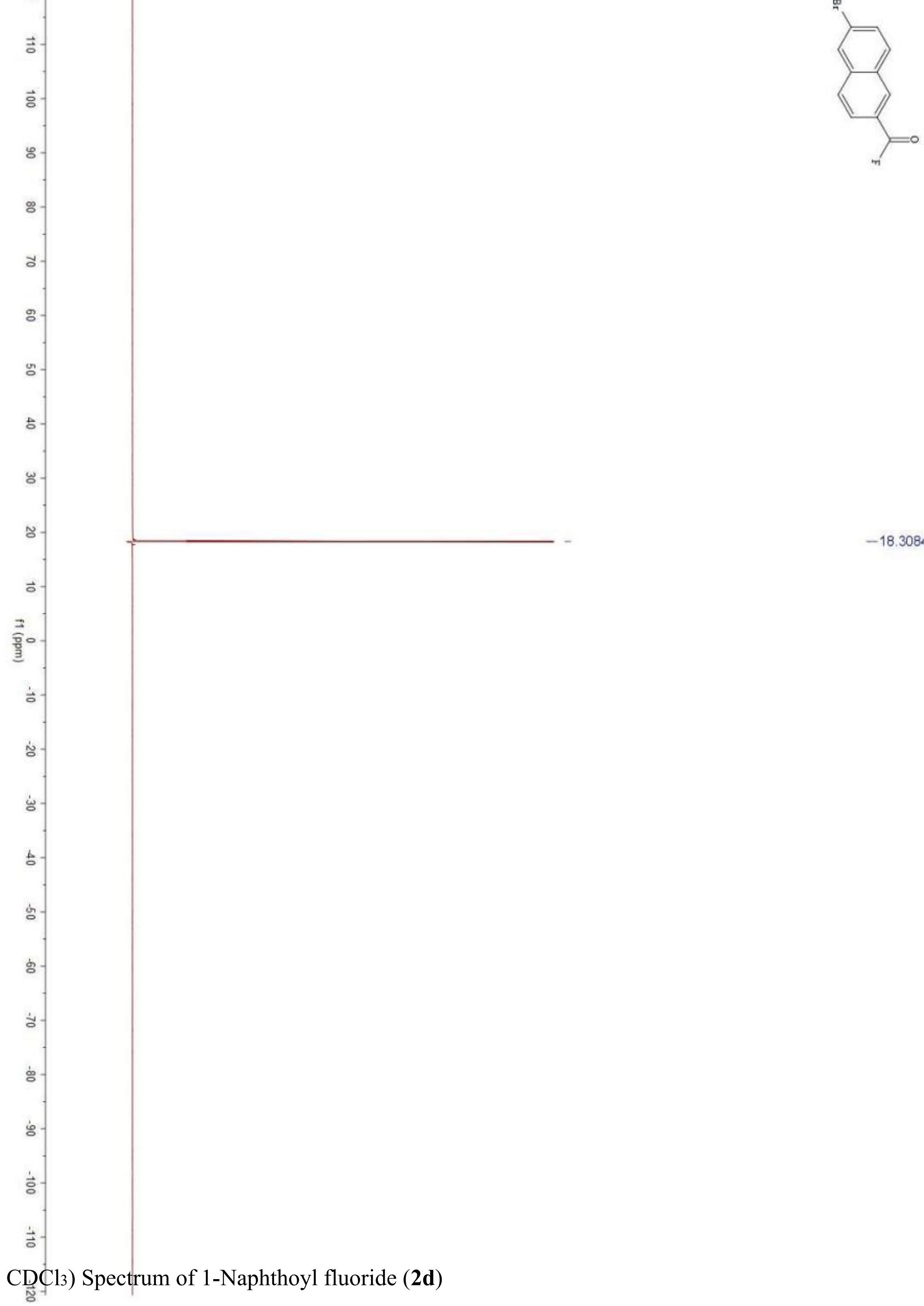
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 6-Bromo-2-naphthoyl fluoride (**2c**)



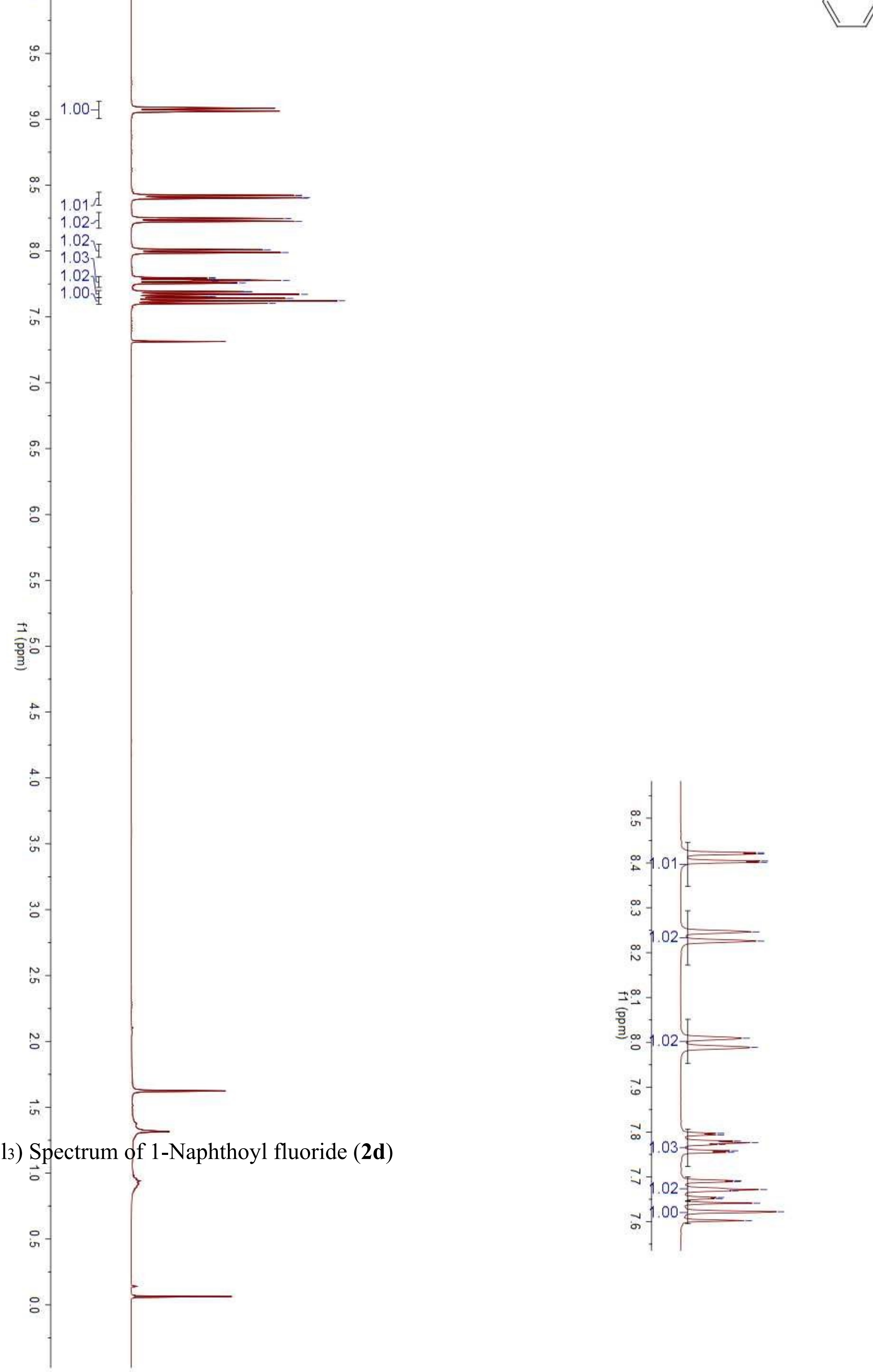
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 6-Bromo-2-naphthoyl fluoride (**2c**)



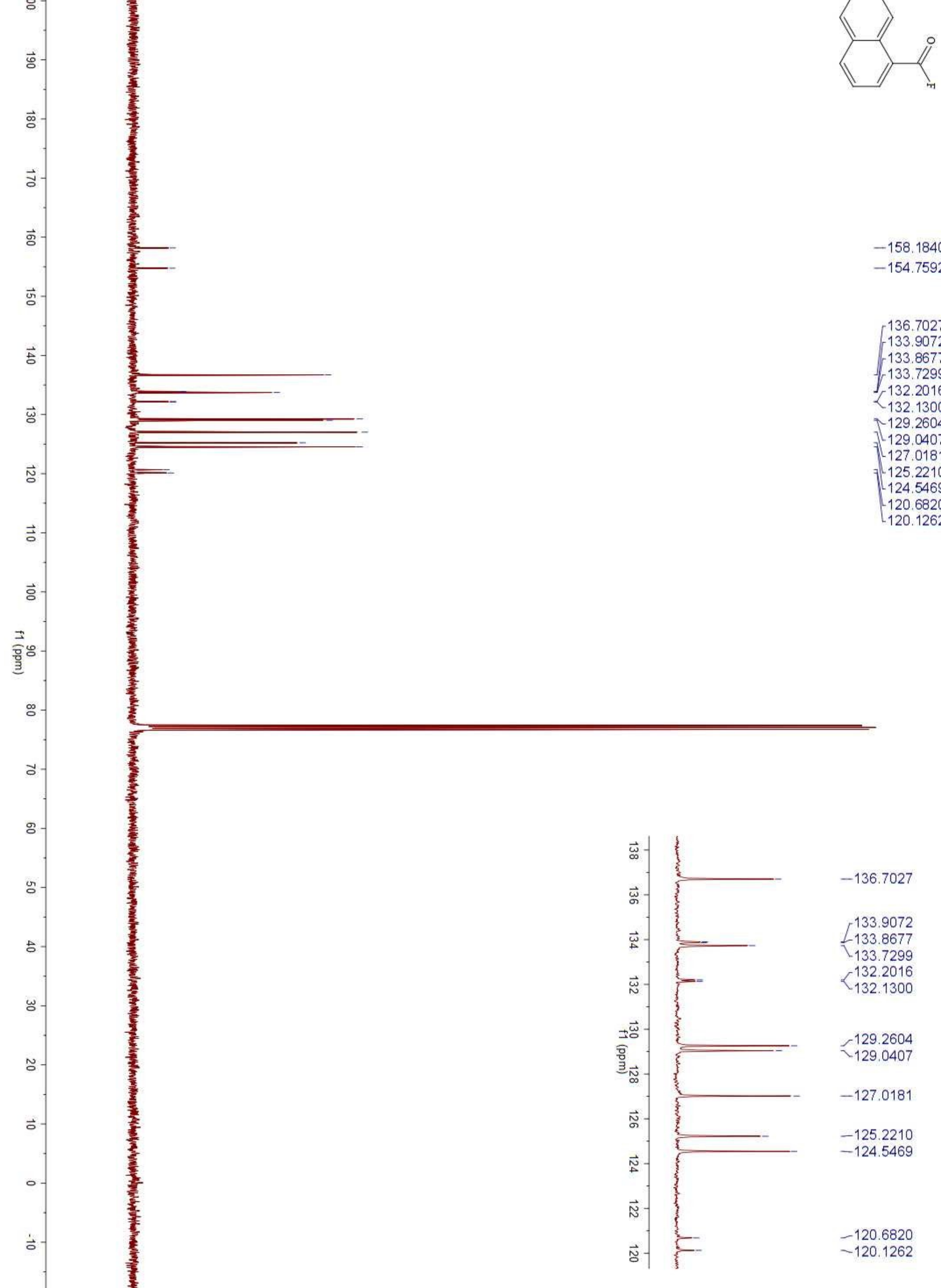
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 6-Bromo-2-naphthoyl fluoride (**2c**)



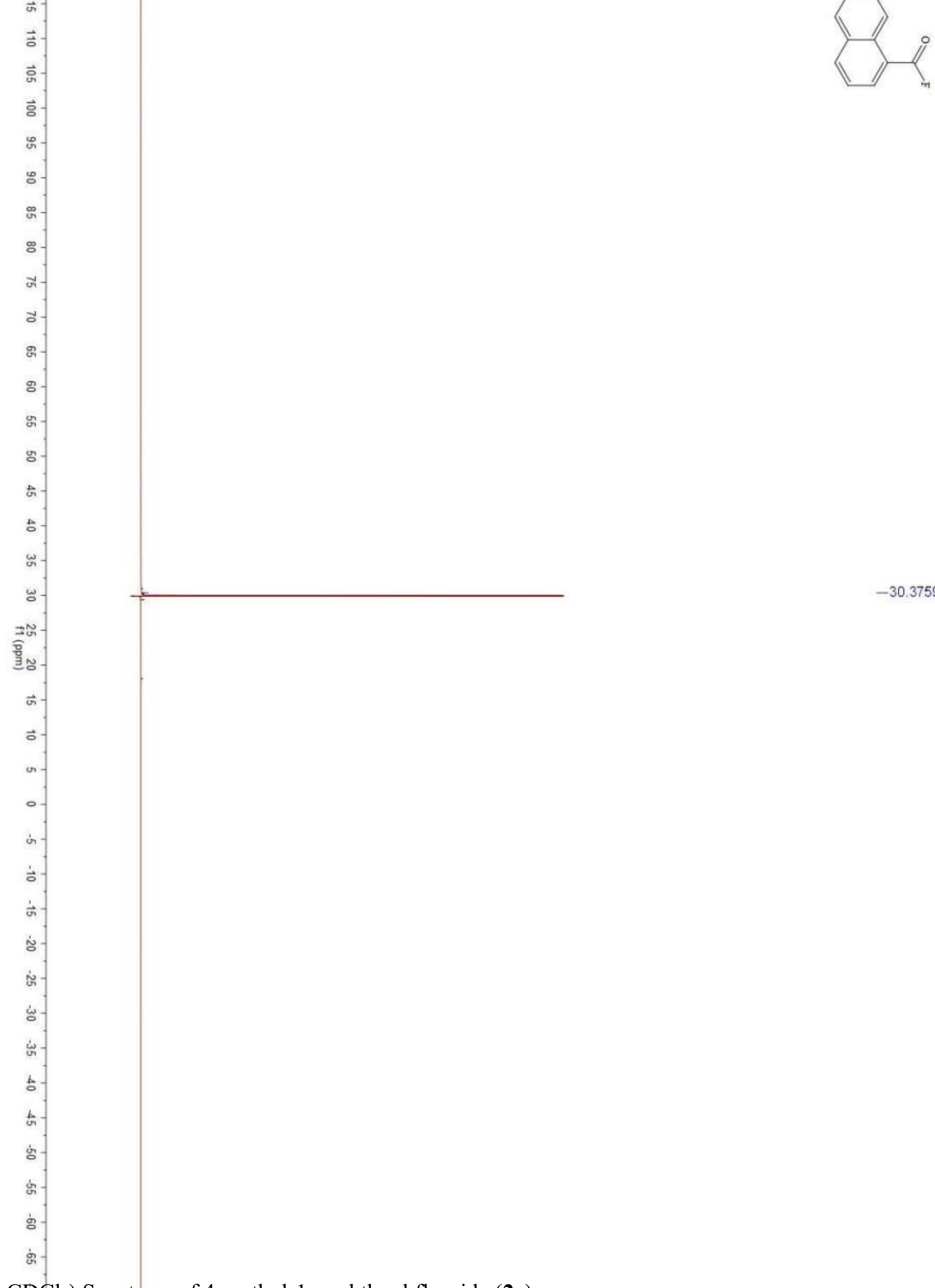
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 1-Naphthoyl fluoride (**2d**)



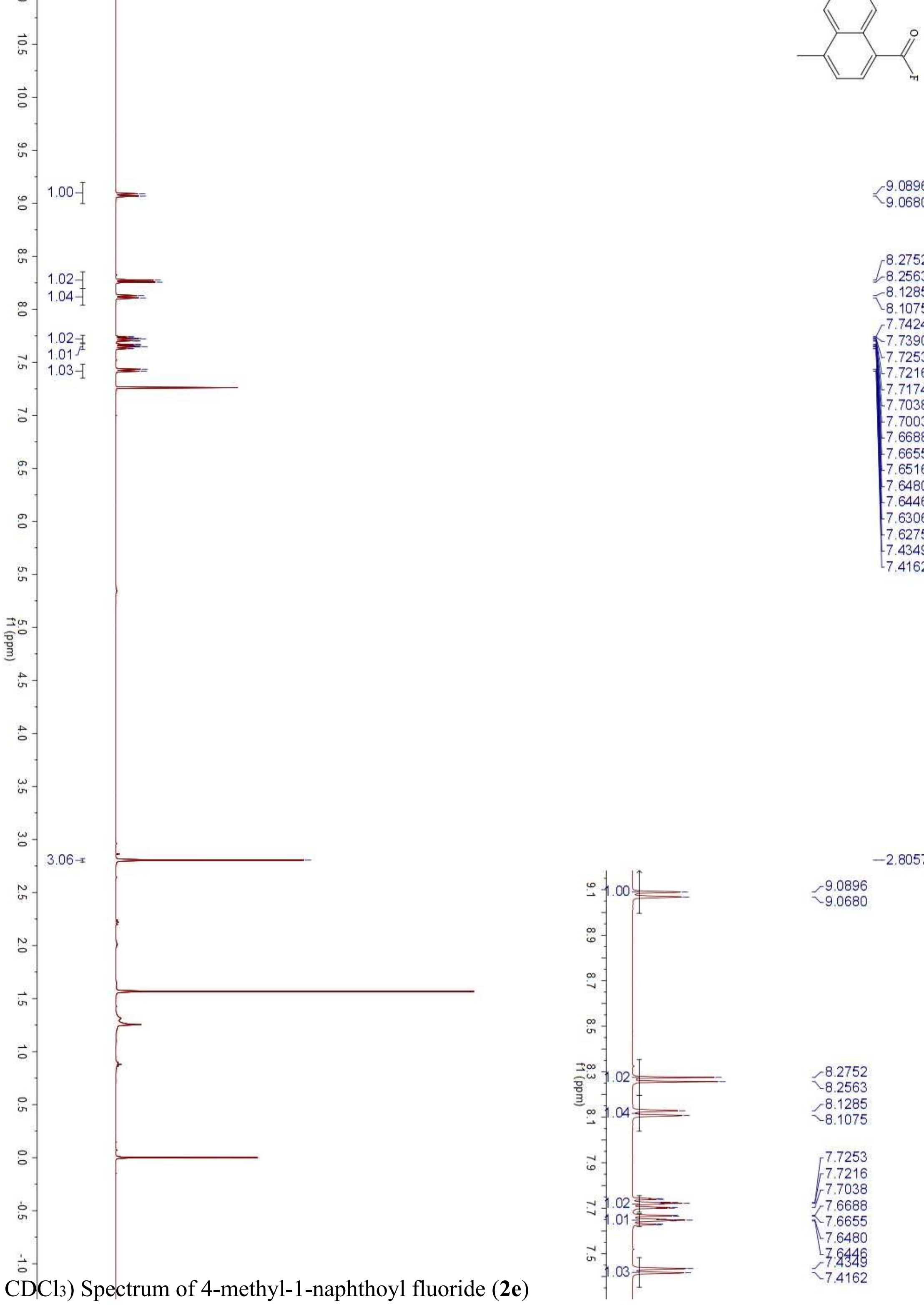
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 1-Naphthoyl fluoride (**2d**)



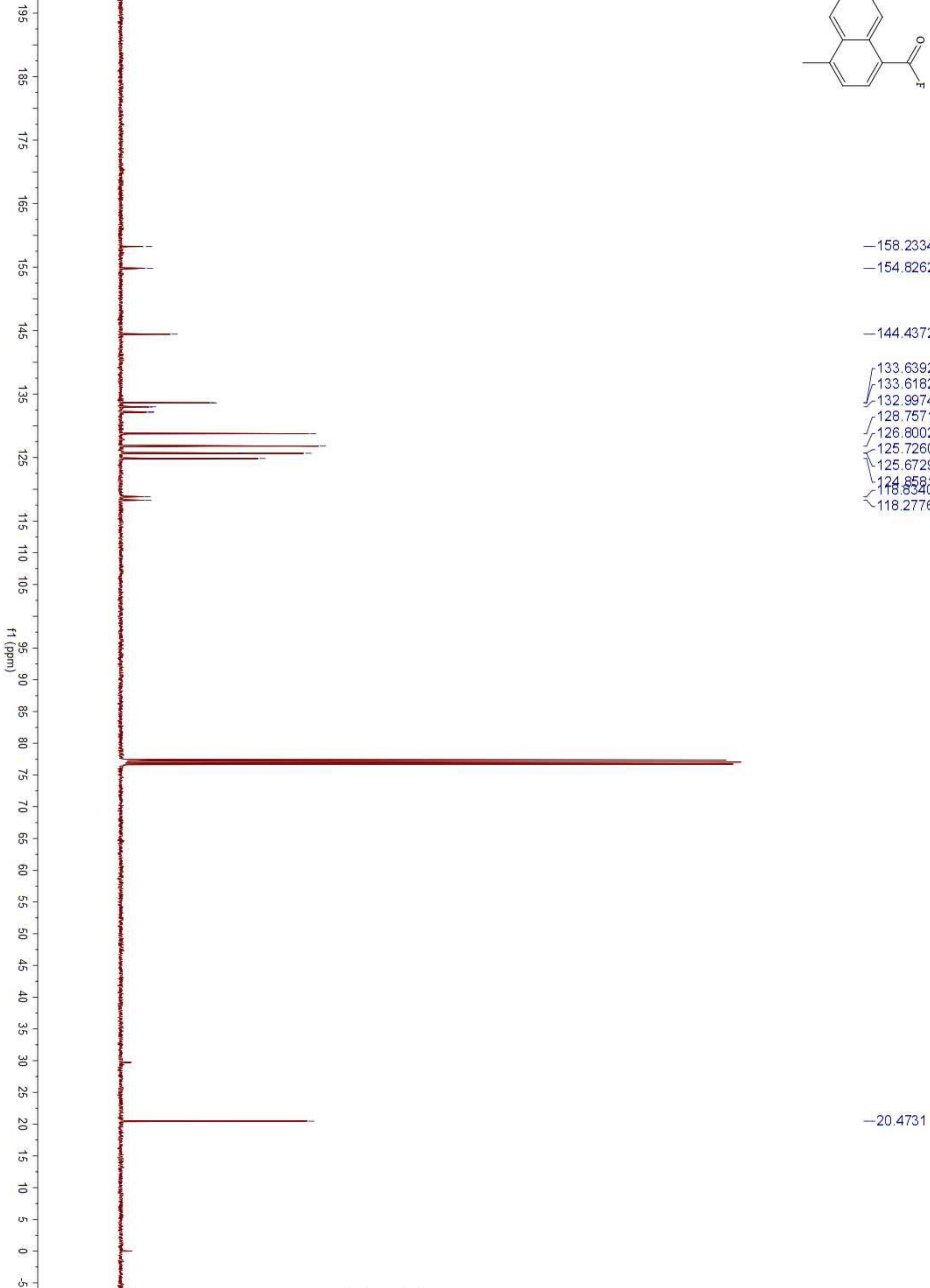
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 1-Naphthoyl fluoride (**2d**)



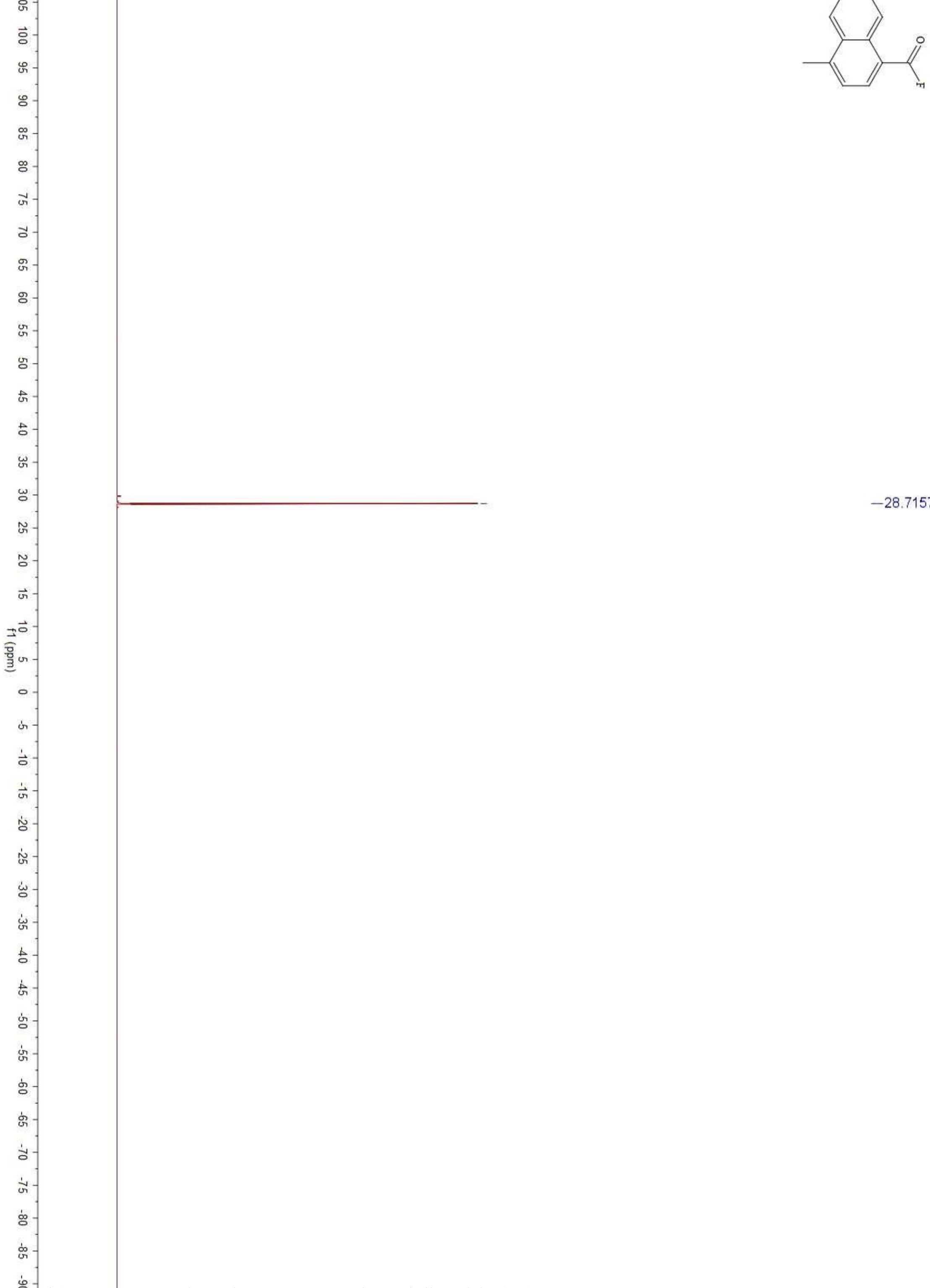
^1H NMR (400 MHz, $CDCl_3$) Spectrum of 4-methyl-1-naphthoyl fluoride (**2e**)



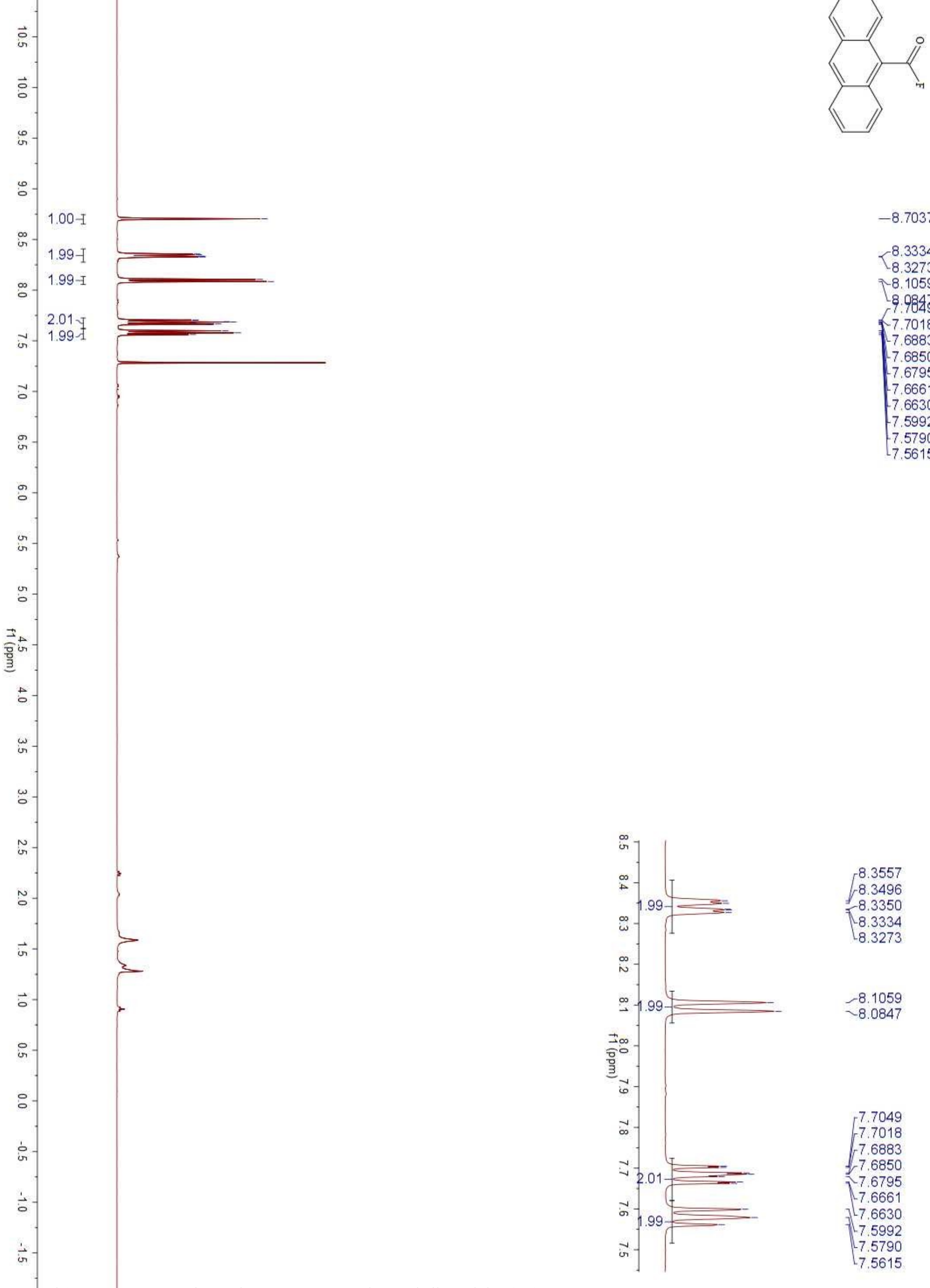
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 4-methyl-1-naphthoyl fluoride (**2e**)



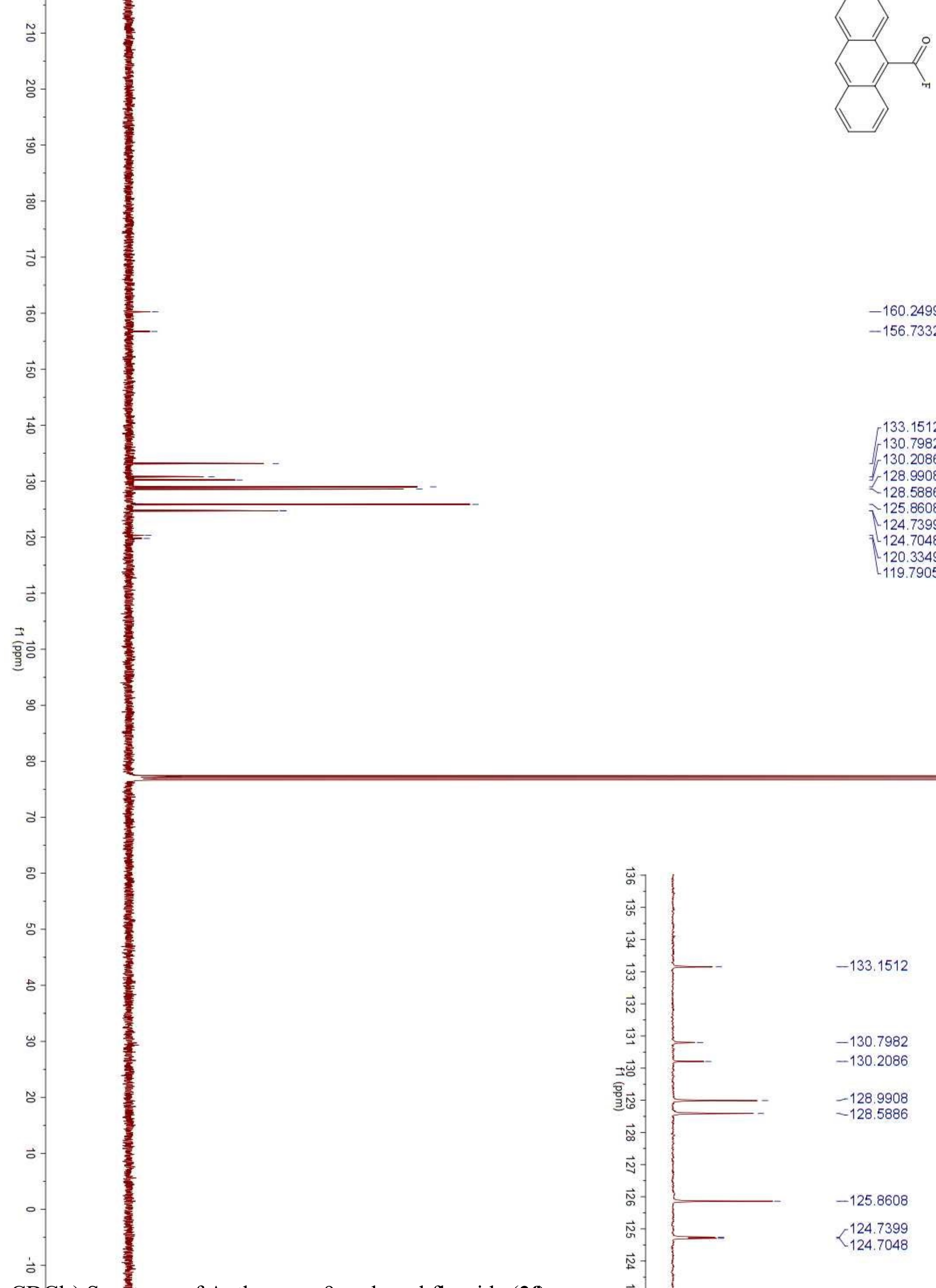
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of 4-methyl-1-naphthoyl fluoride (**2e**)



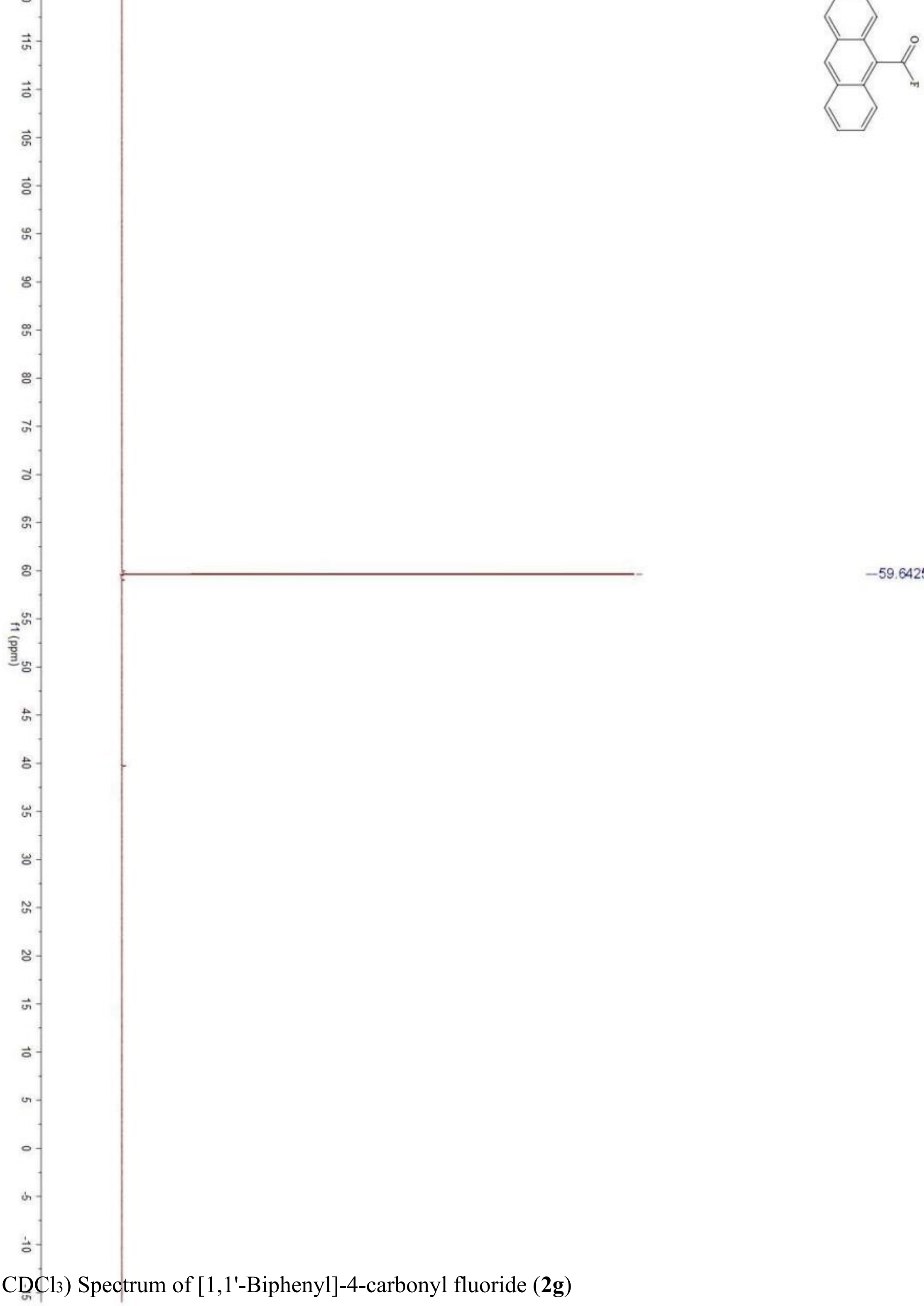
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of Anthracene-9-carbonyl fluoride (**2f**)



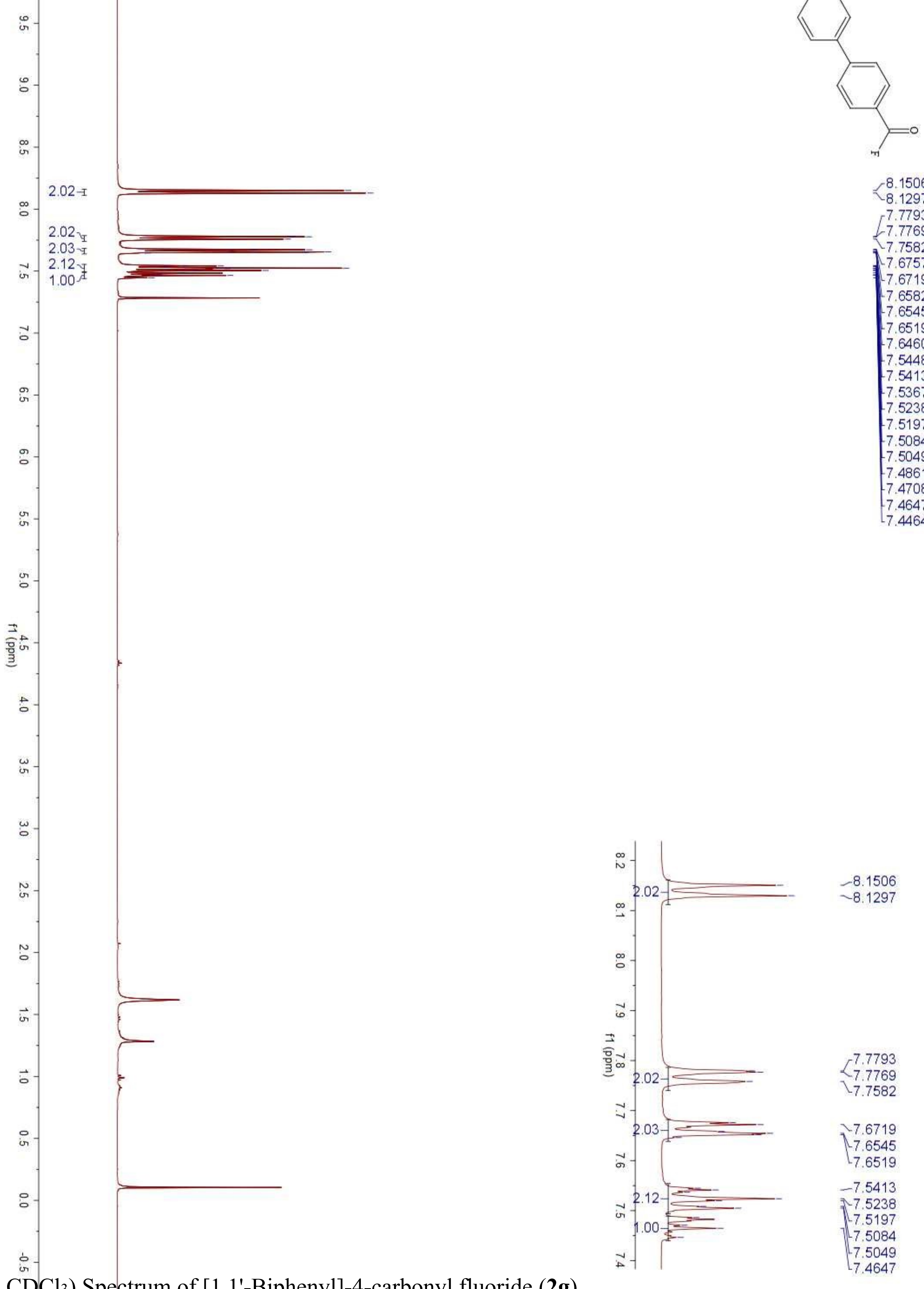
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of Anthracene-9-carbonyl fluoride (**2f**)



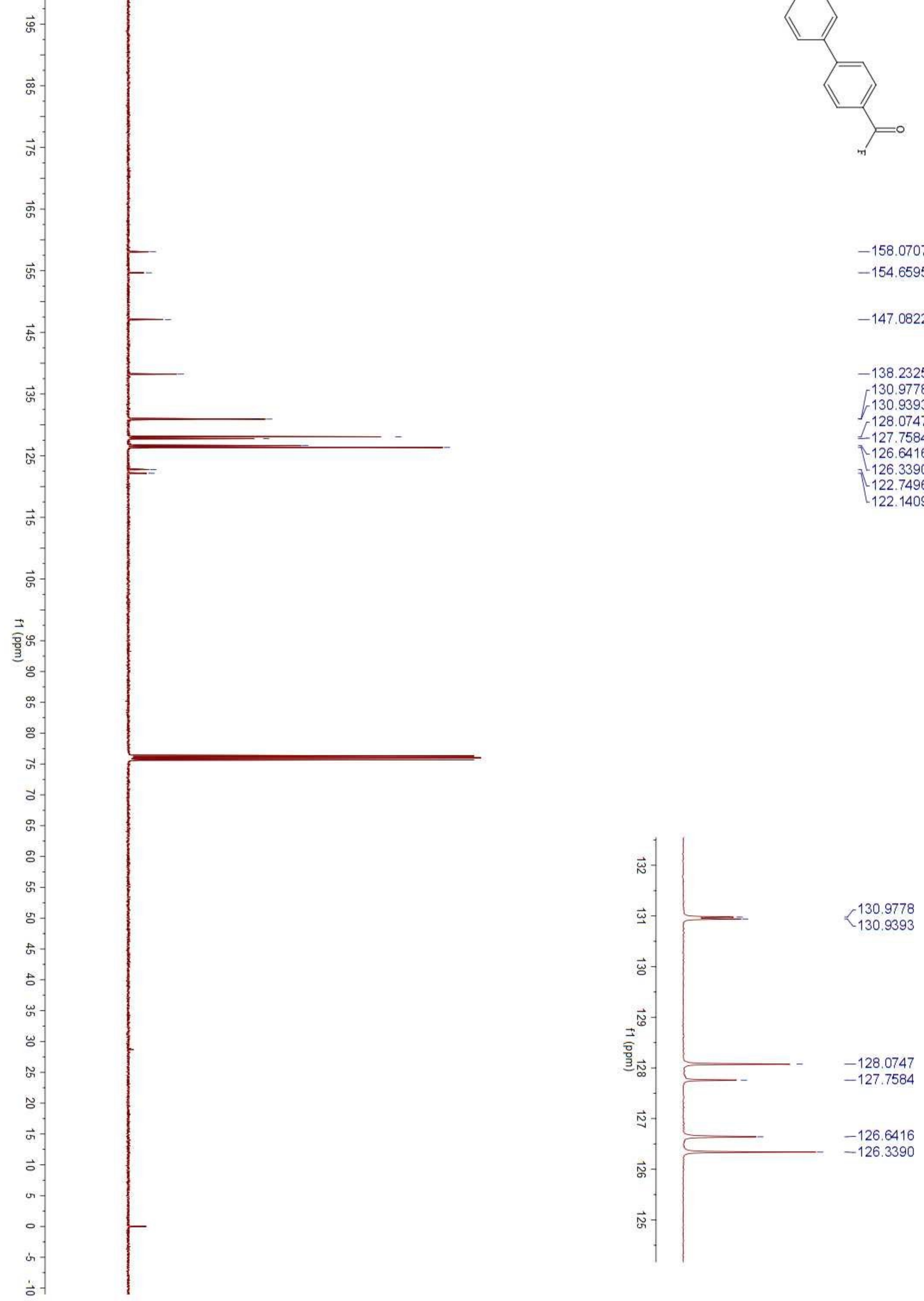
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of Anthracene-9-carbonyl fluoride (**2f**)



^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-4-carbonyl fluoride (**2g**)



^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-4-carbonyl fluoride (**2g**)


O
F
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−147.0822
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126.3390
122.7496
122.1409
f1 (ppm)
195
185
175
165
155
145
135
125
115
105
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
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-10
130.9778
130.9393
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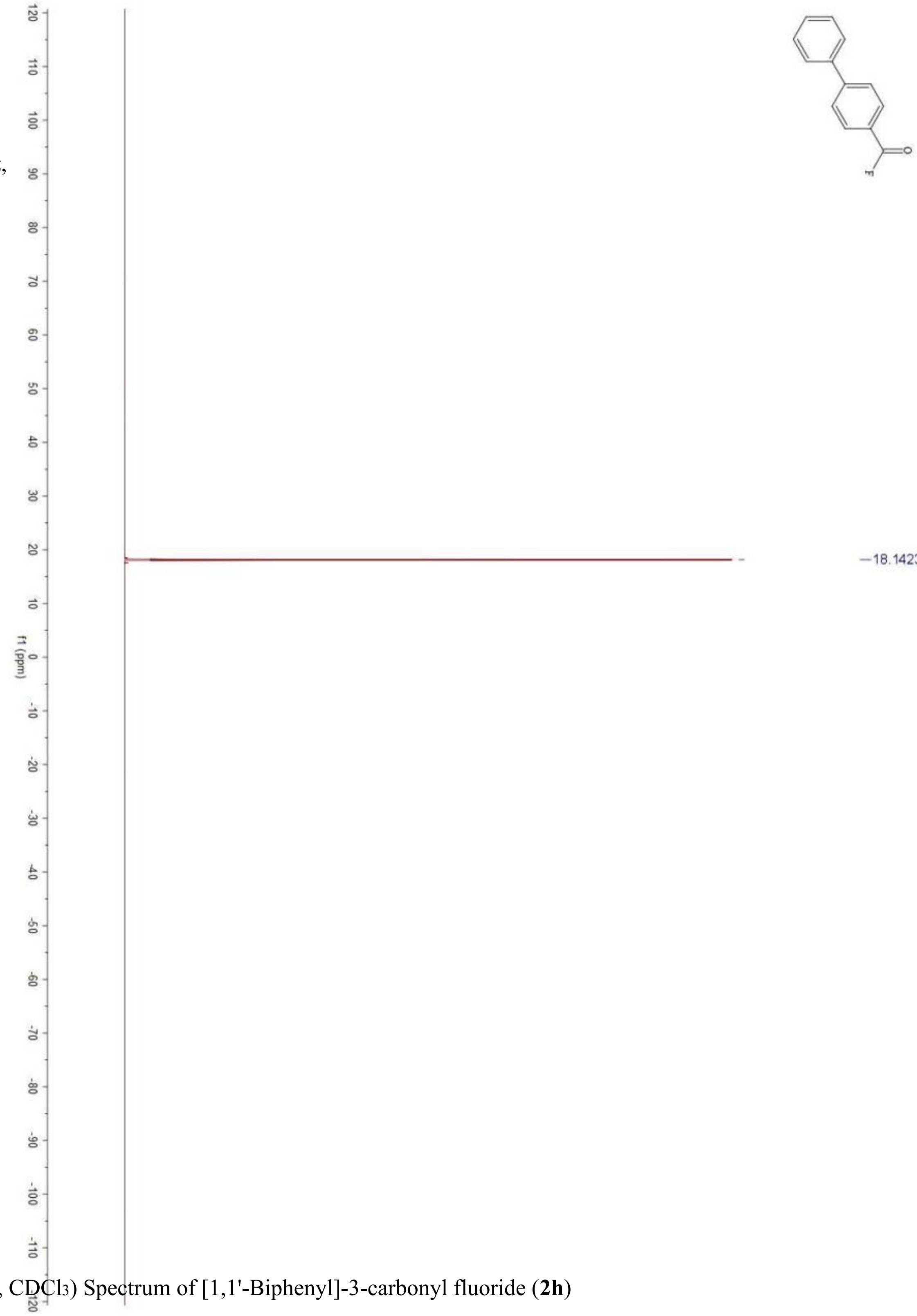
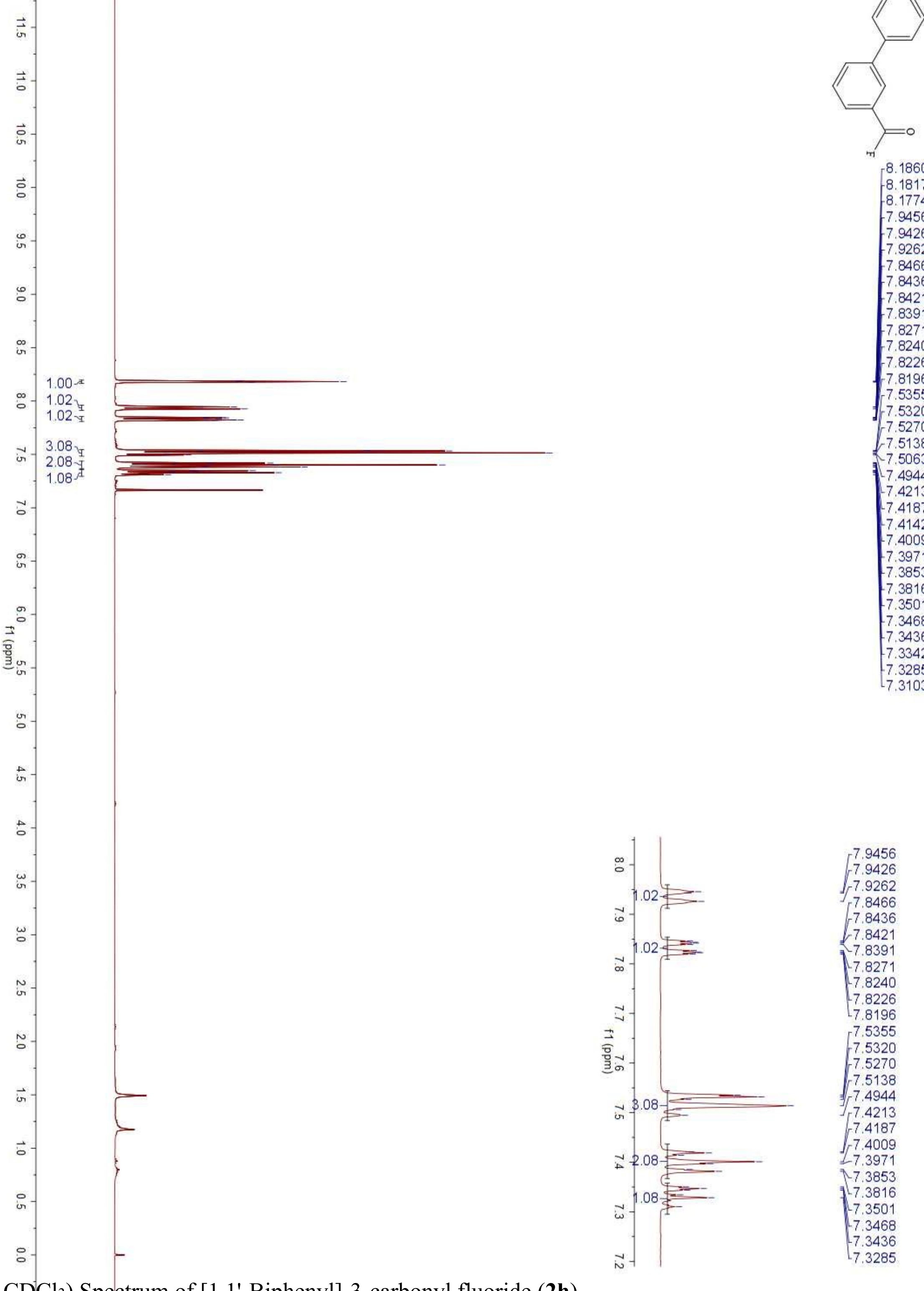
126
125

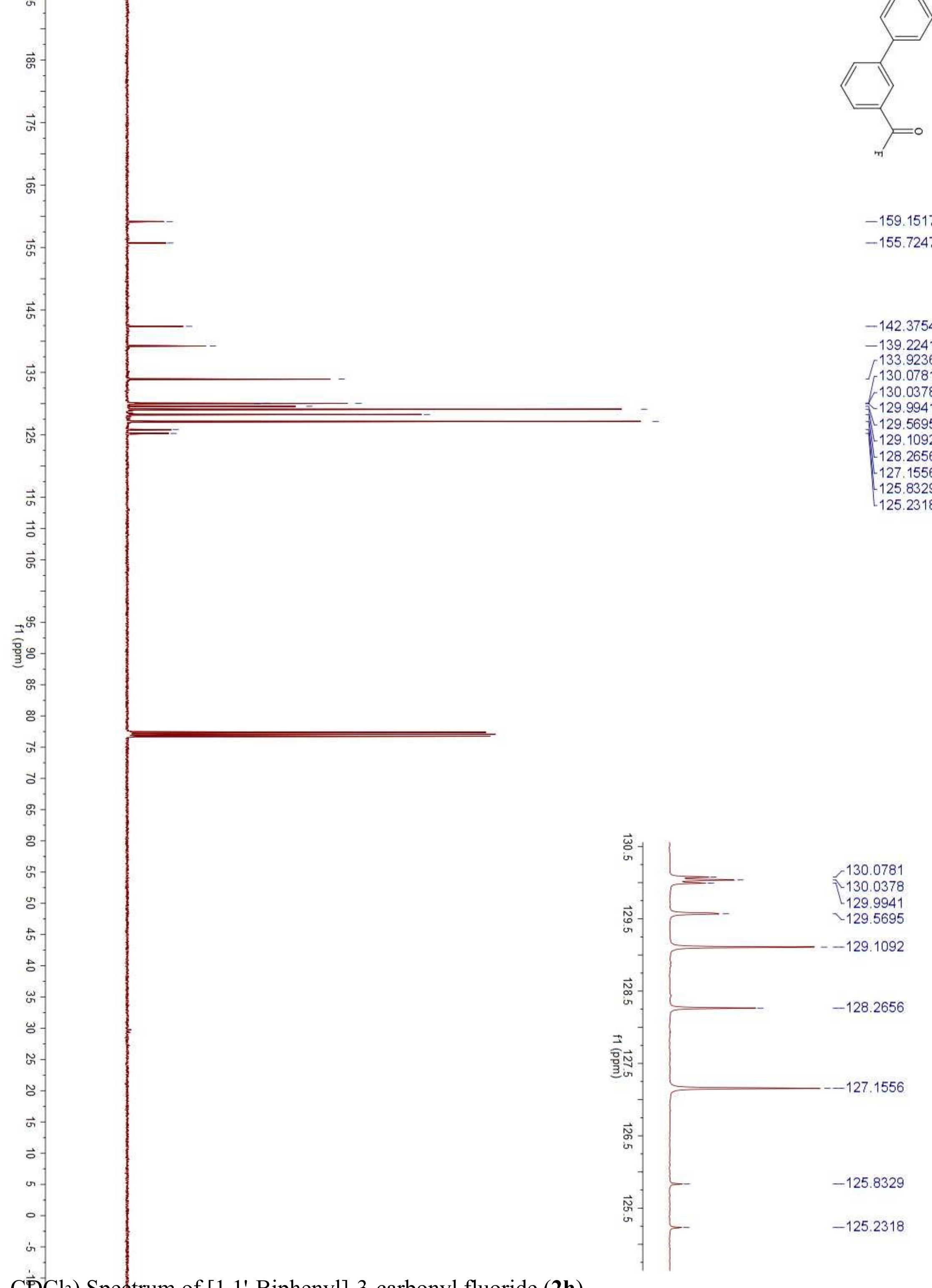
^{19}F NMR (376 MHz,



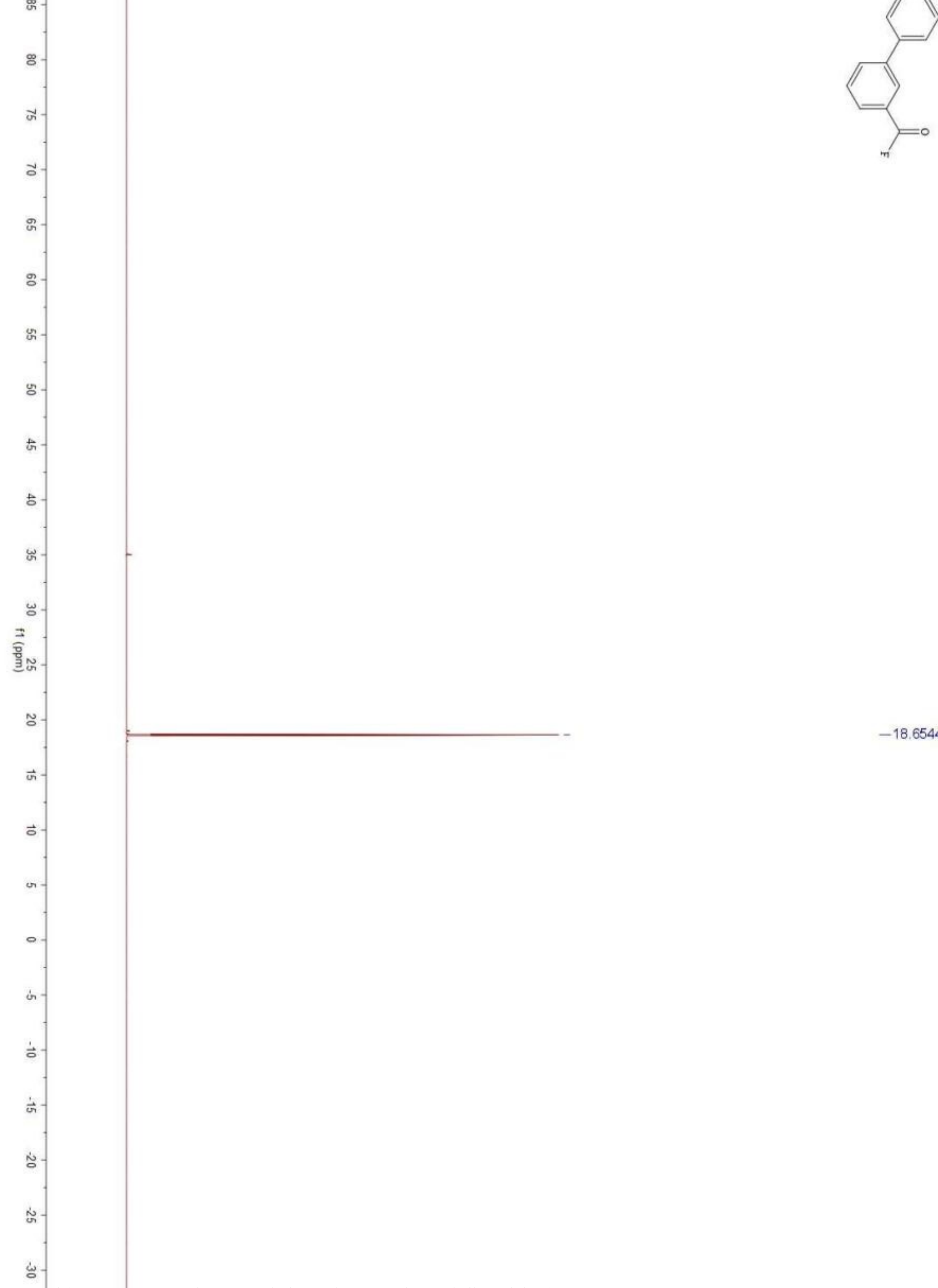
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of [1,1'-Biphenyl]-3-carbonyl fluoride (**2h**)



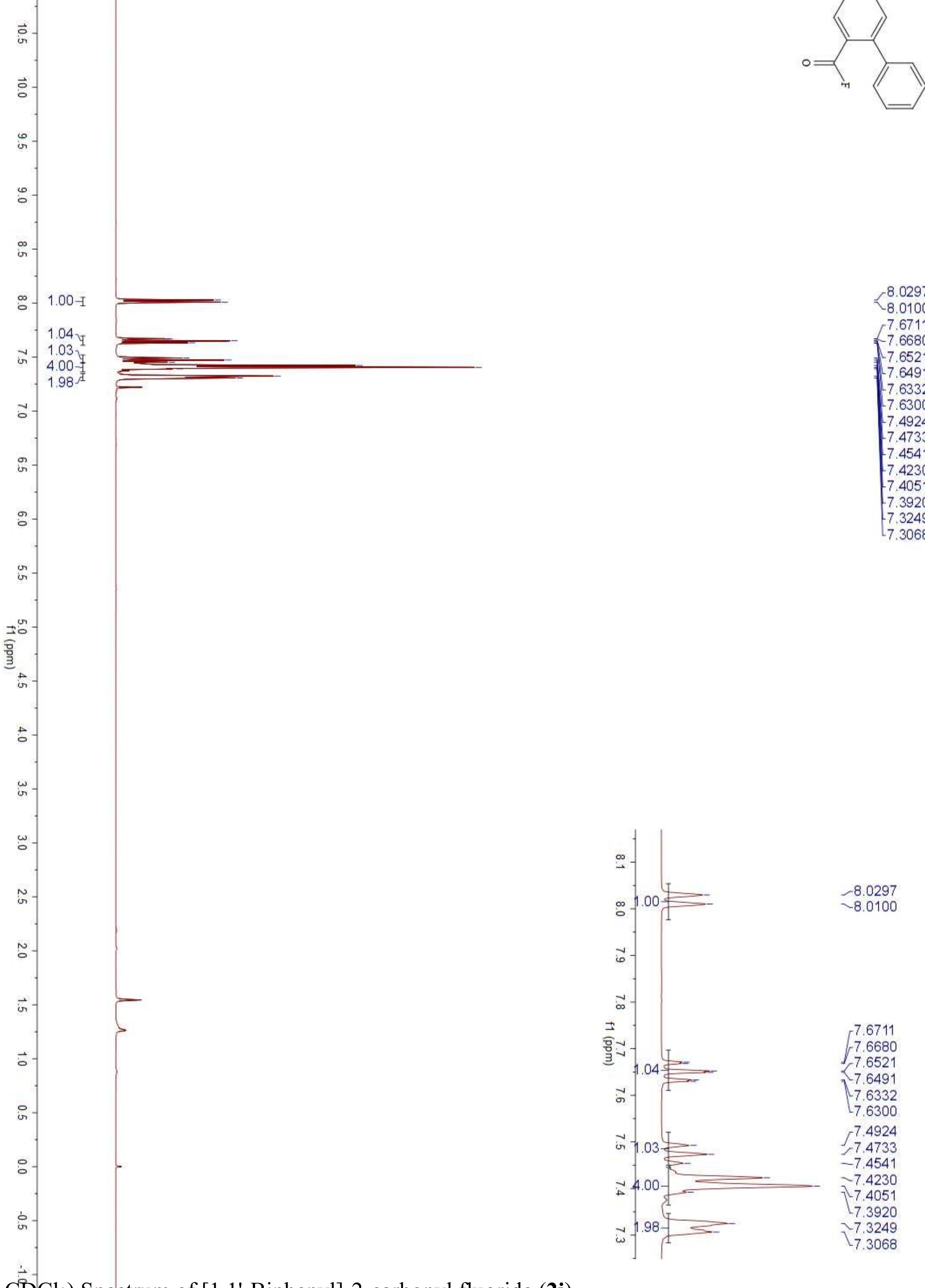
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-3-carbonyl fluoride (**2h**)



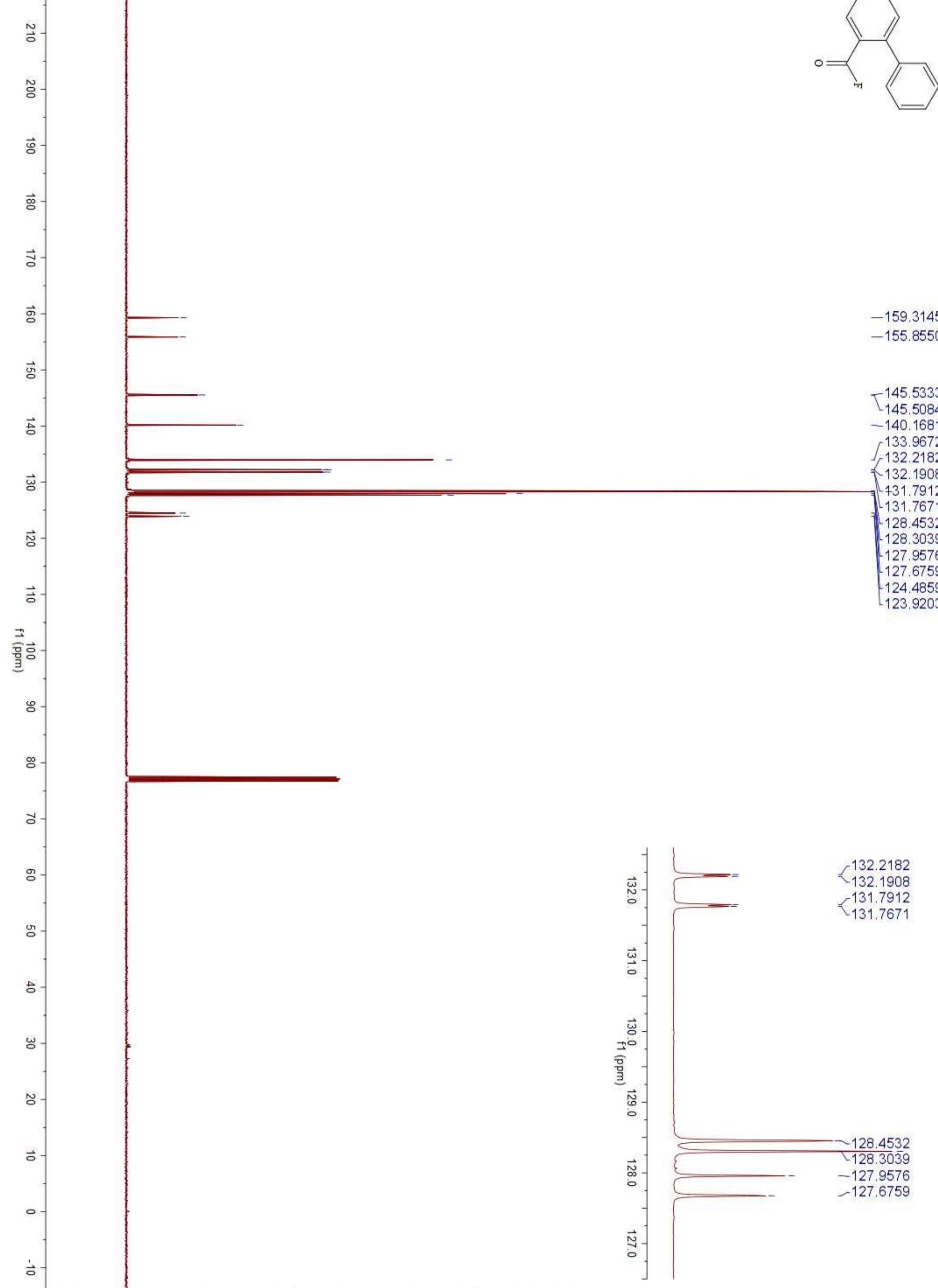
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-3-carbonyl fluoride (**2h**)



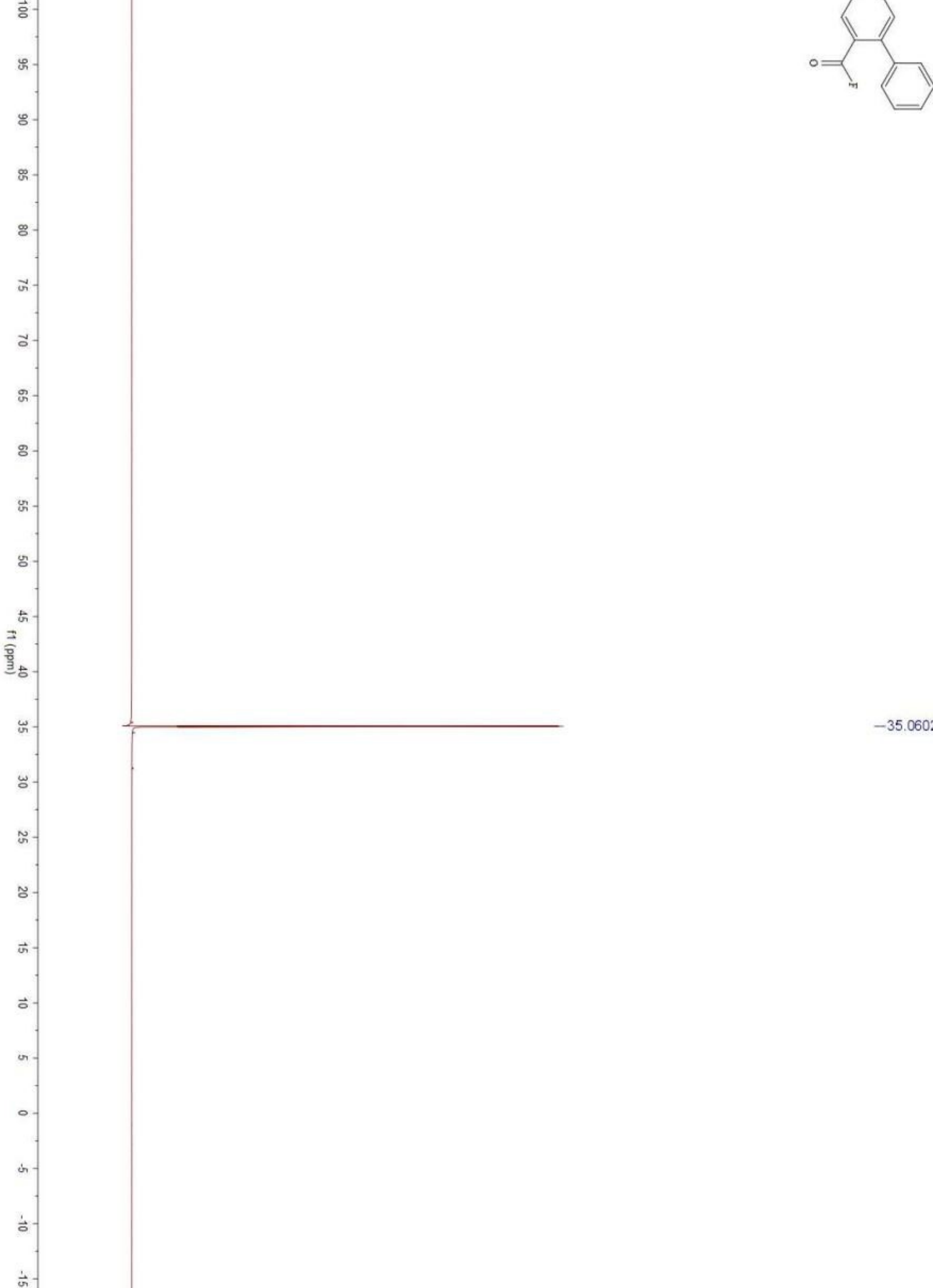
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-2-carbonyl fluoride (**2i**)



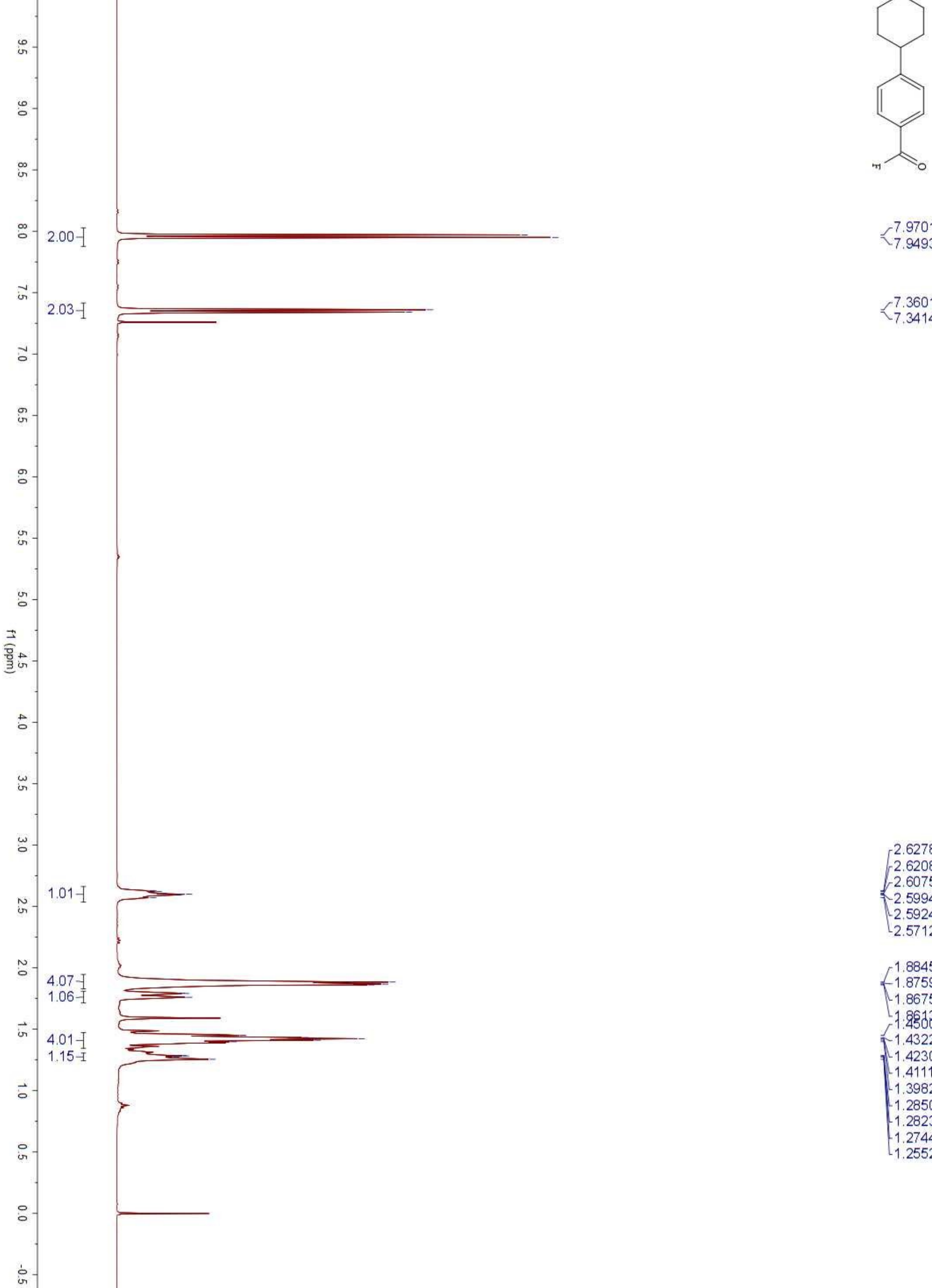
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-2-carbonyl fluoride (**2i**)



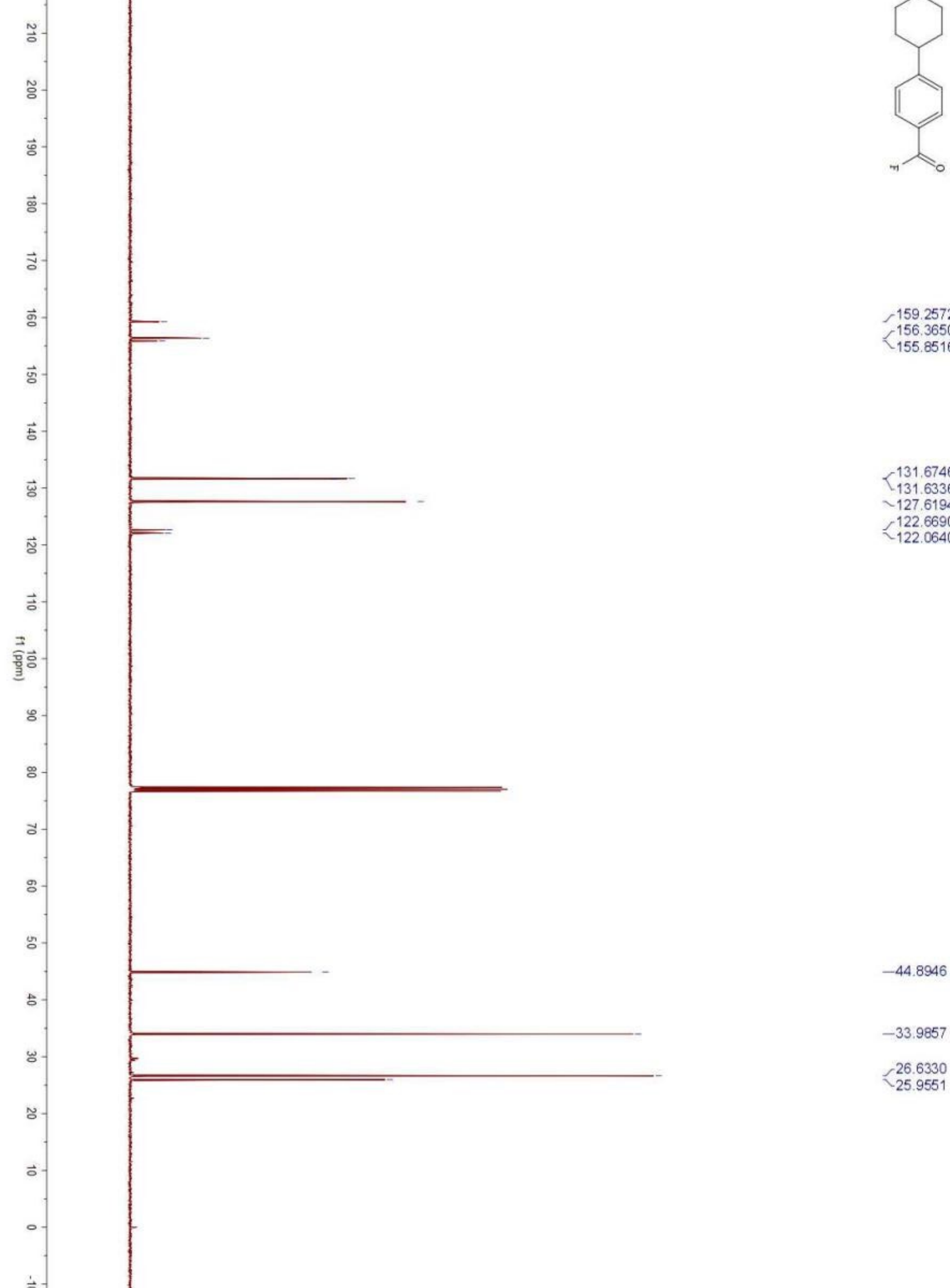
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of [1,1'-Biphenyl]-2-carbonyl fluoride (**2i**)



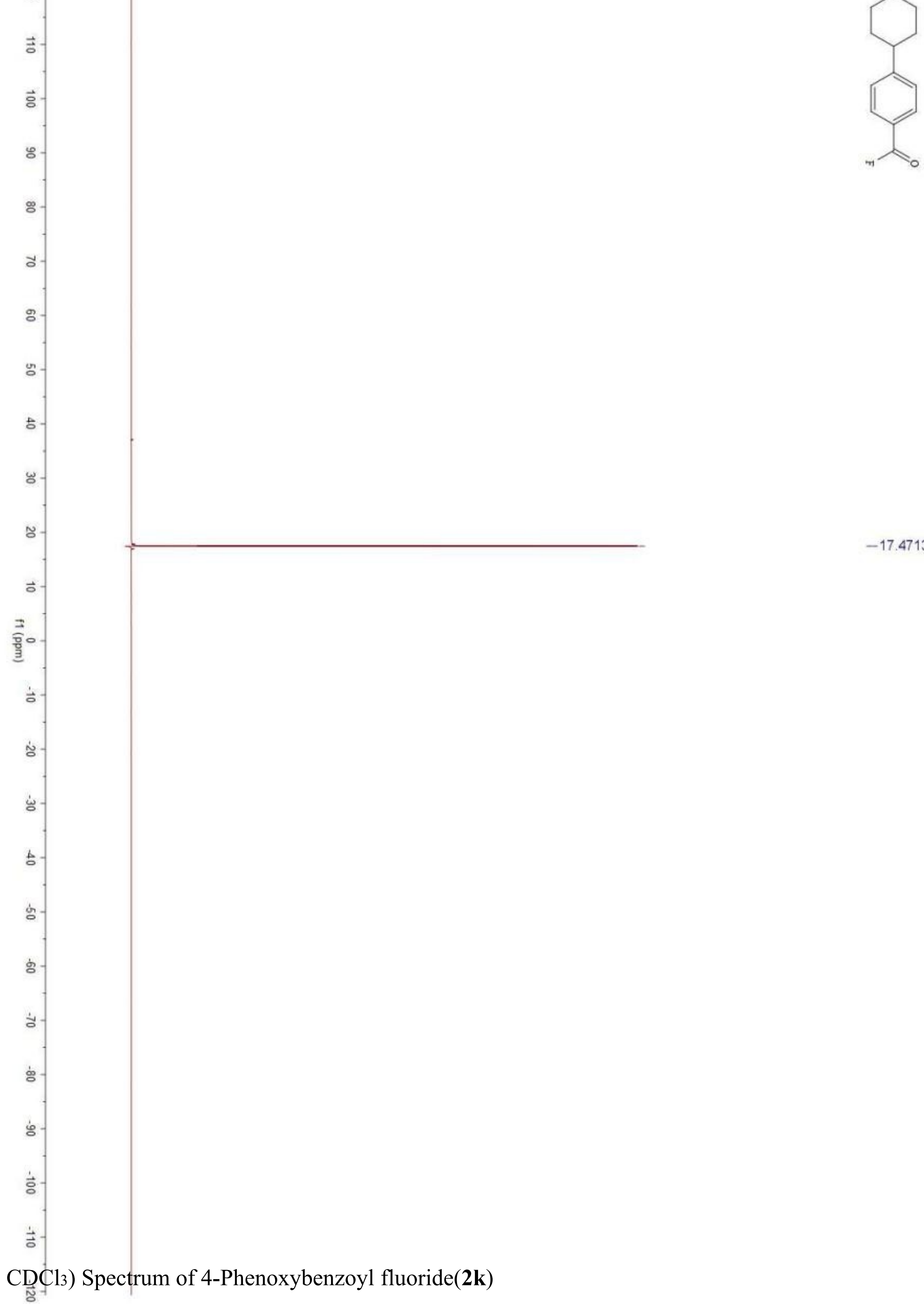
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of 4-Cyclohexylbenzoyl fluoride (**2j**)



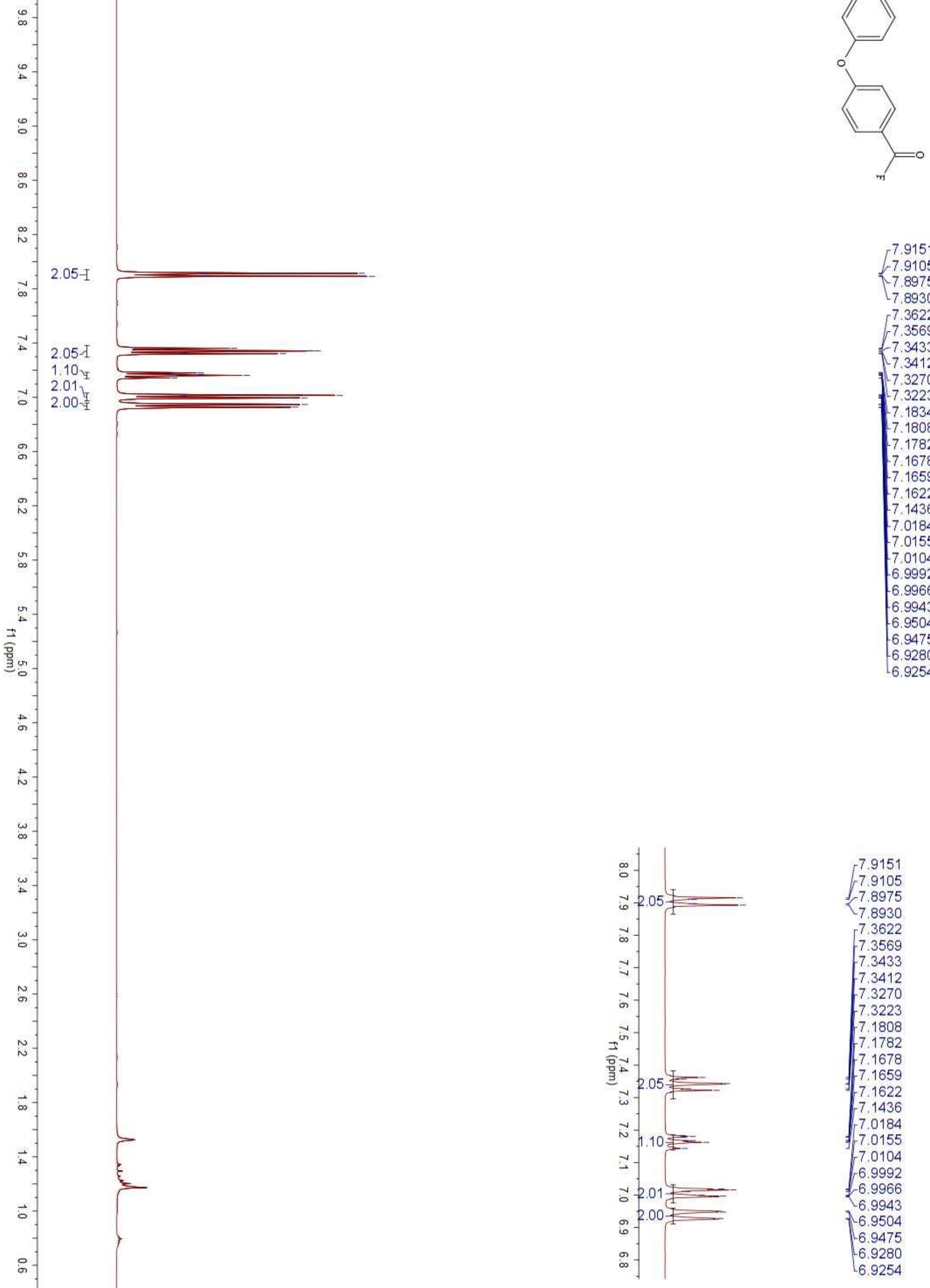
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of 4-Cyclohexylbenzoyl fluoride (**2j**)



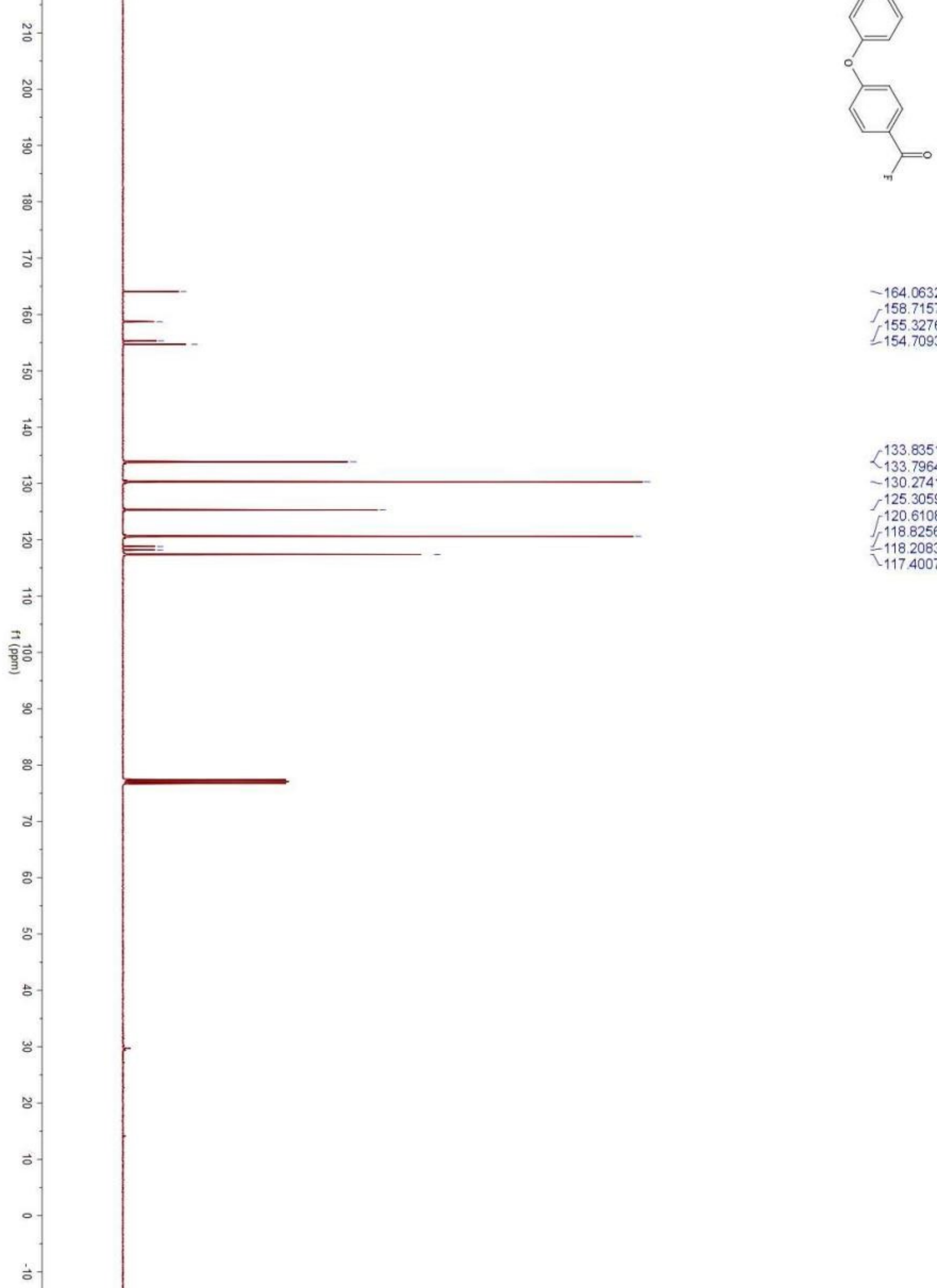
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of 4-Cyclohexylbenzoyl fluoride (**2j**)



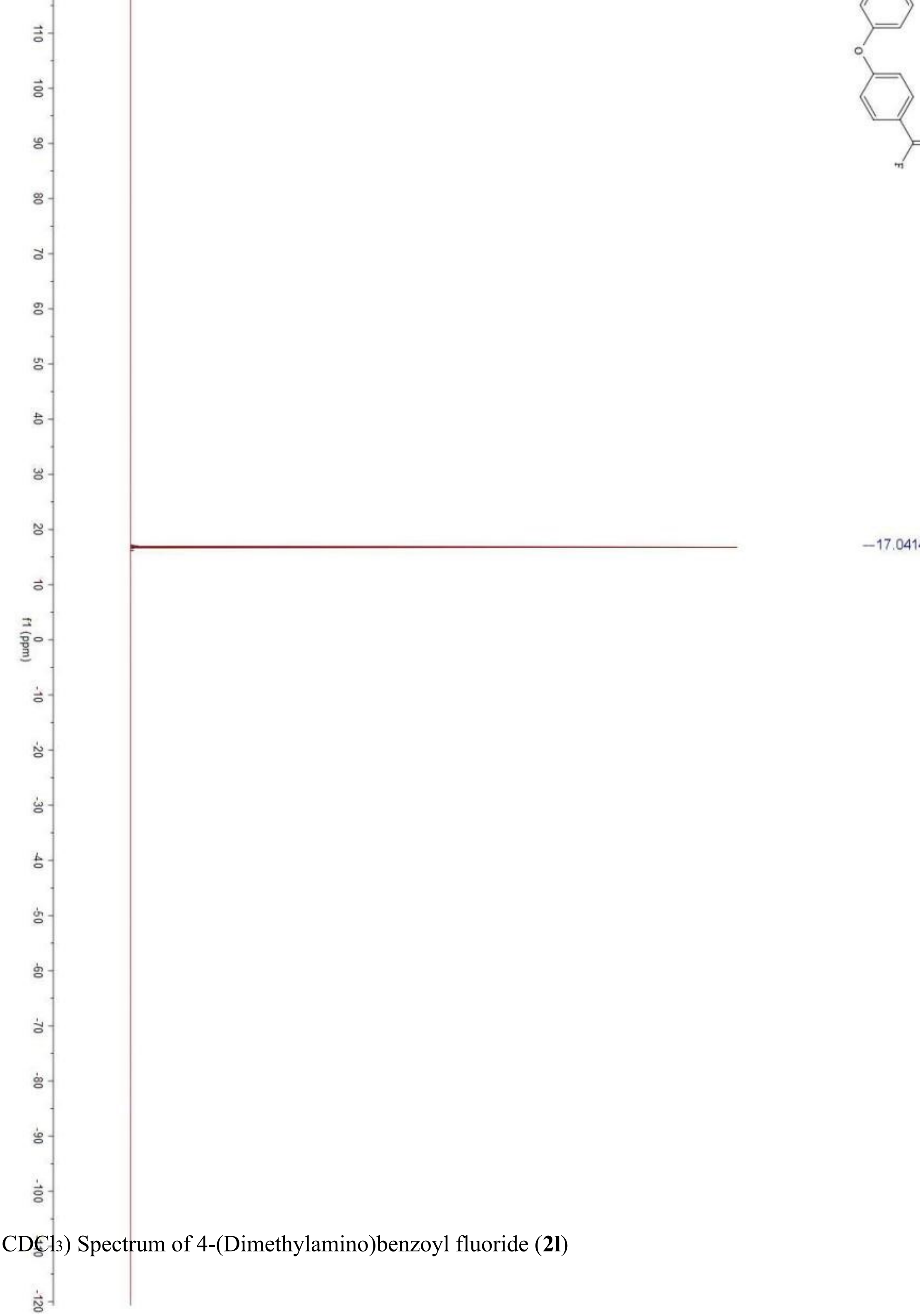
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 4-Phenoxybenzoyl fluoride(**2k**)



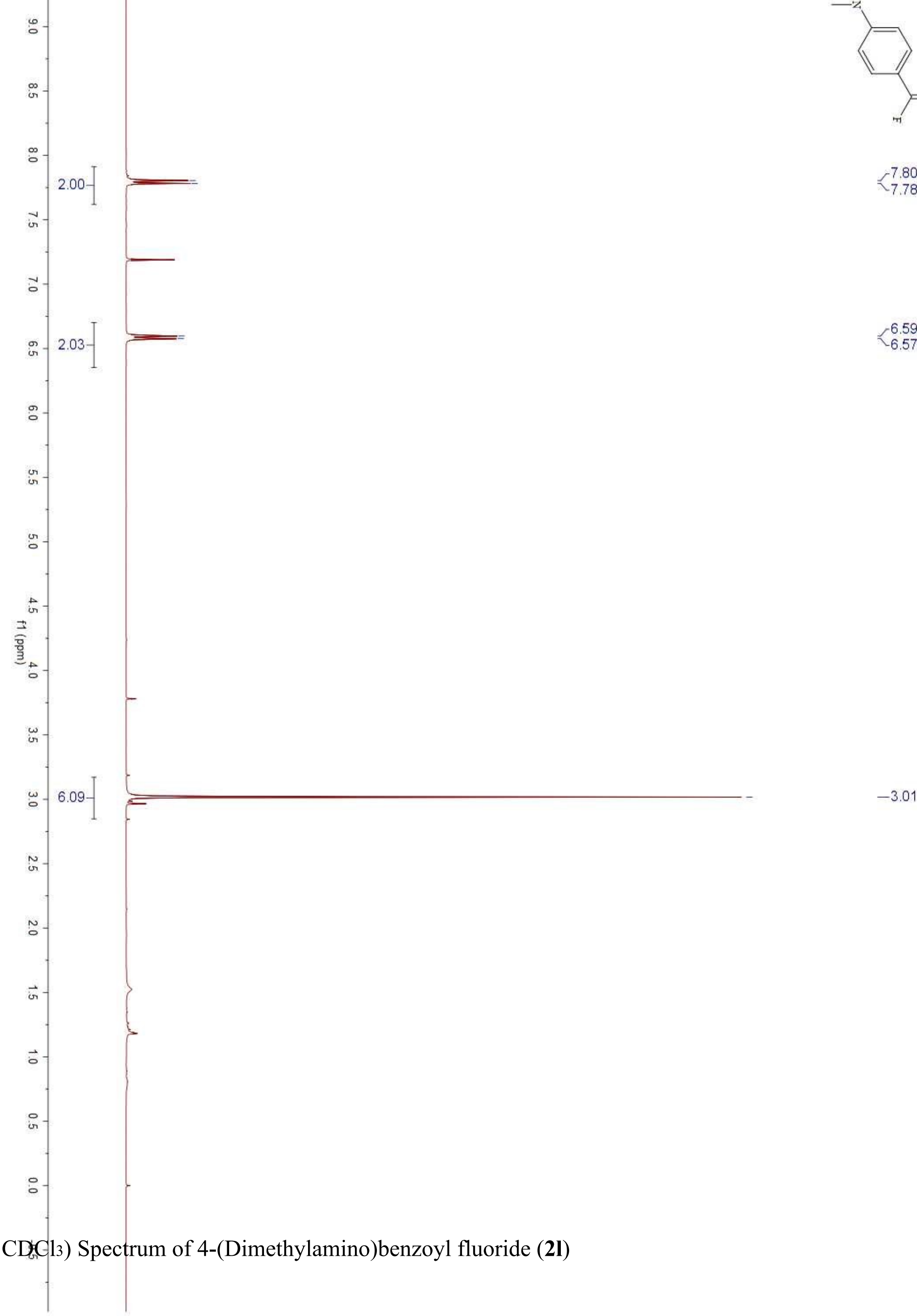
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 4-Phenoxybenzoyl fluoride(**2k**)



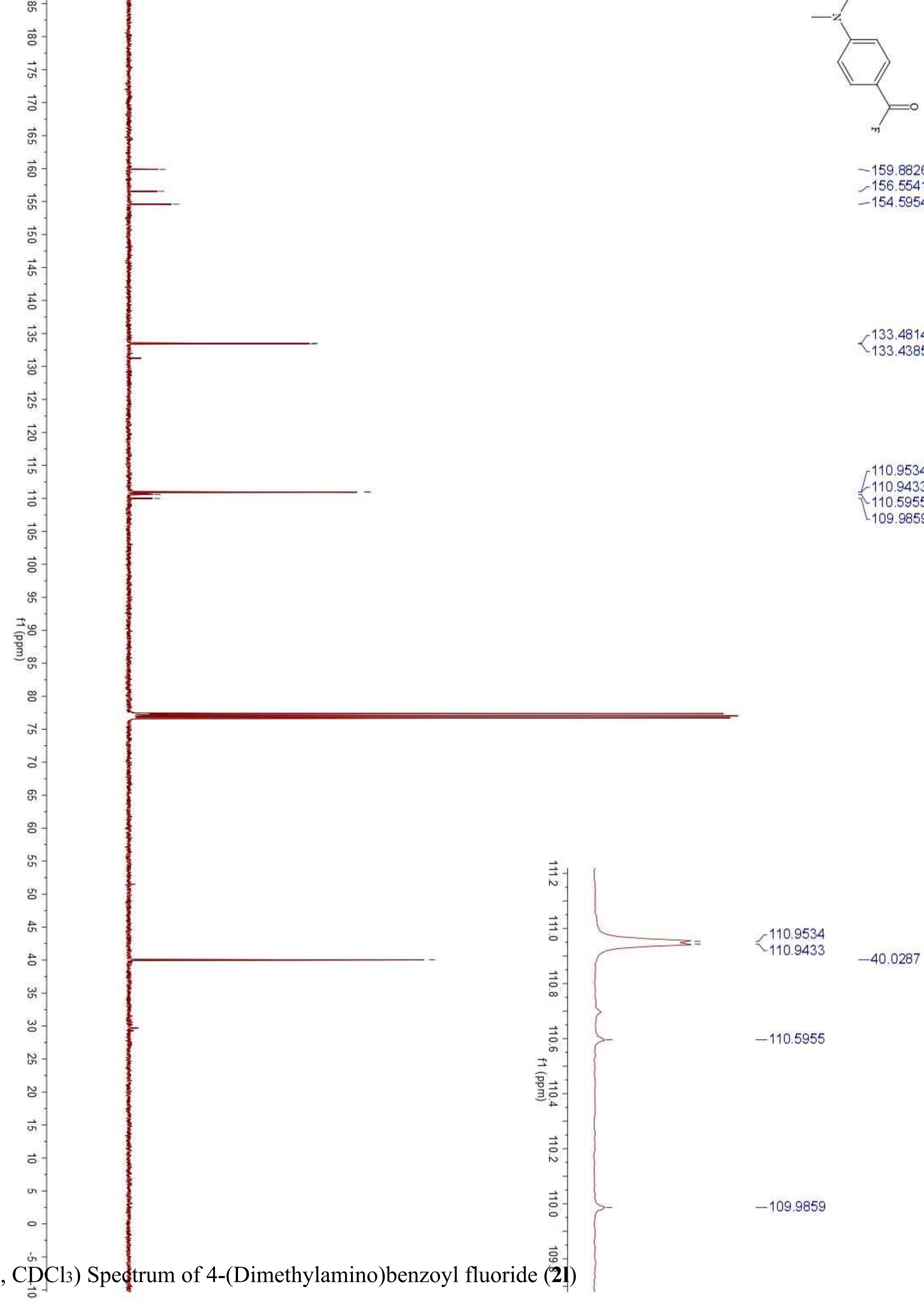
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 4-Phenoxybenzoyl fluoride(**2k**)



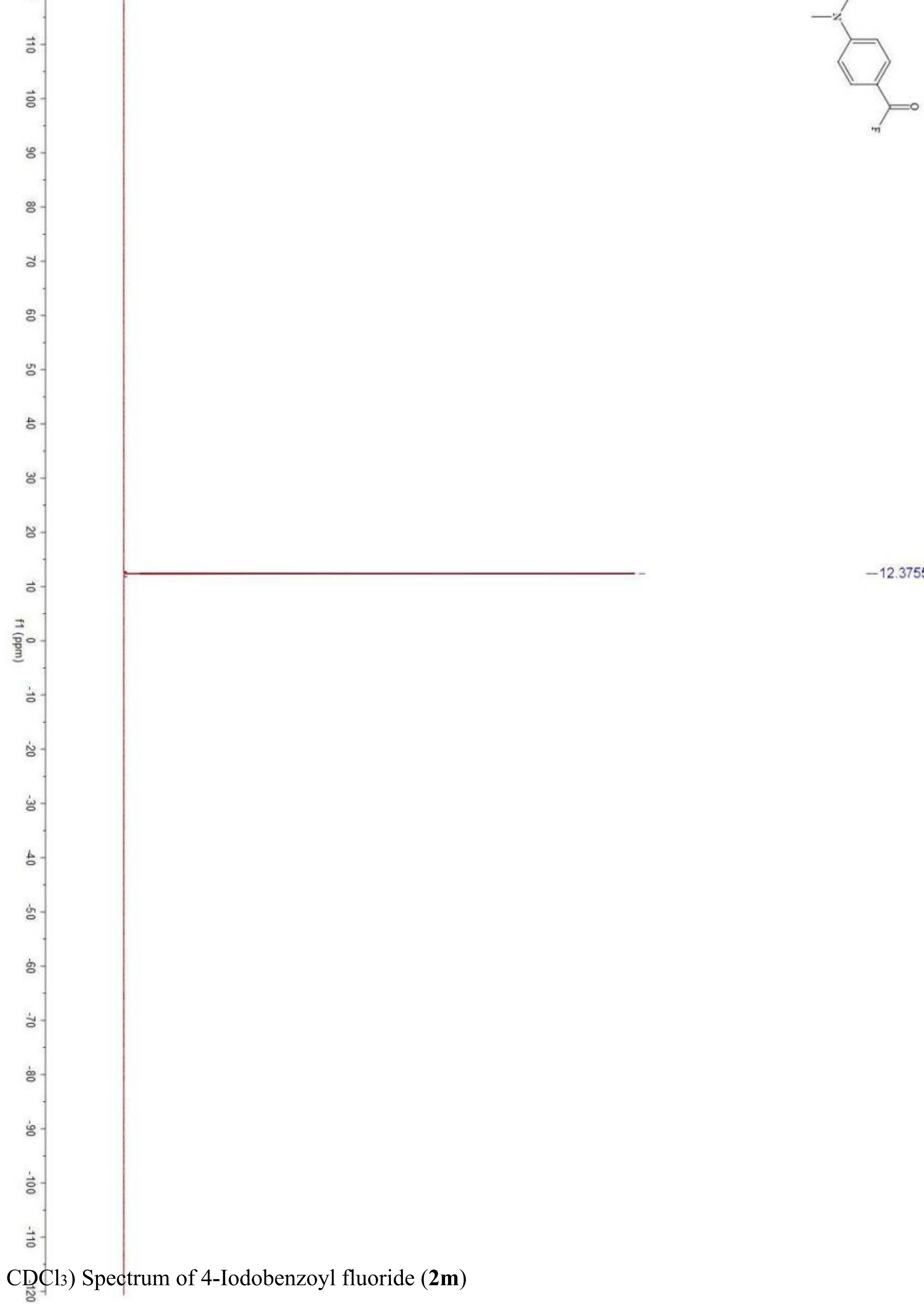
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of 4-(Dimethylamino)benzoyl fluoride (**2l**)



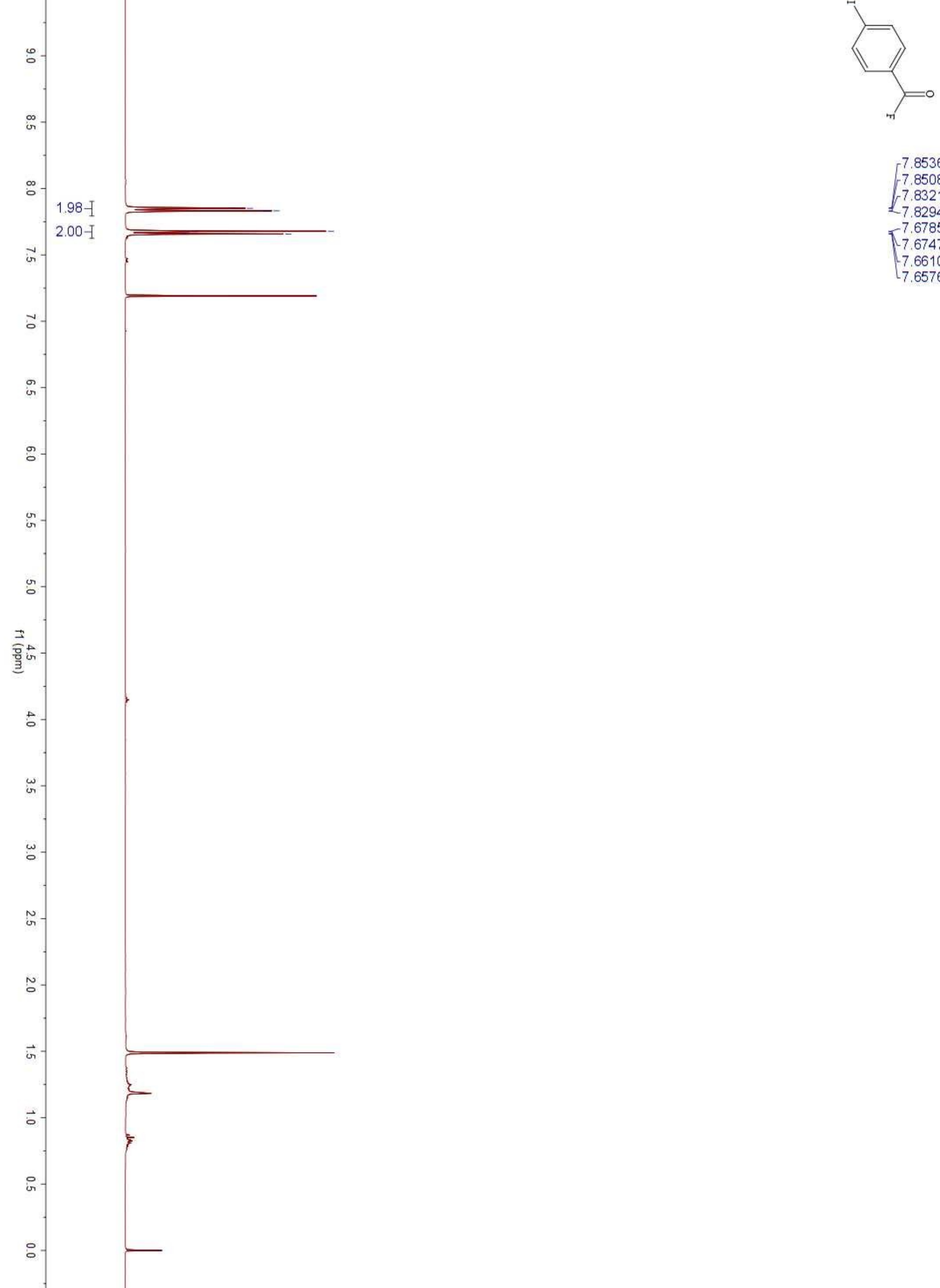
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 4-(Dimethylamino)benzoyl fluoride (**2l**)



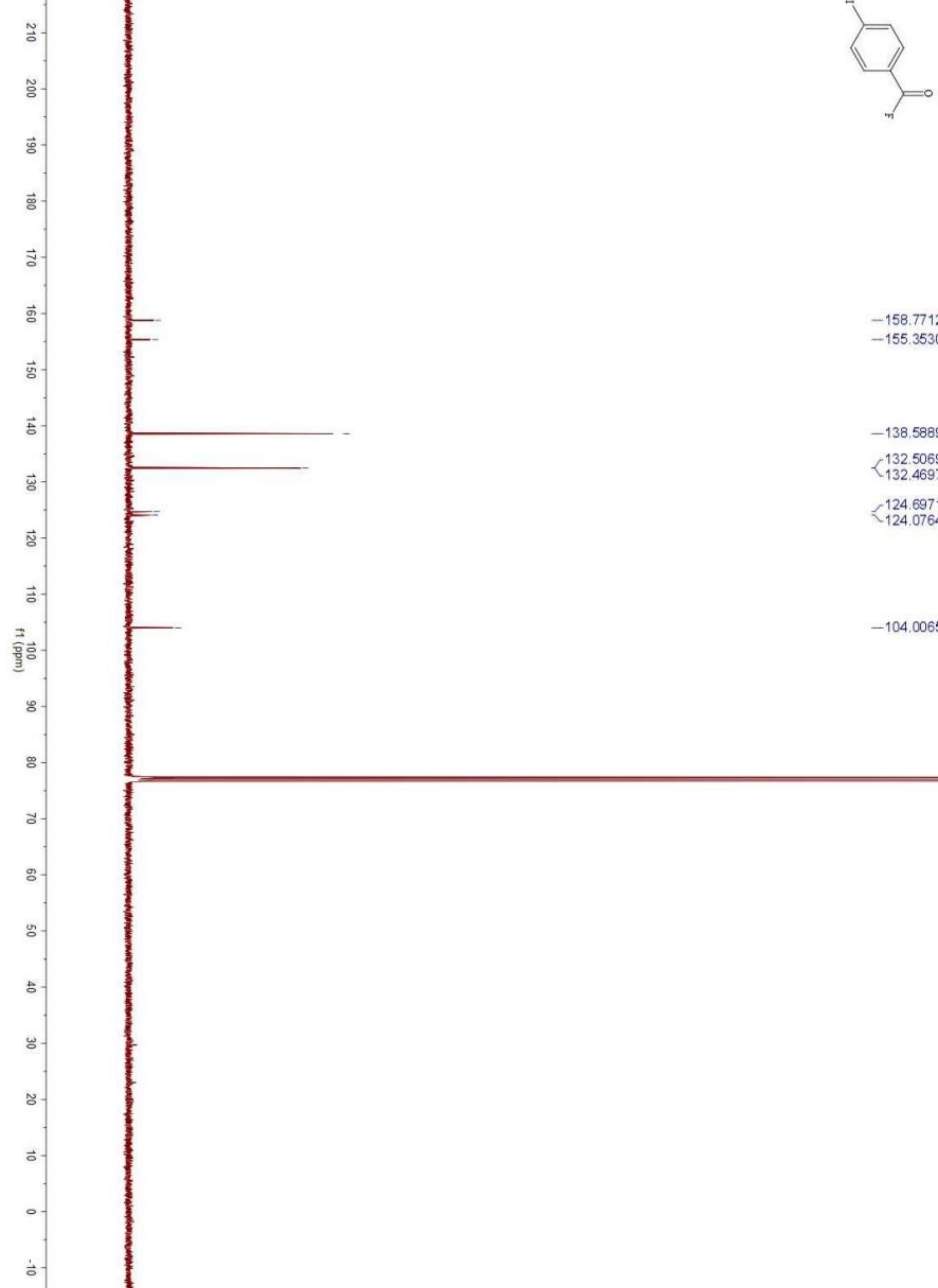
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 4-(Dimethylamino)benzoyl fluoride (**2l**)



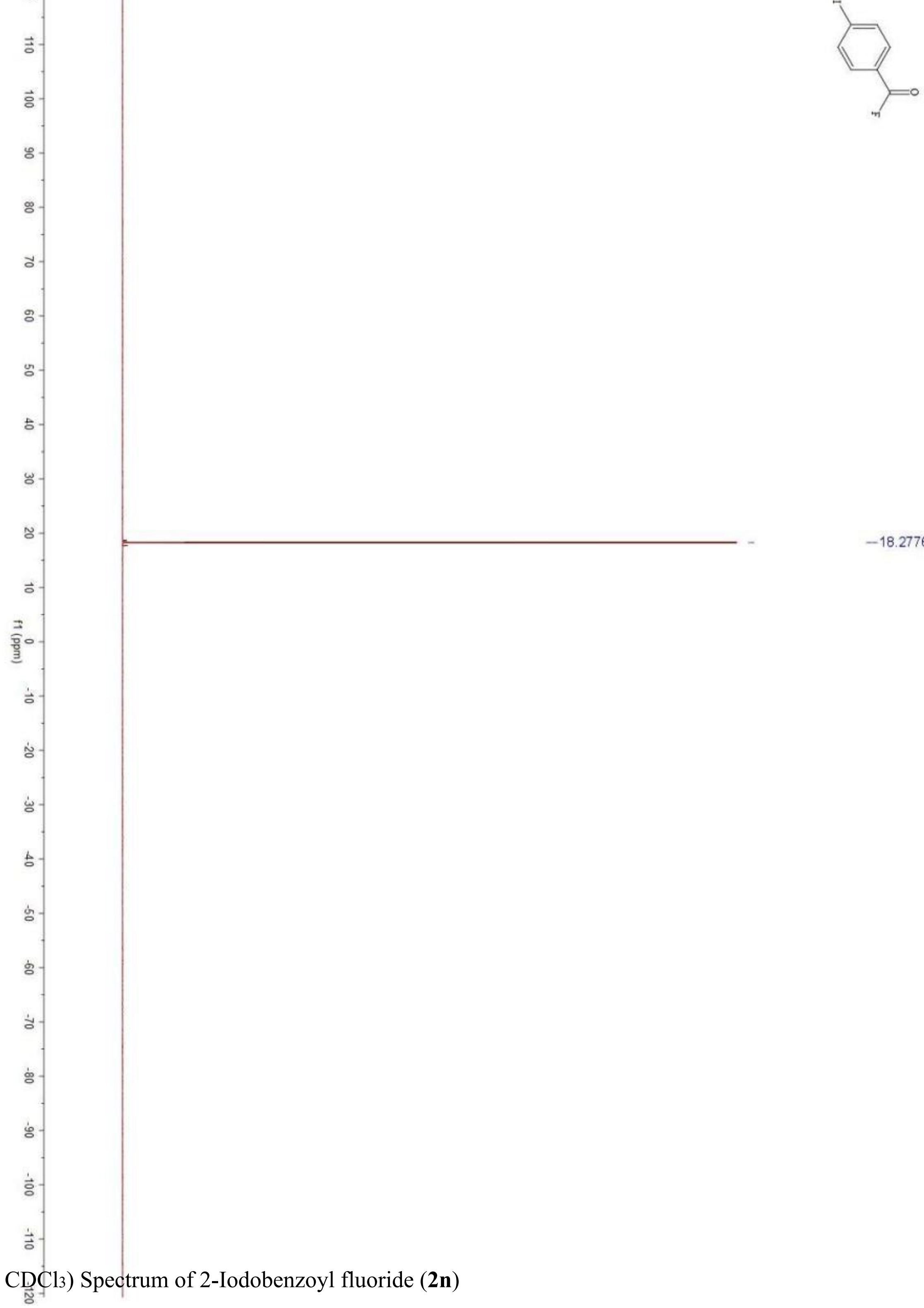
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 4-Iodobenzoyl fluoride (**2m**)



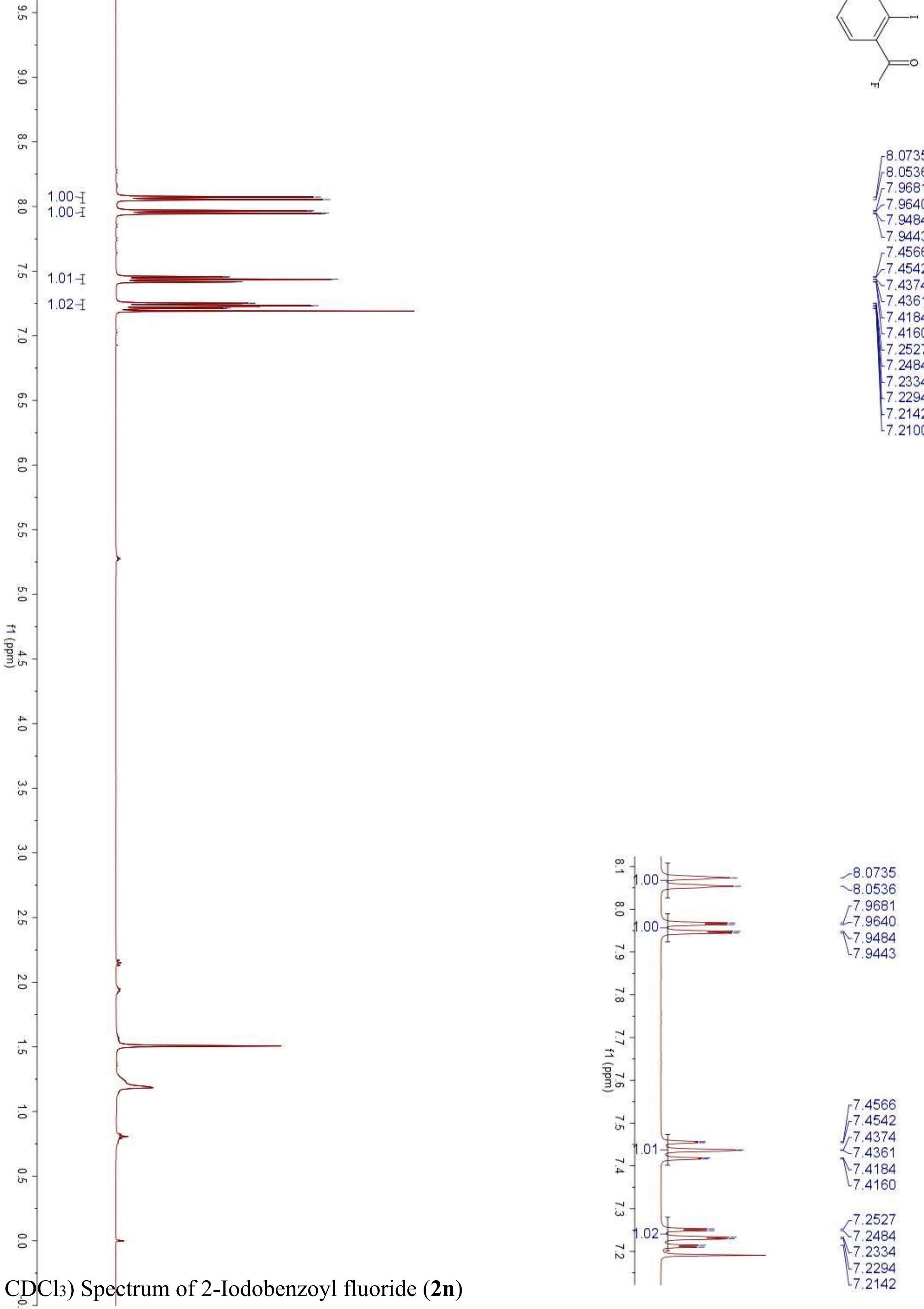
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of 4-Iodobenzoyl fluoride (**2m**)



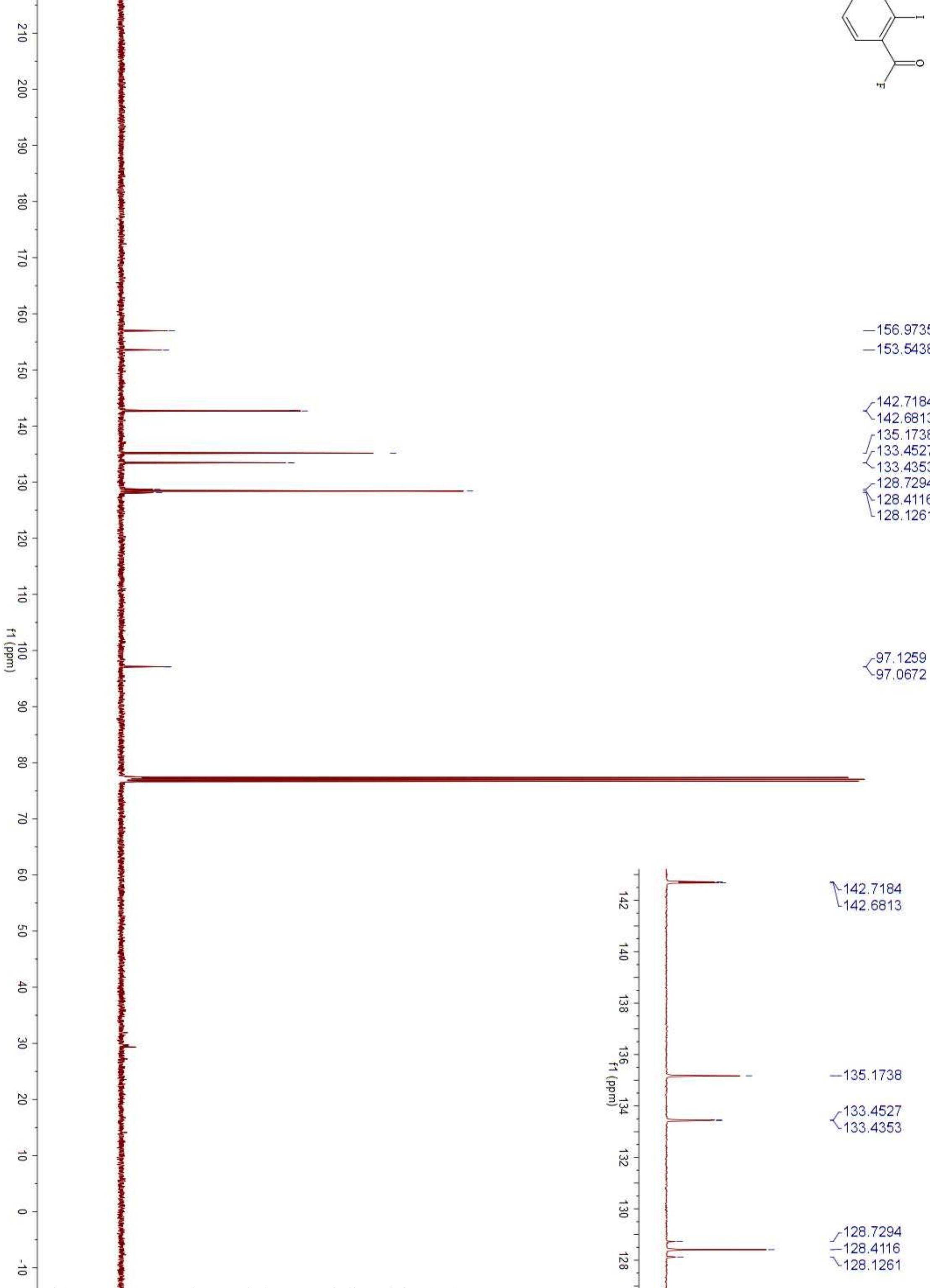
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 4-Iodobenzoyl fluoride (**2m**)



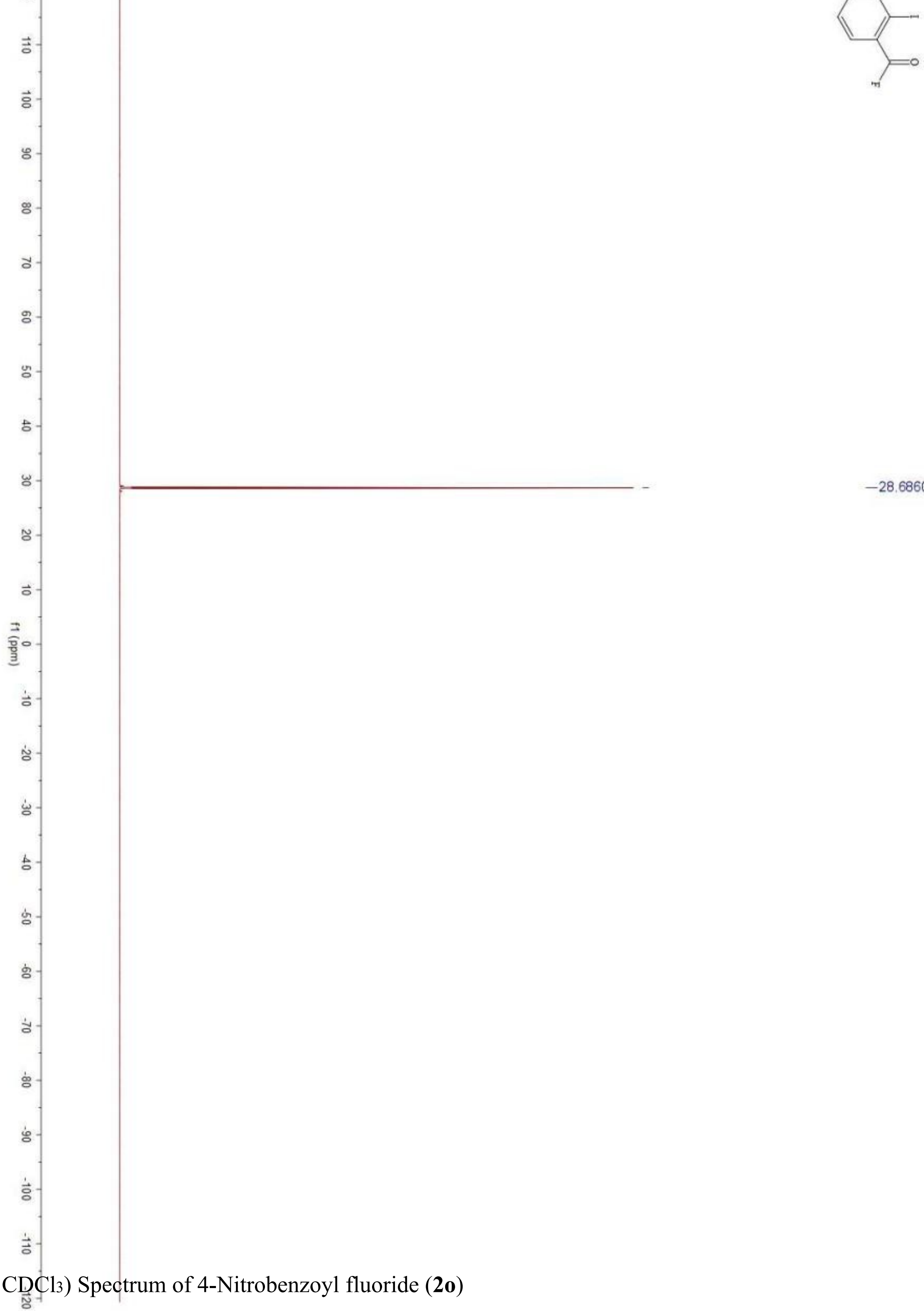
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 2-Iodobenzoyl fluoride (**2n**)



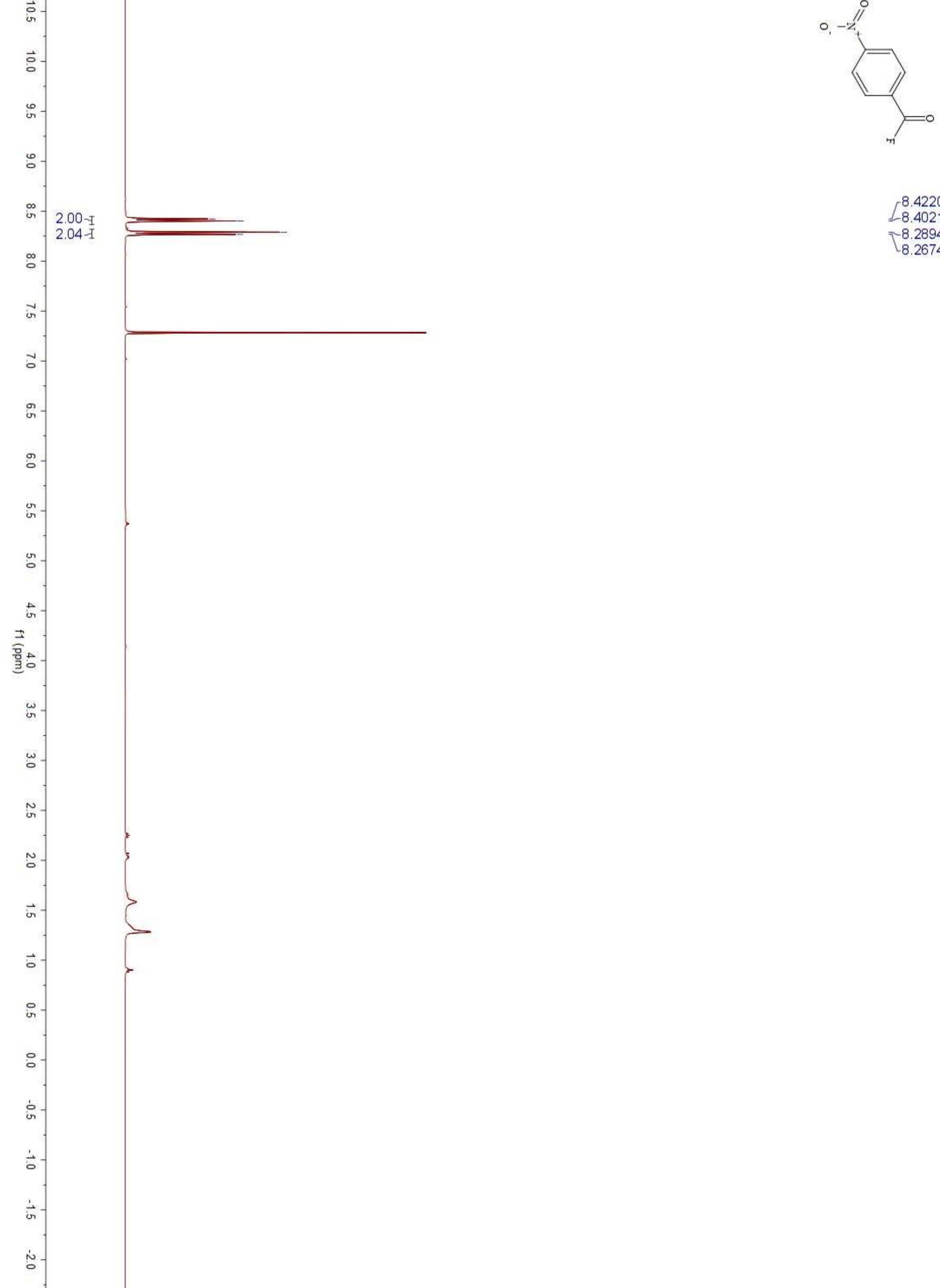
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 2-Iodobenzoyl fluoride (**2n**)



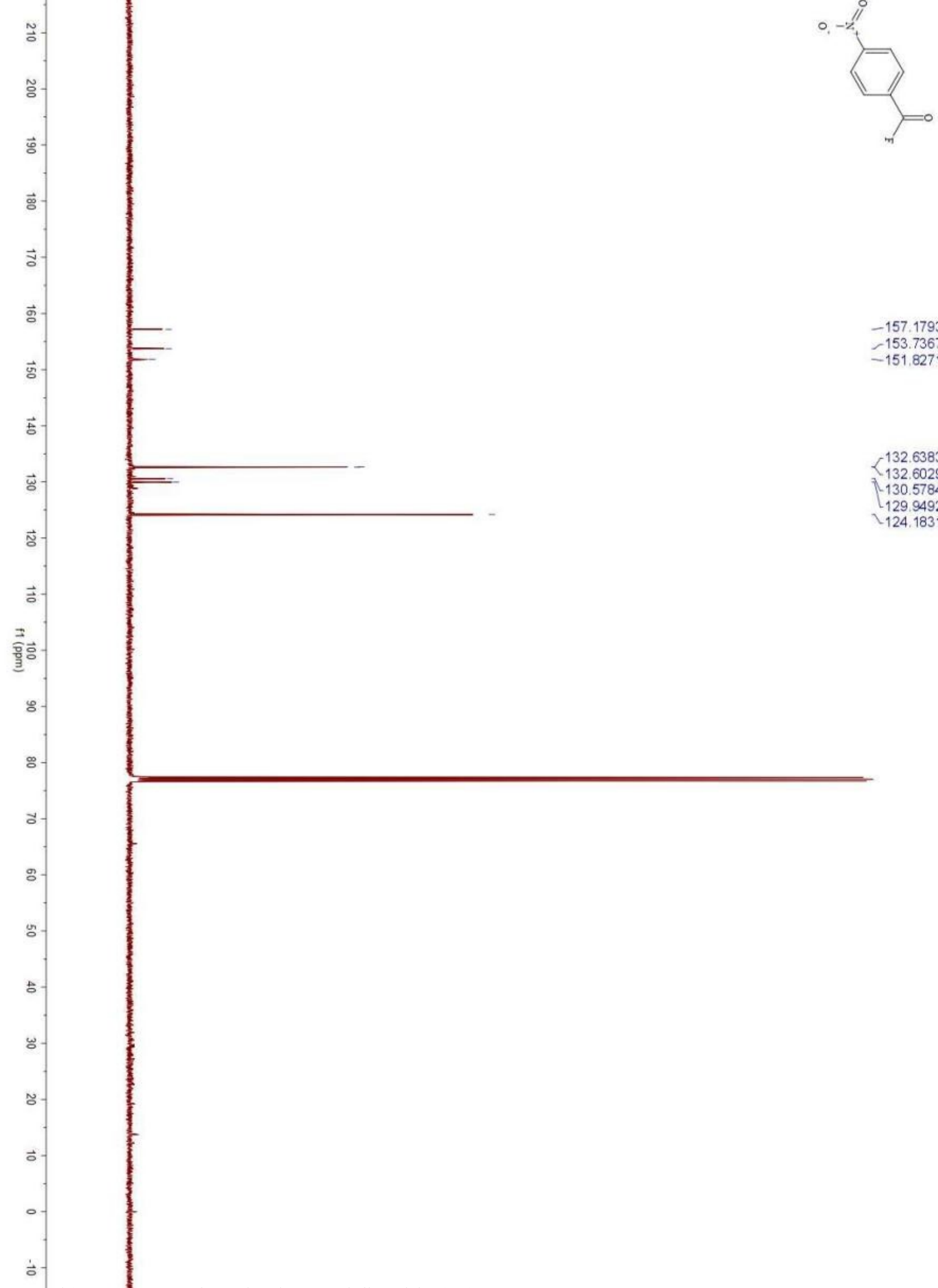
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 2-Iodobenzoyl fluoride (**2n**)



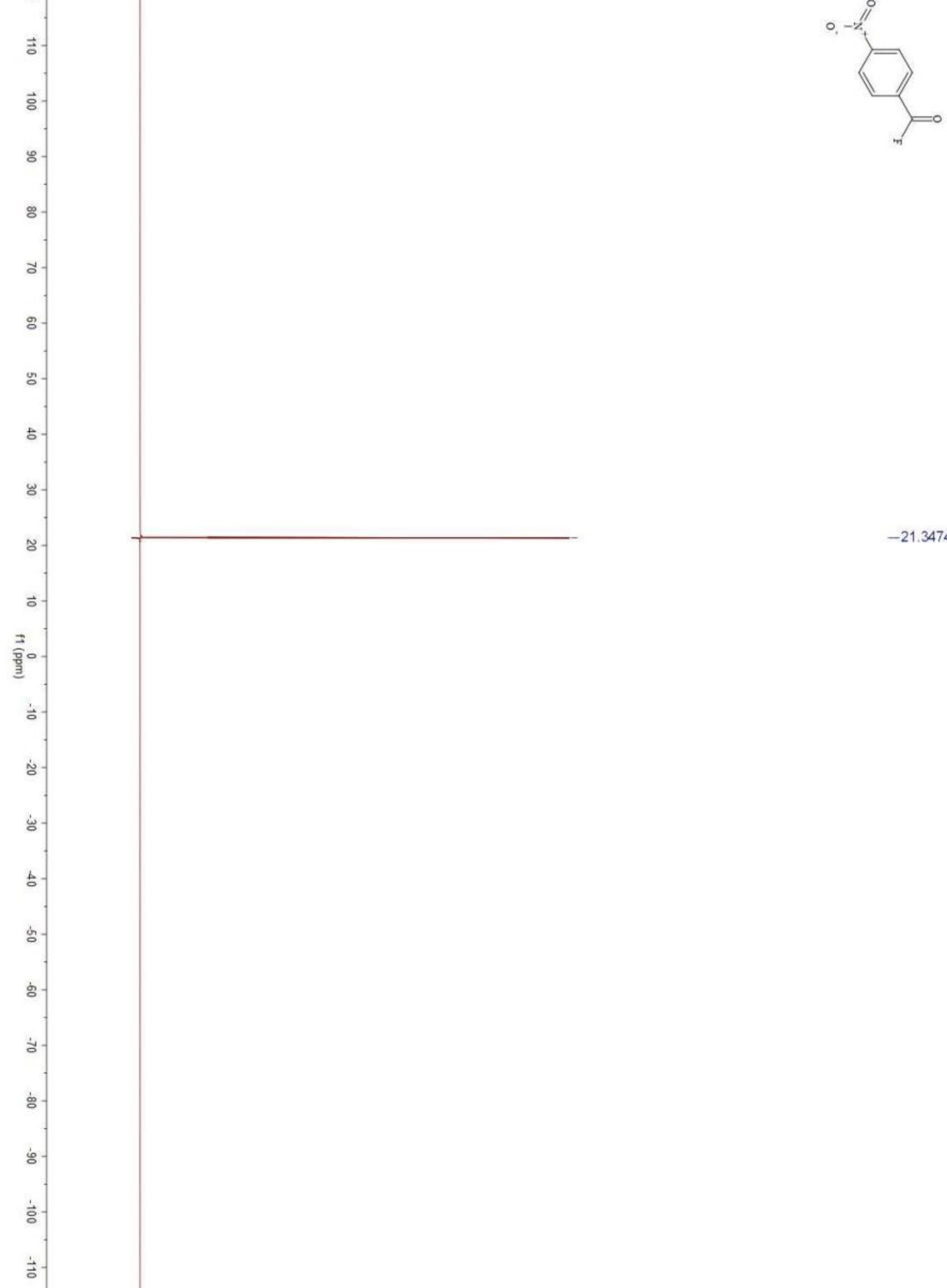
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of 4-Nitrobenzoyl fluoride (**2o**)



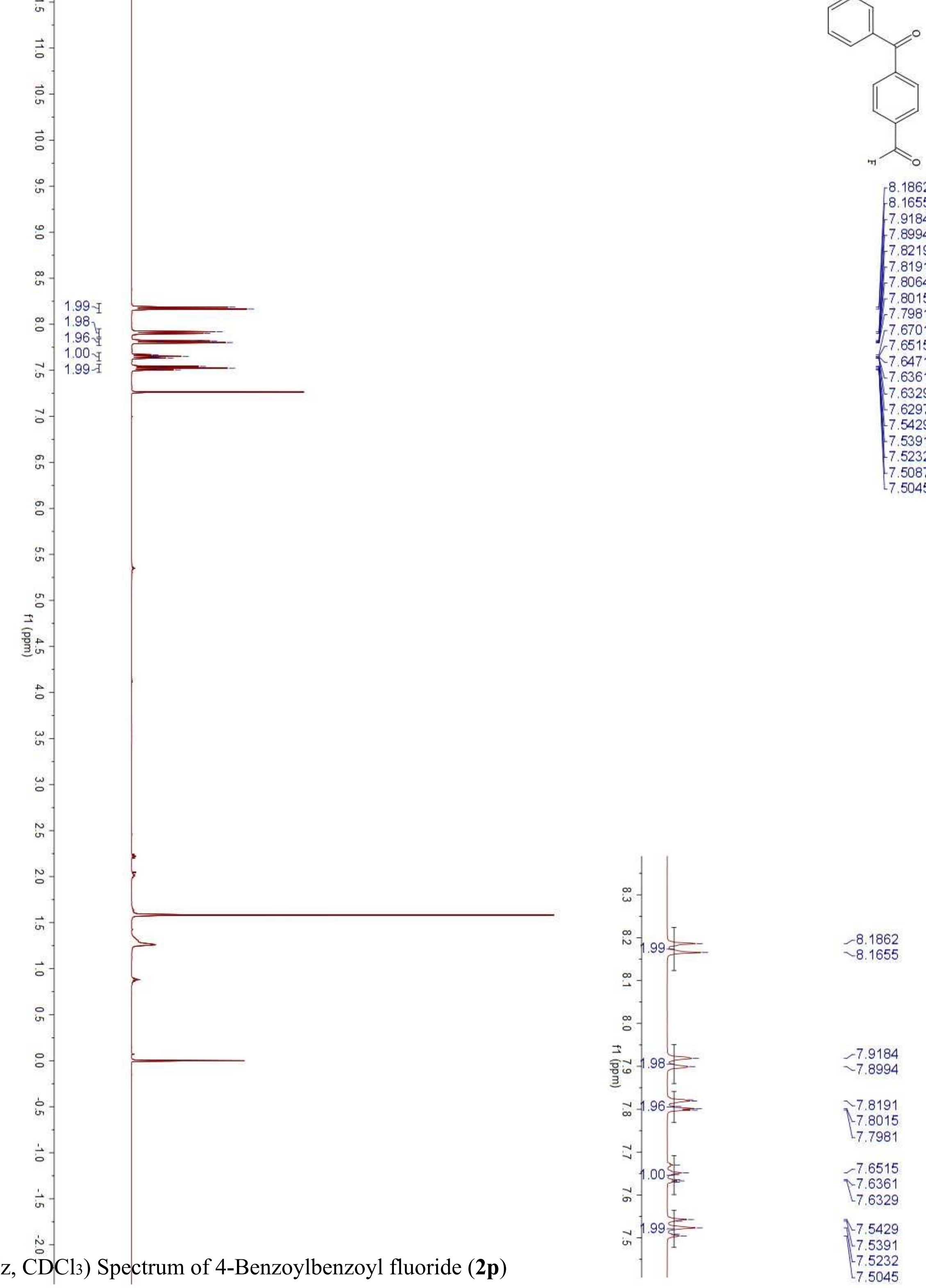
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of 4-Nitrobenzoyl fluoride (**2o**)



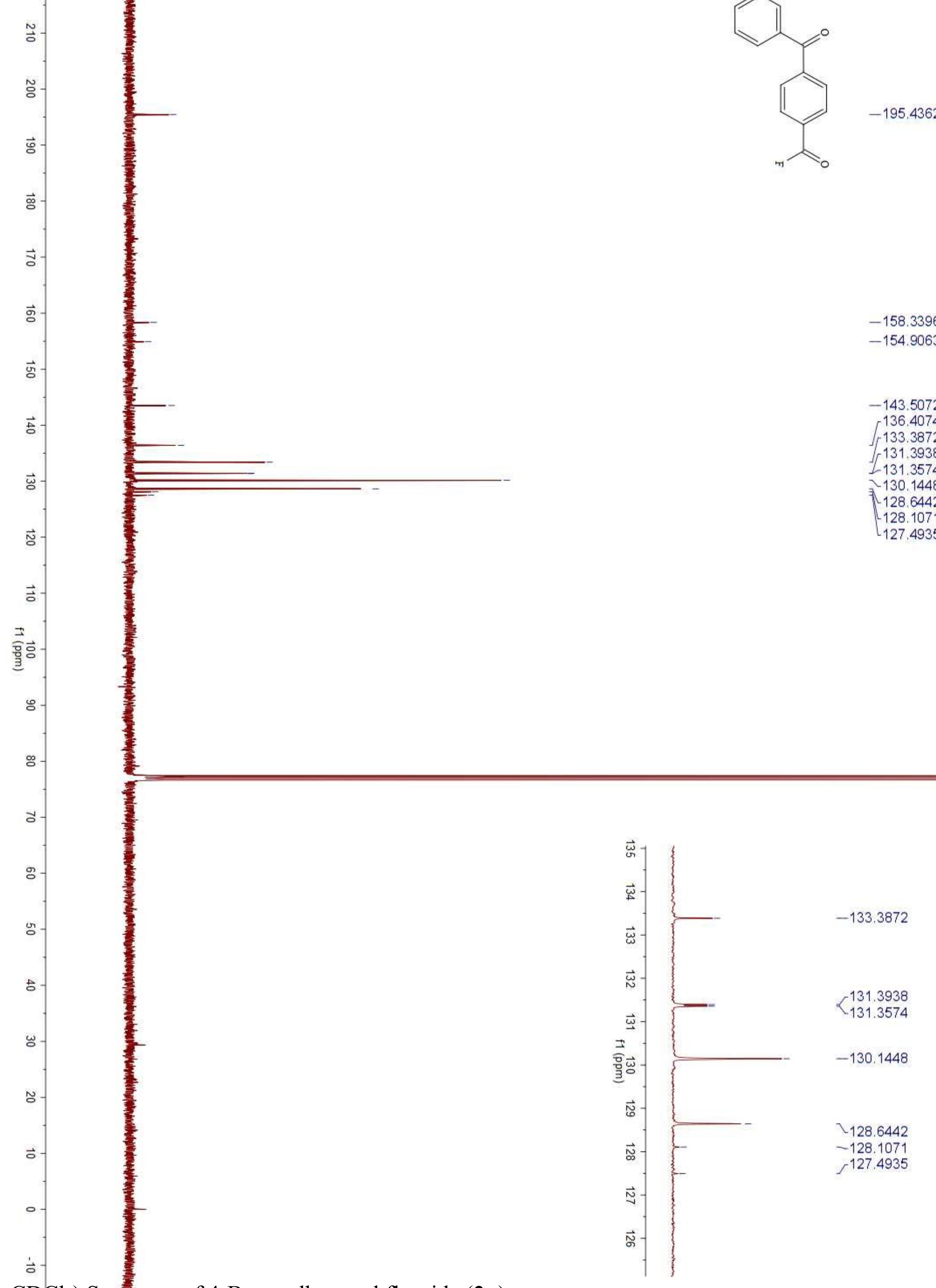
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of 4-Nitrobenzoyl fluoride (**2o**)



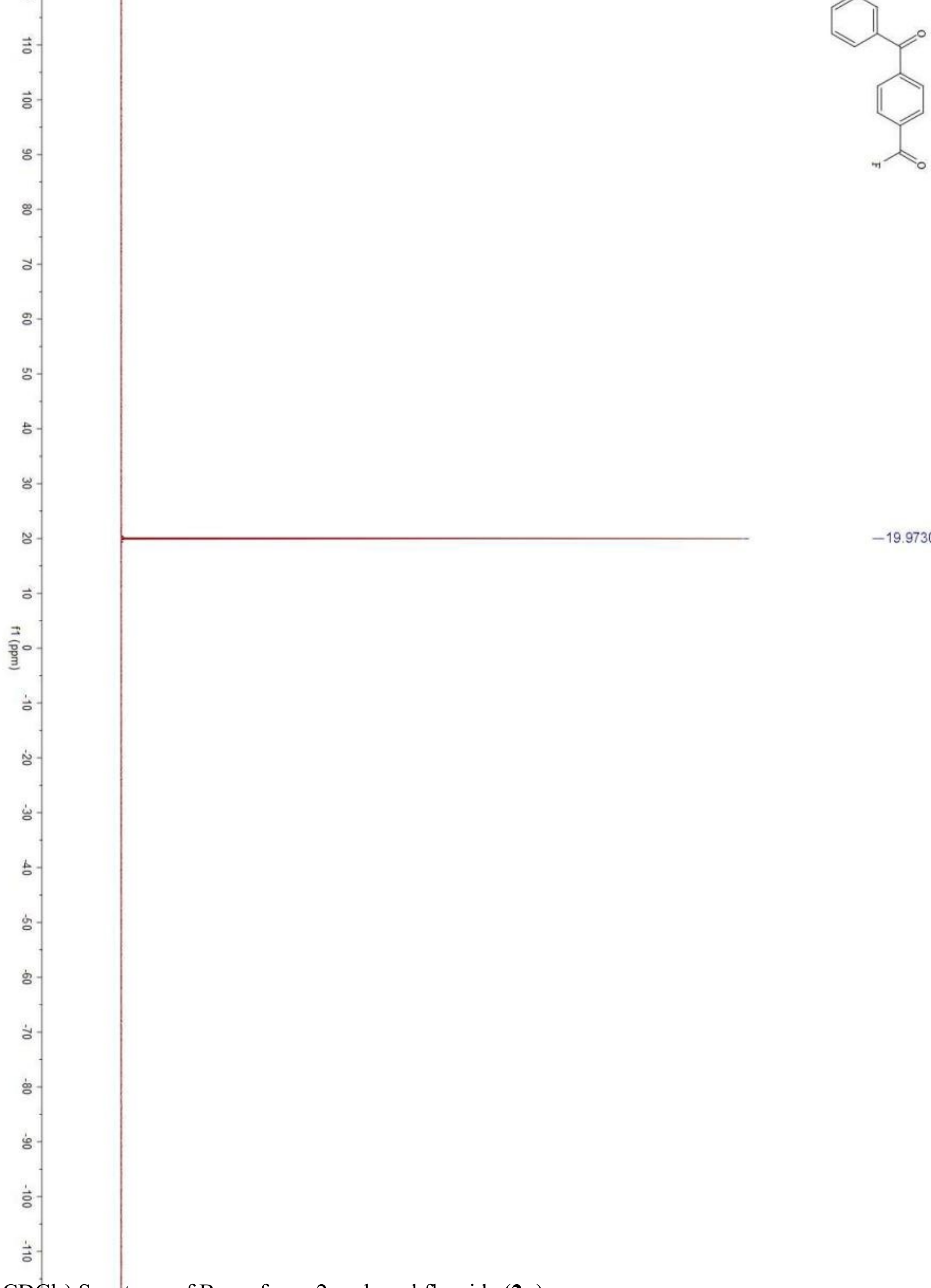
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 4-Benzoylbenzoyl fluoride (**2p**)



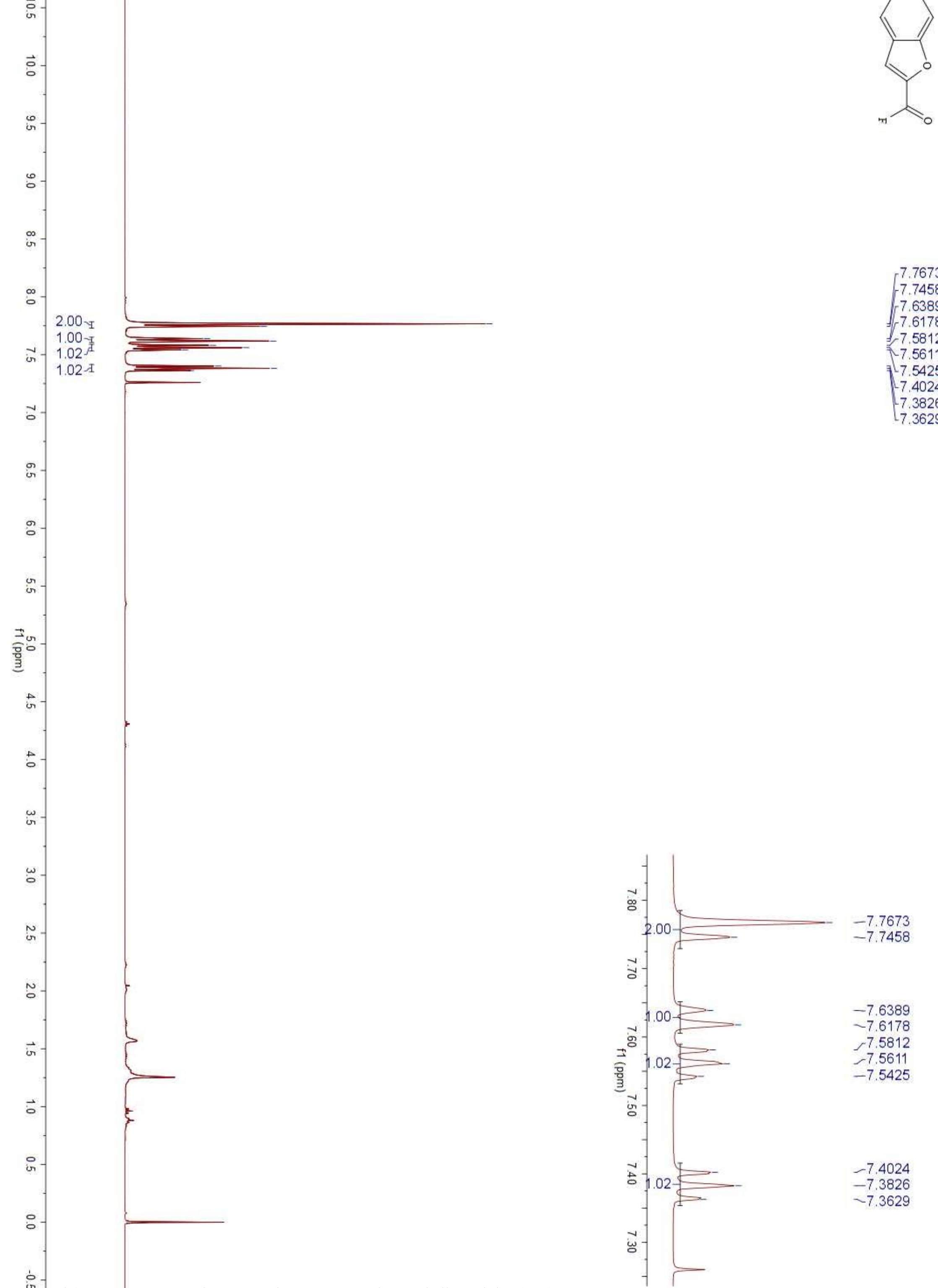
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 4-Benzoylbenzoyl fluoride (**2p**)



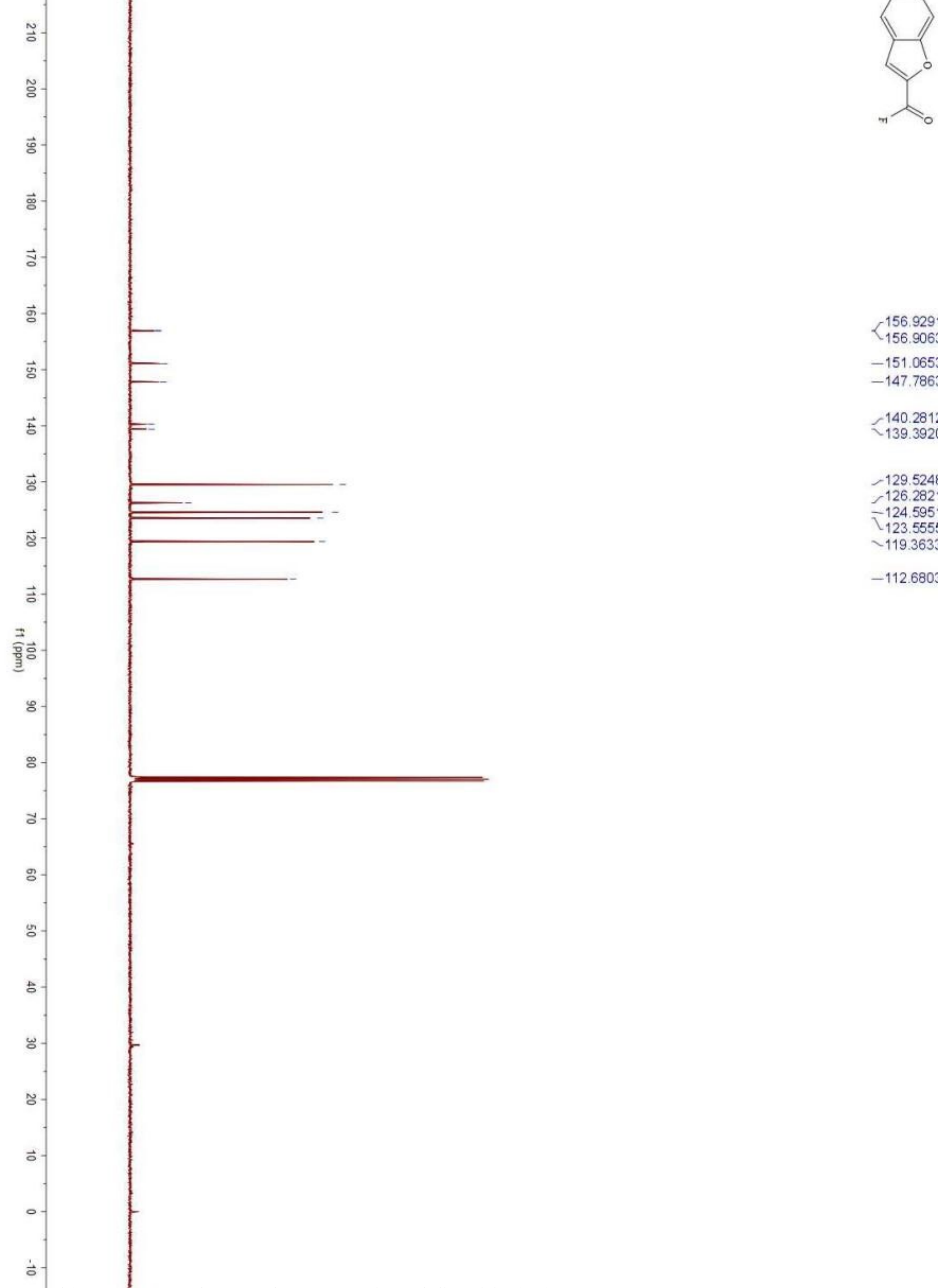
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 4-Benzoylbenzoyl fluoride (**2p**)



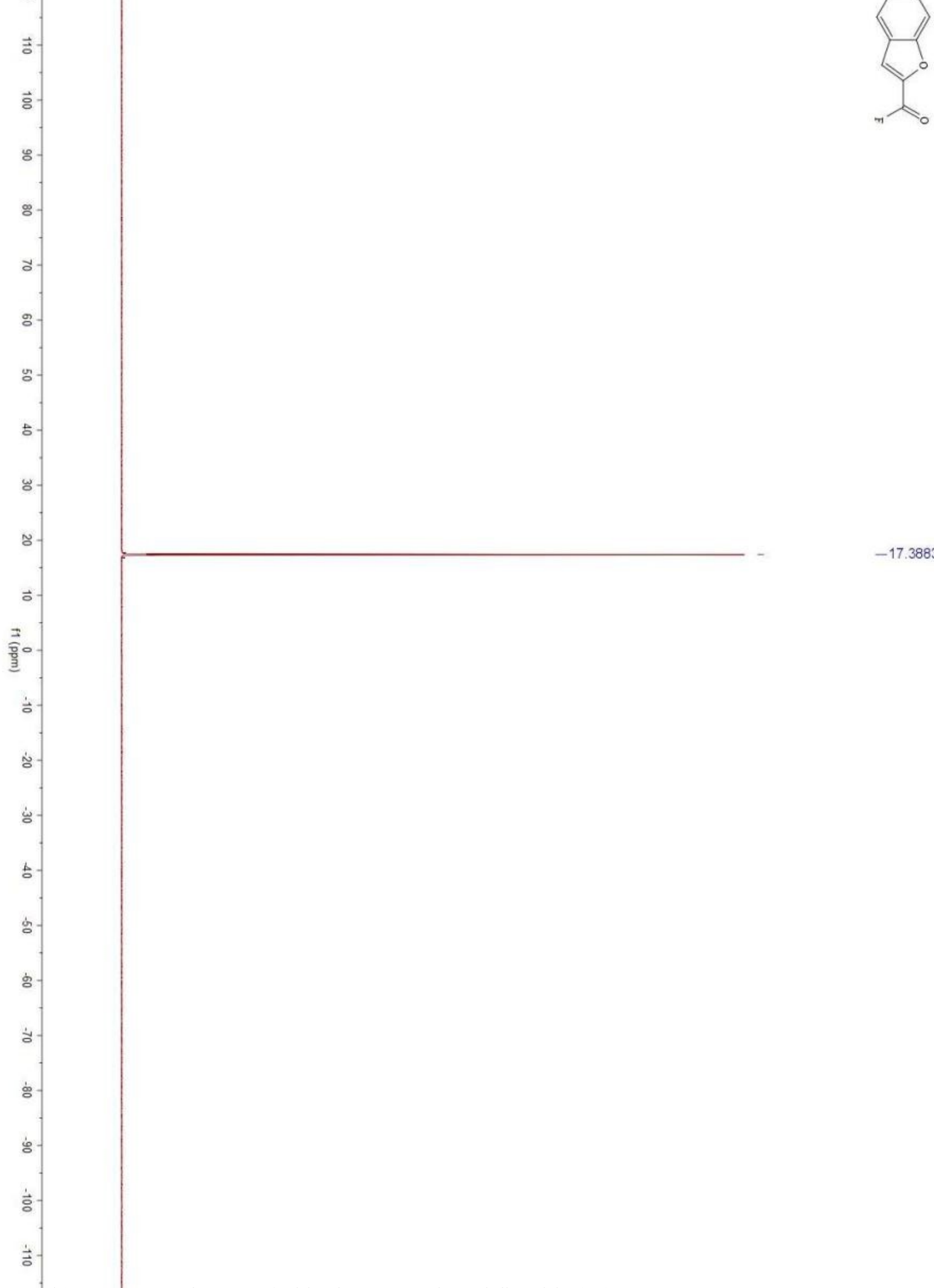
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of Benzofuran-2-carbonyl fluoride (**2q**)



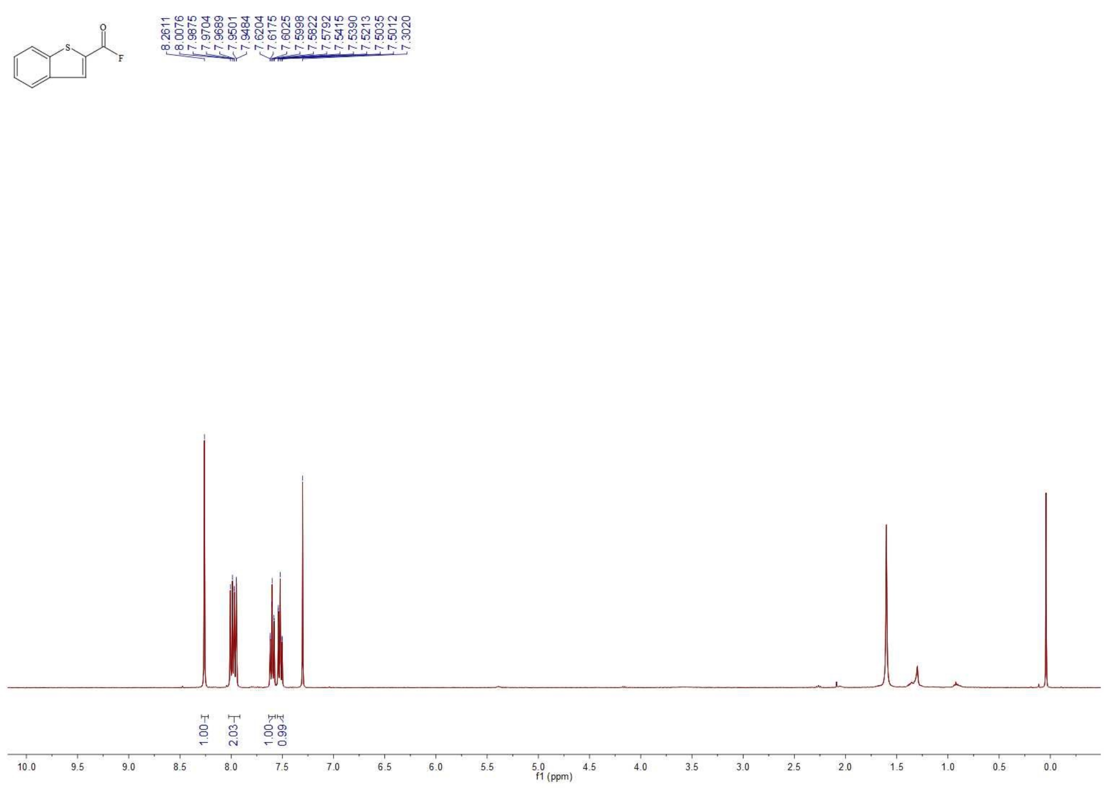
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of Benzofuran-2-carbonyl fluoride (**2q**)



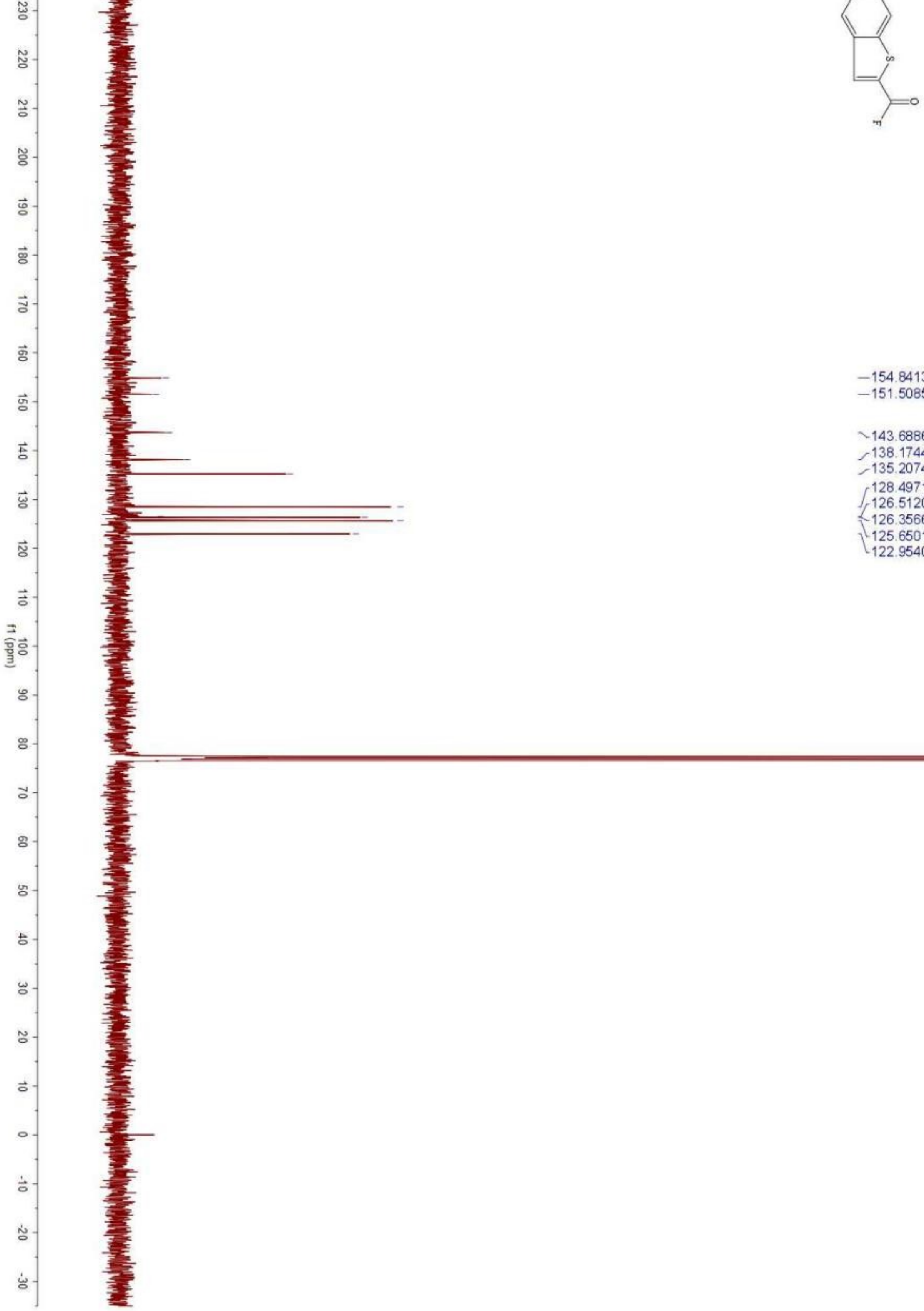
^{19}F NMR (376 MHz, $CDCl_3$) Spectrum of Benzofuran-2-carbonyl fluoride (**2q**)



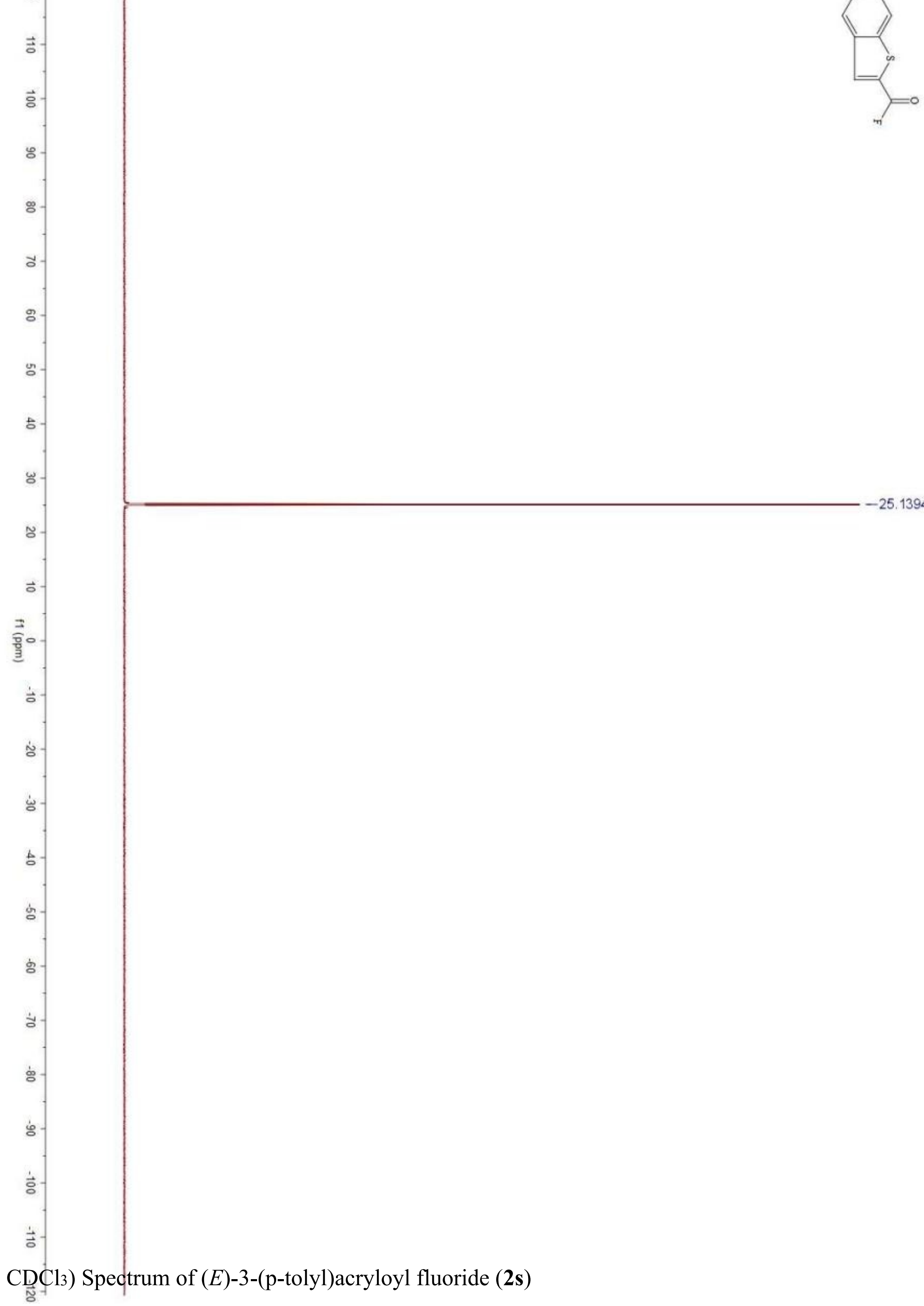
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of Benzo[*b*]thiophene-2-carbonyl fluoride (**2r**)



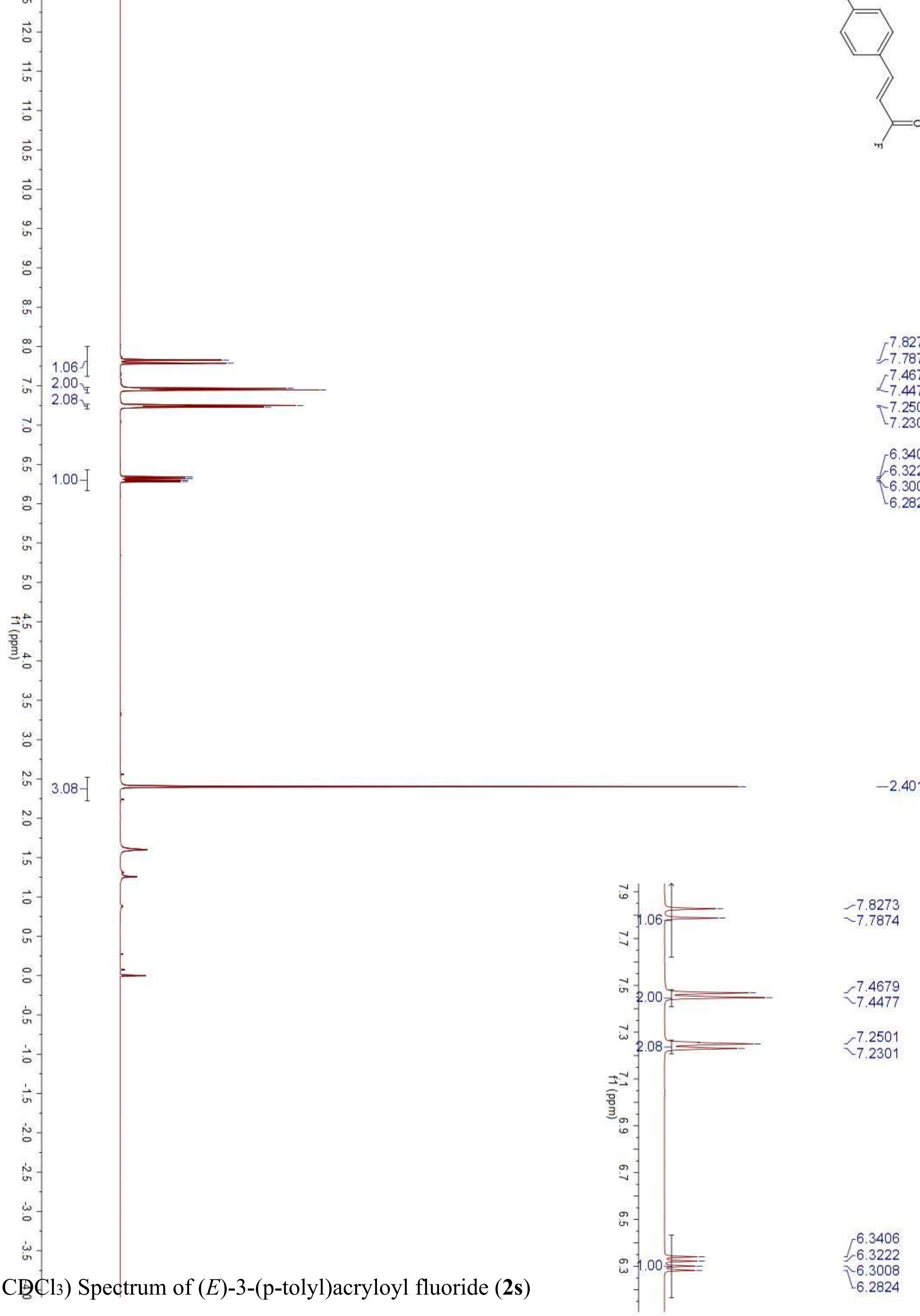
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of Benzo[*b*]thiophene-2-carbonyl fluoride (**2r**)



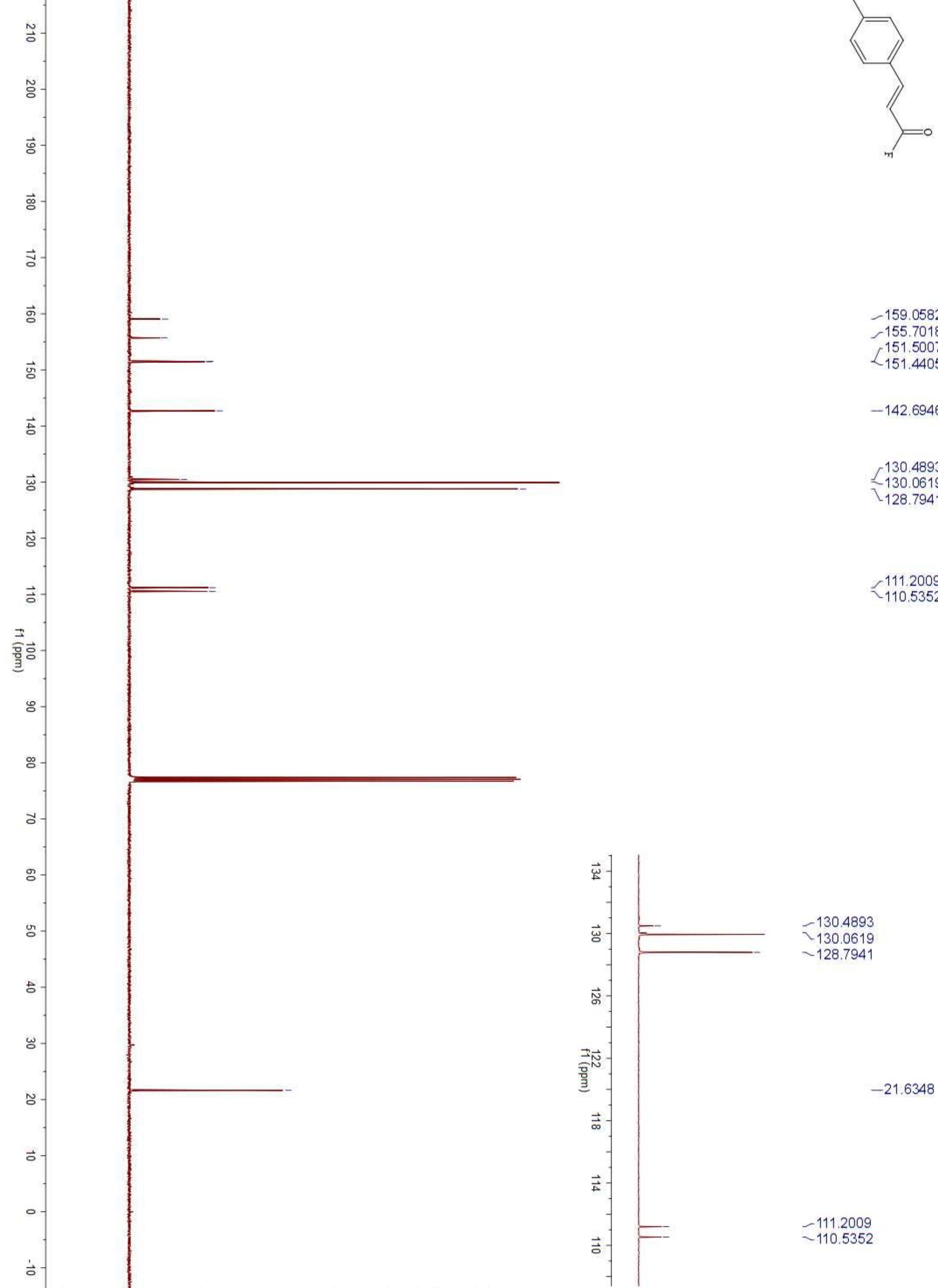
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of Benzo[*b*]thiophene-2-carbonyl fluoride (**2r**)



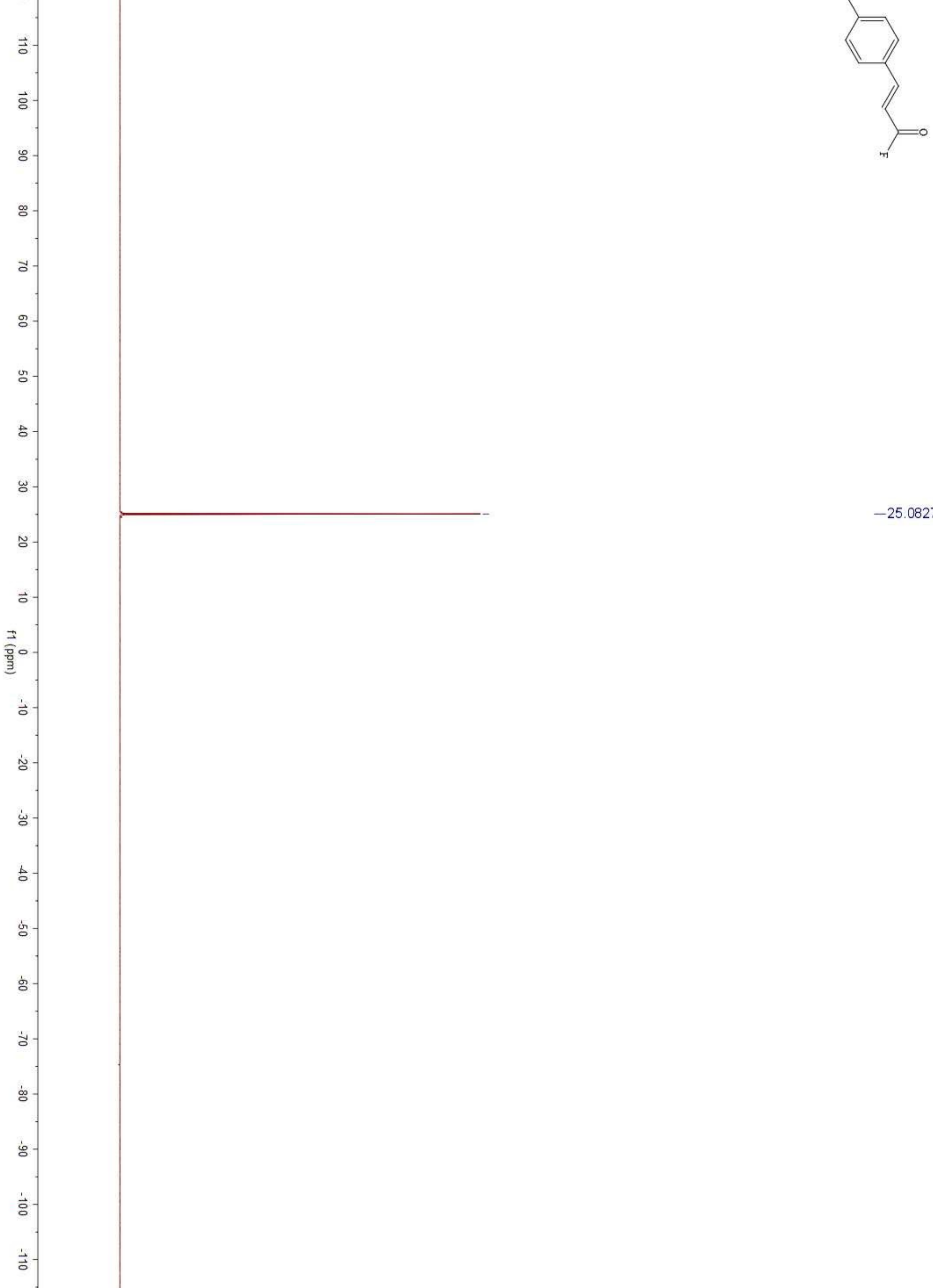
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of (*E*)-3-(p-tolyl)acryloyl fluoride (**2s**)



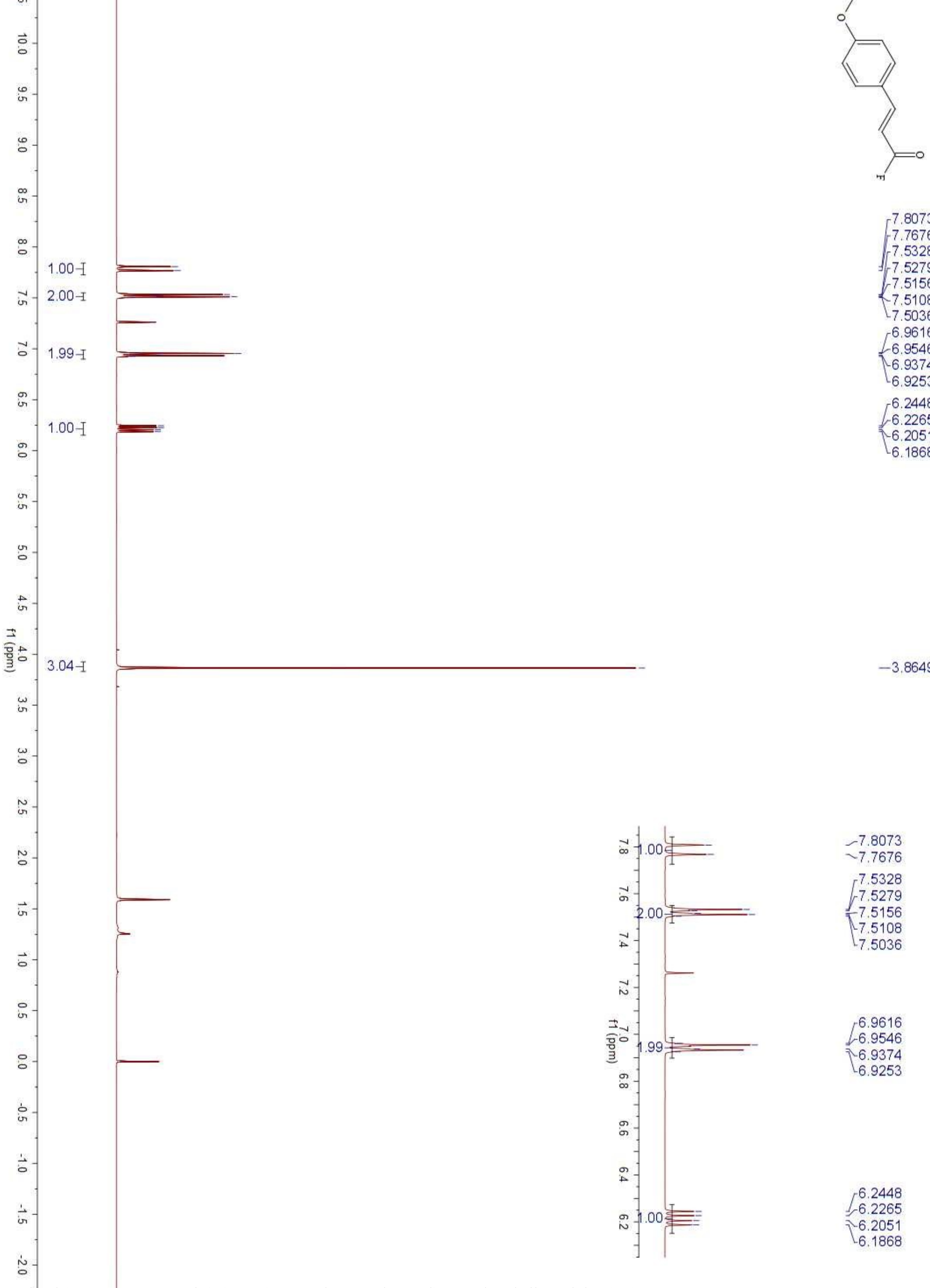
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of (*E*)-3-(p-tolyl)acryloyl fluoride (**2s**)



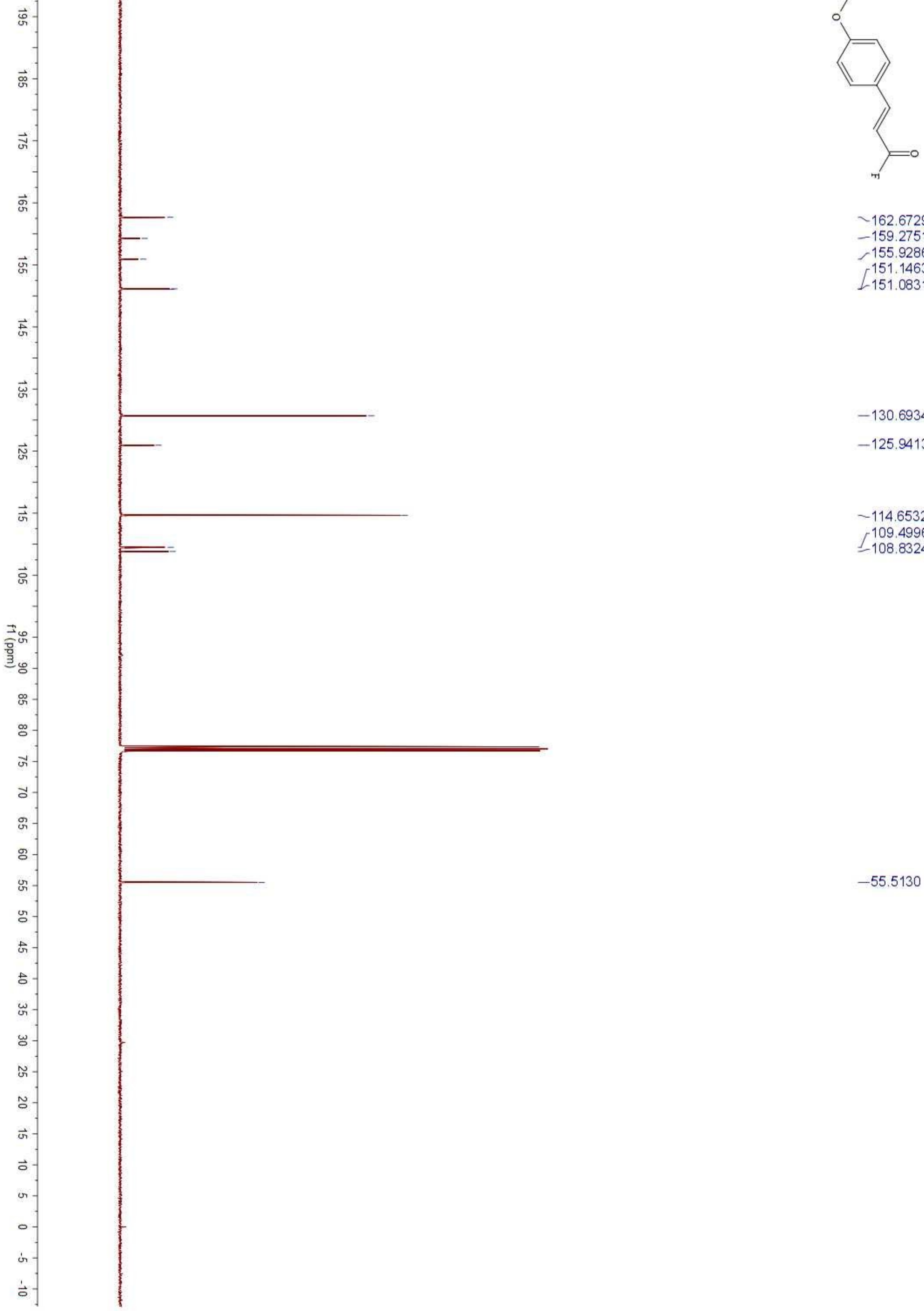
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of (*E*)-3-(p-tolyl)acryloyl fluoride (**2s**)



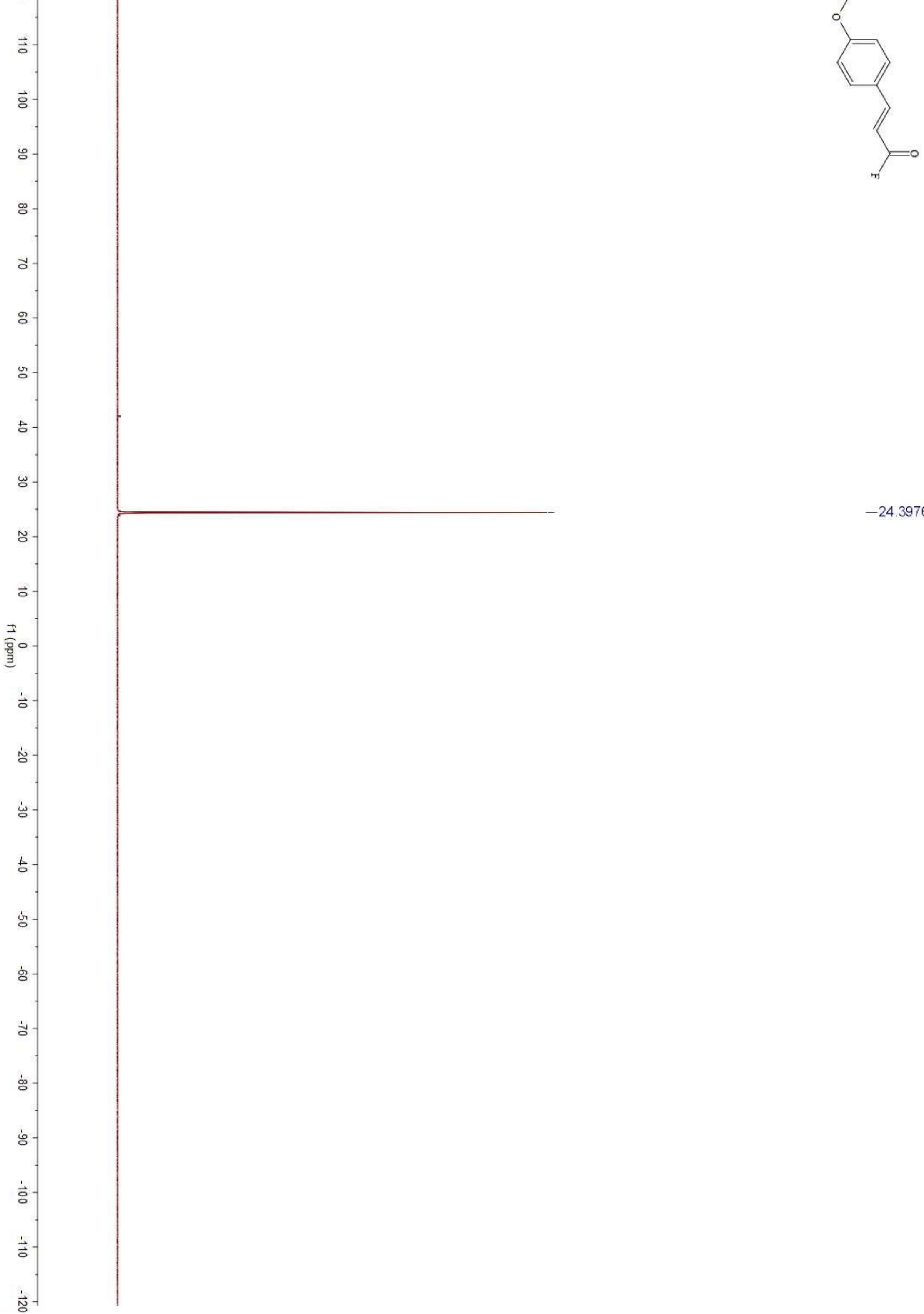
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of (*E*)-3-(4-methoxyphenyl)acryloyl fluoride (**2t**)



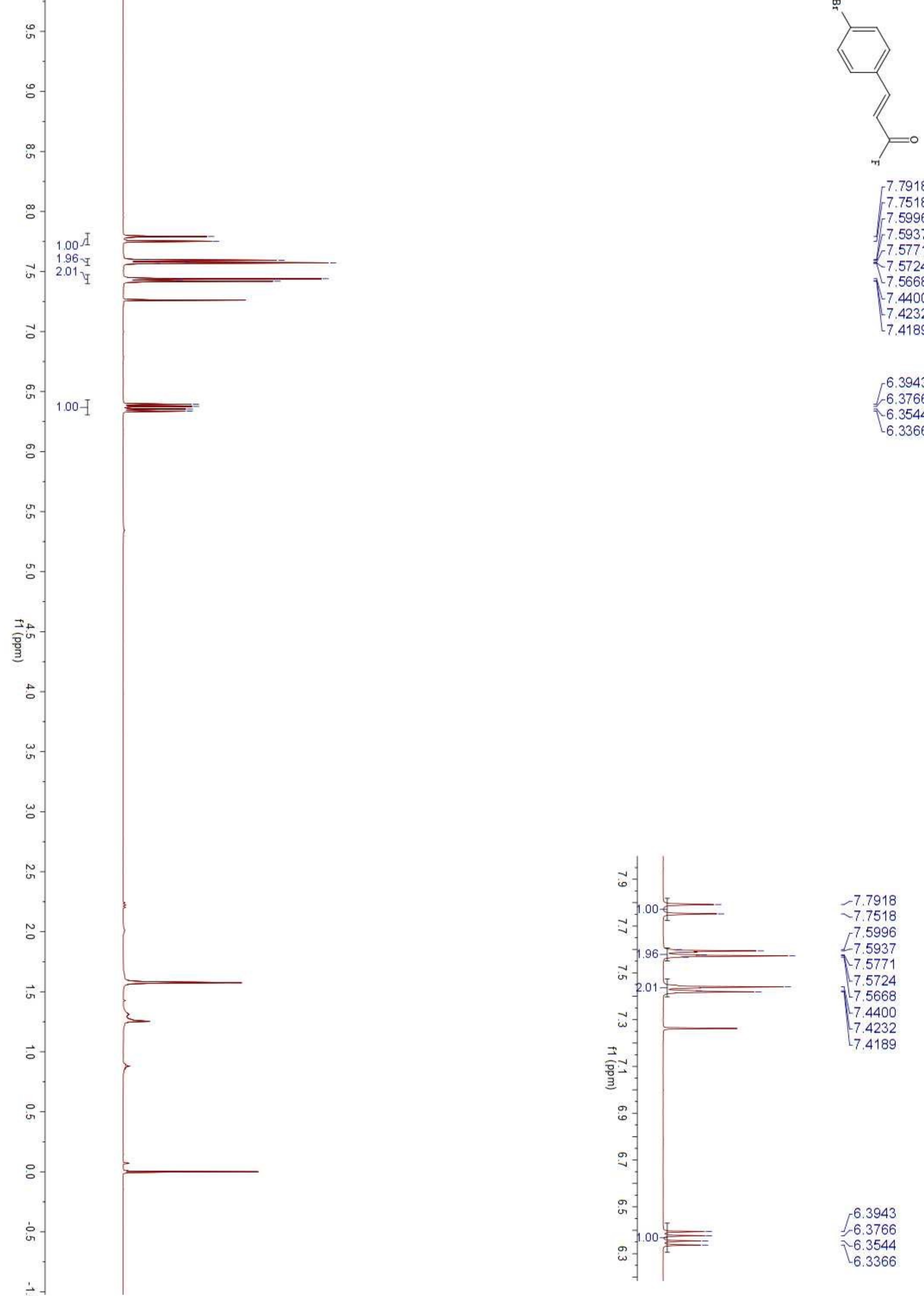
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of (*E*)-3-(4-methoxyphenyl)acryloyl fluoride (**2t**)



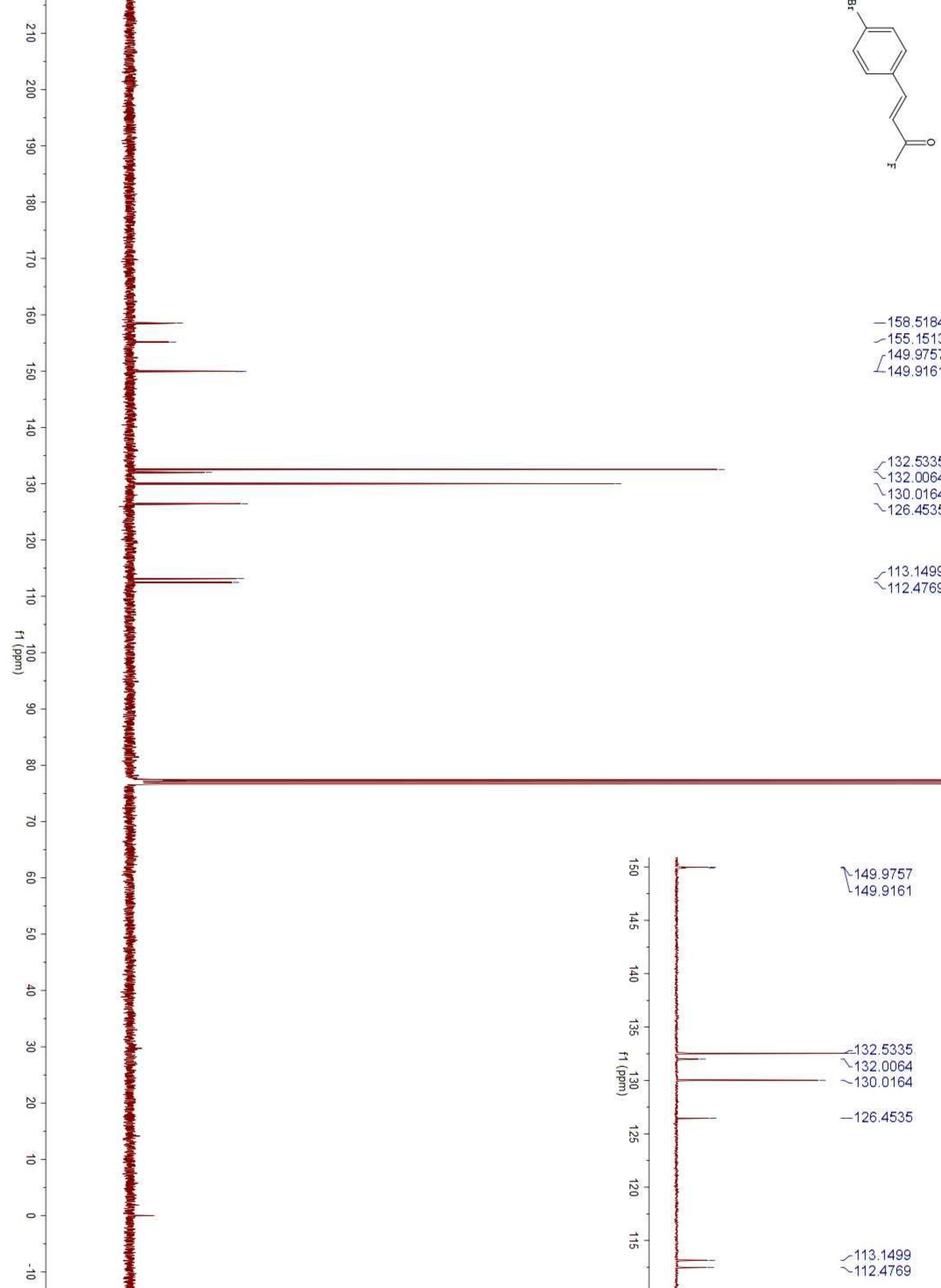
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of (*E*)-3-(4-methoxyphenyl)acryloyl fluoride (**2t**)



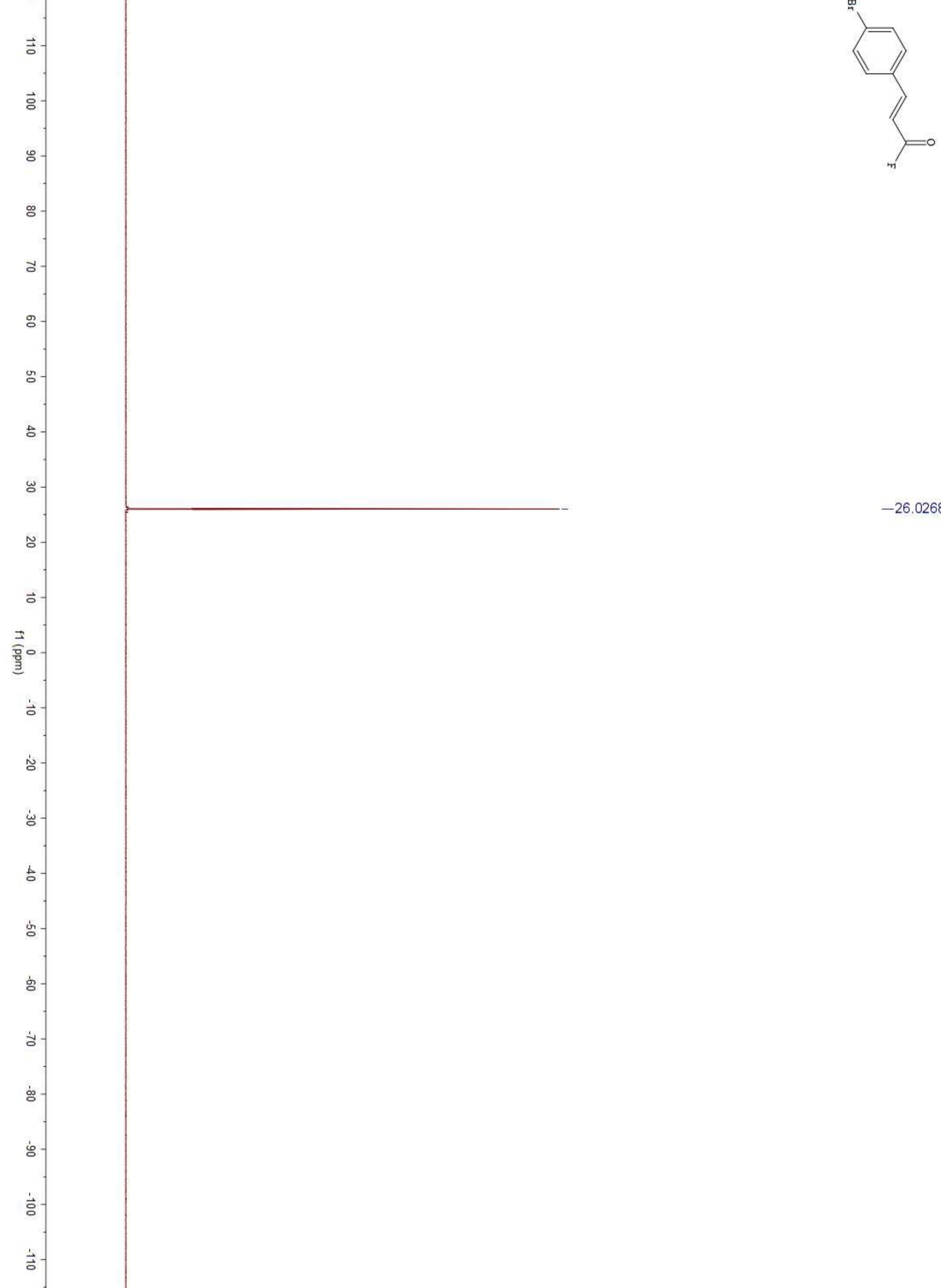
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of (*E*)-3-(4-bromophenyl)acryloyl fluoride (**2u**)



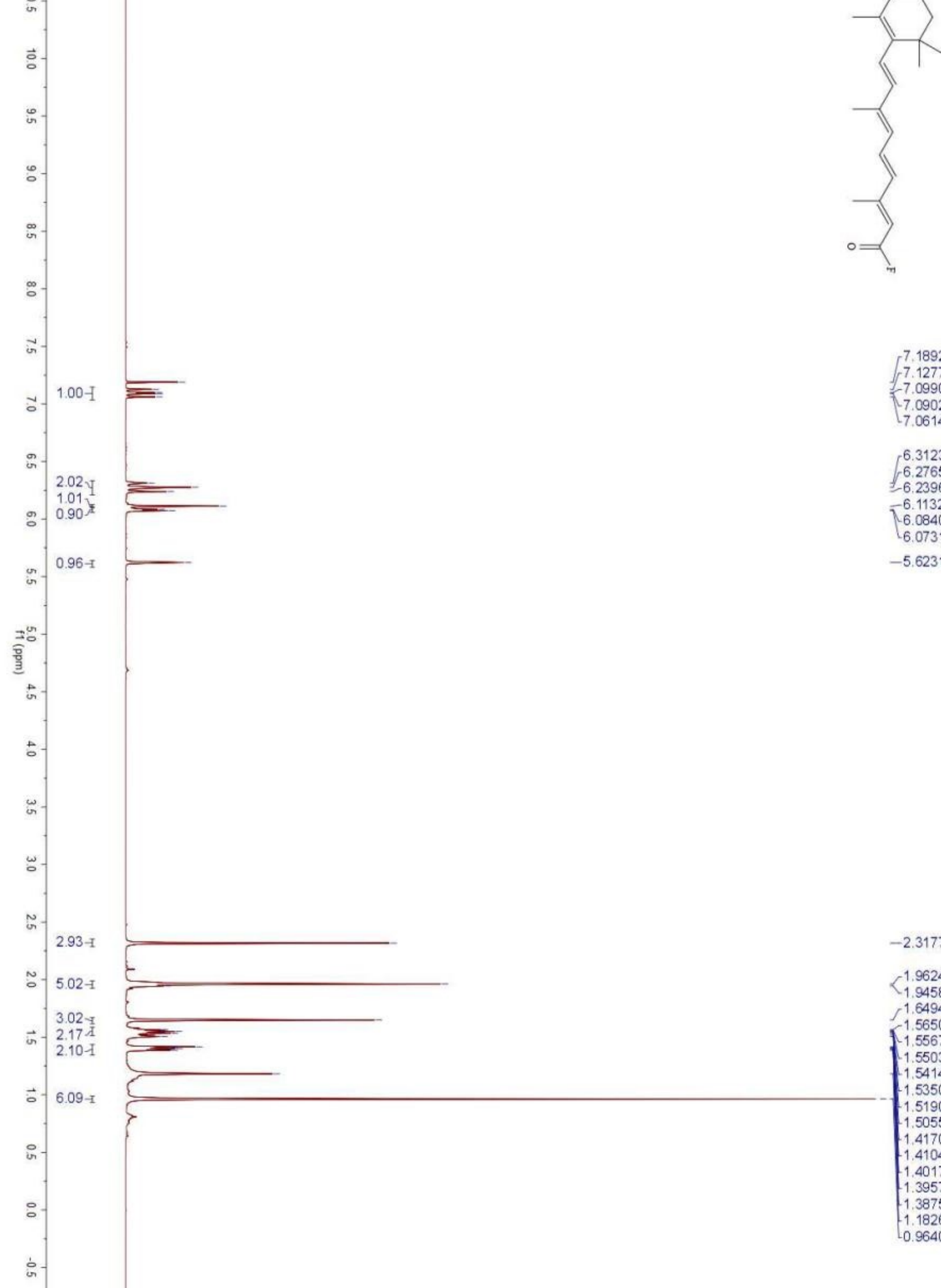
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of (*E*)-3-(4-bromophenyl)acryloyl fluoride (**2u**)



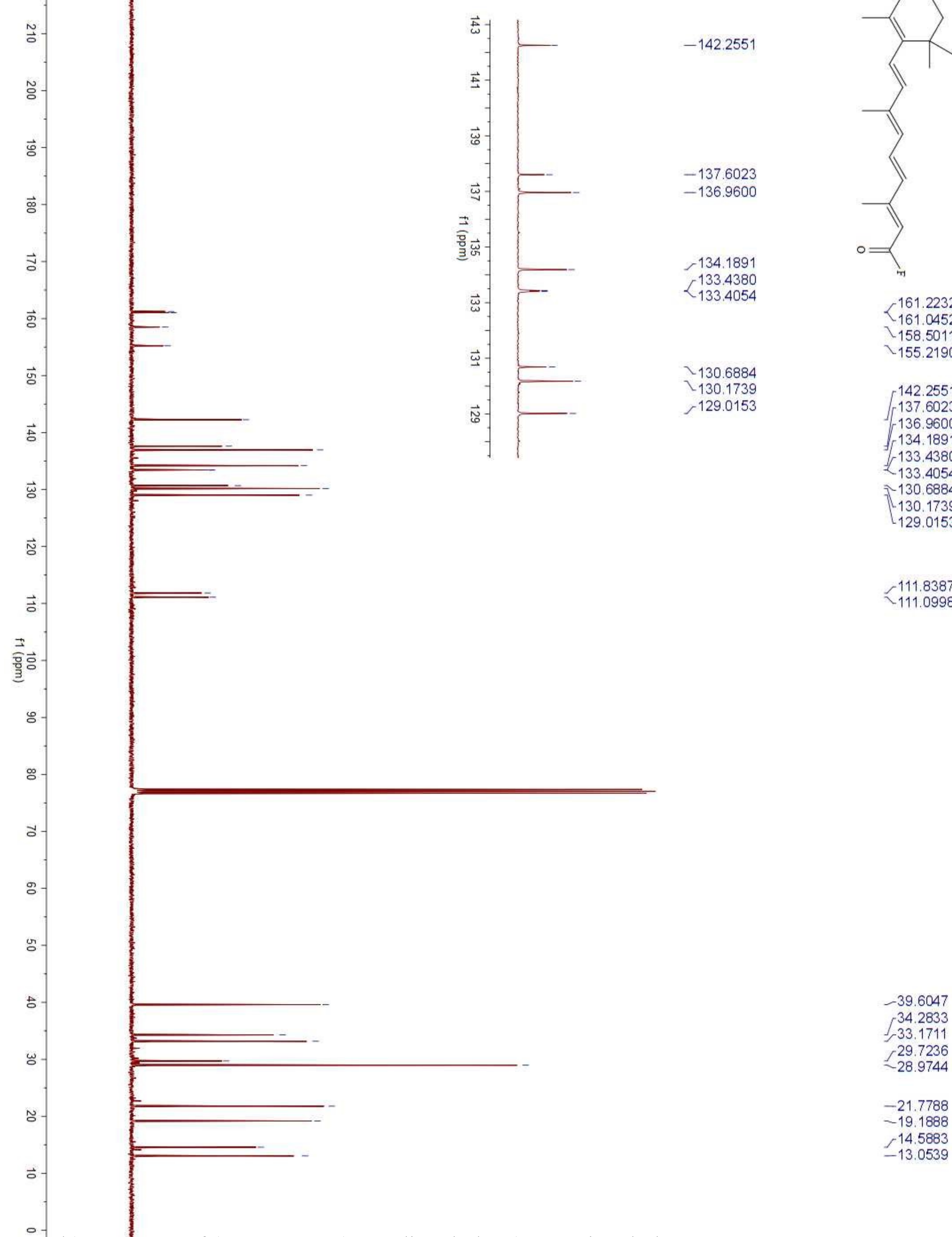
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of (*E*)-3-(4-bromophenyl)acryloyl fluoride (**2u**)



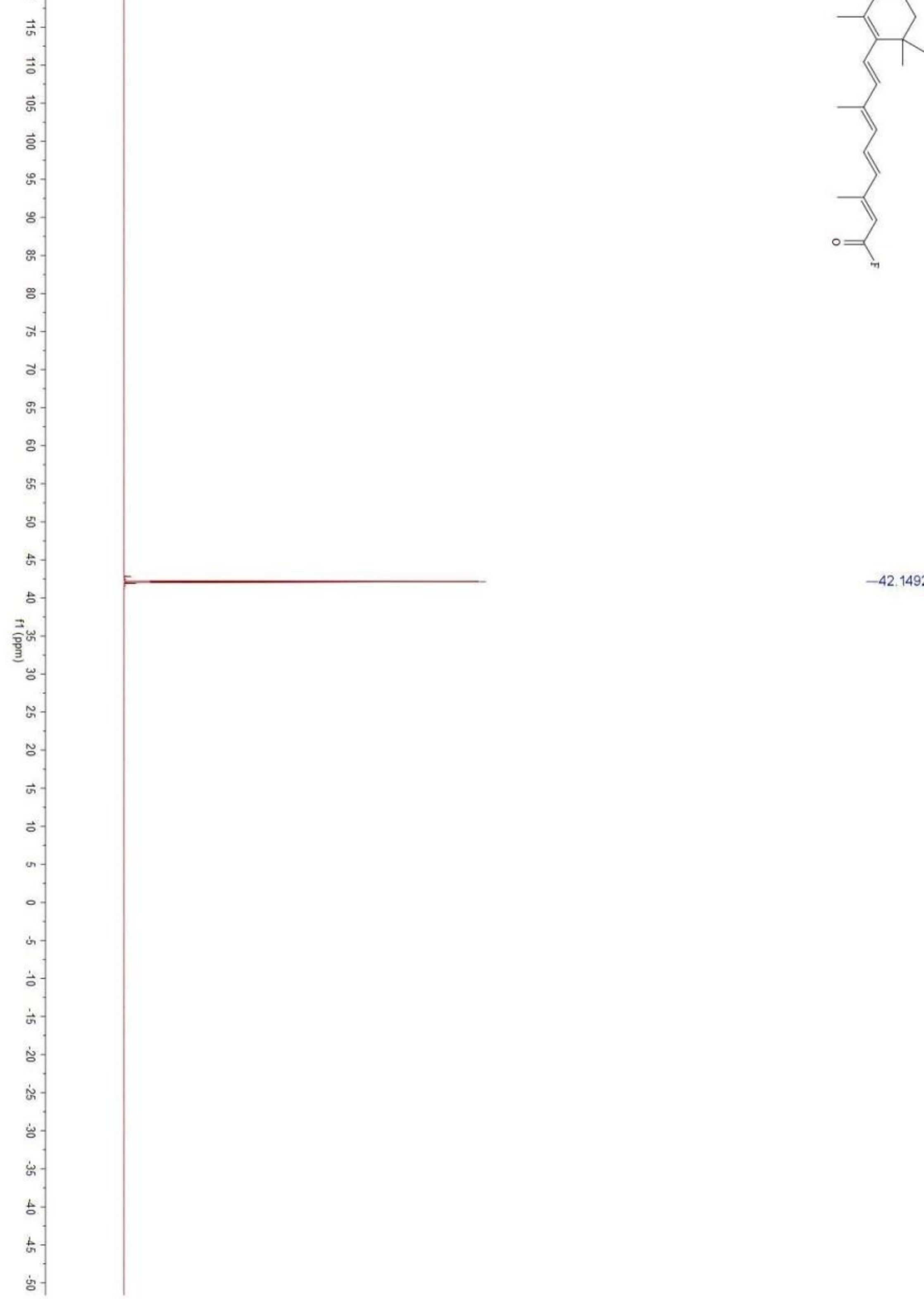
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of (2E,4E,6E,8E)-3,7-dimethyl-9-(2,6,6-trimethyl cyclohex-1-en-1-yl)nona-2,4,6,8-tetraenoyl fluoride (**2v**)



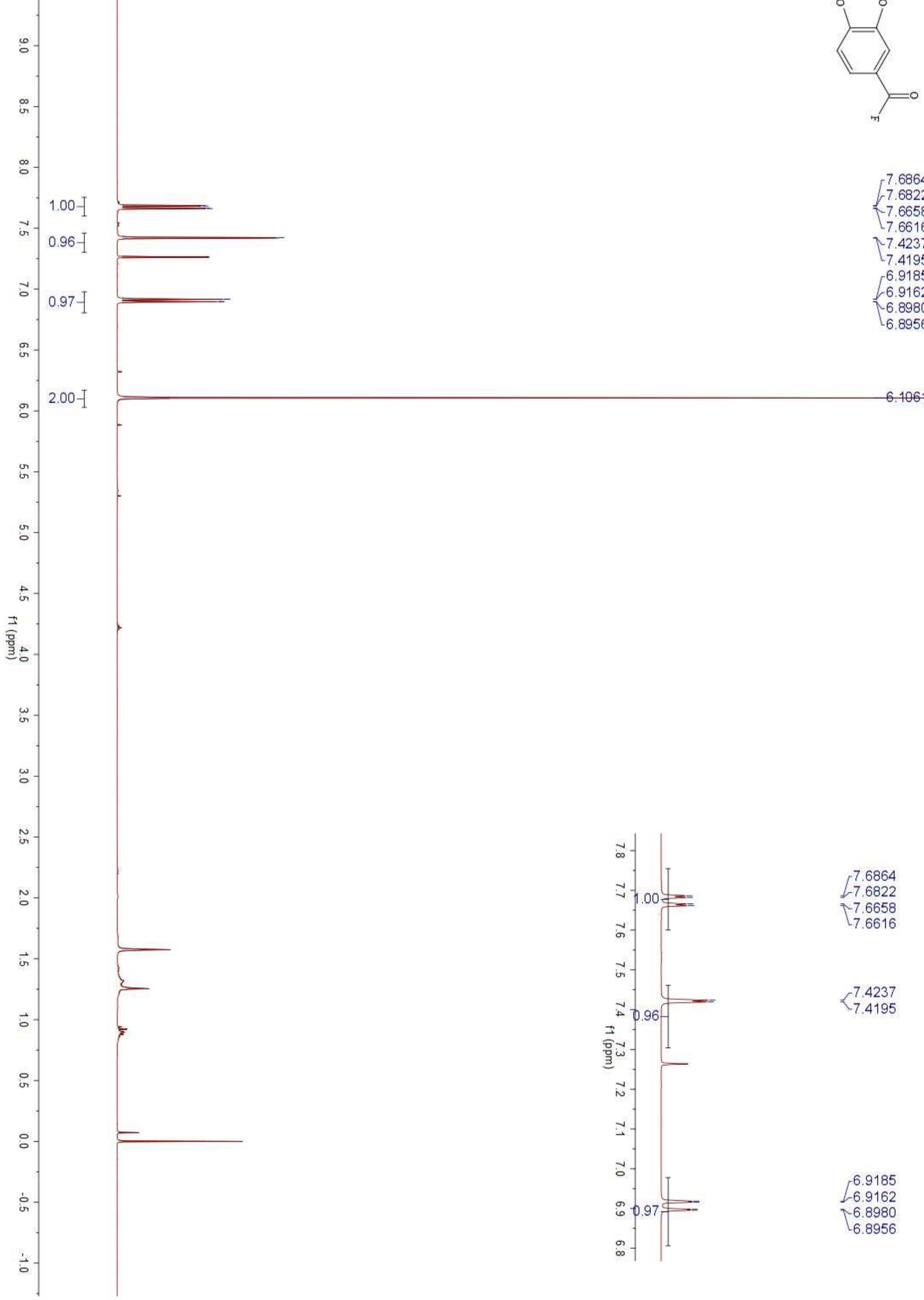
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of (2E,4E,6E,8E)-3,7-dimethyl-9-(2,6,6-trimethyl cyclohex-1-en-1-yl)nona-2,4,6,8-tetraenoyl fluoride (**2v**)



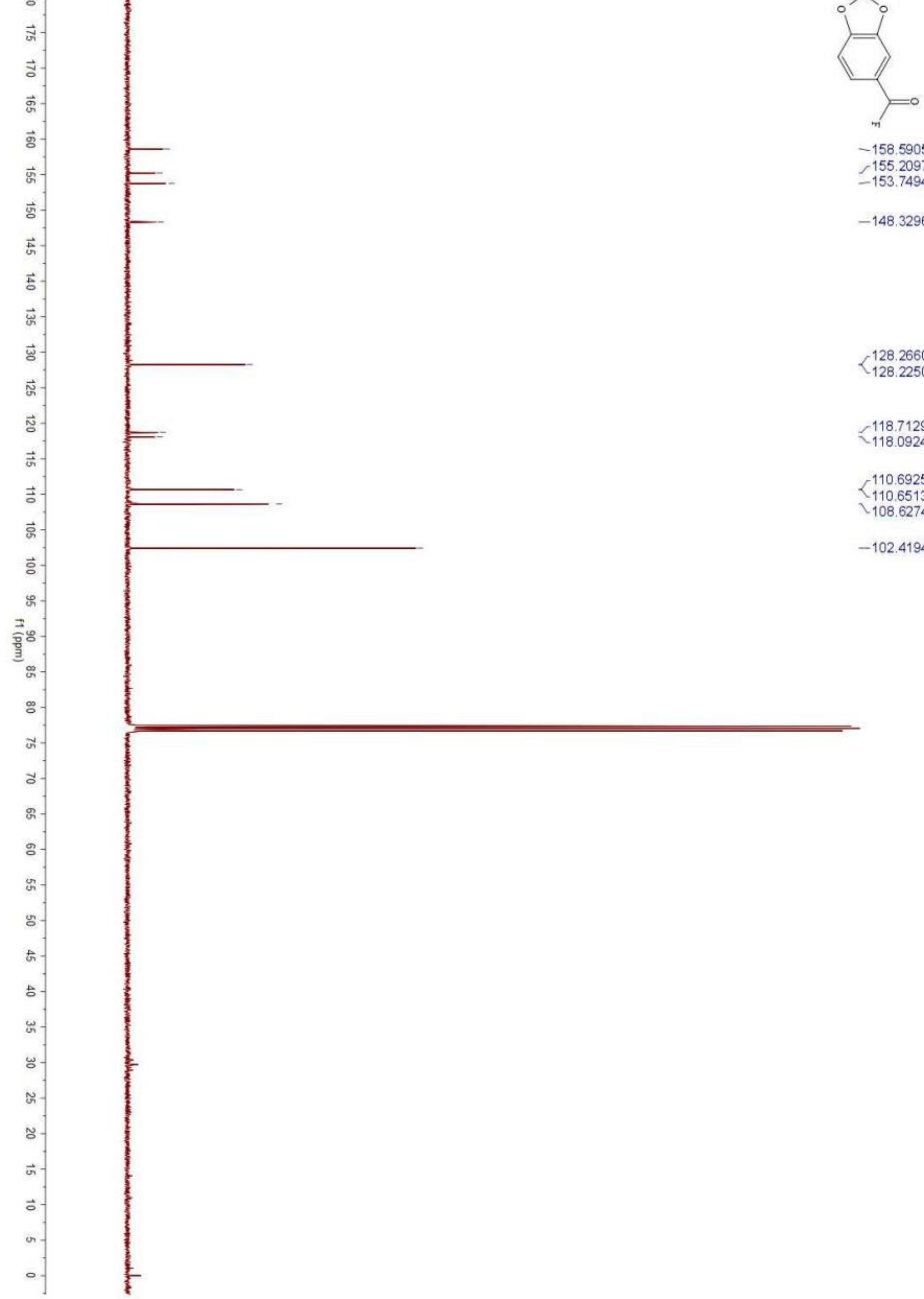
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of (2E,4E,6E,8E)-3,7-dimethyl-9-(2,6,6-trimethyl cyclohex-1-en-1-yl)nona-2,4,6,8-tetraenoyl fluoride (**2v**)



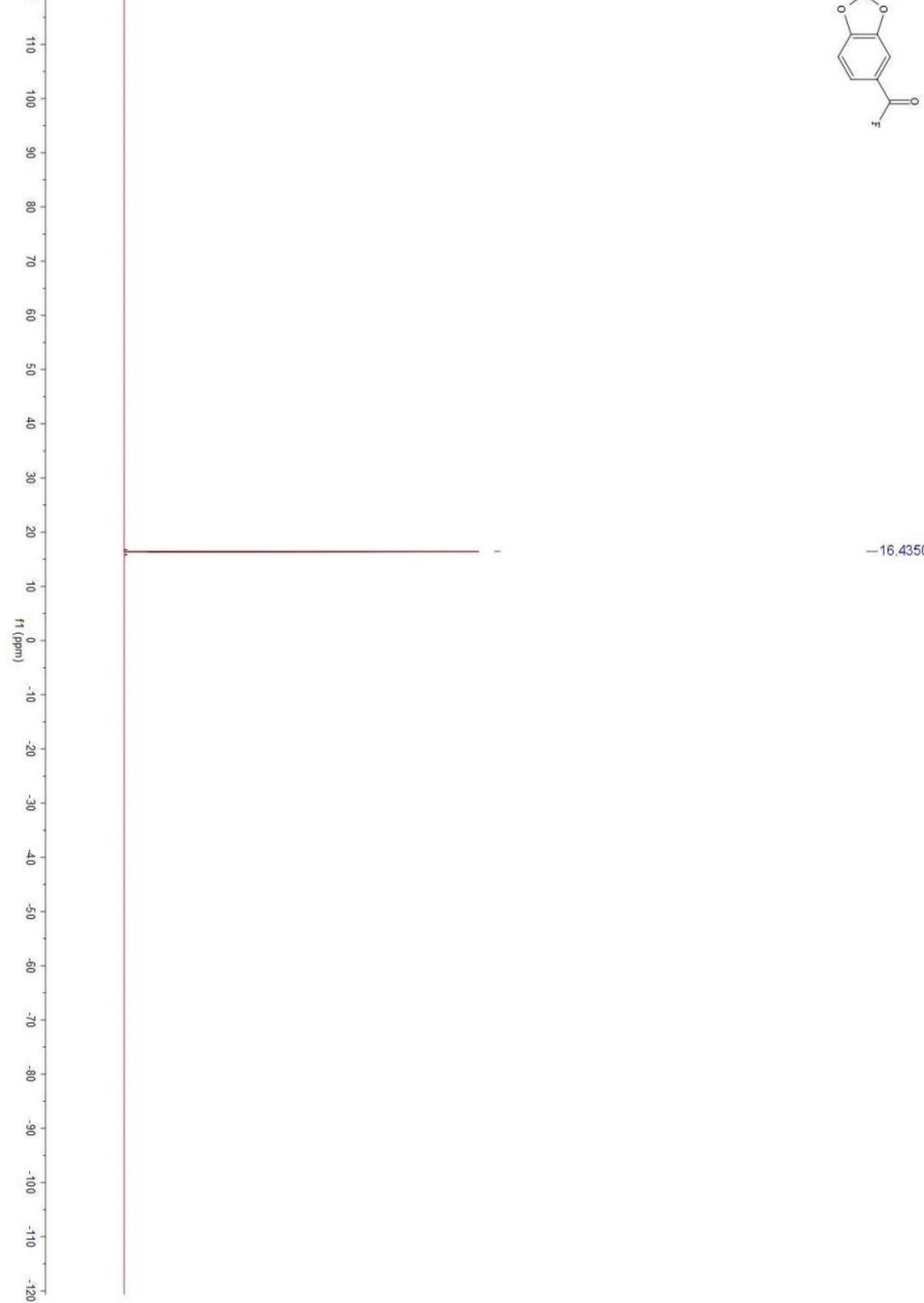
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of Benzo[*d*][1,3]dioxole-5-carbonyl fluoride (**2w**)



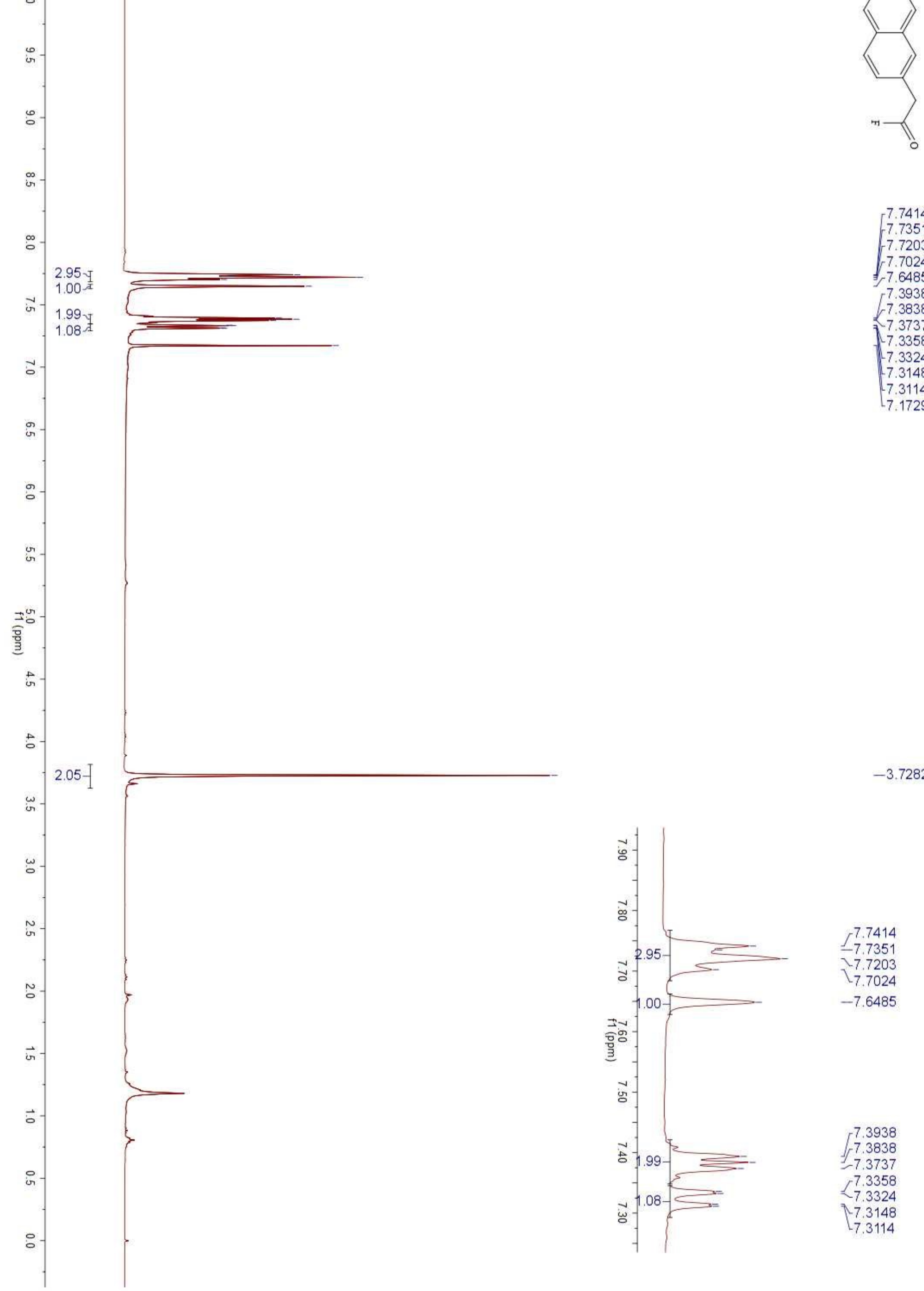
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of Benzo[*d*][1,3]dioxole-5-carbonyl fluoride (**2w**)



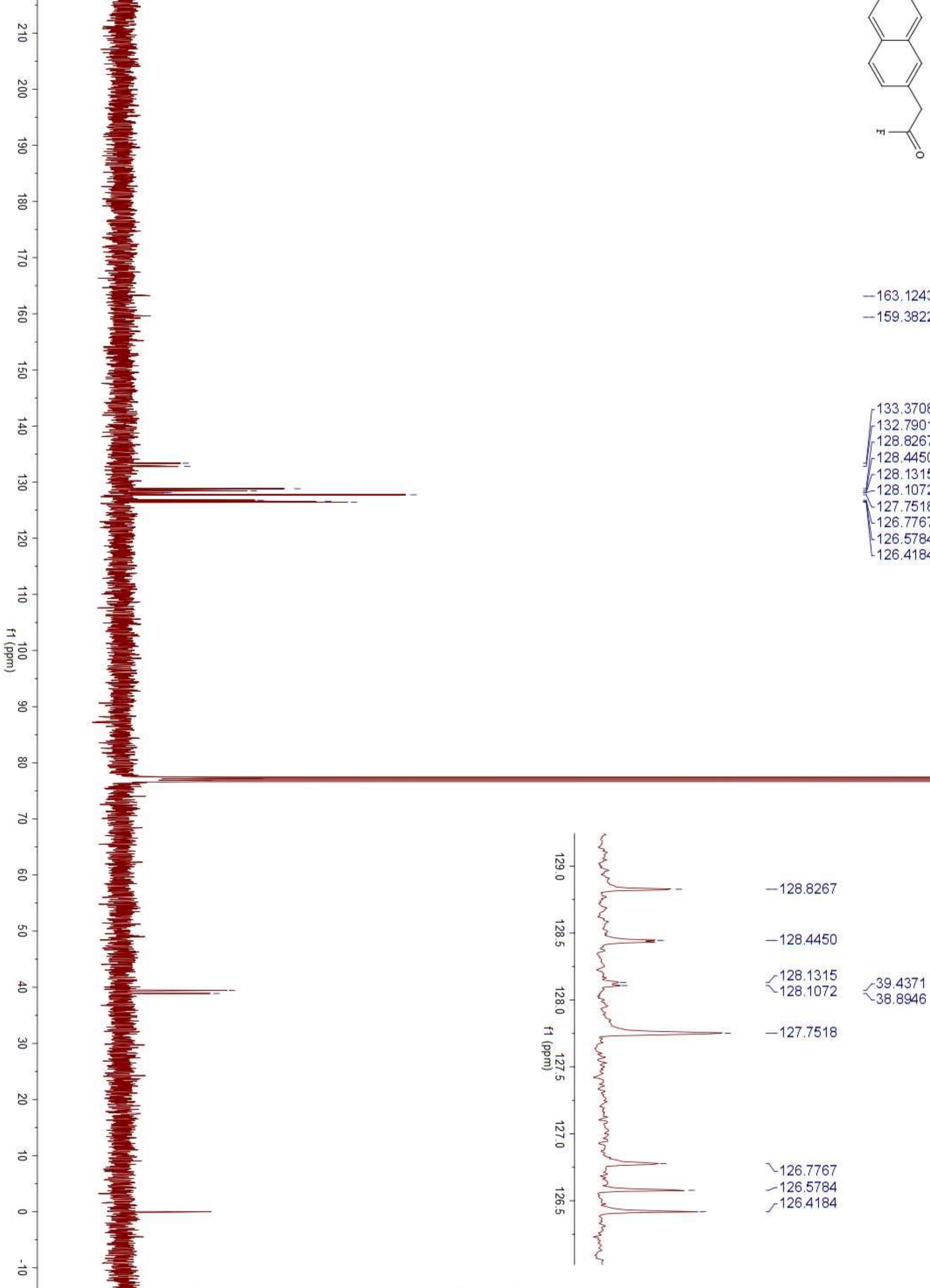
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of Benzo[*d*][1,3]dioxole-5-carbonyl fluoride (**2w**)



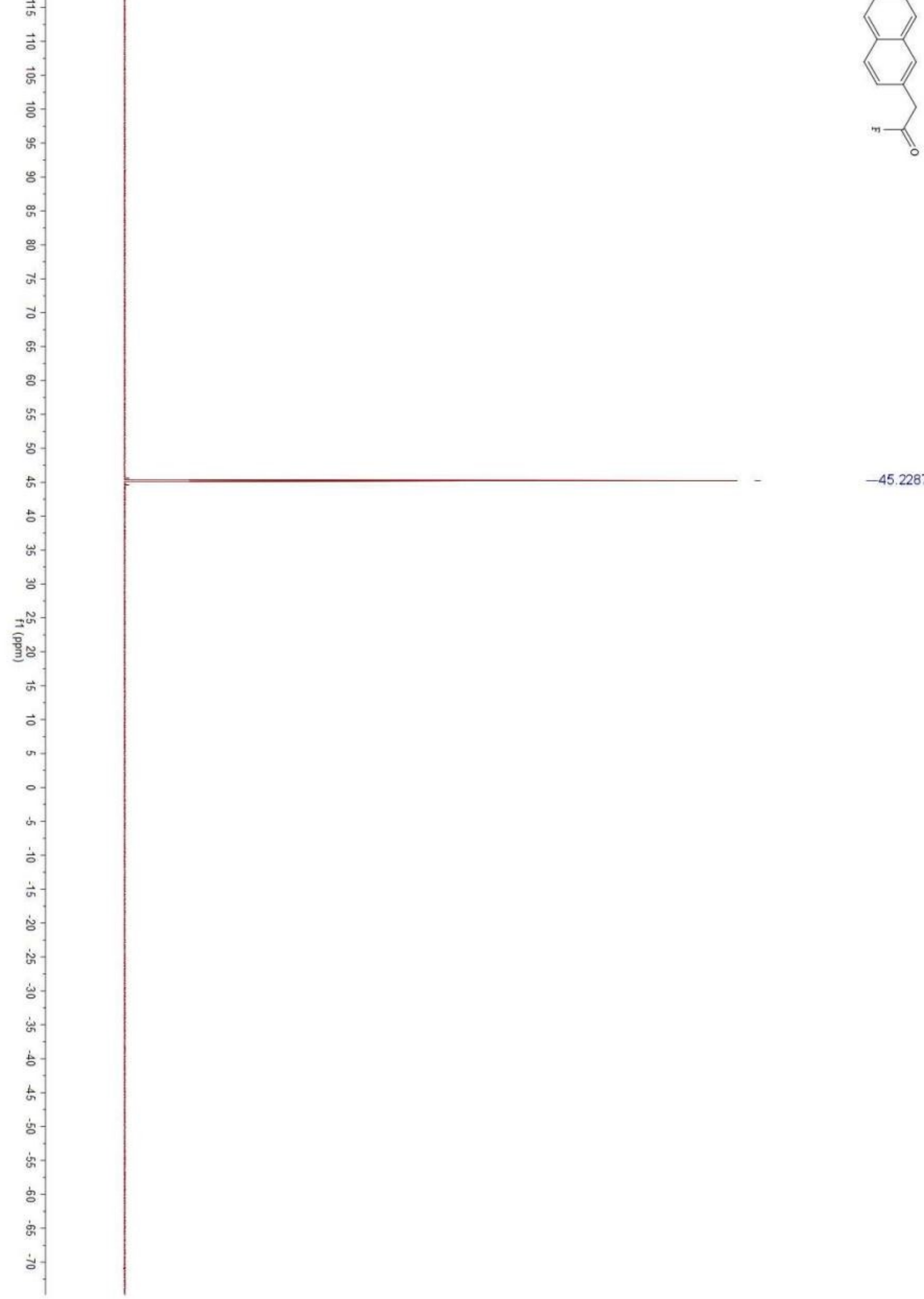
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of 2-(Naphthalen-2-yl)acetyl fluoride (**2x**)



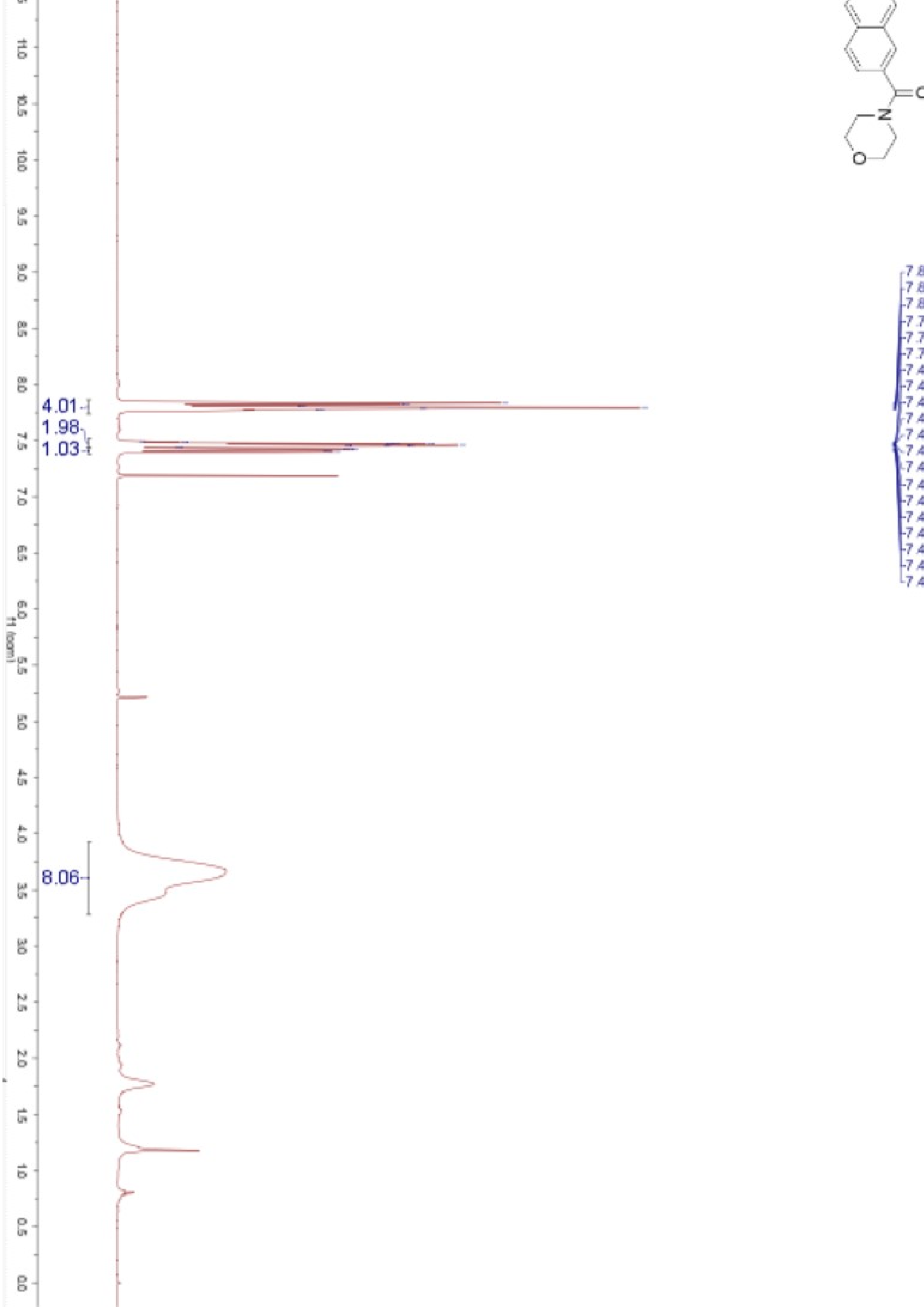
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of 2-(Naphthalen-2-yl)acetyl fluoride (**2x**)



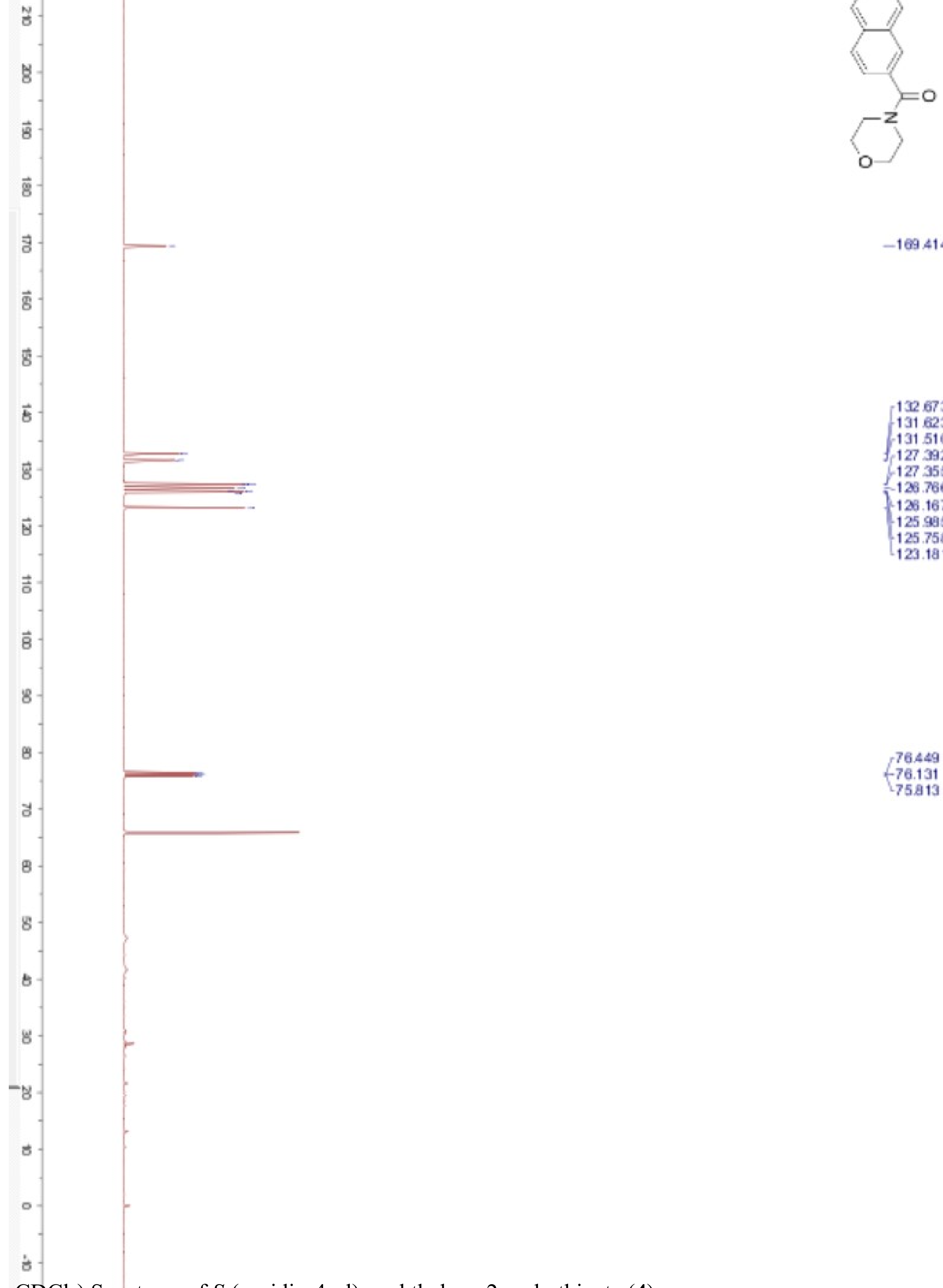
^{19}F NMR (376 MHz, CDCl$_3$) Spectrum of 2-(Naphthalen-2-yl)acetyl fluoride (**2x**)



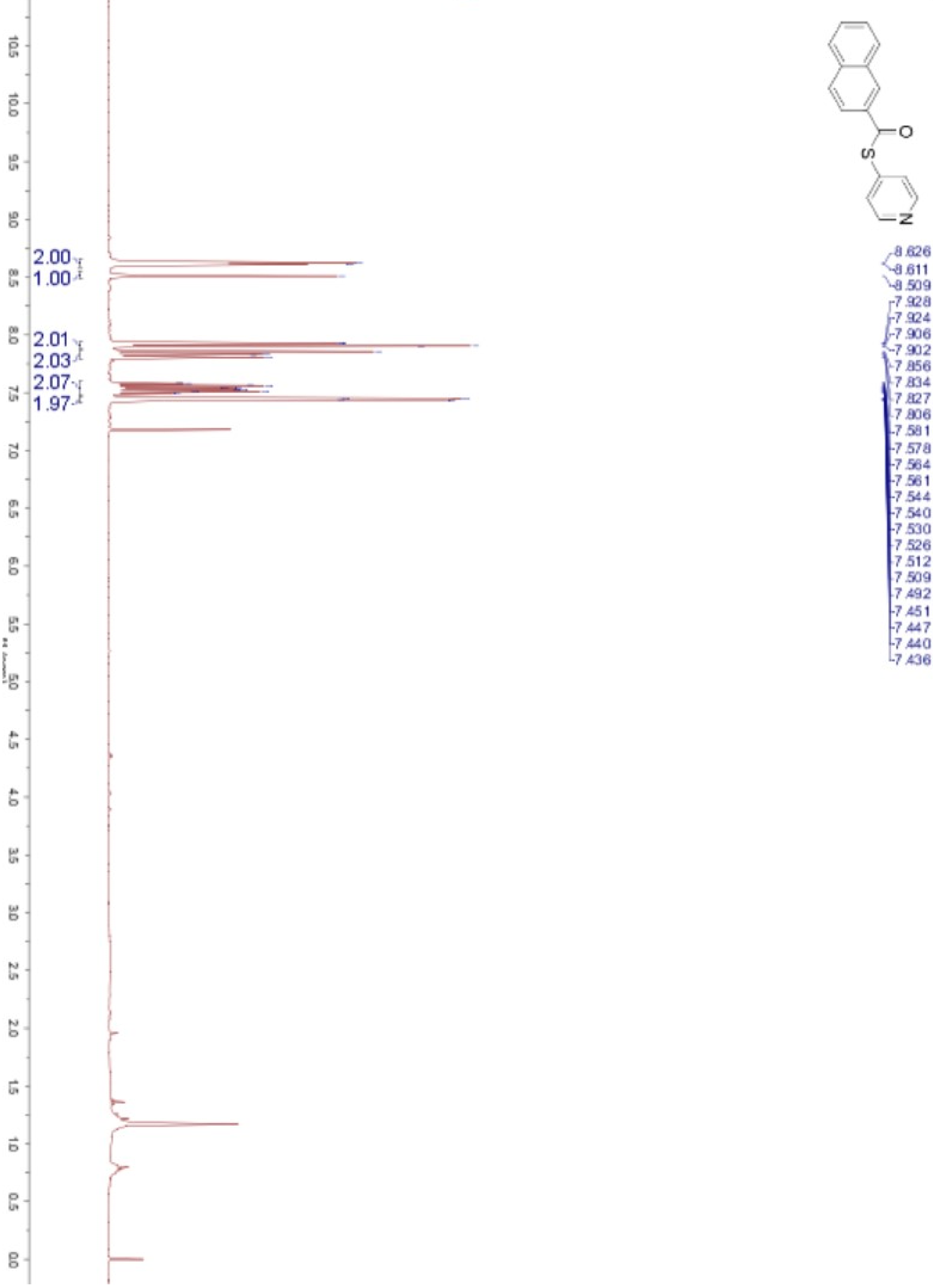
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of morpholino(naphthalen-2-yl)methanone (**3**)



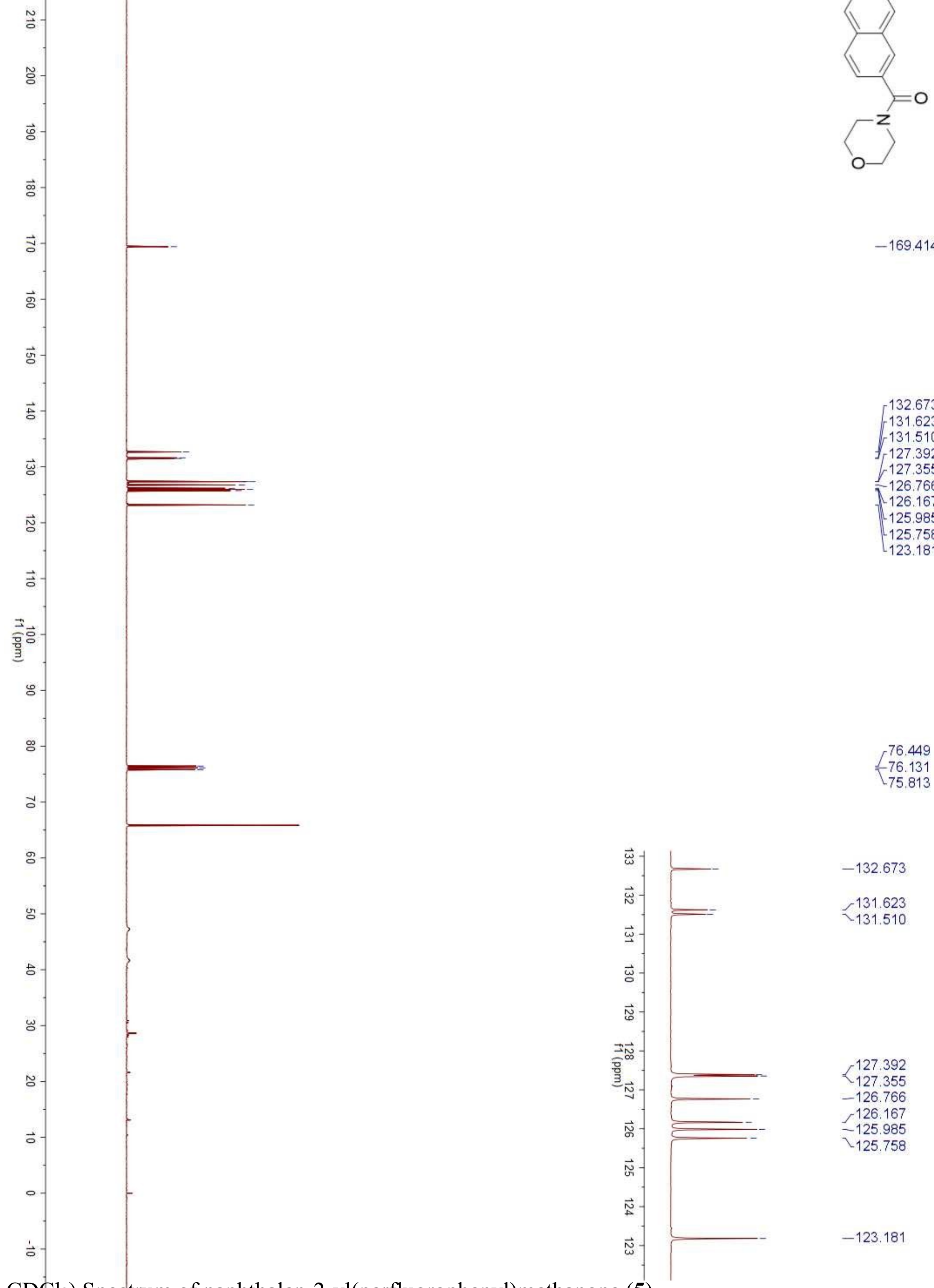
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of morpholino(naphthalen-2-yl)methanone (**3**)



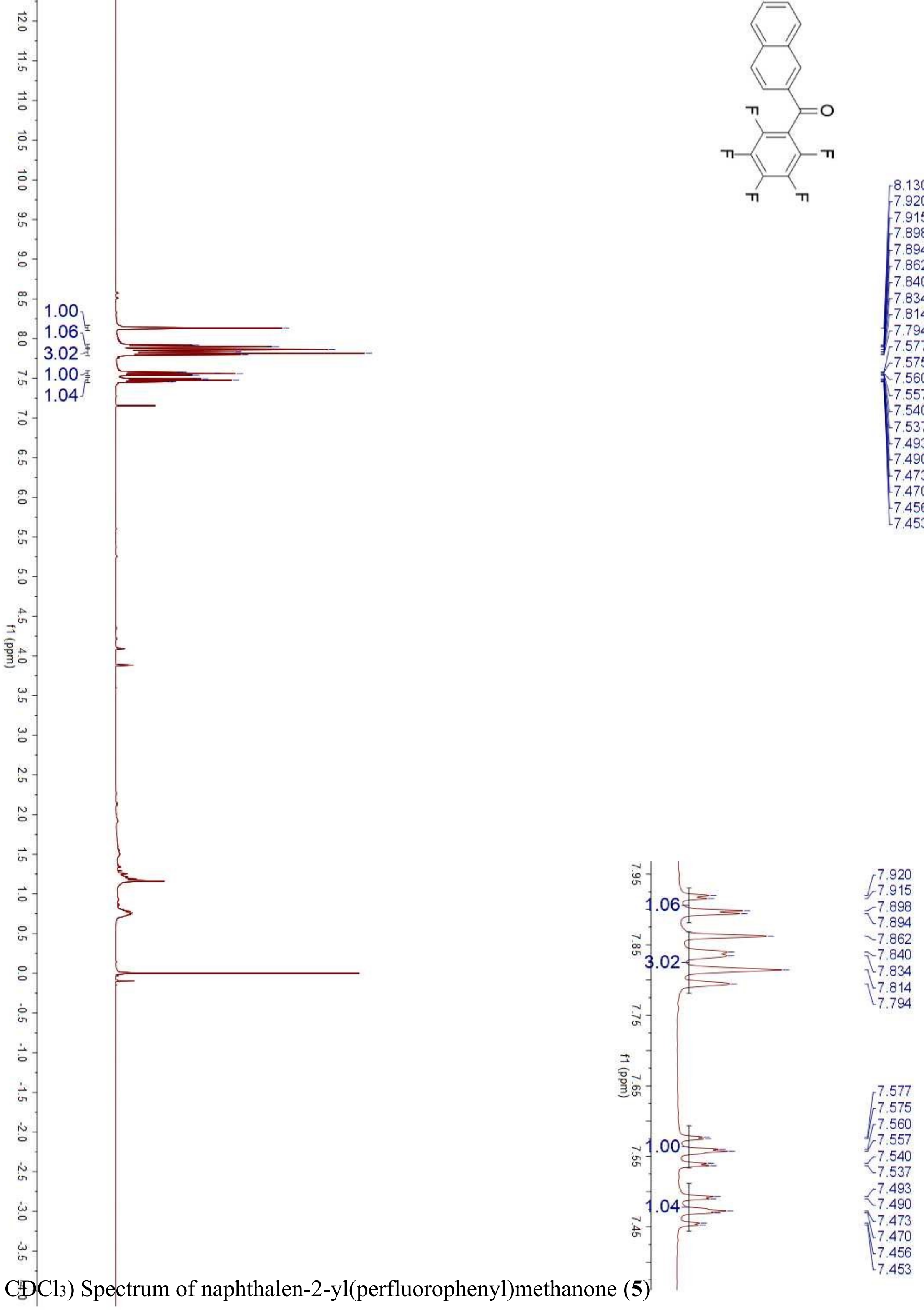
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of *S*-(pyridin-4-yl) naphthalene-2-carbothioate (**4**)



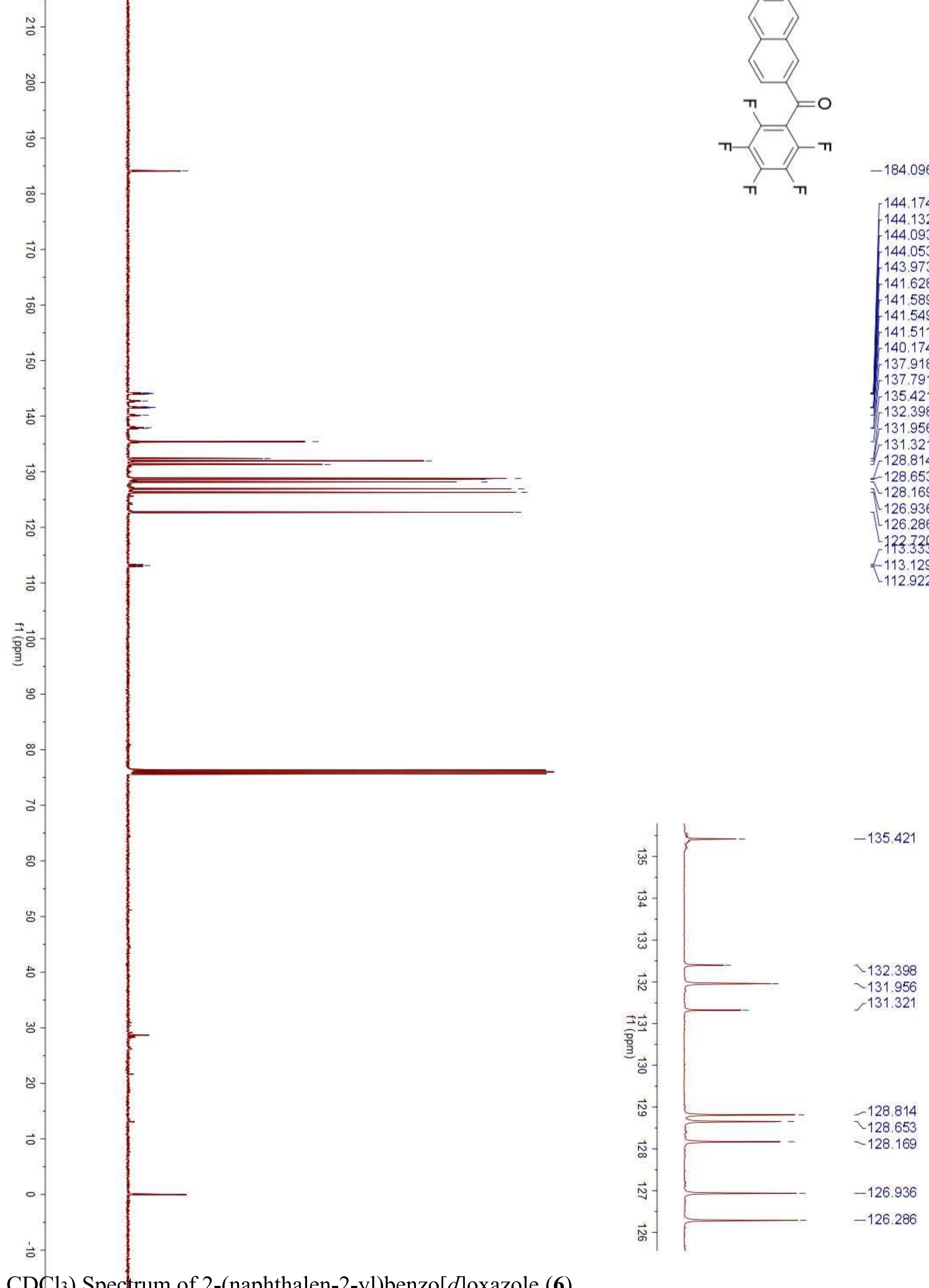
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of *S*-(pyridin-4-yl) naphthalene-2-carbothioate (**4**)



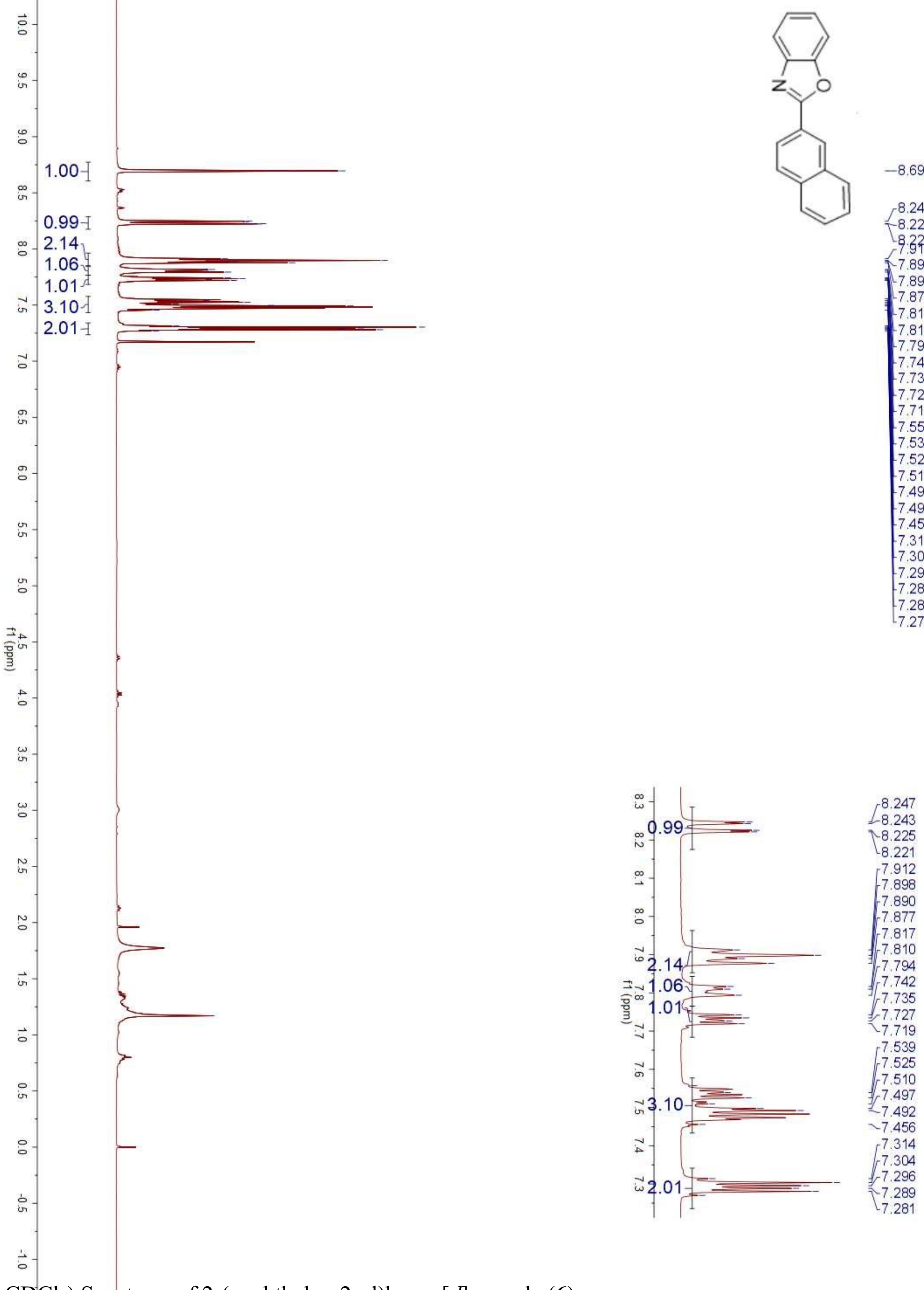
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of naphthalen-2-yl(perfluorophenyl)methanone (**5**)



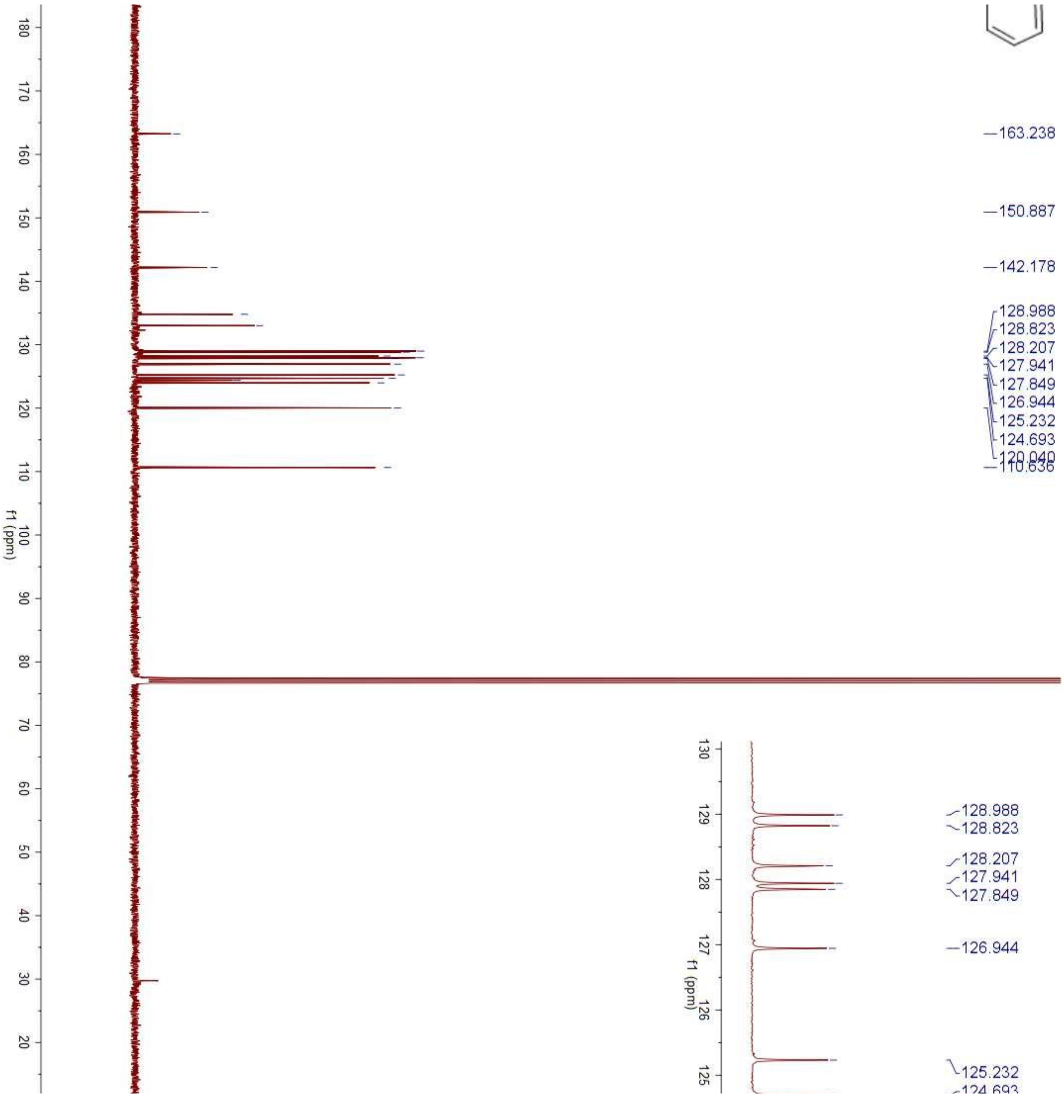
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of naphthalen-2-yl(perfluorophenyl)methanone (**5**)



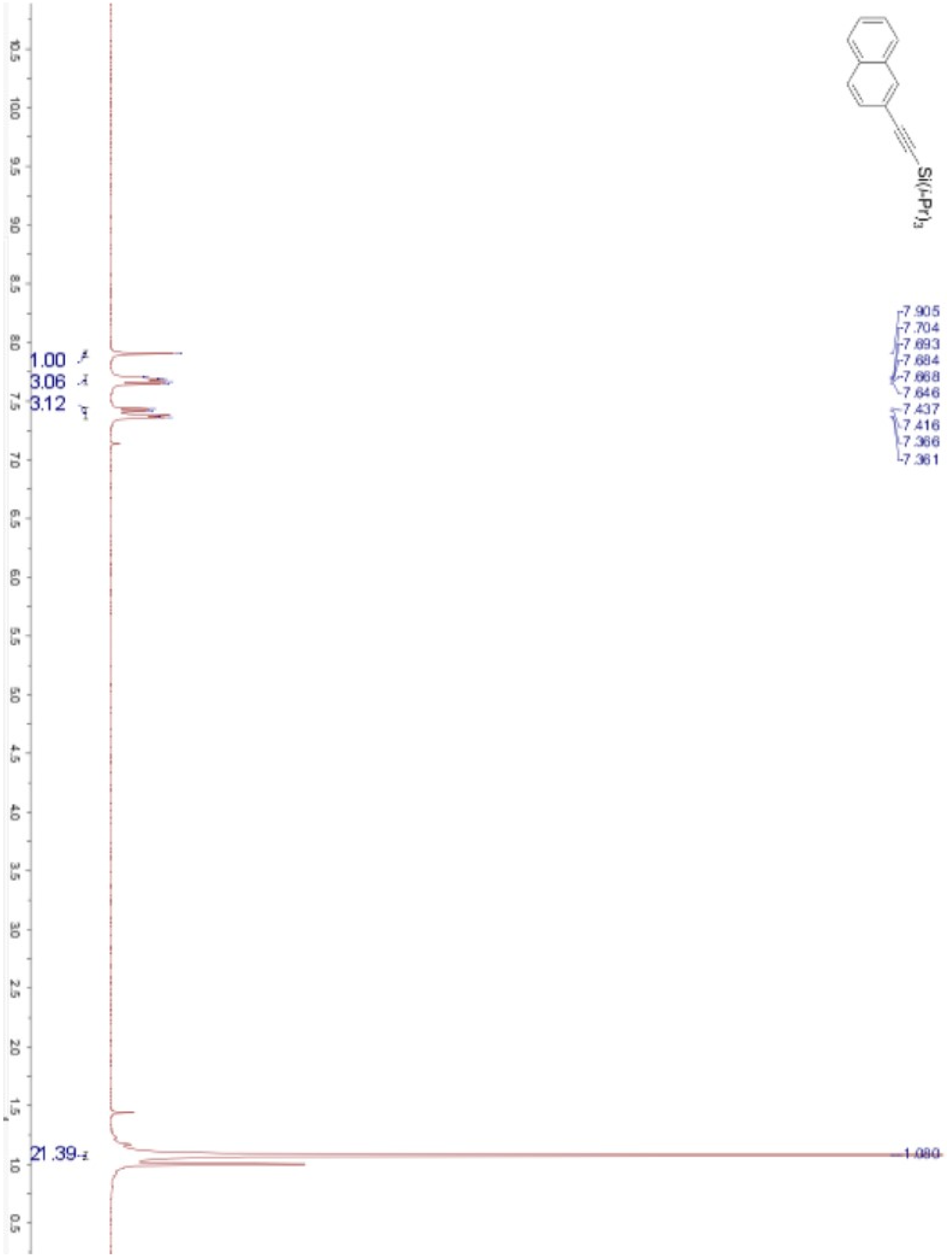
^{1}H NMR (400 MHz, CDCl$_3$) Spectrum of 2-(naphthalen-2-yl)benzo[*d*]oxazole (**6**)



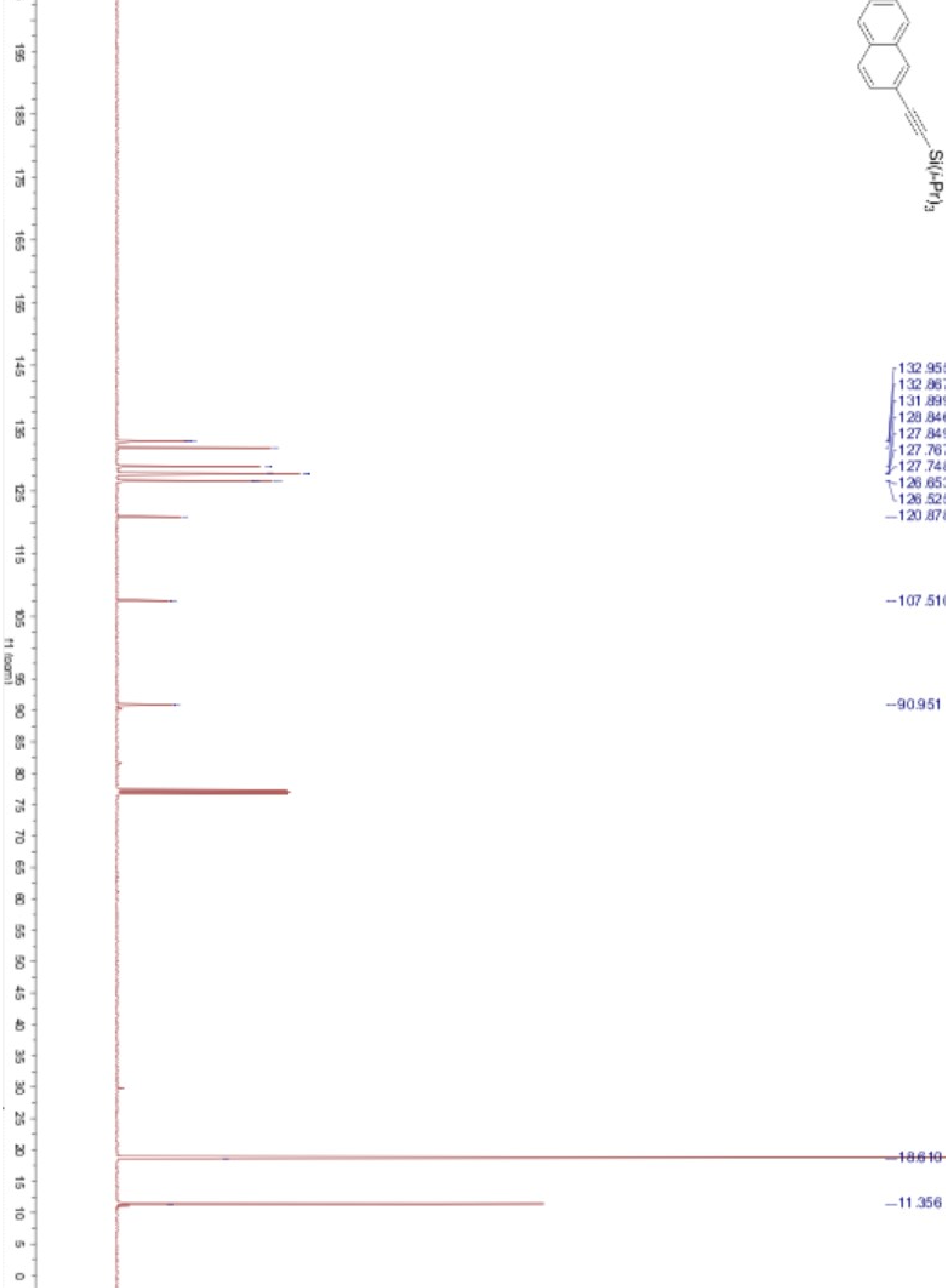
^{13}C NMR (101 MHz, $CDCl_3$) Spectrum of 2-(naphthalen-2-yl)benzo[*d*]oxazole (**6**)



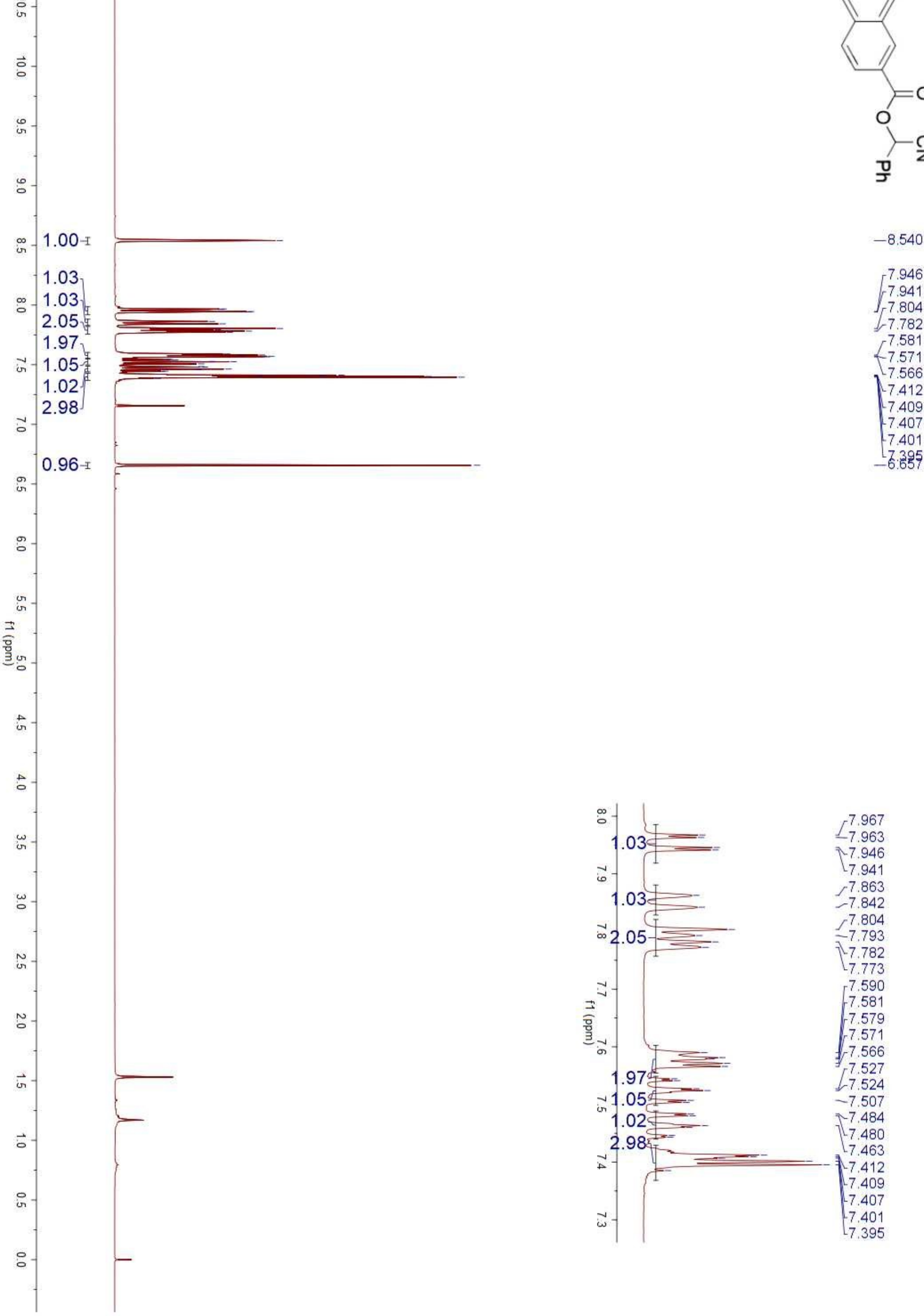
¹H NMR (400 MHz, $CDCl_3$) Spectrum of triisopropyl(naphthalen-2-ylethynyl)silane (**7**)



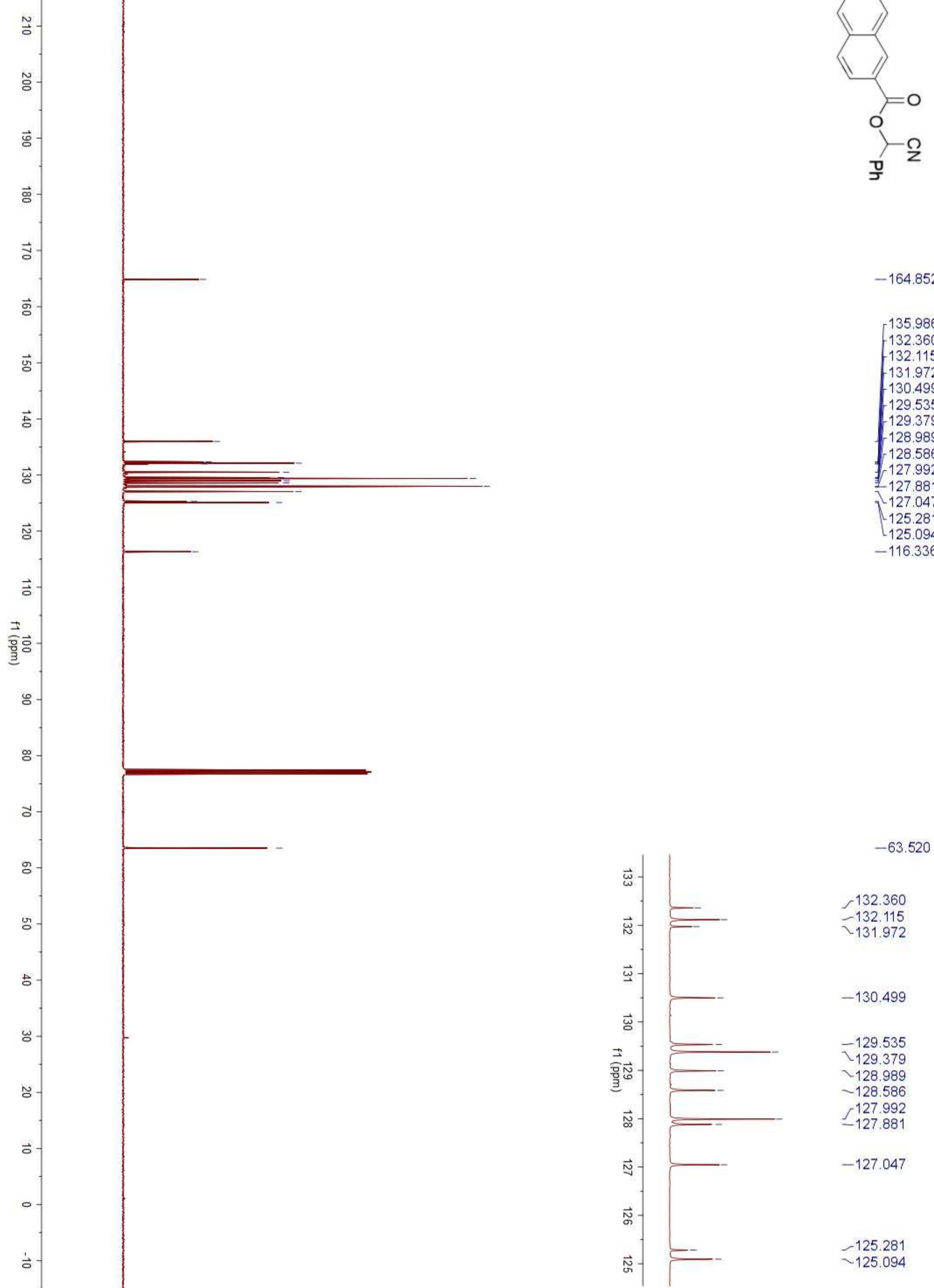
^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of triisopropyl(naphthalen-2-ylethynyl)silane (**7**)



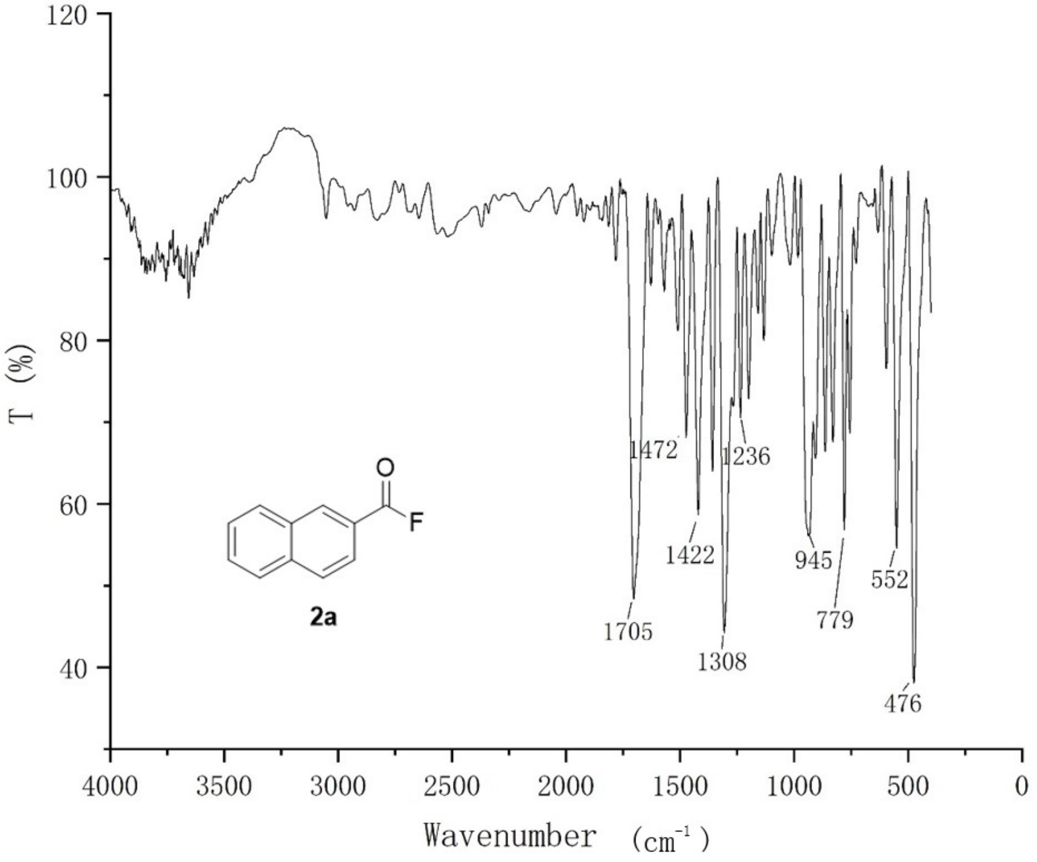
^{1}H NMR (400 MHz, $CDCl_3$) Spectrum of cyano(phenyl)methyl-2-naphthoate (**8**)



^{13}C NMR (101 MHz, CDCl$_3$) Spectrum of cyano(phenyl)methyl-2-naphthoate (**8**)



6. Copies of Infrared spectrum of the Products



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100
80
60
40
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm⁻¹)
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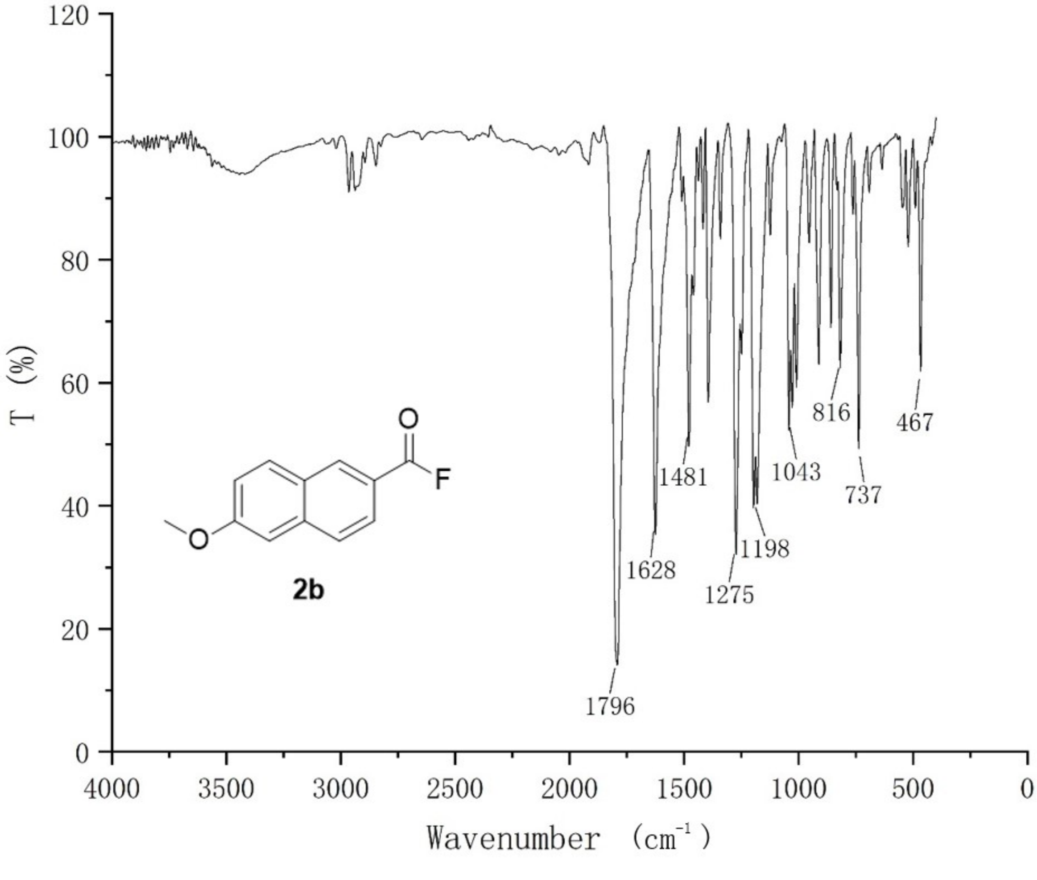
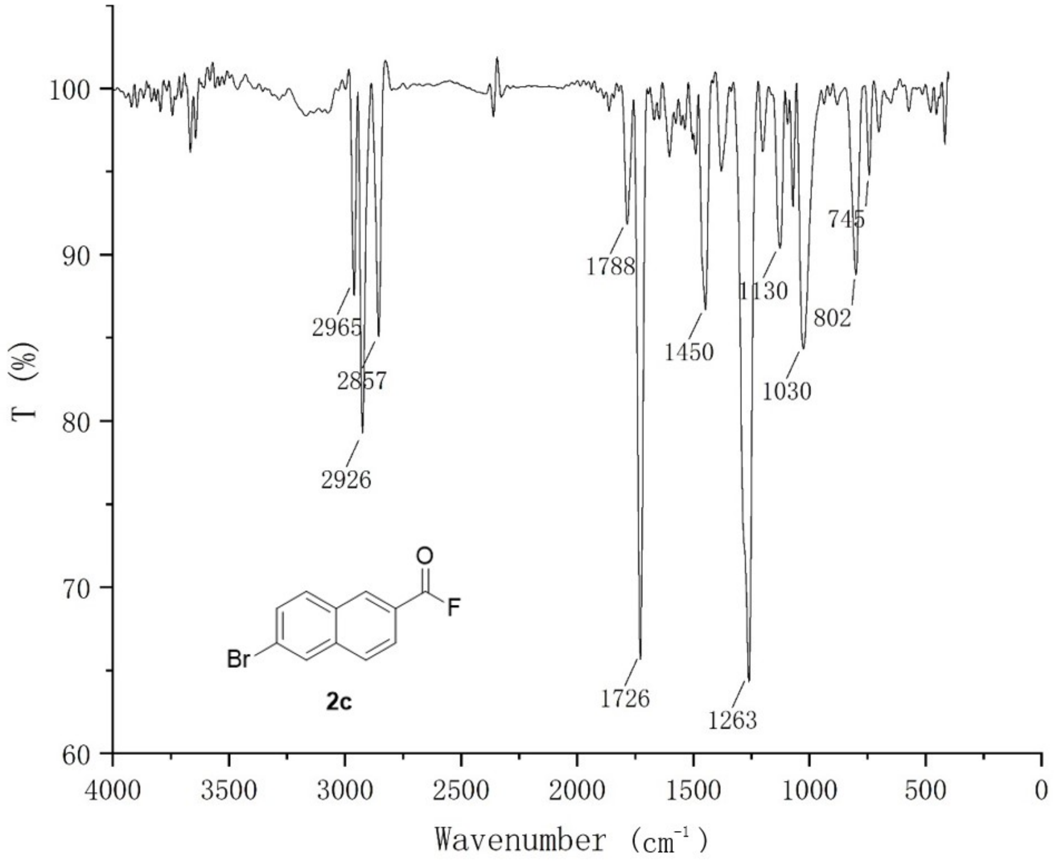
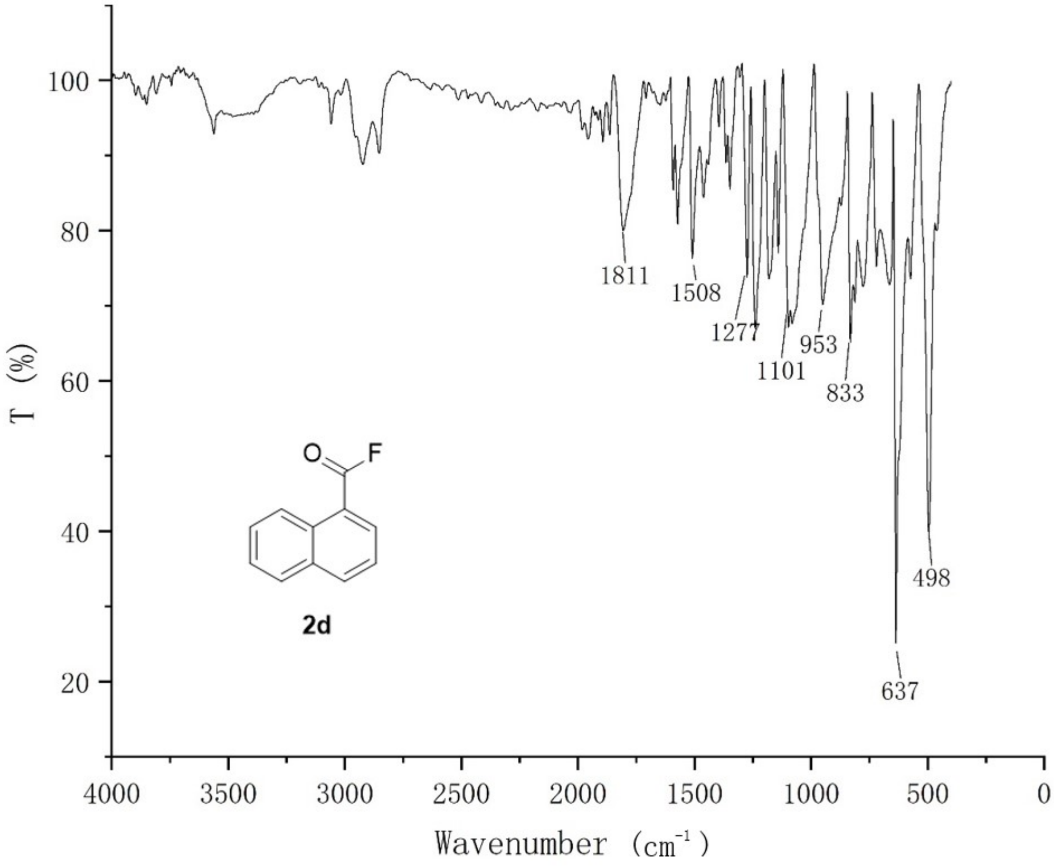
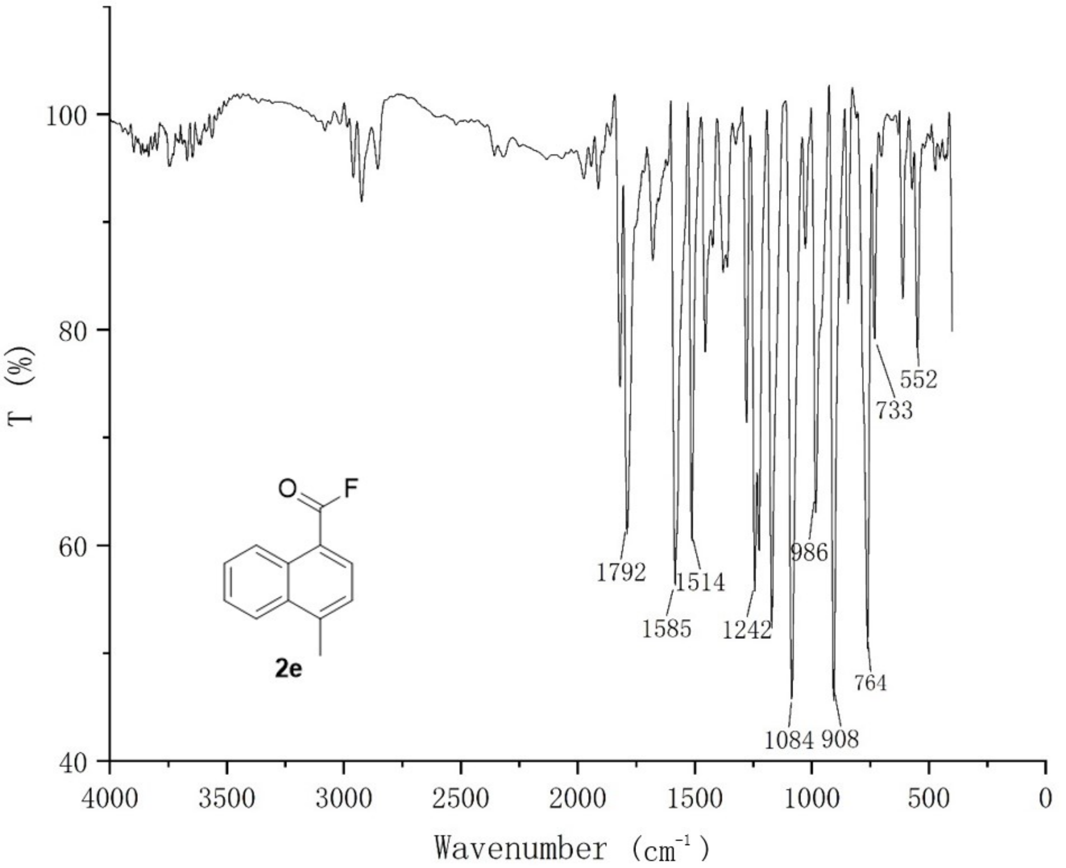
1236
1422
945
552
1705
779
1308
476
O
F
2a

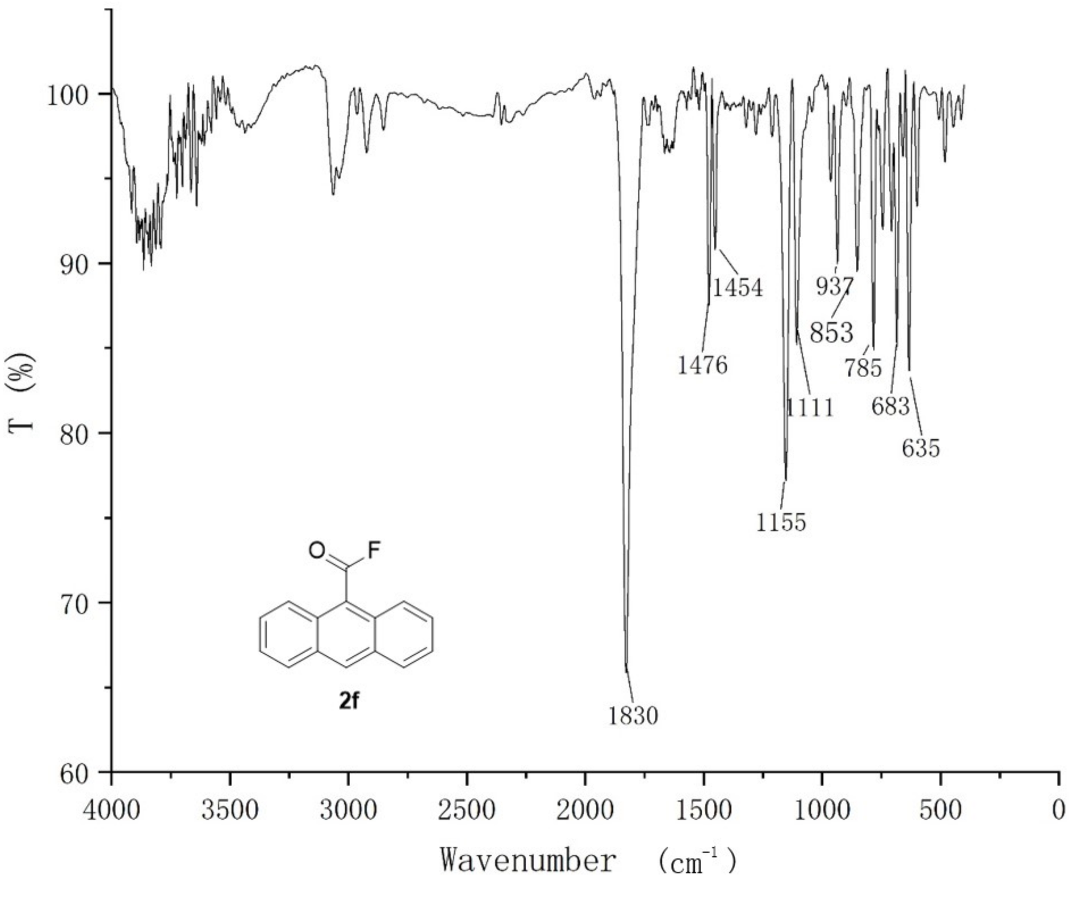


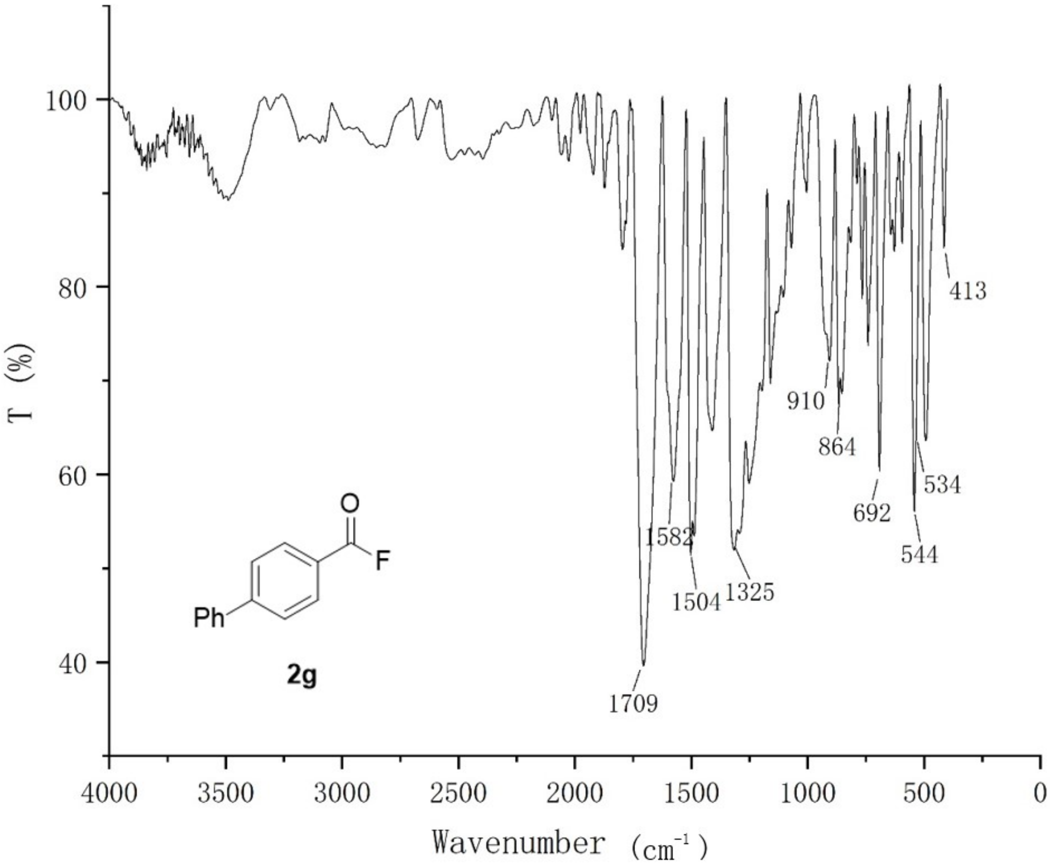
120
100
80
60
40
20
0
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm⁻¹)
816
467
1481
1043
737
1628
1198
1275
1796
O
F
O
2b

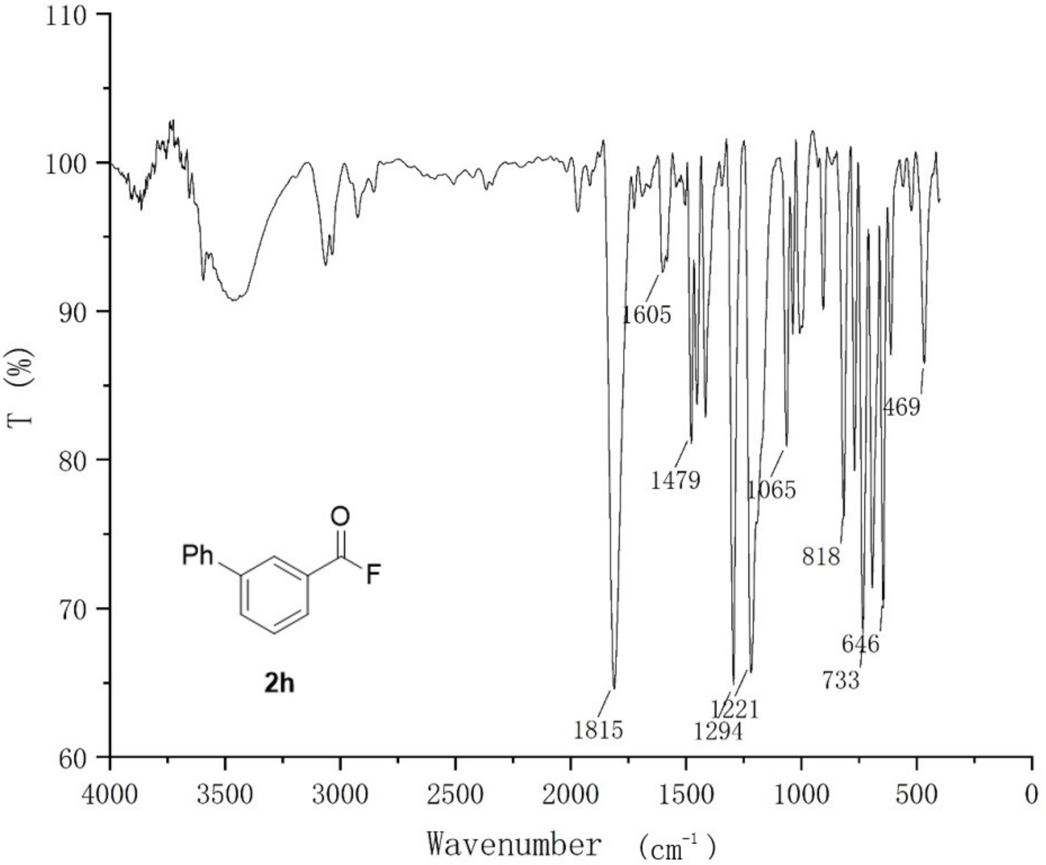

T (%)
100
90
80
70
60
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm⁻¹)
2965
2857
2926
1788
1726
1450
1263
1130
1030
802
745
O
F
Br
2c


T (%)
100
80
60
40
20
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm⁻¹)
1811
1508
1277
1101
953
833
637
498
O
F
2d

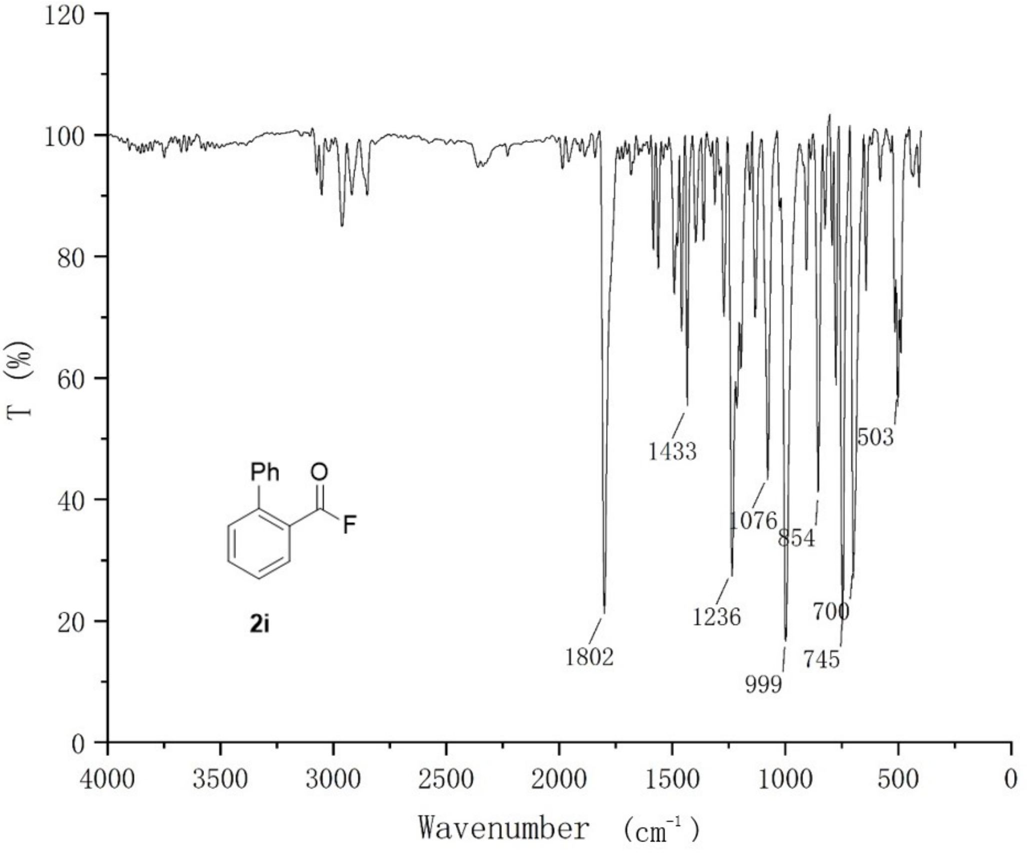

T (%)
100
80
60
40
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
O
F
2e
1792
1585
1514
1242
1084
908
986
764
733
552


T (%)
100
90
80
70
60
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
O
F
2f
1830
1476
1454
1155
1111
937
853
785
683
635

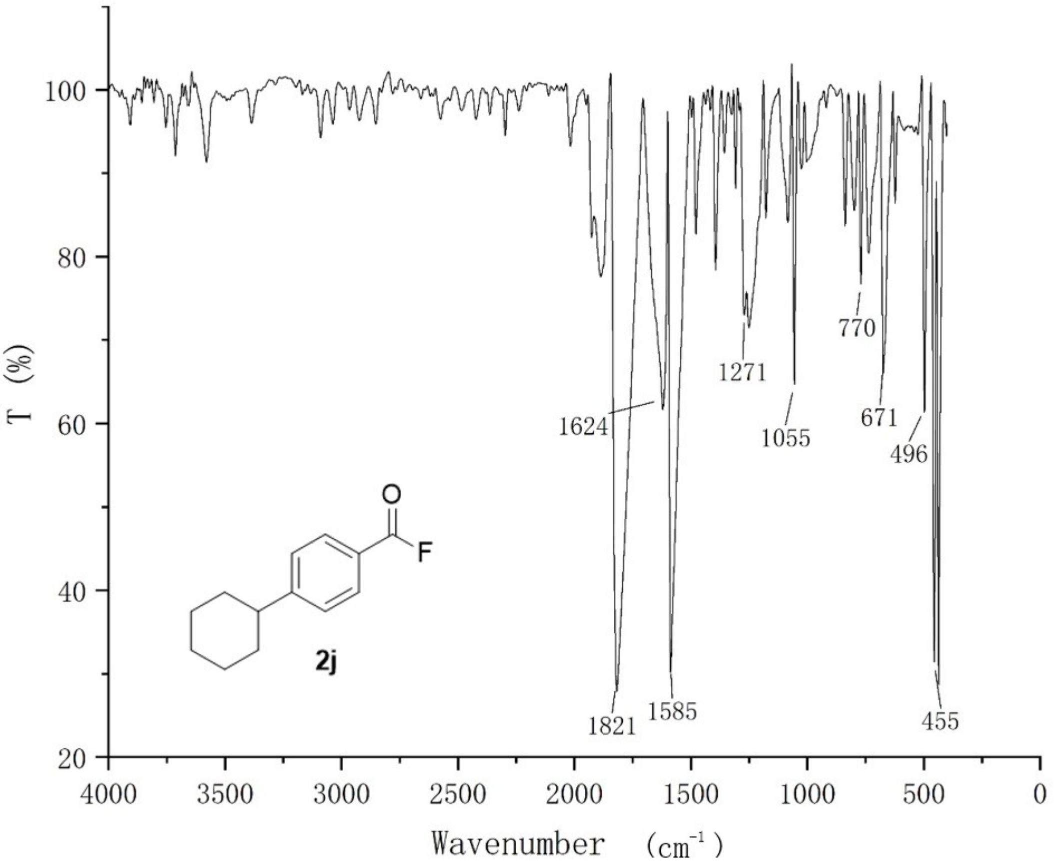

100
80
60
40
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
1709
1582
1504
1325
910
864
692
544
534
413
O
F
Ph
2g

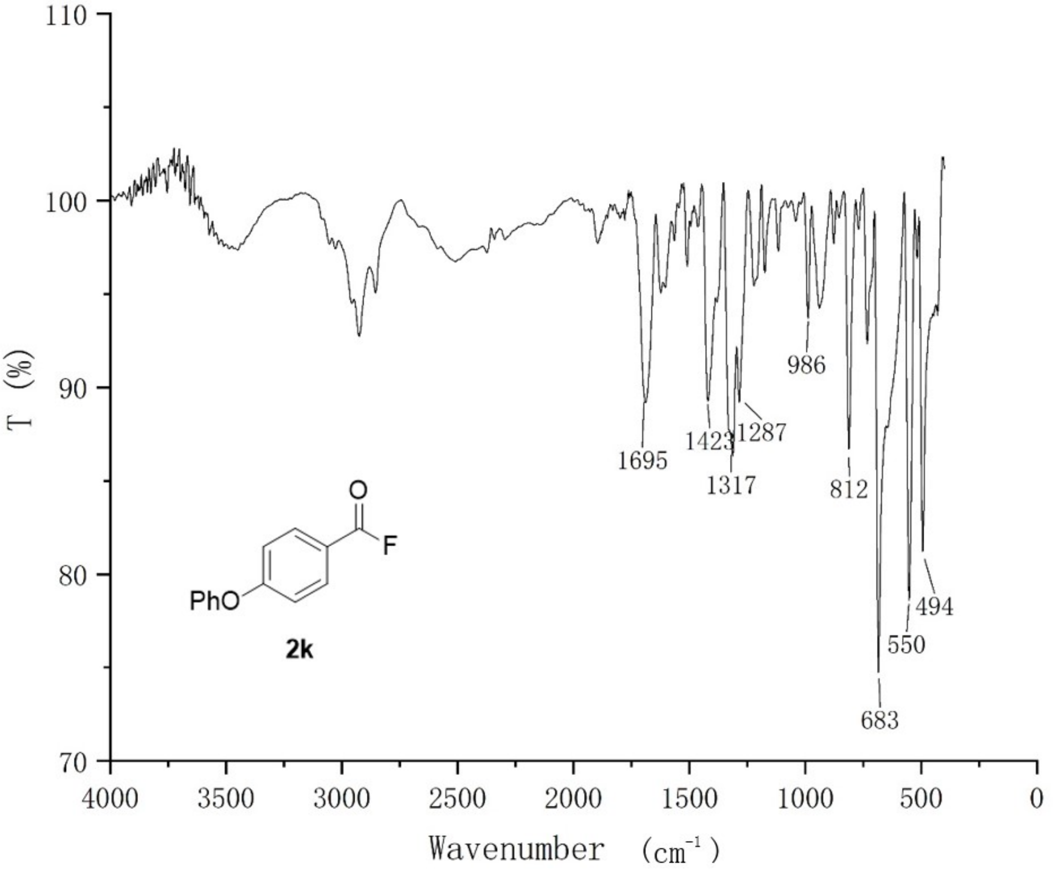


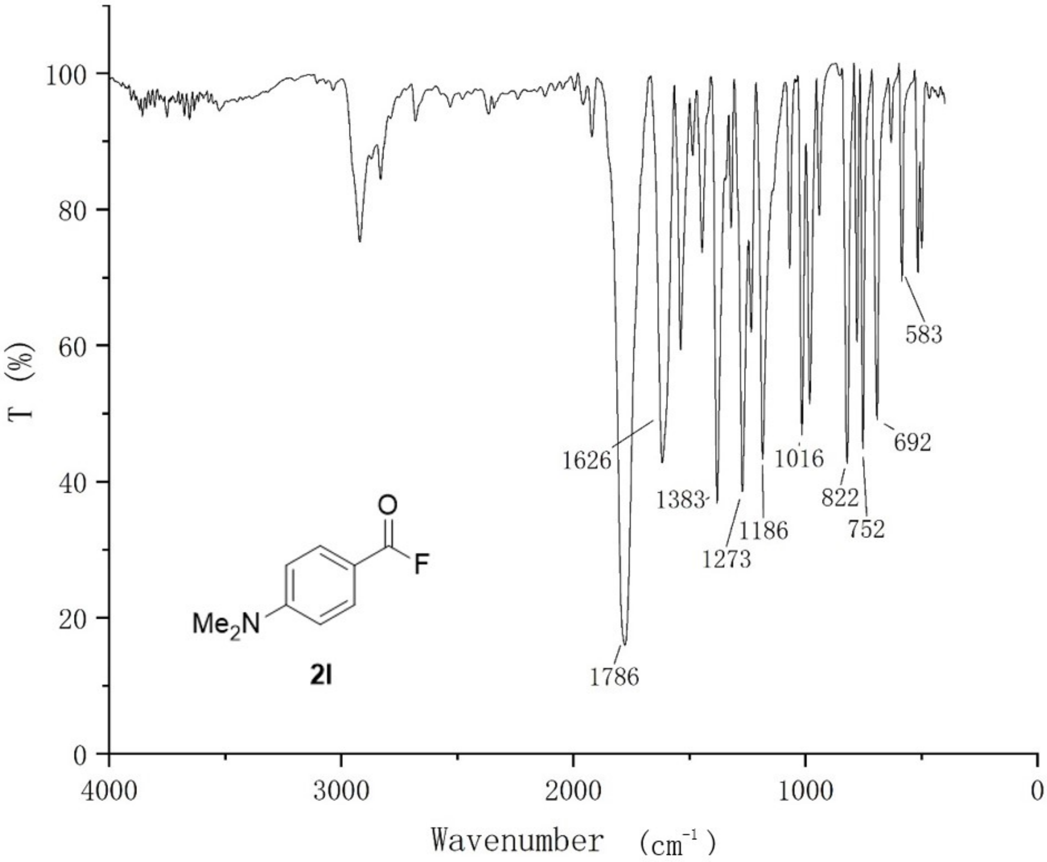
T (%)
110
100
90
80
70
60
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
1605
1479
1065
818
469
646
733
1221
1294
1815
Ph
O
F
2h

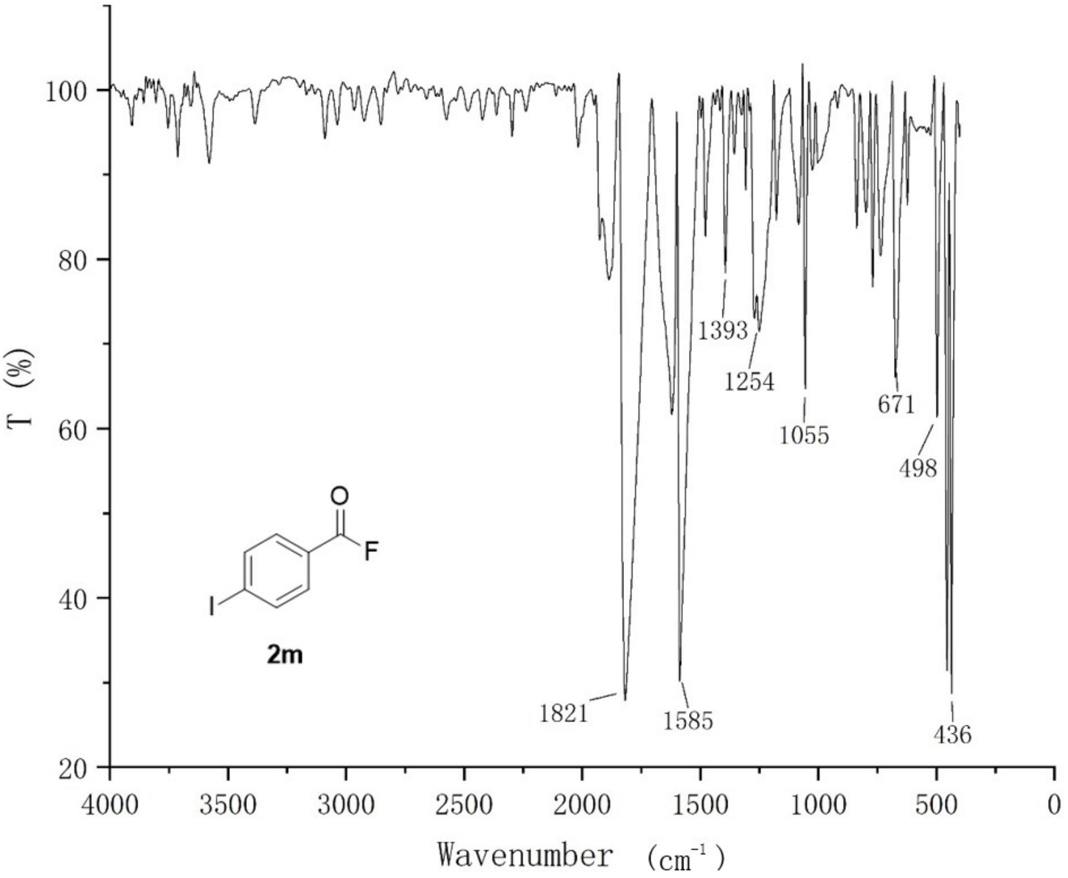


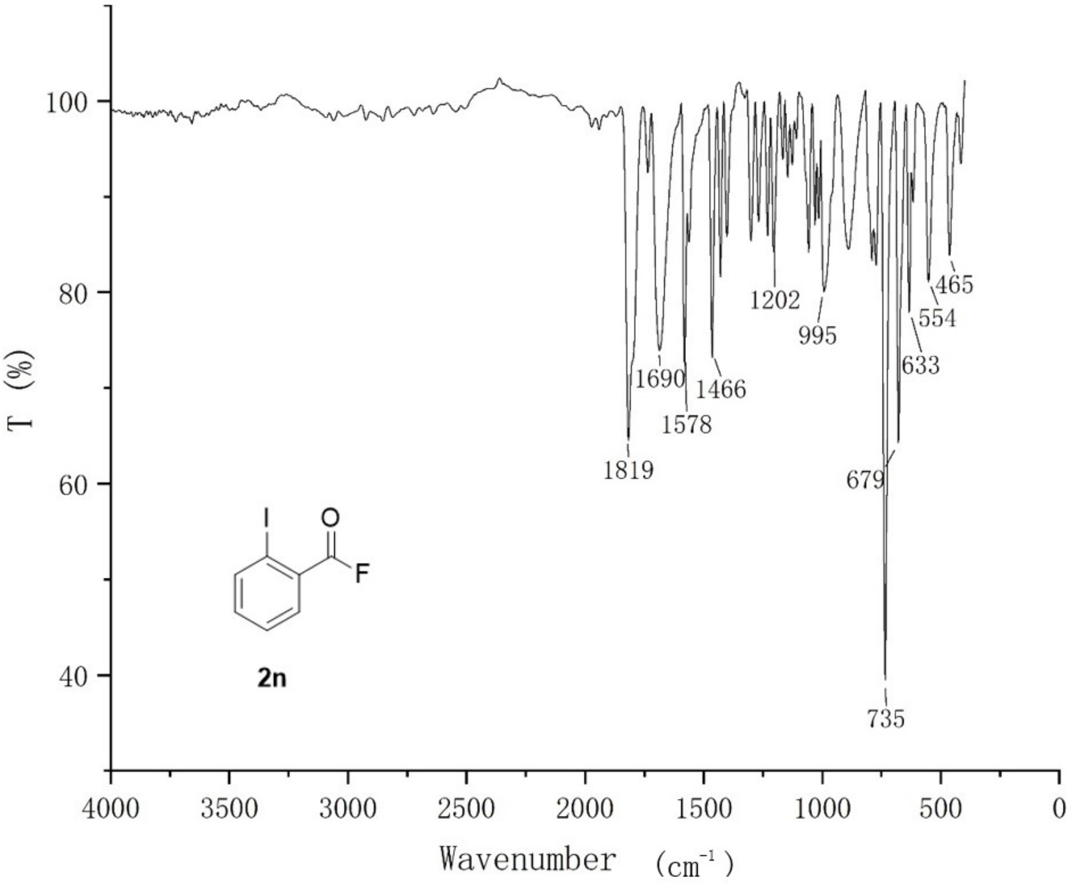
T (%)
120
100
80
60
40
20
0
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
1433
503
1076
854
1236
700
745
999
1802
Ph
O
F
2i

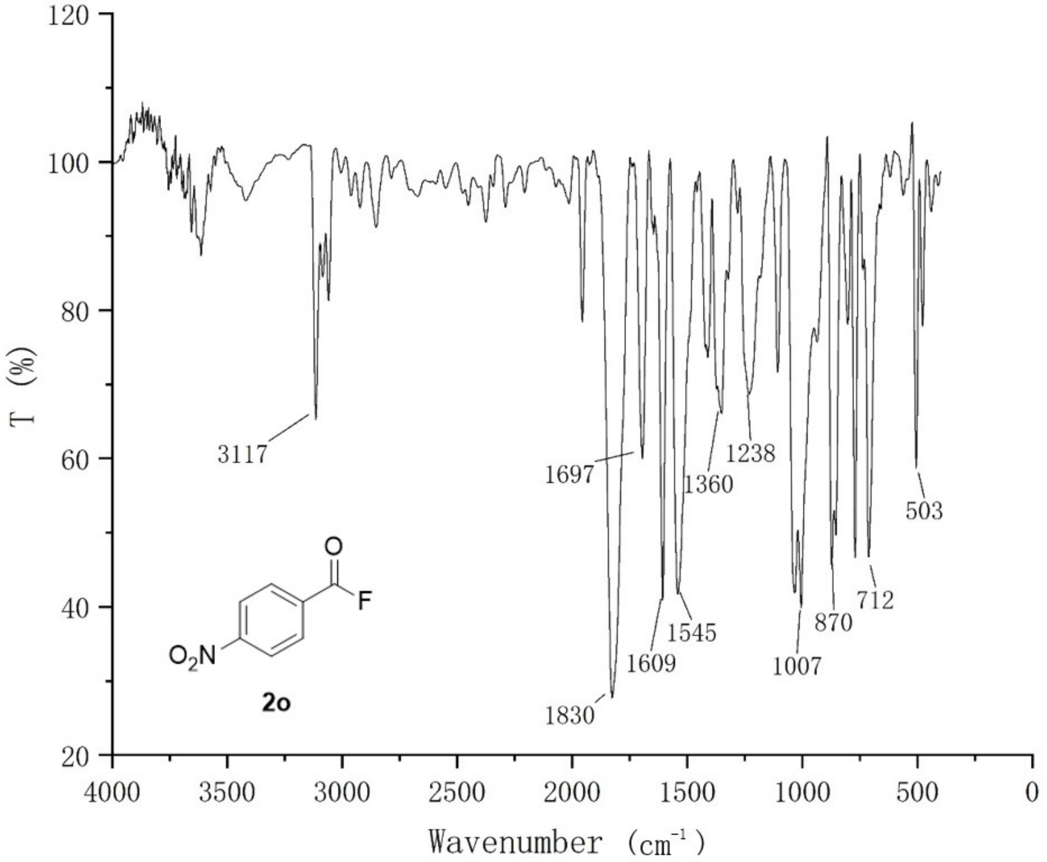

T (%)
Wavenumber (cm^{-1})
20
40
60
80
100
4000
3500
3000
2500
2000
1500
1000
500
0
1821
1624
1585
1271
1055
770
671
496
455
O
F
2j

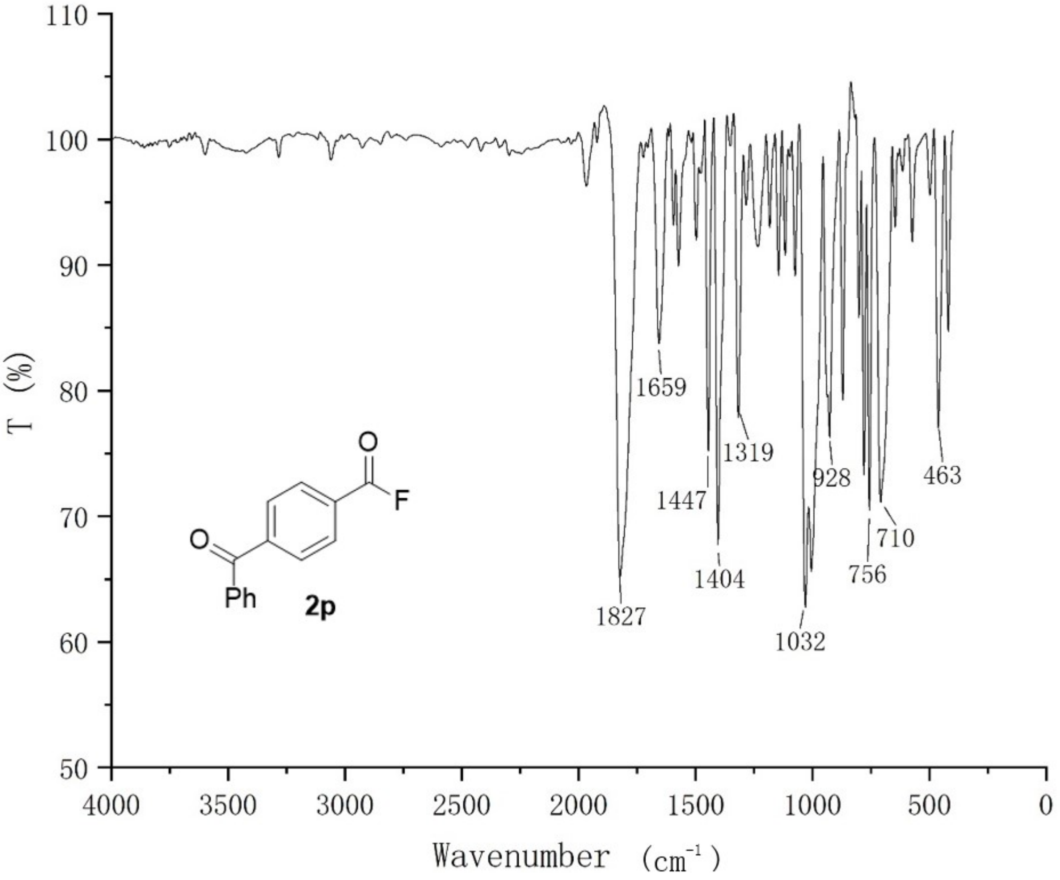

T (%)
Wavenumber (cm^{-1})
70
80
90
100
110
4000
3500
3000
2500
2000
1500
1000
500
0
1695
1423
1287
1317
986
812
683
550
494
O
F
PhO
2k

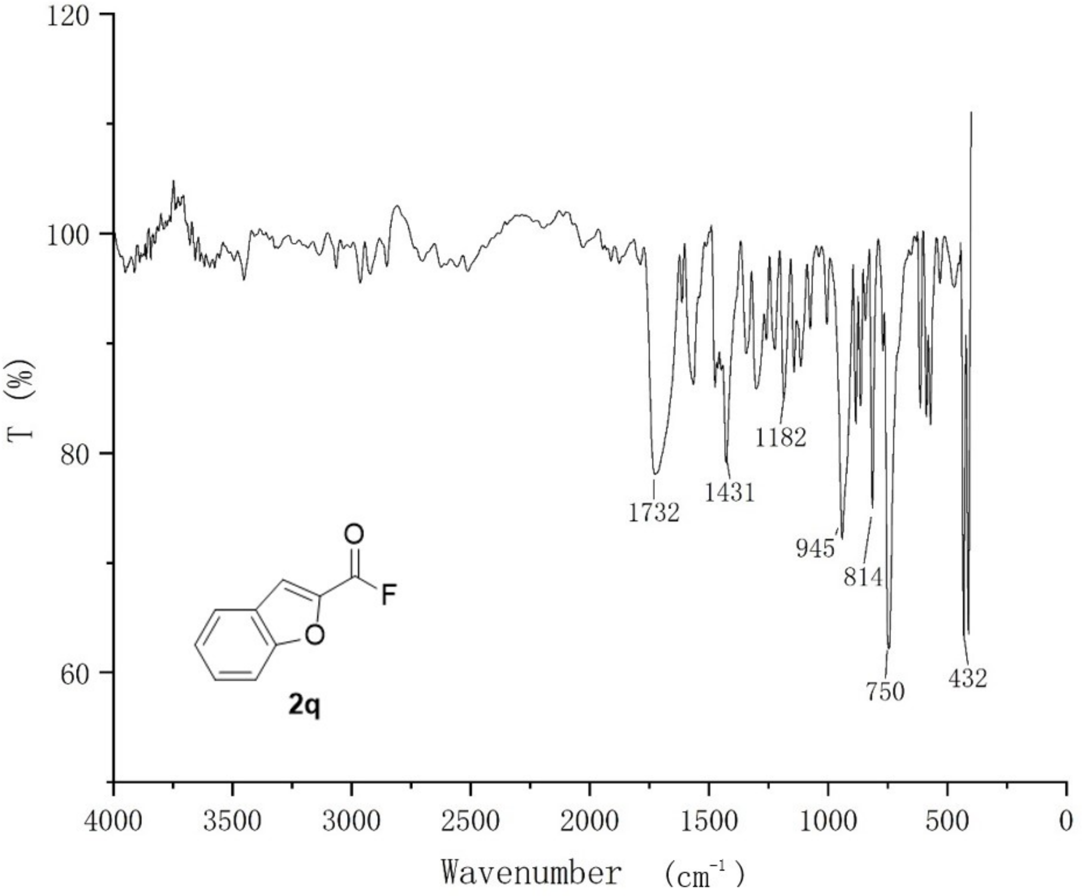

100
80
60
40
20
0
T (%)
4000
3000
2000
1000
0
Wavenumber (cm^{-1})
1786
1626
1383
1273
1186
1016
822
752
692
583
O
F
Me$_2$N
2l

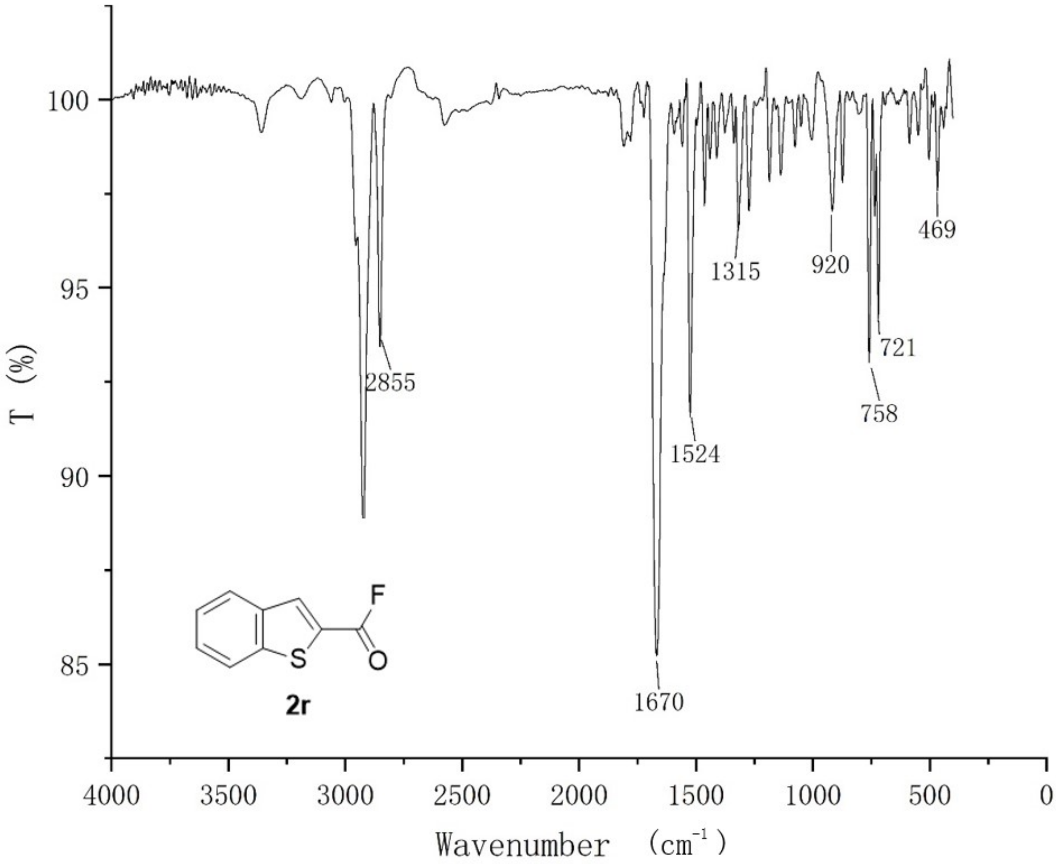

T (%)
Wavenumber (cm^{-1})
20
40
60
80
100
4000
3500
3000
2500
2000
1500
1000
500
0
1821
1585
1393
1254
1055
671
498
436
O
F
I
2m

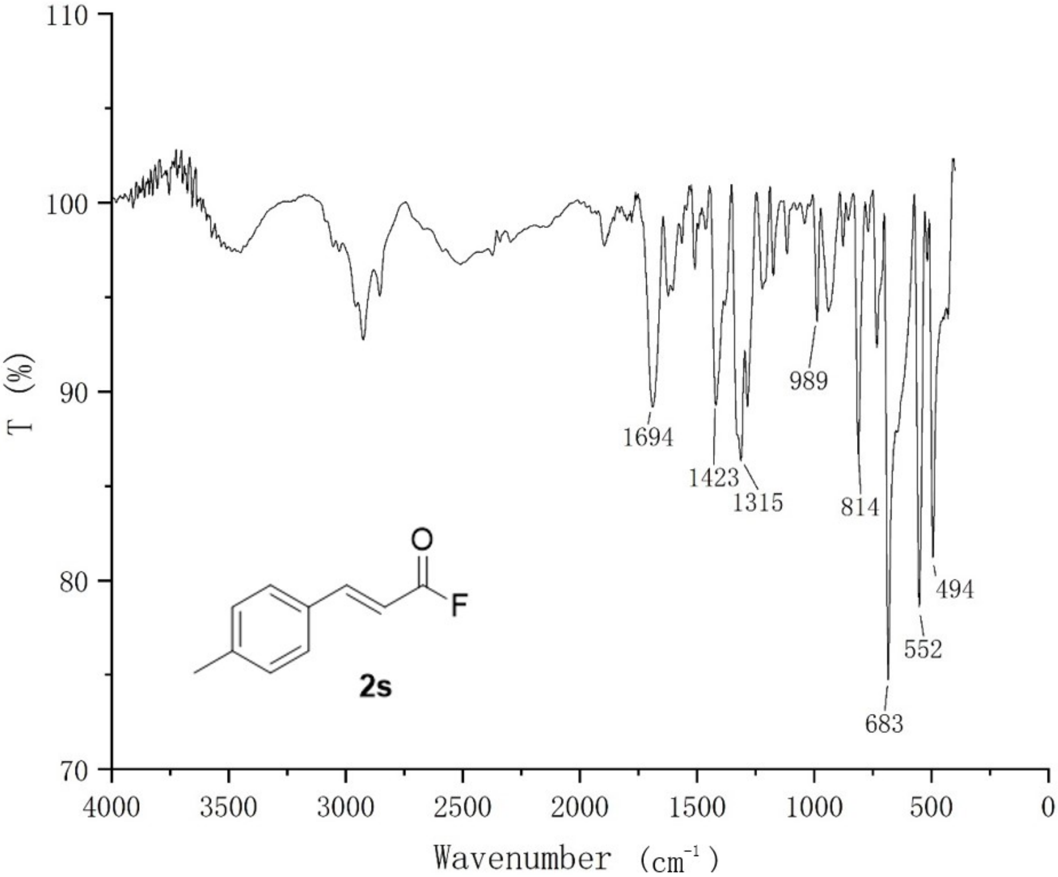

T (%)
Wavenumber (cm^{-1})
40
60
80
100
4000
3500
3000
2500
2000
1500
1000
500
0
1819
1690
1578
1466
1202
995
633
554
465
679
735
I
O
F
2n

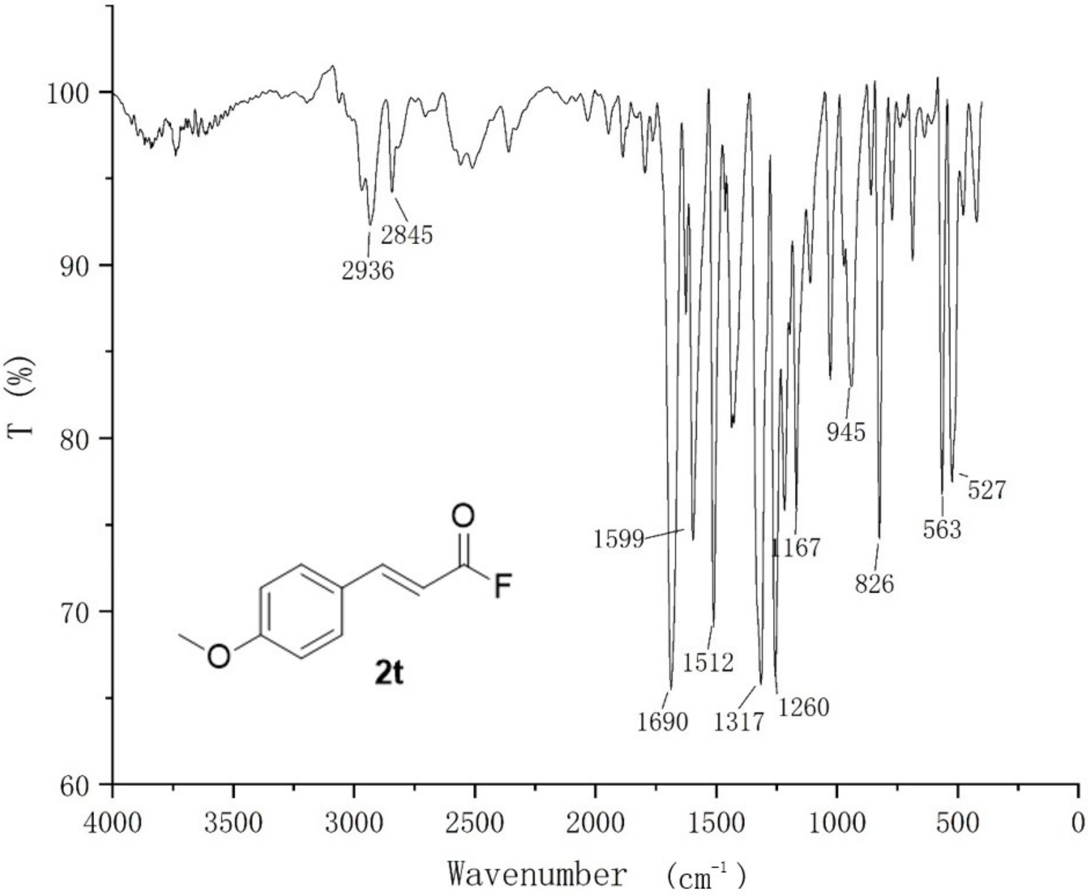

120
100
80
60
40
20
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm-1)
3117
1697
1830
1609
1545
1360
1238
1007
870
712
503
O
F
O2N
2o


110
100
90
80
70
60
50
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm-1)
1659
1827
1447
1404
1319
1032
928
756
710
463
O
F
O
Ph
2p

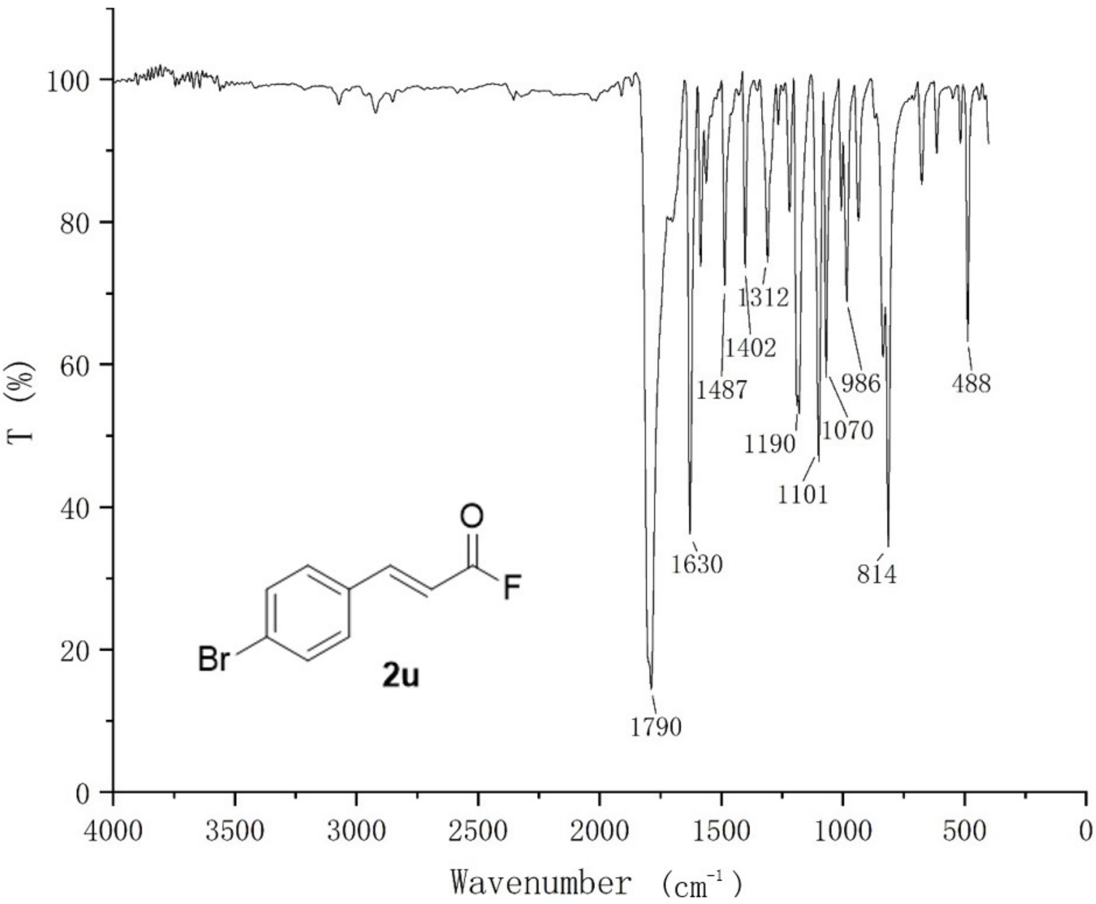

120
100
80
60
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
1732
1431
1182
945
814
750
432
O
F
O
2q

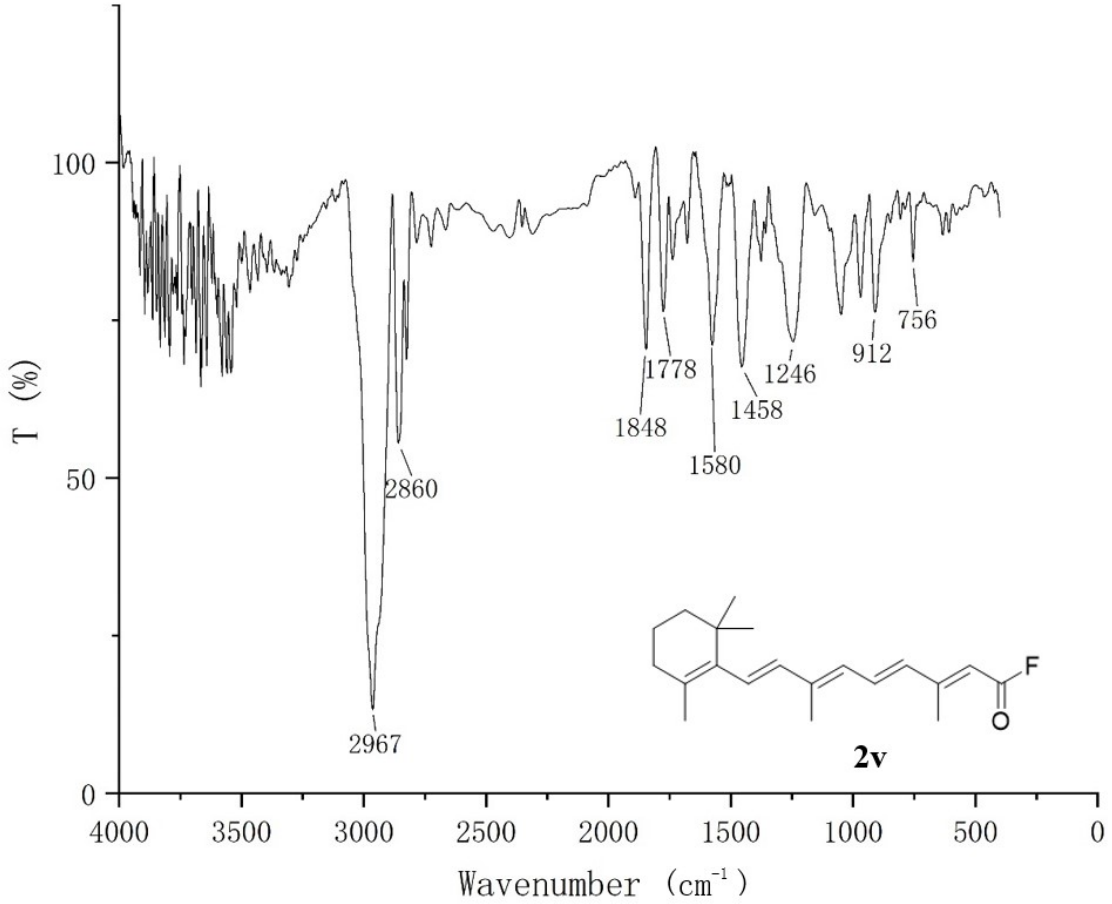

T (%)
100
95
90
85
2855
1670
1524
1315
920
758
721
469
2r
F
O
S
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})

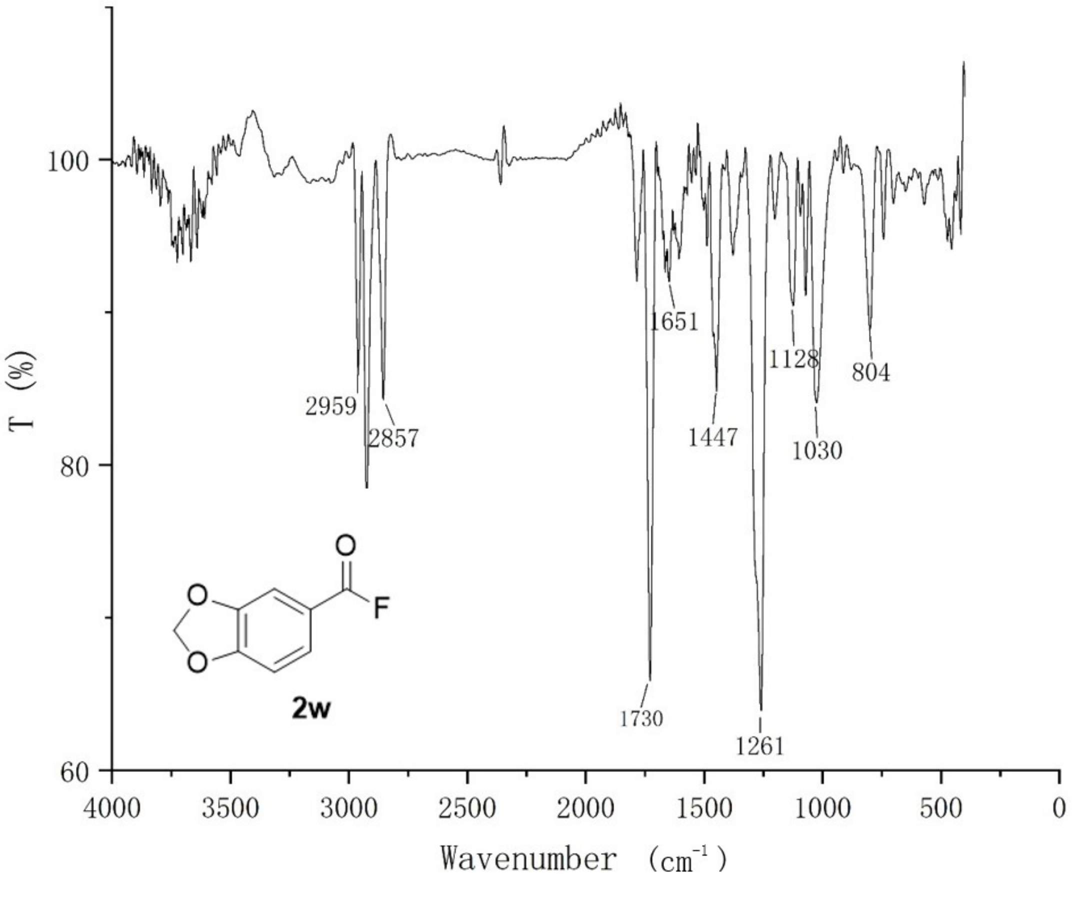

T (%)
110
100
90
80
70
1694
1423
1315
989
814
683
552
494
O
F
2s
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})

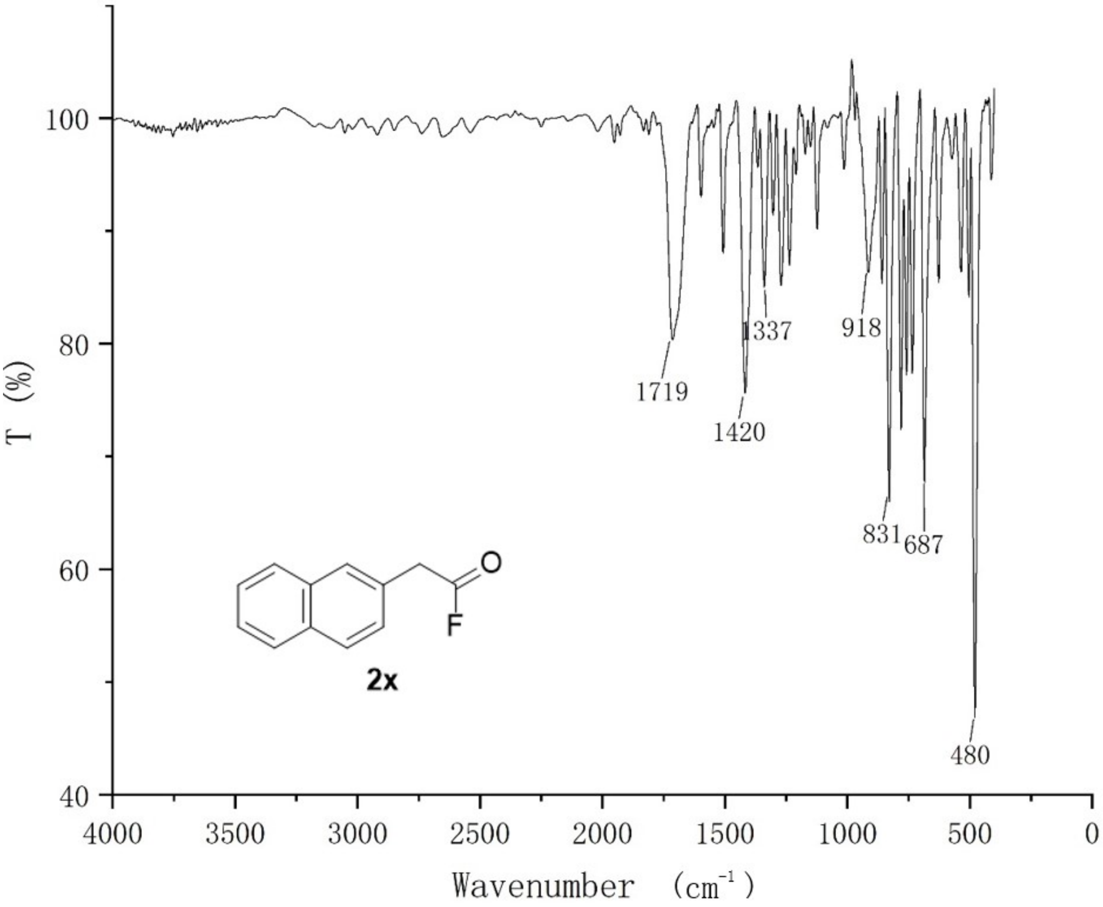


100
90
80
70
60
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm-1)
2936
2845
1599
1690
1512
1317
1260
1167
945
826
563
527
O
F
O
2t


100
80
60
40
20
0
T (%)
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm⁻¹)
1790
1630
1487
1402
1312
1190
1101
1070
986
814
488
O
F
Br
2u


T (%)
100
50
0
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
2967
2860
1848
1778
1580
1458
1246
912
756
F
O
2v


T (%)
100
80
60
4000
3500
3000
2500
2000
1500
1000
500
0
Wavenumber (cm^{-1})
2959
2857
1730
1651
1447
1261
1128
1030
804
O
F
O
O
2w


T (%)
100
80
60
40
Wavenumber (cm^{-1})
4000
3500
3000
2500
2000
1500
1000
500
0
1719
1420
1337
918
831
687
480
O
F
2x