Supporting Information

Time-economical synthesis of selenofunctionalized heterocycles via I_2O_5-mediated selenylative heterocyclization

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Content

1. General information

Solvents and reagents

Reagents were used as received without further purification unless otherwise indicated. Solvents were dried and distilled prior to use. Petroleum ether used had a boiling point range of 60−90°C. Diselenides were prepared from the corresponding iodides with elemental selenium according to Braga's report.[1] Unsaturated alcohols and acids **10** were purchased from reagent manufacturer. Substrates **1**,[2] **4**[3], **8**[4] and **12**[5] were prepared according to our previous works. Compounds **6** were synthesized via aldehyde allylation, subsequent Mitsunobu reaction with N-hydroxyphthalimide, N-deprotection and N-sulfonylation, as previously reported by Chemler.[6]

Chromatography

Chromatographic purification of products was performed as flash column chromatography on silica gel (200−300 meshes). Thin-layer chromatography (TLC) was carried out on silica plates (TLC Silica GF_{254}). Visualization of the compounds was accomplished by projecting UV-light onto the developed plates.

NMR spectra

NMR spectra were recorded on a Bruker Avance- III HD (^{1}H NMR: 400 MHz, ^{13}C NMR: 100 MHz) spectrometer. Chemical shifts are referenced to residual solvent signals ($CDCl_3$: 7.26 ppm and 77.16 ppm for ^{1}H NMR and ^{13}C NMR respectively) and reported in parts per million (ppm) relative to tetramethylsilane (TMS). Spin−spin coupling constants (*J*) were given in Hz. Multiplicities of NMR signals are abbreviated as follows: br = broad, s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet.

Mass spectra

High resolution mass spectrometry (HRMS) analyses were carried out on a Thermo Fisher Q Exactive Mass Spectrometer, and the mass analyzer type is Orbitrap.

Melting points

Melting points were determined on glass slides using a WRX-4 digital display microscopic melting point apparatus and were presented uncorrected.

X-ray diffraction experiment

The crystal of compound **5b** and **13h** were obtained by slowly evaporating a mixture of ethyl acetate and *n*-hexane solution at ambient temperature. The data were collected at 100 K on a Rigaku Oxford Diffraction Supernova Dual Source, Cu at Zero equipped with an AtlasS2 CCD using Cu Kα radiation.

2. Photograph of the color of reaction mixture

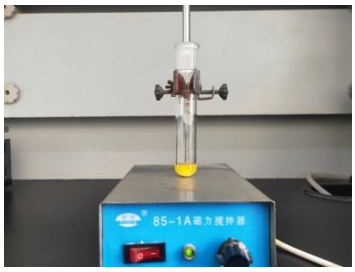


Fig. S1a at the beginning of the reaction

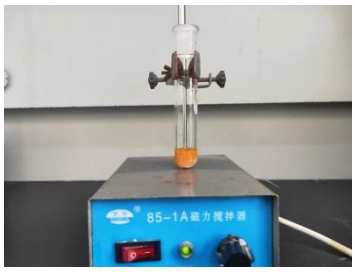


Fig. S1b at the end of the reaction

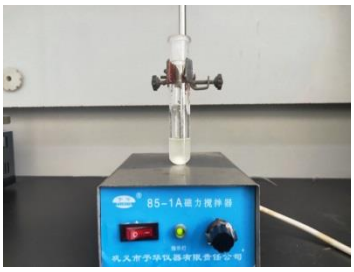


Fig. S1c after adding an aqueous $Na_2S_2O_3$

3. The proof of the formation of PhSeI in the reaction

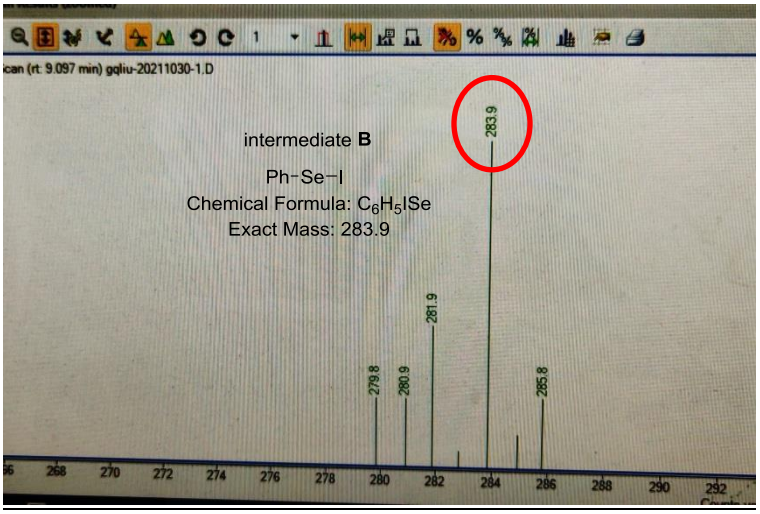
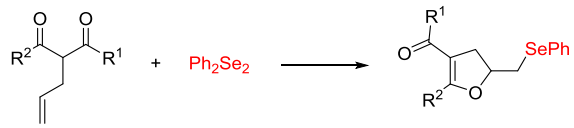
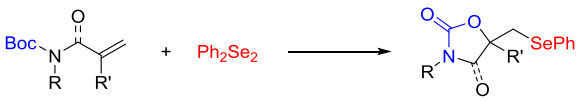


Figure S2. GC-MS spectra of PhSeI generated from the reaction of Ph_2Se_2 and I_2O_5

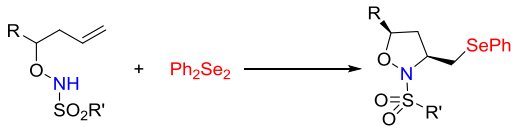
4. Comparison with reported protocol



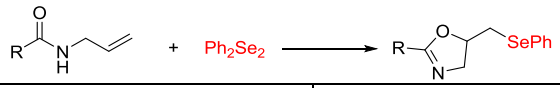
Green Chem. **2019**, 4976-4980	This work
[−] reaction condition: N_2, r.t.	[+] reaction condition: open air, r.t.
[−] reaction times: 2-2.5 h	[+] reaction times: 10 min
[−] reaction setup: electrochemical device	[+] reaction setup: flask
[+] selenium source: Ph_2Se_2	[+] selenium source: Ph_2Se_2
[+] additive: none	[+] additive: none
[−] yield: 50-93%	[+] yield: 73-93%



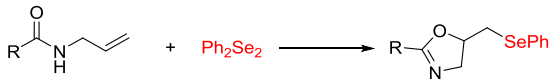
No method available	This work
	[+] reaction condition: open air, r.t.
	[+] reaction times: 10 min
	[+] reaction setup: flask
	[+] selenium source: Ph_2Se_2
	[+] additive: none
	[+] yield: 68-96%



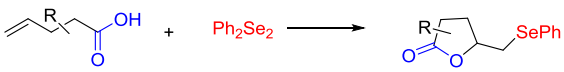
Synthesis **2002** 2117–2123	This work
[+] reaction condition: open air, r.t.	[+] reaction condition: open air, r.t.
[−] reaction times: 24 h	[+] reaction times: 10 min
[+] reaction setup: flask	[+] reaction setup: flask
[−] selenium source: PhSeBr	[+] selenium source: Ph_2Se_2
[−] additive: Na_2CO_3	[+] additive: none
[−] yield: 73% yield, one example	[+] yield: 84-93%, 13 examples



Adv. Synth. Catal. **2020**, 1046–1052	This work
[+] reaction condition: open air, r.t.	[+] reaction condition: open air, r.t.
[−] reaction times: 2 h	[+] reaction times: 10 min
[−] reaction setup: electrochemical device	[+] reaction setup: flask
[+] selenium source: Ph_2Se_2	[+] selenium source: Ph_2Se_2
[+] additive: none	[+] additive: none
[−] yield: 63-91%	[+] yield: 73-93%

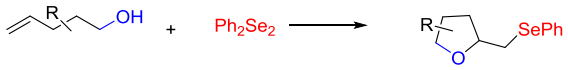


Adv. Synth. Catal. **2020**, 1046–1052	This work
[+] reaction condition: open air, r.t.	[+] reaction condition: open air, r.t.
[−] reaction times: 2 h	[+] reaction times: 10 min
[−] reaction setup: electrochemical device	[+] reaction setup: flask
[+] selenium source: Ph_2Se_2	[+] selenium source: Ph_2Se_2
[+] additive: none	[+] additive: none
[−] yield: 63-91%	[+] yield: 73-93%

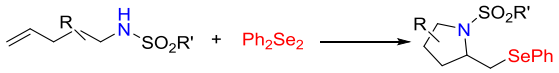


J. Org. Chem. **2021**, 86, 8620−862	This work

[−] reaction condition: 80 °C, air	[+] reaction condition: r.t., open air
[−] reaction times: 24 h	[+] reaction times: 10 min
[+] reaction setup: flask	[+] reaction setup: flask
[+] selenium source: Ph_2Se_2	[+] selenium source: Ph_2Se_2
[−] additive: $FeCl_3$	[+] additive: none
[−] yield: 80%, 88% yields, 2 examples	[+] yield: 73-93%, 9 examples



Tetrahedron **1981**, 4097-4109	This work
[−] reaction condition: −78 °C	[+] reaction condition: r.t.
[−] reaction times: not indicated	[+] reaction times: 10 min
[+] reaction setup: flask	[+] reaction setup: flask
[−] selenium source: N-phenylselenophthalimide	[+] selenium source: Ph_2Se_2
[−] additive: base	[+] additive: none
[+] yield: 75-95%	[−] yield: 73-93%



Org. Lett. **2019**, 21, 885−889	This work
[+] reaction condition: r.t., open air	[+] reaction condition: r.t., open air
[−] reaction times: not indicated	[+] reaction times: 10 min
[−] reaction setup: flask, lamp	[+] reaction setup: flask
[+] selenium source: Ph_2Se_2	[+] selenium source: Ph_2Se_2
[−] additive: 4CzIPN	[+] additive: none
[+] yield: 98%, one example	[+] yield: 82-94%, 10 examples

5. General procedure for the selenocyclizations

The reaction was carried out in an open air system. To a 10 mL vessel with magnetic stir bar were added 0.2 mmol substrates, 0.2 mmol diselenide, 0.2 mmol I_2O_5 and 2 mL of CH_3CN. The reaction mixture was stirred at room temperature and the reaction was monitored by TLC. Most of the cyclization reactions were completed within ten minutes. After completion of reaction, the reaction was next quenched with a saturated aqueous $Na_2S_2O_3$ solution and extracted with EtOAc. The combined organic layers were dried (Na_2SO_4) and concentrated to give a crude residue, which was purified by flash column chromatography.

6. Characterization data

Phenyl(2-phenyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3a**). Compound **3a** was prepared according to the general procedure and isolated as an oil (78 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz,

$CDCl_3$): δ 7.52 (dd, *J* = 6.4, 3.0 Hz, 2H), 7.36 (d, *J* = 7.2 Hz, 2H), 7.19 (dd, *J* = 7.4, 4.4 Hz, 3H), 7.17 – 7.03 (m, 4H), 6.97 (dt, *J* = 15.6, 7.7 Hz, 4H), 4.99 – 4.89 (m, 1H), 3.39 (dd, *J* = 15.2, 9.9 Hz, 1H), 3.32 (dd, *J* = 12.6, 5.5 Hz, 1H), 3.15 (dd, *J* = 12.6, 7.1 Hz, 1H), 3.05 (dd, *J* = 15.2, 7.4 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 192.3, 164.4, 137.9, 132.3, 130.1, 129.0, 128.8, 128.3, 128.2, 128.1, 127.9, 126.6, 126.5, 126.4, 110.6, 80.0, 37.5, 31.6. The data are in accordance with the literature.[7]

(5-((Phenylselanyl)methyl)-2-(*p*-tolyl)-4,5-dihydrofuran-3-yl)(*p*-tolyl)methanone (**3b**). Compound **3b** was prepared according to the general procedure and isolated as an oil (80 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.58 – 7.44 (m, 2H), 7.32 (d, *J* = 8.2 Hz, 2H), 7.25 – 7.19 (m, 3H), 6.99 (d, *J* = 8.2 Hz, 2H), 6.84 (d, *J* = 7.9 Hz, 2H), 6.79 (d, *J* = 7.9 Hz, 2H), 5.12 – 4.73 (m, 1H), 3.41 – 3.34 (m, 1H), 3.34 – 3.29 (m, 1H), 3.14 (dd, *J* = 12.6, 7.2 Hz, 1H), 3.02 (dd, *J* = 15.2, 7.3 Hz, 1H), 2.18 (s, 3H), 2.16 (s, 3H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 192.2, 163.6, 140.7, 139.2, 135.3, 132.2, 128.2, 128.0, 127.3, 127.2, 126.4, 126.1, 109.8, 79.6, 37.9, 31.5, 21.7, 20.4, 20.3. The data are in accordance with the literature.[7]

(4-Methoxyphenyl)(2-(4-methoxyphenyl)-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3c**). Compound **3c** was prepared according to the general procedure and isolated as an oil (76 mg, 79% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.56 – 7.48 (m, 2H), 7.48 – 7.41 (m, 2H), 7.27 – 7.19 (m, 3H), 7.08 (d, *J* = 8.8 Hz, 2H), 6.56 (d, *J* = 8.8 Hz, 2H), 6.52 (d, *J* = 8.9 Hz, 2H), 4.88 (dtd, *J* = 9.8, 7.2, 5.6 Hz, 1H), 3.67 (s, 3H), 3.65 (s, 3H), 3.45 – 3.33 (m, 1H), 3.33 – 3.27 (m, 1H), 3.13 (dd, *J* = 12.6, 7.0 Hz, 1H), 3.01 (dd, *J* = 15.1, 7.3 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 192.2, 163.7, 162.2, 160.8, 133.2, 131.6, 131.2, 131.0, 129.3, 129.3, 127.4, 122.4, 113.1, 113.0, 110.0, 80.4, 55.33, 55.27, 39.1, 32.6. The data are in accordance with the literature.[7]

(4-Fluorophenyl)(2-(4-fluorophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3d**). Compound **3d** was prepared according to the general procedure and isolated as an oil (79 mg, 87% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.67 – 7.56 (m, 2H), 7.47 (dd, *J* = 8.7, 5.5 Hz, 2H), 7.32 – 7.25 (m, 4H), 7.25 – 7.06 (m, 2H), 6.86 – 6.76 (m, 3H), 5.06 – 4.97 (m, 1H), 3.44 (dd, *J* = 15.3, 9.9 Hz, 1H), 3.37 (dd, *J* = 12.7, 5.5 Hz, 1H), 3.24 (dd, *J* = 12.7, 6.9 Hz, 1H), 3.11 (dd, *J* = 15.2, 7.4 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 191.5, 165.3 (d, $J_{C\text{-}F}$ = 101.8 Hz), 164.0, 162.8(d, $J_{C\text{-}F}$ = 101.3 Hz), 135.1(d, $J_{C\text{-}F}$ = 3.1 Hz), 133.3, 131.5 (d, $J_{C\text{-}F}$ = 8.7 Hz), 131.3 (d, $J_{C\text{-}F}$ = 9.0 Hz), 129.3, 129.1, 127.5, 126.0 (d, $J_{C\text{-}F}$ = 3.1 Hz), 115.03 (d, $J_{C\text{-}F}$ = 4.9 Hz), 114.81 (d, $J_{C\text{-}F}$ = 4.7 Hz), 111.42, 38.6, 32.6. ^{19}F NMR (376 MHz, $CDCl_3$): δ -107.4, -108.7. The data are in accordance with the literature.[7]

(4-Chlorophenyl)(2-(4-chlorophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3e**). Compound **3e** was prepared according to the general procedure and isolated as an oil (78 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^1H NMR

(400 MHz, $CDCl_3$): δ 7.63 – 7.54 (m, 2H), 7.40 (d, *J* = 8.5 Hz, 2H), 7.33 – 7.21 (m, 4H), 7.13 – 7.07 (m, 5H), 5.12 – 4.99 (m, 1H), 3.43 (dd, *J* = 15.3, 9.9 Hz, 1H), 3.36 (dd, *J* = 12.7, 5.4 Hz, 1H), 3.23 (dd, *J* = 12.7, 6.8 Hz, 1H), 3.10 (dd, *J* = 15.3, 7.4 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 191.6, 164.0, 137.8, 137.2, 136.5, 133.3, 130.6, 130.3, 129.3, 129.1, 128.2, 128.13, 128.06, 127.6, 111.8, 81.2, 38.7, 32.5. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{24}H_{19}Cl_2O_2Se$ 488.9922; Found 488.9991.

(4-Bromophenyl)(2-(4-bromophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3f**). Compound **3f** was prepared according to the general procedure and isolated as a yellow solid (90 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). Mp: 94−96 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 7.55 – 7.44 (m, 2H), 7.32 – 7.17 (m, 7H), 7.16 (d, *J* = 8.5 Hz, 2H), 6.92 (d, *J* = 8.6 Hz, 2H), 5.05 – 4.89 (m, 1H), 3.35 (dd, *J* = 15.3, 9.9 Hz, 1H), 3.28 (dd, *J* = 12.7, 5.4 Hz, 1H), 3.15 (dd, *J* = 12.7, 6.9 Hz, 1H), 3.01 (dd, *J* = 15.3, 7.4 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 191.7, 164.1, 137.6, 133.3, 131.1, 131.0, 130.7, 130.4, 129.3, 129.1, 128.6, 127.6, 126.3, 124.9, 111.8, 81.3, 38.6, 32.5. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{24}H_{19}Br_2O_2Se$ 576.8912; Found 576.8936.

1-(2-Ethyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)propan-1-one (**3g**). Compound **3g** was prepared according to the general procedure and isolated as an oil (59 mg, 91% yield) after flash chromatography (petroleum ether/ethyl acetate = 15:1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.68 – 7.45 (m, 2H), 7.20– 7.18 (m, 3H), 4.79 – 4.65 (m, 1H), 4.08 (q, *J* = 7.1 Hz, 2H), 3.13 (dd, *J* = 12.5, 5.5 Hz, 1H), 3.03 – 2.88 (m, 2H), 2.62 (dd, *J* = 14.8, 6.9 Hz, 2H), 2.57 – 2.49 (m, 1H), 1.19 (t, *J* = 7.1 Hz, 3H), 1.00 (t, *J* = 7.6 Hz, 3H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 171.1, 164.9, 132.1, 128.2, 128.1, 126.3, 99.4, 79.8, 58.4, 34.5, 31.7, 20.2, 13.4, 10.1. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{16}H_{21}O_2Se$ 325.0701; Found 325.0703.

(5-Methyl-2-phenyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3h**). Compound **3h** was prepared according to the general procedure and isolated as an oil (81 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.63 – 7.53 (m, 2H), 7.50 – 7.38 (m, 2H), 7.32 – 7.22 (m, 4H), 7.17 – 6.98 (m, 7H), 3.48 – 3.26 (m, 3H), 3.18 (d, *J* = 15.2 Hz, 1H), 1.67 (s, 3H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 193.5, 164.8, 139.1, 132.9, 131.0, 130.6, 130.1, 129.9, 129.3, 129.2, 128.9, 127.6, 127.5, 127.2, 111.8, 87.6, 44.0, 39.2, 26.8. The data are in accordance with the literature.[7]

Ethyl 4-benzoyl-5-phenyl-2-((phenylselanyl)methyl)-2,3-dihydrofuran-2-carboxylate (**3i**). Compound **3i** was prepared according to the general procedure and isolated as an oil (79 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.64 – 7.55 (m, 2H), 7.49 – 7.38 (m, 2H), 7.33 – 7.19 (m, 4H), 7.19 – 7.12 (m, 3H), 7.09 – 6.97 (m, 4H), 4.27 – 4.19 (m, 2H), 3.69 – 3.54 (m, 3H), 3.47 (d, *J* = 15.8 Hz, 1H), 1.29 (t, *J* = 7.1 Hz, 3H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 193.0, 170.8, 164.5, 138.5, 133.6, 131.4, 130.2, 129.8, 129.5, 129.3, 129.1, 129.0, 127.7, 127.6, 127.5, 111.2, 88.0, 62.2, 42.7, 34.9, 14.1. The data are in accordance with the literature.[7]

Phenyl(2-phenyl-7-(phenylselanyl)-3a,4,5,6,7,7a-hexahydrobenzofuran-3-yl)methanone (**3j**). Compound **3j** was prepared according to the general procedure and isolated as an oil (67 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 50/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.63 (dd, *J* = 7.3, 2.2 Hz, 2H), 7.49 – 7.36 (m, 2H), 7.34 – 7.25 (m, 3H), 7.06 – 6.89 (m, 7H), 4.73 (dd, *J* = 7.4, 5.8 Hz, 1H), 3.73 – 3.67 (m, 1H), 3.61 (q, *J* = 6.9 Hz, 1H), 2.09 – 1.99 (m, 2H), 1.83 – 1.75 (m, 1H), 1.73 – 1.63 (m, 1H), 1.56 – 1.48 (m, 2H), 1.47 – 1.41 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 192.5, 164.4, 137.9, 134.4, 130.4, 129.0, 128.4, 128.2, 128.1, 127.6, 127.5, 127.0, 126.7, 126.6, 116.5, 84.2, 43.1, 42.0, 27.8, 25.3, 20.0. The data are in accordance with the literature.[7]

2-((Phenylselanyl)methyl)-3,5,6,7-tetrahydrobenzofuran-4(2H)-one (**3k**). Compound **3k** was prepared according to the general procedure and isolated as an oil (46 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 5:1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.53 – 7.41 (m, 2H), 7.22 – 7.17 (m, 3H), 4.92 – 4.84 (m, 1H), 3.15 (dd, *J* = 12.7, 5.9 Hz, 1H), 3.01 (dd, *J* = 12.7, 6.8 Hz, 1H), 2.90 (ddt, *J* = 14.1, 9.8, 1.9 Hz, 1H), 2.57 (ddt, *J* = 14.8, 6.9, 1.9 Hz, 1H), 2.32 – 2.17 (m, 4H), 1.98 – 1.92 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 195.5, 177.0, 133.3, 129.2, 129.0, 127.5, 112.9, 84.4, 36.4, 32.7, 31.8, 23.9, 21.7. The data are in accordance with the literature.[7]

1-(2-Phenyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)ethan-1-one (**3l**). Compound **3l** was prepared according to the general procedure and isolated as an oil (39 mg 54% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.62 – 7.53 (m, 4H), 7.49 – 7.44 (m, 1H), 7.40 (dd, *J* = 8.1, 6.5 Hz, 2H), 7.33 – 7.21 (m, 3H), 4.88 – 4.81 (m, 1H), 3.45 – 3.17 (m, 2H), 3.10 (dd, *J* = 12.7, 6.9 Hz, 1H), 2.90 (dd, *J* = 14.7, 7.2 Hz, 1H), 1.77 (d, *J* = 1.5 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.0, 168.4, 140.8, 133.2, 131.0, 129.2, 129.1, 128.3, 127.8, 127.4, 112.2, 81.3, 36.9, 32.6, 15.4. The data are in accordance with the literature.[7]

(2-Methyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3l'**). Compound **3l'** was prepared according to the general procedure and isolated as an oil (24 mg, 34% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.53 – 7.46 (m, 2H), 7.45 – 7.28 (m, 5H), 7.23 – 7.16 (m, 3H), 4.90 – 4.81 (m, 1H), 3.36 – 3.14 (m, 2H), 3.06 (dd, *J* = 12.6, 7.3 Hz, 1H), 2.88 (dd, *J* = 15.2, 7.2 Hz, 1H), 1.87 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 194.6, 165.7, 133.3, 130.7, 130.6, 129.3, 129.2, 129.1, 128.3, 127.5, 114.3, 81.1, 37.1, 32.7, 28.9. The data are in accordance with the literature.[7]

Ethyl 2-ethyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-carboxylate (**3m**). Compound **3m** was prepared according to the general procedure and isolated as an oil (60 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.52 – 7.40 (m, 2H), 7.25 – 7.07 (m, 3H), 4.75 – 4.67 (m, 1H), 3.13 (dd, *J* = 12.5, 5.3 Hz, 1H), 3.01 (ddt, *J* = 14.3, 10.1, 1.2 Hz, 1H), 2.94 (dd, *J* = 12.5, 7.5 Hz, 1H), 2.66 (dd, *J* = 14.2, 6.8 Hz, 1H), 2.55 (q, *J* = 7.7 Hz, 2H), 2.32 (q, *J* = 7.3 Hz, 2H), 1.03 – 1.97 (m, 6H). ^{13}C{^{1}H} NMR (100 MHz,

$CDCl_3$): δ 196.4, 170.7, 132.1, 128.2, 128.1, 126.4, 108.4, 79.9, 34.8, 33.6, 31.6, 20.9, 10.0, 6.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{21}O_3Se$ 341.0650; Found 341.0657.

Ethyl 2-phenyl-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-carboxylate (**3n**). Compound **3n** was prepared according to the general procedure and isolated as an oil (70 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.72 – 7.59 (m, 2H), 7.58 – 7.45 (m, 2H), 7.37 – 7.25 (m, 3H), 7.21 – 7.18 (m, 3H), 4.83 (dtd, *J* = 10.1, 7.4, 5.5 Hz, 1H), 4.06 (q, *J* = 7.1 Hz, 2H), 3.23 (s, 1H), 3.24 – 3.17 (m, 1H), 3.04 (dd, *J* = 12.5, 7.6 Hz, 1H), 2.87 (dd, *J* = 15.4, 7.1 Hz, 1H), 1.13 (t, *J* = 7.1 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 164.2, 163.5, 132.2, 129.3, 128.8, 128.3, 128.2, 128.1, 126.5, 126.4, 101.0, 79.4, 58.8, 36.2, 31.5, 13.2. The data are in accordance with the literature.[7]

Methyl 2-(4-fluorophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-carboxylate (**3o**). Compound **3o** was prepared according to the general procedure and isolated as an oil (68 mg, 87% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.75 (d, *J* = 8.8 Hz, 2H), 7.63 – 7.42 (m, 2H), 7.05 – 7.00 (m, 3H), 7.03 (t, *J* = 8.8 Hz, 2H), 4.92 – 4.85 (m, 1H), 3.67 (s, 3H), 3.33 – 3.21 (m, 2H), 3.10 (dd, *J* = 12.7, 7.2 Hz, 1H), 2.93 (dd, *J* = 15.4, 7.1 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 165.6, 163.8 (d, $J_{C\text{-}F}$ = 249 Hz), 163.7, 133.3, 131.6 (d, $J_{C\text{-}F}$= 8.6 Hz), 129.3, 129.1, 127.5, 125.8 (d, $J_{C\text{-}F}$= 3.3 Hz), 114.7 (d, $J_{C\text{-}F}$= 21.7 Hz), 101.5, 80.5, 51.1, 37.2, 32.6. ^{19}F NMR (376 MHz, $CDCl_3$): δ -109.1. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{20}H_{18}FO_3Se$ 393.0400; Found 393.0408.

Ethyl 2-(4-methoxyphenyl)-5-((phenylselanyl)methyl)-4,5-dihydrofuran-3-carboxylate (**3p**). Compound **3p** was prepared according to the general procedure and isolated as an oil (77 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 25/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.67 (d, *J* = 8.9 Hz, 2H), 7.55 – 7.48 (m, 2H), 7.23 – 7.11 (m, 3H), 6.79 (d, *J* = 8.9 Hz, 2H), 4.83 – 4.73 (m, 1H), 4.06 (q, *J* = 7.1 Hz, 2H), 3.75 (s, 3H), 3.26 – 3.16 (m, 2H), 3.02 (dd, *J* = 12.5, 7.5 Hz, 1H), 2.84 (dd, *J* = 15.2, 7.1 Hz, 1H), 1.16 (t, *J* = 7.1 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 164.4, 163.3, 160.2, 132.2, 130.1, 128.2, 126.3, 121.1, 111.9, 99.5, 79.1, 58.7, 54.3, 36.3, 31.6, 13.3. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{21}H_{23}O_4Se$ 419.0756; Found 419.0762.

1-(6-Methyl-2-((phenylselanyl)methyl)-3,4-dihydro-2*H*-pyran-5-yl)ethanone (**3q**). Compound **3q** was prepared according to the general procedure and isolated as a white solid (47 mg, 76% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). Mp: 195−197 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.67 – 7.34 (m, 2H), 7.30 – 7.24 (m, 3H), 4.06 – 4.00 (m, 1H), 3.20 (dd, *J* = 12.8, 5.9 Hz, 1H), 3.01 (dd, *J* = 12.7, 6.8 Hz, 1H), 2.48 – 2.38 (m, 1H), 2.36 – 2.27 (m, 1H), 2.19 (s, 3H), 2.16 (s, 3H), 2.14 – 2.07 (m, 1H), 1.72 – 1.62 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 198.9, 164.1, 132.9, 129.9, 129.2, 127.3, 109.9, 75.7, 31.7, 29.7, 26.4, 22.4, 21.0. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{15}H_{18}NaO_2Se$ 333.0364; Found 333.0380.

(5-((Methylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3ba**). Compound **3ba** was prepared according to the general procedure and isolated as an oil (58 mg, 81%

yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.50 – 7.39 (m, 2H), 7.31 – 7.13 (m, 4H), 7.13 – 7.00 (m, 4H), 5.10 – 5.03 (m, 1H), 3.46 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.13 (dd, *J* = 15.1, 7.8 Hz, 1H), 3.01 (dd, *J* = 12.8, 5.6 Hz, 1H), 2.92 (dd, *J* = 12.7, 6.7 Hz, 1H), 2.12 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 139.0, 131.2, 130.01, 130.00, 129.3, 128.9, 127.7, 127.6, 111.8, 81.8, 38.8, 30.0, 5.3. The data are in accordance with the literature.[7]

(5-((Benzylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bb**). Compound **3bb** was prepared according to the general procedure and isolated as an oil (77 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.51 – 7.38 (m, 2H), 7.28 (d, *J* = 4.3 Hz, 4H), 7.24 – 7.11 (m, 5H), 7.11 – 7.03 (m, 4H), 5.02 – 4.93 (m, 1H), 3.87 (s, 2H), 3.38 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.05 (dd, *J* = 15.1, 7.7 Hz, 1H), 2.92 (dd, *J* = 12.8, 5.7 Hz, 1H), 2.86 (dd, *J* = 12.8, 6.5 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.4, 165.3, 139.0, 138.9, 131.2, 130.04, 129.99, 129.4, 129.0, 128.9, 128.6, 127.67, 127.66, 127.0, 111.8, 81.7, 38.8, 28.4, 27.9. The data are in accordance with the literature.[7]

(5-((Phenethylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bc**). Compound **3bc** was prepared according to the general procedure and isolated as an oil (81 mg, 91% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.51 – 7.40 (m, 2H), 7.29 – 7.12 (m, 9H), 7.10 – 7.02 (m, 4H), 5.09 – 4.98 (m, 1H), 3.42 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.23 – 3.08 (m, 1H), 3.07 – 2.85 (m, 6H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 140.9, 139.0, 131.2, 130.04, 130.01, 129.4, 128.9, 128.5, 128.4, 127.68, 127.67, 126.4, 111.9, 82.0, 38.8, 37.2, 28.7, 26.0. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{26}H_{25}O_2Se$ 449.1014; Found 449.1021.

(5-((Isobutylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bd**). Compound **3bd** was prepared according to the general procedure and isolated as an oil (76 mg, 95% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.57 – 7.39 (m, 2H), 7.29 – 7.12 (m, 4H), 7.10 – 7.04 (m, 4H), 5.08 – 5.00 (m, 1H), 3.46 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.12 (dd, *J* = 15.1, 7.7 Hz, 1H), 3.01 (dd, *J* = 12.6, 5.5 Hz, 1H), 2.92 (dd, *J* = 12.6, 7.0 Hz, 1H), 2.61 (d, *J* = 3.0 Hz, 1H), 2.60 (d, *J* = 3.0 Hz, 1H), 1.87 (dt, *J* = 13.3, 6.7 Hz, 1H), 1.01 (d, *J* = 2.0 Hz, 3H), 0.99 (d, *J* = 2.0 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.5, 165.5, 139.0, 131.1, 130.02, 130.00, 129.3, 128.9, 127.7, 127.6, 111.8, 81.9, 38.7, 35.1, 29.4, 29.0, 22.6. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{22}H_{25}O_2Se$ 401.1014; Found 401.1019.

(5-((Pentylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3be**). Compound **3be** was prepared according to the general procedure and isolated as an oil (74 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.52 – 7.35 (m, 2H), 7.29 – 7.11 (m, 4H), 7.12 – 7.01 (m, 4H), 5.05 (dtd, *J* = 9.8, 7.3, 5.5 Hz, 1H), 3.45 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.12 (dd, *J* = 15.1, 7.7 Hz, 1H), 3.02 (dd, *J* = 12.6, 5.5 Hz, 1H), 2.92 (dd, *J* = 12.6, 6.9 Hz, 1H), 2.67 (td, *J* = 7.6, 1.7 Hz, 2H), 1.74 – 1.62 (m, 2H),

1.46 – 1.23 (m, 4H), 0.88 (t, *J* = 7.0 Hz, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 139.0, 131.1, 130.03, 129.99, 129.3, 128.9, 127.65, 127.61, 111.8, 82.0, 38.8, 32.0, 30.3, 28.4, 25.1, 22.2, 14.0. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{23}H_{27}O_2Se$ 415.1171; Found 415.1176.

(5-((Heptylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bf**). Compound **3bf** was prepared according to the general procedure and isolated as a yellow solid (81 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). Mp: 110−112 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.50 – 7.34 (m, 2H), 7.30 – 7.11 (m, 4H), 7.13 – 7.04 (m, 4H), 5.05 (dtd, *J* = 9.8, 7.3, 5.5 Hz, 1H), 3.46 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.12 (dd, *J* = 15.2, 7.7 Hz, 1H), 3.02 (dd, *J* = 12.6, 5.5 Hz, 1H), 2.93 (dd, *J* = 12.7, 6.9 Hz, 1H), 2.68 (td, *J* = 7.5, 1.6 Hz, 2H), 1.75 – 1.64 (m, 2H), 1.45 – 1.20 (m, 8H), 0.87 (t, *J* = 7.1 Hz, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 139.0, 131.1, 130.03, 129.99, 129.3, 128.9, 127.64, 127.61, 111.8, 82.0, 38.8, 31.7, 30.7, 29.8, 28.8, 28.4, 25.1, 22.6, 14.1. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{25}H_{31}O_2Se$ 443.1484; Found 443.1493.

(5-((Cyclohexylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bg**). Compound **3bg** was prepared according to the general procedure and isolated as an oil (78 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.53 – 7.35 (m, 2H), 7.32 – 7.11 (m, 4H), 7.14 – 7.04 (m, 4H), 5.05 (dtd, *J* = 9.8, 7.4, 5.4 Hz, 1H), 3.46 (dd, *J* = 15.1, 9.8 Hz, 1H), 3.12 (dd, *J* = 15.2, 7.6 Hz, 1H), 3.08 – 3.00 (m, 2H), 2.94 (dd, *J* = 12.6, 7.1 Hz, 1H), 2.14 – 1.96 (m, 2H), 1.78 – 1.78 (m, 2H), 1.64 – 1.43 (m, 3H), 1.36 – 1.19 (m, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 139.1, 131.1, 130.05, 129.97, 129.3, 128.9, 127.64, 127.60, 111.8, 82.1, 39.5, 38.8, 34.7, 34.6, 27.0, 26.84, 26.81, 25.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{24}H_{27}O_2Se$ 427.1171; Found 427.1178.

(5-(((4-Fluorophenyl)selanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bh**). Compound **3bh** was prepared according to the general procedure and isolated as a yellow solid (75 mg, 86% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). Mp: 69−71 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.66 – 7.53 (m, 2H), 7.43 (dd, *J* = 8.3, 1.4 Hz, 2H), 7.30 – 6.86 (m, 10H), 4.99 (dtd, *J* = 9.9, 7.2, 5.6 Hz, 1H), 3.45 (dd, *J* = 15.2, 9.9 Hz, 1H), 3.34 (dd, *J* = 12.6, 5.6 Hz, 1H), 3.19 (dd, *J* = 12.6, 6.9 Hz, 1H), 3.12 (dd, *J* = 15.2, 7.5 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.3, 162.7 (d, $J_{C\text{-}F}$ = 247.7 Hz), 138.9, 136.1 (d, $J_{C\text{-}F}$ = 7.8 Hz), 131.2, 130.1, 129.8, 129.3, 128.9, 127.7, 127.6, 123.5 (d, $J_{C\text{-}F}$ = 3.5 Hz), 116.5 (d, $J_{C\text{-}F}$ = 21.6 Hz), 111.7, 81.0, 38.6, 33.4. ^{19}F NMR (376 MHz, $CDCl_3$: δ -113.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{24}H_{20}FO_2Se$ 439.0607; Found 439.0615.

(5-(((4-Chlorophenyl)selanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bi**). Compound **3bi** was prepared according to the general procedure and isolated as a yellow solid (75 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). Mp: 65−67 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.51 (d, *J* = 8.5 Hz, 2H), 7.43 (d, *J* = 6.9 Hz, 2H), 7.31 – 7.13 (m, 4H), 7.13 – 6.99 (m, 6H), 5.01 (dtd, *J* = 9.9, 7.2, 5.7 Hz, 1H), 3.45 (dd, *J* = 15.3, 9.9 Hz, 1H), 3.35 (dd, *J* = 12.7, 5.6 Hz, 1H), 3.22 (dd, *J* = 12.7, 6.7 Hz, 1H), 3.12 (dd, *J* = 15.3, 7.4 Hz,

1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.3, 165.2, 138.9, 134.8, 133.8, 131.2, 130.1, 129.8, 129.4, 129.3, 128.9, 127.7, 127.6, 127.4, 111.6, 80.9, 38.6, 33.0. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{24}H_{20}ClO_2Se$ 455.0312; Found 455.0321.

(5-(((4-Methoxyphenyl)selanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bj**). Compound **3bj** was prepared according to the general procedure and isolated as an oil (80 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.55 (d, *J* = 8.7 Hz, 2H), 7.43 (d, *J* = 6.9 Hz, 2H), 7.30 – 7.10 (m, 4H), 7.11 – 6.95 (m, 4H), 6.82 (d, *J* = 8.7 Hz, 2H), 4.97 (dtd, *J* = 9.8, 7.4, 5.5 Hz, 1H), 3.80 (s, 3H), 3.45 (dd, *J* = 15.2, 9.8 Hz, 1H), 3.30 (dd, *J* = 12.5, 5.5 Hz, 1H), 3.14 (dd, *J* = 7.4, 1.0 Hz, 1H), 3.10 (dd, *J* = 7.4, 3.8 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 159.7, 139.0, 136.2, 131.1, 129.99, 129.94, 129.4, 128.9, 127.7, 127.6, 118.9, 115.0, 111.7, 81.2, 55.3, 38.5, 33.5. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{25}H_{23}O_3Se$ 451.0807; Found 451.0818.

Phenyl(2-phenyl-5-(((4-(trifluoromethoxy)phenyl)selanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3bk**). Compound **3bk** was prepared according to the general procedure and isolated as an oil (93 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61 (d, *J* = 8.6 Hz, 2H), 7.44 (d, *J* = 6.8 Hz, 2H), 7.32 – 6.97 (m, 10H), 5.22 – 4.92 (m, 1H), 3.47 (dd, *J* = 15.2, 9.9 Hz, 1H), 3.38 (dd, *J* = 12.7, 5.6 Hz, 1H), 3.25 (dd, *J* = 12.7, 6.7 Hz, 1H), 3.14 (dd, *J* = 15.2, 7.4 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.3, 165.3, 148.8, 138.9, 134.9, 131.3, 130.1, 129.8, 129.3, 128.9, 127.7, 127.6, 127.5, 121.7, 120.4 (q, $J_{C\text{-}F}$ =256 Hz), 111.7, 80.8, 38.6, 33.1. ^{19}F NMR (376 MHz, $CDCl_3$): δ -57.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{25}H_{20}F_3O_3Se$ 505.0524; Found 505.0524.

(5-(((4-(*tert*-Butyl)phenyl)selanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bl**). Compound **3bl** was prepared according to the general procedure and isolated as an oil (86 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.53 (d, *J* = 8.4 Hz, 2H), 7.49 – 7.41 (m, 2H), 7.30 (d, *J* = 8.4 Hz, 2H), 7.24 – 7.11 (m, 4H), 7.11 – 6.99 (m, 4H), 5.01 (dtd, *J* = 9.9, 7.3, 5.4 Hz, 1H), 3.47 (dd, *J* = 15.2, 9.9 Hz, 1H), 3.37 (dd, *J* = 12.5, 5.4 Hz, 1H), 3.20 (dd, *J* = 13.0, 7.6 Hz, 1H), 3.15 (dd, *J* = 15.3, 7.4 Hz, 1H), 1.31 (s, 9H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.5, 150.8, 139.0, 133.4, 131.2, 130.00, 129.95, 129.4, 128.9, 127.7, 127.6, 126.4, 125.5, 111.7, 81.1, 38.6, 34.6, 32.7, 31.3. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{28}H_{29}O_2Se$ 477.1327; Found 477.1338.

(5-((Benzo[*d*][1,3]dioxol-5-ylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bm**). Compound **3bm** was prepared according to the general procedure and isolated as an oil (85 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.43 (d, *J* = 6.9 Hz, 2H), 7.28 – 6.93 (m, 10H), 6.72 (d, *J* = 7.9 Hz, 1H), 5.94 (s, 2H), 5.07 – 4.87 (m, 1H), 3.44 (dd, *J* = 15.2, 9.9 Hz, 1H), 3.30 (dd, *J* = 12.6, 5.5 Hz, 1H), 3.16 – 3.09 (m, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 148.1, 147.9, 139.0, 131.2, 130.0, 129.9, 129.4, 128.9, 128.5, 127.7, 127.6, 119.9, 114.9, 111.7, 109.2, 101.3, 81.1, 38.5, 33.6. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{25}H_{21}O_4Se$ 465.0600; Found 465.0607.

(5-((Naphthalen-2-ylselanyl)methyl)-2-phenyl-4,5-dihydrofuran-3-yl)(phenyl)methanone (**3bn**). Compound **3bn** was prepared according to the general procedure and isolated as an oil (84 mg, 90%) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.48 (d, *J* = 7.7 Hz, 1H), 7.93 (d, *J* = 7.1 Hz, 1H), 7.89 – 7.77 (m, 2H), 7.69 – 7.52 (m, 2H), 7.47 – 7.33 (m, 3H), 7.27 – 6.97 (m, 8H), 4.98 – 4.90 (m, 1H), 3.50 – 3.37 (m, 2H), 3.23 (dd, *J* = 12.4, 7.2 Hz, 1H), 3.16 (dd, *J* = 15.2, 7.4 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 139.0, 134.5, 134.1, 133.8, 131.2, 130.0, 129.9, 129.3, 129.3, 129.1, 128.9, 128.8, 128.3, 127.8, 127.9, 127.7, 127.6, 127.0, 126.4, 125.8, 111.7, 81.1, 38.6, 32.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{28}H_{23}O_2Se$ 471.0858; Found 471.0864.

Phenyl(2-phenyl-5-((thiophen-2-ylselanyl)methyl)-4,5-dihydrofuran-3-yl)methanone (**3bo**). Compound **3bo** was prepared according to the general procedure and isolated as a yellow solid (75 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). Mp: 82−84 °C. ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 7.44 (d, *J* = 6.8 Hz, 2H), 7.40 (d, *J* = 5.3 Hz, 1H), 7.31 – 7.14 (m, 5H), 7.12 – 7.02 (m, 4H), 6.99 (dd, *J* = 5.3, 3.5 Hz, 1H), 5.01 (dtd, *J* = 9.9, 7.2, 5.7 Hz, 1H), 3.48 (dd, *J* = 15.2, 9.9 Hz, 1H), 3.30 (dd, *J* = 12.5, 5.8 Hz, 1H), 3.17 – 3.07 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 193.4, 165.4, 138.9, 136.3, 131.3, 131.2, 130.1, 129.9, 129.4, 128.9, 128.2, 127.7, 127.6, 122.5, 111.7, 80.9, 38.4, 35.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{22}H_{19}O_2SSe$ 427.0265; Found 427.0271.

3-(4-Chlorophenyl)-5-methyl-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5a**). Compound **5a** was prepared according to the general procedure and isolated as a white solid (56 mg, 71% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 106−108 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.56 – 7.52 (m, 2H), 7.46 (d, *J* = 8.8 Hz, 2H), 7.39 (d, *J* = 8.8 Hz, 2H), 7.30 – 7.25 (m, 3H), 3.46 (d, *J* = 13.9 Hz, 1H), 3.41 (d, *J* = 13.9 Hz, 1H), 1.77 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 173.2, 152.8, 134.8, 133.6, 129.5, 129.42, 129.40, 128.7, 128.1, 126.8, 85.4, 34.4, 22.9. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{17}H_{14}ClNO_3SeNa$ 417.9720; Found 417.9727.

3-(4-Bromophenyl)-5-methyl-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5b**). Compound **5b** was prepared according to the general procedure and isolated as a white solid (65 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1). Mp: 120−122 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.54 (d, *J* = 8.8 Hz, 2H), 7.49 – 7.42 (m, 2H), 7.25 (d, *J* = 8.8 Hz, 2H), 7.23 – 7.16 (m, 3H), 3.38 (d, *J* = 13.9 Hz, 1H), 3.33 (d, *J* = 13.9 Hz, 1H), 1.69 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 172.1, 151.7, 132.5, 131.5, 128.9, 128.4, 127.6, 127.1, 126.0, 121.7, 84.4, 33.4, 21.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{15}BrNO_3Se$ 439.9395; Found 439.9399.

3-(4-Iodophenyl)-5-methyl-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5c**). Compound **5c** was prepared according to the general procedure and isolated as a white solid (72 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 138−139 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.81 (d, *J* = 8.7 Hz, 2H), 7.53 (dd, *J* = 7.6, 2.0 Hz, 2H), 7.36 – 7.23

(m, 3H), 7.19 (d, *J* = 8.7 Hz, 2H), 3.45 (d, *J* = 13.9 Hz, 1H), 3.40 (d, *J* = 13.9 Hz, 1H), 1.76 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.1, 152.7, 138.6, 138.5, 133.6, 130.7, 129.4, 128.7, 128.1, 127.2, 94.3, 85.4, 34.4, 22.8. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{17}H_{14}INO_3SeNa$ 509.9076; Found 509.9076.

5-Methyl-5-((phenylselanyl)methyl)-3-(*p*-tolyl)oxazolidine-2,4-dione (**5d**). Compound **5d** was prepared according to the general procedure and isolated as an oil (58 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 12:1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61 – 7.51 (m, 2H), 7.34 – 7.17 (m, 7H), 3.45 (d, *J* = 13.8 Hz, 1H), 3.41 (d, *J* = 13.8 Hz, 1H), 2.40 (s, 3H), 1.76 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.6, 153.4, 139.2, 133.7, 130.0, 129.4, 128.9, 128.3, 128.0, 125.6, 85.3, 34.5, 22.9, 21.2. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{18}H_{18}NO_3Se$ 376.0446; Found 376.0453.

3-(4-Ethoxyphenyl)-5-methyl-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5e**). Compound **5e** was prepared according to the general procedure and isolated as an oil (67 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.56 (dd, *J* = 7.3, 2.2 Hz, 2H), 7.37 – 7.16 (m, 5H), 6.97 (d, *J* = 9.0 Hz, 2H), 4.05 (q, *J* = 7.0 Hz, 2H), 3.45 (d, *J* = 13.8 Hz, 1H), 3.40 (d, *J* = 13.8 Hz, 1H), 1.75 (s, 3H), 1.43 (t, *J* = 7.0 Hz, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.8, 159.2, 153.6, 133.7, 129.4, 128.9, 128.0, 127.1, 123.3, 115.1, 85.3, 63.8, 34.6, 22.9, 14.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{19}H_{20}NO_4Se$ 406.0552; Found 406.0559.

5-Methyl-3-(naphthalen-2-yl)-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5f**). Compound **5f** was prepared according to the general procedure and isolated as a white solid (66 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 119−121 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.88 (d, *J* = 8.8 Hz, 1H), 7.84 – 7.78 (m, 3H), 7.59 – 7.39 (m, 5H), 7.26 – 7.09 (m, 3H), 3.44 (d, *J* = 13.8 Hz, 1H), 3.37 (d, *J* = 13.9 Hz, 1H), 1.73 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.6, 153.3, 133.6, 133.1, 133.0, 129.4, 129.4, 128.9, 128.3, 128.1, 127.8, 127.2, 126.7, 124.9, 122.9, 85.4, 34.5, 22.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{21}H_{18}NO_3Se$ 412.0446; Found 412.0449.

3-(Benzo[*d*][1,3]dioxol-5-yl)-5-methyl-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5g**). Compound **5g** was prepared according to the general procedure and isolated as an oil (63 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 15:1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61 – 7.47 (m, 2H), 7.31 – 7.25 (m, 3H), 6.90 – 6.86 (m, 3H), 6.03 (s, 2H), 3.45 (d, *J* = 13.8 Hz, 1H), 3.40 (d, *J* = 13.9 Hz, 1H), 1.75 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.7, 153.3, 148.2, 148.2, 133.6, 129.4, 128.8, 128.1, 124.3, 120.0, 108.5, 107.2, 102.0, 85.4, 34.5, 22.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{18}H_{16}NO_5Se$ 406.0188; Found 406.0192.

5-Methyl-5-((phenylselanyl)methyl)-3-(3,4,5-trimethoxyphenyl)oxazolidine-2,4-dione (**5h**). Compound **5h** was prepared according to the general procedure and isolated as an oil (72 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.62 – 7.48 (m, 2H), 7.37 – 7.20 (m, 3H), 6.64 (s, 2H), 3.87 (s, 3H), 3.85 (s, 6H), 3.47

(d, *J* = 13.9 Hz, 1H), 3.43 (d, *J* = 13.9 Hz, 1H), 1.78 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.6, 153.6, 153.2, 138.5, 133.4, 129.4, 128.9, 128.0, 126.4, 103.5, 85.2, 60.9, 56.3, 34.4, 22.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{20}H_{22}NO_6Se$ 452.0607; Found 452.0607.

3-(Furan-2-ylmethyl)-5-methyl-5-((phenylselanyl)methyl)oxazolidine-2,4-dione (**5i**). Compound **5i** was prepared according to the general procedure and isolated as an oil (50 mg, 68% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.39 (dd, *J* = 7.5, 2.0 Hz, 2H), 7.29 (dd, *J* = 1.8, 0.9 Hz, 1H), 7.23 – 7.15 (m, 3H), 6.39 – 6.28 (m, 1H), 6.25 (dd, *J* = 3.3, 1.9 Hz, 1H), 4.65 (d, *J* = 15.4 Hz, 1H), 4.59 (d, *J* = 15.4 Hz, 1H), 3.24 (s, 2H), 1.57 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 173.8, 153.8, 147.5, 142.9, 133.7, 129.2, 128.9, 128.0, 110.6, 109.8, 85.7, 36.5, 34.0, 22.7. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{16}H_{15}NO_4SeNa$ 388.0059; Found 388.0068.

5-Methyl-5-((phenylselanyl)methyl)-3-(2-(thiophen-2-yl)ethyl)oxazolidine-2,4-dione (**5j**). Compound **5j** was prepared according to the general procedure and isolated as an oil (56 mg, 71% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.58 – 7.39 (m, 2H), 7.34 – 7.21 (m, 3H), 7.15 (dd, *J* = 5.1, 1.2 Hz, 1H), 6.92 (dd, *J* = 5.1, 3.4 Hz, 1H), 6.88 – 6.85 (m, 1H), 3.81 (td, *J* = 7.4, 2.0 Hz, 2H), 3.30 – 3.19 (m, 4H), 1.56 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 174.2, 154.2, 139.0, 133.6, 129.3, 129.0, 128.0, 127.1, 126.1, 124.4, 85.4, 41.2, 34.0, 27.4, 22.6. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{18}NO_3SSe$ 396.0167; Found 396.0167.

3-Phenyl-5-((phenylselanyl)methyl)oxazolidin-2-one (**5k**). Compound **5k** was prepared according to the general procedure and isolated as a white solid (60 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 79−81 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.56 – 7.47 (m, 2H), 7.45 – 7.40 (m, 2H), 7.36 – 7.26 (m, 2H), 7.26 – 7.18 (m, 3H), 7.10 – 7.02 (m, 1H), 4.65 (tdd, *J* = 8.9, 6.4, 4.3 Hz, 1H), 4.04 (t, *J* = 8.8 Hz, 1H), 3.71 (dd, *J* = 9.1, 6.4 Hz, 1H), 3.30 (dd, *J* = 12.9, 4.3 Hz, 1H), 2.98 (dd, *J* = 12.8, 9.1 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 154.4, 138.1, 133.7, 129.5, 129.1, 128.1, 127.8, 124.1, 118.2, 71.7, 50.3, 31.0. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{16}H_{16}NO_2Se$ 334.0341; Found 334.0342.

5-((Phenylselanyl)methyl)-3-(*m*-tolyl)oxazolidin-2-one (**5l**). Compound **5l** was prepared according to the general procedure and isolated as an oil (64 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.56 – 7.44 (m, 2H), 7.32 – 7.03 (m, 6H), 6.87 (dd, *J* = 6.8, 1.6 Hz, 1H), 4.63 (tdd, *J* = 8.8, 6.3, 4.3 Hz, 1H), 4.01 (t, *J* = 8.8 Hz, 1H), 3.68 (dd, *J* = 9.2, 6.3 Hz, 1H), 3.28 (dd, *J* = 12.9, 4.3 Hz, 1H), 2.97 (dd, *J* = 12.8, 9.1 Hz, 1H), 2.28 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 154.4, 139.0, 138.0, 133.7, 129.5, 128.9, 128.1, 127.9, 125.0, 119.0, 115.4, 71.7, 50.4, 31.1, 21.6. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{18}NO_2Se$ 348.0497; Found 348.0505.

3-(4-Bromophenyl)-5-((phenylselanyl)methyl)oxazolidin-2-one (**5m**). Compound **5m** was prepared according to the general procedure and isolated as a white solid (76 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 80−81 °C. ^{1}H NMR (400 MHz,

$CDCl_3$): δ 7.53 – 7.45 (m, 2H), 7.38 (d, *J* = 9.0 Hz, 2H), 7.30 (d, *J* = 9.0 Hz, 2H), 7.25 – 7.19 (m, 3H), 4.65 (tdd, *J* = 8.8, 6.4, 4.3 Hz, 1H), 3.98 (t, *J* = 8.8 Hz, 1H), 3.65 (dd, *J* = 9.1, 6.4 Hz, 1H), 3.29 (dd, *J* = 12.9, 4.2 Hz, 1H), 2.97 (dd, *J* = 12.9, 9.1 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 153.1, 136.2, 132.6, 130.9, 128.5, 127.1, 126.7, 118.6, 115.8, 70.7, 49.0, 29.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{16}H_{15}BrNO_2Se$ 411.9446; Found 411.9450.

3-Pentyl-5-((phenylselanyl)methyl)oxazolidin-2-one (**5n**). Compound **5n** was prepared according to the general procedure and isolated as an oil (63 mg, 96% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.99 – 7.45 (m, 2H), 7.40 – 7.12 (m, 3H), 4.62 – 4.56 (m, 1H), 3.64 (t, *J* = 8.7 Hz, 1H), 3.36 – 3.25 (m, 2H), 3.25 – 3.15 (m, 2H), 2.97 (dd, *J* = 12.8, 9.1 Hz, 1H), 1.61 – 1.45 (m, 2H), 1.39 – 1.10 (m, 4H), 0.89 (t, *J* = 7.0 Hz, 3H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 157.5, 133.4, 129.5, 128.2, 127.9, 72.1, 49.5, 44.1, 31.2, 28.7, 27.0, 22.3, 14.0. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{15}H_{22}NO_2Se$ 328.0810; Found 328.0815.

3-Heptyl-5-((phenylselanyl)methyl)oxazolidin-2-one (**5o**). Compound **5o** was prepared according to the general procedure and isolated as an oil (66 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.74 – 7.38 (m, 2H), 7.41 – 7.21 (m, 3H), 4.62 – 4.55 (m, 1H), 3.63 (t, *J* = 8.7 Hz, 1H), 3.34 – 3.26 (m, 2H), 3.23 – 3.19 (m, 2H), 2.97 (dd, *J* = 12.8, 9.2 Hz, 1H), 1.48 (q, *J* = 7.1 Hz, 2H), 1.37 – 1.20 (m, 8H), 0.88 (t, *J* = 6.8 Hz, 3H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 157.5, 133.4, 129.4, 128.2, 127.9, 72.1, 49.5, 44.1, 31.7, 31.1, 28.9, 27.3, 26.6, 22.6, 14.1. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{26}NO_2Se$ 356.1123; Found 356.1126.

5-((Phenylselanyl)methyl)oxazolidin-2-one (**5p**). Compound **5p** was prepared according to the general procedure and isolated as an oil (49 mg, 95% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.74 – 7.46 (m, 2H), 7.30 – 7.27 (m, 3H), 6.53 (brs, 1H), 4.75 – 4.67(m, 1H), 3.69 (td, *J* = 8.7, 2.7 Hz, 1H), 3.41 – 3.27 (m, 2H), 3.00 (dd, *J* = 12.8, 8.9 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 159.9, 133.5, 129.5, 128.1, 127.9, 75.8, 45.8, 30.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{10}H_{12}NO_2Se$ 258.0028; Found 258.0026.

6-((Phenylselanyl)methyl)-1,3-oxazinan-2-one (**5q**). Compound **5q** was prepared according to the general procedure and isolated as an oil (45 mg, 84% yield) after flash chromatography (petroleum ether/ethyl acetate = 1/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.61 – 7.48 (m, 2H), 7.37 – 7.16 (m, 3H), 5.26 (brs, 1H), 4.41 – 4.35 (m, 1H), 3.70 – 3.19 (m, 3H), 2.99 (dd, *J* = 13.0, 8.9 Hz, 1H), 2.35 – 2.02 (m, 1H), 2.00 – 1.66 (m, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 153.6, 132.9, 129.4, 128.3, 127.6, 77.2, 39.0, 30.9, 25.6. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{11}H_{13}NNaO_2Se$ 294.0004; Found 294.0000.

3-((Phenylselanyl)methyl)-2-tosylisoxazolidine (**7a**). Compound **7a** was prepared according to the general procedure and isolated as an oil (70 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.74 (d, *J* = 8.3 Hz, 2H),

7.60 – 7.50 (m, 2H), 7.40 – 7.10 (m, 5H), 4.47 – 4.20 (m, 1H), 3.96 (td, *J* = 7.8, 3.7 Hz, 1H), 3.90 – 3.82 (m, 1H), 3.40 (dd, *J* = 12.6, 5.0 Hz, 1H), 2.95 (dd, *J* = 12.6, 9.2 Hz, 1H), 2.56 – 2.31 (m, 4H), 2.22 – 2.08 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 145.1, 132.8, 132.5, 129.7, 129.3, 129.2, 129.0, 127.3, 70.1, 59.9, 35.0, 32.2, 21.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{20}NO_3SSe$ 398.0324; Found 398.0332.

2-((4-Methoxyphenyl)sulfonyl)-3-((phenylselanyl)methyl)isoxazolidine (**7b**). Compound **7b** was prepared according to the general procedure and isolated as an oil (74 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.78 (d, *J* = 8.9 Hz, 2H), 7.66 – 7.44 (m, 2H), 7.39 – 7.19 (m, 3H), 6.96 (d, *J* = 8.9 Hz, 2H), 4.50 – 4.17 (m, 1H), 3.96 (td, *J* = 7.9, 3.9 Hz, 1H), 3.86 (s, 4H), 3.40 (dd, *J* = 12.6, 5.0 Hz, 1H), 2.94 (dd, *J* = 12.6, 9.2 Hz, 1H), 2.53 – 2.30 (m, 1H), 2.26 – 2.00 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 164.0, 132.8, 131.4, 129.3, 129.1, 127.3, 126.7, 114.3, 70.1, 60.0, 55.7, 35.1, 32.2. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{17}H_{20}NO_4SSe$ 414.0273; Found 414.0274.

2-((4-Nitrophenyl)sulfonyl)-3-((phenylselanyl)methyl)isoxazolidine (**7c**). Compound **7c** was prepared according to the general procedure and isolated as a yellow solid (72 mg, 84% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 110−112 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.26 (d, *J* = 8.8 Hz, 2H), 7.97 (d, *J* = 8.8 Hz, 2H), 7.64 – 7.42 (m, 2H), 7.32 – 6.98 (m, 3H), 4.44 – 4.38 (m, 1H), 4.20 – 3.76 (m, 2H), 3.26 (dd, *J* = 12.7, 5.7 Hz, 1H), 2.92 (dd, *J* = 12.7, 8.2 Hz, 1H), 2.61 – 2.46 (m, 1H), 2.23 – 2.10 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 150.7, 141.9, 133.0, 130.4, 129.4, 128.9, 127.5, 124.1, 70.6, 59.5, 35.0, 32.1. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{16}H_{17}N_2O_5SSe$ 429.0018; Found 429.0015.

3-((Phenylselanyl)methyl)-2-(phenylsulfonyl)isoxazolidine (**7d**). Compound **7d** was prepared according to the general procedure and isolated as an oil (69 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87 (d, *J* = 8.4 Hz, 2H), 7.71 – 7.59 (m, 1H), 7.60 – 7.54 (m, 2H), 7.53 – 7.49 (m, 2H), 7.35 – 7.25 (m, 3H), 4.38 – 4.31(m, 1H), 4.00 – 3.95(m, 1H), 3.92 – 3.86 (m, 1H), 3.40 (dd, *J* = 12.6, 5.1 Hz, 1H), 2.96 (dd, *J* = 12.6, 9.1 Hz, 1H), 2.53 – 2.39 (m, 1H), 2.24 – 2.04 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 135.6, 134.0, 132.9, 129.3, 129.2, 129.1, 129.0, 127.4, 70.2, 59.9, 35.0, 32.2. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{16}H_{18}NO_3SSe$ 384.0167; Found 384.0167.

2-(Naphthalen-2-ylsulfonyl)-3-((phenylselanyl)methyl)isoxazolidine (**7e**). Compound **7e** was prepared according to the general procedure and isolated as an oil (71 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.44 (d, *J* = 1.9 Hz, 1H), 7.98 – 7.88 (m, 3H), 7.84 (dd, *J* = 8.7, 1.9 Hz, 1H), 7.75 – 7.54 (m, 4H), 7.41 – 7.16 (m, 3H), 4.46 – 4.30 (m, 1H), 4.01 – 3.94 (m, 1H), 3.92 – 3.86 (m, 1H), 3.44 (dd, *J* = 12.6, 5.1 Hz, 1H), 2.98 (dd, *J* = 12.6, 9.1 Hz, 1H), 2.58 – 2.28 (m, 1H), 2.23 – 2.05 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 135.4, 132.8, 132.6, 132.0, 131.1, 129.5, 129.43, 129.36, 129.33, 129.0, 128.0, 127.6, 127.4, 123.8, 70.2, 60.0, 35.1, 32.2. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{20}H_{20}NO_3SSe$ 434.0324; Found 434.0329.

2-(Ethylsulfonyl)-3-((phenylselanyl)methyl)isoxazolidine (**7f**). Compound **7f** was prepared according to the general procedure and isolated as an oil (61 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.65 – 7.45 (m, 2H), 7.33 – 7.10 (m, 3H), 4.55 – 4.48 (m, 1H), 4.28 (q, *J* = 7.6 Hz, 1H), 4.11 (td, *J* = 7.9, 3.8 Hz, 1H), 3.45 – 3.09 (m, 3H), 2.96 (dd, *J* = 12.6, 8.3 Hz, 1H), 2.58 (dtd, *J* = 11.8, 7.8, 3.8 Hz, 1H), 2.17 (dtd, *J* = 12.3, 8.4, 5.2 Hz, 1H), 1.39 (t, *J* = 7.5 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 132.8, 129.3, 129.3, 127.3, 70.8, 57.6, 45.0, 34.9, 32.5, 7.6. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{12}H_{18}NO_3SSe$ 336.0167; Found 336.0171.

2-(Cyclopropylsulfonyl)-3-((phenylselanyl)methyl)isoxazolidine (**7g**). Compound **7g** was prepared according to the general procedure and isolated as an oil (61 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60 – 7.43 (m, 2H), 7.38 – 7.15 (m, 3H), 4.51 – 4.44 (m, 1H), 4.25 (dt, *J* = 8.8, 7.7 Hz, 1H), 4.11 (td, *J* = 7.9, 3.8 Hz, 1H), 3.27 (dd, *J* = 12.5, 5.4 Hz, 1H), 2.95 (dd, *J* = 12.6, 8.6 Hz, 1H), 2.70 – 2.43 (m, 2H), 2.17 (dtd, *J* = 12.2, 8.4, 5.3 Hz, 1H), 1.41 – 1.30 (m, 1H), 1.24 – 1.10 (m, 2H), 1.08 – 0.98 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 132.7, 129.3, 129.2, 127.3, 70.6, 58.7, 34.9, 32.4, 27.9, 6.4, 5.3. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{13}H_{18}NO_3SSe$ 348.0167; Found 348.0173.

3-Methyl-3-((phenylselanyl)methyl)-2-tosylisoxazolidine (7h). Compound **7h** was prepared according to the general procedure and isolated as an oil (75 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.72 (d, *J* = 8.3 Hz, 2H), 7.45 (dd, *J* = 6.5, 3.0 Hz, 2H), 7.21 (d, *J* = 8.1 Hz, 2H), 7.17 – 7.13 (m, 3H), 4.18 (ddd, *J* = 9.2, 7.2, 5.9 Hz, 1H), 3.83 (dt, *J* = 8.5, 6.8 Hz, 1H), 3.31 (d, *J* = 12.6 Hz, 1H), 3.13 (d, *J* = 12.6 Hz, 1H), 2.42 (ddd, *J* = 12.2, 8.6, 5.8 Hz, 1H), 2.34 (s, 3H), 2.28 (ddd, *J* = 12.2, 9.2, 6.4 Hz, 1H), 1.74 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 143.5, 134.3, 131.7, 129.9, 128.4, 128.1, 127.7, 126.1, 70.2, 68.5, 39.9, 38.3, 21.8, 20.6. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{18}H_{22}NO_3SSe$ 412.0480; Found 412.0472.

5-Methyl-3-((phenylselanyl)methyl)-2-tosylisoxazolidine (7i). Compound **7i** was prepared according to the general procedure and isolated as an oil (71 mg, 87% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). The crude NMR indicated the presence of mixture of diastereomers (*cis* : *trans*== 1.7 : 1). The stereoechemistry of diastereomer has been determined via nOe analysis.

cis-Isomer, oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.72 (d, *J* = 8.0 Hz, 2H), 7.56 (d, *J* = 7.9 Hz, 2H), 7.39 – 7.03 (m, 5H), 4.35 – 4.22 (m, 1H), 4.15 – 3.83 (m, 1H), 3.49 (dd, *J* = 12.5, 4.5 Hz, 1H), 3.00 (dd, *J* = 12.4, 9.6 Hz, 1H), 2.56 (ddd, *J* = 12.5, 7.5, 5.4 Hz, 1H), 2.43 (s, 3H), 1.69 (ddd, *J* = 12.2, 10.0, 8.0 Hz, 1H), 1.18 (d, *J* = 6.0 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 145.0, 132.7, 132.6, 129.7, 129.3, 129.2, 129.0, 127.3, 78.2, 61.0, 42.7, 32.5, 21.7, 17.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{18}H_{22}NO_3SSe$ 412.0480; Found 412.0489.

trans-Isomer, oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.68 (d, *J* = 8.3 Hz, 2H), 7.60 – 7.49 (m, 2H), 7.40 – 7.20 (m, 5H), 4.38– 4.31 (m, 1H), 4.16– 4.09 (m, 1H), 3.36 (dd, *J* = 12.7, 4.9 Hz, 1H), 2.89

(dd, *J* = 12.7, 9.9 Hz, 1H), 2.43 (s, 3H), 2.24 (ddd, *J* = 12.6, 5.9, 2.1 Hz, 1H), 1.56 (ddd, *J* = 12.5, 9.7, 8.1 Hz, 1H), 1.17 (d, *J* = 6.1 Hz, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 145.0, 132.9, 131.3, 129.6, 129.5, 129.4, 128.8, 127.4, 61.7, 40.3, 31.2, 21.7, 18.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{18}H_{22}NO_3SSe$ 412.0480; Found 412.0482.

5-Allyl-3-((phenylselanyl)methyl)-2-tosylisoxazolidine (7j). Compound **7j** was prepared according to the general procedure and isolated as an oil (81 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 35/1). The crude NMR indicated the presence of mixture of diastereomers (*cis* : *trans*== 2.1 : 1). The stereoechemistry of diastereomer was assigned by analogy to **7i**.

cis-Isomer, oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.72 (d, *J* = 8.3 Hz, 2H), 7.61 – 7.47 (m, 2H), 7.39 – 7.22 (m, 5H), 5.64 (ddt, *J* = 18.2, 9.4, 6.9 Hz, 1H), 5.23 – 4.77 (m, 2H), 4.43 – 4.18 (m, 1H), 4.03 (dq, *J* = 9.9, 6.0 Hz, 1H), 3.47 (dd, *J* = 12.5, 4.7 Hz, 1H), 2.98 (dd, *J* = 12.5, 9.6 Hz, 1H), 2.56 – 2.50 (m, 1H), 2.43 (s, 3H), 2.37 – 2.27 (m, 1H), 2.25 – 2.12 (m, 1H), 1.88 – 1.73 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 145.0, 132.8, 132.7, 132.5, 129.7, 129.3, 129.2, 128.9, 127.3, 118.1, 81.2, 60.6, 40.4, 36.8, 32.5, 21.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{20}H_{24}NO_3SSe$ 438.0637; Found 438.0646.

trans-Isomer, oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.70 (d, *J* = 8.3 Hz, 2H), 7.60 – 7.45 (m, 2H), 7.38 – 7.19 (m, 5H), 5.61 (ddt, *J* = 17.1, 10.3, 6.9 Hz, 1H), 5.13 – 4.90 (m, 2H), 4.34 – 4.14 (m, 2H), 3.34 (dd, *J* = 12.7, 5.0 Hz, 1H), 2.89 (dd, *J* = 12.7, 9.7 Hz, 1H), 2.47 – 2.40 (s, 4H), 2.27 (ddd, *J* = 12.6, 6.1, 2.1 Hz, 1H), 2.22 – 2.11 (m, 1H), 1.77 (ddd, *J* = 12.5, 9.6, 8.0 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 145.0, 133.2, 133.0, 131.6, 129.55, 129.49, 129.36, 128.8, 127.4, 117.9, 80.7, 61.2, 38.5, 38.1, 31.2, 21.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{20}H_{24}NO_3SSe$ 438.0637; Found 438.0639.

5-(Furan-2-yl)-3-((phenylselanyl)methyl)-2-tosylisoxazolidine (7k). Compound **7k** was prepared according to the general procedure and isolated as an oil (82 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 35/1). The crude NMR indicated the presence of mixture of diastereomers (*cis* : *trans*= 1.4 : 1). The stereoechemistry of diastereomer was assigned by analogy to **7i**.

cis-Isomer, oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.72 (d, *J* = 8.4 Hz, 2H), 7.56 – 7.41 (m, 2H), 7.33 – 7.13 (m, 6H), 6.34 – 5.90 (m, 2H), 5.22 (dd, *J* = 8.6, 7.5 Hz, 1H), 4.50 (ddt, *J* = 9.1, 7.9, 5.6 Hz, 1H), 3.45 (dd, *J* = 12.6, 5.6 Hz, 1H), 3.05 (dd, *J* = 12.6, 9.1 Hz, 1H), 2.80 – 2.68 (m, 1H), 2.46 – 2.39 (m, 1H), 2.35 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 148.7, 145.1, 143.7, 133.0, 132.7, 129.7, 129.3, 129.2, 129.0, 127.4, 110.8, 110.5, 76.7, 60.5, 38.5, 32.4, 21.7. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{21}H_{21}NO_4SSeNa$ 486.0249; Found 486.0263.

trans-Isomer, oil. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.56 – 7.44 (m, 4H), 7.27 – 7.25 (m, 3H), 7.19 – 7.17 (m, 1H), 7.12 (d, *J* = 8.0 Hz, 2H), 6.21 (dd, *J* = 3.4, 1.8 Hz, 1H), 6.16 (d, *J* = 3.3 Hz, 1H), 5.14 (dd, *J* = 8.7, 7.0 Hz, 1H), 4.19 (ddt, *J* = 8.6, 7.0, 4.3 Hz, 1H), 3.40 (dd, *J* = 12.8, 4.7 Hz, 1H), 2.91 (dd, *J* = 12.8, 9.9 Hz, 1H), 2.42 – 2.36 (m, 2H), 2.34 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz,

$CDCl_3$): δ 149.7, 144.8, 143.0, 133.2, 131.0, 129.6, 129.4, 128.7, 127.6, 110.5, 109.8, 75.1, 61.9, 37.4, 30.9, 21.7. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{21}H_{21}NO_4SSeNa$ 486.0249; Found 486.0259.

5-Phenyl-3-((phenylselanyl)methyl)-2-tosylisoxazolidine (7l). Compound **7l** was prepared according to the general procedure and isolated as an oil (86 mg, 91% yield) after flash chromatography (petroleum ether/ethyl acetate = 40/1). The crude NMR indicated the presence of mixture of diastereomers (*cis* : *trans*= 1.4 : 1). The stereoechemistry of diastereomer was assigned by analogy to **7i**.

cis-Isomer, oil. ^1H NMR (400 MHz, $CDCl_3$): δ 7.76 (d, *J* = 8.3 Hz, 2H), 7.64 – 7.50 (m, 2H), 7.37 – 7.04 (m, 10H), 4.96 (dd, *J* = 10.4, 5.6 Hz, 1H), 4.45 (dtd, *J* = 9.4, 7.7, 4.5 Hz, 1H), 3.56 (dd, *J* = 12.6, 4.5 Hz, 1H), 3.11 (dd, *J* = 12.6, 9.4 Hz, 1H), 2.84 (ddd, *J* = 12.8, 7.4, 5.7 Hz, 1H), 2.43 (s, 3H), 2.17 (ddd, *J* = 12.4, 10.4, 8.1 Hz, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 145.1, 136.3, 132.8, 132.4, 129.8, 129.3, 129.3, 129.0, 128.8, 128.6, 127.3, 126.9, 83.4, 61.1, 43.3, 32.6, 21.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{23}H_{24}NO_3SSe$ 474.0637; Found 474.0644.

trnas-Isomer, oil. ^1H NMR (400 MHz, $CDCl_3$): δ 7.67 (d, *J* = 8.3 Hz, 2H), 7.63 – 7.53 (m, 2H), 7.40 – 7.30 (m, 6H), 7.29 – 7.17 (m, 4H), 5.16 (dd, *J* = 11.0, 5.7 Hz, 1H), 4.42 – 4.27 (m, 1H), 3.46 (dd, *J* = 12.8, 4.8 Hz, 1H), 3.05 (dd, *J* = 12.8, 10.0 Hz, 1H), 2.54 (dd, *J* = 12.8, 5.7 Hz, 1H), 2.41 (s, 3H), 2.17– 2.09 (m, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 145.1, 136.6, 133.1, 131.2, 129.6, 129.5, 129.4, 128.74, 128.67, 128.5, 127.5, 127.1, 82.4, 61.9, 40.9, 31.2, 21.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{23}H_{24}NO_3SSe$ 474.0637; Found 474.0640.

5-(4-Chlorophenyl)-3-((phenylselanyl)methyl)-2-tosylisoxazolidine (7m). Compound **7m** was prepared according to the general procedure and isolated as an oil (88 mg, 87% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). The crude NMR indicated the presence of mixture of diastereomers (*cis* : *trans*= 1.8 : 1). The stereoechemistry of diastereomer was assigned by analogy to **7i**.

Both diastereomers: δ 7.74 (d, *J* = 8.3 Hz, 2H, *cis* diastereomer), 7.65 (d, *J* = 8.3 Hz, 2H, *trans* diastereomer), 7.58 – 7.55 (m, 4H, both diastereomer), 7.34 – 7.17 (m, 18 both diastereomer), 5.13 (dd, *J* = 10.8, 5.8 Hz, 1H, *trans* diastereomer), 4.96 (dd, *J* = 10.2, 5.7 Hz, 1H, *cis* diastereomer), 4.52 – 4.41 (m, 1H, *cis* diastereomer), 4.40 – 4.25 (m, 1H, *trans* diastereomer), 3.53 (dd, *J* = 12.6, 4.5 Hz, 1H, *trans* diastereomer), 3.43 (dd, *J* = 12.8, 5.0 Hz, 1H, *cis* diastereomer), 3.08 (dd, *J* = 12.6, 9.4 Hz, 1H, *trans* diastereomer), 3.02 (dd, *J* = 12.8, 9.8 Hz, 1H, *cis* diastereomer), 2.82 (ddd, *J* = 12.9, 7.5, 5.7 Hz, 1H, *trans* diastereomer), 2.55 (ddd, *J* = 12.8, 5.9, 1.8 Hz, 1H, *cis* diastereomer), 2.42 (s, 3H, *cis* diastereomer), 2.41 (s, 3H, *trans* diastereomer), 2.20 – 2.08 (m, 2H, both diastereomer). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 145.3, 145.2, 135.3, 134.9, 134.6, 134.5, 133.1, 132.8, 132.3, 131.3, 129.7, 129.58, 129.56, 129.45, 129.38, 129.28, 128.9, 128.8, 128.7, 128.7, 128.5, 128.2, 127.6, 127.4, 82.6, 81.8, 61.8, 61.0, 43.2, 40.9, 32.6, 31.1, 21.8, 21.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{23}H_{23}ClNO_3SSe$ 508.0247; Found 508.0257.

2-Phenyl-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9a). Compound **9a** was prepared

according to the general procedure and isolated as an oil (56 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.79 – 7.75 (m, 2H), 7.48 (dd, *J* = 6.5, 3.0 Hz, 2H), 7.37 (t, *J* = 7.4 Hz, 1H), 7.29 (t, *J* = 7.5 Hz, 2H), 7.19 – 7.15 (m, 3H), 4.84 – 4.73 (m, 1H), 4.06 (dd, *J* = 15.0, 9.5 Hz, 1H), 3.73 (dd, *J* = 15.0, 6.9 Hz, 1H), 3.19 (dd, *J* = 12.7, 5.4 Hz, 1H), 2.95 (dd, *J* = 12.7, 7.5 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 162.6, 132.3, 130.3, 128.2, 127.9, 127.2, 127.1, 126.6, 126.5, 77.8, 59.2, 30.9. The data are in accordance with the literature.[8]

5-((Phenylselanyl)methyl)-2-(*p*-tolyl)-4,5-dihydrooxazole (9b). Compound **9b** was prepared according to the general procedure and isolated as an oil (62 mg, 94% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.74 (d, *J* = 8.1 Hz, 2H), 7.65 – 7.50 (m, 2H), 7.31 – 7.22 (m, 3H), 7.18 (d, *J* = 8.0 Hz, 2H), 4.90 – 4.83 (m, 1H), 4.14 (dd, *J* = 14.9, 9.5 Hz, 1H), 3.80 (dd, *J* = 14.9, 6.8 Hz, 1H), 3.28 (dd, *J* = 12.7, 5.4 Hz, 1H), 3.03 (dd, *J* = 12.7, 7.5 Hz, 1H), 2.38 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 163.9, 141.8, 133.4, 129.3, 129.0, 128.9, 128.1, 127.5, 124.8, 78.8, 60.2, 32.0, 21.6. The data are in accordance with the literature.[8]

2-(4-Chlorophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9c). Compound **9c** was prepared according to the general procedure and isolated as an oil (57 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.68 (d, *J* = 8.4 Hz, 2H), 7.51 – 7.46 (m, 2H), 7.26 (d, *J* = 8.4 Hz, 2H), 7.23 – 7.16 (m, 3H), 4.86 – 4.76 (m, 1H), 4.06 (dd, *J* = 15.1, 9.5 Hz, 1H), 3.73 (dd, *J* = 15.0, 6.9 Hz, 1H), 3.18 (dd, *J* = 12.8, 5.5 Hz, 1H), 2.97 (dd, *J* = 12.8, 7.3 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 162.8, 137.5, 133.4, 129.5, 129.3, 128.9, 128.6, 127.5, 126.1, 79.2, 60.3, 31.9. The data are in accordance with the literature.[9]

2-(4-Bromophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9d). Compound **9d** was prepared according to the general procedure and isolated as an oil (68 mg, 86% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60 (d, *J* = 8.5 Hz, 2H), 7.49 – 7.44 (m, 2H), 7.41 (d, *J* = 8.5 Hz, 2H), 7.23 – 7.15 (m, 3H), 4.89 – 4.76 (m, 1H), 4.04 (dd, *J* = 15.1, 9.5 Hz, 1H), 3.71 (dd, *J* = 15.1, 6.9 Hz, 1H), 3.17 (dd, *J* = 12.8, 5.5 Hz, 1H), 2.96 (dd, *J* = 12.8, 7.3 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 161.8, 132.3, 130.5, 128.6, 128.2, 127.8, 126.5, 125.5, 124.9, 78.1, 59.3, 30.8. The data are in accordance with the literature.[9]

2-(4-Nitrophenyl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9e). Compound **9e** was prepared according to the general procedure and isolated as a yellow solid (67 mg, 93% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.12 (d, *J* = 8.9 Hz, 2H), 7.88 (d, *J* = 8.8 Hz, 2H), 7.63 – 7.35 (m, 2H), 7.20 – 7.16 (m, 3H), 4.98 – 4.86 (m, 1H), 4.12 (dd, *J* = 15.5, 9.6 Hz, 1H), 3.79 (dd, *J* = 15.5, 7.0 Hz, 1H), 3.19 (dd, *J* = 12.9, 5.5 Hz, 1H), 3.02 (dd, *J* = 13.0, 7.0 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 161.9, 149.4, 133.4, 129.3, 129.1, 128.8, 127.6, 123.5, 79.7, 60.5, 31.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for

$C_{16}H_{15}N_2O_3Se$ 363.0242; Found 363.0244.

4-(5-((Phenylselanyl)methyl)-4,5-dihydrooxazol-2-yl)benzonitrile (9f). Compound **9f** was prepared according to the general procedure and isolated as an oil (57 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.83 (d, *J* = 8.4 Hz, 2H), 7.58 (d, *J* = 8.4 Hz, 2H), 7.51 – 7.37 (m, 2H), 7.27 – 7.11 (m, 3H), 4.90 – 4.82 (m, 1H), 4.11 (dd, *J* = 15.4, 9.6 Hz, 1H), 3.78 (dd, *J* = 15.4, 7.0 Hz, 1H), 3.18 (dd, *J* = 12.9, 5.5 Hz, 1H), 3.01 (dd, *J* = 12.9, 7.1 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 162.2, 133.4, 132.1, 131.7, 129.3, 128.8, 128.7, 127.6, 118.3, 114.7, 79.5, 60.4, 31.8. The data are in accordance with the literature[9].

2-(5-((Phenylselanyl)methyl)-4,5-dihydrooxazol-2-yl)phenol (9g). Compound **9g** was prepared according to the general procedure and isolated as an oil (56 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 12.02 (brs, 1H), 7.55 (dd, *J* = 6.5, 3.0 Hz, 2H), 7.49 (dd, *J* = 7.8, 1.7 Hz, 1H), 7.34 (ddd, *J* = 8.7, 7.4, 1.8 Hz, 1H), 7.29 – 7.25 (m, 3H), 6.98 (d, *J* = 8.4 Hz, 1H), 6.81 (td, *J* = 7.5, 1.0 Hz, 1H), 4.85 (dtd, *J* = 9.4, 7.2, 5.2 Hz, 1H), 4.16 (dd, *J* = 14.6, 9.4 Hz, 1H), 3.83 (dd, *J* = 14.6, 6.9 Hz, 1H), 3.27 (dd, *J* = 12.8, 5.3 Hz, 1H), 3.03 (dd, *J* = 12.8, 7.6 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 165.4, 159.8, 133.5, 133.3, 129.3, 128.6, 128.1, 127.7, 118.6, 116.7, 110.6, 78.3, 58.7, 31.6. The data are in accordance with the literature.[9]

5-((Phenylselanyl)methyl)-2-(4-vinylphenyl)-4,5-dihydrooxazole (9h). Compound **9h** was prepared according to the general procedure and isolated as an oil (66 mg, 96% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.72 (d, *J* = 8.0 Hz, 2H), 7.49 – 7.46 (m, 2H), 7.37 – 7.31 (m, 2H), 7.22 – 7.09 (m, 3H), 6.64 (dd, *J* = 17.6, 10.9 Hz, 1H), 5.74 (d, *J* = 17.6 Hz, 1H), 5.25 (d, *J* = 10.9 Hz, 1H), 4.83 – 4.75 (m, 1H), 4.07 (dd, *J* = 15.0, 9.4 Hz, 1H), 3.73 (dd, *J* = 15.0, 6.9 Hz, 1H), 3.19 (dd, *J* = 12.7, 5.5 Hz, 1H), 2.96 (dd, *J* = 12.7, 7.4 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 162.4, 139.3, 135.1, 132.3, 128.2, 127.4, 126.4, 125.8, 125.0, 114.6, 77.8, 59.2, 30.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{18}H_{18}NOSe$ 344.0548; Found 344.0556.

2-(Naphthalen-2-yl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9i). Compound **9i** was prepared according to the general procedure and isolated as an oil (67 mg, 91% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 9.04 (d, *J* = 8.6 Hz, 1H), 7.95 – 7.86 (m, 2H), 7.83 – 7.76 (m, 1H), 7.55 – 7.48 (m, 3H), 7.46 – 7.42 (m, 1H), 7.38 (dd, *J* = 8.2, 7.3 Hz, 1H), 7.25 – 7.07 (m, 3H), 4.95 – 4.82 (m, 1H), 4.25 (dd, *J* = 15.0, 9.5 Hz, 1H), 3.92 (dd, *J* = 15.0, 6.8 Hz, 1H), 3.28 (dd, *J* = 12.6, 5.4 Hz, 1H), 3.06 (dd, *J* = 12.6, 7.5 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 163.6, 133.7, 133.4, 132.0, 131.1, 129.3, 129.1, 128.9, 128.5, 127.5, 127.3, 126.3, 126.1, 124.6, 124.3, 77.7, 61.0, 32.0. The data are in accordance with the literature.[7]

5-((Phenylselanyl)methyl)-2-(1H-pyrrol-2-yl)-4,5-dihydrooxazole (9j). Compound **9j** was prepared according to the general procedure and isolated as a yellow solid (46 mg, 75% yield)

after flash chromatography (petroleum ether/ethyl acetate = 6/1). Mp: 86−88 °C.^{1}H NMR (400 MHz, $CDCl_3$): δ 10.12 (brs, 1H), 7.74 – 7.49 (m, 2H), 7.36 – 7.27 (m, 3H), 6.87 (dd, *J* = 2.6, 1.5 Hz, 1H), 6.67 (dd, *J* = 3.6, 1.4 Hz, 1H), 6.22 – 6.20 (m, 1H), 4.97 – 4.72 (m, 1H), 4.09 (dd, *J* = 14.3, 9.3 Hz, 1H), 3.75 (dd, *J* = 14.3, 6.7 Hz, 1H), 3.27 (dd, *J* = 12.7, 5.3 Hz, 1H), 3.01 (dd, *J* = 12.7, 7.7 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 158.7, 133.4, 129.3, 128.8, 127.6, 122.2, 119.8, 113.0, 109.8, 79.0, 59.3, 31.7. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{14}H_{15}N_2OSe$ 307.0344; Found 307.0350.

2-(Furan-2-yl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9k). Compound **9k** was prepared according to the general procedure and isolated as an oil (52 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 7/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61 – 7.36 (m, 3H), 7.30 – 7.05 (m, 3H), 6.78 (d, *J* = 3.4 Hz, 1H), 6.38 (dd, *J* = 3.5, 1.8 Hz, 1H), 4.89 – 4.71 (m, 1H), 4.07 (dd, *J* = 15.0, 9.4 Hz, 1H), 3.75 (dd, *J* = 15.0, 6.9 Hz, 1H), 3.20 (dd, *J* = 12.7, 5.2 Hz, 1H), 2.94 (dd, *J* = 12.8, 7.8 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 155.0, 144.2, 141.8, 134.0, 132.3, 128.2, 126.5, 113.3, 110.4, 78.1, 59.0, 30.5. The data are in accordance with the literature.[7]

5-((Phenylselanyl)methyl)-2-(thiophen-2-yl)-4,5-dihydrooxazole (9l). Compound **9l** was prepared according to the general procedure and isolated as an oil (58 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.55 – 7.45 (m, 2H), 7.41 (d, *J* = 3.7 Hz, 1H), 7.35 (d, *J* = 5.0 Hz, 1H), 7.25 – 7.11 (m, 3H), 6.97 (dd, *J* = 4.8, 3.6 Hz, 1H), 4.86 – 4.71 (m, 1H), 4.06 (dd, *J* = 14.9, 9.4 Hz, 1H), 3.73 (dd, *J* = 14.9, 6.8 Hz, 1H), 3.21 (dd, *J* = 12.7, 5.2 Hz, 1H), 2.96 (dd, *J* = 12.7, 7.8 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 158.5, 132.4, 132.3, 129.2, 128.8, 128.2, 127.7, 126.5, 126.5, 78.4, 59.2, 30.7. The data are in accordance with the literature.[7]

5-((Phenylselanyl)methyl)-2-(pyridin-3-yl)-4,5-dihydrooxazole (9m). Compound **9m** was prepared according to the general procedure and isolated as an oil (61 mg, 97% yield) after flash chromatography (petroleum ether/ethyl acetate = 1/2). ^{1}H NMR (400 MHz, $CDCl_3$): δ 9.03 (d, *J* = 2.0 Hz, 1H), 8.68 (dd, *J* = 4.8, 1.7 Hz, 1H), 8.09 (d, *J* = 7.9 Hz, 1H), 7.56 (dd, *J* = 6.4, 3.0 Hz, 2H), 7.37 – 7.11 (m, 4H), 4.98 – 4.90 (m, 1H), 4.17 (dd, *J* = 15.1, 9.5 Hz, 1H), 3.85 (dd, *J* = 15.2, 7.0 Hz, 1H), 3.27 (dd, *J* = 12.8, 5.3 Hz, 1H), 3.09 (dd, *J* = 12.9, 7.2 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 161.8, 152.0, 149.4, 135.4, 133.4, 129.3, 128.8, 127.6, 123.8, 123.1, 79.2, 60.2, 31.8. The data are in accordance with the literature.[9]

5-((Phenylselanyl)methyl)-2-(1-ferroceneyl)-4,5-dihydrooxazole (9n). Compound **9n** was prepared according to the general procedure and isolated as an oil (64 mg, 76% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.65 – 7.44 (m, 2H), 7.31 – 7.10 (m, 3H), 4.76 – 4.69 (m, 1H), 4.63 (dd, *J* = 9.2, 1.9 Hz, 2H), 4.25 (t, *J* = 1.9 Hz, 2H), 4.11 (s, 5H), 3.93 (dd, *J* = 14.5, 9.3 Hz, 1H), 3.61 (dd, *J* = 14.5, 6.7 Hz, 1H), 3.20 (dd, *J* = 12.6, 5.1 Hz, 1H), 2.96 (dd, *J* = 12.6, 7.6 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 165.3, 132.3, 128.3, 128.0, 126.5, 77.2, 69.3, 69.3, 69.1, 68.6, 67.9, 67.9, 59.1, 30.9. HRMS (ESI) m/z:

$[M + H]^+$ Calcd for $C_{20}H_{20}FeNOSe$ 426.0054; Found 426.0061.

5-Methyl-2-phenyl-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9o). Compound **9o** was prepared according to the general procedure and isolated as an oil (61 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.84 – 7.75 (m, 2H), 7.58 – 7.49 (m, 2H), 7.47 – 7.41 (m, 1H), 7.36 (dd, *J* = 8.2, 6.8 Hz, 2H), 7.26 – 7.17 (m, 3H), 4.01 (d, *J* = 14.8 Hz, 1H), 3.79 (d, *J* = 14.8 Hz, 1H), 3.27 (s, 2H), 1.57 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 163.0, 133.1, 131.2, 130.4, 129.2, 128.2, 128.1, 127.9, 127.2, 85.8, 65.6, 38.4, 26.0. The data are in accordance with the literature.[7]

2-Phenyl-6-((phenylselanyl)methyl)-5,6-dihydro-4H-1,3-oxazine (9p). Compound **9p** was prepared according to the general procedure and isolated as an oil (51 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.91 – 7.80 (m, 2H), 7.66 – 7.52 (m, 2H), 7.45 – 7.37 (m, 1H), 7.35 – 7.31 (m, 2H), 7.31 – 7.23 (m, 3H), 4.40 (dtd, *J* = 9.5, 6.4, 2.9 Hz, 1H), 3.68 (ddd, *J* = 16.9, 5.4, 3.0 Hz, 1H), 3.56 (ddd, *J* = 16.9, 10.4, 5.1 Hz, 1H), 3.29 (dd, *J* = 12.7, 6.4 Hz, 1H), 3.12 (dd, *J* = 12.8, 6.4 Hz, 1H), 2.12 (ddt, *J* = 13.5, 5.1, 3.0 Hz, 1H), 1.78 (dtd, *J* = 13.5, 10.2, 5.4 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 155.5, 133.7, 133.0, 130.4, 129.8, 129.3, 128.0, 127.3, 127.0, 74.3, 42.8, 32.4, 27.0. The data are in accordance with the literature.[9]

2-Cyclohexyl-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9q). Compound **9q** was prepared according to the general procedure and isolated as an oil (52 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.48 – 7.45 (m, 2H), 7.20 – 7.15 (t, *J* = 3.2 Hz, 3H), 4.58 (dq, *J* = 9.5, 6.6 Hz, 1H), 3.83 (dd, *J* = 14.3, 9.4 Hz, 1H), 3.50 (dd, *J* = 14.3, 6.6 Hz, 1H), 3.07 (dd, *J* = 12.6, 5.4 Hz, 1H), 2.86 (dd, *J* = 12.6, 7.4 Hz, 1H), 2.37 – 2.03 (m, 1H), 1.83 – 1.79 (m, 2H), 1.71 – 1.57 (m, 2H), 1.40 – 1.10 (m, 6). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 169.9, 132.2, 128.2, 128.0, 126.4, 76.9, 58.4, 36.4, 31.0, 28.7, 24.8, 24.6. The data are in accordance with the literature.[7]

2-(Adamantan-1-yl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9r). Compound **9r** was prepared according to the general procedure and isolated as an oil (60 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.47 – 7.44 (m, 2H), 7.21 – 7.17 (m, 3H), 4.63 – 4.54 (m, 1H), 3.81 (dd, *J* = 14.3, 9.4 Hz, 1H), 3.50 (dd, *J* = 14.4, 6.5 Hz, 1H), 3.06 (dd, *J* = 12.5, 5.3 Hz, 1H), 2.83 (dd, *J* = 12.5, 7.5 Hz, 1H), 1.93 – 1.86 (m, 3H), 1.79 – 1.76 (m, 6H), 1.71 – 1.58 (m, 6H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 172.4, 132.2, 128.2, 128.1, 126.3, 76.8, 58.4, 38.4, 35.5, 34.2, 31.0, 26.9. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{20}H_{26}NOSe$ 376.1174; Found 376.1182.

4-(5-((Phenylselanyl)methyl)-4,5-dihydrooxazol-2-yl)-N,N-dipropylbenzenesulfonamide (9s). Compound **9s** was prepared according to the general procedure and isolated as a white solid (88 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). Mp: 73−75°C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.94 (d, *J* = 8.6, Hz, 2H), 7.80 (d, *J* = 8.5 Hz, 2H), 7.62 – 7.48 (m, 2H), 7.37 – 7.20 (m, 3H), 4.98 – 4.90 (m, 1H), 4.19 (dd, *J* = 15.3, 9.6 Hz, 1H), 3.86 (dd, *J* = 15.3,

7.0 Hz, 1H), 3.27 (dd, *J* = 12.9, 5.5 Hz, 1H), 3.11 – 3.06(m, 5H), 1.54 (q, *J* = 7.4 Hz, 4H), 0.86 (t, *J* = 7.4 Hz, 6H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 162.5, 142.6, 133.4, 131.1, 129.3, 128.8, 128.7, 127.6, 126.9, 79.4, 60.4, 49.9, 31.8, 21.9, 11.2. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{22}H_{29}N_2O_3SSe$ 481.1059; Found 481.1063.

N-(3-Chloro-2-methylphenyl)-3-(5-((phenylselanyl)methyl)-4,5-dihydrooxazol-2-yl)pyridin-2-amine (9t). Compound **9t** was prepared according to the general procedure and isolated as a white solid (84 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). Mp: 127−129 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 10.73 (brs, 1H), 8.23 (dd, *J* = 4.8, 2.0 Hz, 1H), 7.97 (dd, *J* = 6.5, 2.9 Hz, 1H), 7.84 (dd, *J* = 7.7, 2.0 Hz, 1H), 7.65 – 7.47 (m, 2H), 7.39 – 7.22 (m, 3H), 7.18 – 7.04 (m, 2H), 6.65 (dd, *J* = 7.7, 4.8 Hz, 1H), 4.90 – 4.82 (m, 1H), 4.25 (dd, *J* = 14.9, 9.4 Hz, 1H), 3.93 (dd, *J* = 14.9, 6.9 Hz, 1H), 3.28 (dd, *J* = 12.8, 5.5 Hz, 1H), 3.08 (dd, *J* = 12.9, 7.2 Hz, 1H), 2.39 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 162.9, 154.9, 150.8, 139.9, 138.1, 134.7, 133.5, 129.3, 128.7, 128.5, 127.6, 126.5, 124.3, 121.4, 113.0, 105.8, 77.9, 60.0, 31.8, 15.4. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{22}H_{21}ClN_3OSe$ 458.0533; Found 458.0540.

2-(5-(2,5-Dimethylphenoxy)-2-methylpentan-2-yl)-5-((phenylselanyl)methyl)-4,5-dihydrooxazole (9u). Compound **9u** was prepared according to the general procedure and isolated as an oil (84 mg, 95% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.56 – 7.34 (m, 2H), 7.27 – 6.98 (m, 3H), 6.90 (d, *J* = 7.4 Hz, 1H), 6.56 (d, *J* = 7.5 Hz, 1H), 6.52 –6.50 (m, 1H), 4.64 – 4.52 (m, 1H), 3.85 – 3.75 (m, 3H), 3.50 (dd, *J* = 14.4, 6.6 Hz, 1H), 3.05 (dd, *J* = 12.5, 5.1 Hz, 1H), 2.80 (dd, *J* = 12.5, 7.8 Hz, 1H), 2.21 (s, 3H), 2.09 (s, 3H), 1.74 – 1.49 (m, 4H), 1.13 (s, 3H), 1.12 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 171.8, 155.9, 135.3, 132.2, 129.2, 128.2, 127.9, 126.4, 122.5, 119.6, 110.9, 77.2, 66.9, 58.6, 35.9, 35.4, 30.8, 24.7, 24.6, 23.9, 20.4, 14.8. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{24}H_{32}NO_2Se$ 446.1593; Found 446.1582.

(4-Chlorophenyl)(4-((2-(5-((phenylselanyl)methyl)-4,5-dihydrooxazol-2-yl)propan-2-yl)oxy)phenyl)methanone (9v). Compound **9v** was prepared according to the general procedure and isolated as an oil (92 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.73 – 7.68 (m, 4H), 7.53 – 7.46 (m, 2H), 7.44 (d, *J* = 8.5 Hz, 2H), 7.27 – 7.24 (m, 3H), 7.01 (d, *J* = 8.8 Hz, 2H), 4.86 – 4.63 (m, 1H), 4.03 (dd, *J* = 14.8, 9.5 Hz, 1H), 3.73 (dd, *J* = 14.9, 6.8 Hz, 1H), 3.11 (dd, *J* = 12.6, 4.7 Hz, 1H), 2.84 (dd, *J* = 12.7, 8.3 Hz, 1H), 1.71 (s, 3H), 1.69 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 194.3, 168.8, 160.0, 138.4, 136.4, 133.3, 132.0, 131.2, 130.5, 129.3, 128.6, 128.5, 127.6, 117.8, 79.3, 59.7, 31.4, 26.1, 26.0. HRMS (ESI) m/z: $[M + H]^+$ Calcd for $C_{26}H_{25}ClNO_3Se$ 514.0683; Found 514.0690.

2-Phenyl-5-((phenylselanyl)methyl)-4,5-dihydrothiazole (**9w**). Compound **9w** was prepared according to the general procedure and isolated as an oil (56 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.89 – 7.75 (m, 2H), 7.58 – 7.51 (m, 2H), 7.48 – 7.36 (m, 3H), 7.33 – 7.27 (m, 3H), 4.60 (dd, *J* = 16.2, 3.1 Hz, 1H), 4.30 (dd, *J* = 16.2, 7.9 Hz, 1H), 4.15 – 4.01 (m, 1H), 3.16 (dd, *J* = 12.5, 6.1 Hz, 1H),

3.04 (dd, *J* = 12.6, 9.2 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 167.2, 133.6, 133.2, 131.3, 129.3, 128.8, 128.5, 128.3, 127.6, 69.4, 50.8, 33.6. The data are in accordance with the literature.[9]

2-Phenyl-4-((phenylselanyl)methyl)-4,5-dihydro-1H-imidazole (**9x**). Compound **9x** was prepared according to the general procedure and isolated as an oil (48 mg, 76% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.85 (d, *J* = 8.5 Hz, 2H), 7.58 – 7.55 (m, 2H), 7.48 – 7.44 (m, 1H), 7.40 – 7.36 (m, 2H), 7.30 – 7.16 (m, 3H), 4.92 – 4.85 (m, 1H), 4.15 (dd, *J* = 15.0, 9.5 Hz, 1H), 3.82 (dd, *J* = 15.0, 6.9 Hz, 1H), 3.29 (dd, *J* = 12.7, 5.4 Hz, 1H), 3.05 (dd, *J* = 12.7, 7.4 Hz, 1H), 1.77 (brs, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 163.7, 133.4, 131.3, 129.3, 128.9, 128.3, 128.2, 127.6, 127.5, 78.9, 60.3, 32.0. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{16}H_{16}N_2NaSe$ 339.0371; Found 339.0374.

(*E*)-2-Phenyl-5-((phenylselanyl)methylene)-4,5-dihydrooxazole (**9y**). Compound **9y** was prepared according to the general procedure and isolated as an oil (41 mg, 65% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.99 (d, *J* = 7.0 Hz, 2H), 7.68 – 7.49 (m, 1H), 7.51 – 7.38 (m, 4H), 7.36 – 7.13 (m, 3H), 6.21 (t, *J* = 3.0 Hz, 1H), 4.77 (d, *J* = 3.0 Hz, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 163.7, 161.7, 132.1, 131.4, 129.6, 129.3, 128.6, 128.0, 126.5, 126.5, 85.3, 59.0. The data are in accordance with the literature.[9]

(*E*)-2-(Furan-2-yl)-5-((phenylselanyl)methylene)-4,5-dihydrooxazole (**9z**). Compound **9z** was prepared according to the general procedure and isolated as an oil (43 mg, 71% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61 (d, *J* = 1.8 Hz, 1H), 7.50 – 7.37 (m, 2H), 7.33 – 7.14 (m, 3H), 7.06 (d, *J* = 3.5 Hz, 1H), 6.54 (dd, *J* = 3.5, 1.8 Hz, 1H), 6.21 (t, *J* = 3.0 Hz, 1H), 4.75 (d, *J* = 2.9 Hz, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 160.7, 155.9, 146.0, 141.7, 131.2, 129.7, 129.3, 126.6, 115.4, 111.8, 86.0, 58.7. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{14}H_{11}NNaO_2Se$ 327.9847; Found 327.9836.

(*E*)-5-((Phenylselanyl)methylene)-2-(thiophen-2-yl)-4,5-dihydrooxazole (**9aa**). Compound **9aa** was prepared according to the general procedure and isolated as an oil (43 mg, 67% yield) after flash chromatography (petroleum ether/ethyl acetate = 18/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.69 (d, *J* = 4.9 Hz, 1H), 7.53 (d, *J* = 5.0 Hz, 1H), 7.46 – 7.34 (m, 2H), 7.34 – 7.19 (m, 3H), 7.13 (dd, *J* = 5.0, 3.7 Hz, 1H), 6.20 (t, *J* = 3.0 Hz, 1H), 4.74 (d, *J* = 3.0 Hz, 2H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 161.3, 159.5, 131.3, 131.0, 130.8, 129.7, 129.3, 128.9, 127.8, 126.5, 85.6, 58.9. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{14}H_{11}NNaOSSe$ 343.9619; Found 343.9622.

(*E*)-4,4-dimethyl-2-phenyl-5-((phenylselanyl)methylene)-4,5-dihydrooxazole (**9ab**). Compound **9ab** was prepared according to the general procedure and isolated as an oil (53 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.99 (d, *J* = 7.0 Hz, 2H), 7.60 – 7.39 (m, 4H), 7.39 – 7.15 (m, 4H), 6.20 (s, 1H), 1.68 (s, 6H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 167.4, 159.0, 132.7, 131.8, 129.5, 129.2, 128.5, 128.1, 126.5, 126.3, 86.1, 71.0, 27.3. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{18}H_{17}NNaOSe$ 366.0368; Found 366.0380.

5-((Phenylselanyl)methyl)dihydrofuran-2(3*H*)-one (11a). Compound **11a** was prepared according to the general procedure and isolated as an oil (49 mg, 96% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.48 – 7.45 (m, 2H), 7.22 – 7.19 (m, 3H), 4.60 – 4.54 (m, 1H), 3.20 (dd, *J* = 12.9, 4.8 Hz, 1H), 2.93 (dd, *J* = 12.9, 7.9 Hz, 1H), 2.51 – 2.36 (m, 2H), 2.36 – 2.28 (m, 1H), 1.92 – 1.82 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.6, 132.2, 128.3, 127.8, 126.7, 78.3, 30.9, 27.75, 26.6. The data are in accordance with the literature.[10]

4,4-Dimethyl-5-((phenylselanyl)methyl)dihydrofuran-2(3*H*)-one (**11b**). Compound **11b** was prepared according to the general procedure and isolated as an oil (54 mg, 95% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.58 – 7.40 (m, 2H), 7.28 – 7.15 (m, 3H), 4.22 (dd, *J* = 8.4, 4.8 Hz, 1H), 3.02 (dd, *J* = 12.9, 8.4 Hz, 1H), 2.94 (dd, *J* = 12.9, 4.9 Hz, 1H), 2.35 (d, *J* = 17.0 Hz, 1H), 2.28 (d, *J* = 17.0 Hz, 1H), 1.12 (s, 3H), 0.99 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 174.1, 132.1, 128.3, 127.4, 126.5, 86.3, 43.7, 38.8, 25.5, 24.7, 20.3. The data are in accordance with the literature.[10]

6-(Phenylselanyl)hexahydro-2*H*-cyclopenta[*b*]furan-2-one (**11c**). Compound **11c** was prepared according to the general procedure and isolated as an oil (47 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60 – 7.43 (m, 2H), 7.30 – 7.18 (m, 3H), 4.84 (d, *J* = 6.3 Hz, 1H), 4.03 – 3.69 (m, 1H), 3.08 – 3.01(m, 1H), 2.75 (dd, *J* = 18.4, 10.0 Hz, 1H), 2.27 (dd, *J* = 18.4, 2.5 Hz, 1H), 2.23 – 2.13 (m, 2H), 1.87 – 1.69 (m, 1H), 1.60 – 1.43 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.9, 132.6, 128.4, 127.6, 126.8, 89.5, 45.2, 36.1, 35.0, 31.5, 29.0. The data are in accordance with the literature.[10]

***trans*-5-Phenyl-4-(phenylselanyl)dihydrofuran-2(3*H*)-one** (**11d**). Compound **11d** was prepared according to the general procedure and isolated as an oil (57 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.58 – 7.45 (m, 2H), 7.44 – 7.33 (m, 4H), 7.32 – 7.24 (m, 4H), 5.37 (d, *J* = 6.9 Hz, 1H), 3.74 (td, *J* = 8.3, 6.9 Hz, 1H), 3.03 (dd, *J* = 18.0, 8.3 Hz, 1H), 2.66 (dd, *J* = 18.0, 8.4 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 174.6, 137.3, 136.1, 129.6, 129.1, 128.9, 128.8, 126.0, 125.8, 86.2, 42.3, 36.0. The data are in accordance with the literature.[11]

6-(Phenylselanyl)hexahydro-2*H*-3,5-methanocyclopenta[*b*]furan-2-one (**11e**). Compound **11e** was prepared according to the general procedure and isolated as an oil (50 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.51 – 7.38 (m, 2H), 7.26 – 7.16 (m, 3H), 4.68 (d, *J* = 5.0 Hz, 1H), 3.26 (d, *J* = 2.5 Hz, 1H), 3.17 (t, *J* = 4.8 Hz, 1H), 2.50 (dd, *J* = 11.3, 4.8 Hz, 1H), 2.45 (d, *J* = 3.7 Hz, 1H), 2.22 – 2.13 (m, 1H), 2.04 (ddd, *J* = 13.3, 11.3, 3.9 Hz, 1H), 1.73 (dt, *J* = 13.3, 2.2 Hz, 1H), 1.61 (dq, *J* = 11.4, 1.9 Hz, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 179.1, 132.0, 128.4, 126.6, 113.0, 85.4, 48.3, 45.5, 41.3, 37.3, 35.8, 34.3. The data are in accordance with the literature.[10]

3a-(Phenylselanyl)hexahydrobenzofuran-2(3*H*)-one (**11f**). Compound **11f** was prepared according to the general procedure and isolated as an oil (54 mg, 91% yield) after flash

chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.71 – 7.57 (m, 2H), 7.51 – 7.40 (m, 1H), 7.38 – 7.34 (m, 2H), 4.36 (t, *J* = 3.8 Hz, 1H), 2.70 (d, *J* = 16.9 Hz, 1H), 2.48 (d, *J* = 16.9 Hz, 1H), 12.04– 1.98 (m, 2H), 1.94 – 1.85 (m, 1H), 1.80 – 1.46 (m, 5H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 175.2, 138.3, 129.7, 129.5, 125.4, 82.0, 47.0, 44.9, 33.3, 25.1, 21.5, 19.6. The data are in accordance with the literature.[12]

4-(Phenylselanyl)-6-oxabicyclo[3.2.1]octan-7-one (**11g**). Compound **11g** was prepared according to the general procedure and isolated as a white solid (50 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). Mp=75-76 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): 7.60 – 7.52 (m, 2H), 7.37 – 7.19 (m, 3H), 4.83 (t, *J* = 4.3 Hz, 1H), 3.67 (t, *J* = 5.1 Hz, 1H), 2.68 – 2.64 (m, 1H), 2.41 – 2.23 (m, 3H), 2.07 – 2.01 (m, 1H), 1.97 – 1.77 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 178.2, 134.2, 129.4, 128.6, 128.2, 79.8, 41.1, 38.7, 33.7, 25.7, 23.7. The data are in accordance with the literature.[12]

6-((Phenylselanyl)methyl)tetrahydro-2*H*-pyran-2-one (**11h**). Compound **11h** was prepared according to the general procedure and isolated as an oil (49 mg, 92% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.59 – 7.42 (m, 2H), 7.29 – 7.25 (m, 3H), 4.47 – 4.40 (m, 1H), 3.25 (dd, *J* = 12.9, 4.9 Hz, 1H), 3.02 (dd, *J* = 12.9, 7.8 Hz, 1H), 2.56 (dd, *J* = 17.8, 6.5 Hz, 1H), 2.43 (dd, *J* = 17.8, 9.1 Hz, 1H), 2.19 – 2.11 (m, 1H), 1.96 – 1.86 (m, 1H), 1.85 – 1.73 (m, 1H), 1.61 – 1.52 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 171.1, 132.8, 129.4, 129.3, 127.4, 79.8, 32.2, 29.4, 27.4, 18.4. The data are in accordance with the literature.[10]

3,8-Bis((phenylselanyl)methyl)-2,7-dioxaspiro[4.4]nonane-1,6-dione (**11i**). Compound **11i** was prepared according to the general procedure and isolated as an oil (84 mg, 85% yield) in an inseperable mixture of diastereomers after flash chromatography (petroleum ether/ethyl acetate = 10/1). Major isomer, ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.57 – 7.51 (m, 4H), 7.37 – 7.22 (m, 6H), 5.18 – 4.91 (m, 2H), 3.29 (ddd, *J* = 13.4, 9.1, 4.6 Hz, 2H), 3.03 (ddd, *J* = 13.0, 7.9, 3.8 Hz, 2H), 2.90 (dd, *J* = 13.3, 6.4 Hz, 1H), 2.84 (dd, *J* = 13.1, 6.0 Hz, 1H), 1.99 (ddd, *J* = 13.3, 9.1, 6.6 Hz, 2H). Minor isomer, ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.57 – 7.51 (m, 4H), 7.37 – 7.22 (m, 6H), 4.65 – 4.57 (m, 2H), 3.37 (dd, *J* = 12.8, 5.2 Hz, 2H), 3.19 (ddd, *J* = 13.3, 9.1, 4.3 Hz, 2H), 2.71 (dd, *J* = 13.8, 6.5 Hz, 2H), 2.37 (dd, *J* = 13.8, 7.5 Hz, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 173.6, 173.2, 172.9, 172.8, 133.5, 133.43, 133.36, 133.30, 129.5, 129.5, 129.49, 128.47, 128.45, 128.2, 128.1, 128.0, 127.88, 127.85, 78.2, 78.0, 77.5, 53.5, 53.2, 52.3, 39.7, 38.6, 38.3, 37.4, 31.8, 31.5, 31.1, 30.8, 29.7. The data are in accordance with the literature.[13]

2-((Phenylselanyl)methyl)tetrahydrofuran (**11j**). Compound **11j** was prepared according to the general procedure and isolated as an oil (42 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate = 30/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.44 (d, *J* = 7.6 Hz, 2H), 7.20 – 7.14 (m, 3H), 4.06 – 3.97 (m, 1H), 3.87 – 3.80 (m, 1H), 3.69 (dd, *J* = 14.2, 7.8 Hz, 1H), 3.05 (dd, *J* = 12.1, 5.8 Hz, 1H), 2.91 (dd, *J* = 12.2, 6.8 Hz, 1H), 2.03 – 1.94 (m, 1H), 1.89 – 1.75

(m, 2H), 1.59 – 1.50 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 131.5, 129.3, 128.0, 125.8, 77.3, 67.3, 32.0, 30.5, 24.9. The data are in accordance with the literature.[10]

3,3-Dimethyl-2-((phenylselanyl)methyl)tetrahydrofuran (**11k**). Compound **11k** was prepared according to the general procedure and isolated as an oil (51 mg, 95% yield) after flash chromatography (petroleum ether/ethyl acetate = 60/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.49 – 7.42 (m, 2H), 7.26 – 7.13 (m, 3H), 3.83 (q, *J* = 8.1 Hz, 1H), 3.76 (td, *J* = 8.5, 5.1 Hz, 1H), 3.56 (dd, *J* = 8.2, 4.9 Hz, 1H), 2.93 – 2.86 (m, 2H), 1.87 – 1.65 (m, 2H), 1.00 (s, 3H), 0.90 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 131.4, 129.8, 128.0, 125.7, 84.8, 64.5, 40.4, 40.2, 27.6, 24.6, 20.5. The data are in accordance with the literature.[10]

2-((Phenylselanyl)methyl)-2,3-dihydrobenzofuran (**11l**). Compound **11l** was prepared according to the general procedure and isolated as a white solid (55 mg, 95% yield) after flash chromatography (petroleum ether/ethyl acetate = 60/1). Mp=59-61℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.62 – 7.41 (m, 2H), 7.35 – 7.21 (m, 3H), 7.18 – 7.03 (m, 2H), 6.81 (d, *J* = 7.4 Hz, 1H), 6.72 (d, *J* = 8.0 Hz, 1H), 4.94 – 4.87 (m, 1H), 3.37 – 3.22 (m, 2H), 3.06 (dd, *J* = 12.5, 7.7 Hz, 1H), 2.99 (dd, *J* = 15.9, 6.9 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 159.2, 133.1, 129.4, 129.3, 128.1, 127.4, 126.2, 125.1, 120.6, 109.6, 81.9, 35.6, 32.8. The data are in accordance with the literature.[8]

6-(Phenylselanyl)hexahydro-2*H*-3,5-methanocyclopenta[*b*]furan (**11m**). Compound **11m** was prepared according to the general procedure and isolated as an oil (46 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate =30/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.52 – 7.34 (m, 2H), 7.26 – 7.10 (m, 3H), 4.26 (d, *J* = 5.0 Hz, 1H), 3.74 (dd, *J* = 8.0, 4.3 Hz, 1H), 3.64 (d, *J* = 8.0 Hz, 1H), 3.02 (d, *J* = 2.4 Hz, 1H), 2.61 (t, *J* = 4.6 Hz, 1H), 2.36 – 2.30 (m, 1H), 2.16 (d, *J* = 4.2 Hz, 1H), 2.05 – 1.98 (m, 1H), 1.95 (d, *J* = 11.2 Hz, 1H), 1.64 – 1.45 (m, 1H), 1.13 (dt, *J* = 12.7, 2.4 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 131.4, 129.3, 128.1, 125.7, 85.4, 73.4, 52.1, 45.6, 38.8, 37.4, 36.8, 35.9. The data are in accordance with the literature.[10]

4-(Phenylselanyl)-6-oxabicyclo[3.2.1]octane (**11n**). Compound **11n** was prepared according to the general procedure and isolated as an oil (45 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 40/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.51 – 7.49 (m, 2H), 7.37 – 7.00 (m, 3H), 4.42 (t, *J* = 5.2 Hz, 1H), 3.87 (d, *J* = 7.9 Hz, 1H), 3.81 (dd, *J* = 8.1, 4.4 Hz, 1H), 3.50 (t, *J* = 5.1 Hz, 1H), 2.38 – 2.36 (m, 1H), 2.34 – 2.16 (m, 1H), 2.07 (d, *J* = 11.7 Hz, 1H), 1.97 – 1.67 (m, 3H), 1.67 – 1.42 (m, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 133.5, 130.2, 129.1, 127.2, 78.1, 71.9, 45.7, 35.1, 34.5, 26.9, 25.7. The data are in accordance with the literature.[14]

2-((Phenylselanyl)methyl)tetrahydro-2*H*-pyran (**11o**). Compound **11o** was prepared according to the general procedure and isolated as an oil (41 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 70/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.47 – 7.40 (m, 2H), 7.23 – 7.11 (m, 3H), 4.06 – 3.85 (m, 1H), 3.50 – 3.25 (m, 2H), 3.00 (dd, *J* = 12.2, 6.9 Hz, 1H), 2.86 (dd, *J* = 12.2, 5.6 Hz, 1H), 1.78 – 1.67 (m, 2H), 1.56 – 1.23 (m, 4H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 131.3, 129.7, 128.0, 125.7, 76.0, 67.7, 32.6, 30.7, 24.7, 22.3. The data are in accordance with the

literature.[10]

3,8-Bis((phenylselanyl)methyl)-2,7-dioxaspiro[4.4]nonane (**11p**). Compound **11p** was prepared according to the general procedure and isolated as an oil (81 mg, 87% yield) inseparable mixture of isomers (ratio 1:1:1) after flash chromatography (petroleum ether/ethyl acetate = 40/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.02 – 7.45 (m, 4H), 7.29 – 7.21 (m, 6H), 4.28 – 4.05 (m, 1H), 3.84 (dd, *J* = 32.7, 8.5 Hz, 2H), 3.78 – 3.67 (m, 1H), 3.58 (d, *J* = 8.6 Hz, 2H), 3.21 – 3.06 (m, 2H), 3.06 – 2.88 (m, 2H), 2.22 – 2.04 (m, 2H), 1.78 – 1.66 (m, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 132.69, 132.66, 132.64 130.0, 130.03, 130.01, 129.99, 129.97, 127.1, 127.0, 78.4, 78.3, 78.23, 78.21, 77.6, 77.4, 76.9, 76.2, 51.9, 51.5, 43.0, 42.9, 42.3, 41.6, 33.13, 33.10, 33.0, 32.9. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{21}H_{24}NaO_2Se_2$ 490.9999; Found 490.9983.

4,4-Diphenyl-2-((phenylselanyl)methyl)-1-tosylpyrrolidine (**13a**). Compound **13a** was prepared according to the general procedure and isolated as an oil (96 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate=20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.49 – 7.42 (m, 2H), 7.28 – 7.20 (m, 5H), 7.19 – 7.12 (m, 4H), 7.09 – 6.91 (m, 8H), 4.40 (d, *J* = 10.1 Hz, 1H), 3.65 – 3.57 (m, 1H), 3.54 (dd, *J* = 12.5, 2.9 Hz, 1H), 3.41 (d, *J* = 10.2 Hz, 1H), 2.64 – 2.50 (m, 2H), 2.24 (s, 3H), 2.23 – 2.19 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 143.9, 143.8, 142.3, 132.0, 128.5, 128.2, 127.8, 127.6, 127.5, 127.4, 126.4, 126.1, 125.7, 125.5, 125.35, 125.30, 58.4, 57.8, 51.0, 41.5, 31.4, 20.4. The data are in accordance with the literature.[10]

4,4-Diphenyl-2-((phenylselanyl)methyl)-1-(phenylsulfonyl)pyrrolidine (**13b**). Compound **13b** was prepared according to the general procedure and isolated as a white solid (93 mg, 87% yield) after flash chromatography (petroleum ether/ethyl acetate=20/1). mp=127-129 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.49 – 7.43 (m, 2H), 7.42 – 7.35 (m, 3H), 7.28 – 7.22 (m, 5H), 7.20 – 7.15 (m, 4H), 7.12 – 7.00 (m, 4H), 6.98 – 6.93 (m, 2H), 4.41 (d, *J* = 10.2 Hz, 1H), 3.67 – 3.58 (m, 1H), 3.54 (dd, *J* = 12.5, 2.9 Hz, 1H), 3.45 (d, *J* = 10.2 Hz, 1H), 2.64 – 2.54 (m, 2H), 2.29 – 2.19 (m, 1H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 143.8, 143.7, 135.2, 132.1, 131.6, 128.2, 127.9, 127.6, 127.5, 126.4, 126.1, 125.7, 125.6, 125.56, 125.50, 125.3, 58.5, 57.7, 51.0, 41.5, 31.4. The data are in accordance with the literature.[10]

1-(Ethylsulfonyl)-4,4-diphenyl-2-((phenylselanyl)methyl)pyrrolidine (**13c**). Compound **13c** was prepared according to the general procedure and isolated as an oil (82 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate=10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.45 – 7.38 (m, 2H), 7.31 – 7.22 (m, 2H), 7.23 – 7.14 (m, 7H), 7.13 – 7.05 (m, 4H), 4.20 (dd, *J* = 10.7, 1.6 Hz, 1H), 4.09 – 3.91 (m, 2H), 3.43 (dd, *J* = 12.3, 3.0 Hz, 1H), 3.03 (ddd, *J* = 13.0, 7.0, 1.6 Hz, 1H), 2.79 (dd, *J* = 12.3, 9.6 Hz, 1H), 2.63 – 2.39 (m, 3H), 1.11 (t, *J* = 7.4 Hz, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ 144.0, 143.2, 131.2, 128.5, 128.2, 127.7, 127.6, 125.9, 125.8, 125.7, 125.6, 125.5, 58.4, 58.2, 52.1, 44.6, 42.5, 31.9, 6.9. The data are in accordance with the literature.[10]

4,4-Diallyl-2-((phenylselanyl)methyl)-1-tosylpyrrolidine (**13d**). Compound **13d** was prepared according to the general procedure and isolated as an oil (81 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate=20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.58 – 7.48

(m, 2H), 7.46 – 7.39 (m, 2H), 7.27 – 7.23 (m, 3H), 7.14 (d, *J* = 8.0 Hz, 2H), 5.68 – 5.54 (m, 1H), 5.49 – 5.35 (m, 1H), 5.07 – 4.93 (m, 2H), 4.91 – 4.85 (m, 1H), 4.65 (dq, *J* = 16.8, 1.5 Hz, 1H), 3.73 (dd, *J* = 12.3, 2.9 Hz, 1H), 3.56 (dtd, *J* = 10.5, 7.7, 2.9 Hz, 1H), 3.19 (d, *J* = 10.7 Hz, 1H), 3.03 (dd, *J* = 10.7, 1.1 Hz, 1H), 2.88 (dd, *J* = 12.3, 10.2 Hz, 1H), 2.33 (s, 3H), 2.02 (d, *J* = 7.5 Hz, 2H), 1.91 (ddd, *J* = 13.2, 7.5, 1.1 Hz, 1H), 1.57 – 1.46 (m, 2H), 1.29 (dd, *J* = 14.0, 7.9 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 142.5, 133.2, 132.5, 132.2, 132.1, 128.6, 128.2, 128.2, 126.5, 126.1, 117.5, 117.4, 58.3, 57.8, 42.3, 41.2, 39.5, 38.2, 33.0, 20.5. The data are in accordance with the literature.[10]

4,4-Dimethyl-2-((phenylselanyl)methyl)-1-tosylpyrrolidine (**13e**). Compound **13e** was prepared according to the general procedure and isolated as a yellow solid (79 mg, 94% yield) after flash chromatography (petroleum ether/ethyl acetate=20/1). mp=103-104 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.57 – 7.47 (m, 2H), 7.42 (d, *J* = 8.3 Hz, 2H), 7.27 – 7.22 (m, 3H), 7.13 (d, *J* = 8.3 Hz, 2H), 3.76 (dd, *J* = 12.2, 2.9 Hz, 1H), 3.59 (dtd, *J* = 10.6, 7.7, 2.9 Hz, 1H), 3.14 (d, *J* = 10.5 Hz, 1H), 2.97 (dd, *J* = 10.5, 1.2 Hz, 1H), 2.89 (dd, *J* = 12.3, 10.4 Hz, 1H), 2.31 (s, 3H), 1.79 (dd, *J* = 12.8, 7.4 Hz, 1H), 1.51 (dd, *J* = 12.8, 8.0 Hz, 1H), 0.95 (s, 3H), 0.36 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 142.3, 133.1, 131.7, 128.5, 128.4, 128.2, 126.5, 125.96, 61.0, 58.9, 45.7, 36.2, 33.0, 25.4, 24.8, 20.5. The data are in accordance with the literature.[10]

3-((Phenylselanyl)methyl)-2-tosyl-2-azaspiro[4.4]nonane (**13f**). Compound **13f** was prepared according to the general procedure and isolated as an oil (79 mg, 88% yield) after flash chromatography (petroleum ether/ethyl acetate=20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.52 (d, *J* = 7.6 Hz, 2H), 7.41 (d, *J* = 8.3 Hz, 2H), 7.30 – 7.21 (m, 3H), 7.13 (d, *J* = 8.0 Hz, 2H), 3.75 (dd, *J* = 12.3, 3.0 Hz, 1H), 3.56 – 3.49 (m, 1H), 3.24 (d, *J* = 10.2 Hz, 1H), 2.94 (d, *J* = 10.2 Hz, 1H), 2.88 (dd, *J* = 12.3, 10.7 Hz, 1H), 2.32 (s, 3H), 1.84 (dd, *J* = 12.9, 7.4 Hz, 1H), 1.64 (dd, *J* = 12.8, 6.8 Hz, 1H), 1.56 – 1.31 (m, 6H), 0.87 (ddd, *J* = 12.6, 8.2, 6.9 Hz, 1H), 0.73 (ddd, *J* = 13.2, 7.8, 6.0 Hz, 1H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 142.4, 132.9, 131.7, 128.5, 128.3, 128.2, 126.5, 126.0, 59.4, 59.0, 47.3, 43.2, 35.6, 35.4, 32.7, 23.5, 23.2, 20.5. The data are in accordance with the literature.[10]

2-((Phenylselanyl)methyl)-1-tosylindoline (**13g**). Compound **13g** was prepared according to the general procedure and isolated as an oil (79 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate=20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.57 (d, *J* = 8.1 Hz, 1H), 7.55 – 7.44 (m, 2H), 7.34 – 7.22 (m, 5H), 7.17 – 7.09 (m, 1H), 7.05 – 6.99 (m, 2H), 6.98 – 6.88 (m, 2H), 4.20 – 4.10 (m, 1H), 3.58 (dd, *J* = 12.5, 3.5 Hz, 1H), 2.85 (dd, *J* = 12.5, 10.8 Hz, 1H), 2.80 – 2.76 (m, 2H), 2.24 (s, 3H). $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$): δ 142.9, 140.3, 133.5, 131.4, 129.9, 128.5, 128.2, 127.8, 126.8, 126.1, 125.9, 124.2, 123.7, 116.0, 60.5, 33.0, 32.0, 20.5. The data are in accordance with the literature.[10]

2-((Phenylselanyl)methyl)-1-(thiophen-2-ylsulfonyl)pyrrolidine (**13h**). Compound **13h** was prepared according to the general procedure and isolated as a white solid (63 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate=12/1). mp= 90-92°C. ^{1}H NMR (400 MHz,

$CDCl_3$): δ 7.58 – 7.40 (m, 3H), 7.30 (dd, *J* = 3.7, 1.3 Hz, 1H), 7.27 – 7.14 (m, 3H), 6.98 (dd, *J* = 5.0, 3.7 Hz, 1H), 3.67 – 3.61 (m, 1H), 3.52 (dd, *J* = 12.6, 6.4 Hz, 1H), 3.49 – 3.39 (m, 1H), 3.16 – 3.10 (m, 1H), 2.80 (dd, *J* = 12.6, 10.8 Hz, 1H), 1.85 – 1.71 (m, 2H), 1.69 – 1.57 (m, 1H), 1.50 – 1.39 (m, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 135.8, 131.2, 131.1, 130.8, 128.3, 128.2, 126.4, 125.8, 59.3, 49.0, 31.6, 30.0, 22.9. The data are in accordance with the literature.[10]

1-(5-Chloro-2-((2-((phenylselanyl)methyl)pyrrolidin-1-yl)sulfonyl)thiophen-3-yl)ethanone (**13i**). Compound **13i** was prepared according to the general procedure and isolated as an oil (77 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate=1/1). ^1H NMR (400 MHz, $CDCl_3$): δ 7.67 – 7.43 (m, 2H), 7.37 – 7.17 (m, 3H), 6.97 (s, 1H), 4.17 – 3.81 (m, 1H), 3.68 – 3.25 (m, 3H), 2.91 (dd, *J* = 12.5, 10.4 Hz, 1H), 2.52 (s, 3H), 2.10 – 1.83 (m, 3H), 1.78 – 1.67 (m, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 196.1, 143.7, 136.1, 135.7, 132.5, 129.4, 129.2, 127.0, 126.7, 60.6, 49.7, 32.8, 31.2, 24.1. HRMS (ESI) m/z: $[M + Na]^+$ Calcd for $C_{17}H_{18}ClNNaO_3S_2Se$ 485.9474; Found 485.9460.

1-(4-((2-((Phenylselanyl)methyl)pyrrolidin-1-yl)sulfonyl)phenyl)-5-(*p*-tolyl)-3-(trifluoromethyl)-1H-pyrazole (**13j**). Compound **13j** was prepared according to the general procedure and isolated as a white solid (99 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). mp=125-126°C. ^1H NMR (400 MHz, $CDCl_3$): δ 7.50 – 7.46 (m, 4H), 7.30 (d, *J* = 8.6 Hz, 2H), 7.23 – 7.15 (m, 3H), 7.09 (d, *J* = 8.0 Hz, 2H), 6.99 (d, *J* = 8.0 Hz, 2H), 6.66 (s, 1H), 3.51 – 3.46 (m, 2H), 3.45 – 3.37 (m, 1H), 3.00 (dt, *J* = 9.8, 7.3 Hz, 1H), 2.73 (dd, *J* = 12.8, 11.4 Hz, 1H), 2.31 (s, 3H), 1.87 – 1.69 (m, 2H), 1.63 – 1.55 (m, 1H), 1.47 – 1.35 (m, 1H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 144.3, 143.1 (q, $J_{C\text{-}F}$ = 38.5 Hz), 141.4, 138.8, 135.3, 131.8, 128.7, 128.2, 128.0, 127.7, 127.4, 126.1, 124.6, 124.5, 120.0 (q, $J_{C\text{-}F}$ = 269.1 Hz), 105.2, 59.1, 49.0, 31.8, 30.0, 22.8, 20.3. ^{19}F NMR (376 MHz, $CDCl_3$): δ -62.4. The data are in accordance with the literature.[10]

3-(Phenylselanyl)-1H-indole (**14**). Yellow solid (19 mg, 35% yield). Eluent: petroleum ether/ethyl acetate = 20/1. Mp=135-136 ℃. ^1H NMR (400 MHz, $CDCl_3$): δ 8.36 (brs, 1H), 7.56 (d, *J* = 7.9 Hz, 1H), 7.40 (d, *J* = 2.5 Hz, 1H), 7.36 (d, *J* = 8.1 Hz, 1H), 7.23 – 7.13 (m, 3H), 7.13 – 6.97 (m, 4H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$): δ 135.3, 132.8, 130.2, 128.9, 127.9, 127.6, 124.5, 121.9, 119.8, 119.3, 110.3, 97.1. The data are in accordance with the literature.[15]

Phenyl(2,4,6-trimethoxyphenyl)selane (**15**). Yellow solid (18 mg, 28% yield). Eluent: petroleum ether/ethyl acetate = 25/1. Mp=135-136 ℃. ^1H NMR (400 MHz, $CDCl_3$): δ 7.41 – 6.70 (m, 5H), 6.14 (s, 2H), 3.79 (s, 3H), 3.72 (s, 6H). $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$) δ: 161.9, 160.9, 132.5, 127.7, 127.6, 124.2, 96.0, 90.1, 55.3, 54.4. The data are in accordance with the literature.[15]

7. References

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8. ORTEP drawing of 5b and 13h

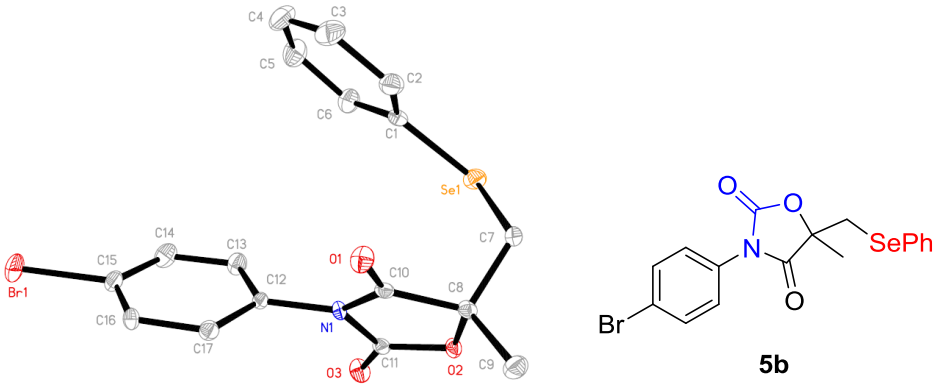


Fig. S3. ORTEP drawing of **5b**. Hydrogen atoms were omitted for clarity.

Table S1 Crystal data and structure refinement for **5b**.

CCDC	2093778
Empirical formula	$C_{17}H_{14}BrNO_3Se$
Formula weight	439.16
Temperature/K	200.00(10)
Crystal system	monoclinic
Space group	$P2_1/n$
a/Å	12.5541(7)
b/Å	6.6650(4)

c/Å	20.2899(11)
α/	90
β/	103.002(6)
γ/	90
Volume/Å^3	1654.19(17)
Z	4
ρ_{calc}g/cm^3	1.763
μ/mm^{-1}	4.699
F(000)	864.0
Crystal size/mm^3	0.14 ×0.12 ×0.09
Radiation	Mo Kα (λ = 0.71073)
2Θ range for data collection/	4.12 to 49.996
Index ranges	-14 ≤ h ≤ 14, -7 ≤ k ≤ 6, -18 ≤ l ≤ 24
Reflections collected	7572
Independent reflections	2898 [R_{int} = 0.0355, R_{sigma} = 0.0461]
Data/restraints/parameters	2898/0/209
Goodness-of-fit on F^2	1.037
Final R indexes [I>=2σ (I)]	R_1 = 0.0333, wR_2 = 0.0599
Final R indexes [all data]	R_1 = 0.0484, wR_2 = 0.0659
Largest diff. peak/hole / e Å^{-3}	0.53/-0.43

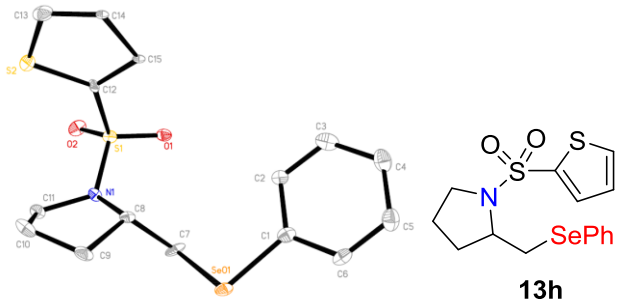


Fig. S4. ORTEP drawing of **13**. Hydrogen atoms were omitted for clarity.

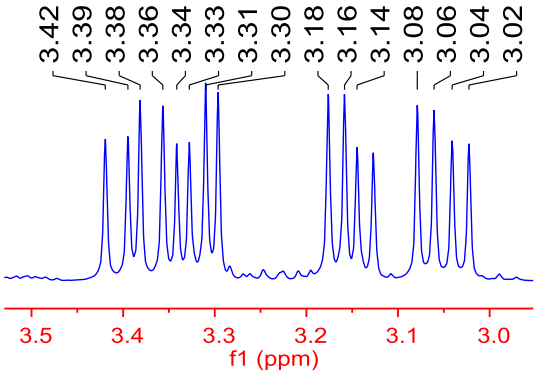
Table S1 Crystal data and structure refinement for **13h**.

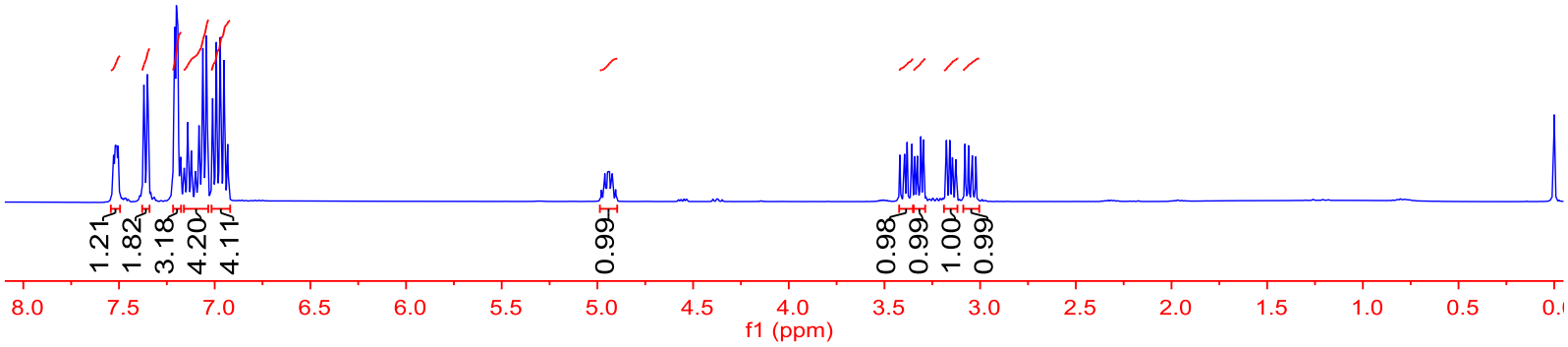
CCDC	2116754
Empirical formula	$C_{15}H_{17}NO_2S_2Se$
Formula weight	386.37
Temperature/K	100.01(11)
Crystal system	orthorhombic
Space group	$P2_12_12_1$
a/Å	8.0638(5)
b/Å	8.2150(7)
c/Å	24.112(2)

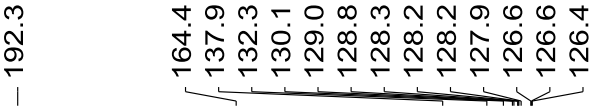
α/	90
β/	90
γ/	90
Volume/Å^3	1597.3(2)
Z	4
ρ_{calc}g/cm^3	1.607
μ/mm^{-1}	2.615
F(000)	784.0
Crystal size/mm^3	0.13 × 0.11 × 0.1
Radiation	Mo Kα (λ = 0.71073)
2Θ range for data collection/°	5.238 to 49.996
Index ranges	$-8 \leq h \leq 9$, $-9 \leq k \leq 7$, $-23 \leq l \leq 28$
Reflections collected	7121
Independent reflections	2808 [R_{int} = 0.0524, R_{sigma} = 0.0793]
Data/restraints/parameters	2808/12/202
Goodness-of-fit on F^2	1.066
Final R indexes [I>=2σ (I)]	R_1 = 0.0485, wR_2 = 0.0876
Final R indexes [all data]	R_1 = 0.0588, wR_2 = 0.0923
Largest diff. peak/hole / e Å^{-3}	0.49/-0.69
Flack parameter	0.49(2)

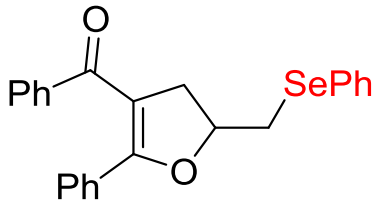
9. Copies of NMR spectra

^{1}H NMR (400 MHz, $CDCl_3$) of **3a**

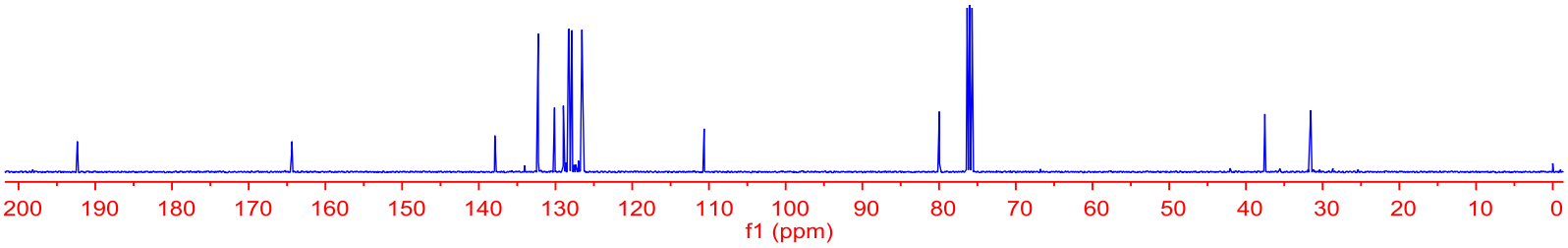


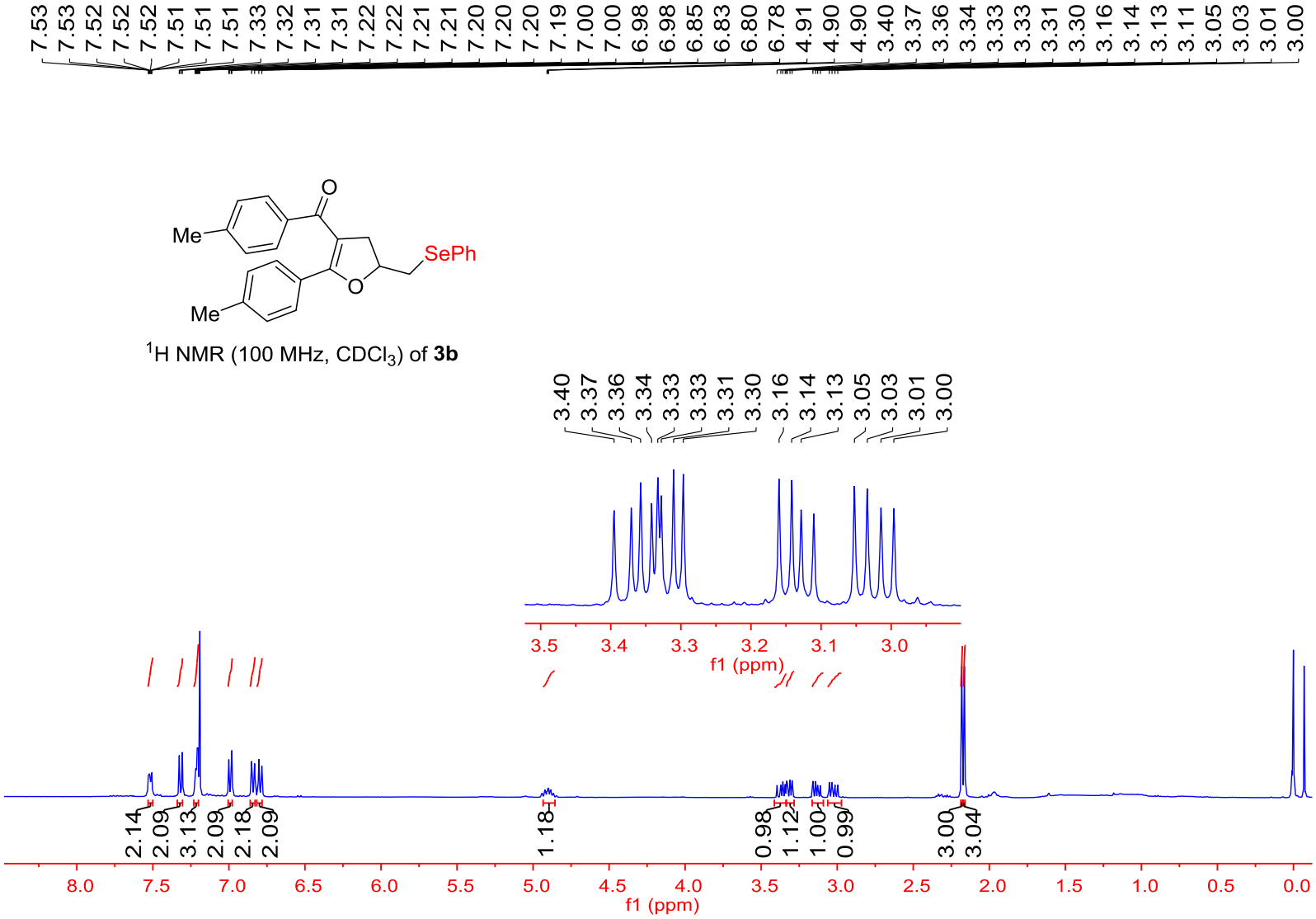




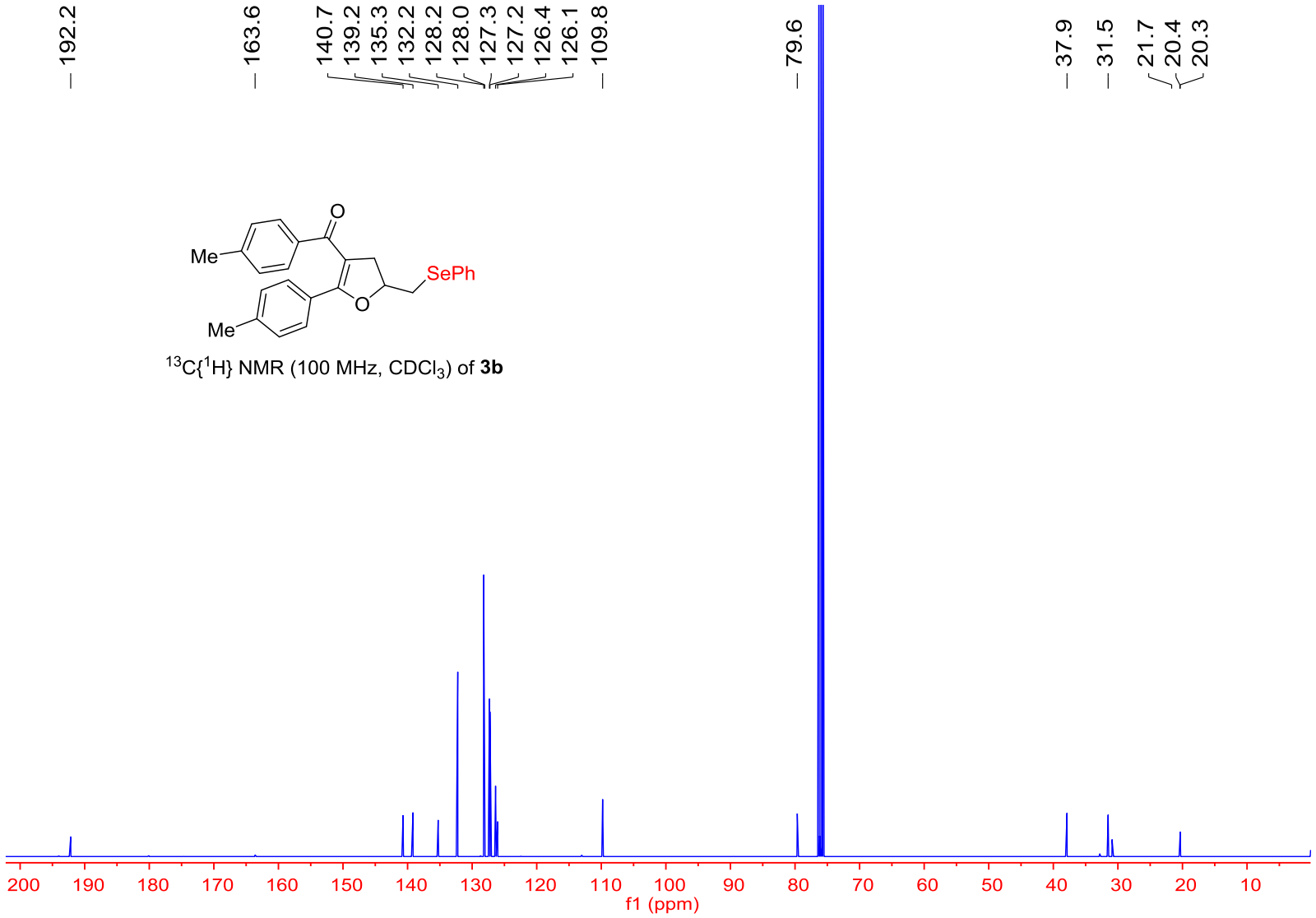


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3a**

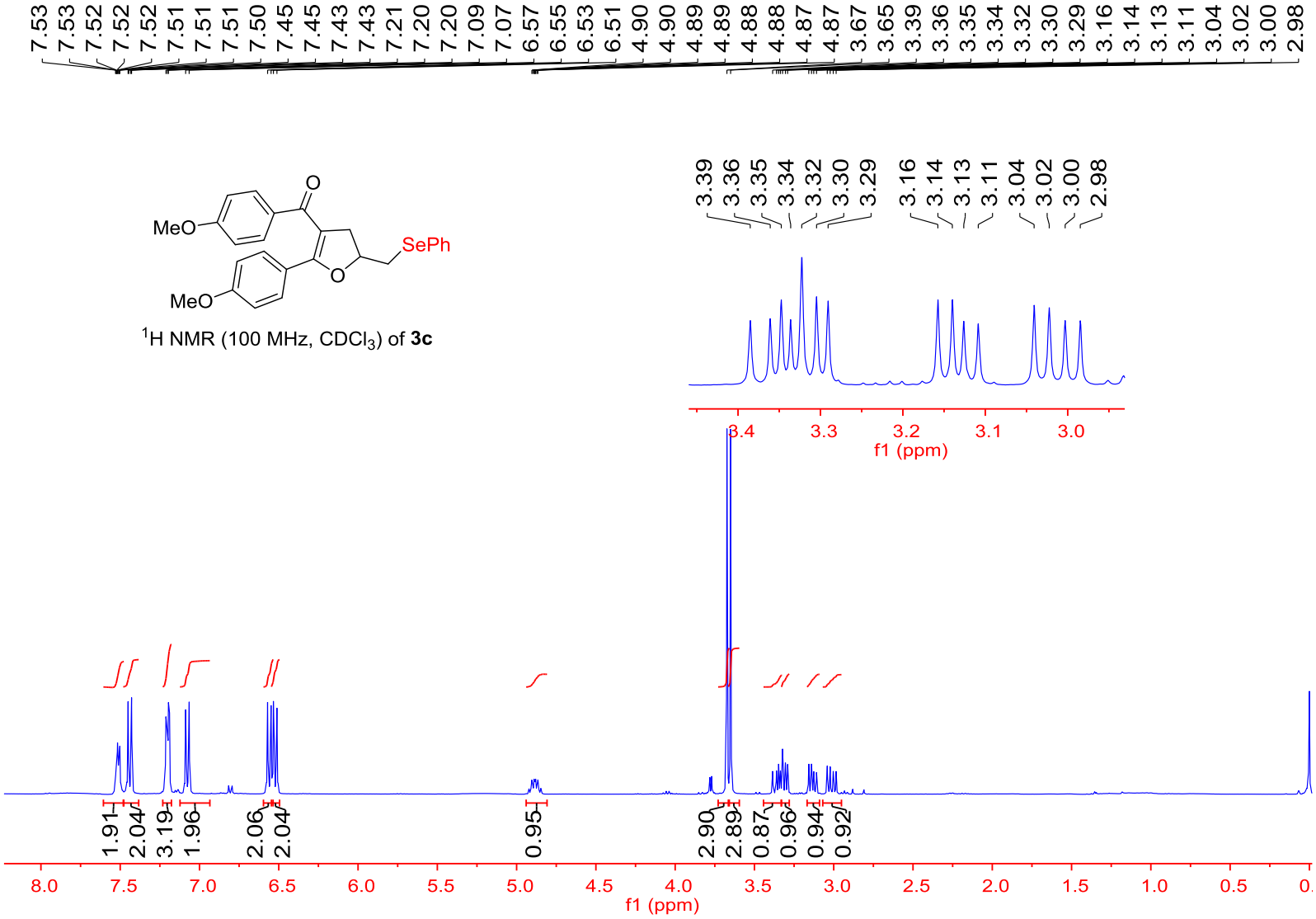




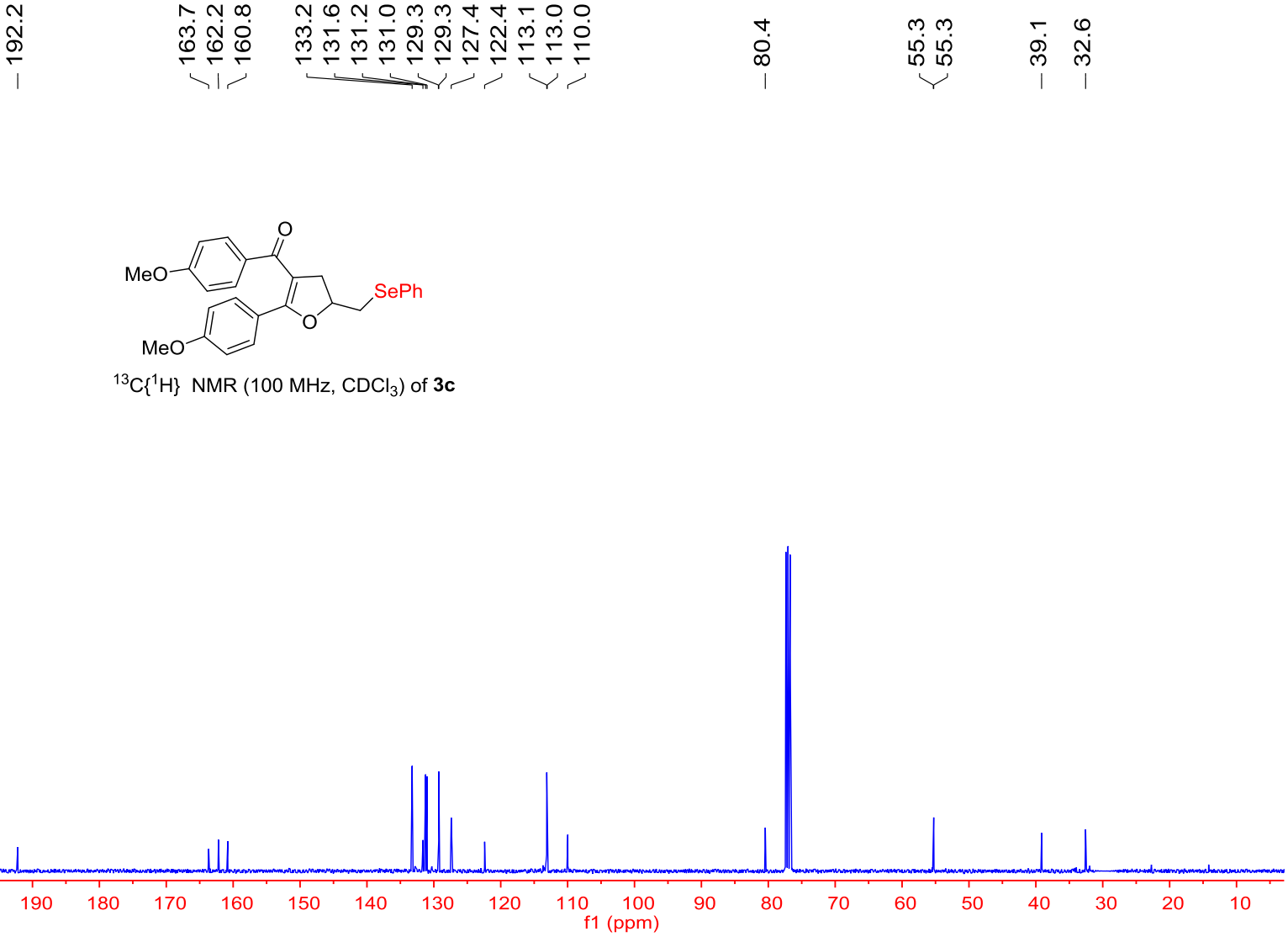
^{1}H NMR (100 MHz, $CDCl_3$) of **3b**



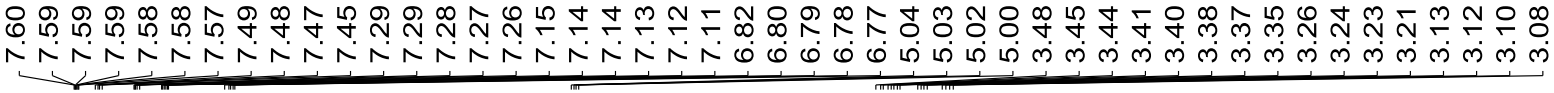
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3b**

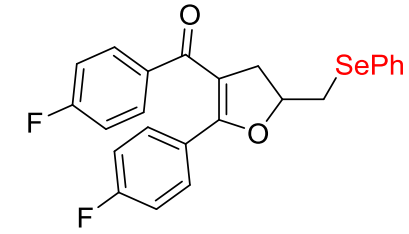


^{1}H NMR (100 MHz, $CDCl_3$) of **3c**

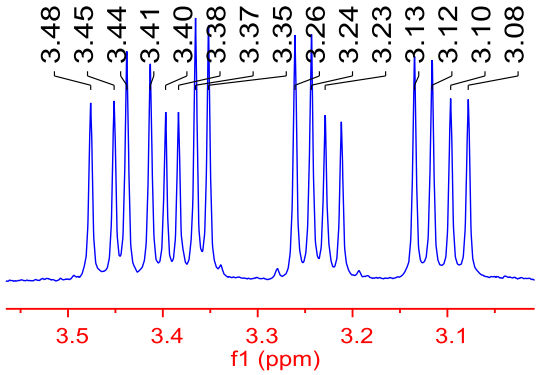


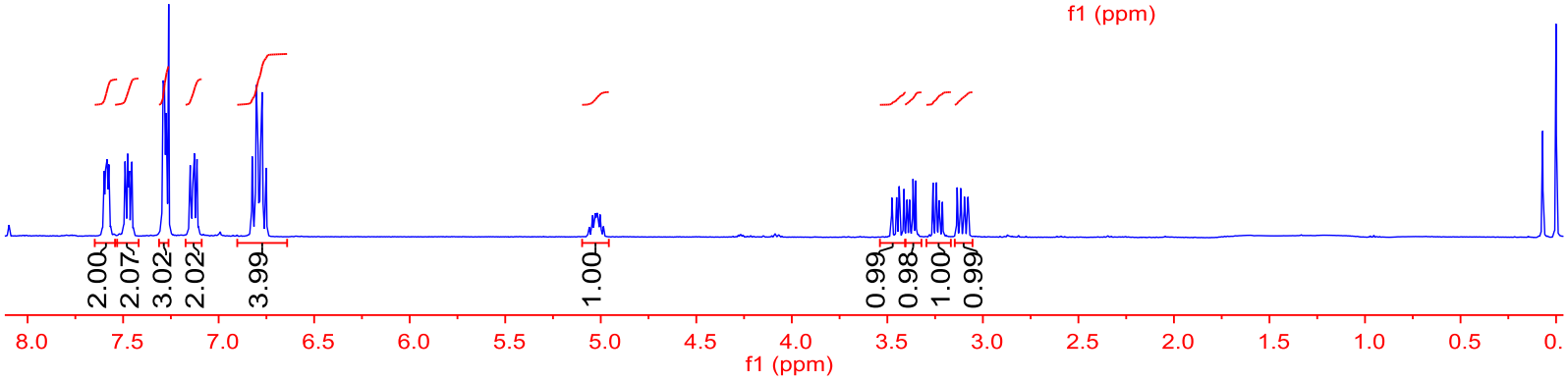
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3c**

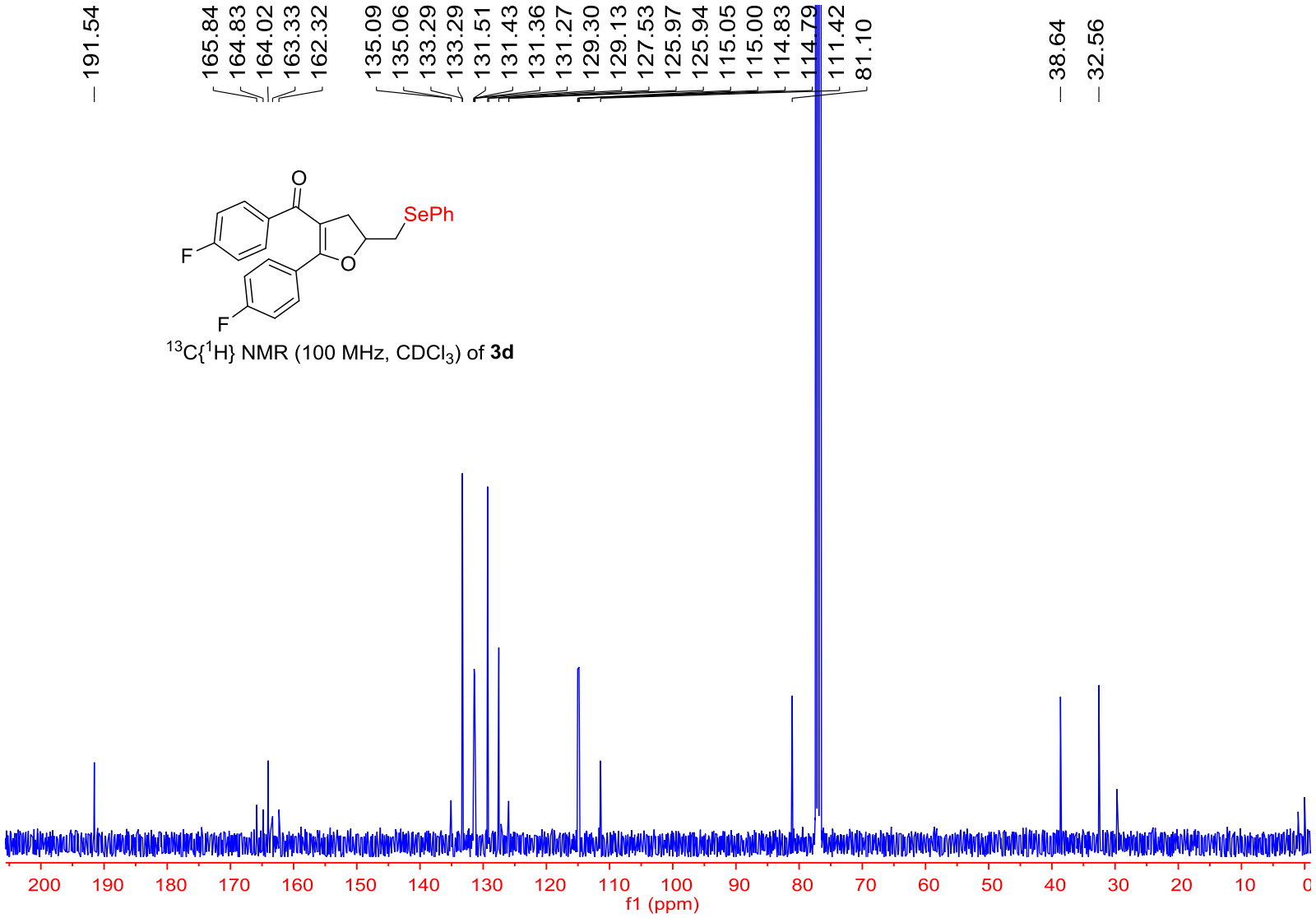




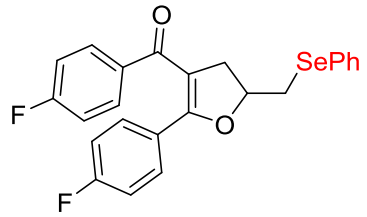
^{1}H NMR (400 MHz, $CDCl_3$) of **3d**



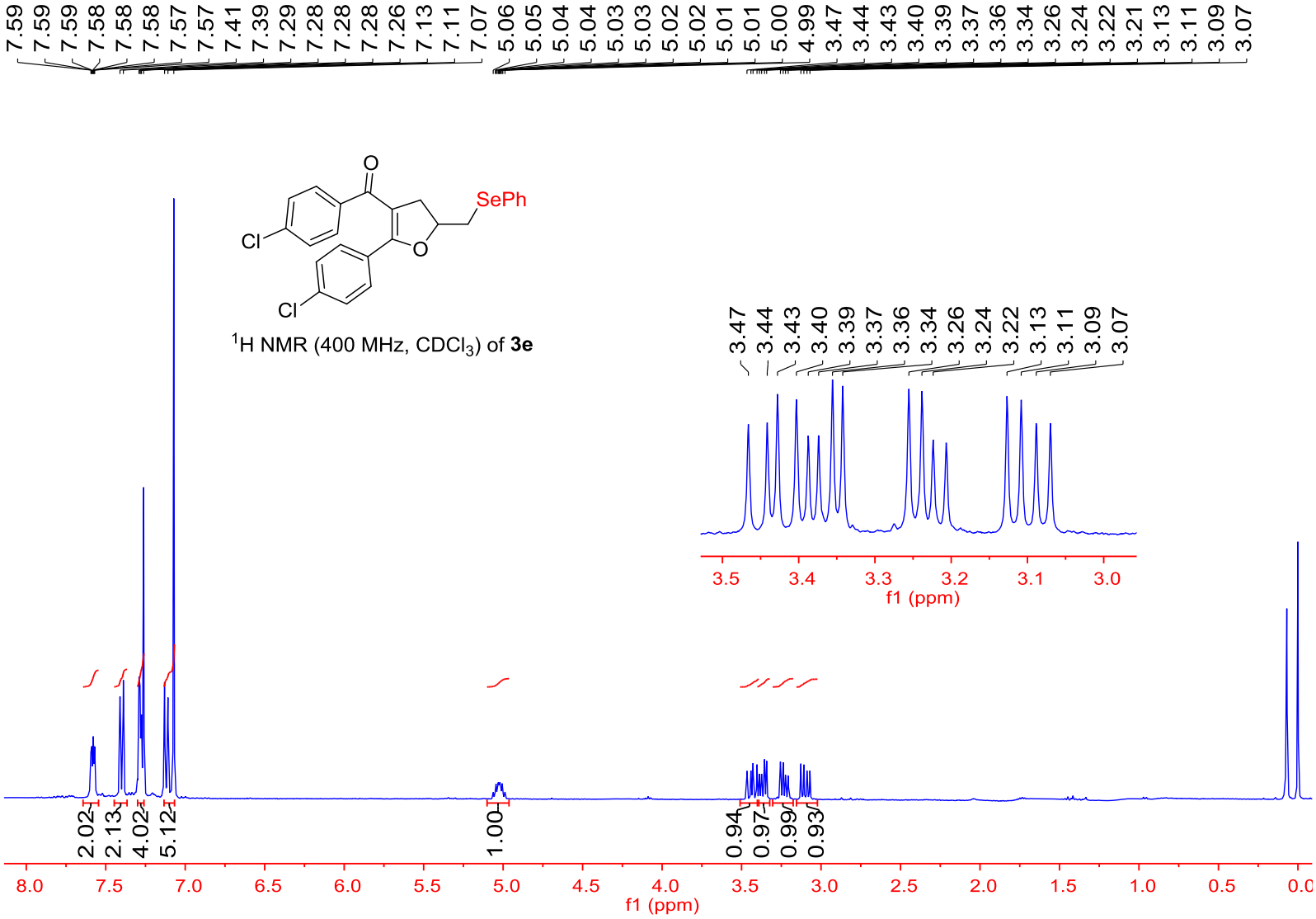


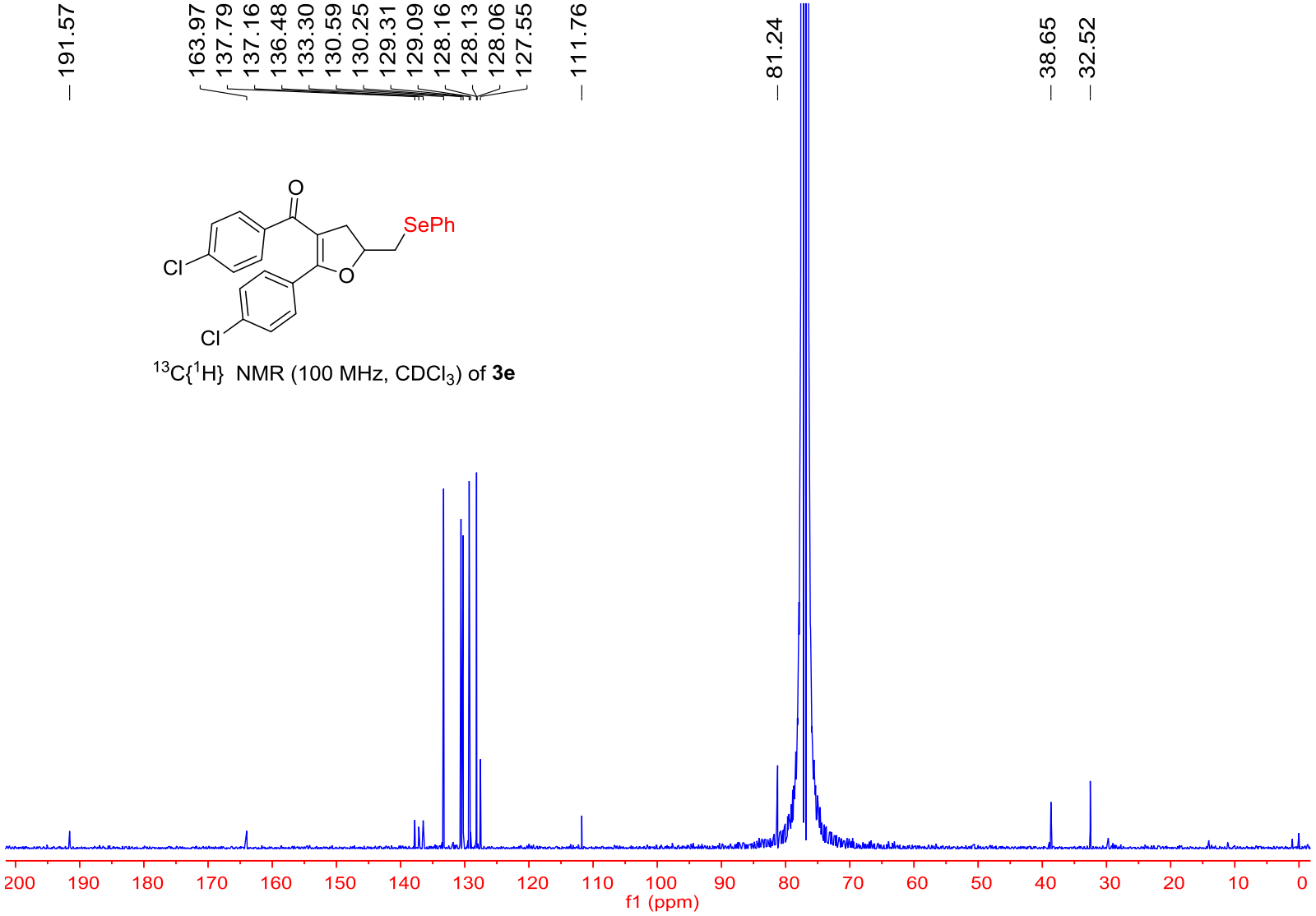


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3d**

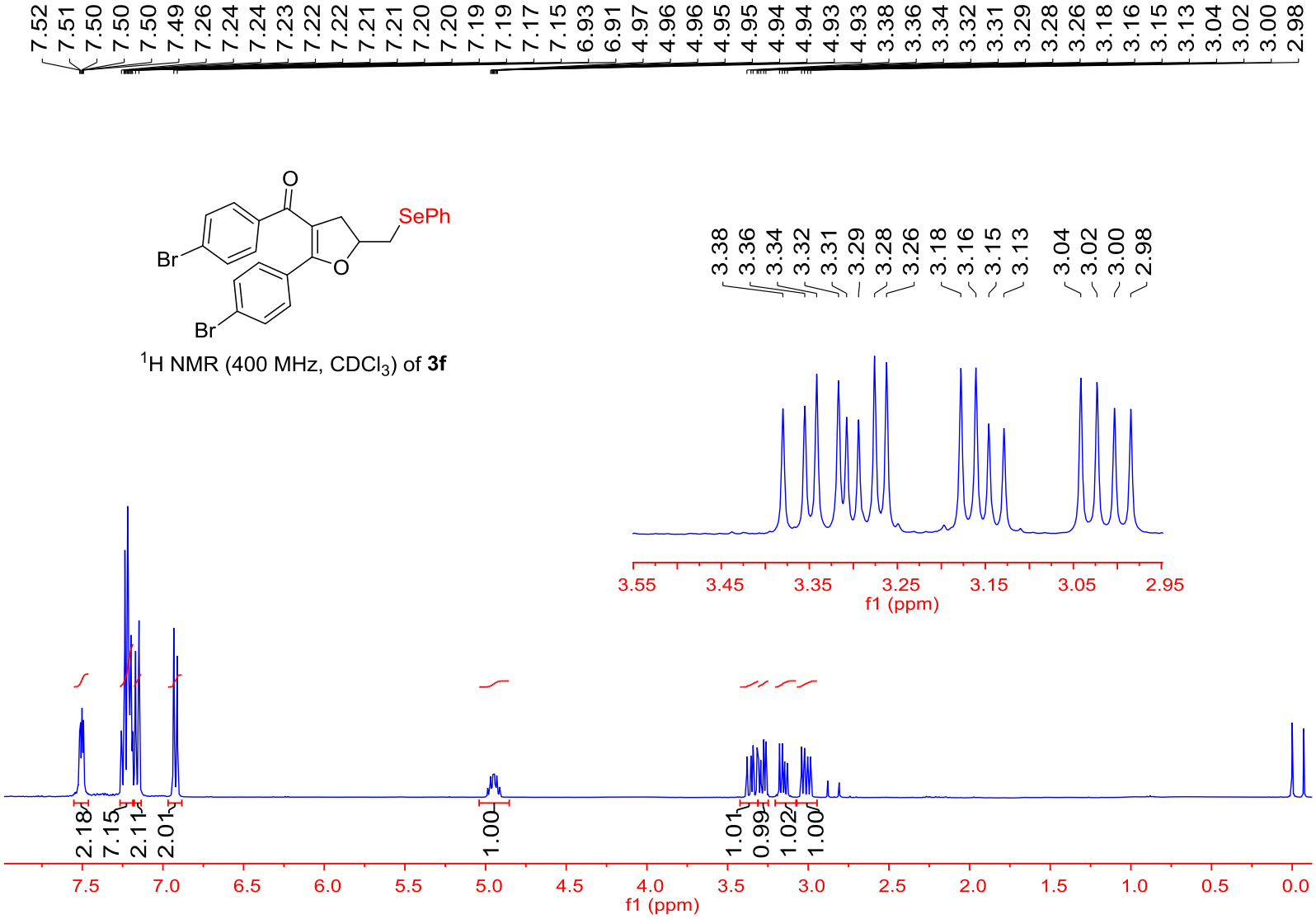


^{19}F NMR (376 MHz, $CDCl_3$) of **3d**

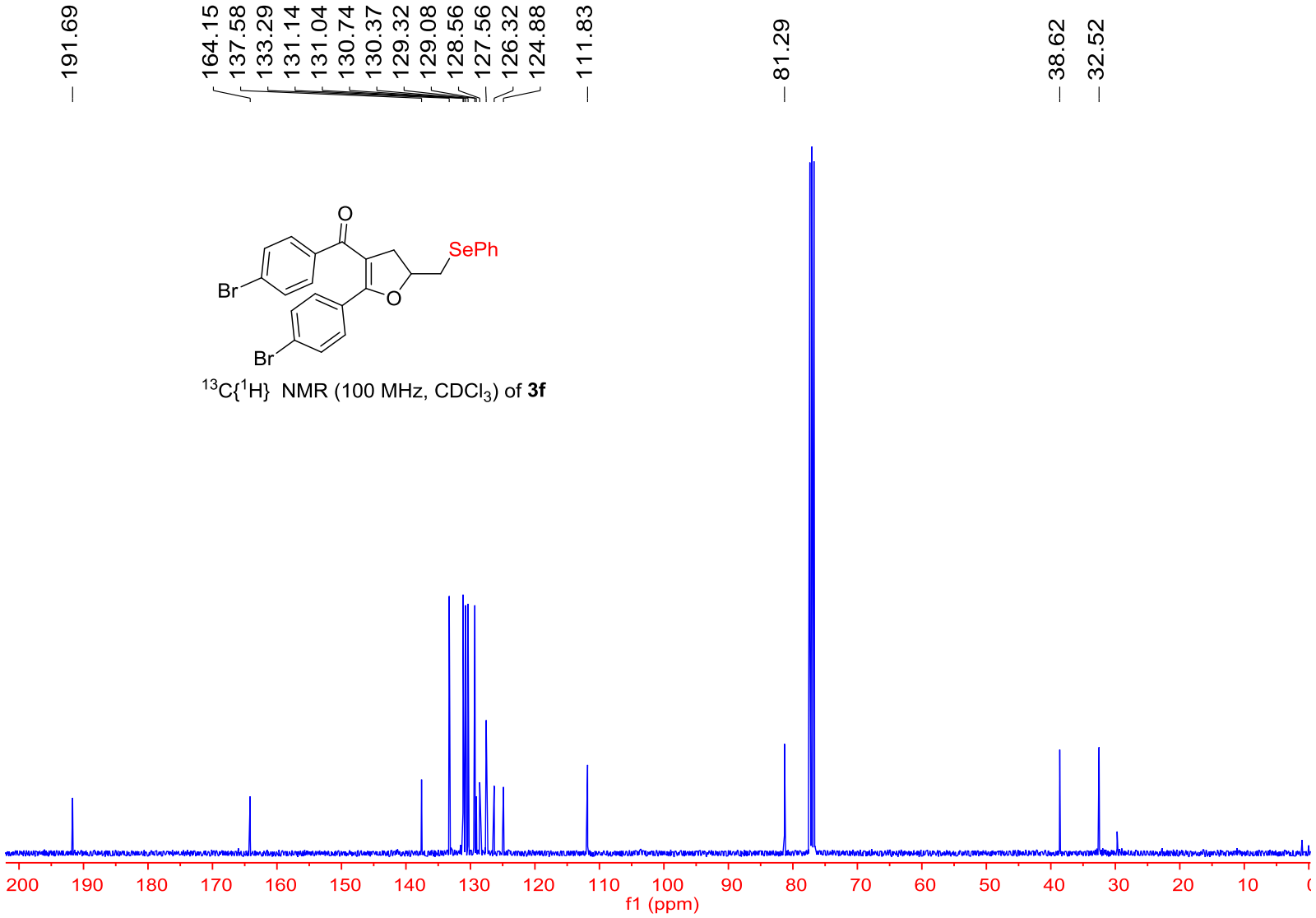

7.59 7.59 7.59 7.58 7.58 7.58 7.57 7.57 7.41 7.39 7.29 7.28 7.28 7.28 7.26 7.13 7.11 7.07
5.06 5.05 5.04 5.04 5.03 5.03 5.02 5.02 5.01 5.01 5.00 4.99
3.47 3.44 3.43 3.40 3.39 3.37 3.36 3.34 3.26 3.24 3.22 3.21 3.13 3.11 3.09 3.07
O
SePh
Cl
O
Cl
1H NMR (400 MHz, CDCl3) of 3e
3.47 3.44 3.43 3.40 3.39 3.37 3.36 3.34 3.26 3.24 3.22 3.13 3.11 3.09 3.07
3.5 3.4 3.3 3.2 3.1 3.0
f1 (ppm)
2.02 2.13 4.02 5.12 1.00 0.94 0.97 0.99 0.93
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)



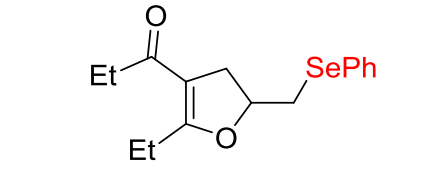
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3e**



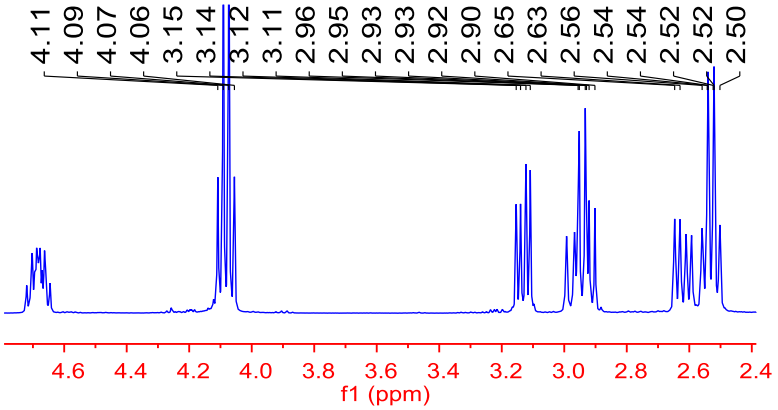
^{1}H NMR (400 MHz, $CDCl_3$) of **3f**

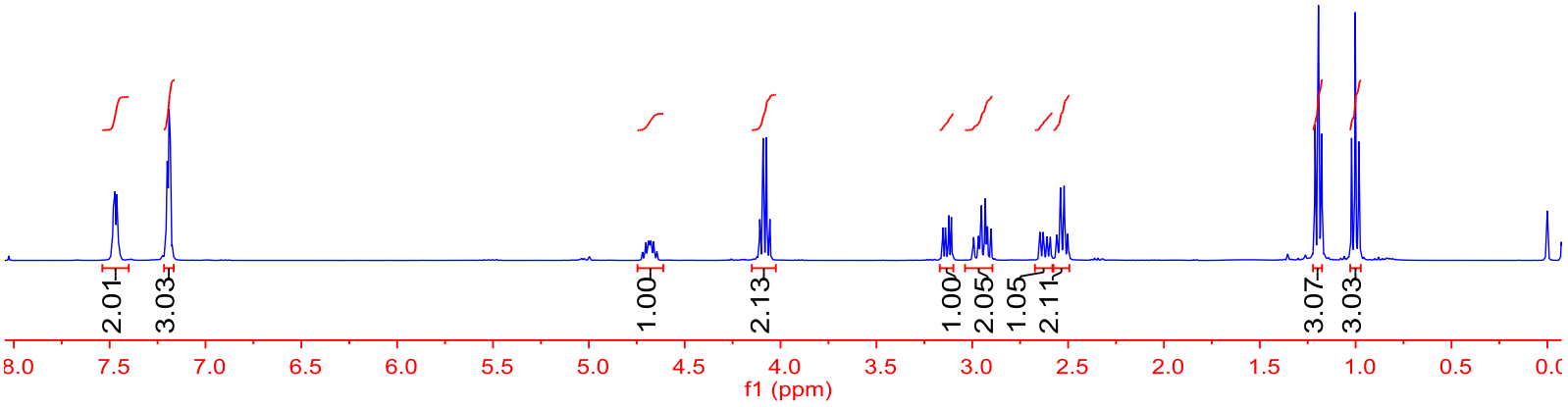


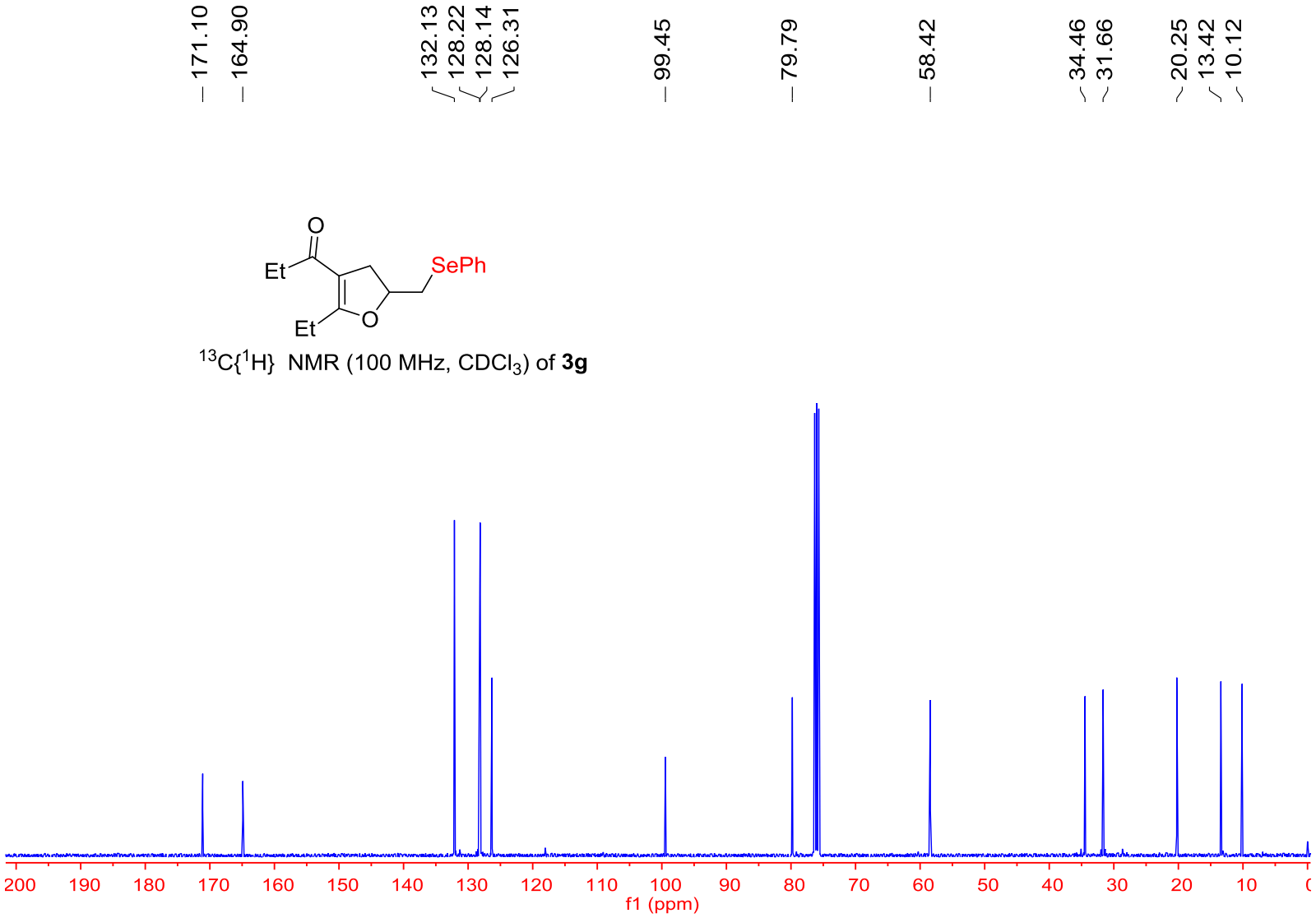
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3f**



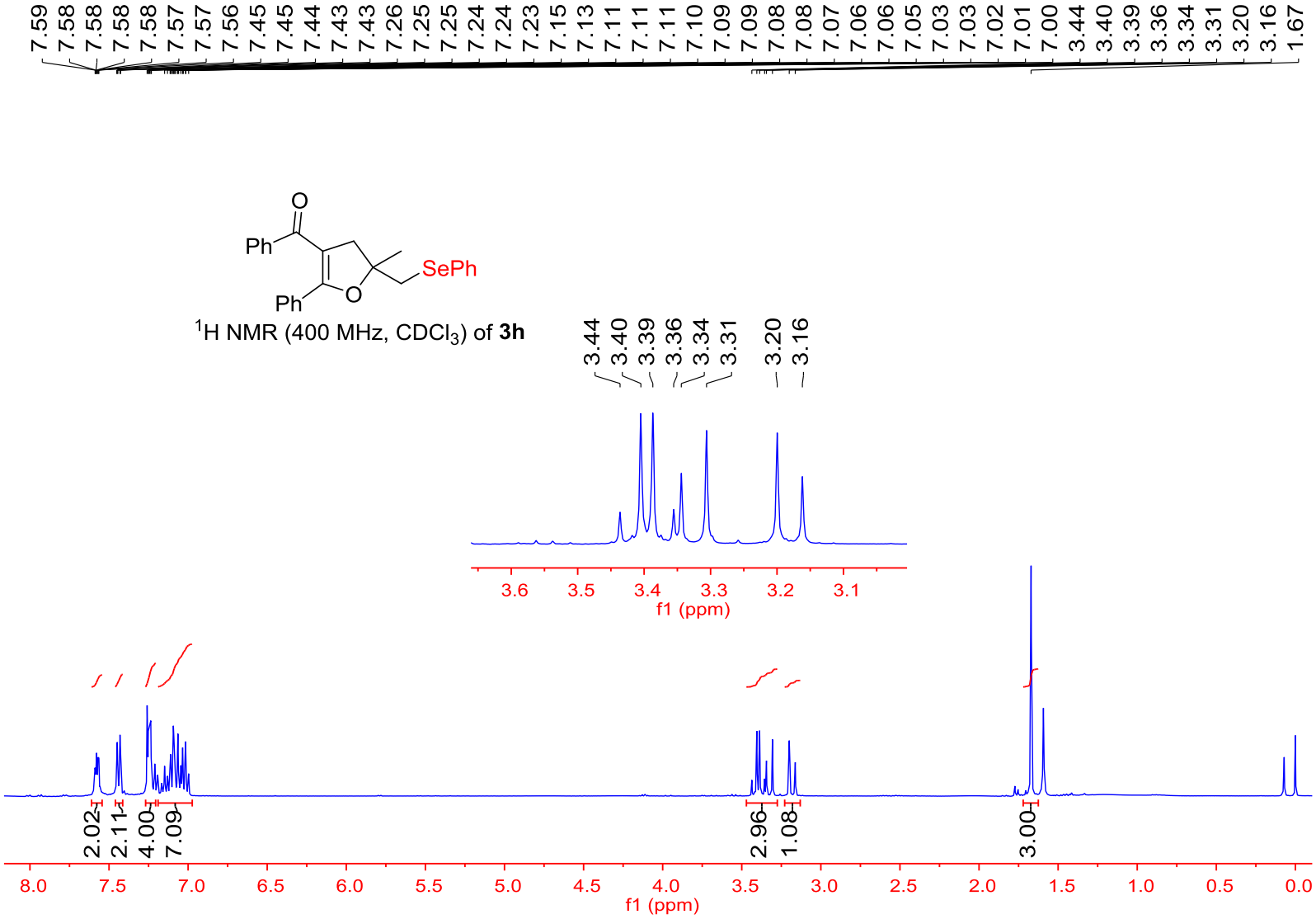
^{1}H NMR (400 MHz, $CDCl_3$) of **3g**

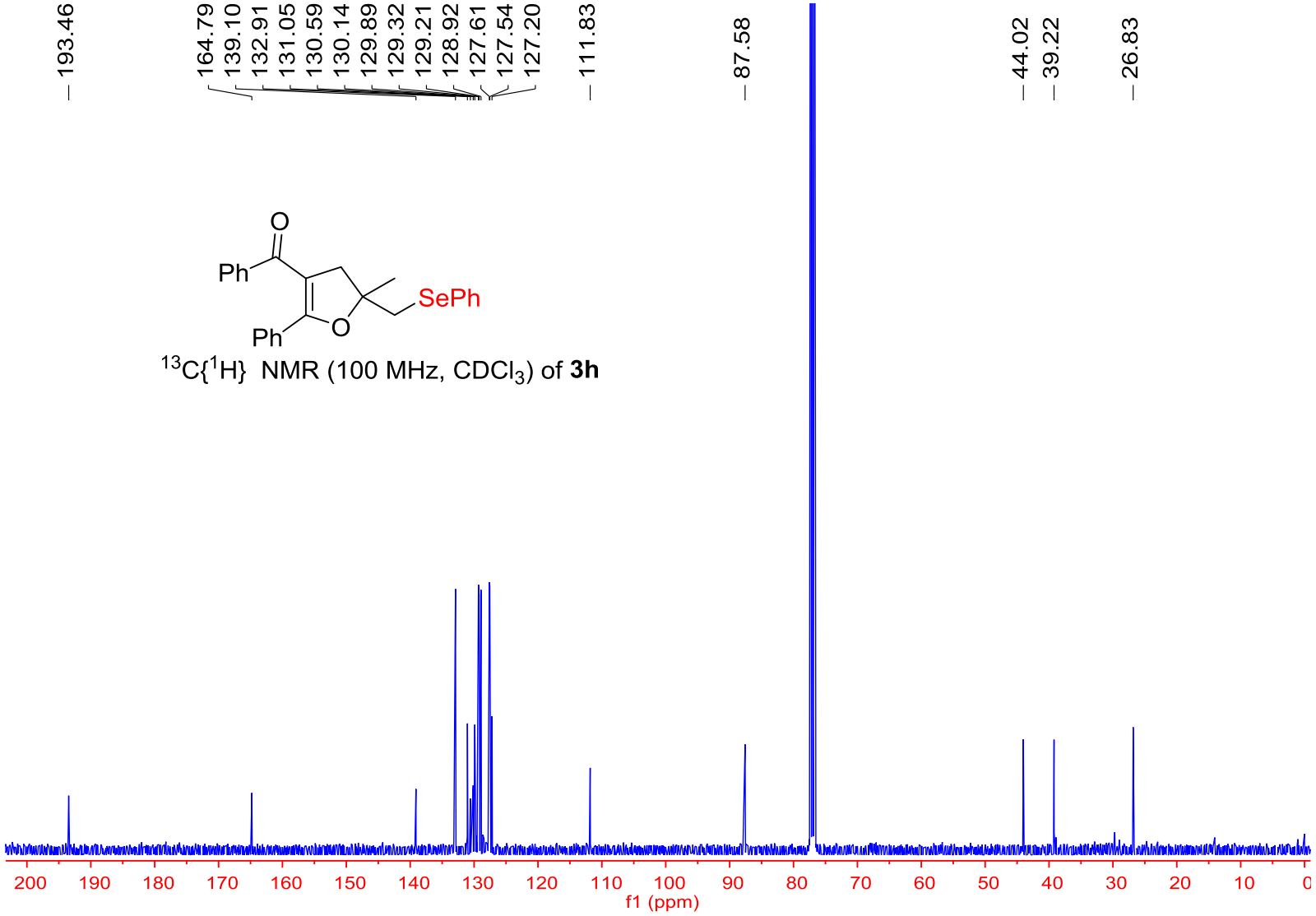




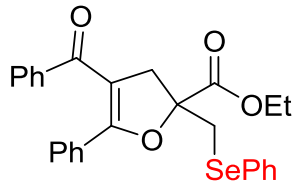


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3g**

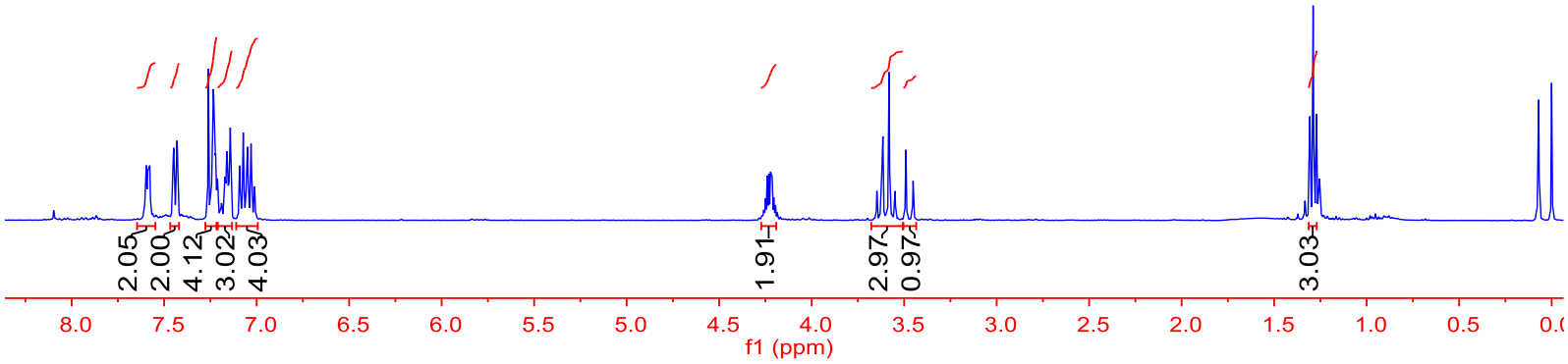

7.59 7.58 7.58 7.58 7.58 7.57 7.57 7.56 7.45 7.45 7.44 7.43 7.43 7.26 7.25 7.25 7.24 7.24 7.23 7.15 7.13 7.11 7.11 7.11 7.10 7.09 7.09 7.08 7.08 7.07 7.06 7.06 7.05 7.03 7.03 7.02 7.01 7.00 3.44 3.40 3.39 3.36 3.34 3.31 3.20 3.16 1.67
O
Ph
SePh
Ph
O
1H NMR (400 MHz, CDCl3) of 3h
3.44 3.40 3.39 3.36 3.34 3.31 3.20 3.16
3.6 3.5 3.4 3.3 3.2 3.1
f1 (ppm)
2.02 2.11 4.00 7.09 2.96 1.08 3.00
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

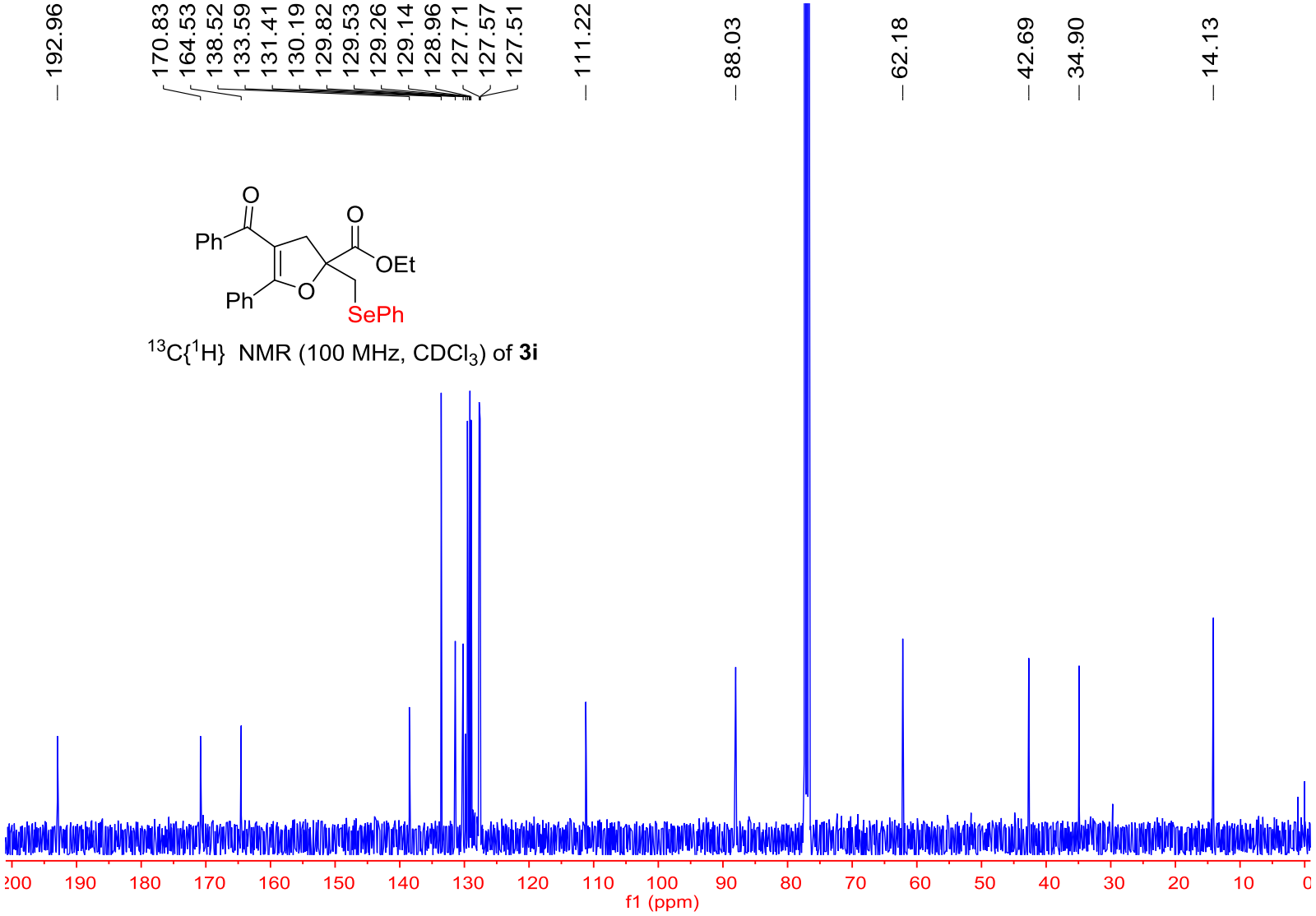


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3h**

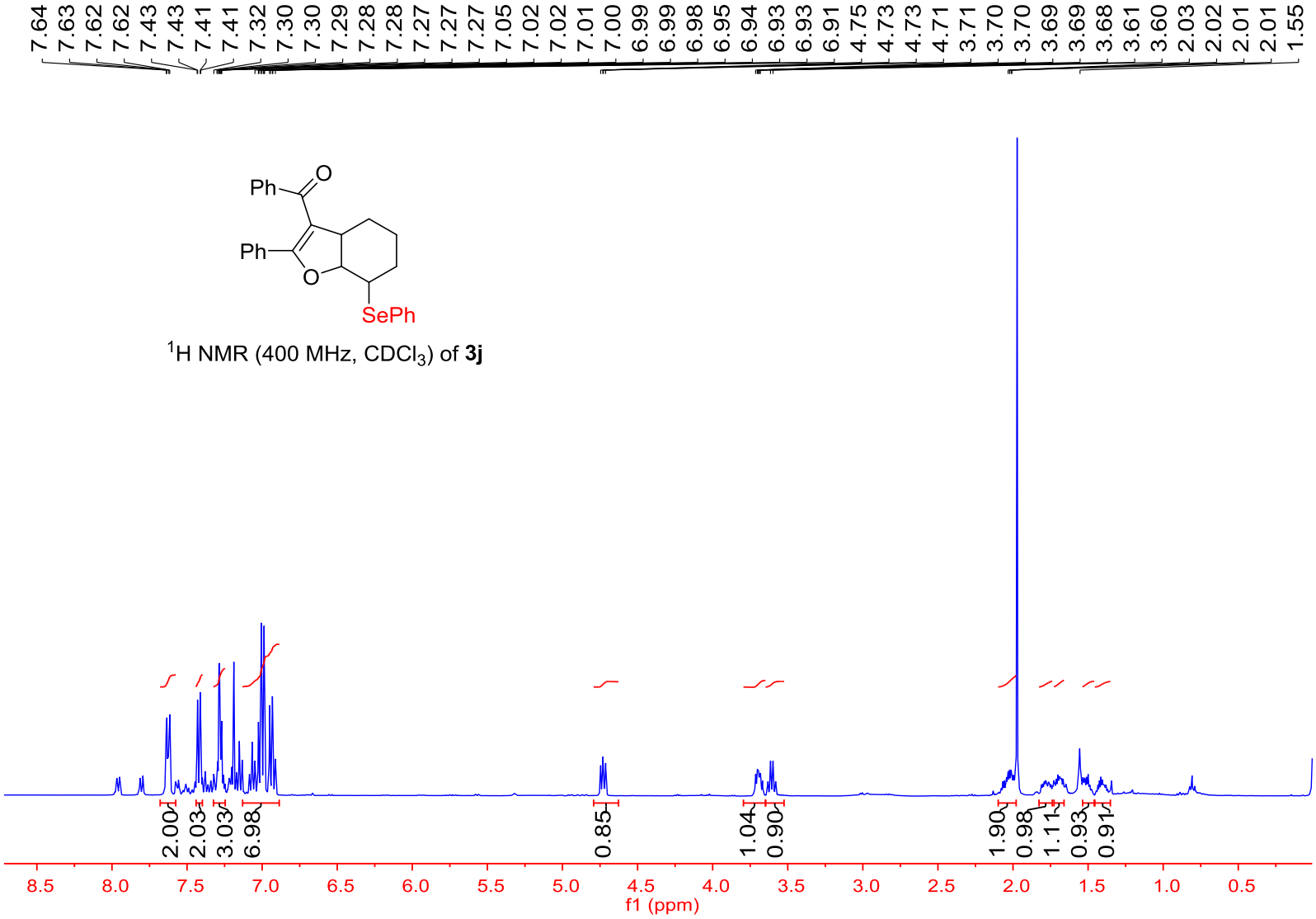


^{1}H NMR (400 MHz, $CDCl_3$) of **3i**

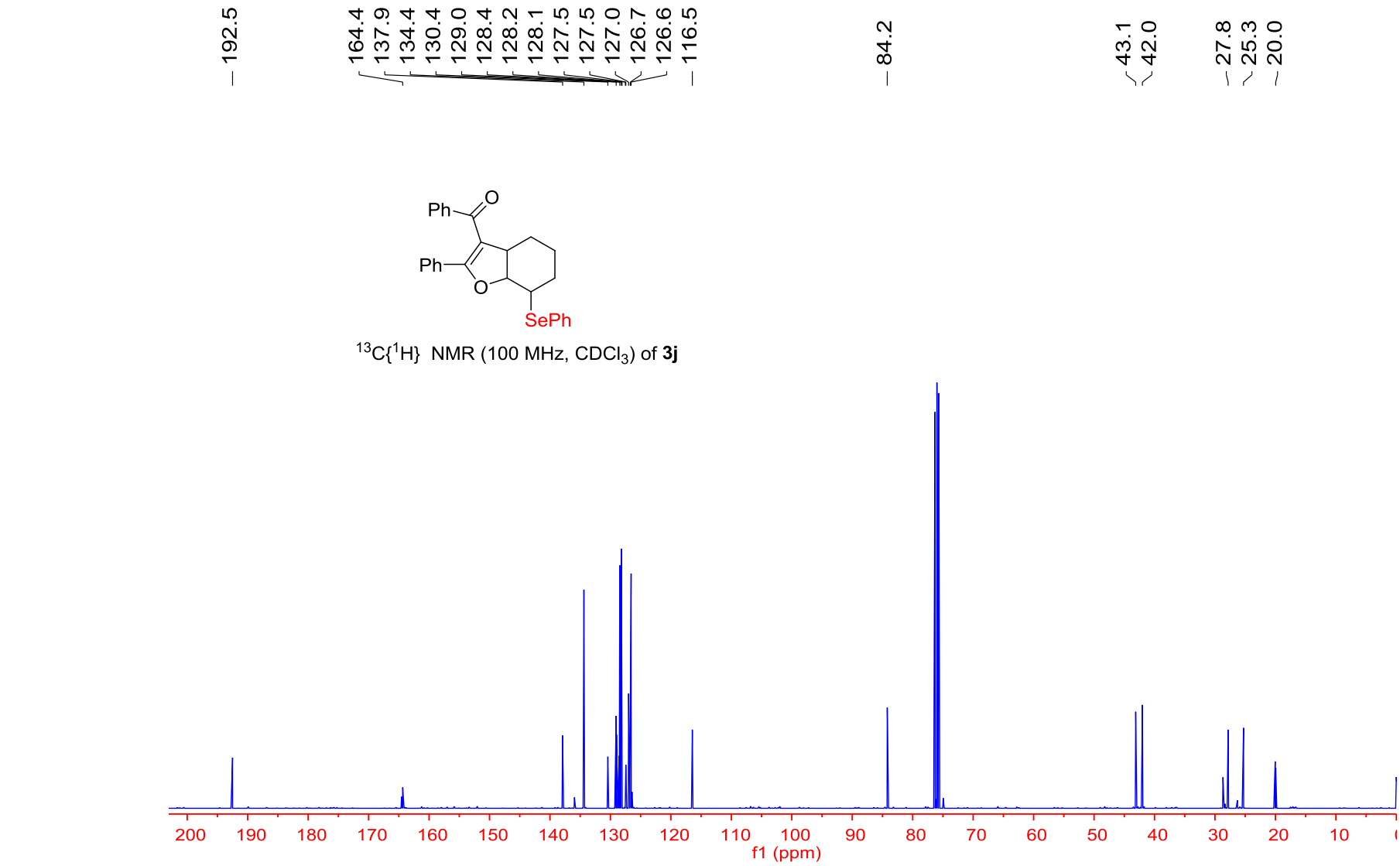




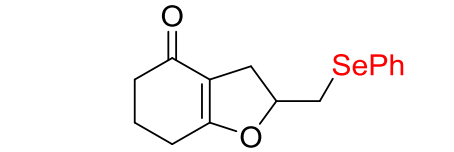
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3i**



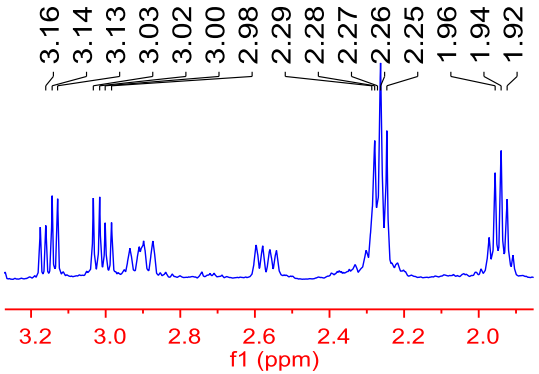
^{1}H NMR (400 MHz, $CDCl_3$) of **3j**

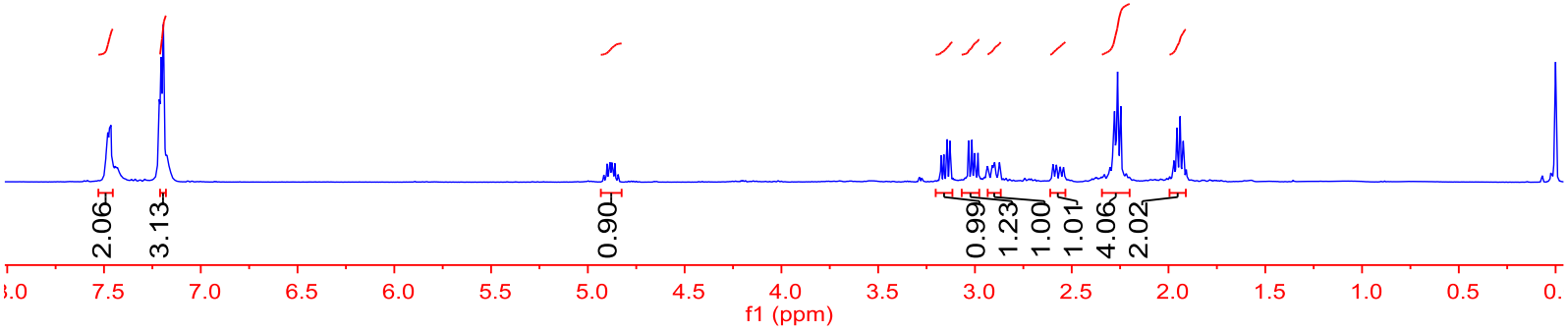


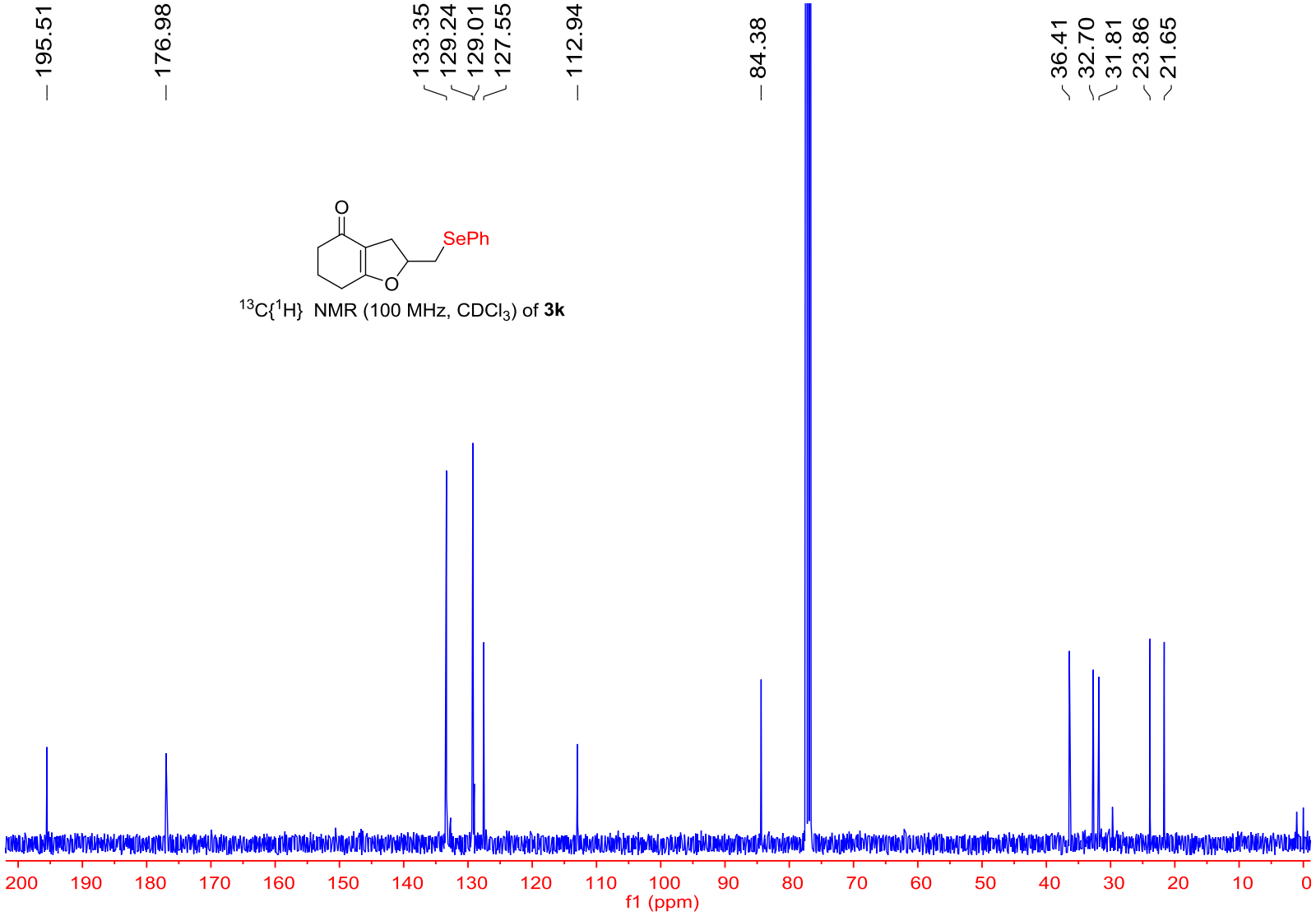
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3j**



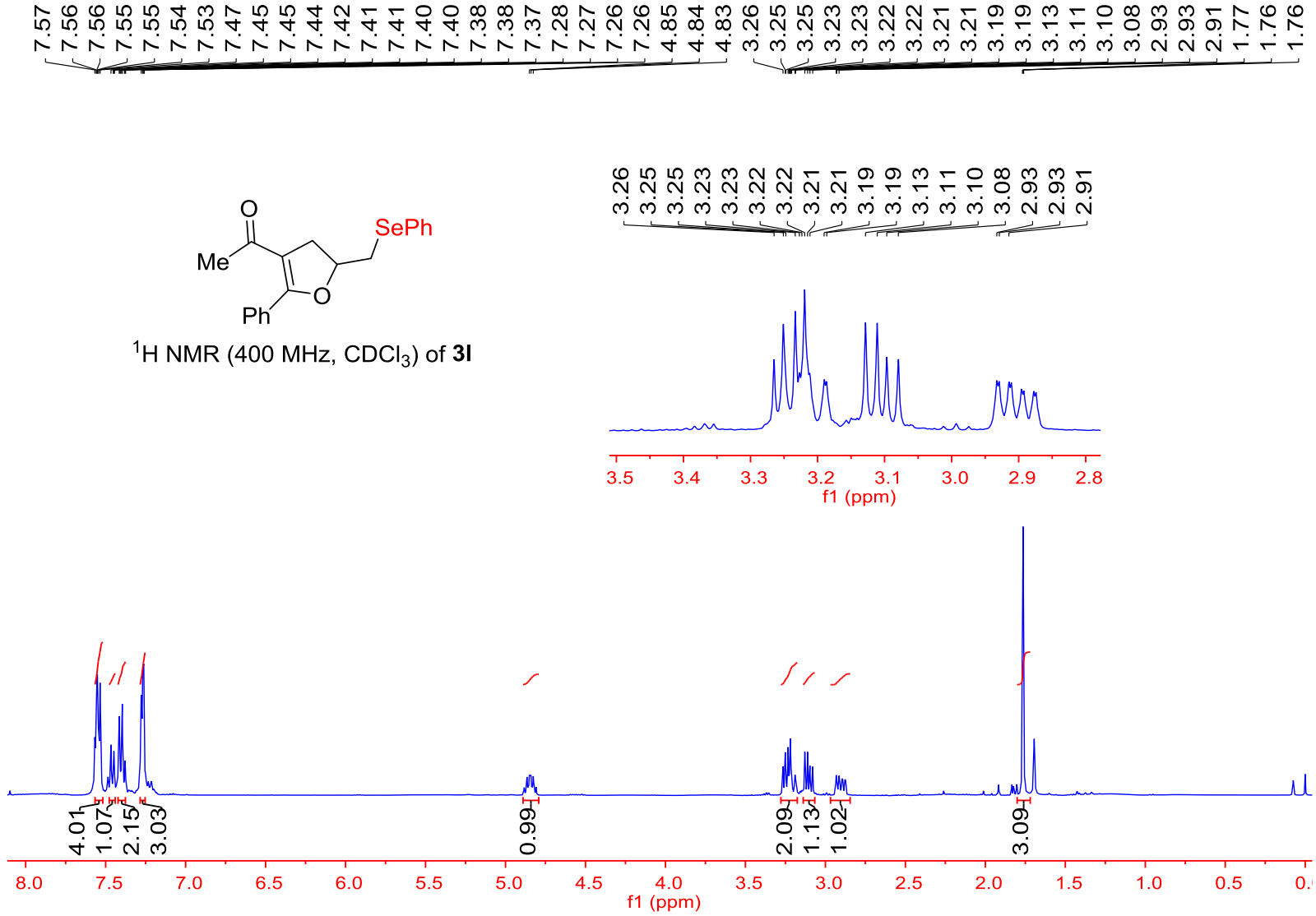
^{1}H NMR (400 MHz, $CDCl_3$) of **3k**



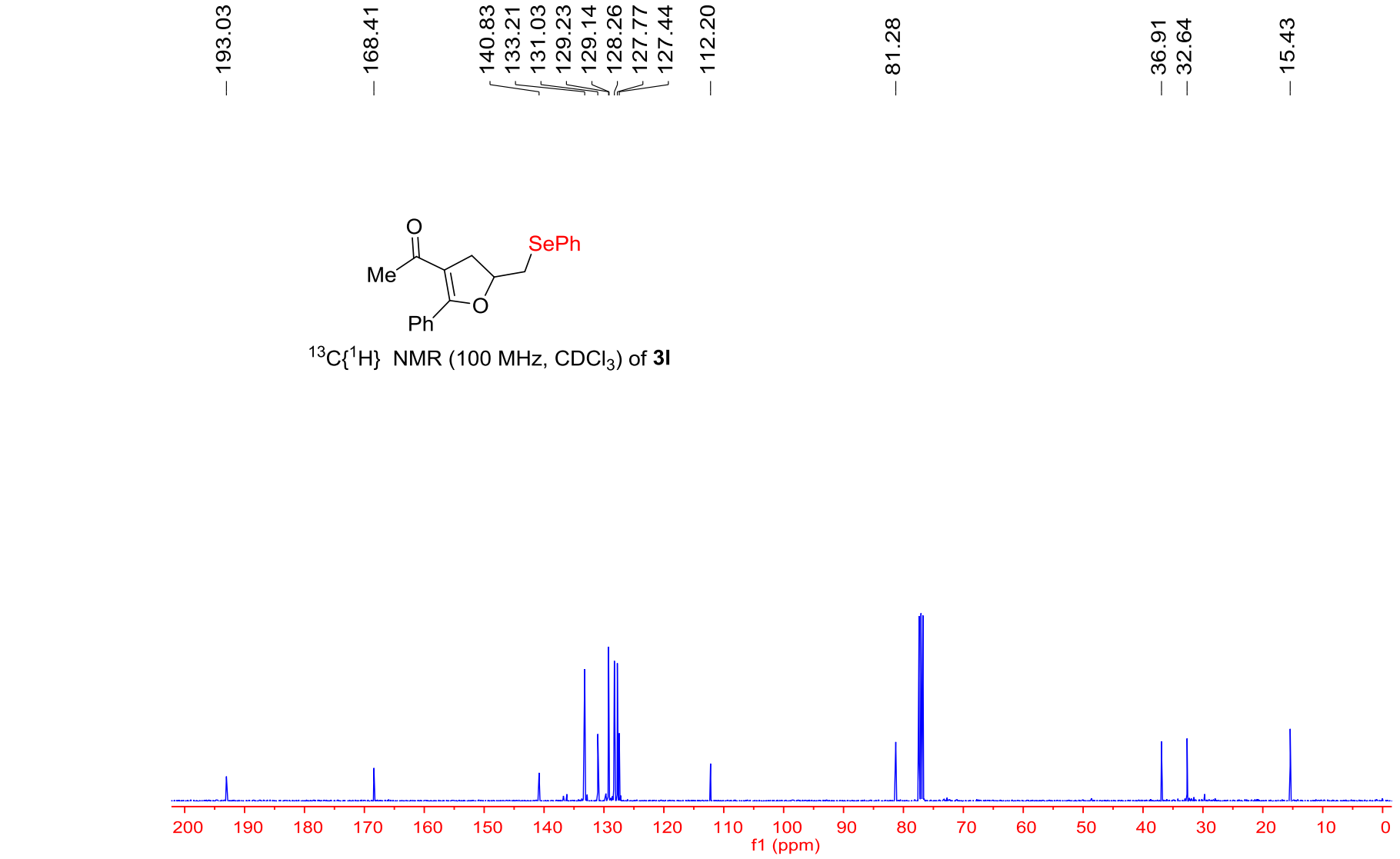




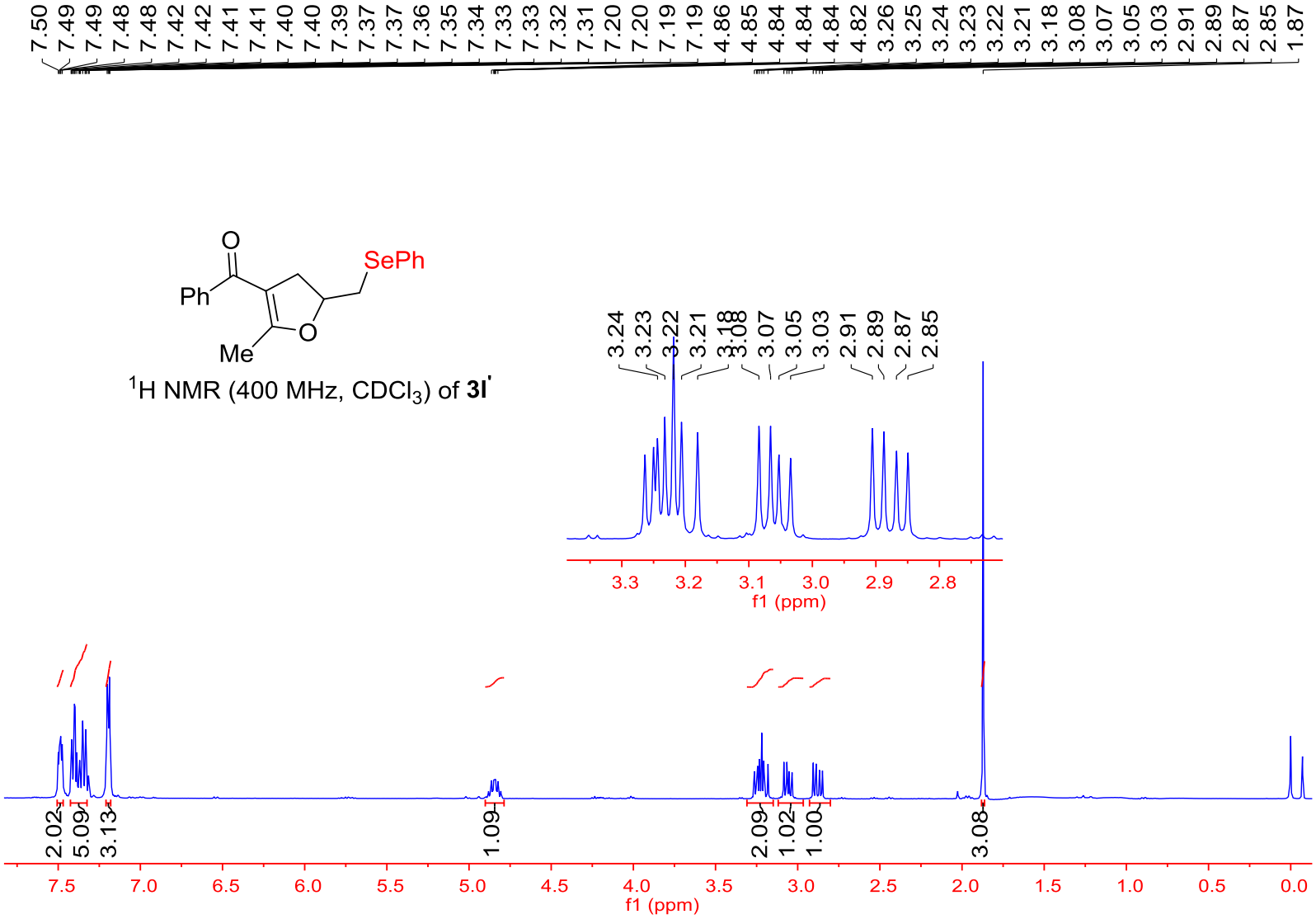
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3k**

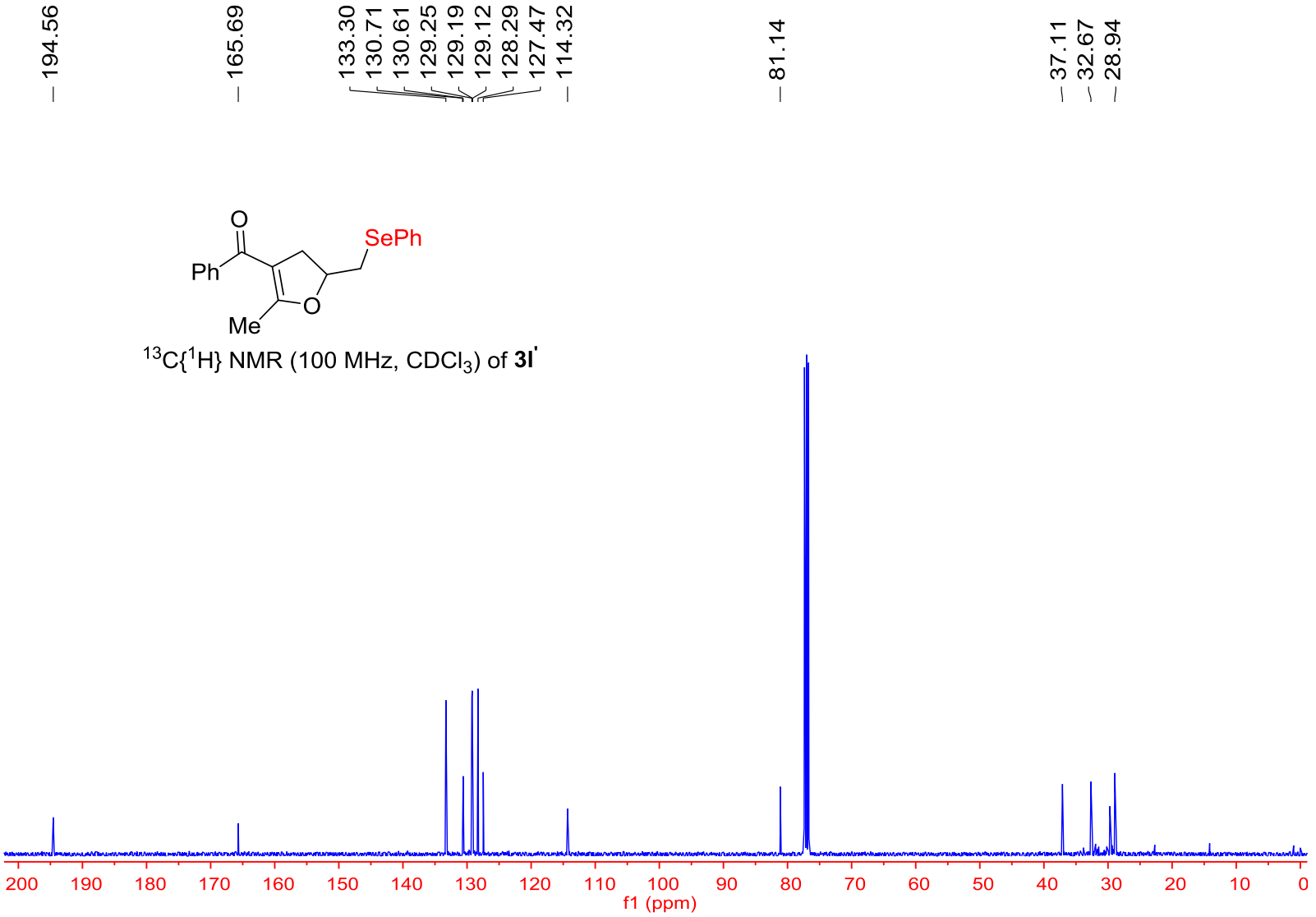


^{1}H NMR (400 MHz, $CDCl_3$) of **3l**

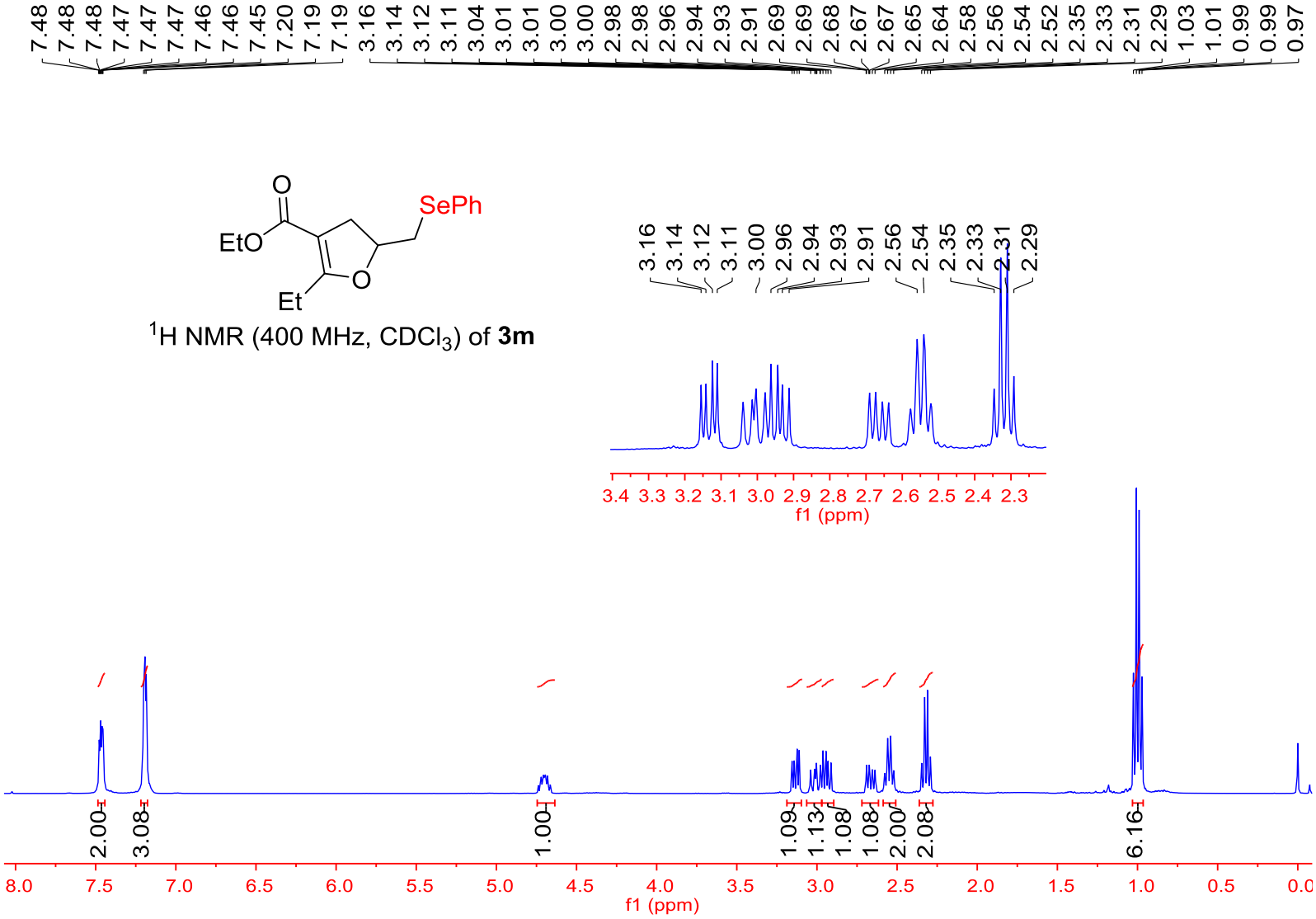


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3l**

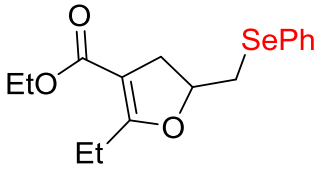

7.50 7.49 7.49 7.48 7.48 7.42 7.42 7.41 7.41 7.40 7.40 7.39 7.37 7.37 7.36 7.35 7.34 7.33 7.33 7.32 7.31 7.20 7.20 7.19 7.19 4.86 4.85 4.84 4.84 4.84 4.82 3.26 3.25 3.24 3.23 3.22 3.21 3.18 3.08 3.07 3.05 3.03 2.91 2.89 2.87 2.85 1.87
O
Ph
SePh
O
Me
1H NMR (400 MHz, CDCl3) of 3l'
3.24 3.23 3.22 3.21 3.18 3.08 3.07 3.05 3.03 2.91 2.89 2.87 2.85
3.3 3.2 3.1 3.0 2.9 2.8
f1 (ppm)
2.02 5.09 3.13 1.09 2.09 1.02 1.00 3.08
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)



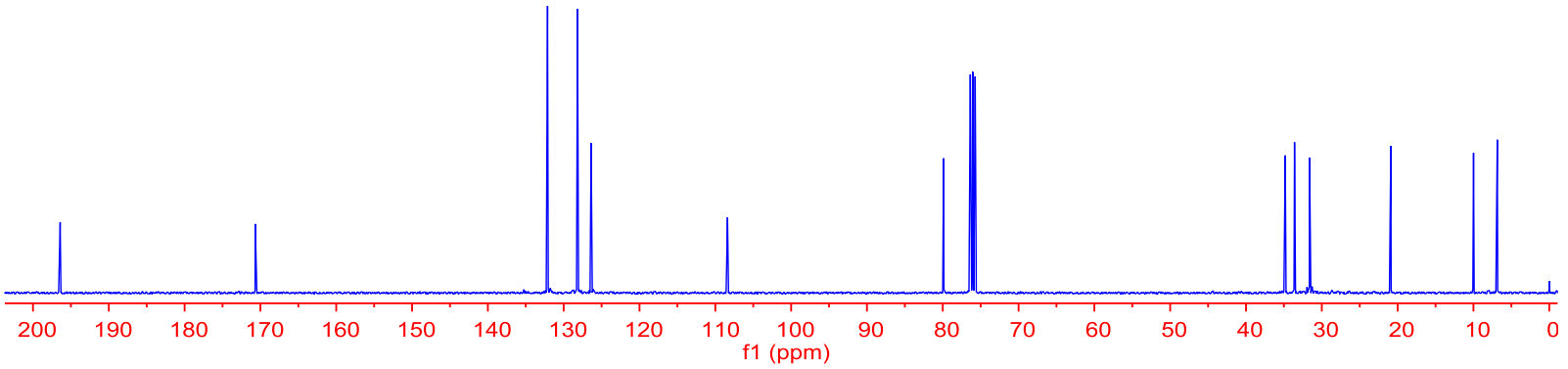
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3l'**

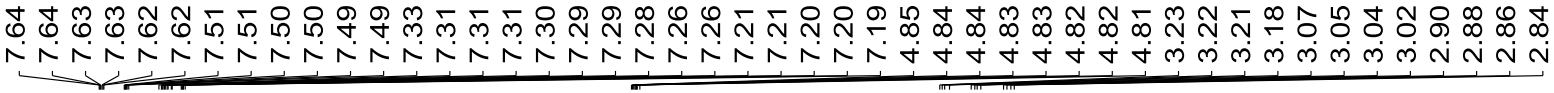

7.48 7.48 7.48 7.47 7.47 7.47 7.46 7.46 7.45 7.20 7.19 7.19
3.16 3.14 3.12 3.11 3.04 3.01 3.01 3.00 3.00 2.98 2.98 2.96 2.94 2.93 2.91 2.69 2.69 2.68 2.67 2.67 2.65 2.64 2.58 2.56 2.54 2.52 2.35 2.33 2.31 2.29 1.03 1.01 0.99 0.99 0.97
O
EtO
SePh
O
Et
1H NMR (400 MHz, CDCl3) of 3m
3.16 3.14 3.12 3.11 3.00 2.96 2.94 2.93 2.91 2.56 2.54 2.35 2.33 2.31 2.29
3.4 3.3 3.2 3.1 3.0 2.9 2.8 2.7 2.6 2.5 2.4 2.3
f1 (ppm)
2.00 3.08 1.00 1.09 1.13 1.08 1.08 2.00 2.08 6.16
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

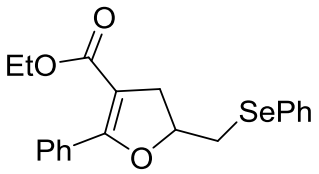
196.41
170.68
132.13
128.18
128.14
126.38
108.39
79.89
34.83
33.60
31.61
20.90
9.99
6.86



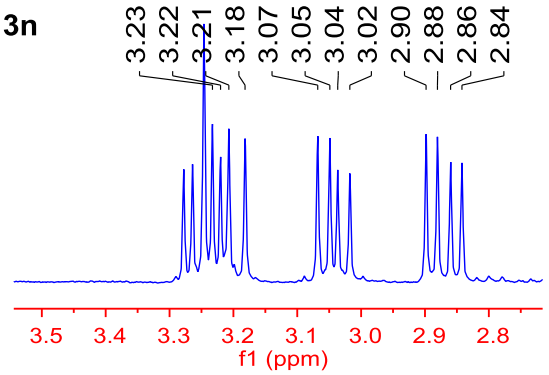
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3m**

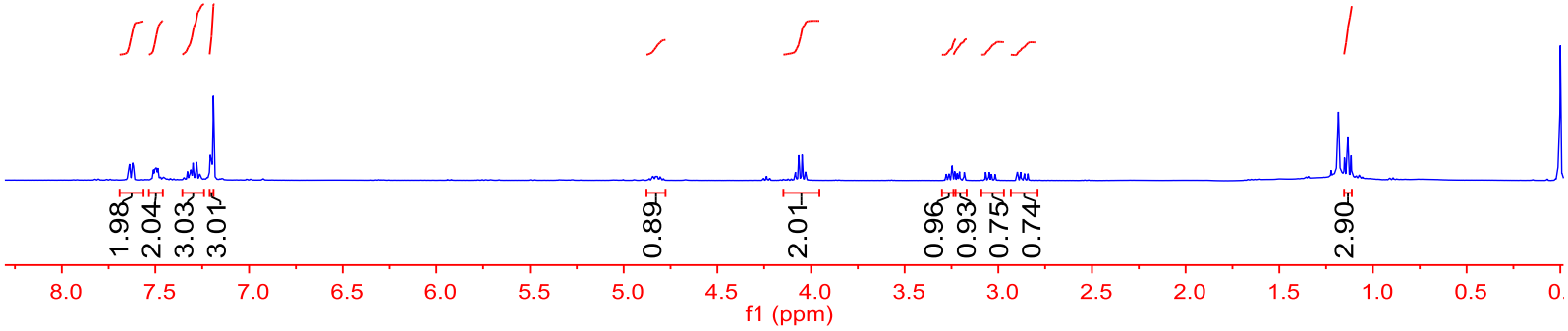


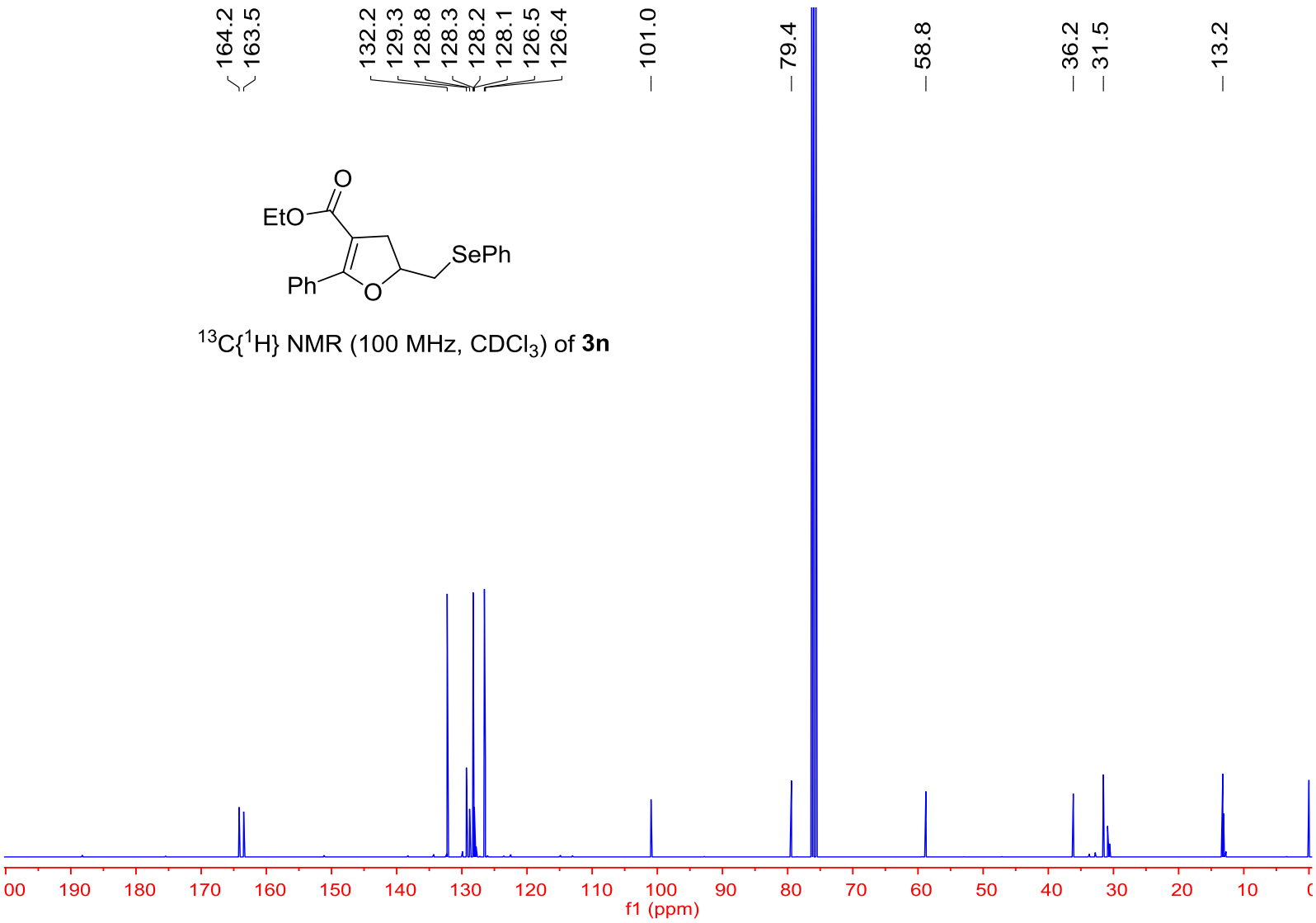




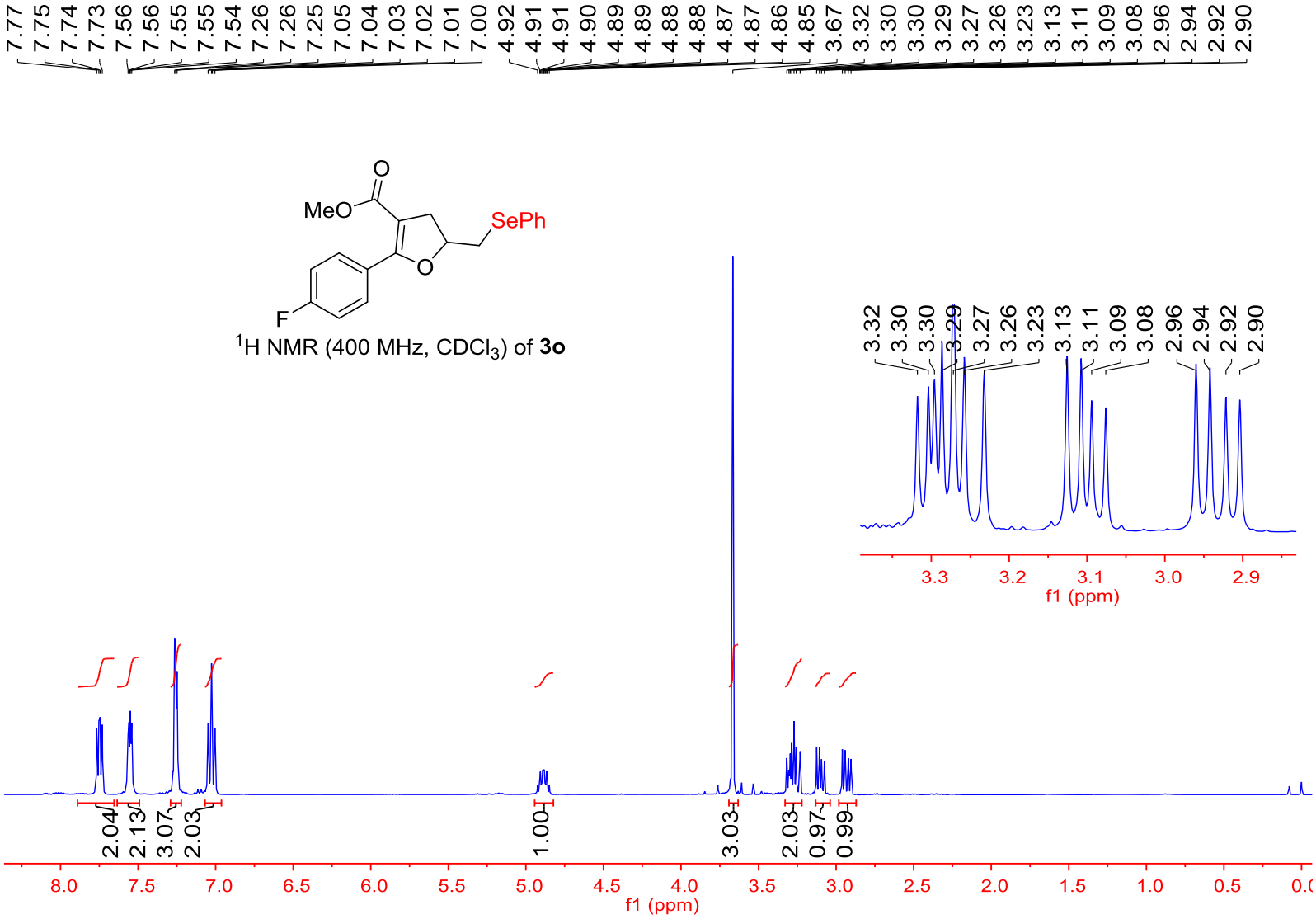
^{1}H NMR (400 MHz, $CDCl_3$) of **3n**

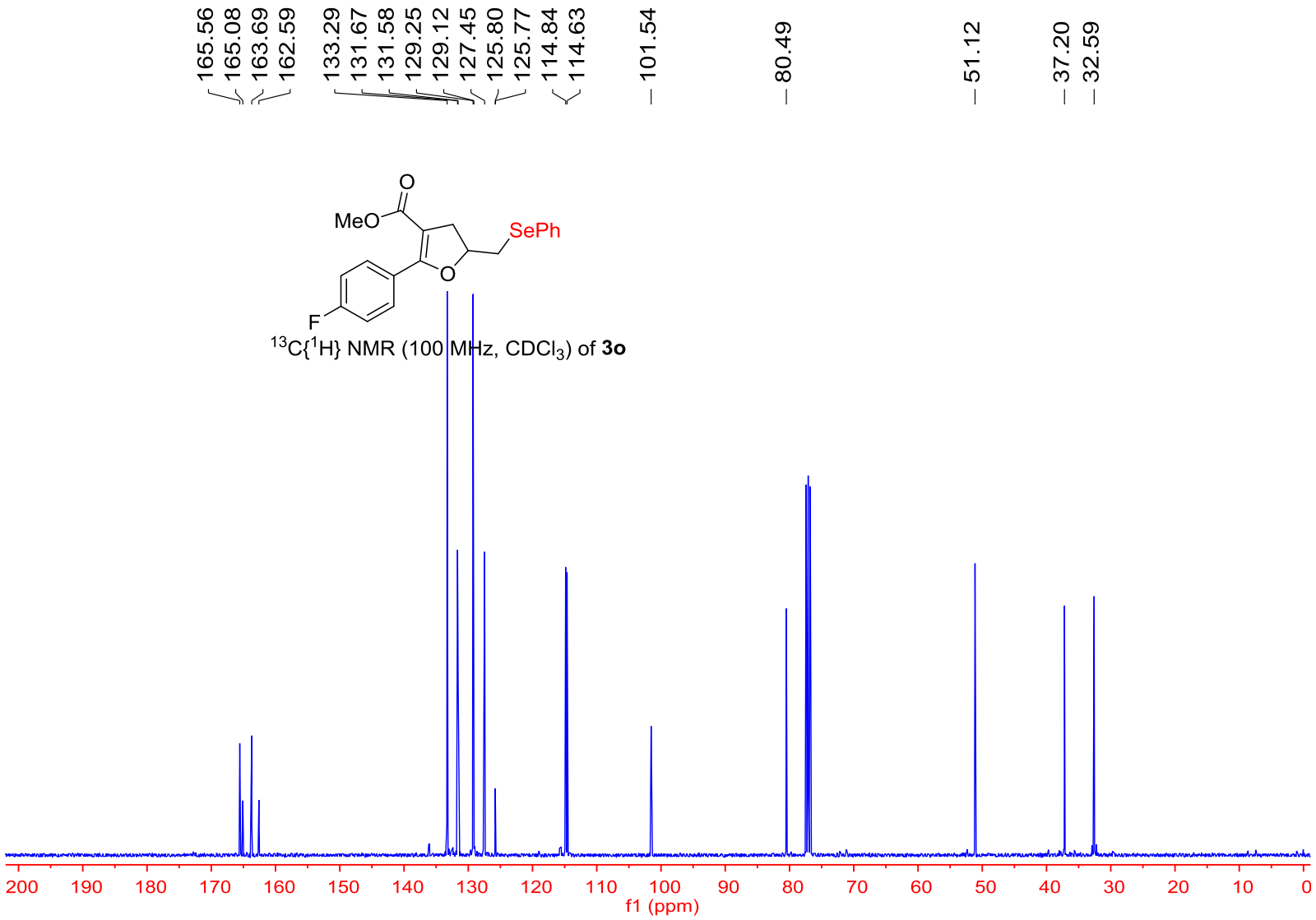




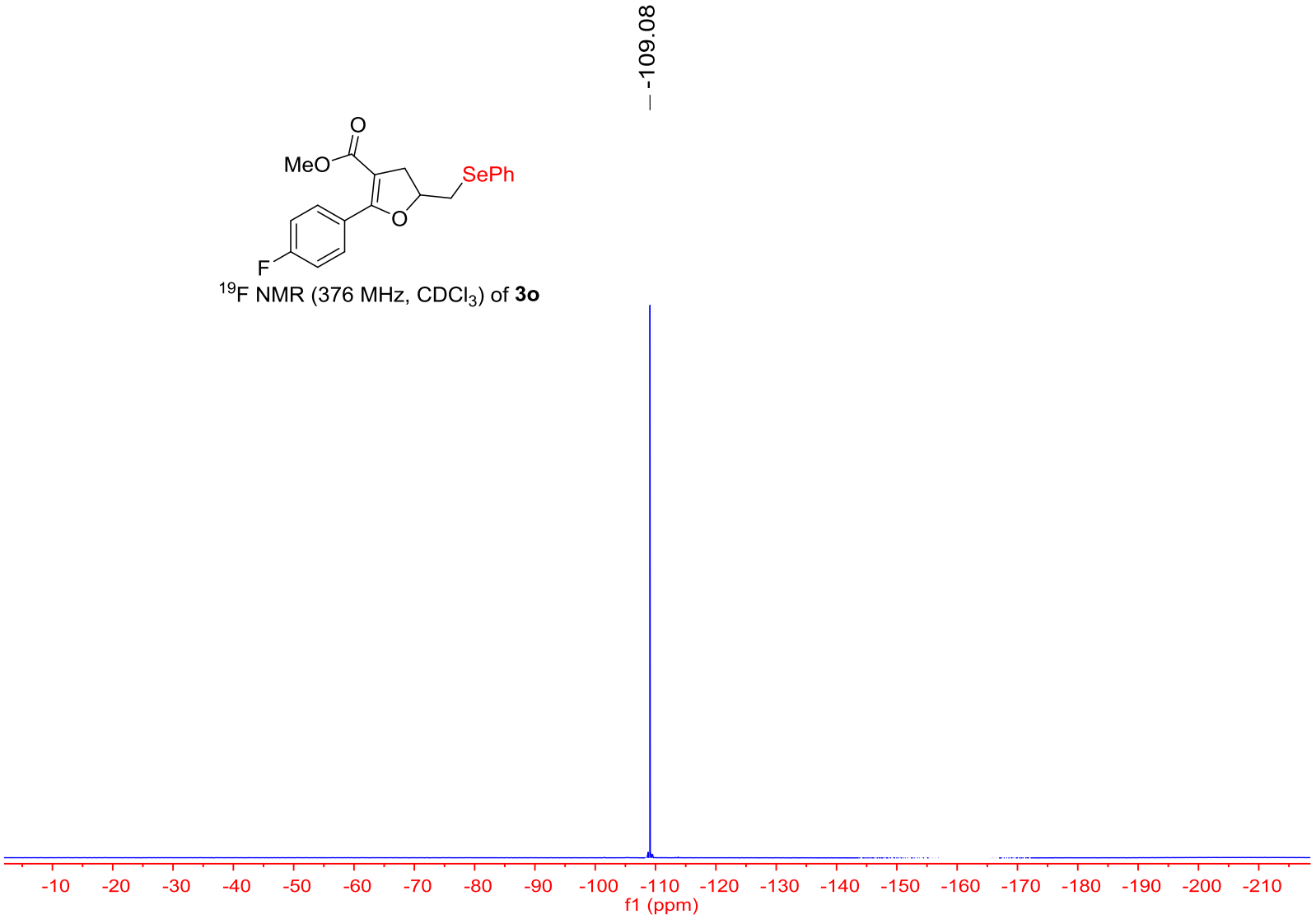


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3n**

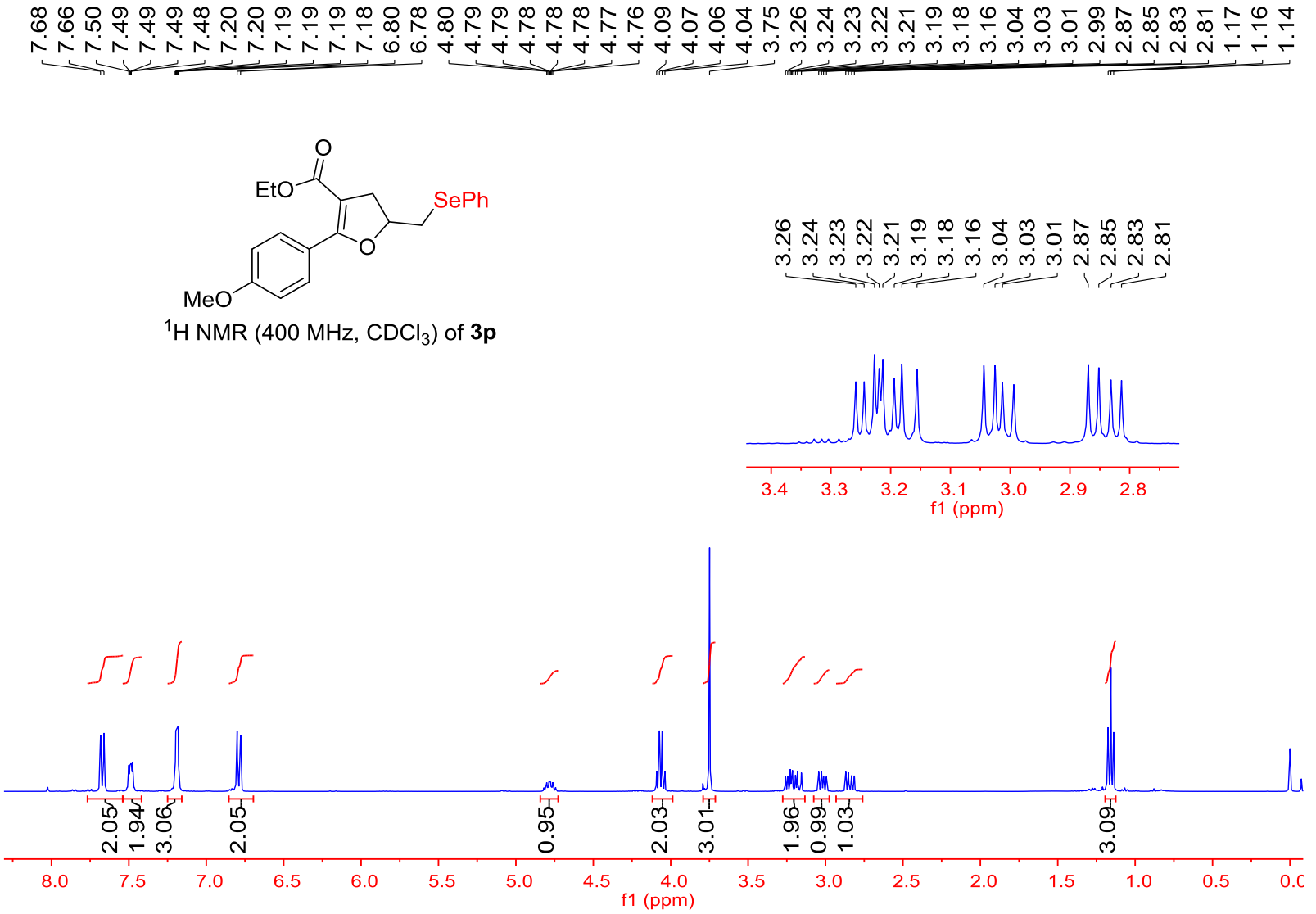

7.77 7.75 7.74 7.73 7.56 7.56 7.55 7.55 7.54 7.26 7.26 7.25 7.05 7.04 7.03 7.02 7.01 7.00 4.92 4.91 4.91 4.90 4.89 4.89 4.88 4.88 4.87 4.87 4.86 4.85 3.67 3.32 3.30 3.30 3.29 3.27 3.26 3.23 3.13 3.11 3.09 3.08 2.96 2.94 2.92 2.90
MeO
O
O
SePh
F
^{1}H NMR (400 MHz, $CDCl_3$) of **3o**
3.32 3.30 3.30 3.29 3.27 3.26 3.23 3.13 3.11 3.09 3.08 2.96 2.94 2.92 2.90
3.3 3.2 3.1 3.0 2.9
f1 (ppm)
2.04 2.13 3.07 2.03 1.00 3.03 2.03 0.97 0.99
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)



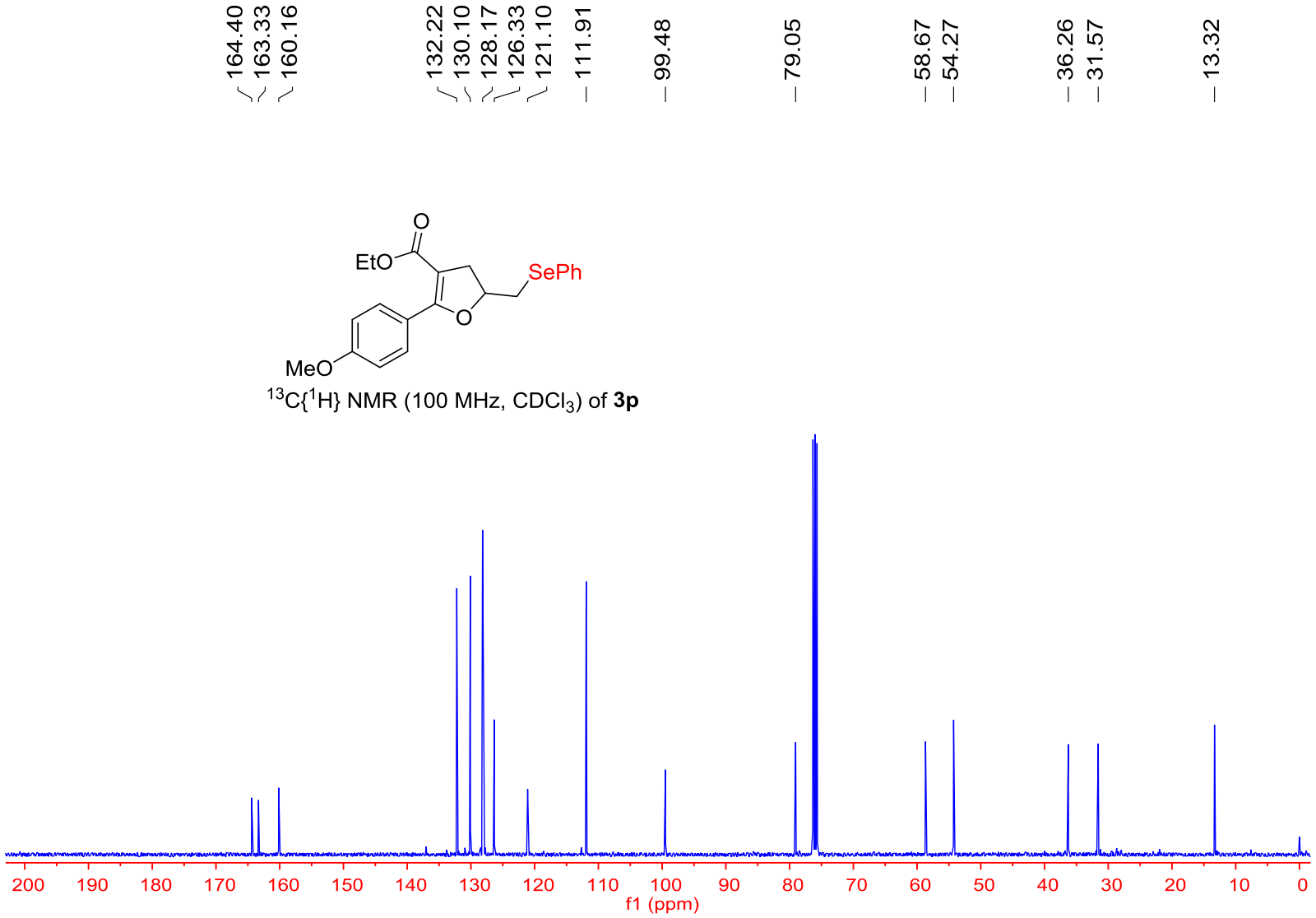
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3o**



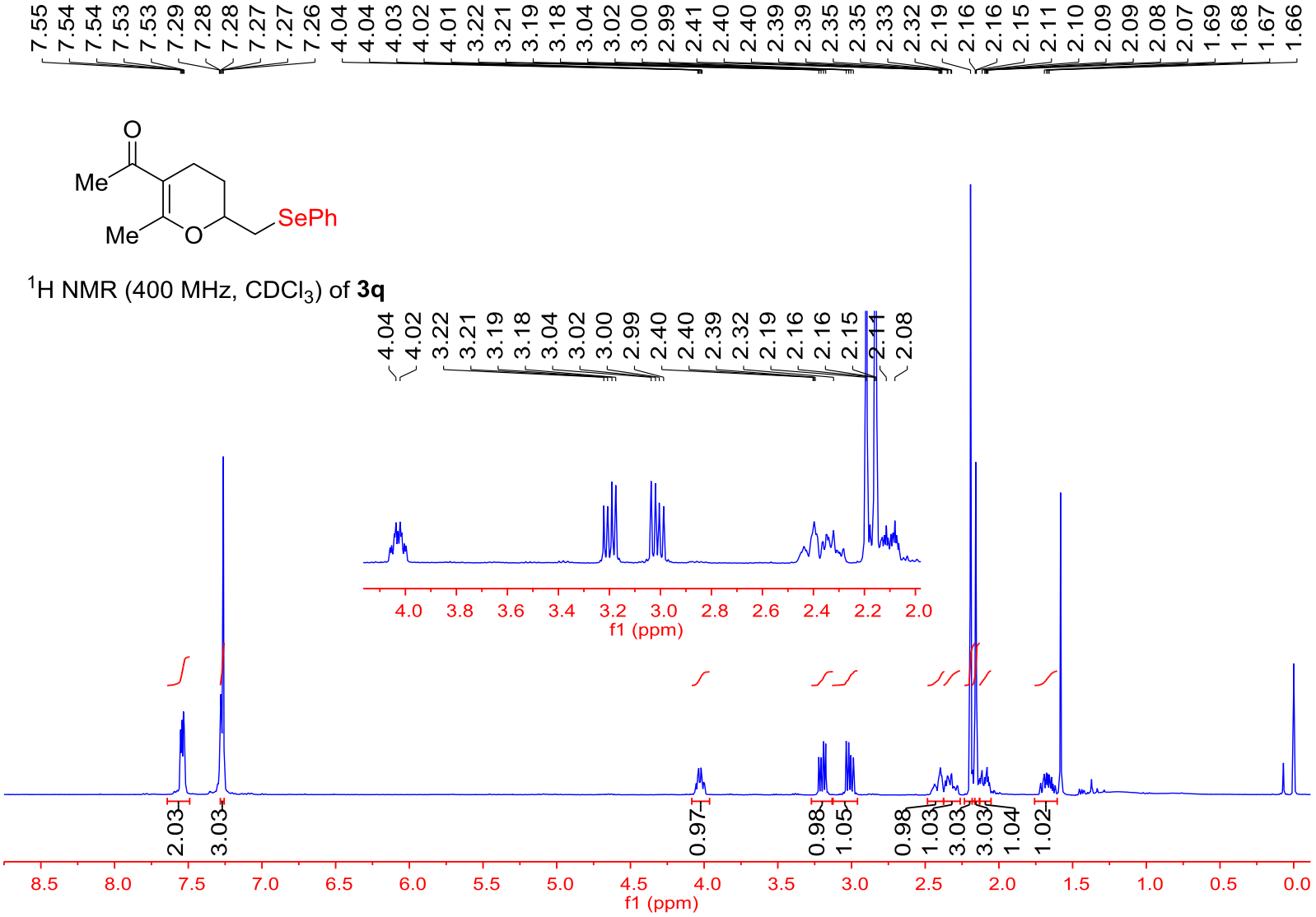
^{19}F NMR (376 MHz, $CDCl_3$) of **3o**

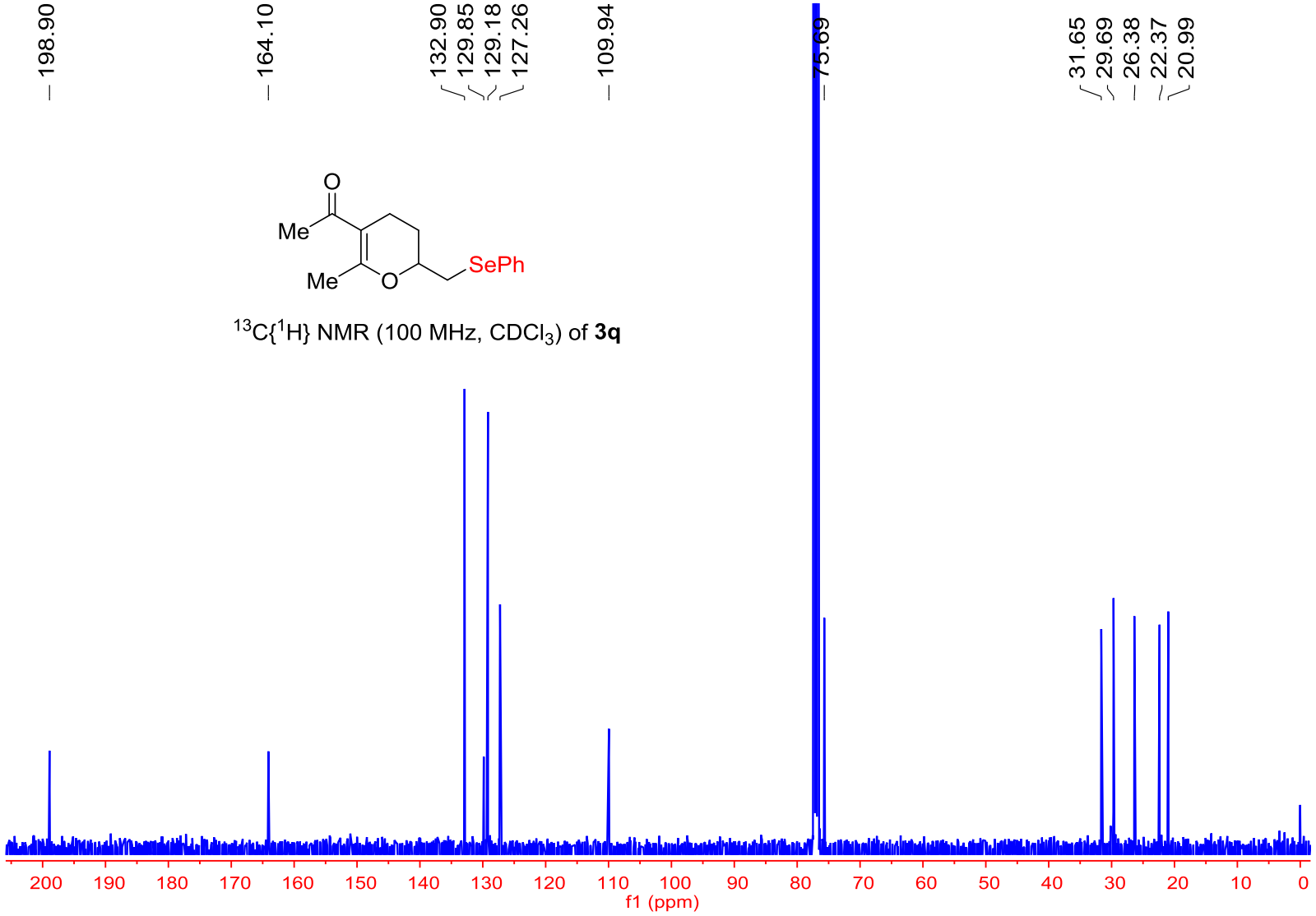


^{1}H NMR (400 MHz, $CDCl_3$) of **3p**

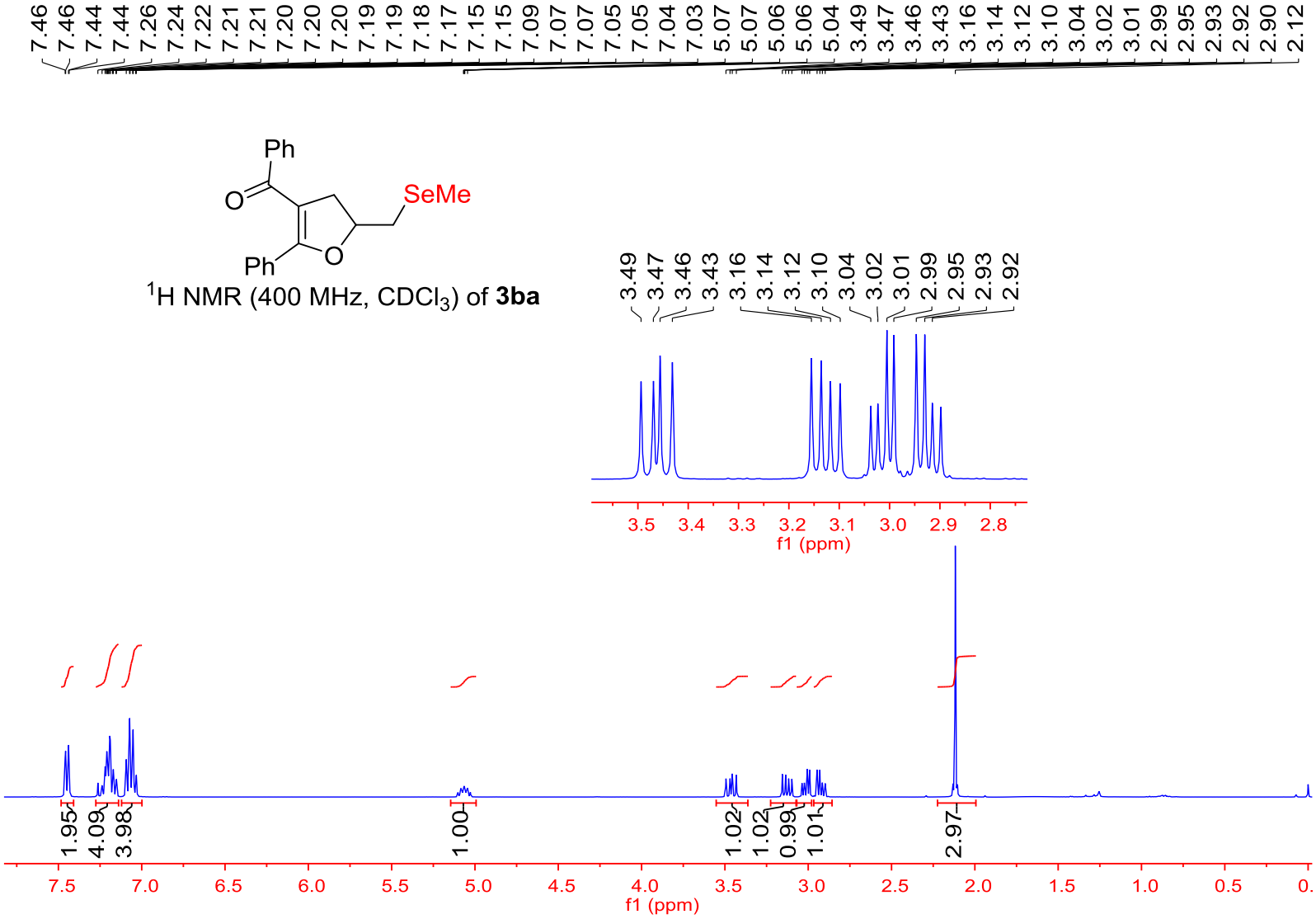


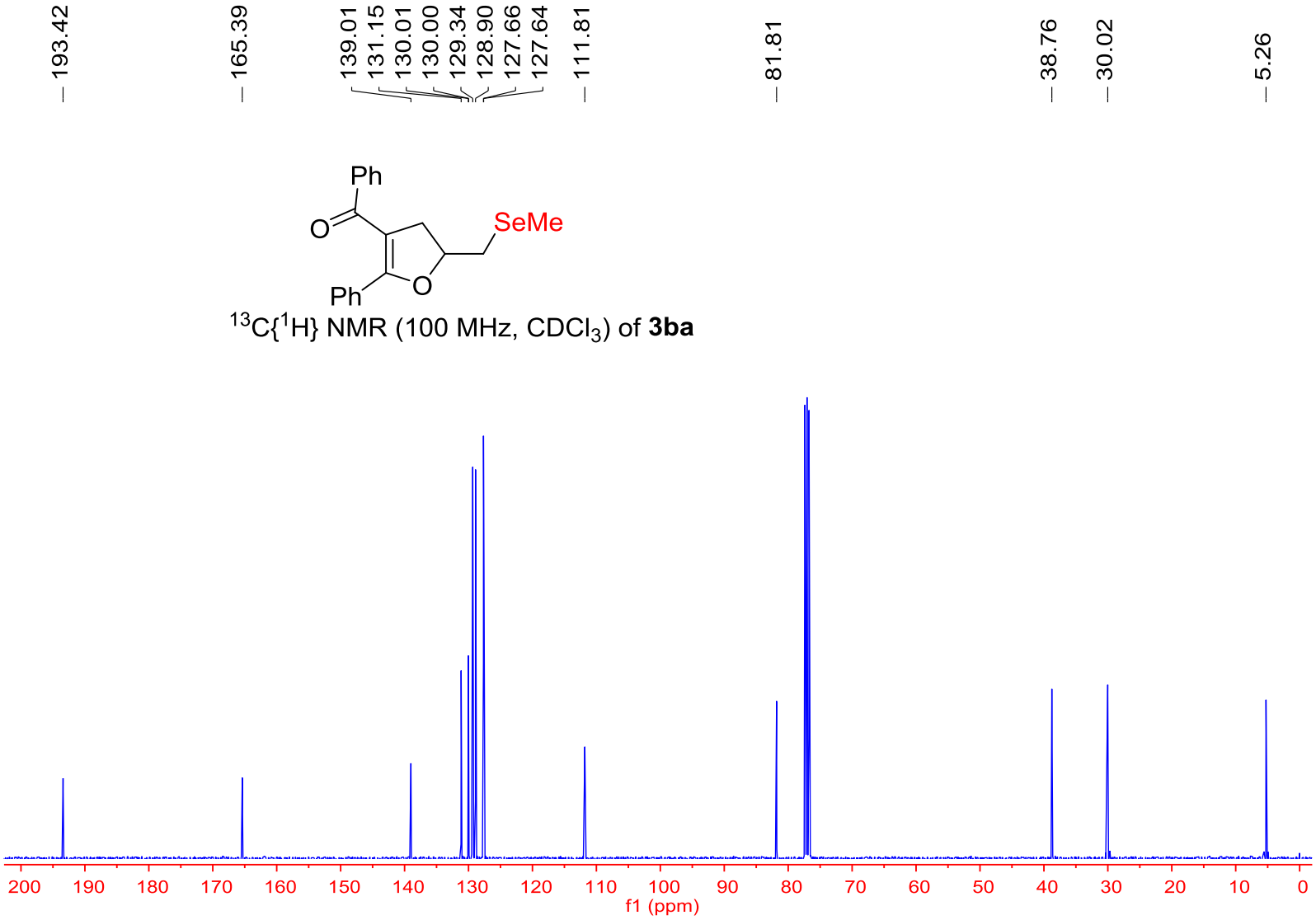
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3p**


7.55 7.54 7.54 7.53 7.53 7.29 7.28 7.28 7.27 7.27 7.26 4.04 4.04 4.03 4.02 4.01 3.22 3.21 3.19 3.18 3.04 3.02 3.00 2.99 2.41 2.40 2.40 2.39 2.39 2.35 2.35 2.33 2.32 2.19 2.16 2.16 2.15 2.11 2.10 2.09 2.09 2.08 2.07 1.69 1.68 1.67 1.66
O
Me
Me
O
SePh
1H NMR (400 MHz, CDCl3) of 3q
4.04 4.02 3.22 3.21 3.19 3.18 3.04 3.02 3.00 2.99 2.40 2.40 2.39 2.32 2.19 2.16 2.16 2.15 2.11 2.08
4.0 3.8 3.6 3.4 3.2 3.0 2.8 2.6 2.4 2.2 2.0
f1 (ppm)
2.03 3.03 0.97 0.98 1.05 0.98 1.03 3.03 3.03 1.04 1.02
8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

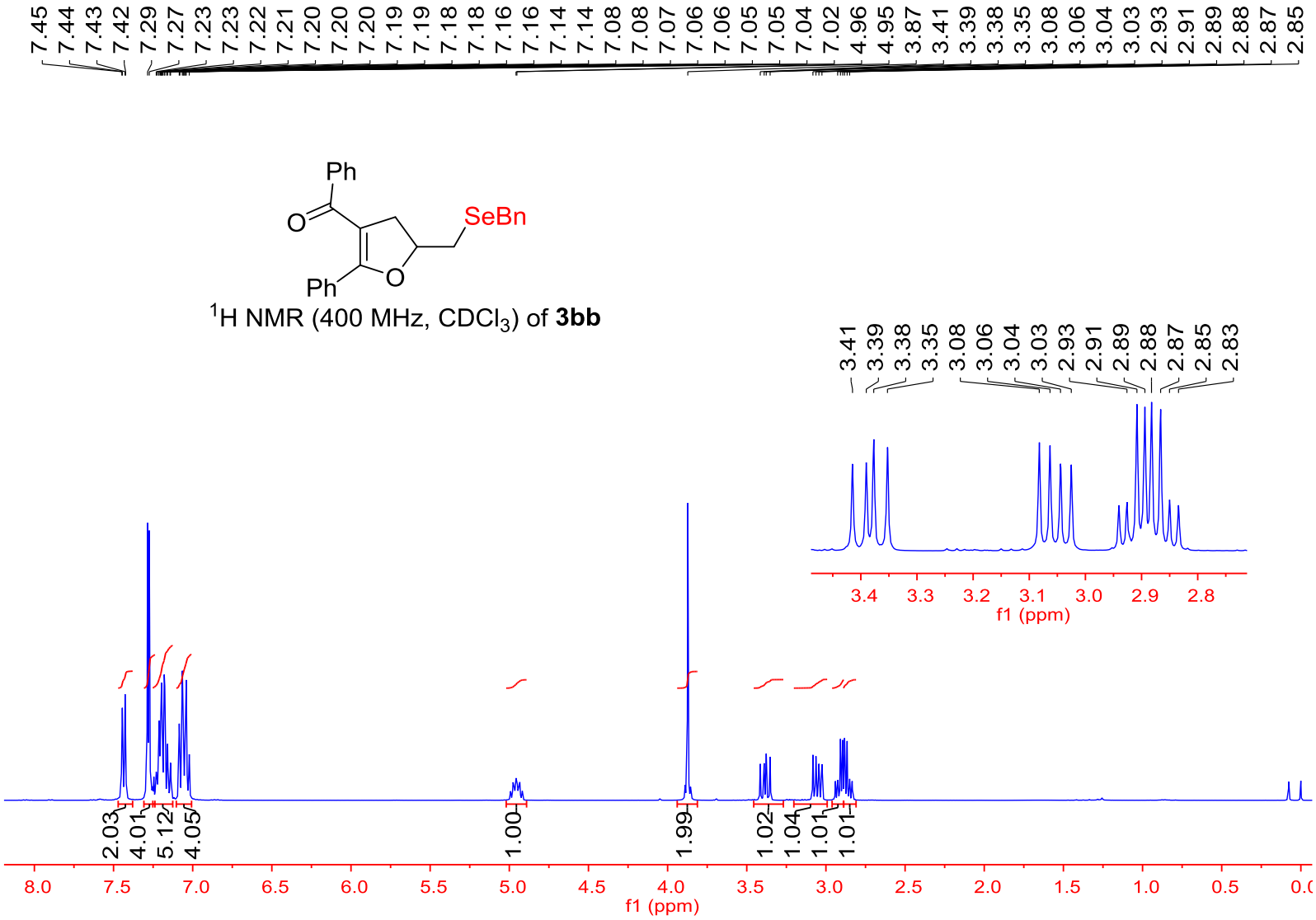


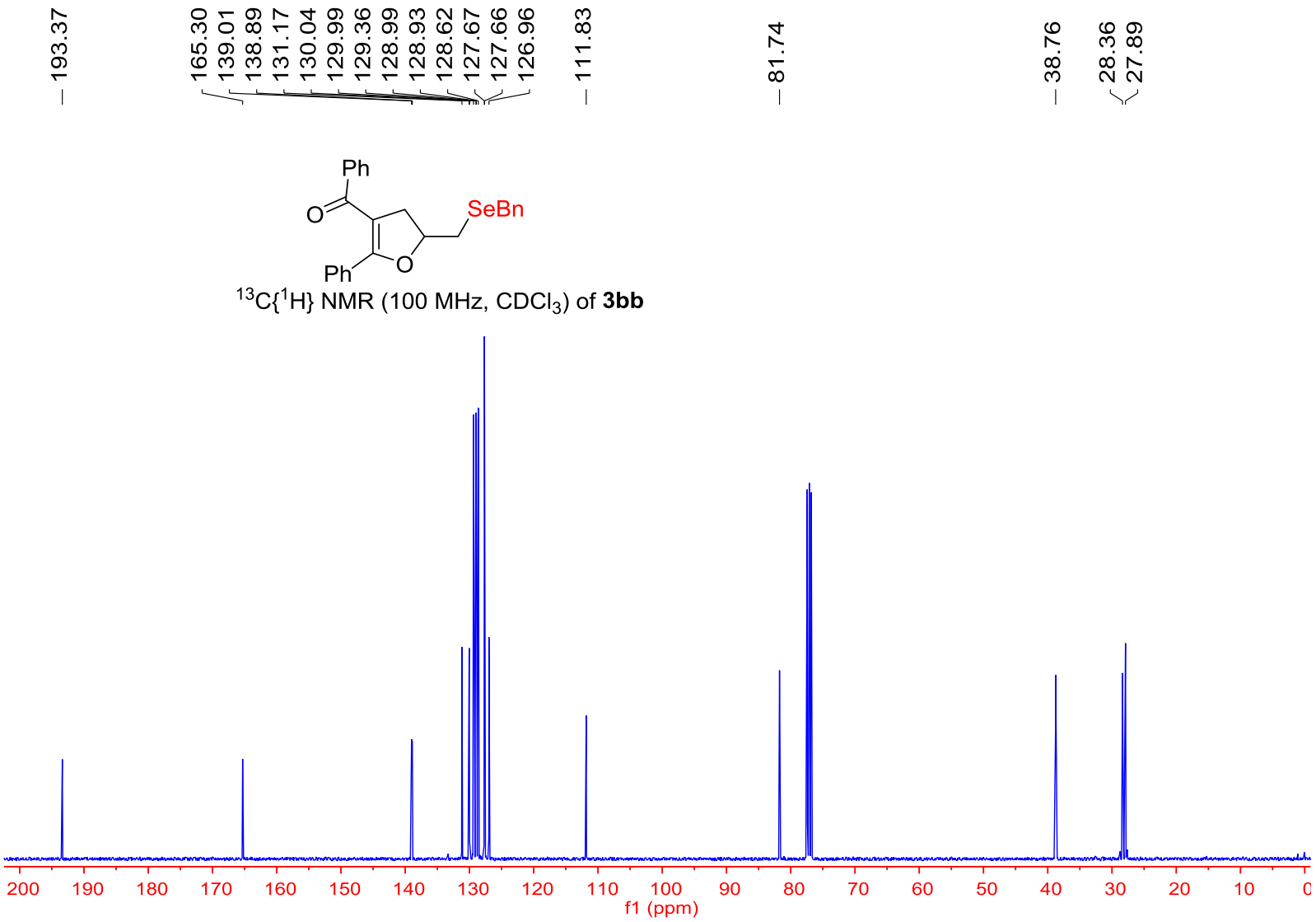
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3q**


7.46 7.46 7.44 7.44 7.26 7.24 7.22 7.21 7.21 7.20 7.20 7.20 7.19 7.19 7.18 7.17 7.15 7.15 7.09 7.07 7.07 7.05 7.05 7.04 7.03 5.07 5.07 5.06 5.06 5.04 3.49 3.47 3.46 3.43 3.16 3.14 3.12 3.10 3.04 3.02 3.01 2.99 2.95 2.93 2.92 2.90 2.12
Ph
O
SeMe
Ph
O
1H NMR (400 MHz, CDCl3) of 3ba
3.49 3.47 3.46 3.43 3.16 3.14 3.12 3.10 3.04 3.02 3.01 2.99 2.95 2.93 2.92
3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8
f1 (ppm)
1.95 4.09 3.98 1.00 1.02 1.02 0.99 1.01 2.97
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.
f1 (ppm)

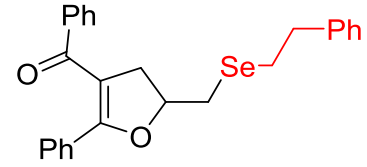


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3ba**

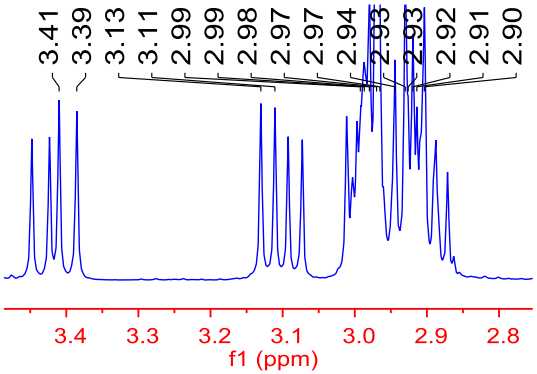

7.45 7.44 7.43 7.42 7.29 7.27 7.23 7.23 7.22 7.21 7.20 7.20 7.20 7.19 7.19 7.18 7.18 7.16 7.16 7.14 7.14 7.08 7.08 7.07 7.06 7.06 7.05 7.05 7.04 7.02 4.96 4.95 3.87 3.41 3.39 3.38 3.35 3.08 3.06 3.04 3.03 2.93 2.91 2.89 2.88 2.87 2.85
Ph
O
SeBn
Ph
O
1H NMR (400 MHz, CDCl3) of 3bb
3.41 3.39 3.38 3.35 3.08 3.06 3.04 3.03 2.93 2.91 2.89 2.88 2.87 2.85 2.83
3.4 3.3 3.2 3.1 3.0 2.9 2.8
f1 (ppm)
2.03 4.01 5.12 4.05 1.00 1.99 1.02 1.04 1.01 1.01
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

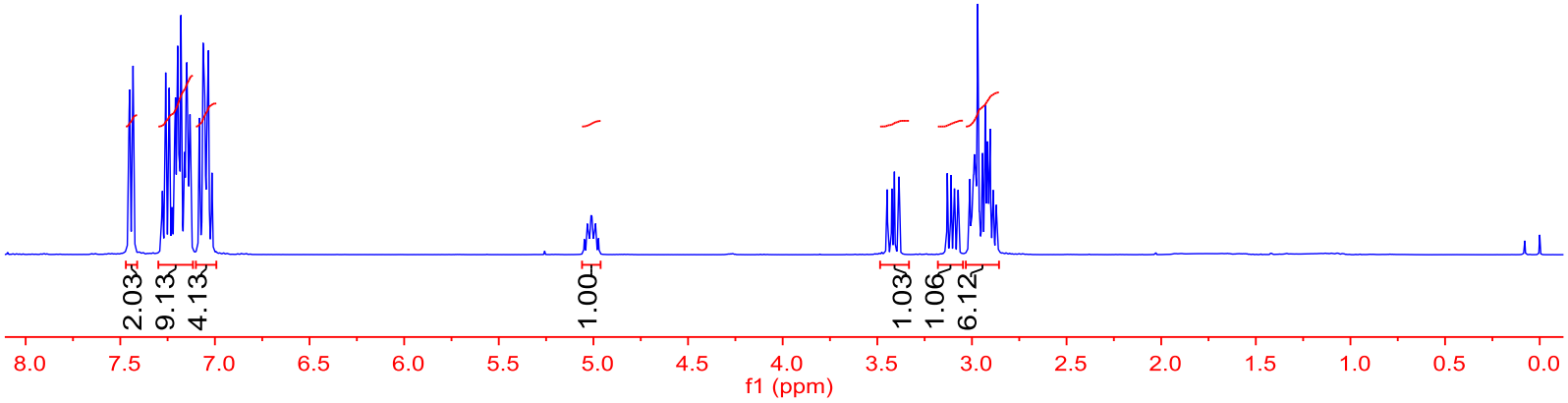


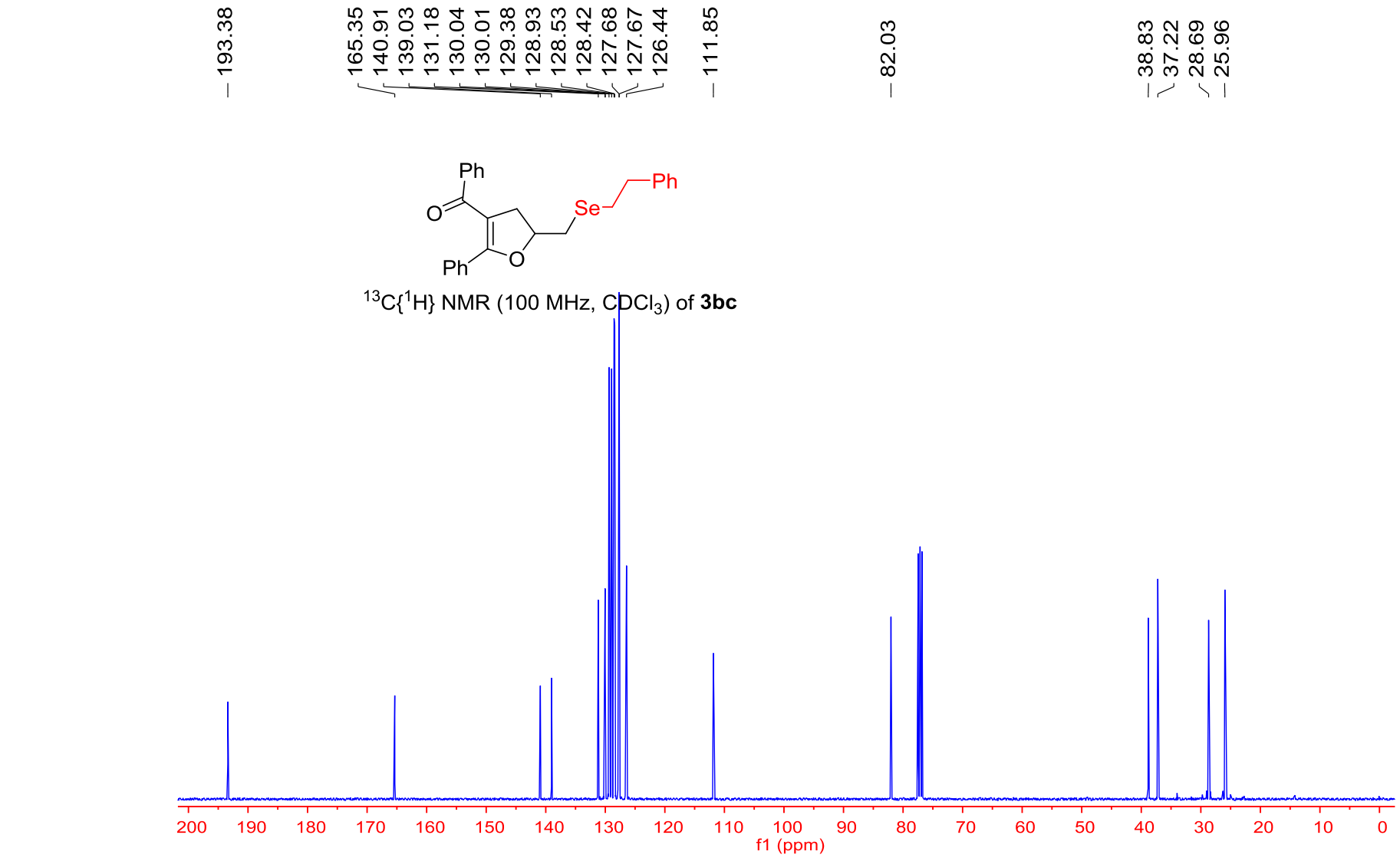
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bb**



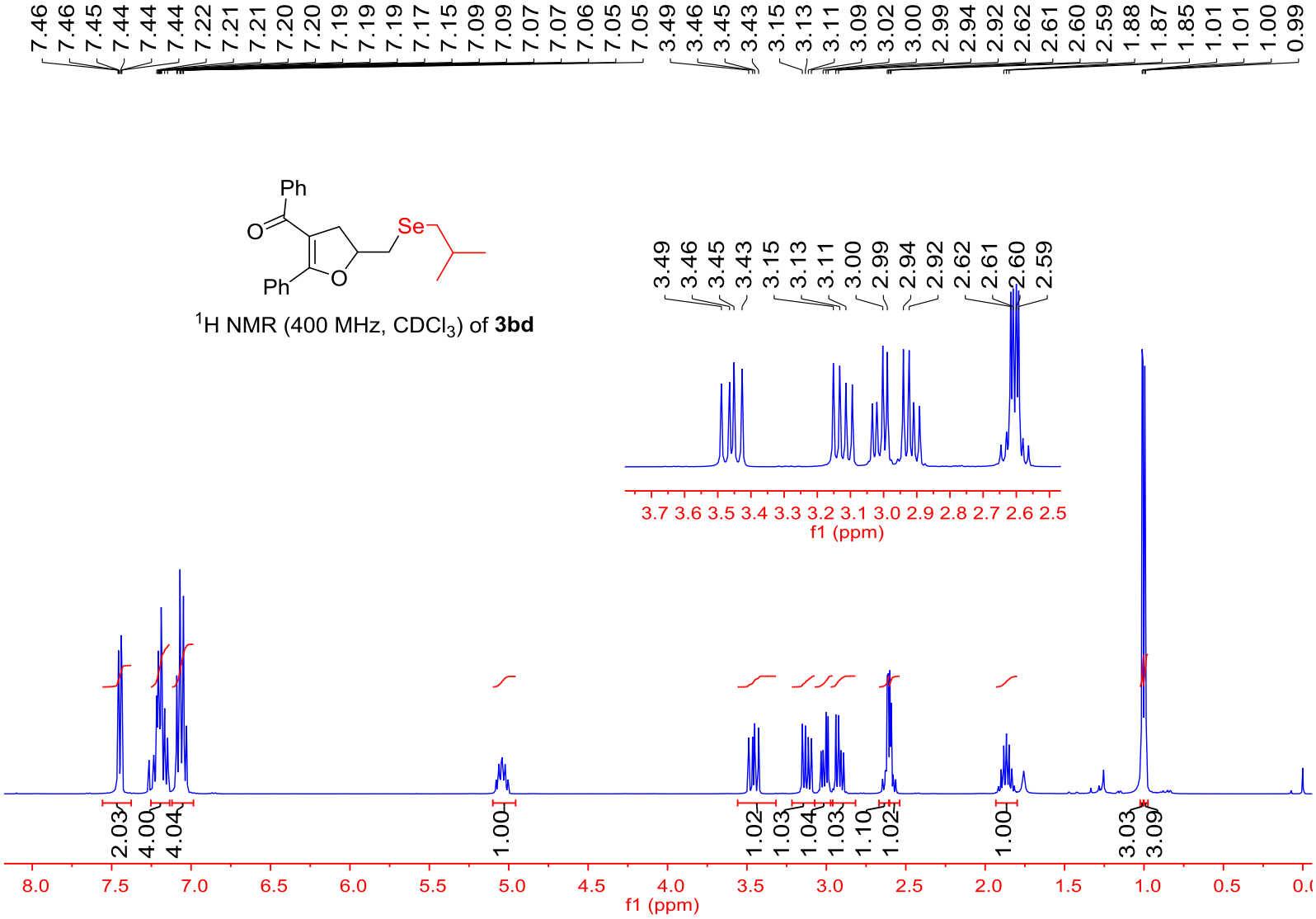
^{1}H NMR (400 MHz, $CDCl_3$) of **3bc**

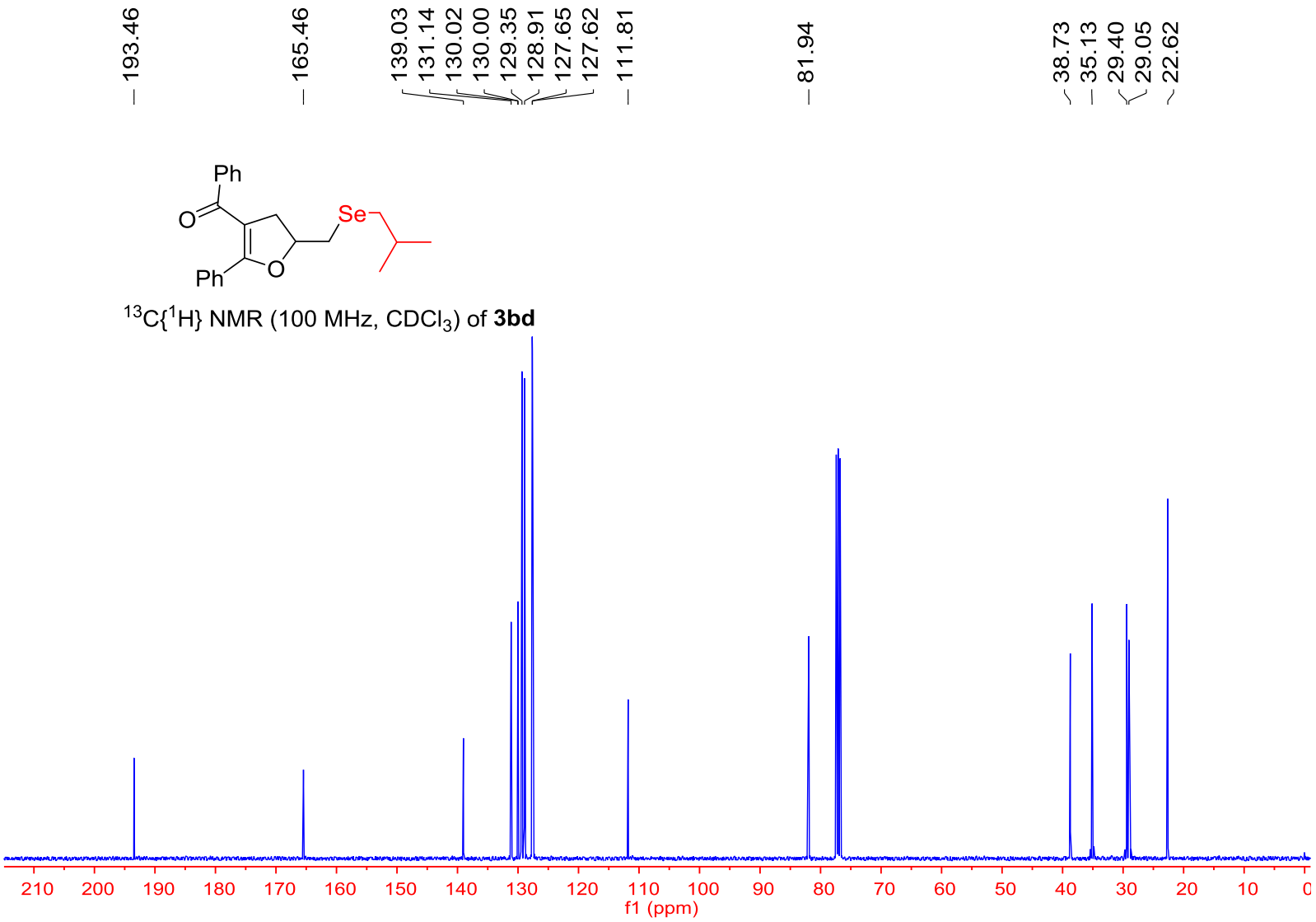


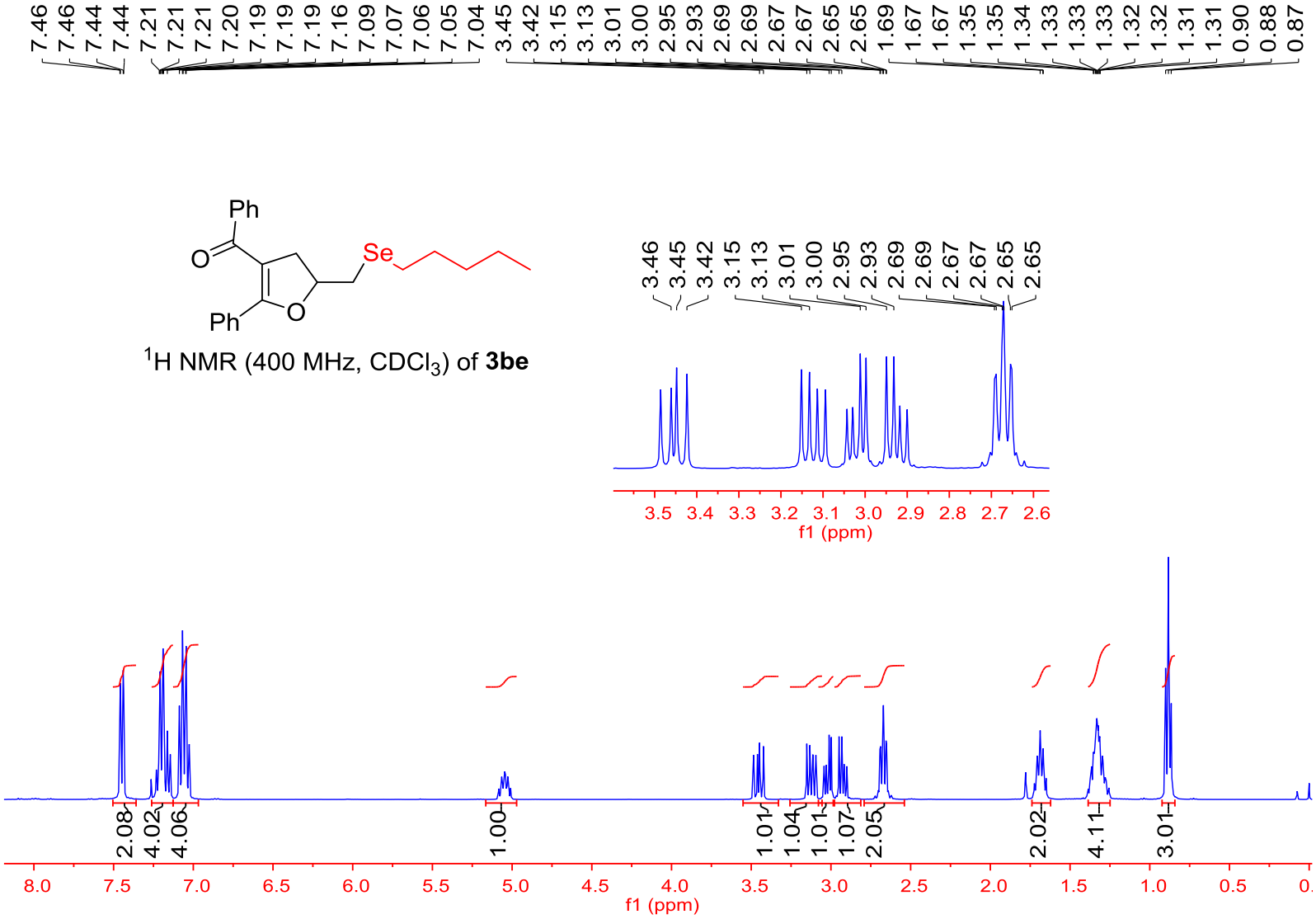


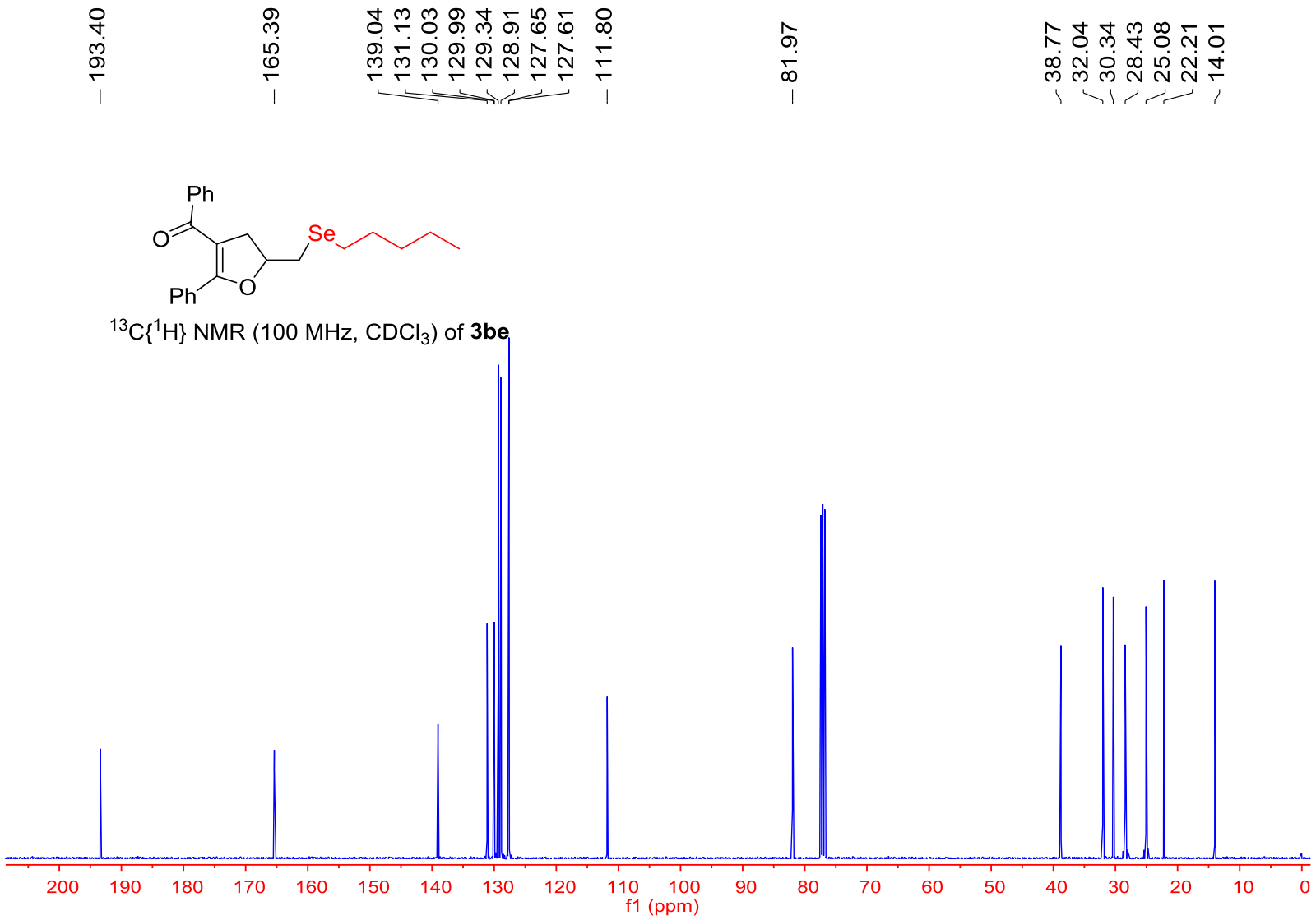


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bc**

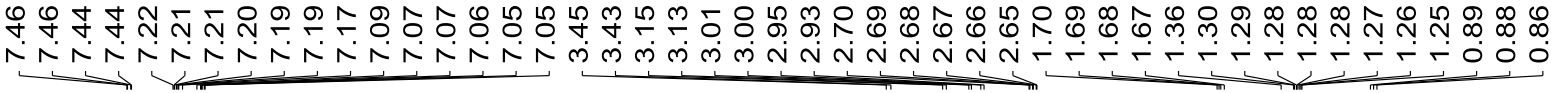

7.46 7.46 7.45 7.44 7.44 7.44 7.22 7.21 7.21 7.20 7.20 7.19 7.19 7.19 7.17 7.15 7.09 7.09 7.07 7.07 7.06 7.05 7.05
3.49 3.46 3.45 3.43 3.15 3.13 3.11 3.09 3.02 3.00 2.99 2.94 2.92 2.62 2.61 2.60 2.59 1.88 1.87 1.85 1.01 1.01 1.00 0.99
Ph
O
Se
Ph
O
1H NMR (400 MHz, CDCl3) of 3bd
3.49 3.46 3.45 3.43 3.15 3.13 3.11 3.00 2.99 2.94 2.92 2.62 2.61 2.60 2.59
3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8 2.7 2.6 2.5
f1 (ppm)
2.03 4.00 4.04 1.00 1.02 1.03 1.04 1.03 1.10 1.02 1.00 3.03 3.09
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

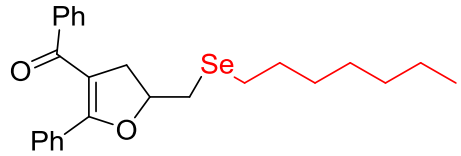

193.46
165.46
139.03
131.14
130.02
130.00
129.35
128.91
127.65
127.62
111.81
81.94
38.73
35.13
29.40
29.05
22.62
Ph
O
Se
Ph
O
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bd**
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


7.46 7.46 7.44 7.44 7.21 7.21 7.21 7.20 7.19 7.19 7.19 7.16 7.09 7.07 7.06 7.05 7.04
3.45 3.42 3.15 3.13 3.01 3.00 2.95 2.93 2.69 2.69 2.67 2.67 2.65 2.65 1.69 1.67 1.67 1.35 1.35 1.34 1.33 1.33 1.33 1.32 1.32 1.31 1.31 0.90 0.88 0.87
Ph
O
Se
Ph
O
1H NMR (400 MHz, CDCl3) of 3be
3.46 3.45 3.42 3.15 3.13 3.01 3.00 2.95 2.93 2.69 2.69 2.67 2.67 2.65 2.65
3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8 2.7 2.6
f1 (ppm)
2.08 4.02 4.06 1.00 1.01 1.04 1.01 1.07 2.05 2.02 4.11 3.01
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

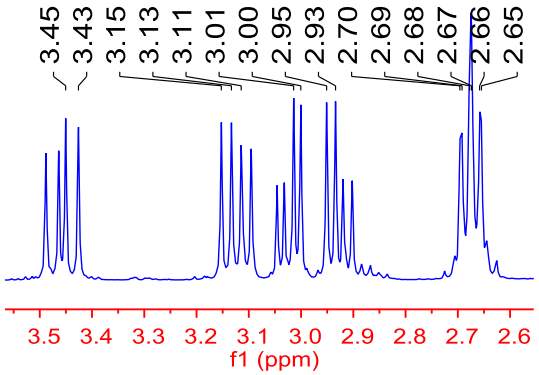


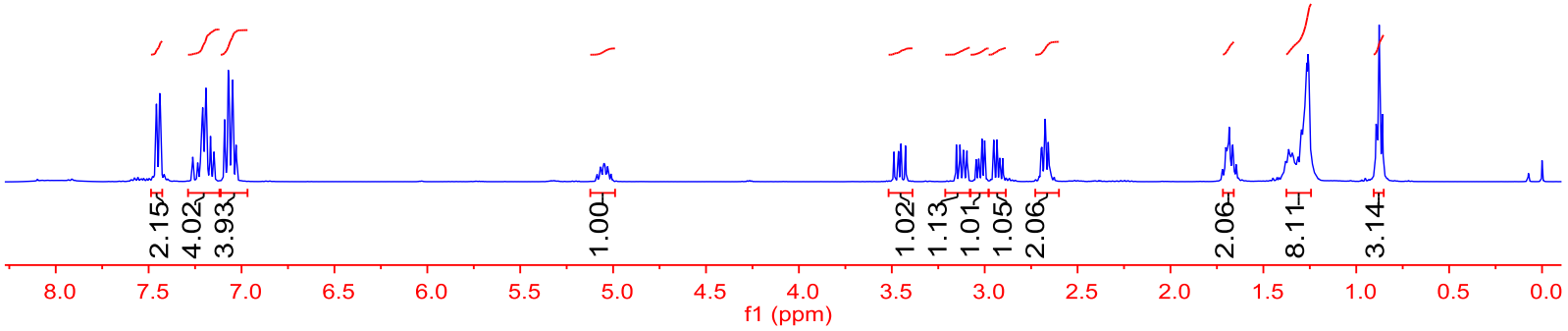
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3be**





^{1}H NMR (400 MHz, $CDCl_3$) of **3bf**





193.41
165.39
139.04
131.13
130.03
129.99
129.34
128.91
127.64
127.61
111.81
81.98
38.77
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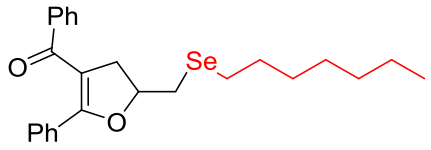
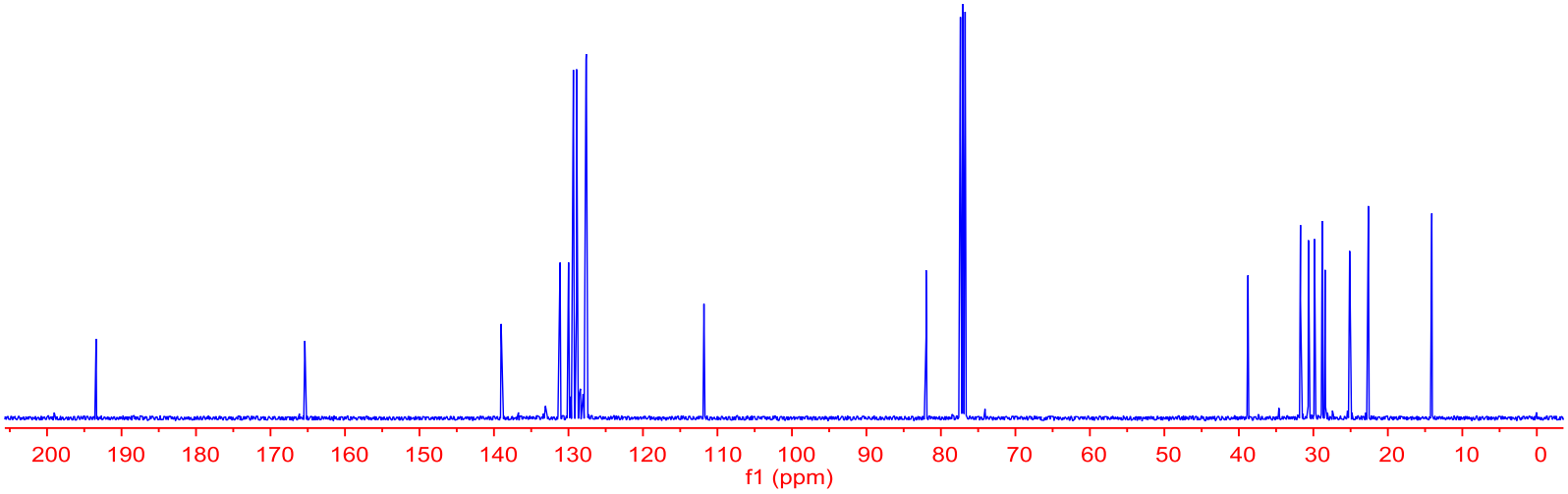
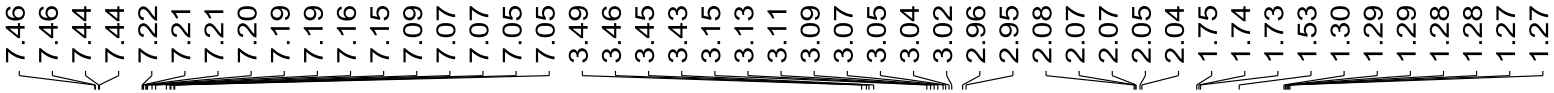
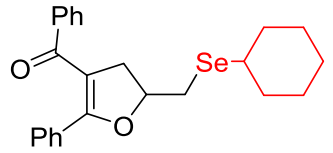
29.84
28.81
28.43
25.13
22.61
14.10



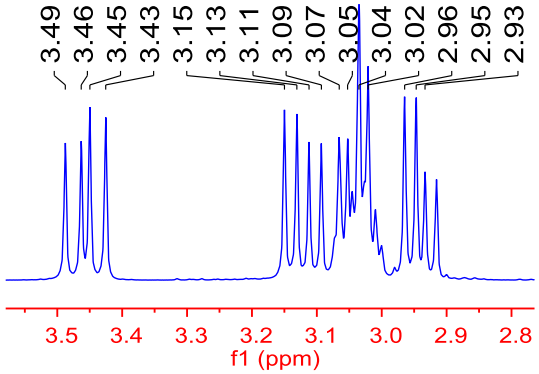
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bf**

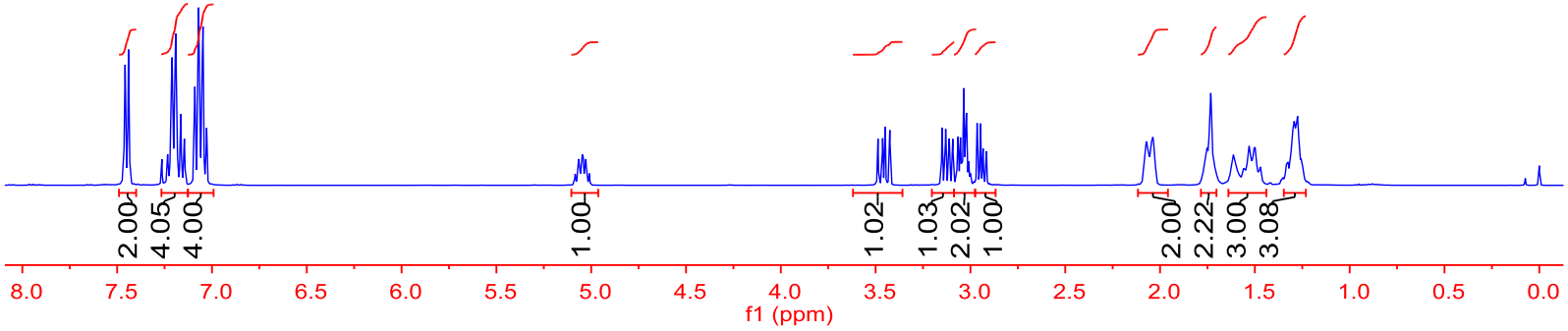


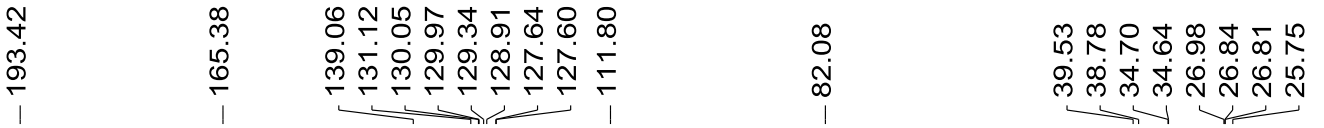


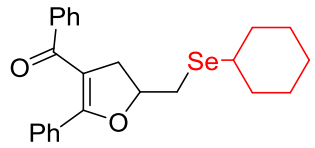


^{1}H NMR (400 MHz, $CDCl_3$) of **3bg**

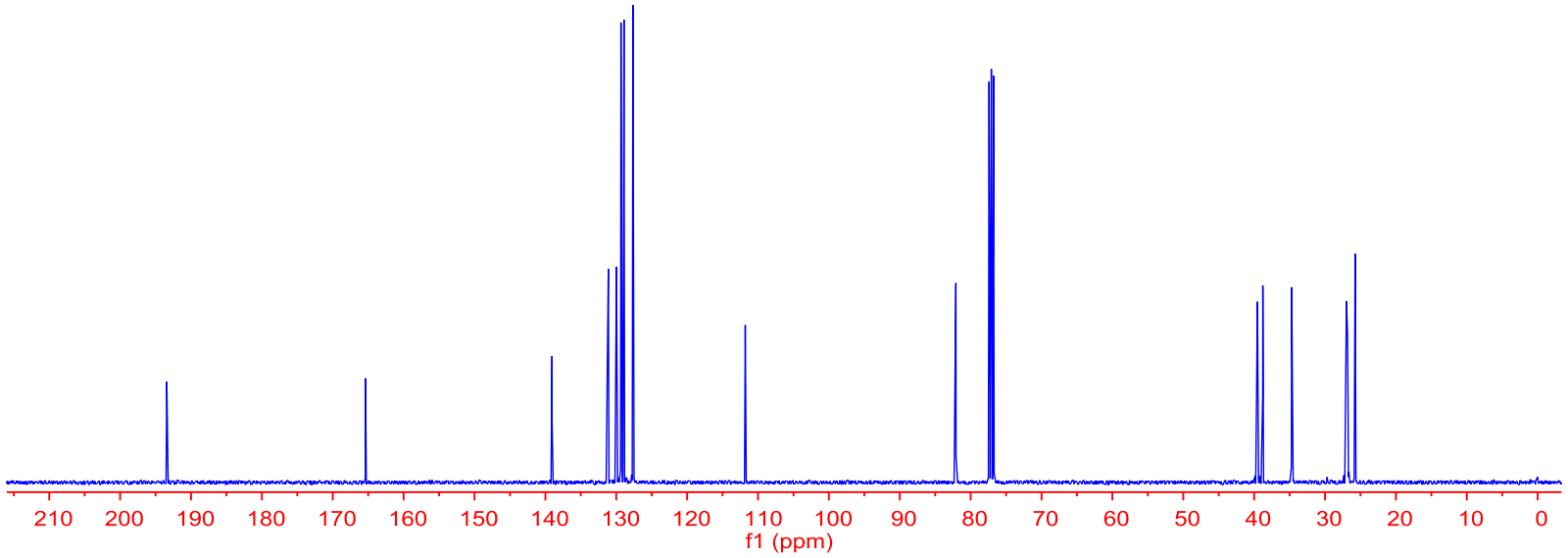


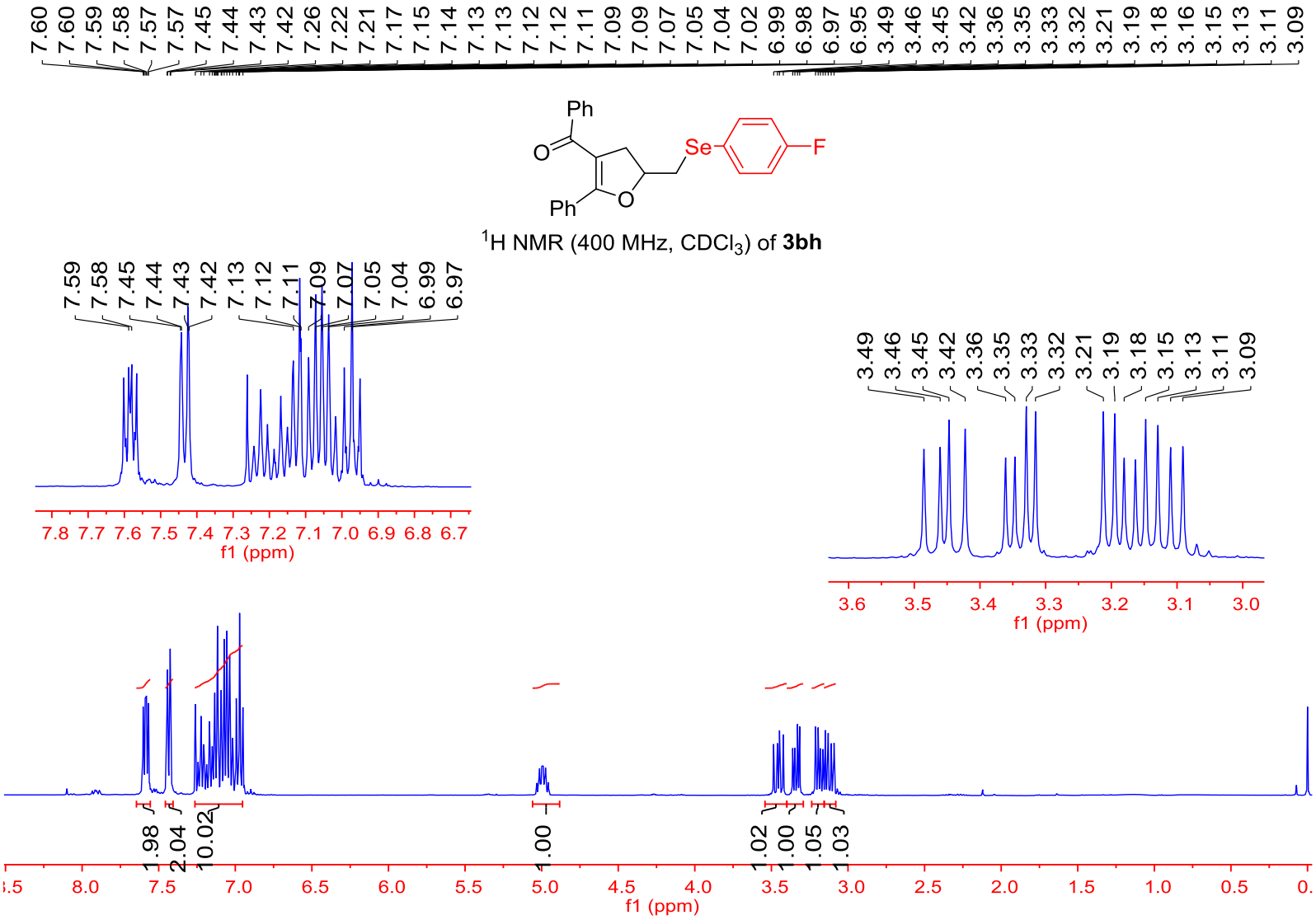




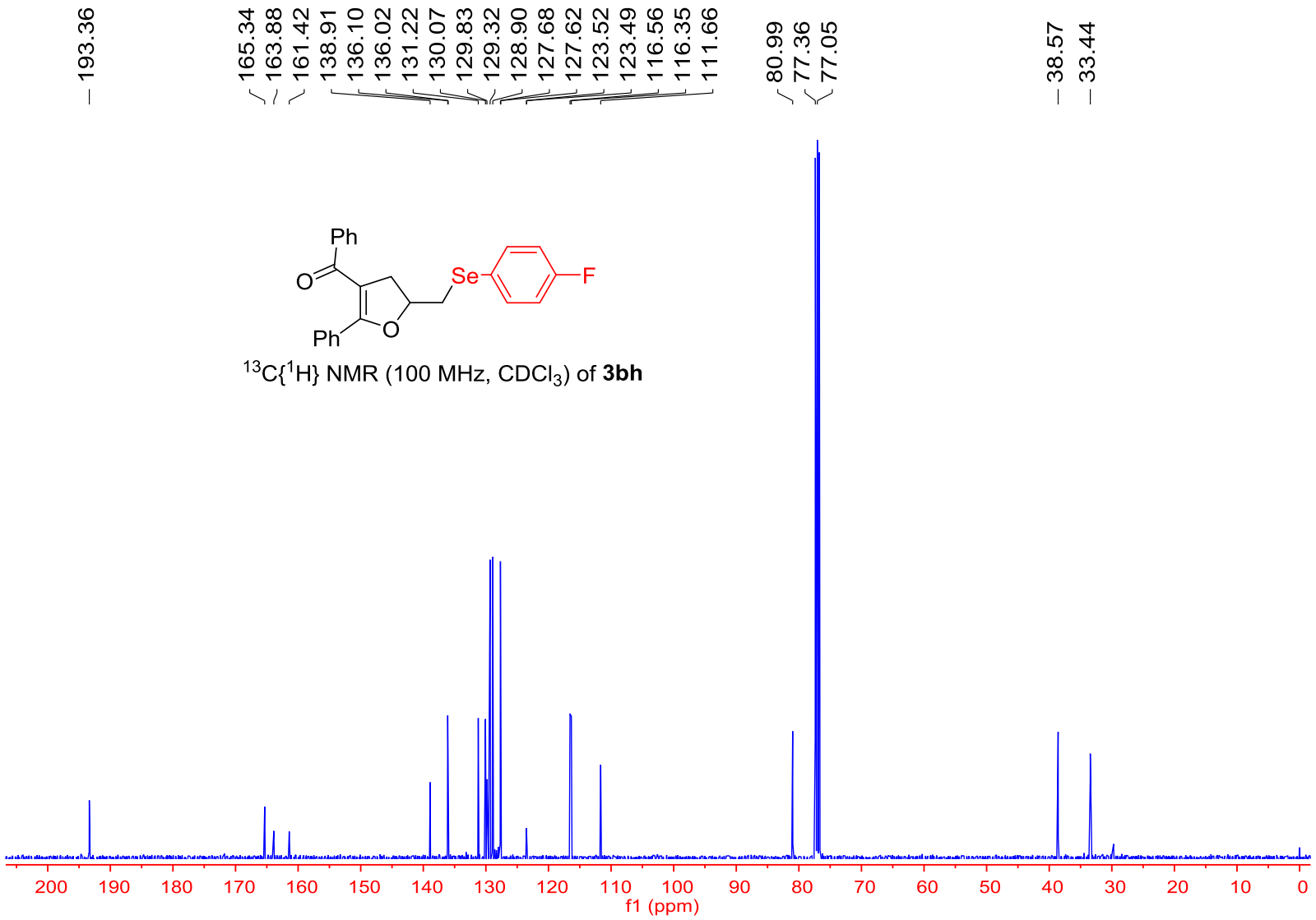


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bg**

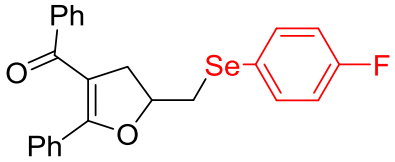




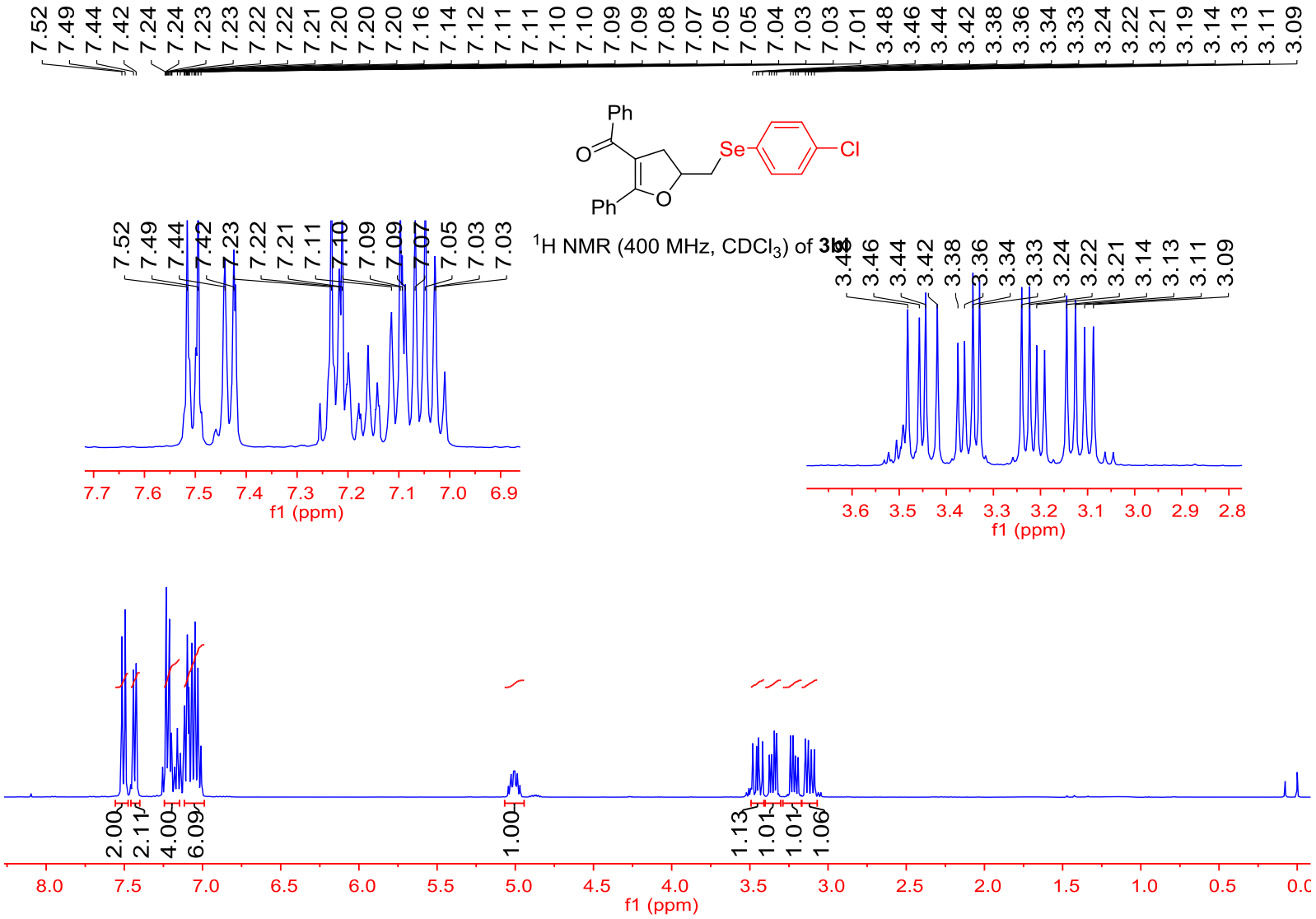
^{1}H NMR (400 MHz, $CDCl_3$) of **3bh**



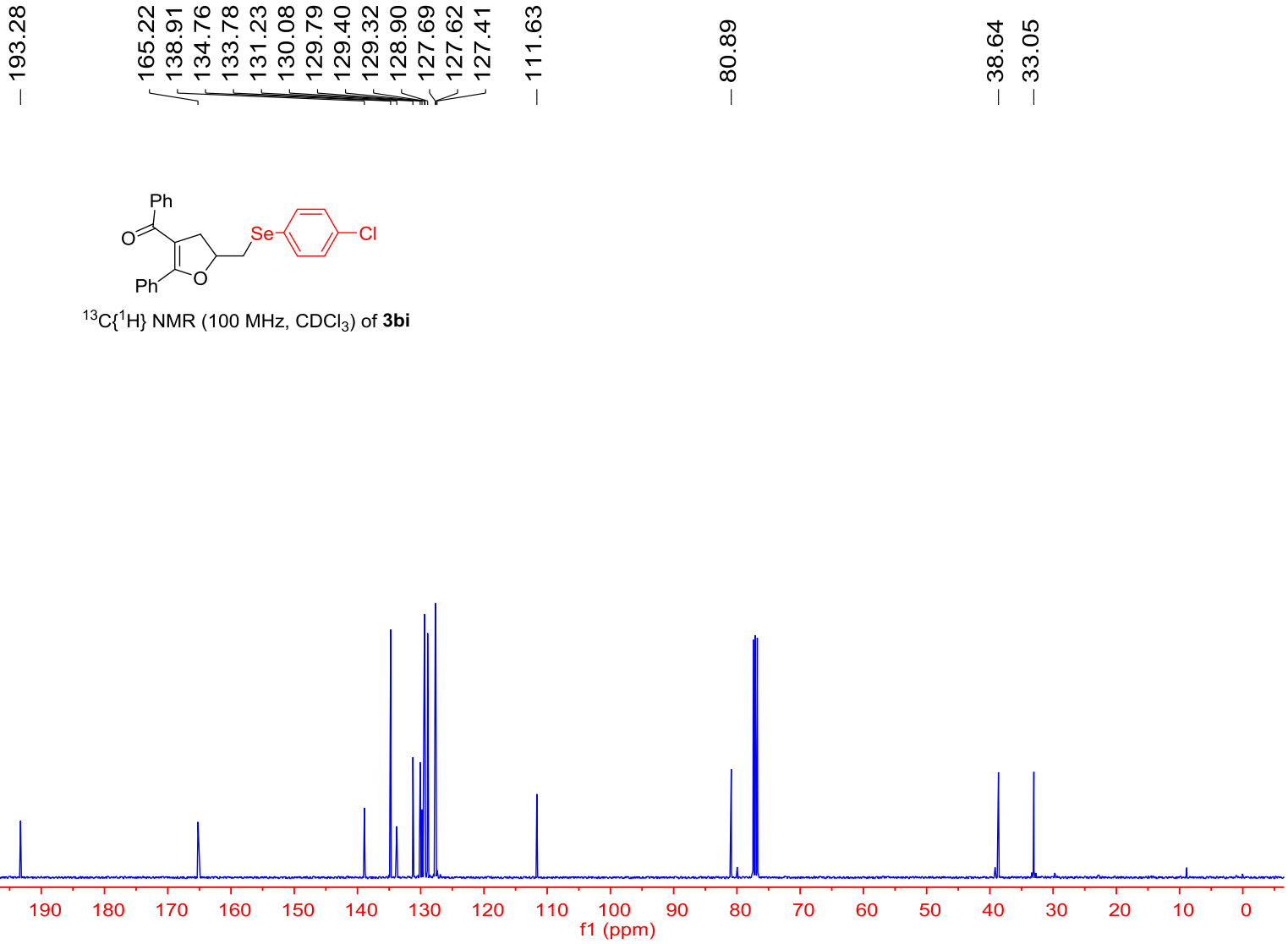
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bh**



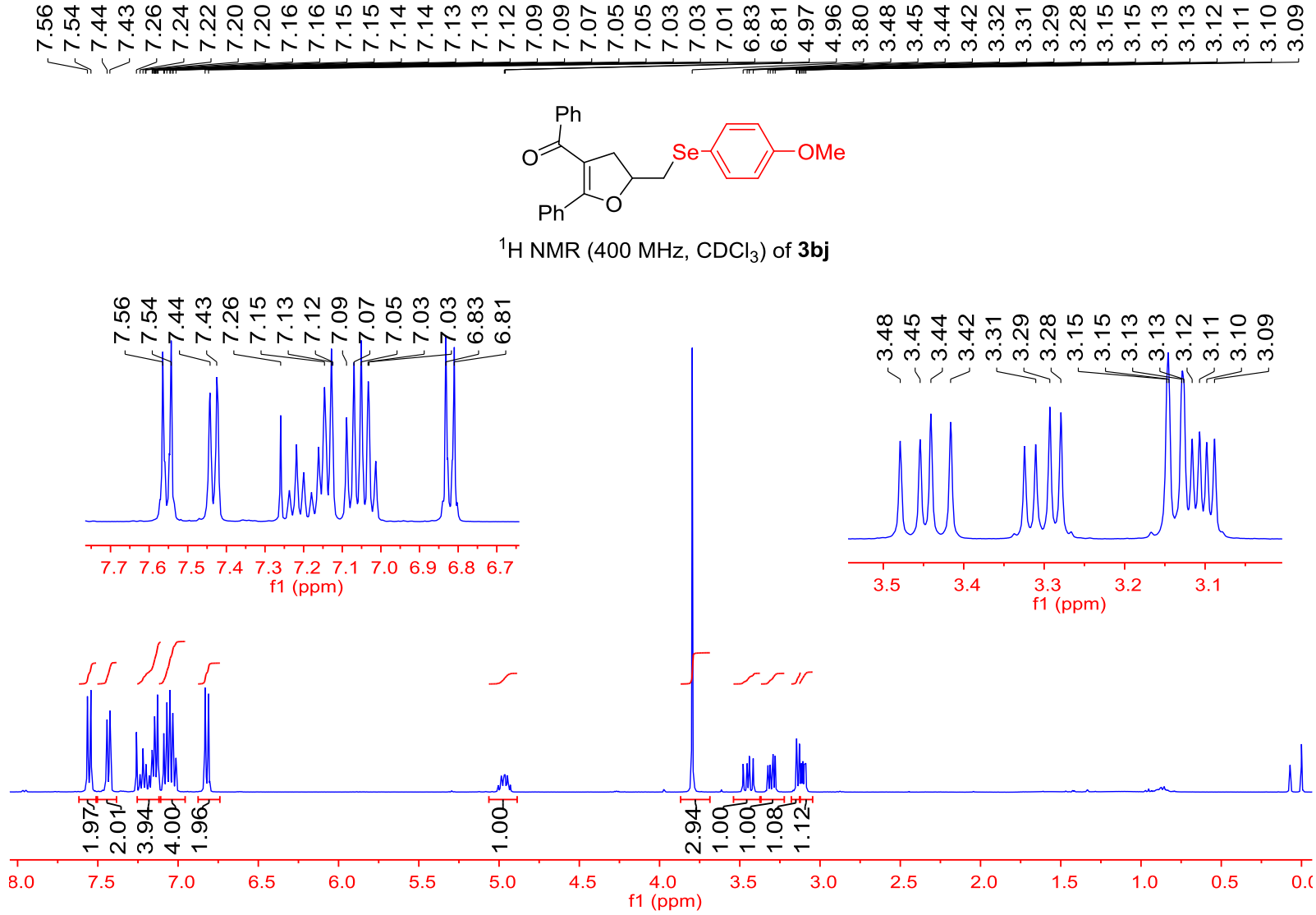
^{19}F NMR (376 MHz, $CDCl_3$) of **3bh**



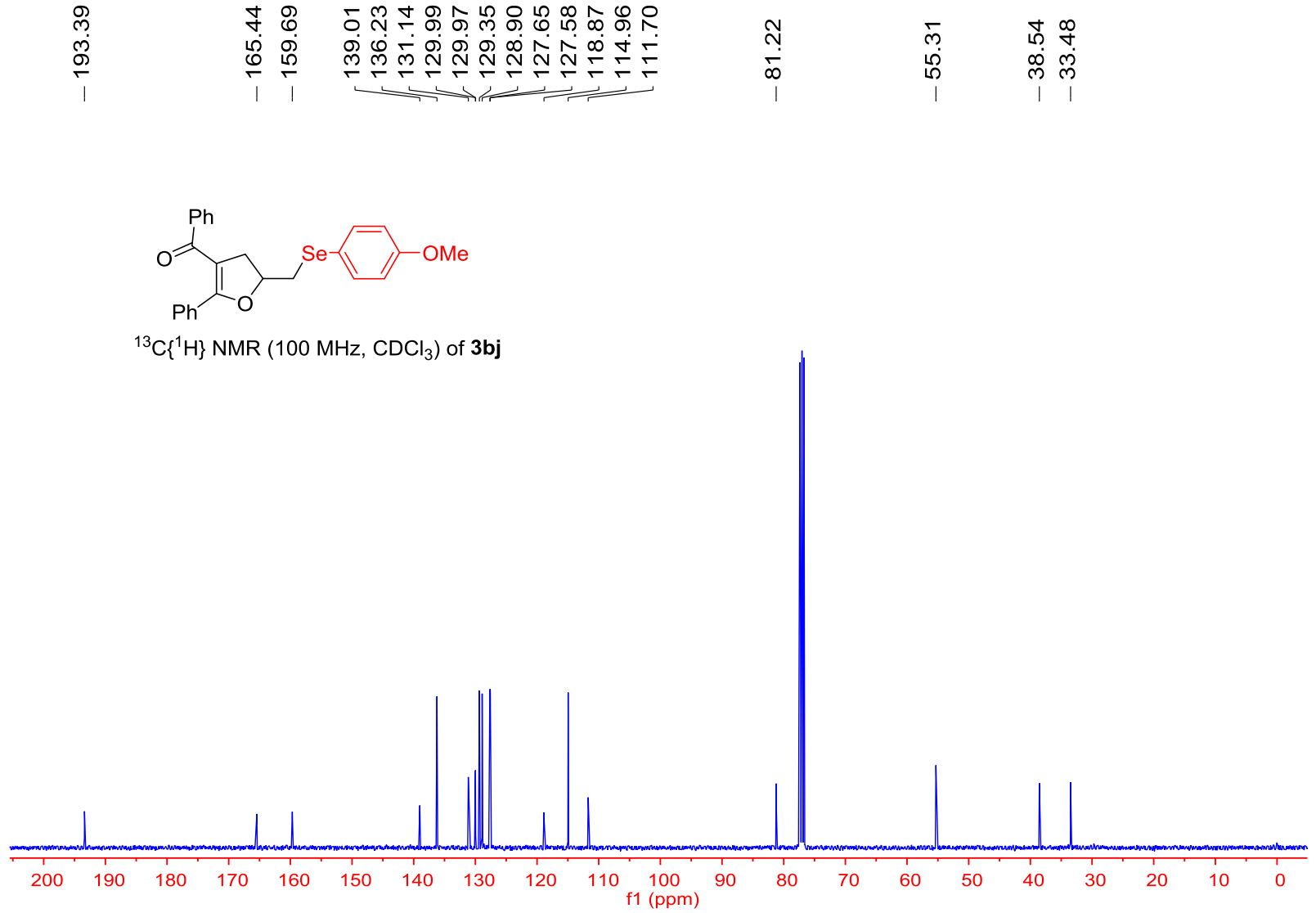
^{1}H NMR (400 MHz, $CDCl_3$) of **3bo**



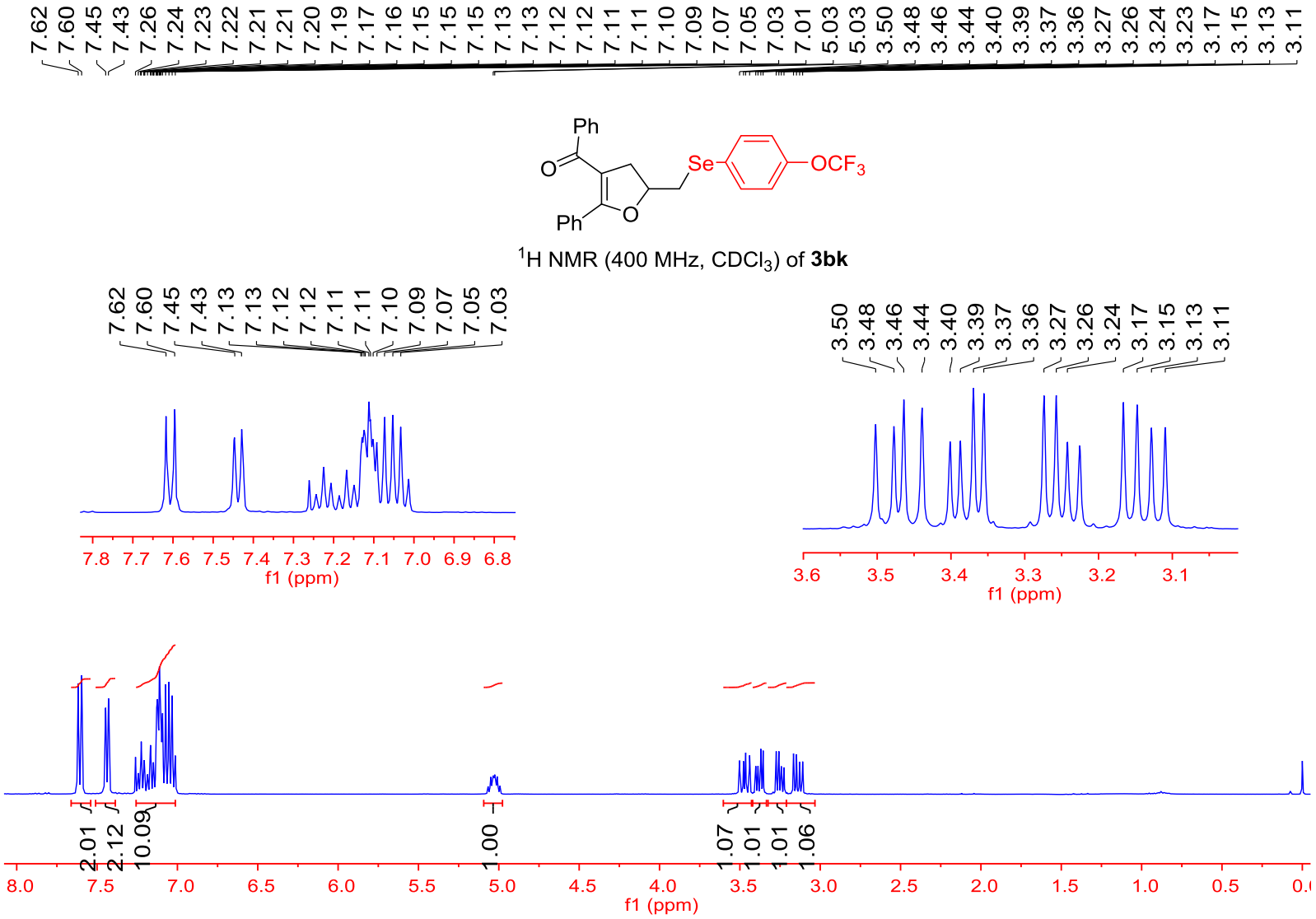
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bi**



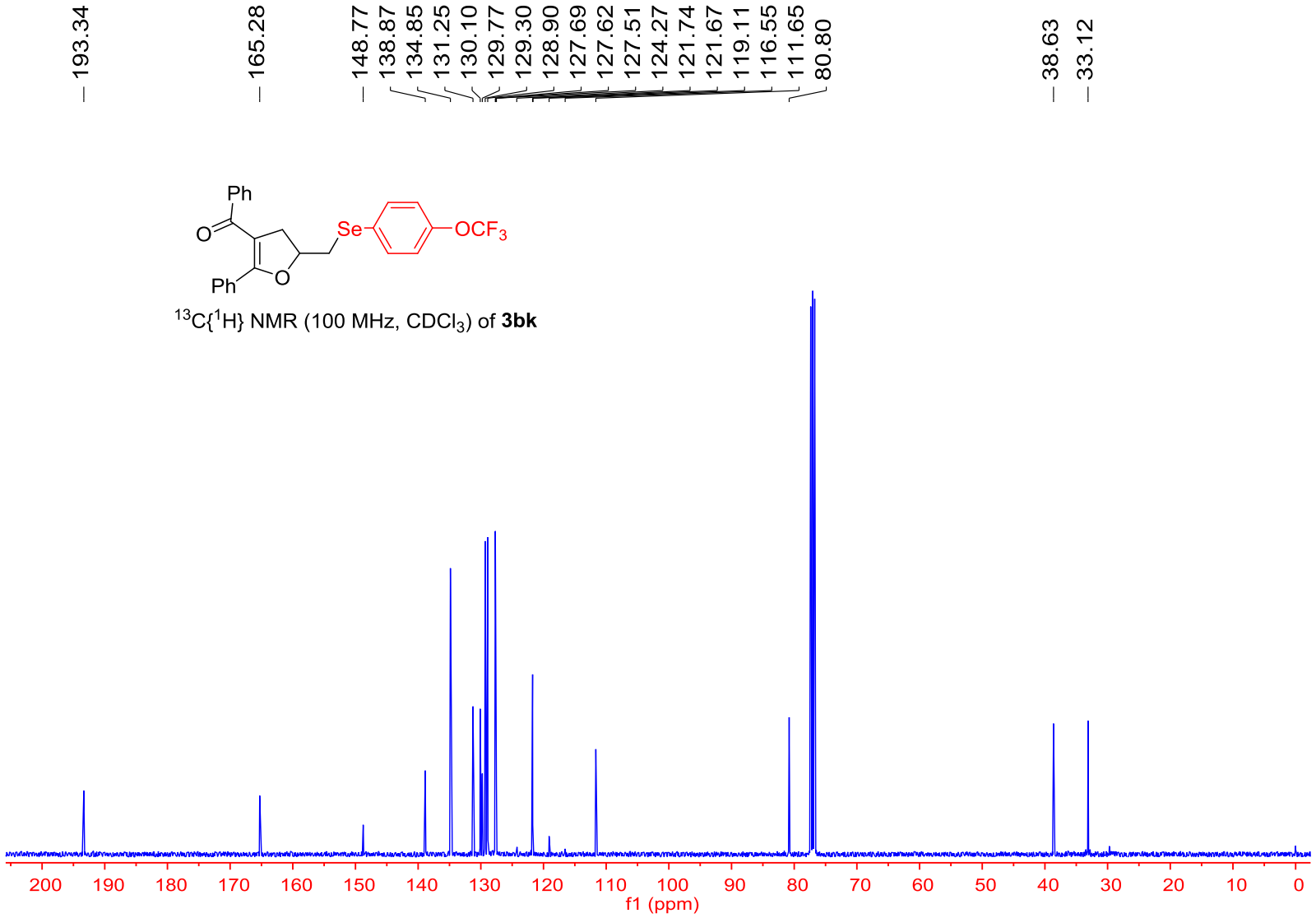
^{1}H NMR (400 MHz, $CDCl_3$) of **3bj**



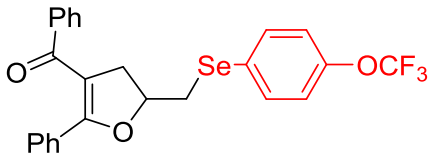
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bj**



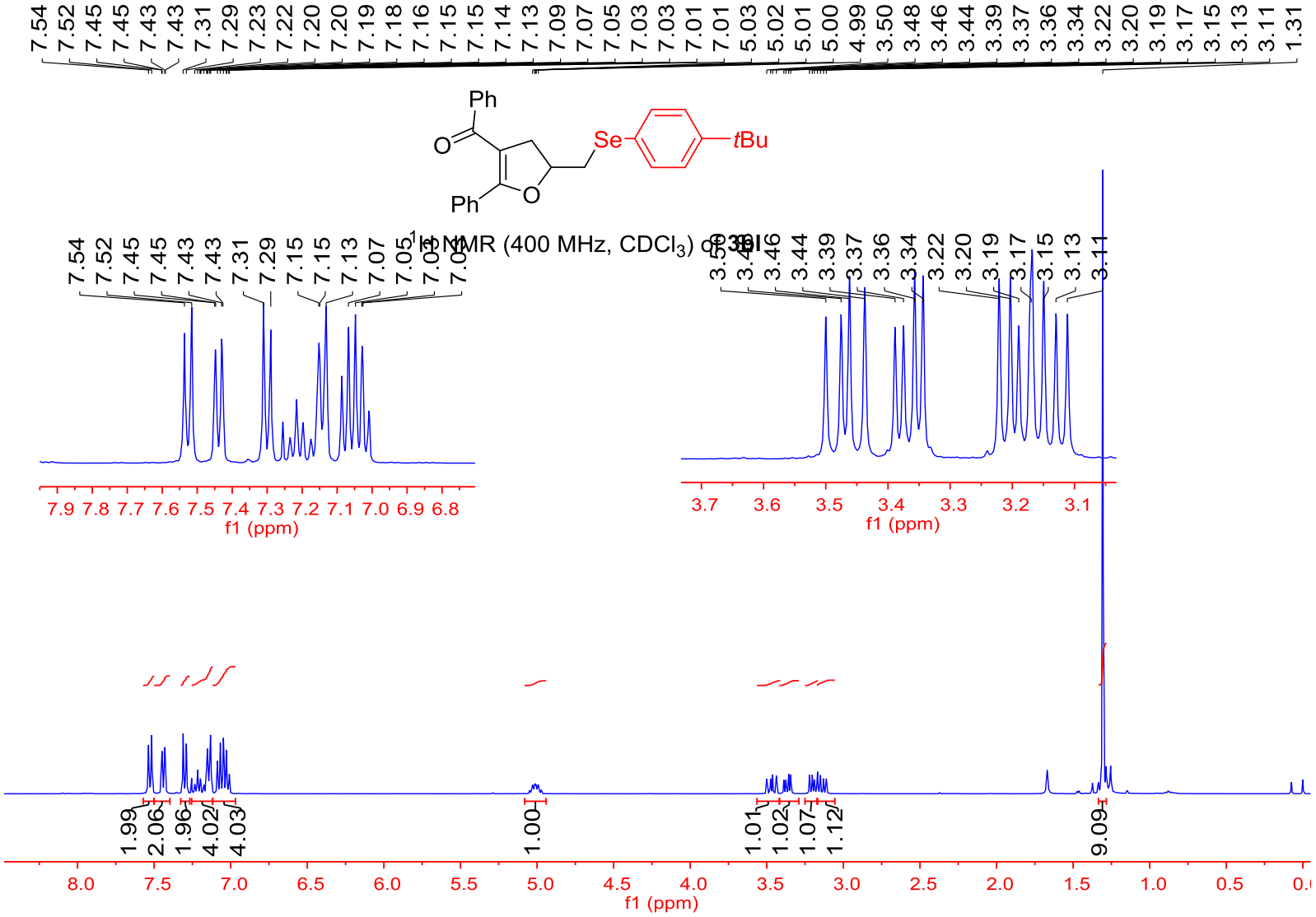
^{1}H NMR (400 MHz, $CDCl_3$) of **3bk**

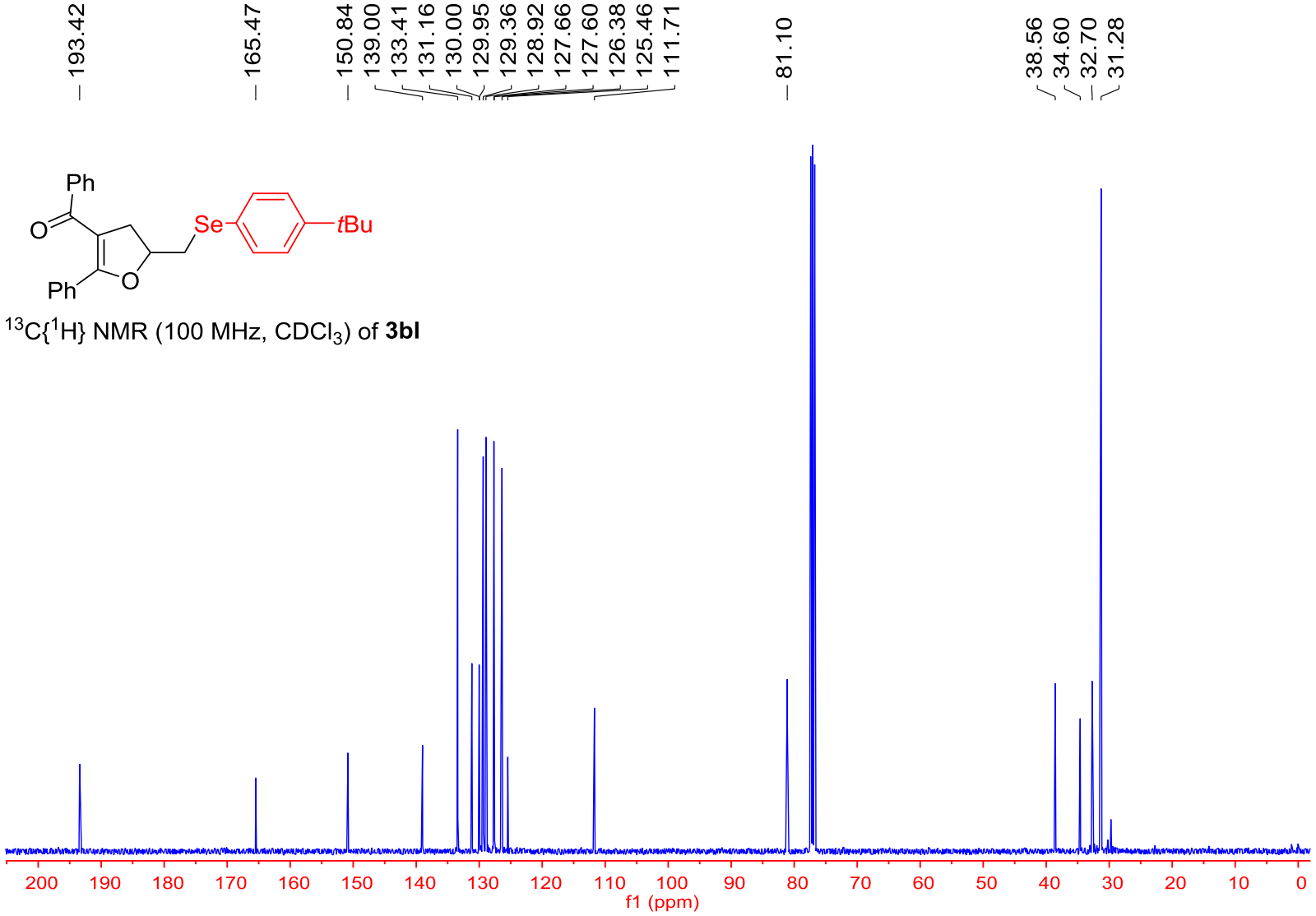


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bk**

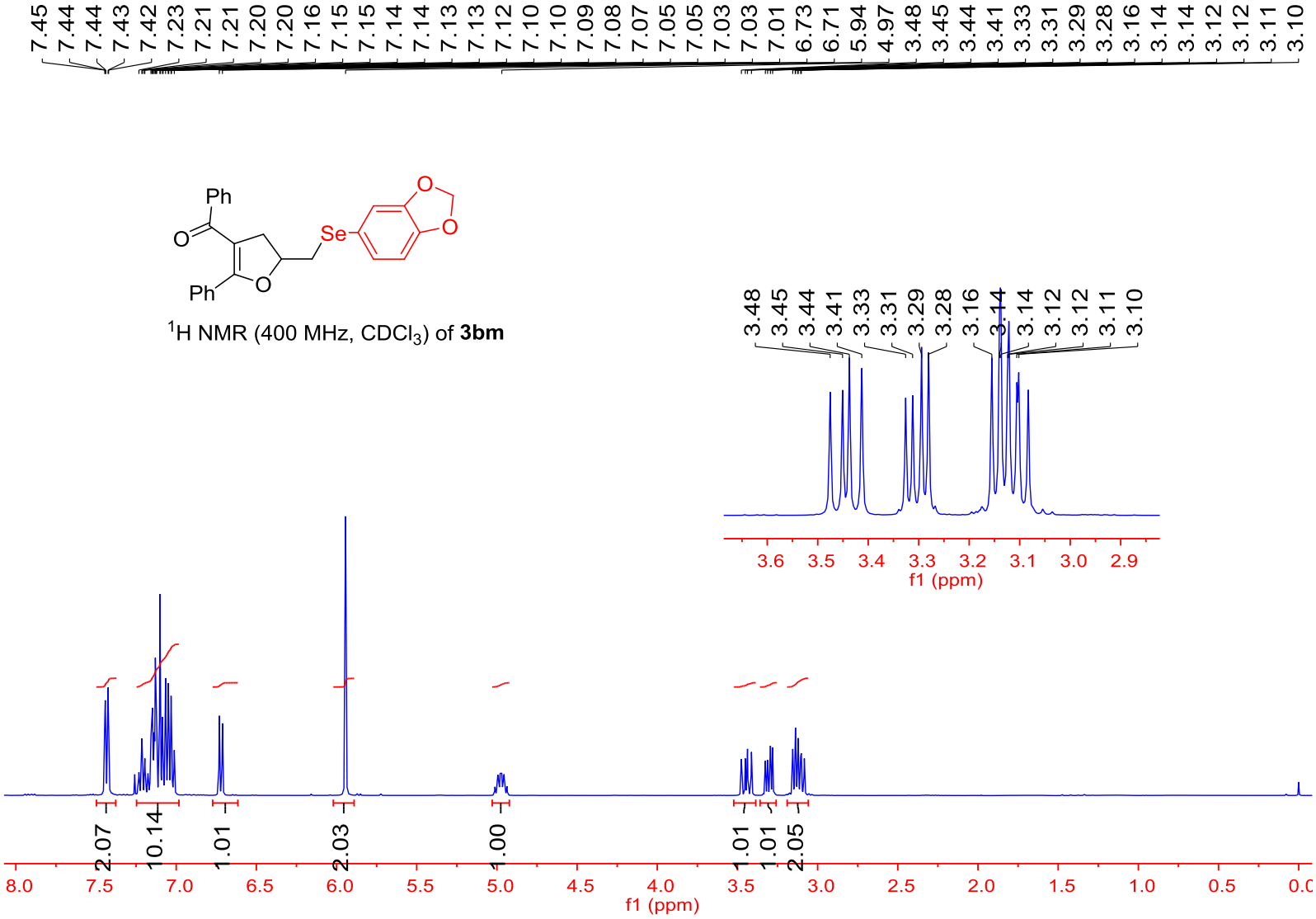


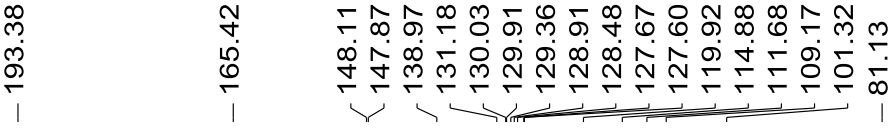
^{19}F NMR (376 MHz, $CDCl_3$) of **3bk**

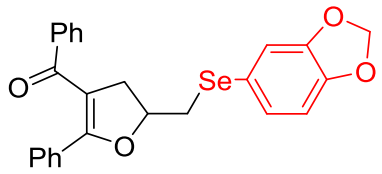

Ph
O
Se
tBu
Ph
O
1H NMR (400 MHz, CDCl3)
f1 (ppm)
1.99
2.06
1.96
4.02
4.03
1.00
1.01
1.02
1.07
1.12
9.09



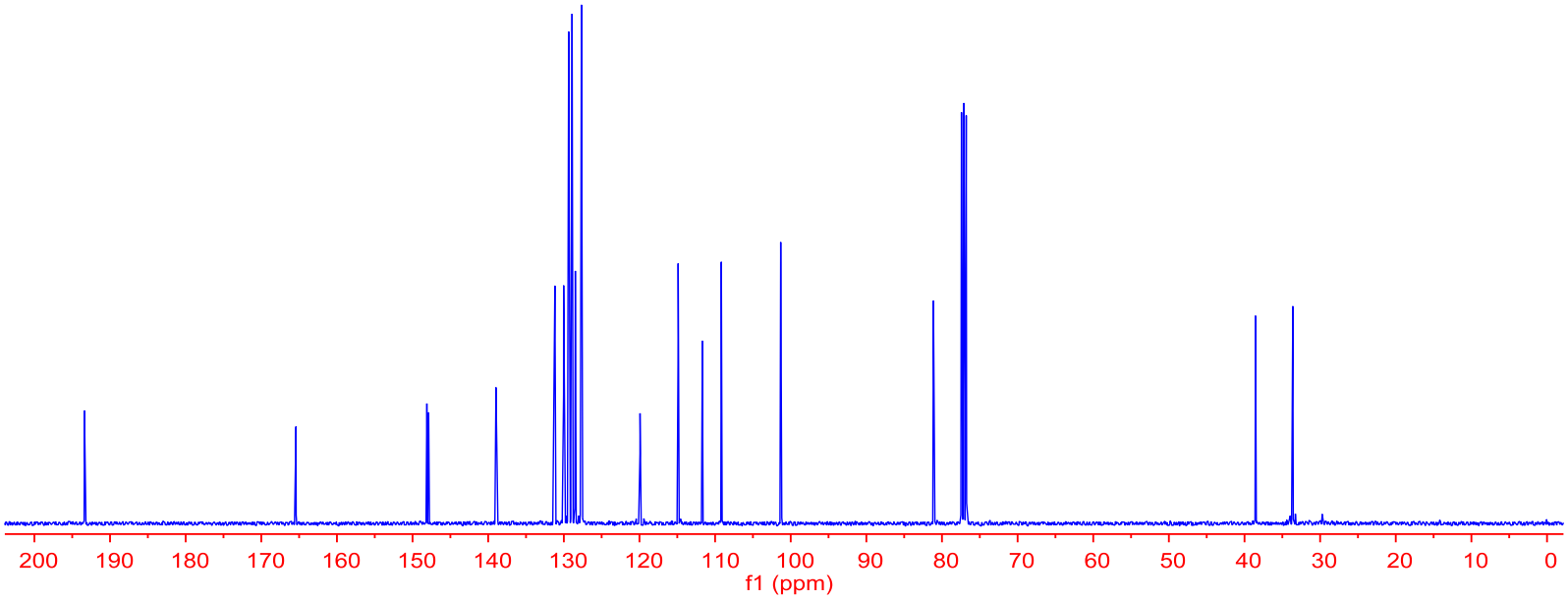
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bl**

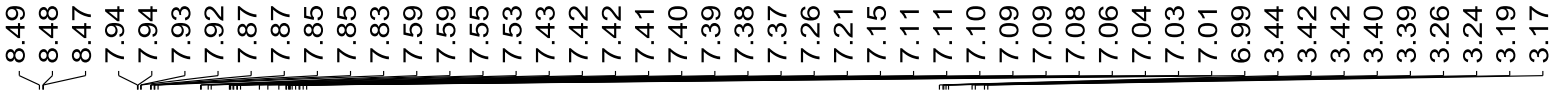

7.45 7.44 7.44 7.43 7.42 7.23 7.21 7.21 7.20 7.20 7.16 7.15 7.15 7.14 7.14 7.13 7.13 7.12 7.10 7.10 7.09 7.08 7.07 7.05 7.05 7.03 7.03 7.01 6.73 6.71 5.94 4.97 3.48 3.45 3.44 3.41 3.33 3.31 3.29 3.28 3.16 3.14 3.14 3.12 3.12 3.11 3.10
Ph
O
Se
O
O
Ph
O
1H NMR (400 MHz, CDCl3) of 3bm
3.48 3.45 3.44 3.41 3.33 3.31 3.29 3.28 3.16 3.14 3.14 3.12 3.12 3.11 3.10
3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9
f1 (ppm)
2.07 10.14 1.01 2.03 1.00 1.01 1.01 2.05
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

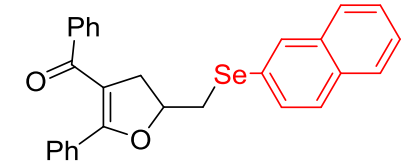




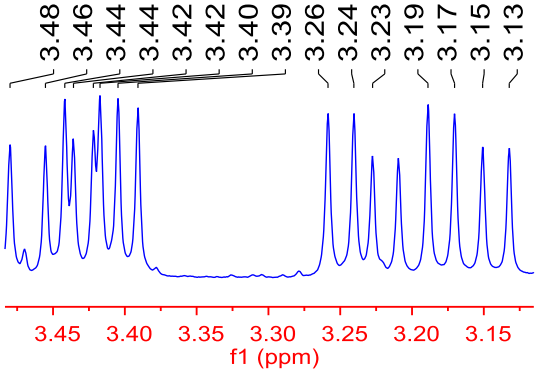
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bm**

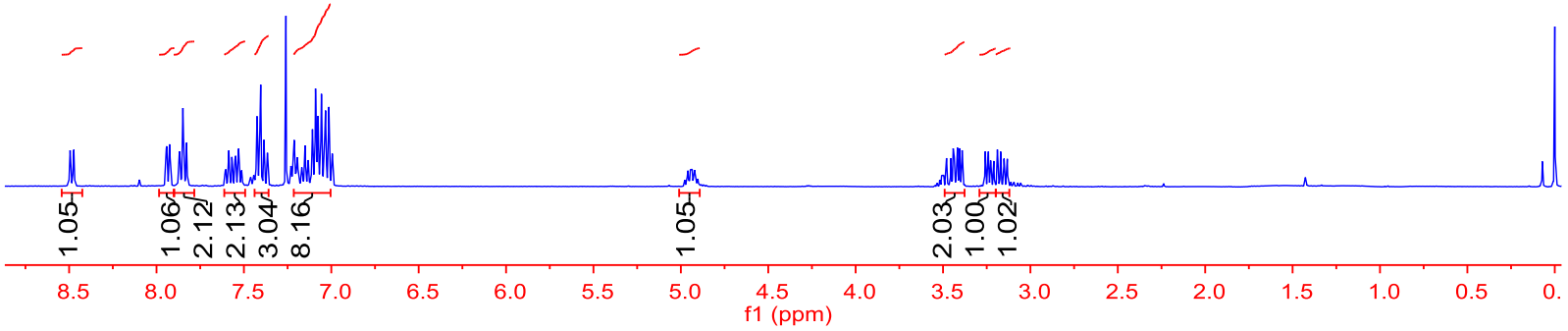


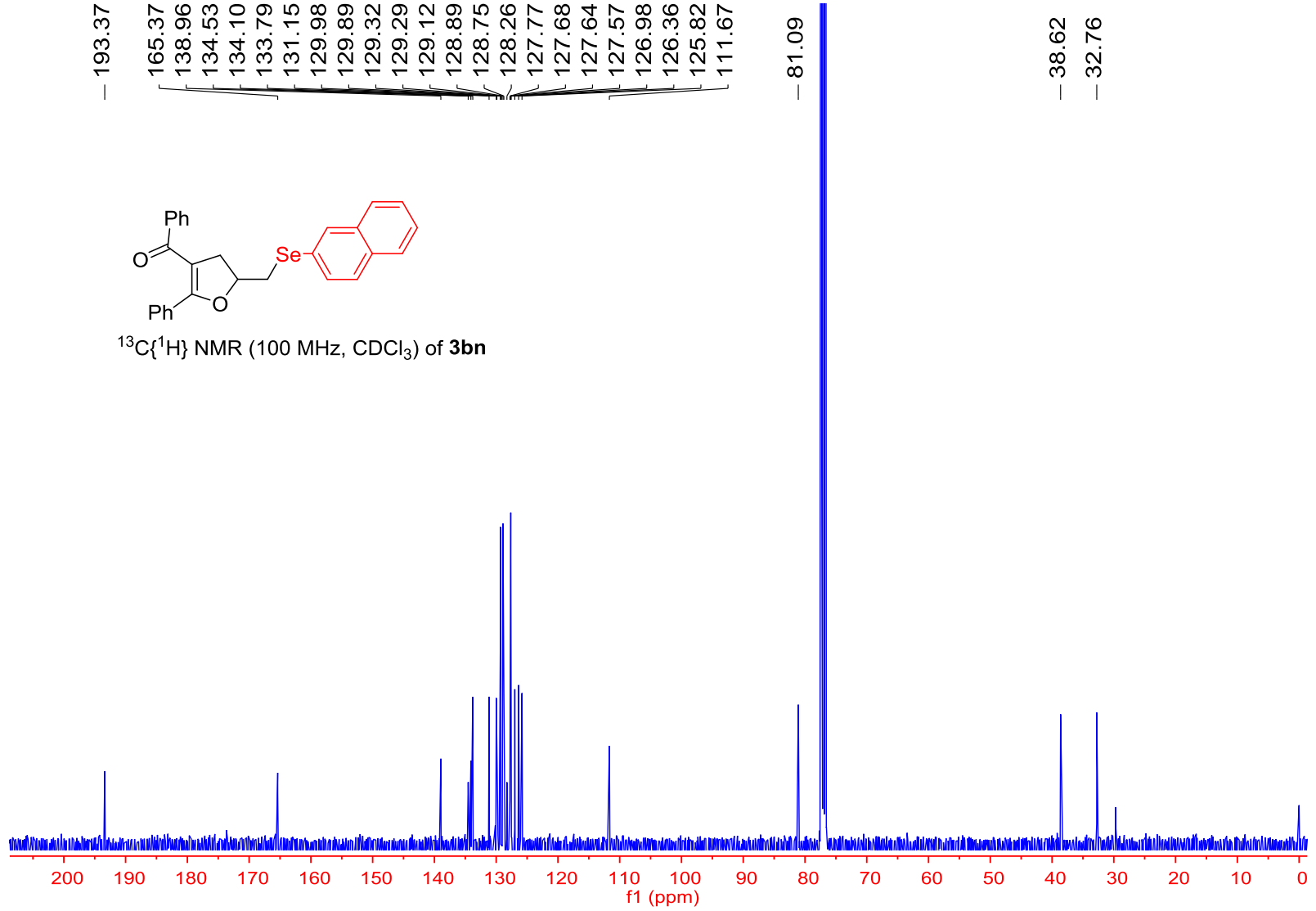




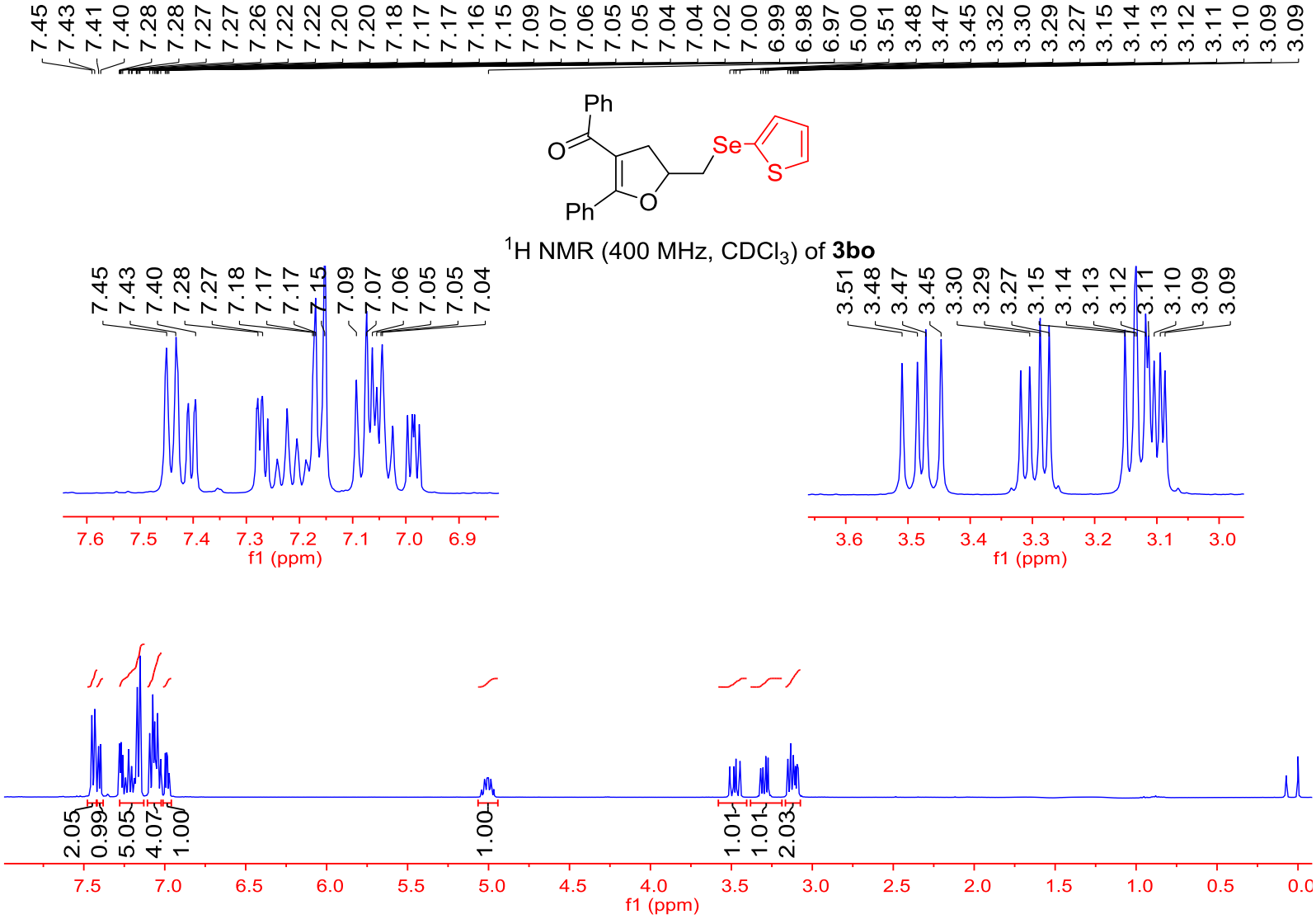
^{1}H NMR (400 MHz, $CDCl_3$) of **3bn**



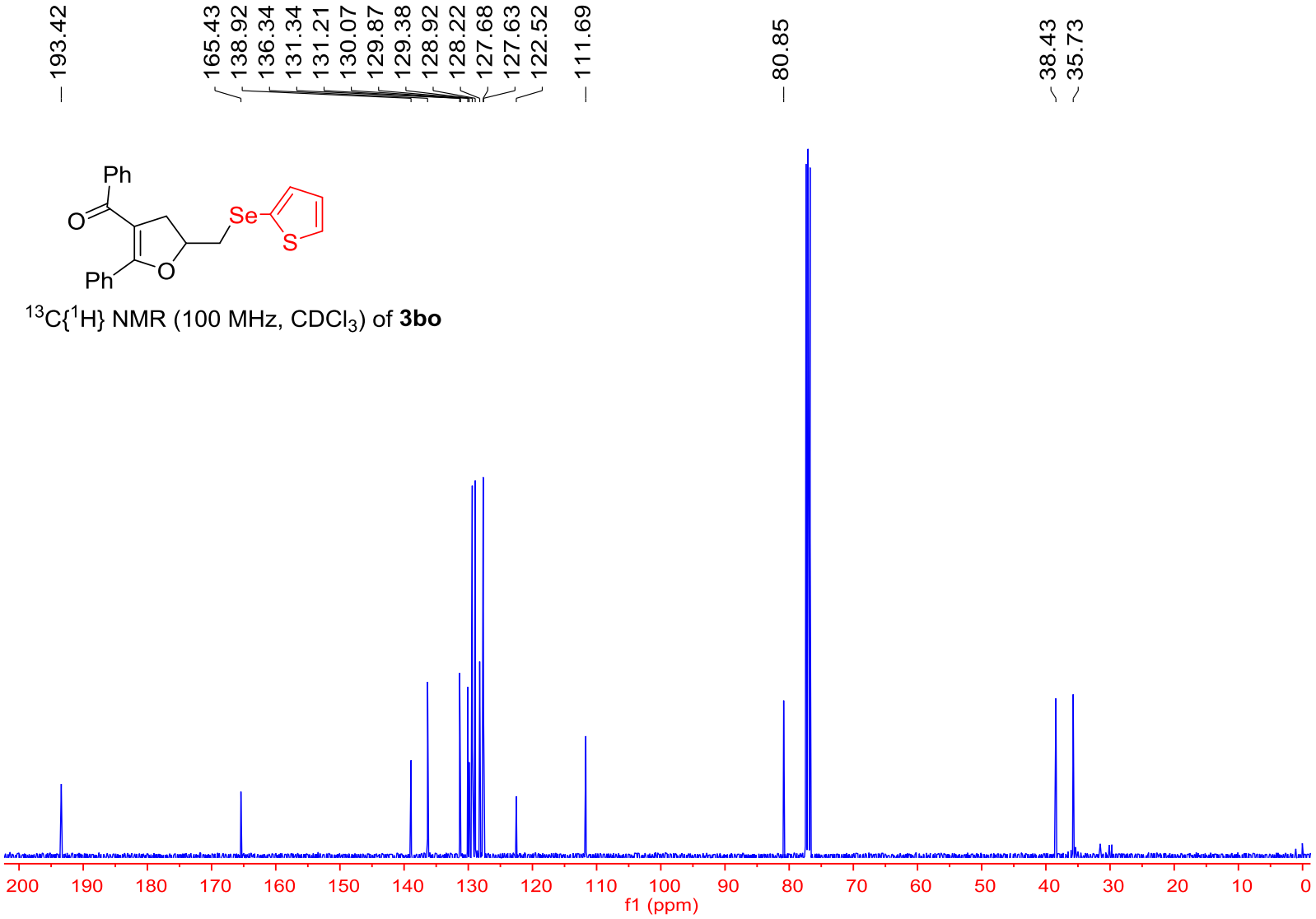




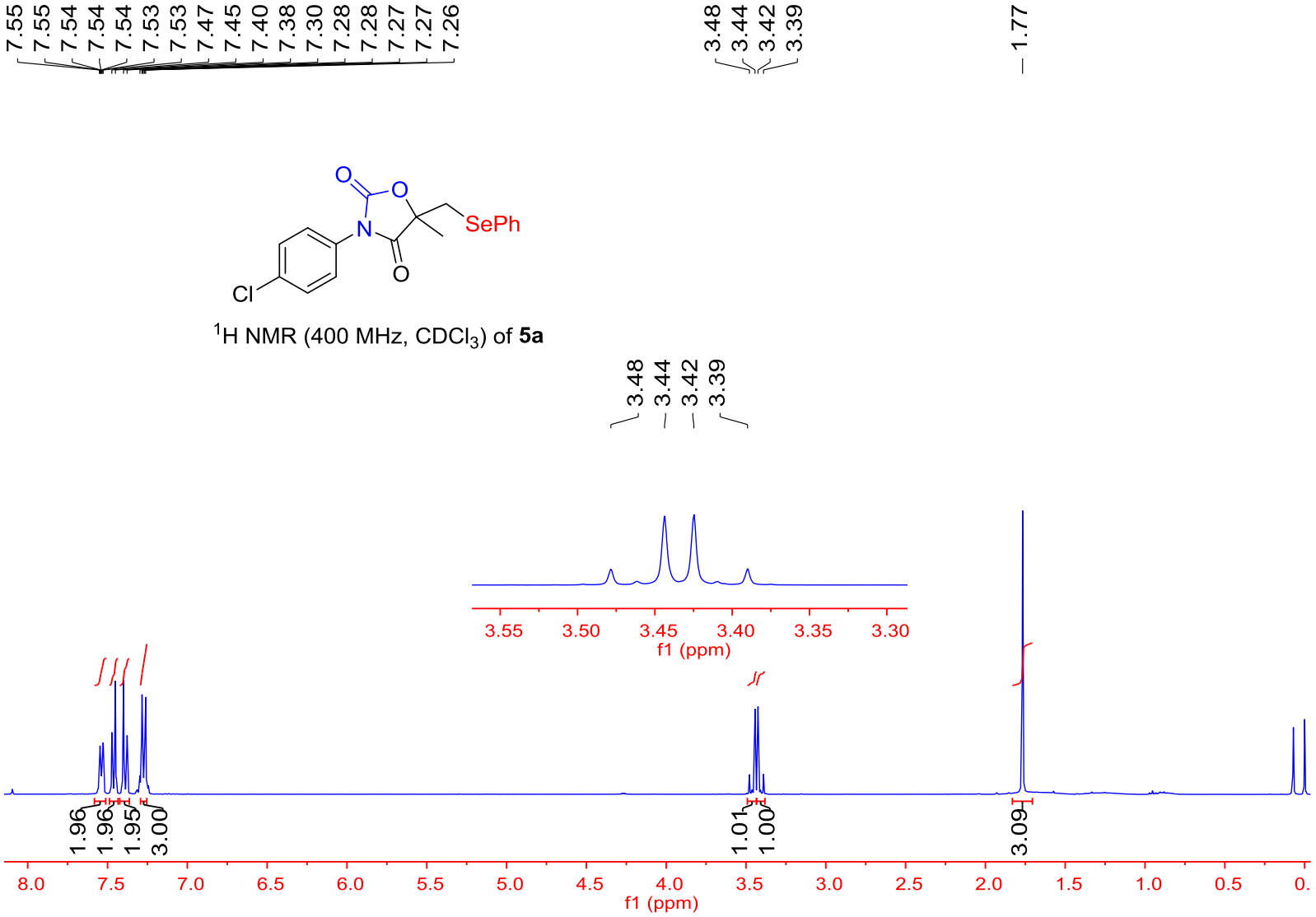
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bn**



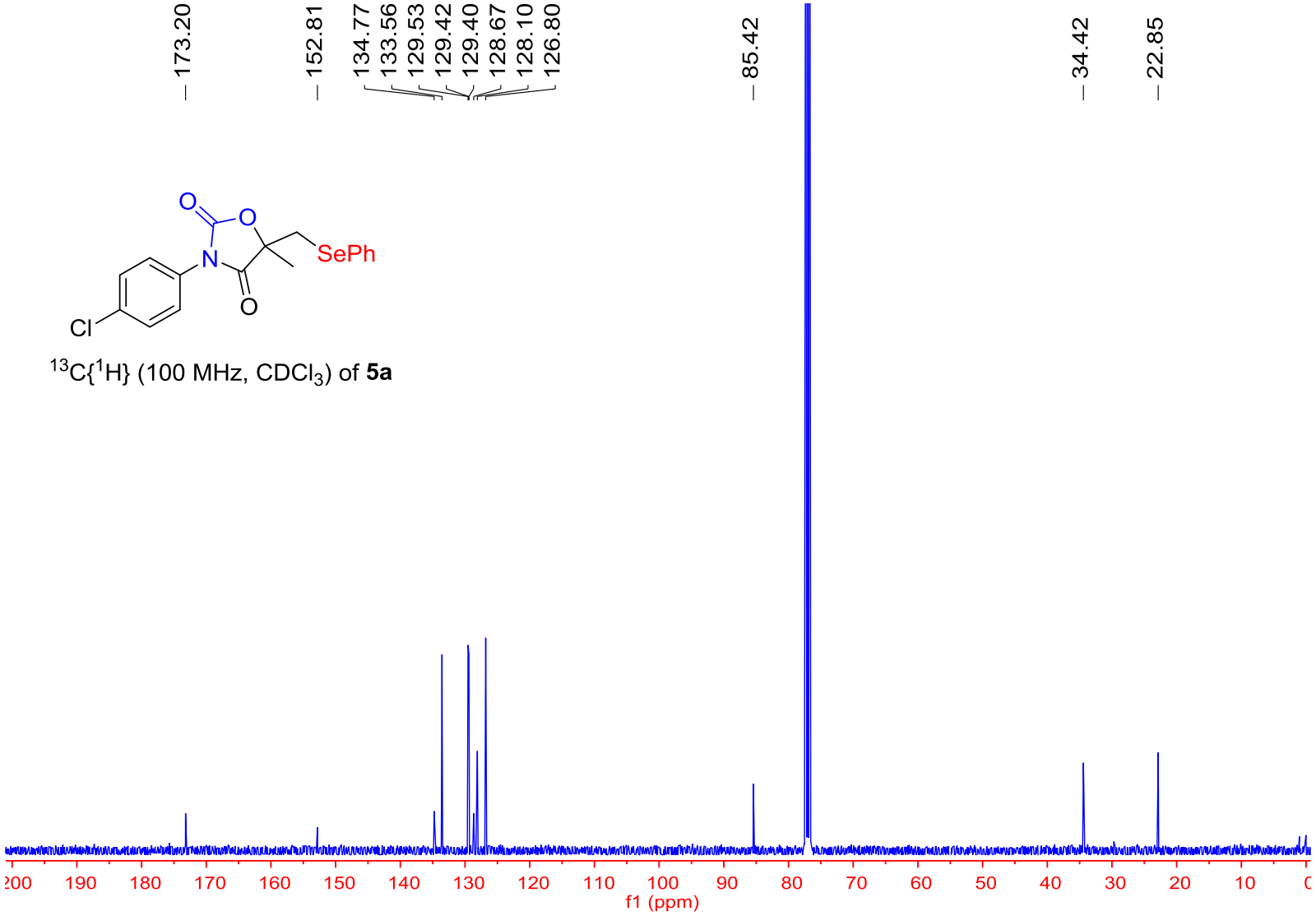
^{1}H NMR (400 MHz, $CDCl_3$) of **3bo**



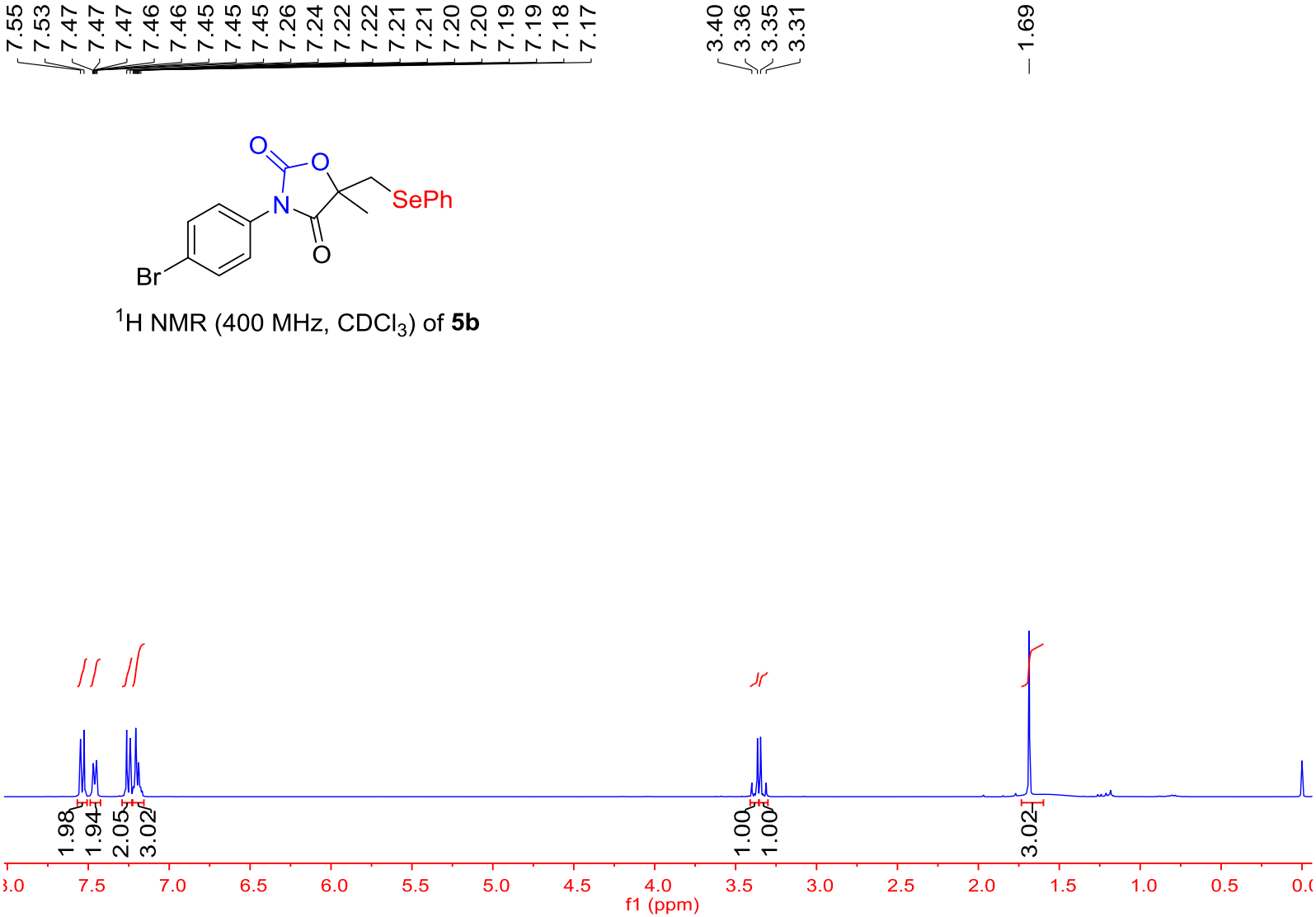
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **3bo**



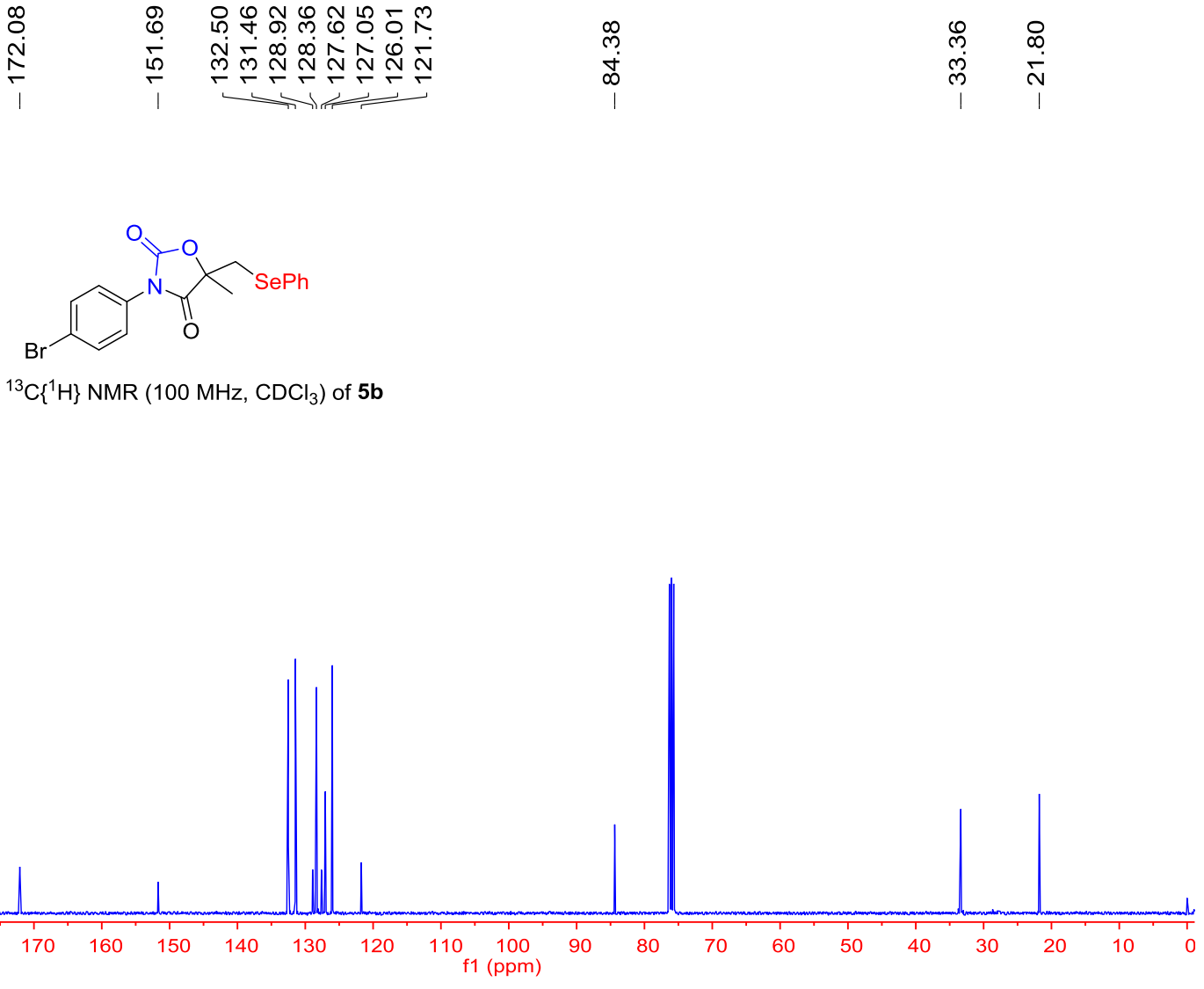
^{1}H NMR (400 MHz, $CDCl_3$) of **5a**



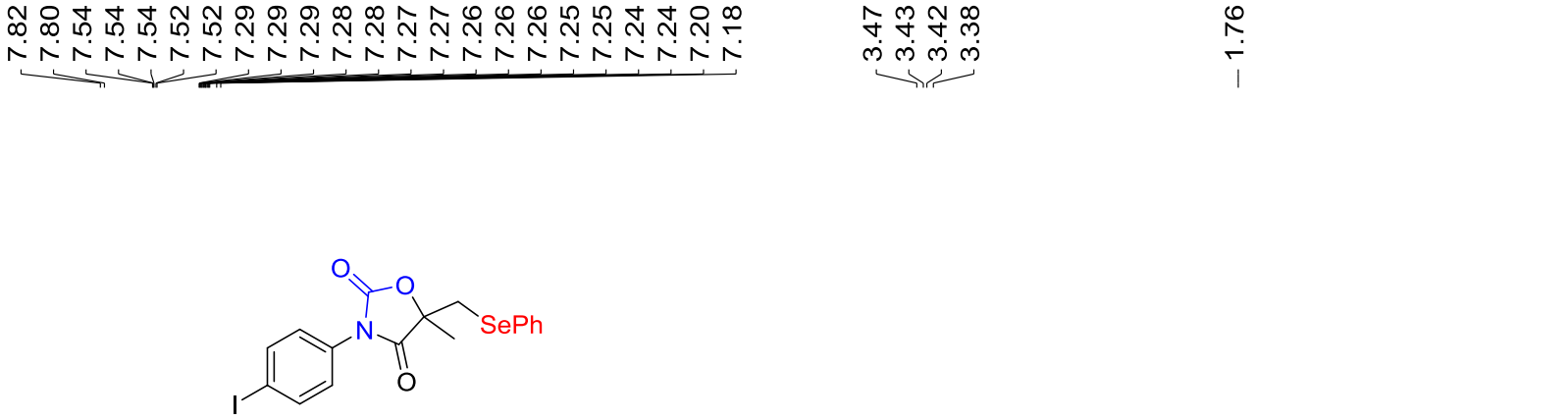
$^{13}C\{^{1}H\}$ (100 MHz, $CDCl_3$) of **5a**



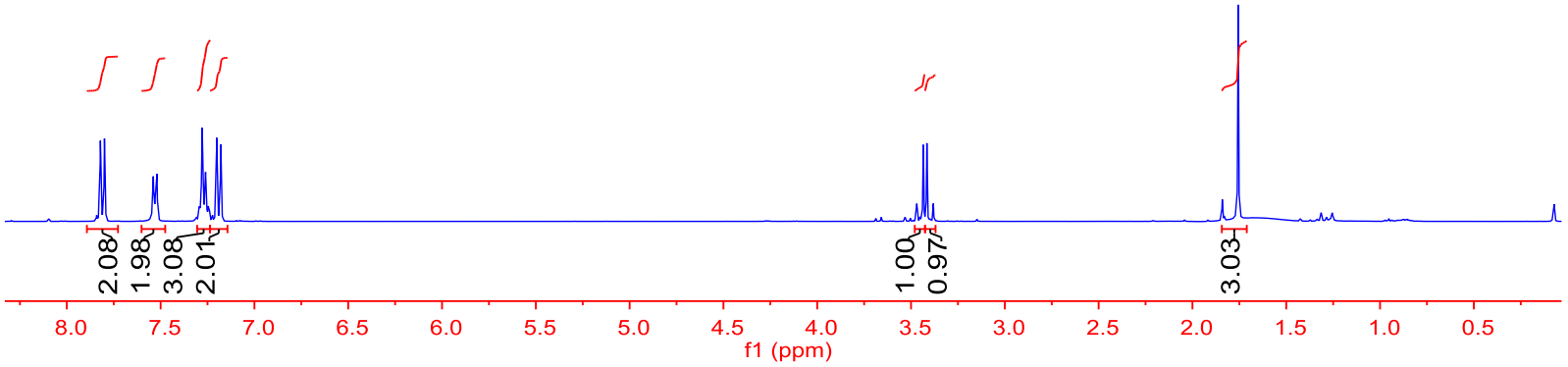
^{1}H NMR (400 MHz, $CDCl_3$) of **5b**

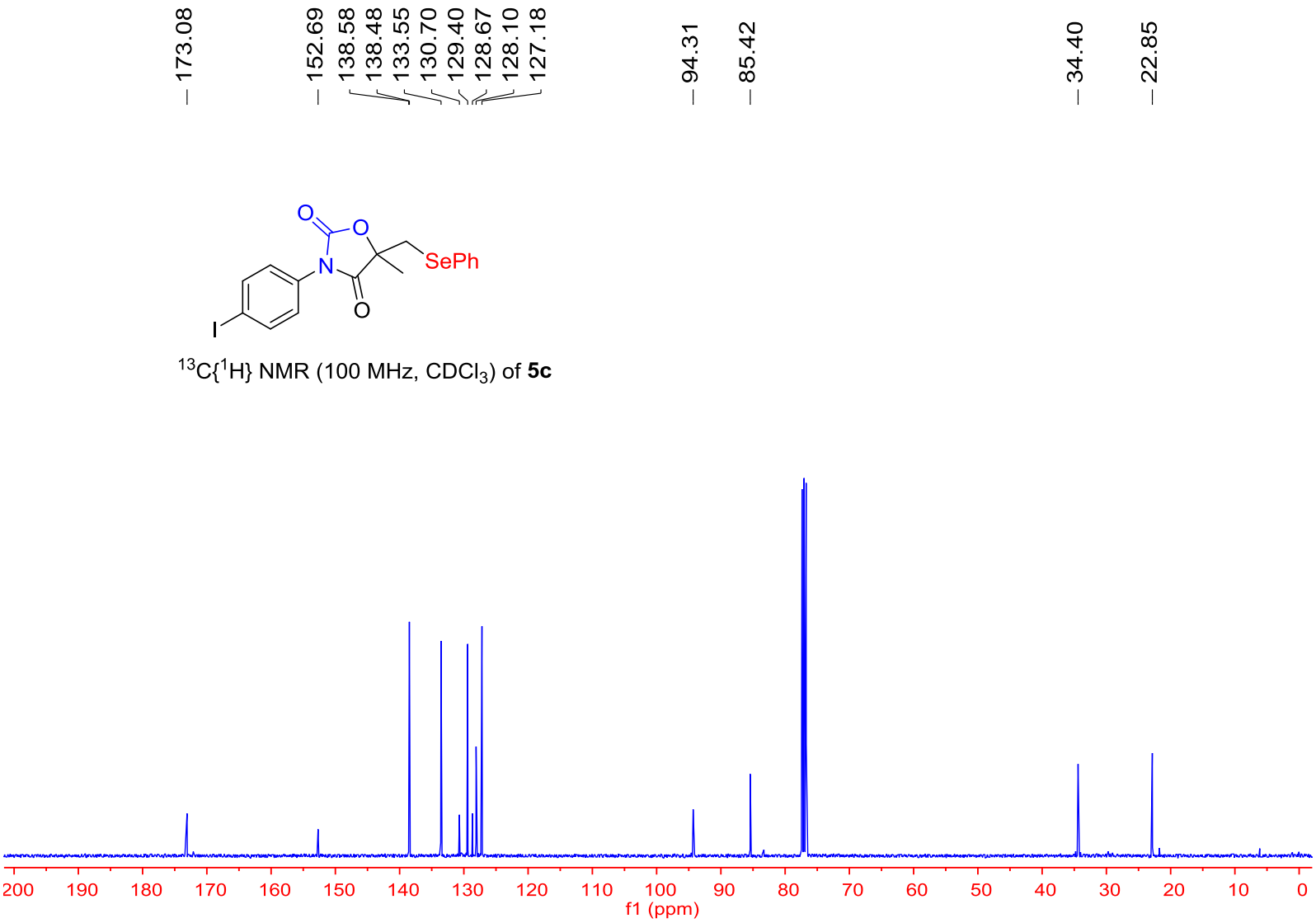


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5b**

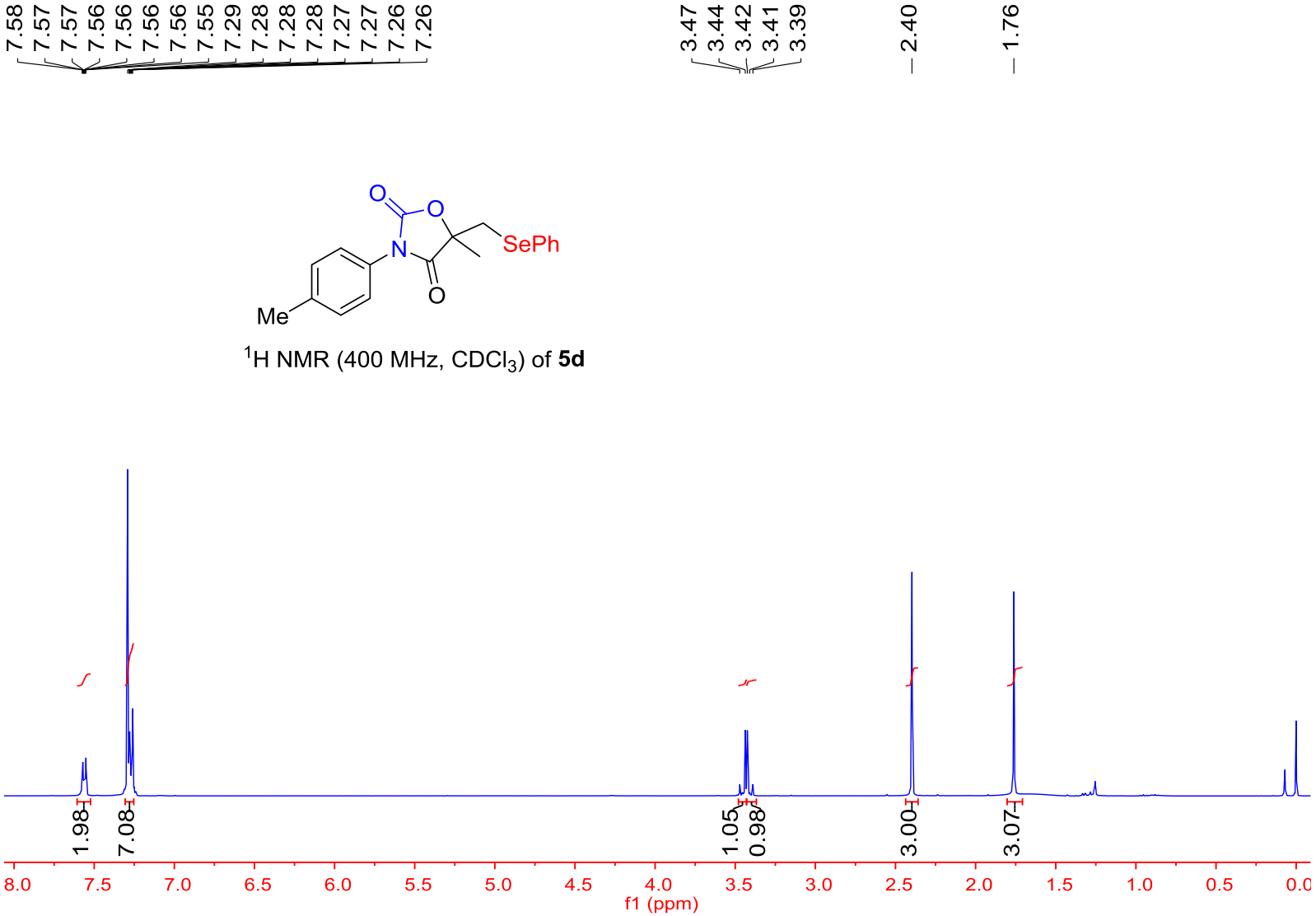


^{1}H NMR (400 MHz, $CDCl_3$) of **5c**

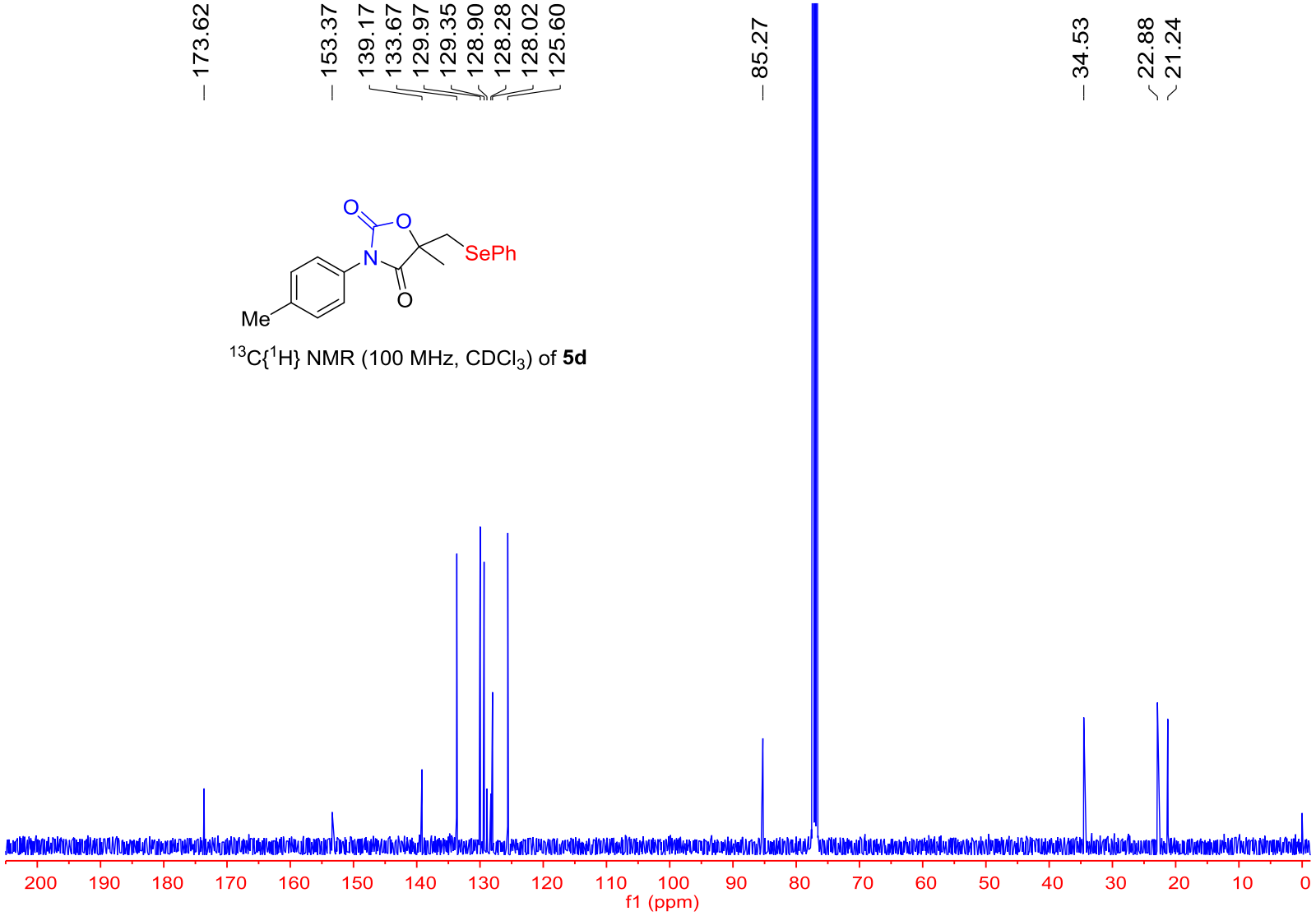




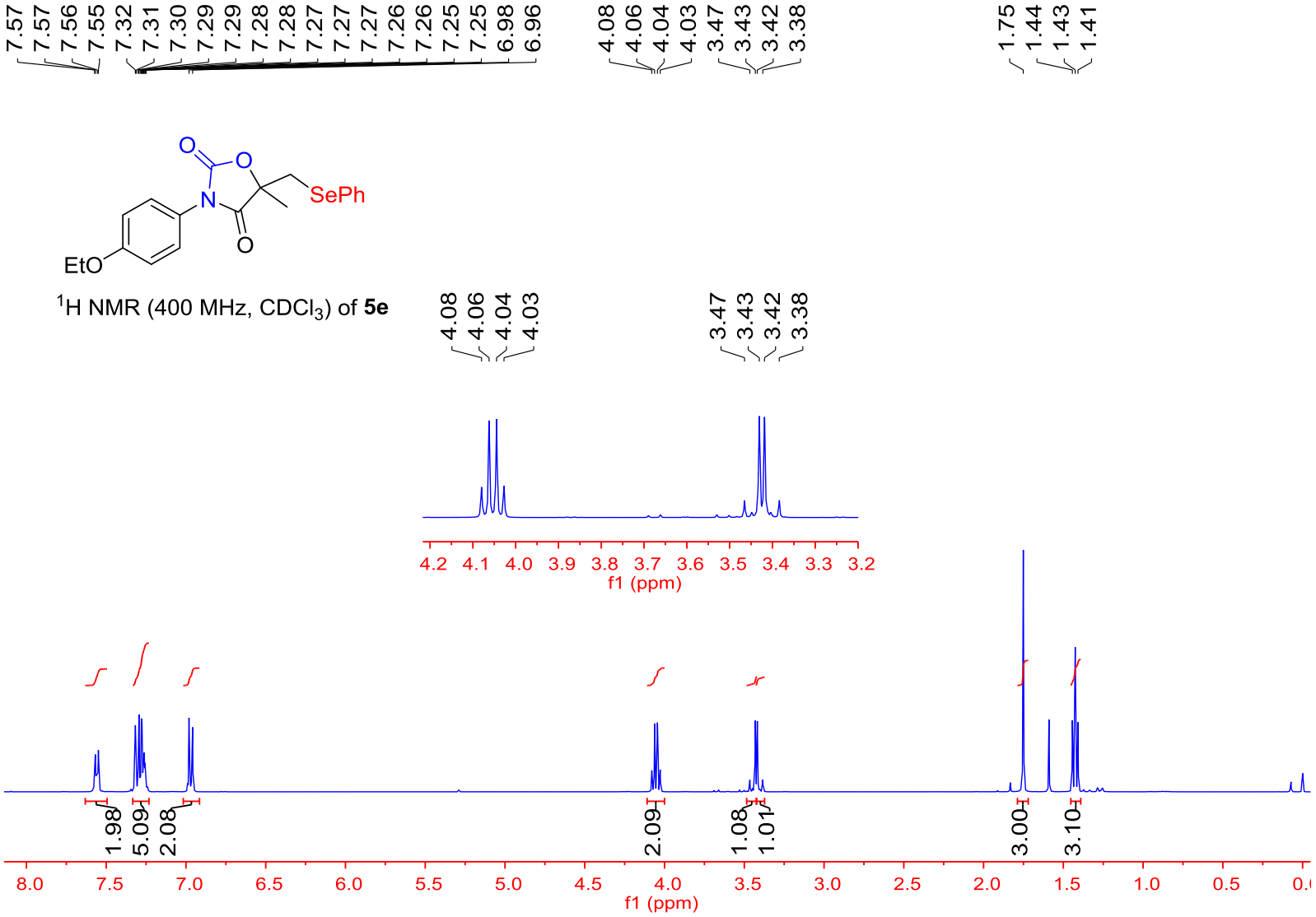
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5c**



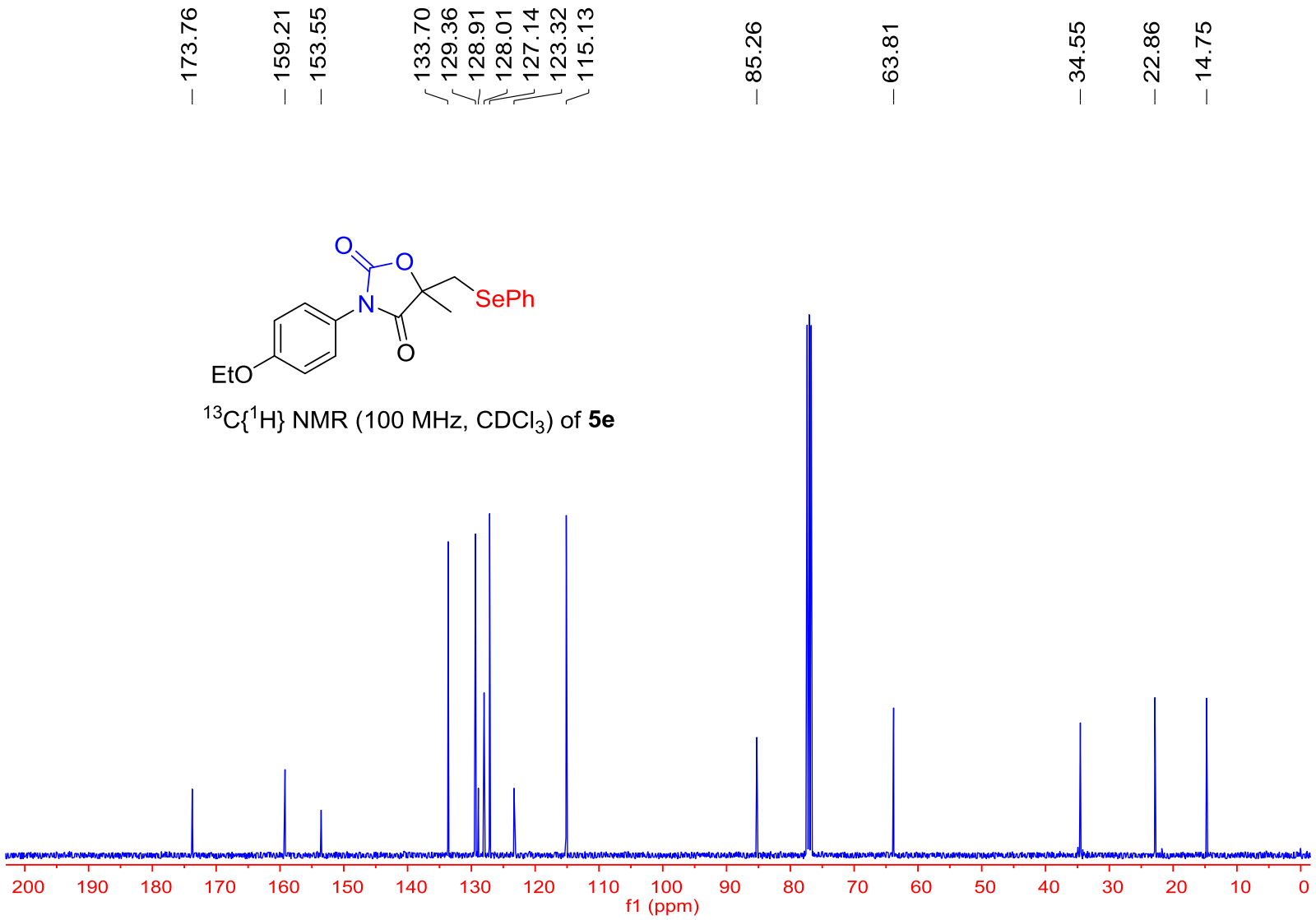
^{1}H NMR (400 MHz, $CDCl_3$) of **5d**



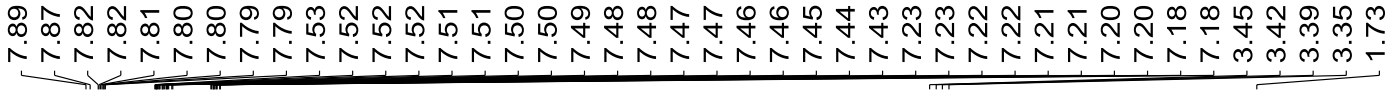
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5d**

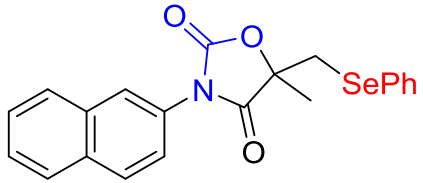


^{1}H NMR (400 MHz, $CDCl_3$) of **5e**

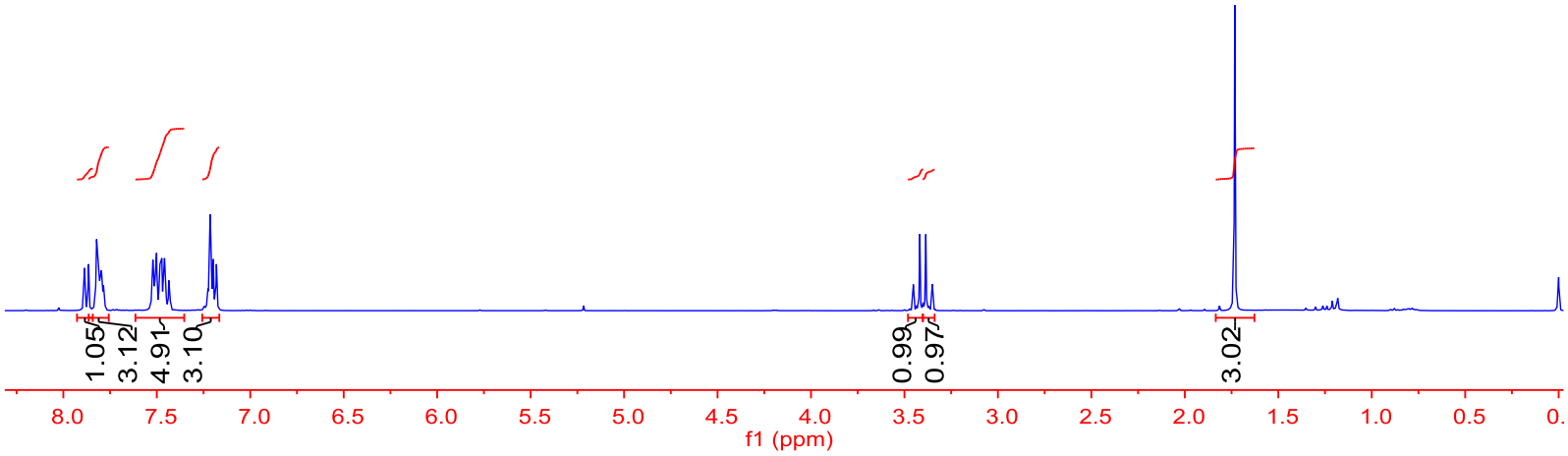


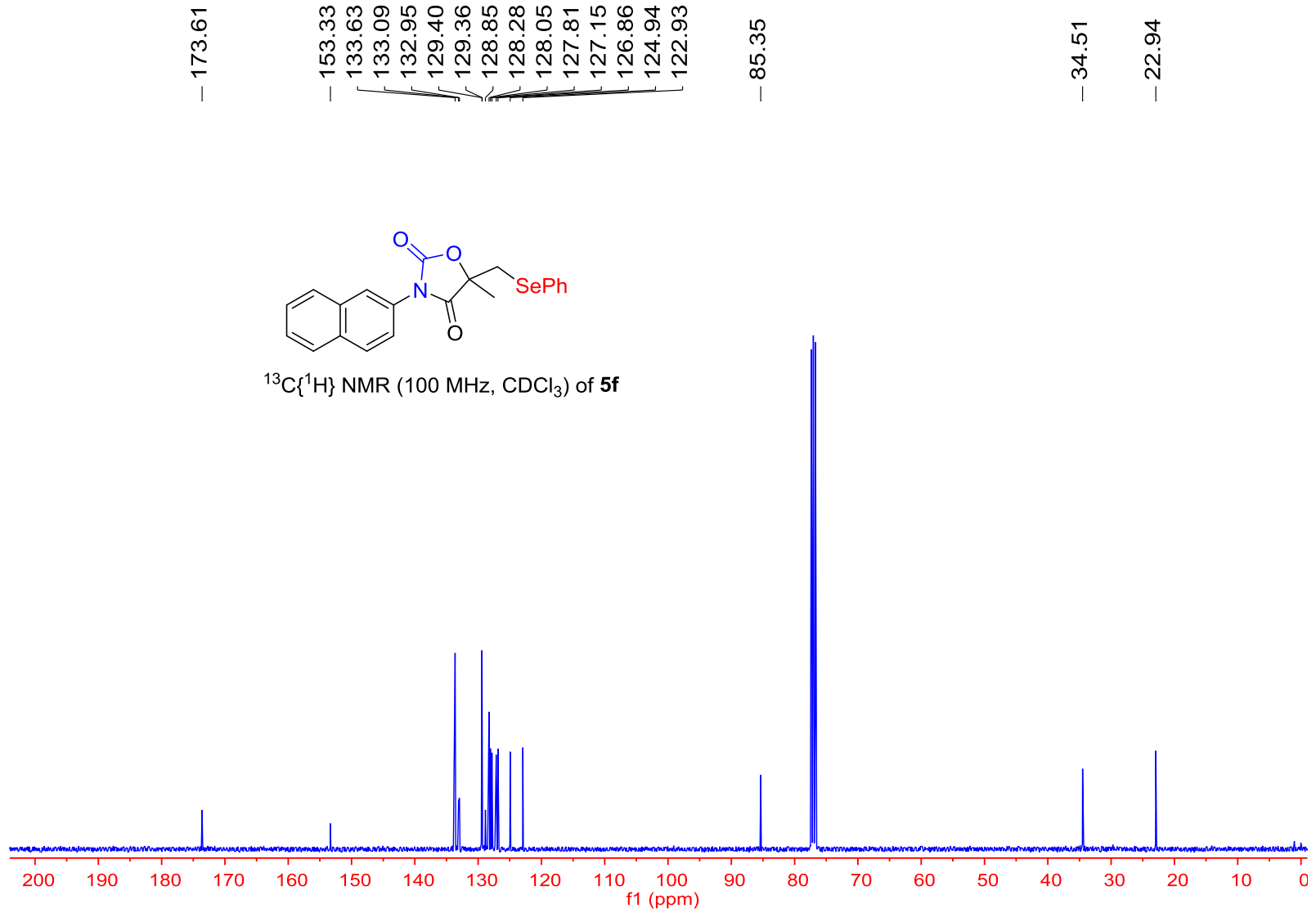
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5e**



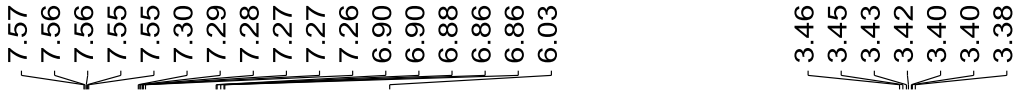


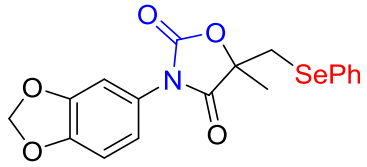
^{1}H NMR (400 MHz, $CDCl_3$) of **5f**



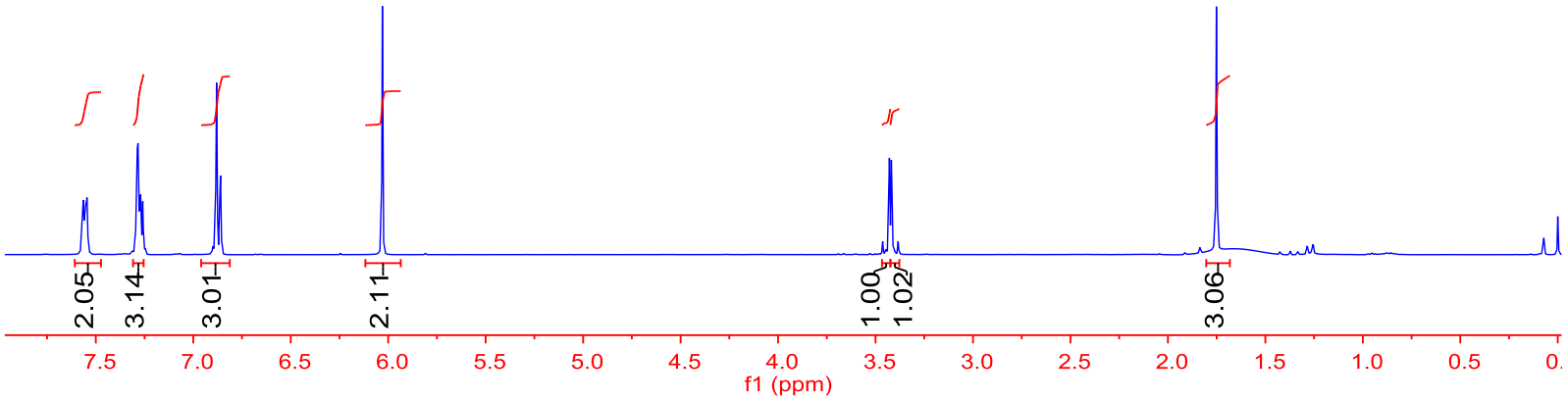


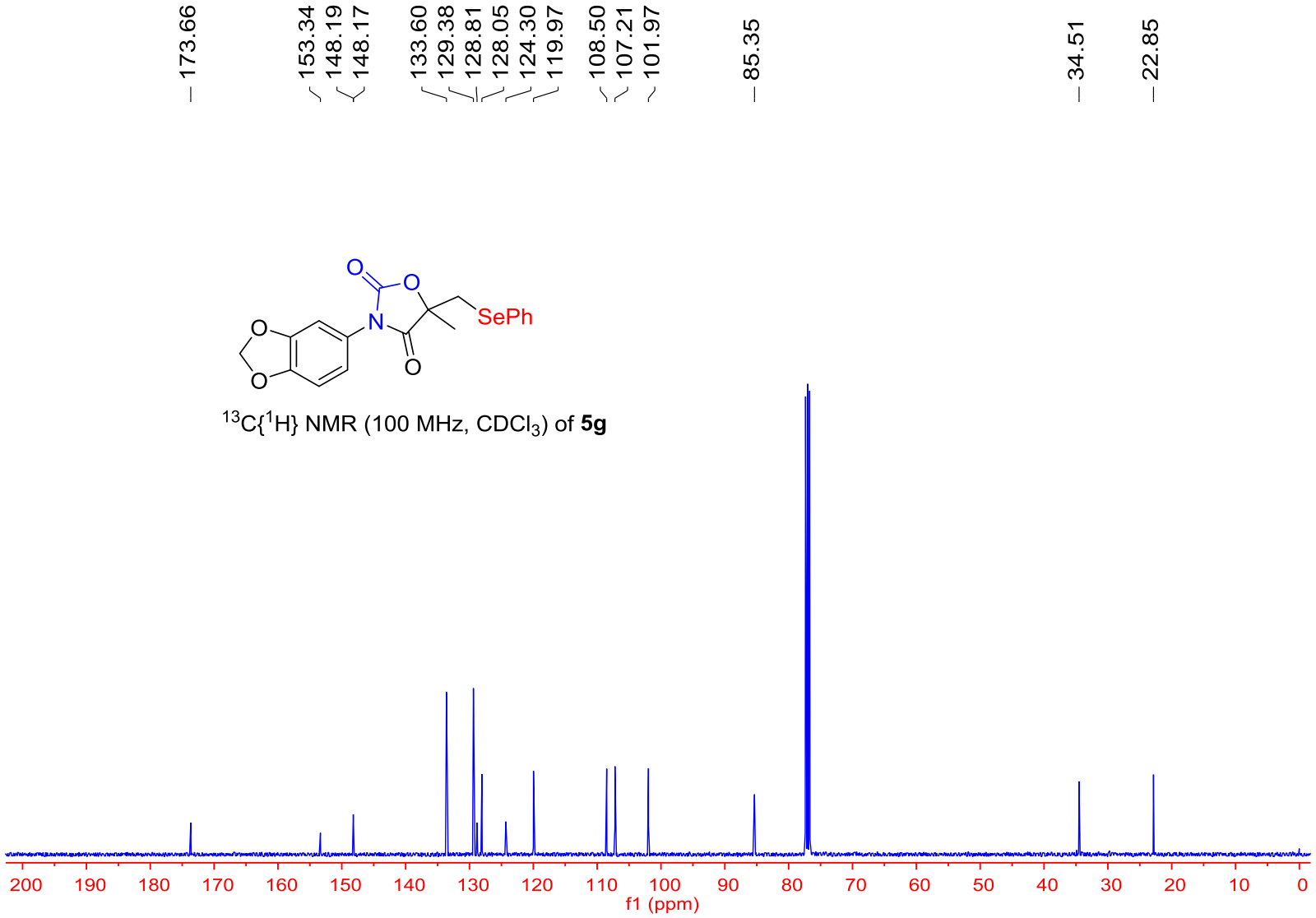
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5f**



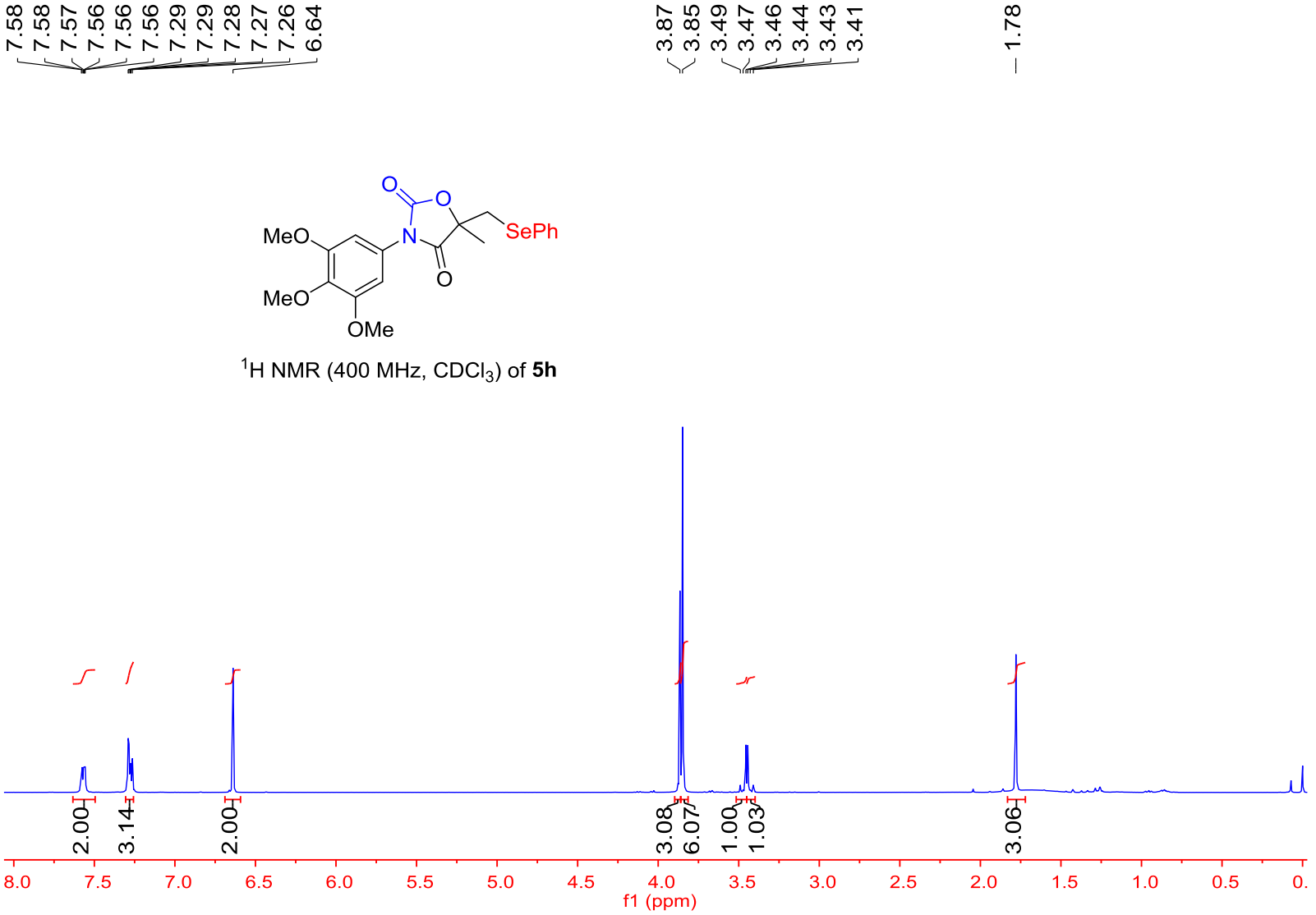


^{1}H NMR (400 MHz, $CDCl_3$) of **5g**

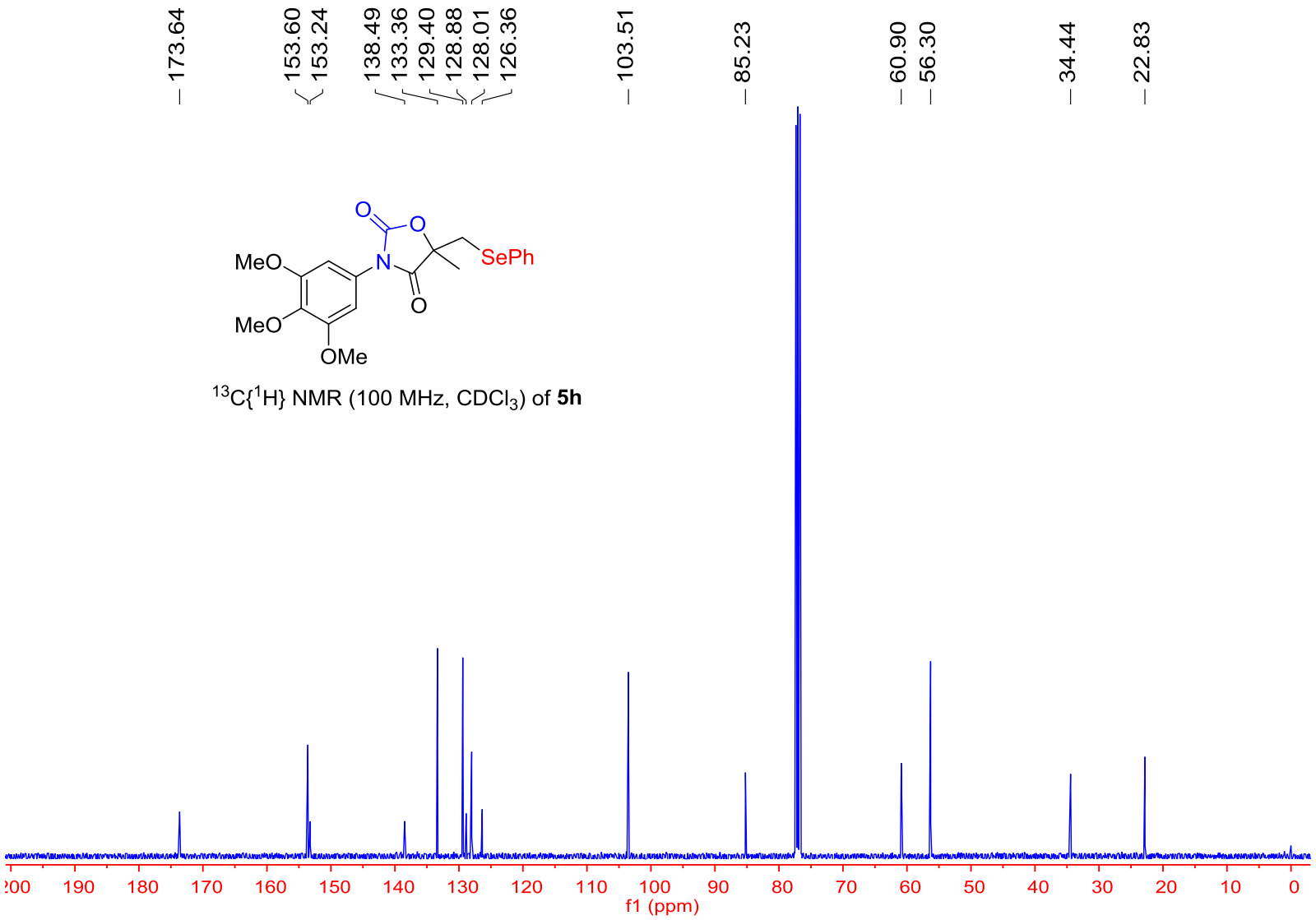




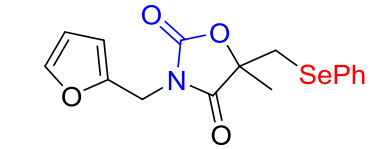
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5g**



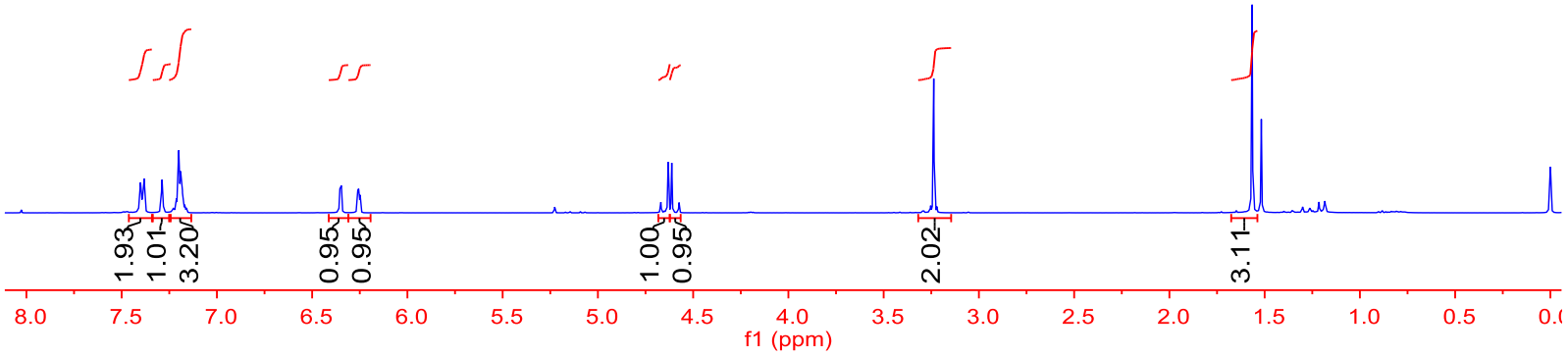
^{1}H NMR (400 MHz, $CDCl_3$) of **5h**

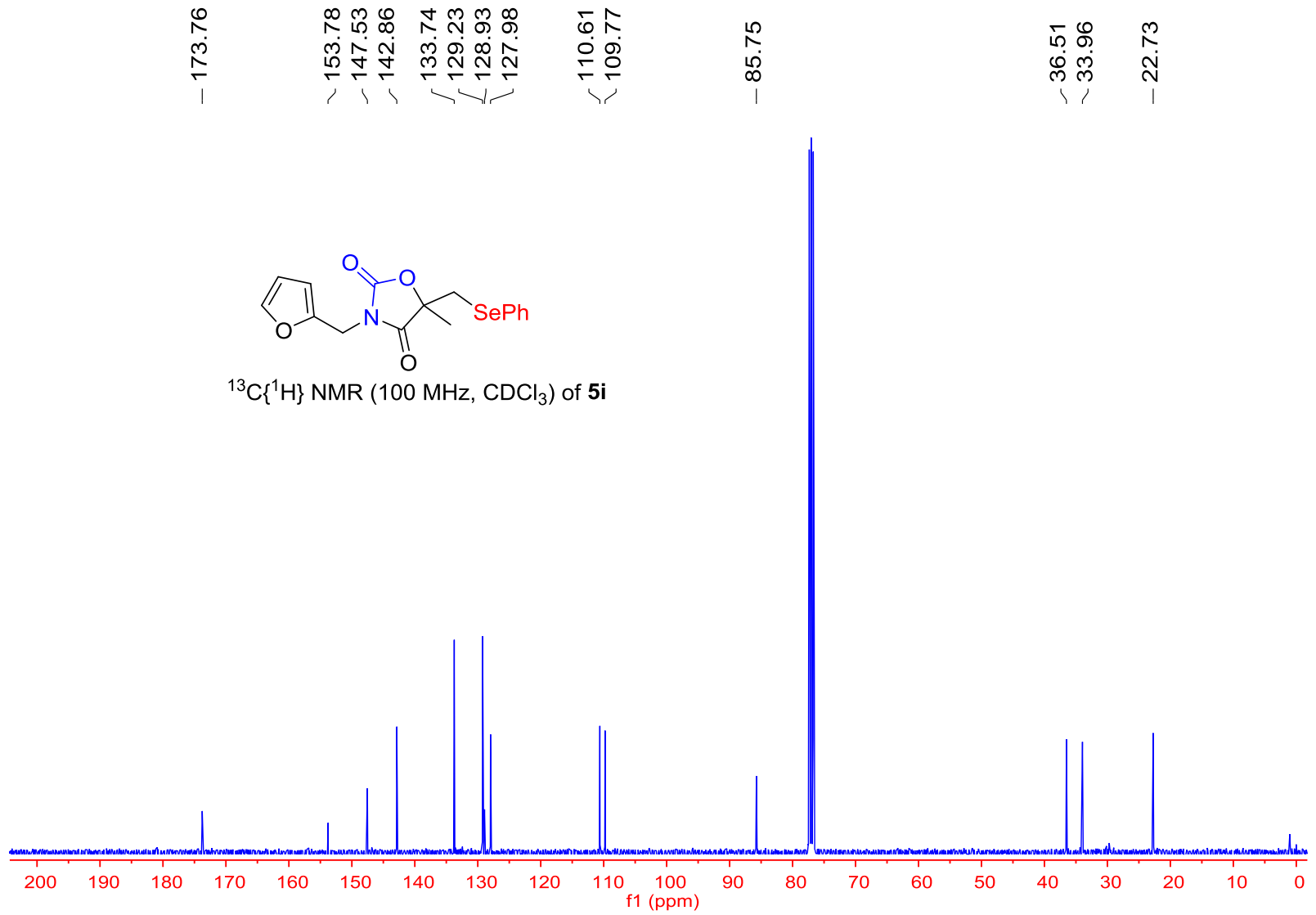


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5h**

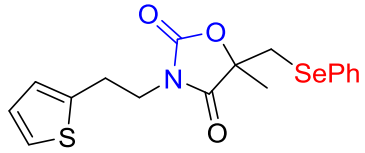


^{1}H NMR (400 MHz, $CDCl_3$) of **5i**

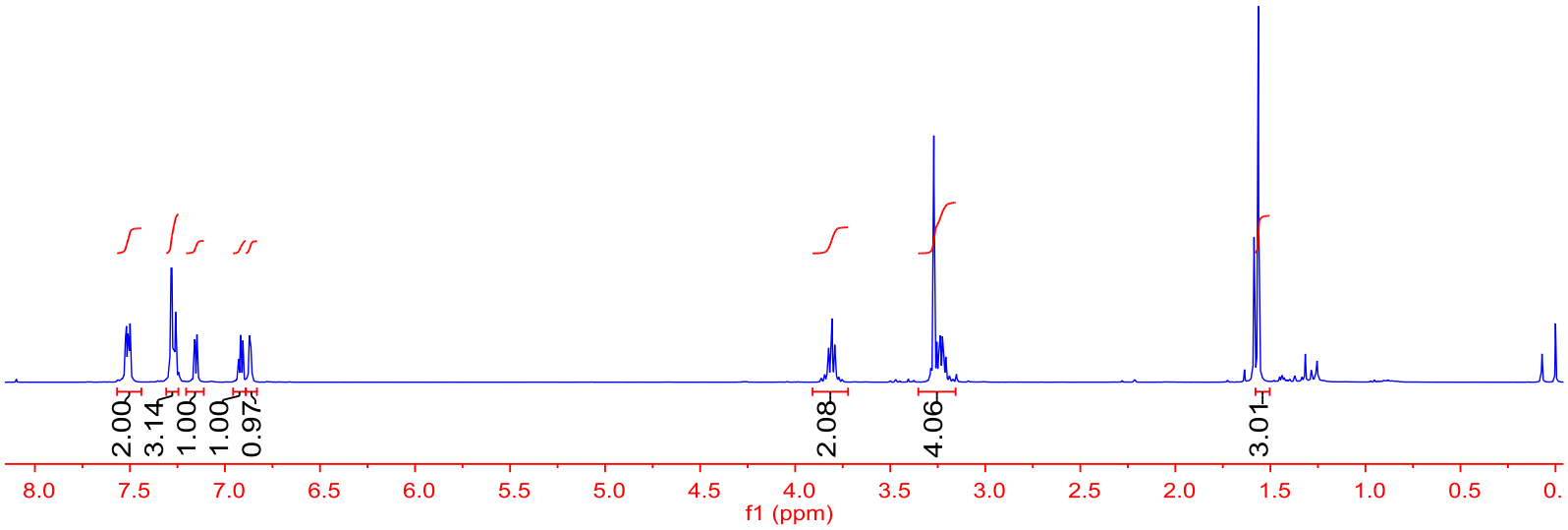


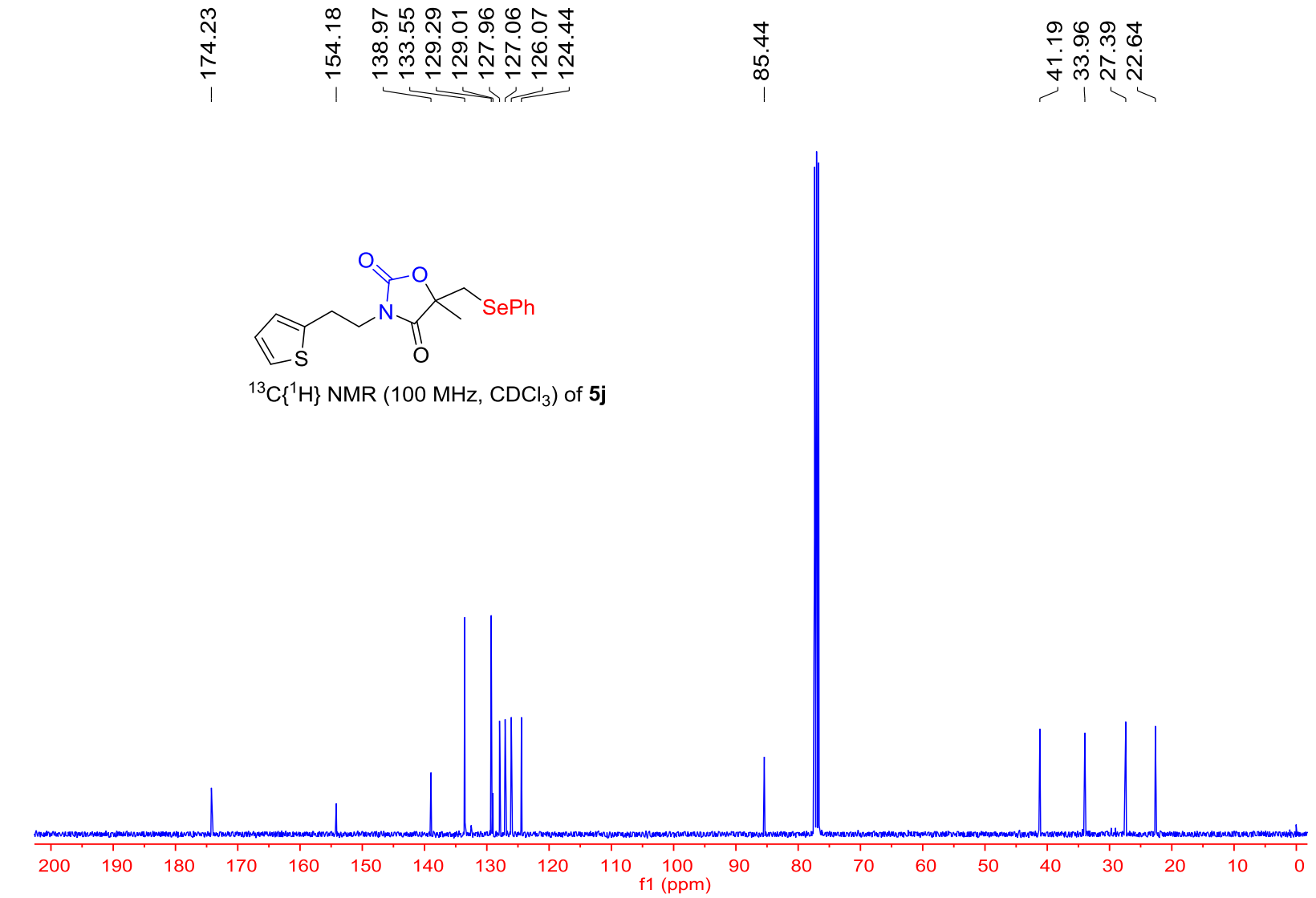


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5i**

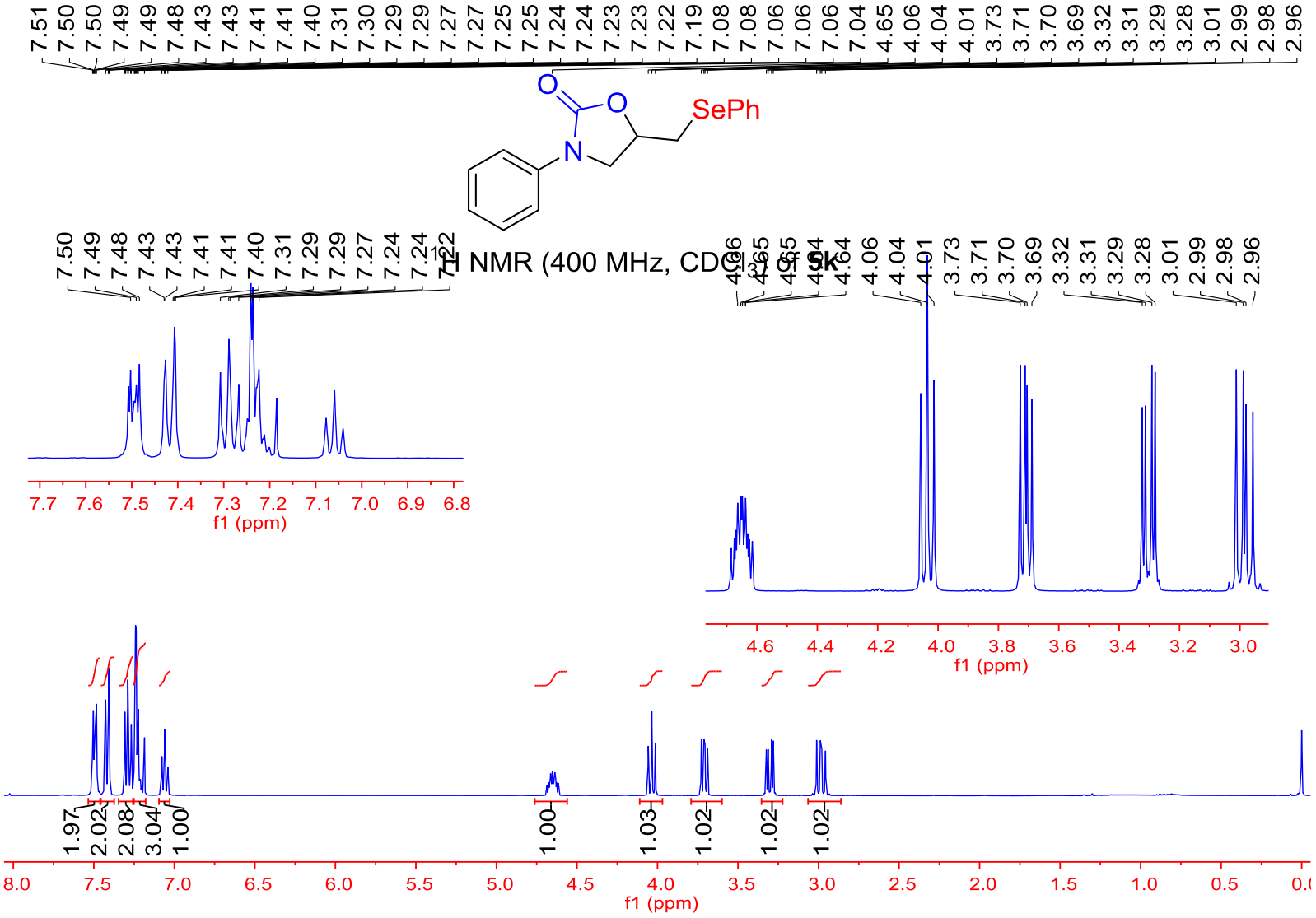


^{1}H NMR (400 MHz, $CDCl_3$) of **5j**

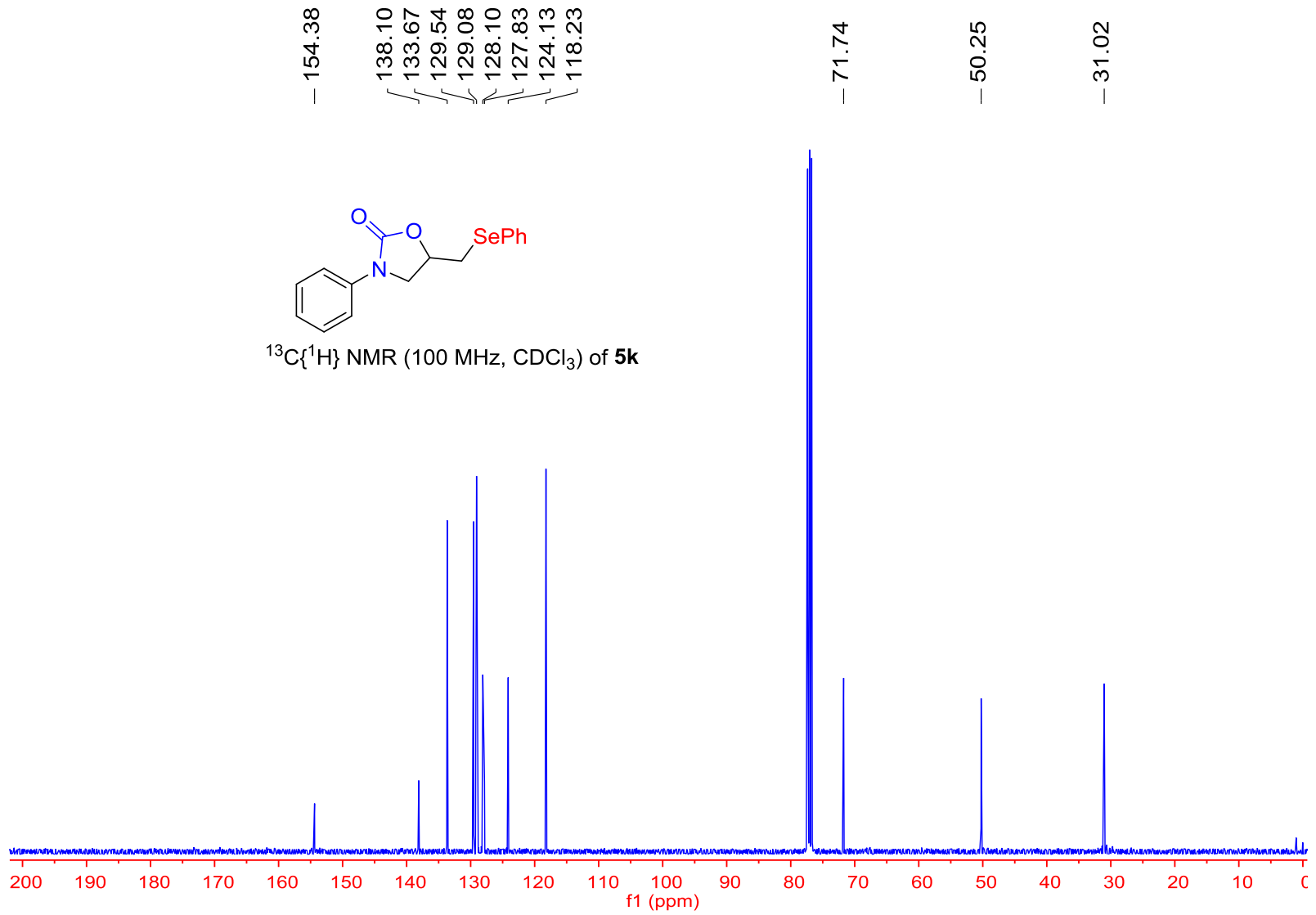




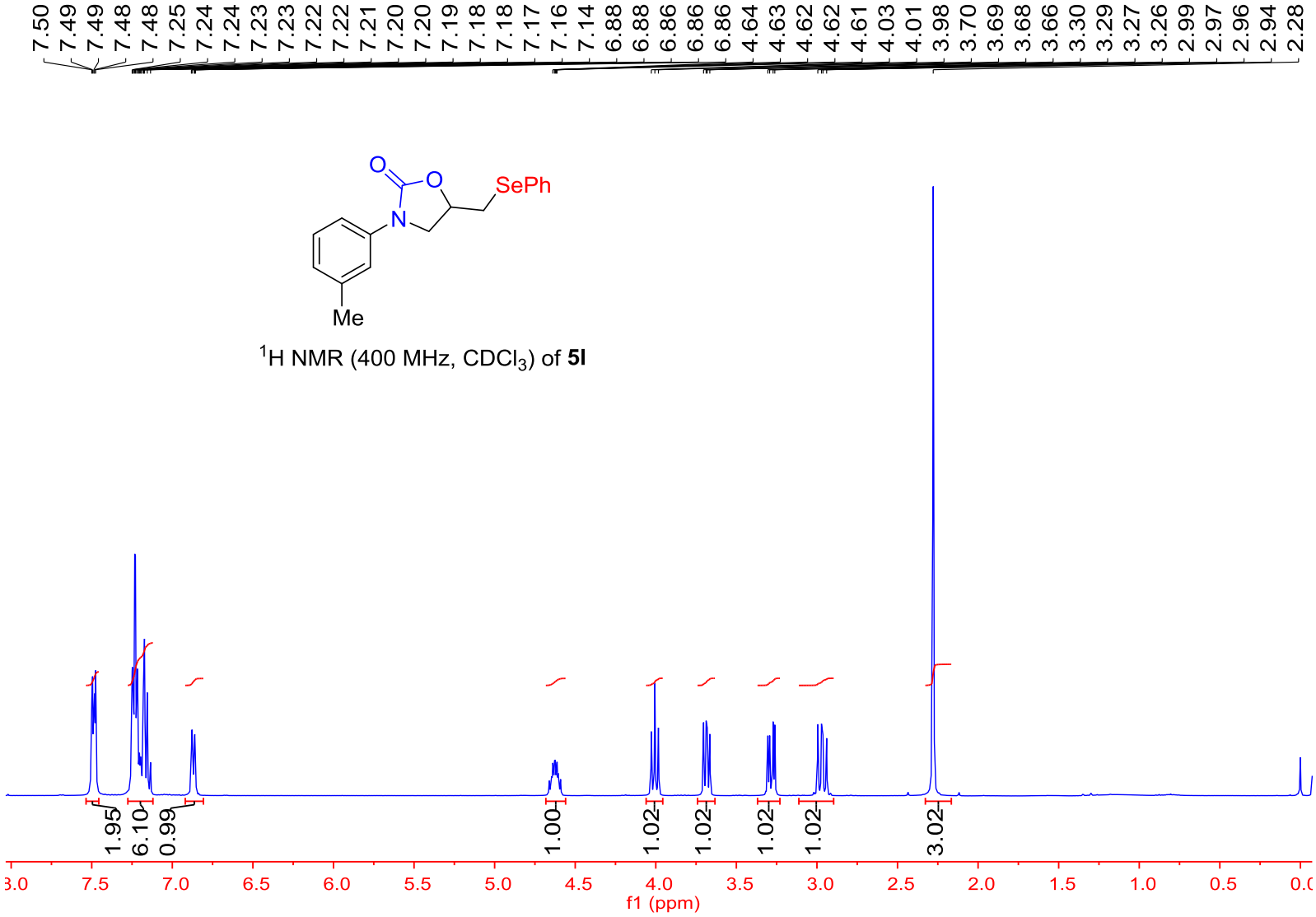
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5j**



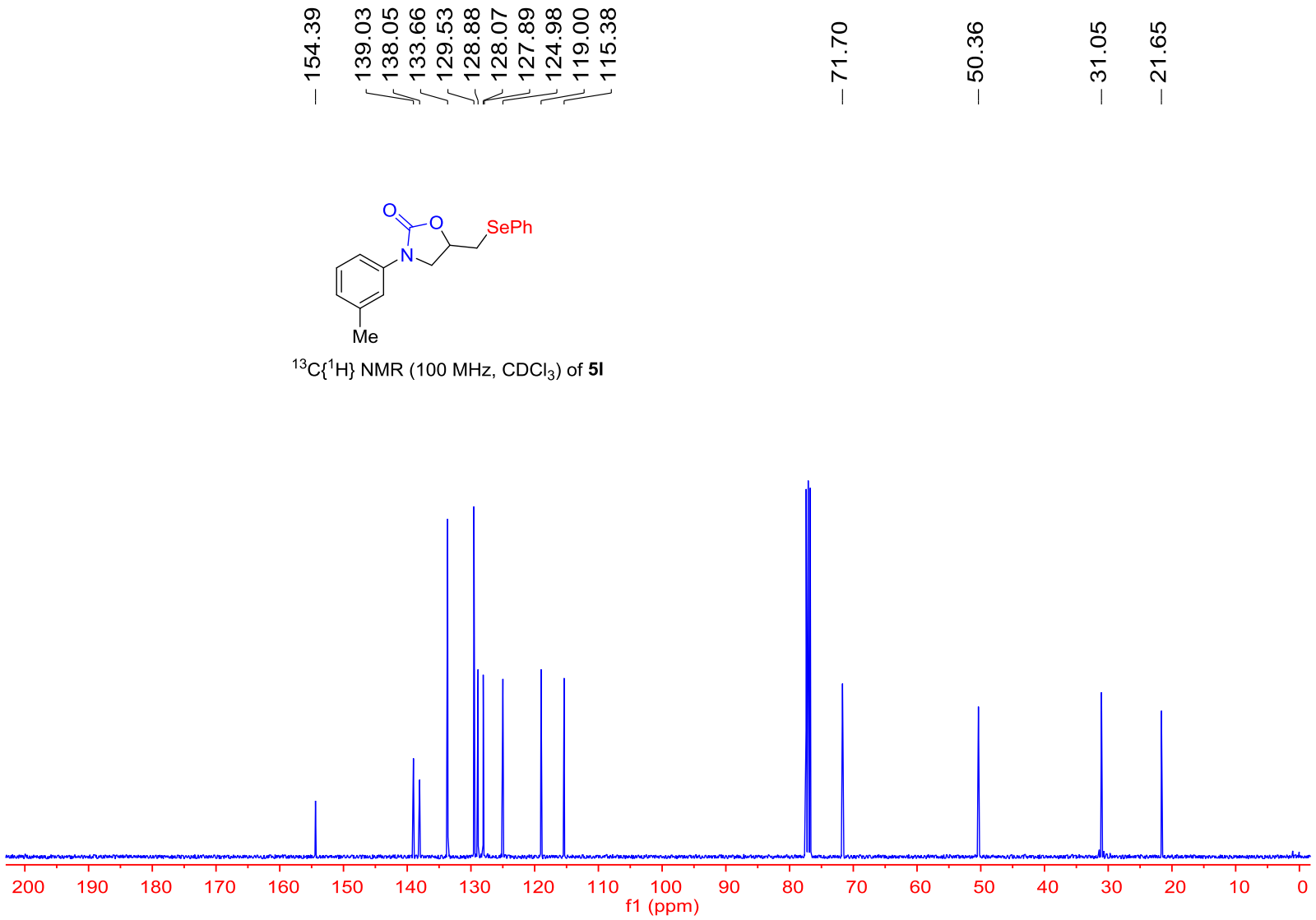
^{1}H NMR (400 MHz, CDCl$_3$) of **5k**



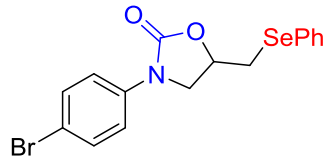
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5k**



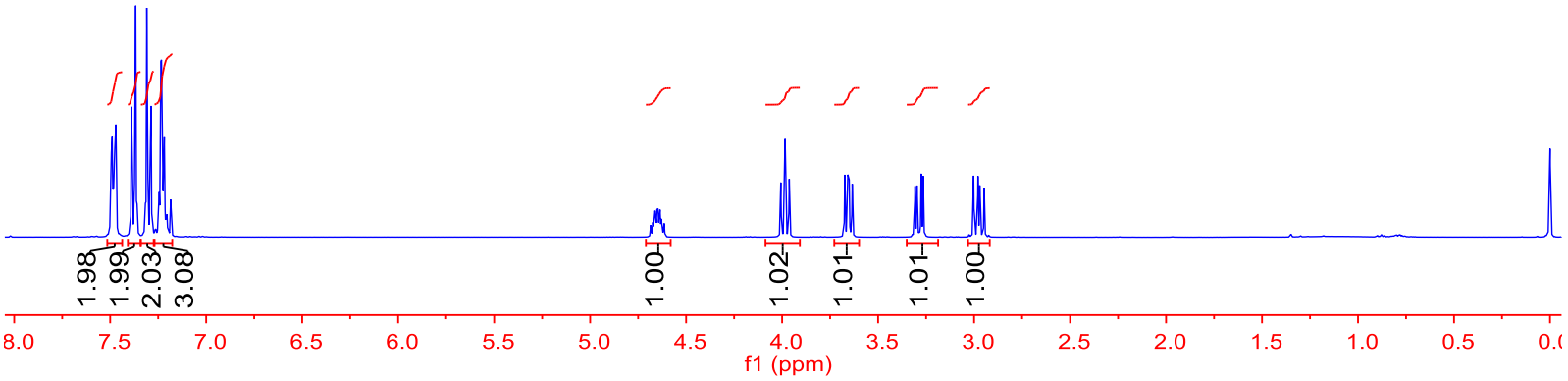
^{1}H NMR (400 MHz, $CDCl_3$) of **5l**

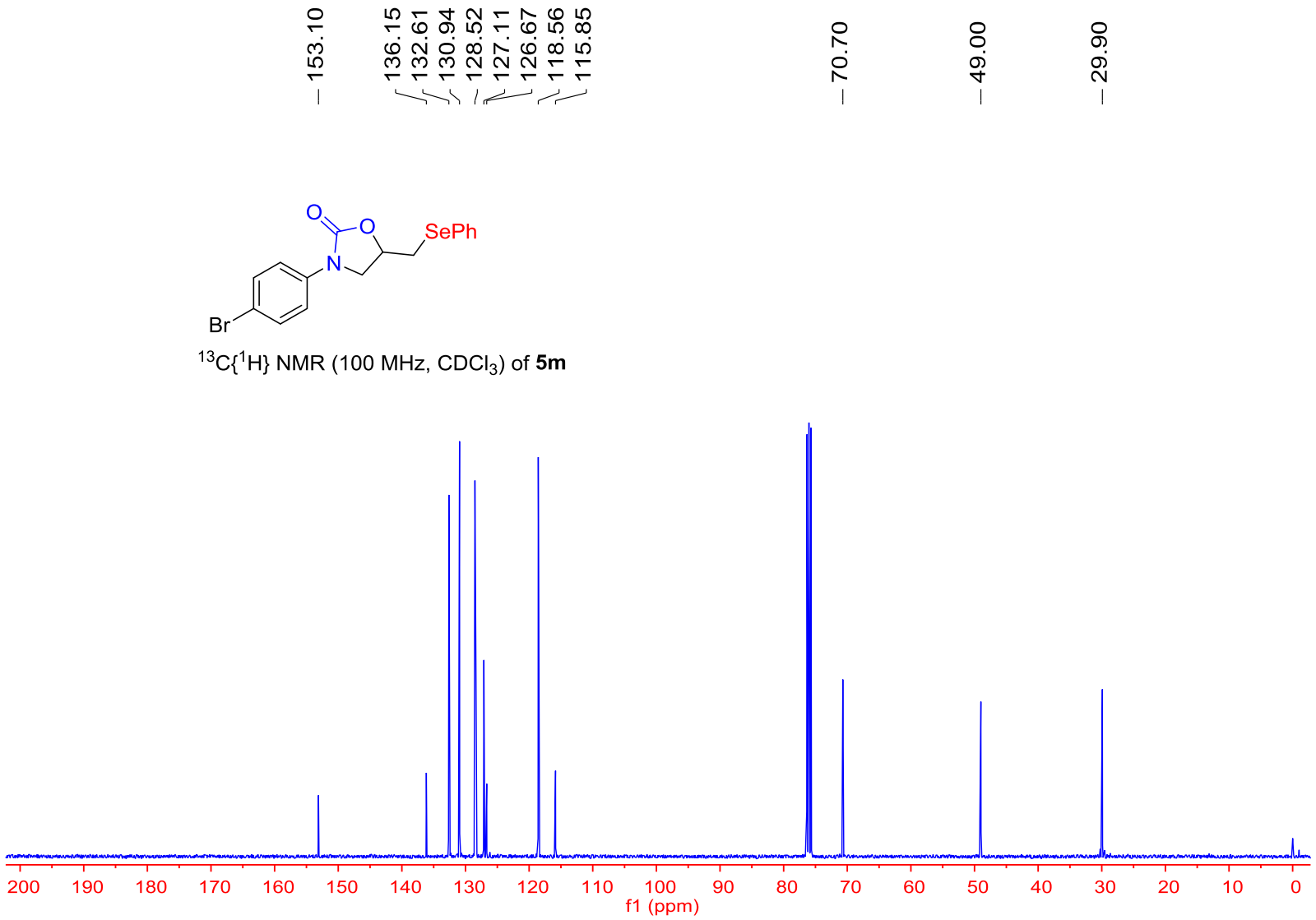


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5l**

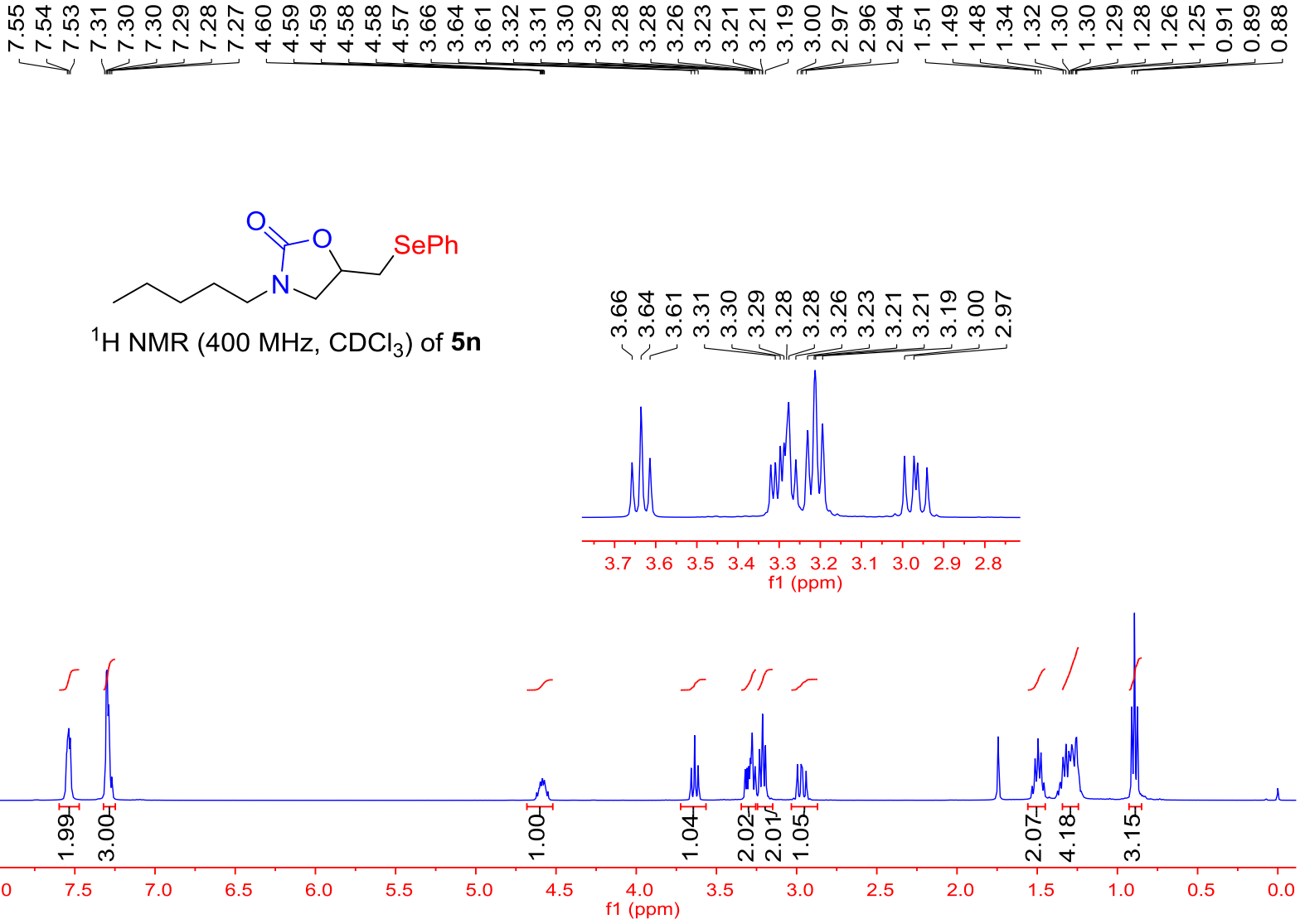


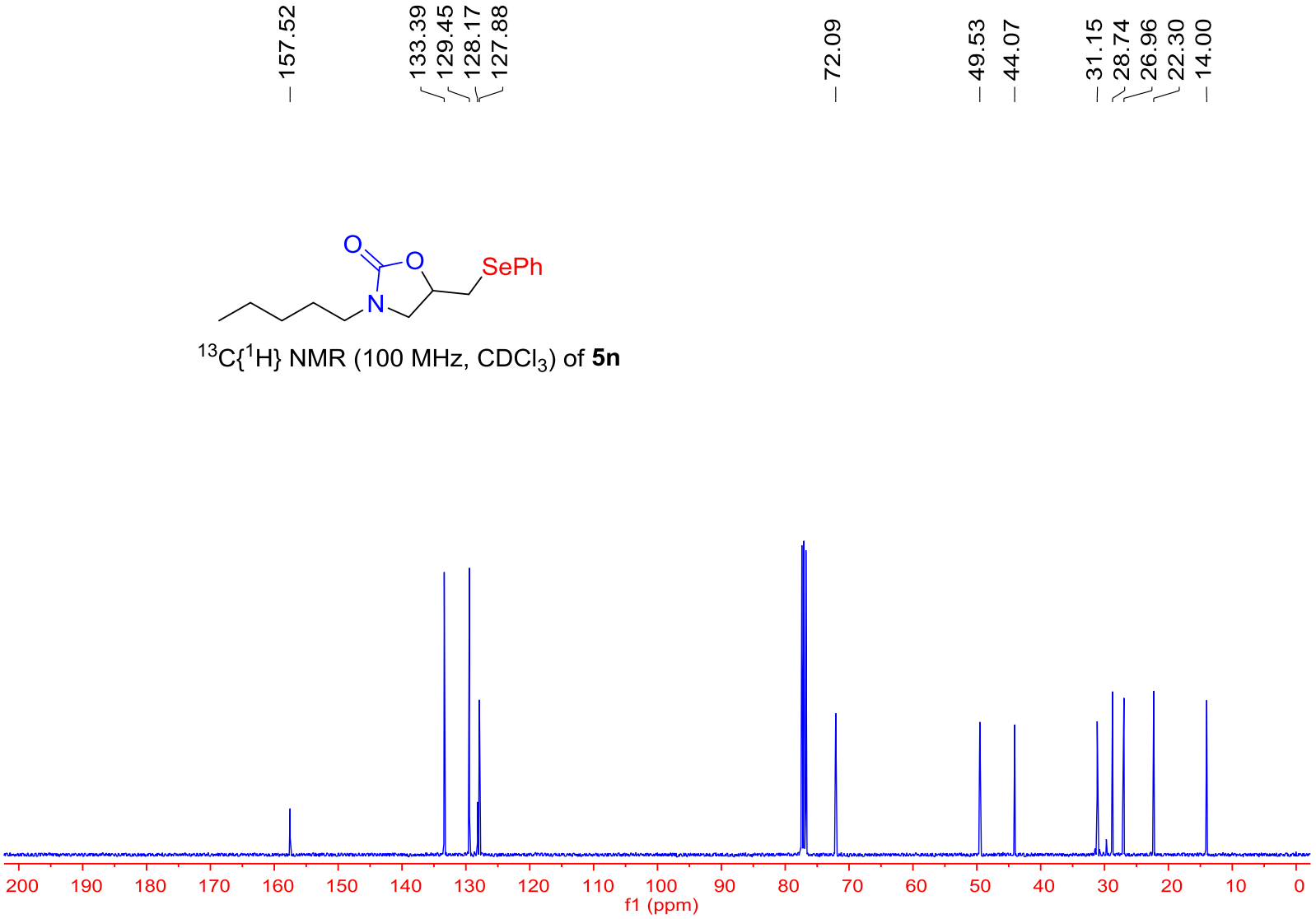
^{1}H NMR (400 MHz, $CDCl_3$) of **5m**



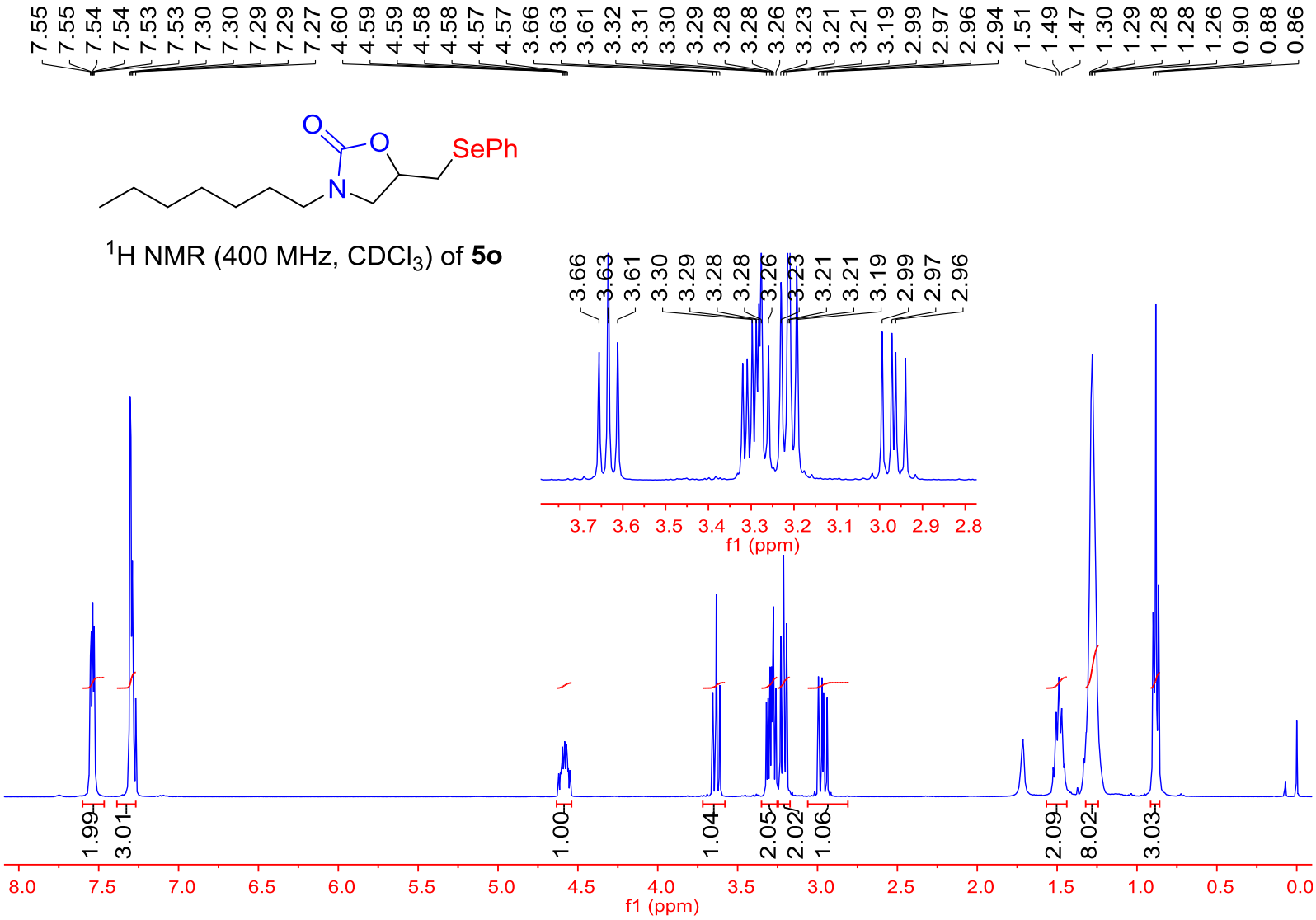


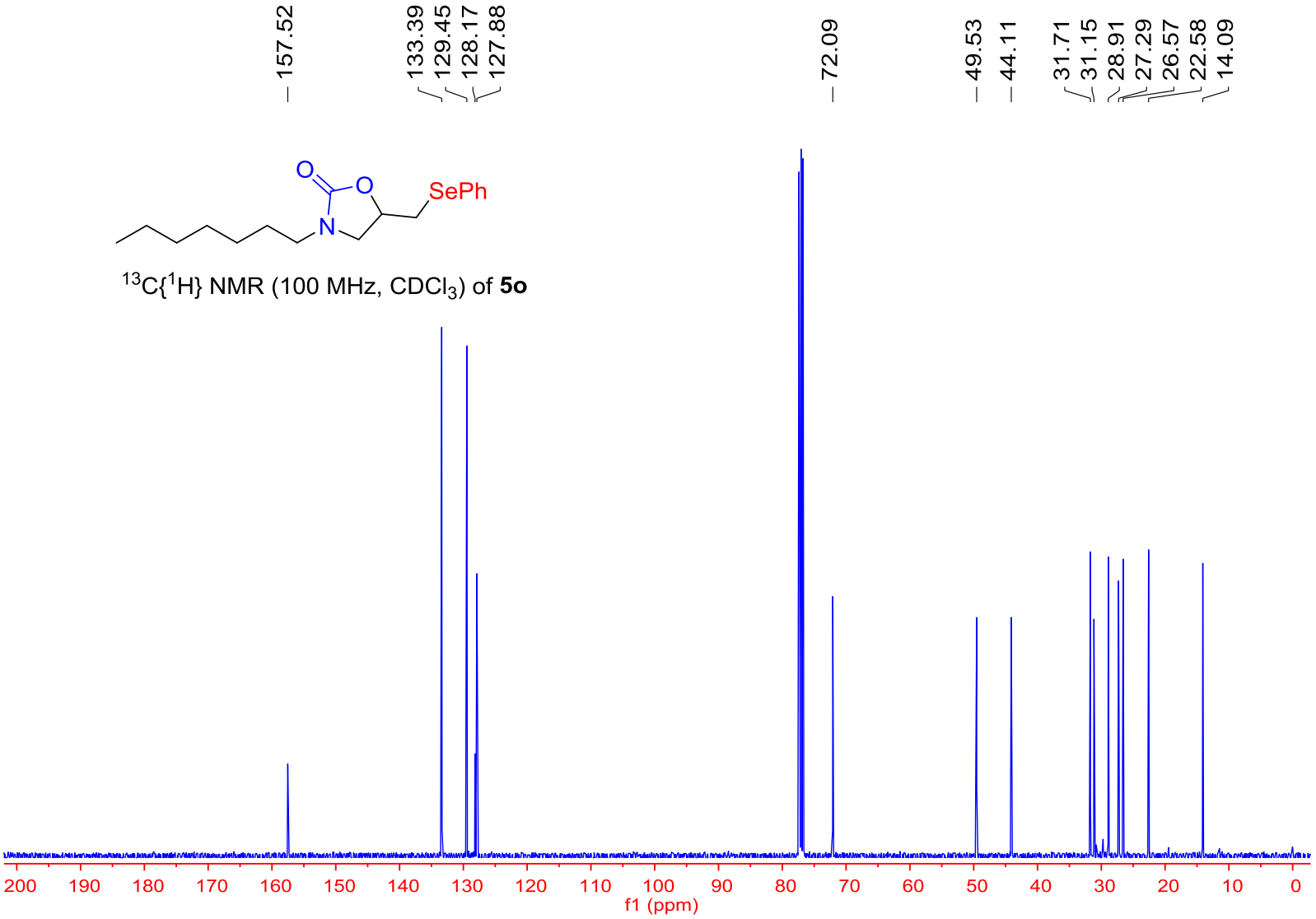
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5m**

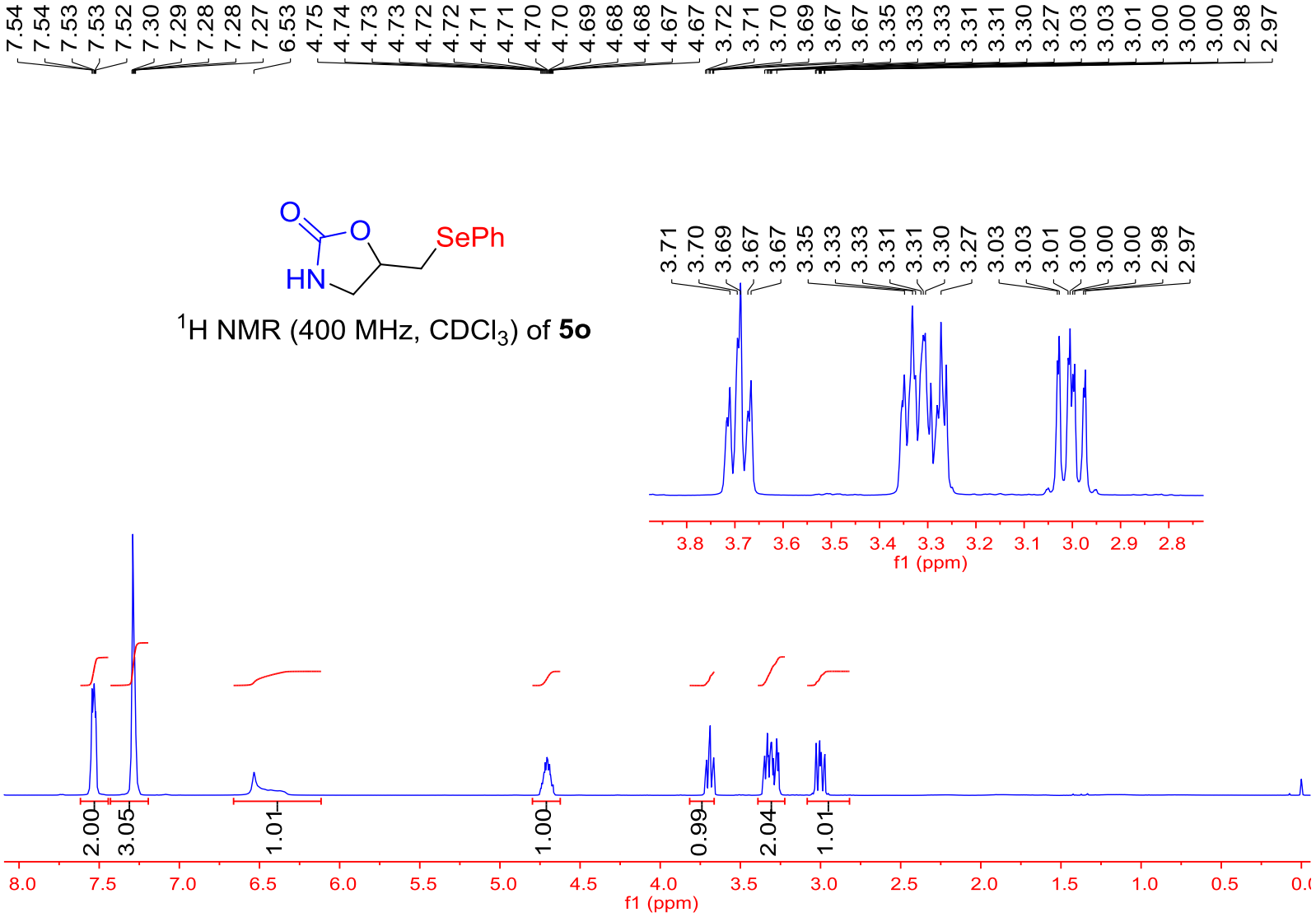

7.55 7.54 7.53 7.31 7.30 7.30 7.29 7.28 7.27 4.60 4.59 4.59 4.58 4.58 4.57 3.66 3.64 3.61 3.32 3.31 3.30 3.29 3.28 3.28 3.26 3.23 3.21 3.21 3.19 3.00 2.97 2.96 2.94 1.51 1.49 1.48 1.34 1.32 1.30 1.30 1.29 1.28 1.26 1.25 0.91 0.89 0.88
O
O
N
SePh
1H NMR (400 MHz, CDCl3) of 5n
3.66 3.64 3.61 3.31 3.30 3.29 3.28 3.28 3.26 3.23 3.21 3.21 3.19 3.00 2.97
3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8
f1 (ppm)
1.99 3.00 1.00 1.04 2.02 2.01 1.05 2.07 4.18 3.15
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

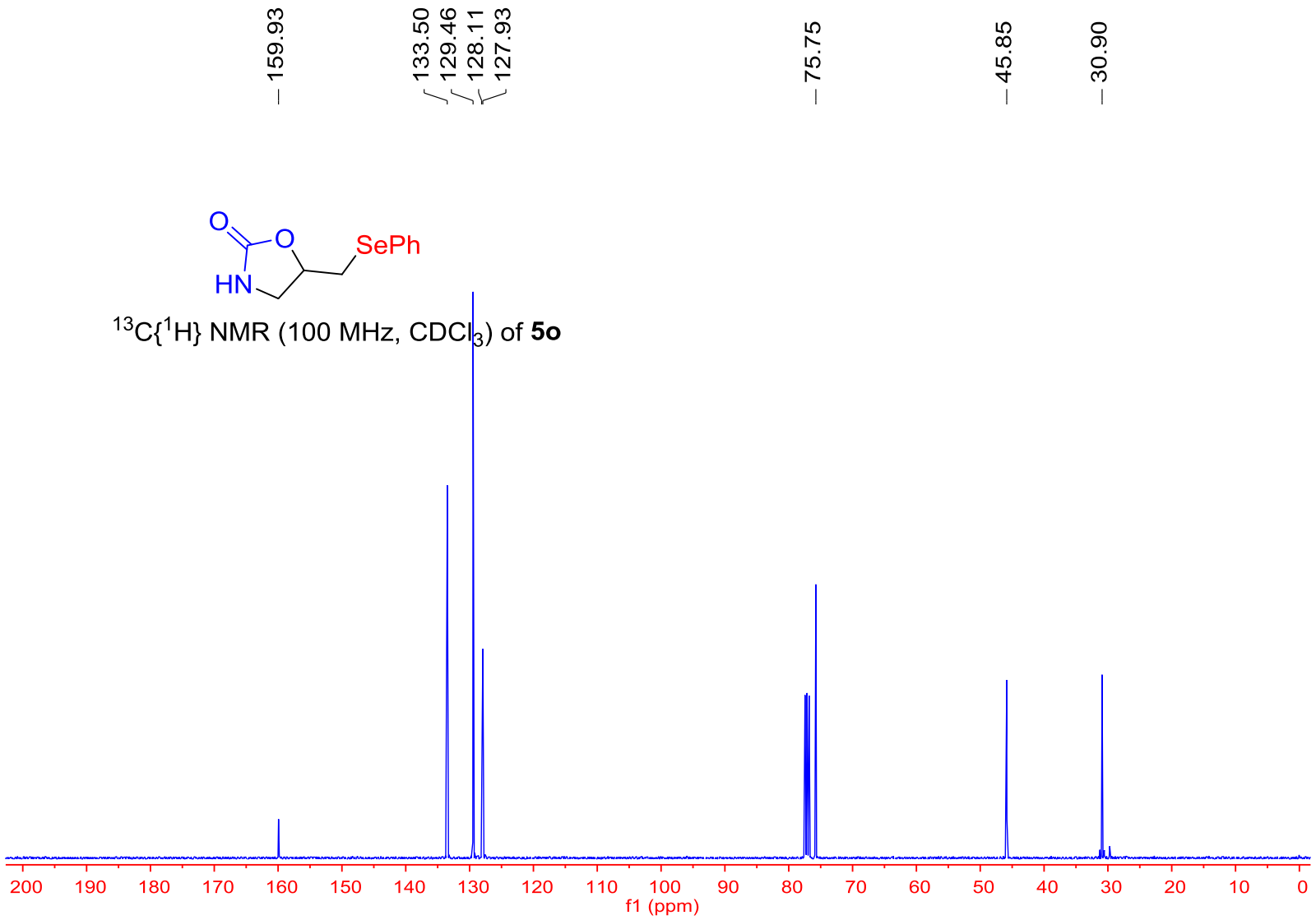


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5n**

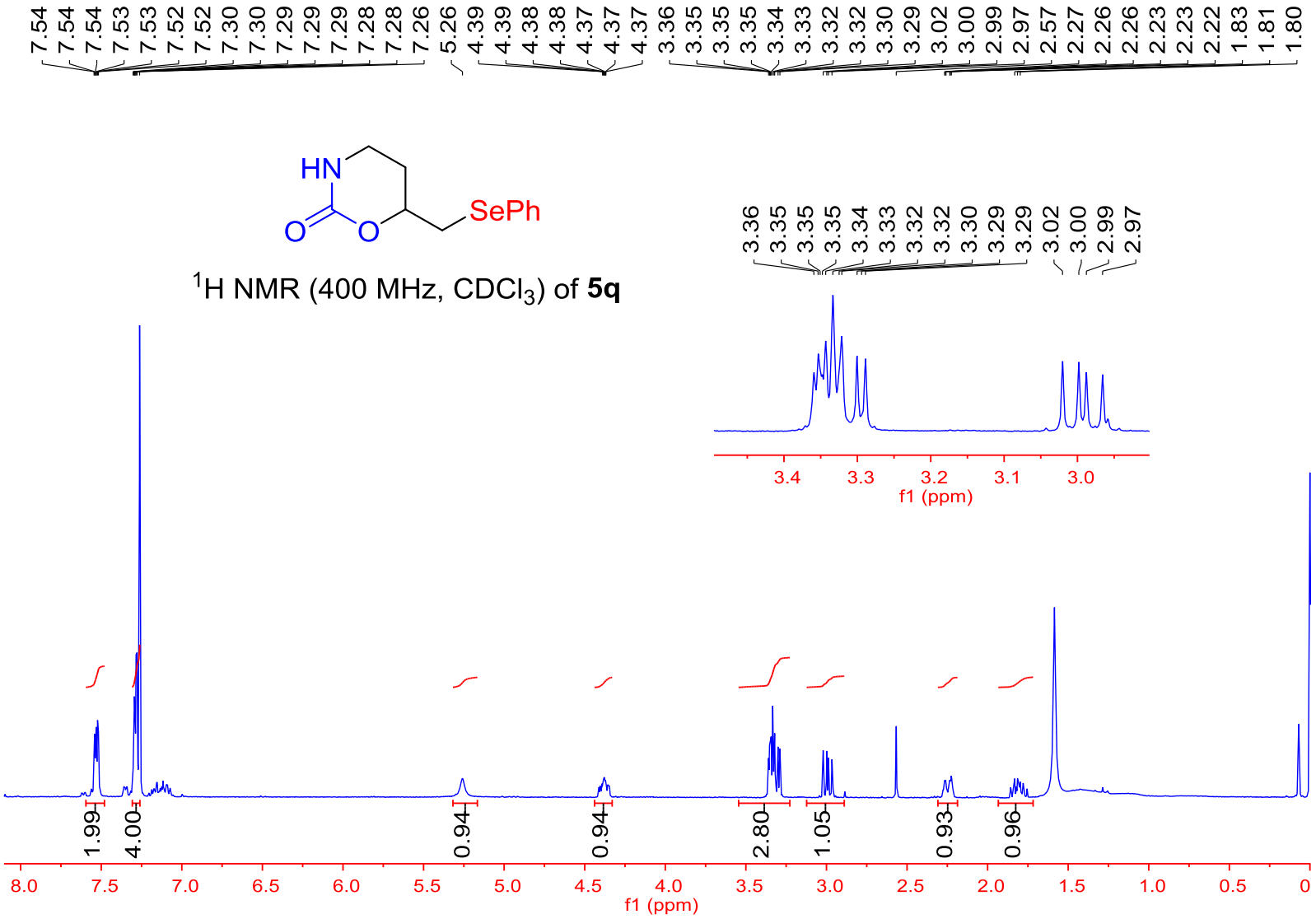

7.55 7.55 7.54 7.54 7.53 7.53 7.30 7.30 7.29 7.29 7.27 4.60 4.59 4.59 4.58 4.58 4.57 4.57 3.66 3.63 3.61 3.32 3.31 3.30 3.29 3.28 3.28 3.26 3.23 3.21 3.21 3.19 2.99 2.97 2.96 2.94 1.51 1.49 1.47 1.30 1.29 1.28 1.28 1.26 0.90 0.88 0.86
O
O
N
SePh
1H NMR (400 MHz, CDCl3) of 5o
3.66 3.63 3.61 3.30 3.29 3.28 3.28 3.26 3.23 3.21 3.21 3.19 2.99 2.97 2.96
3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8
f1 (ppm)
1.99 3.01 1.00 1.04 2.05 2.02 1.06 2.09 8.02 3.03
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

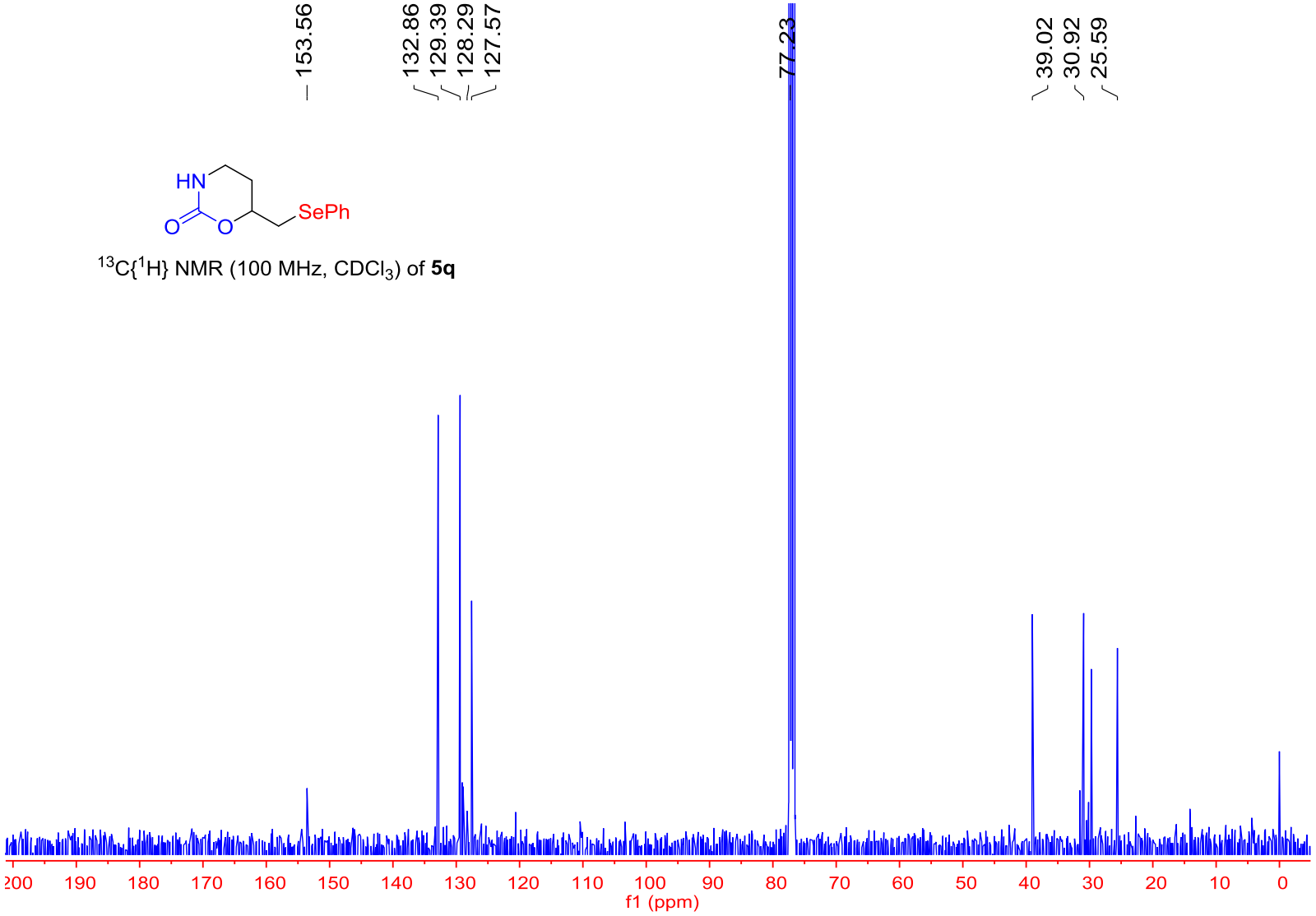

157.52
133.39
129.45
128.17
127.88
72.09
49.53
44.11
31.71
31.15
28.91
27.29
26.57
22.58
14.09
O
O
N
SePh
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5o**
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


7.54 7.54 7.53 7.53 7.52 7.30 7.29 7.28 7.28 7.27 6.53 4.75 4.74 4.73 4.73 4.72 4.72 4.71 4.71 4.70 4.70 4.69 4.68 4.68 4.67 4.67 3.72 3.71 3.70 3.69 3.67 3.67 3.35 3.33 3.33 3.31 3.31 3.30 3.27 3.03 3.03 3.01 3.00 3.00 3.00 2.98 2.97
O
O
HN
SePh
1H NMR (400 MHz, CDCl3) of 5o
3.71 3.70 3.69 3.67 3.67 3.35 3.33 3.33 3.31 3.31 3.30 3.27 3.03 3.03 3.01 3.00 3.00 3.00 2.98 2.97
3.8 3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8
f1 (ppm)
2.00 3.05 1.01 1.00 0.99 2.04 1.01
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

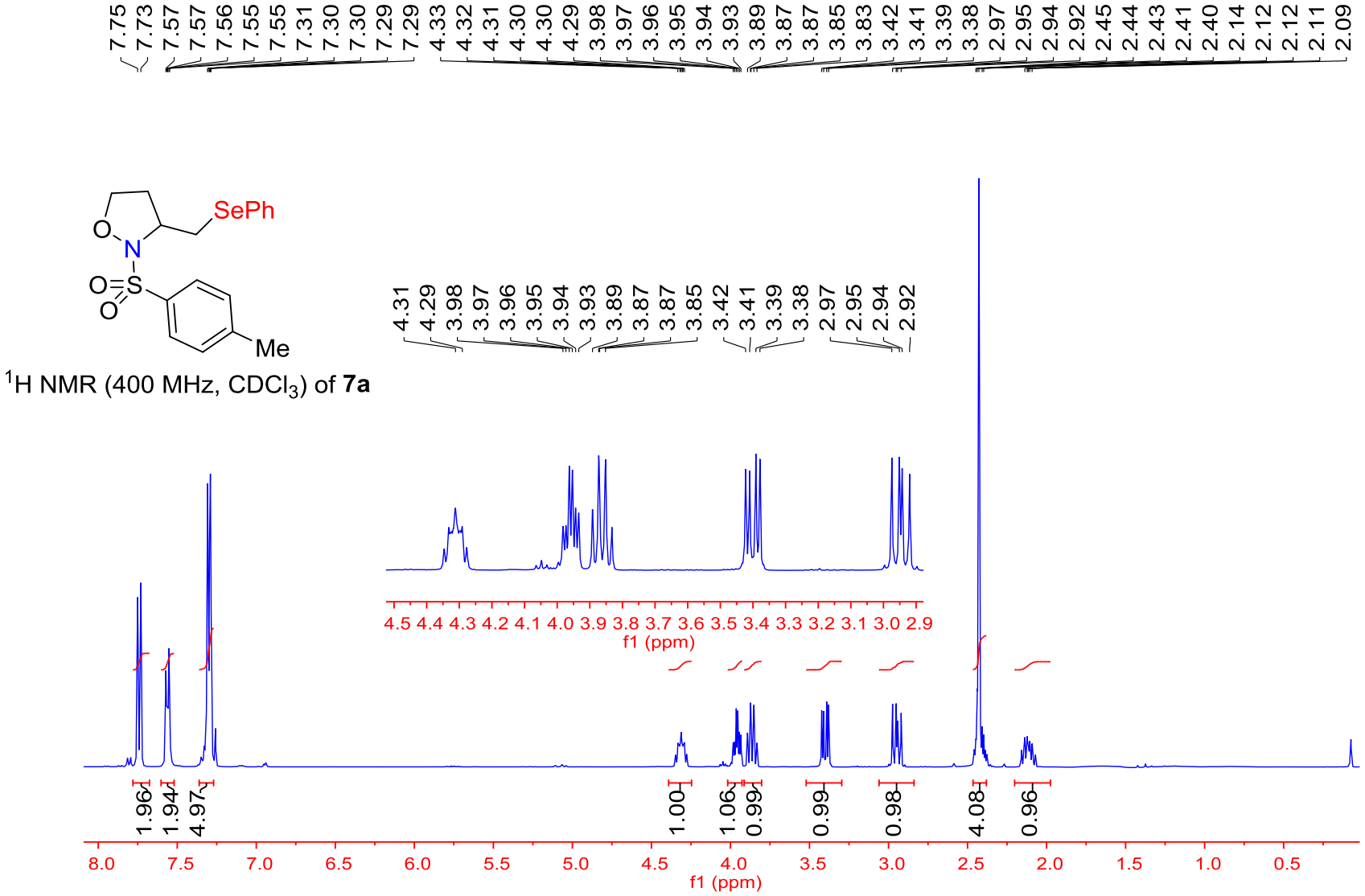


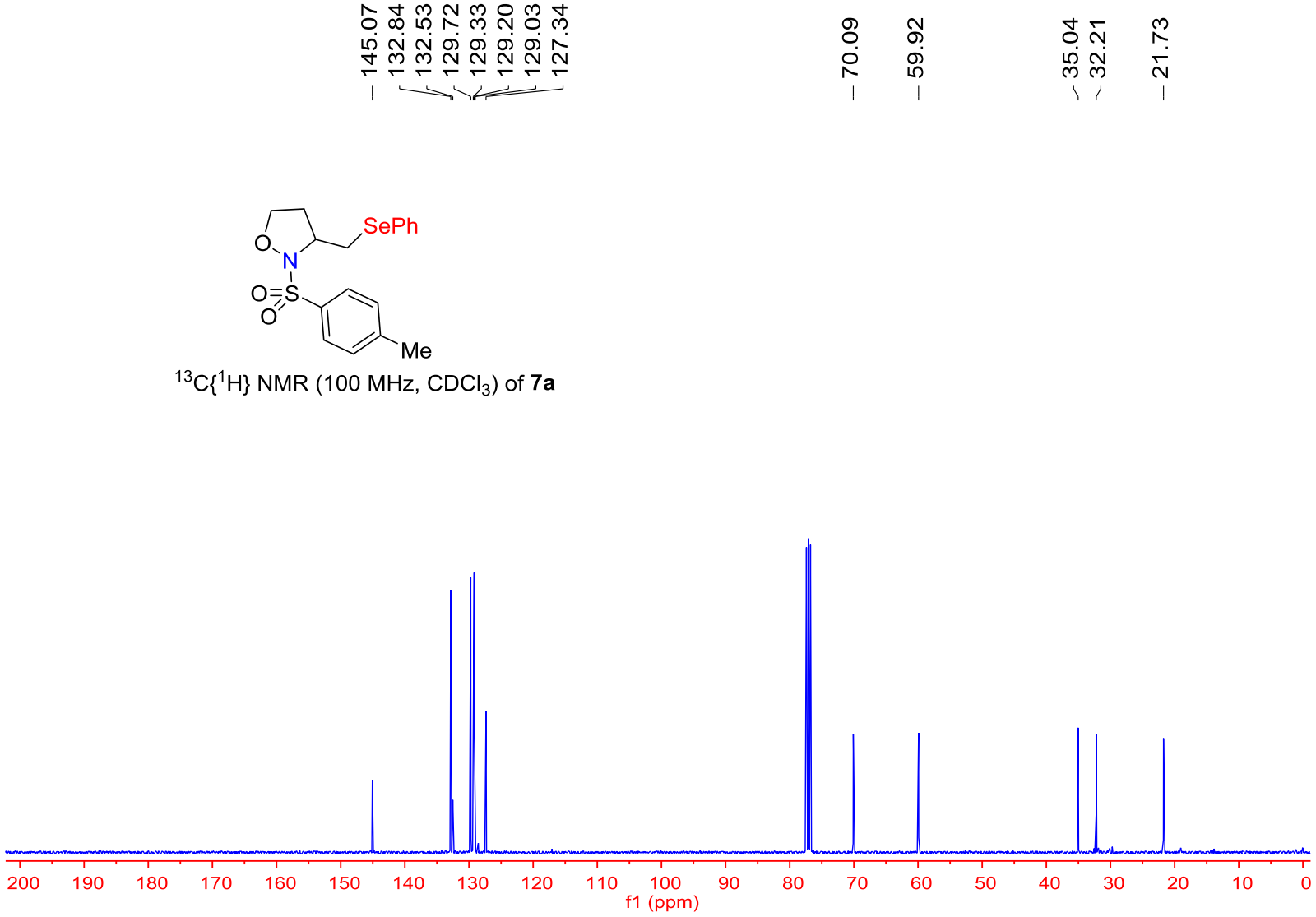
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5o**


7.54 7.54 7.54 7.53 7.53 7.52 7.52 7.30 7.30 7.29 7.29 7.29 7.28 7.28 7.26 5.26 4.39 4.39 4.38 4.38 4.37 4.37 4.37 3.36 3.35 3.35 3.35 3.34 3.33 3.32 3.32 3.30 3.29 3.02 3.00 2.99 2.97 2.57 2.27 2.26 2.26 2.23 2.23 2.22 1.83 1.81 1.80
HN
O
O
SePh
1H NMR (400 MHz, CDCl3) of 5q
3.36 3.35 3.35 3.35 3.34 3.33 3.32 3.32 3.30 3.29 3.29 3.02 3.00 2.99 2.97
3.4 3.3 3.2 3.1 3.0
f1 (ppm)
1.99 4.00 0.94 0.94 2.80 1.05 0.93 0.96
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0
f1 (ppm)

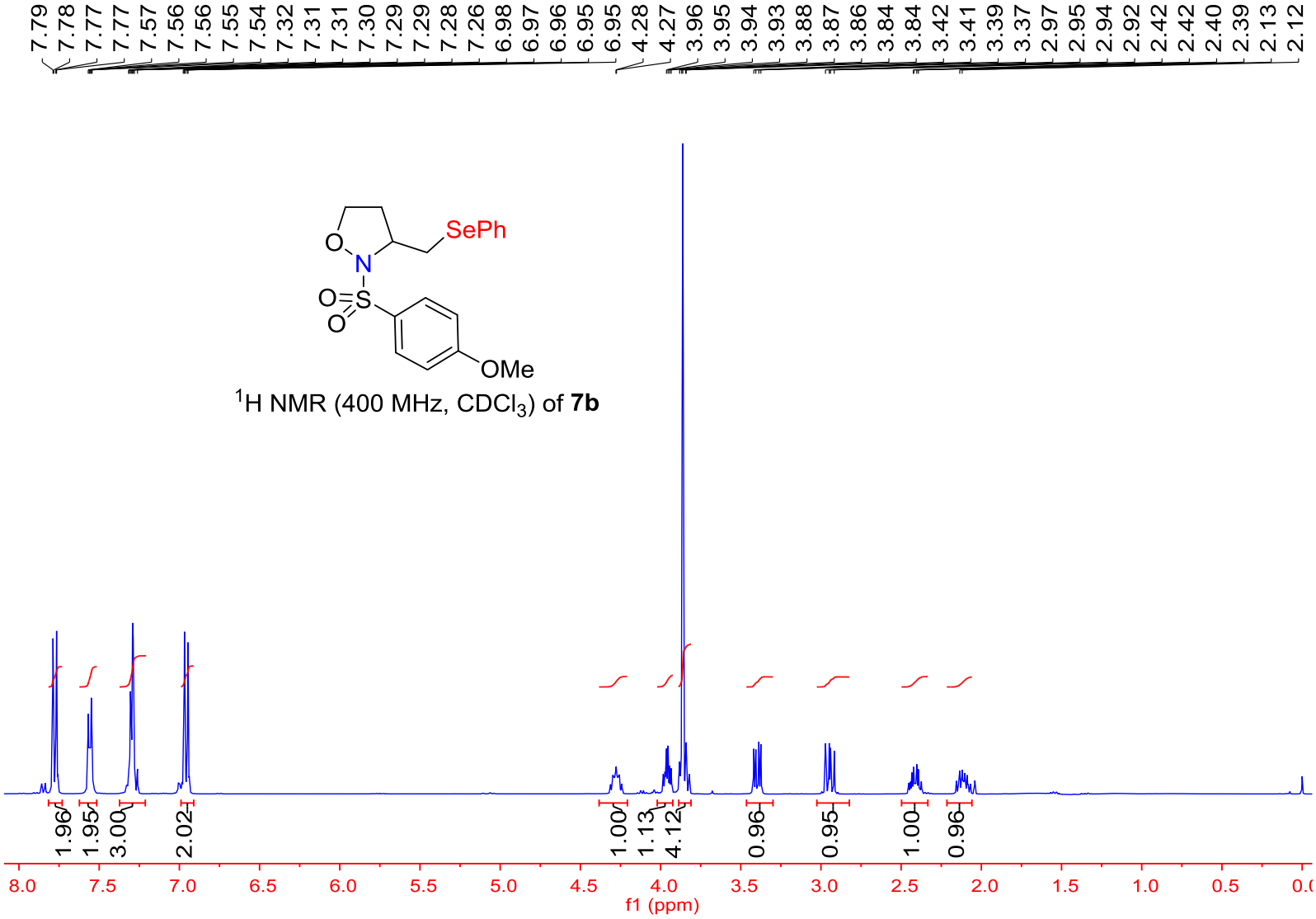


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **5q**

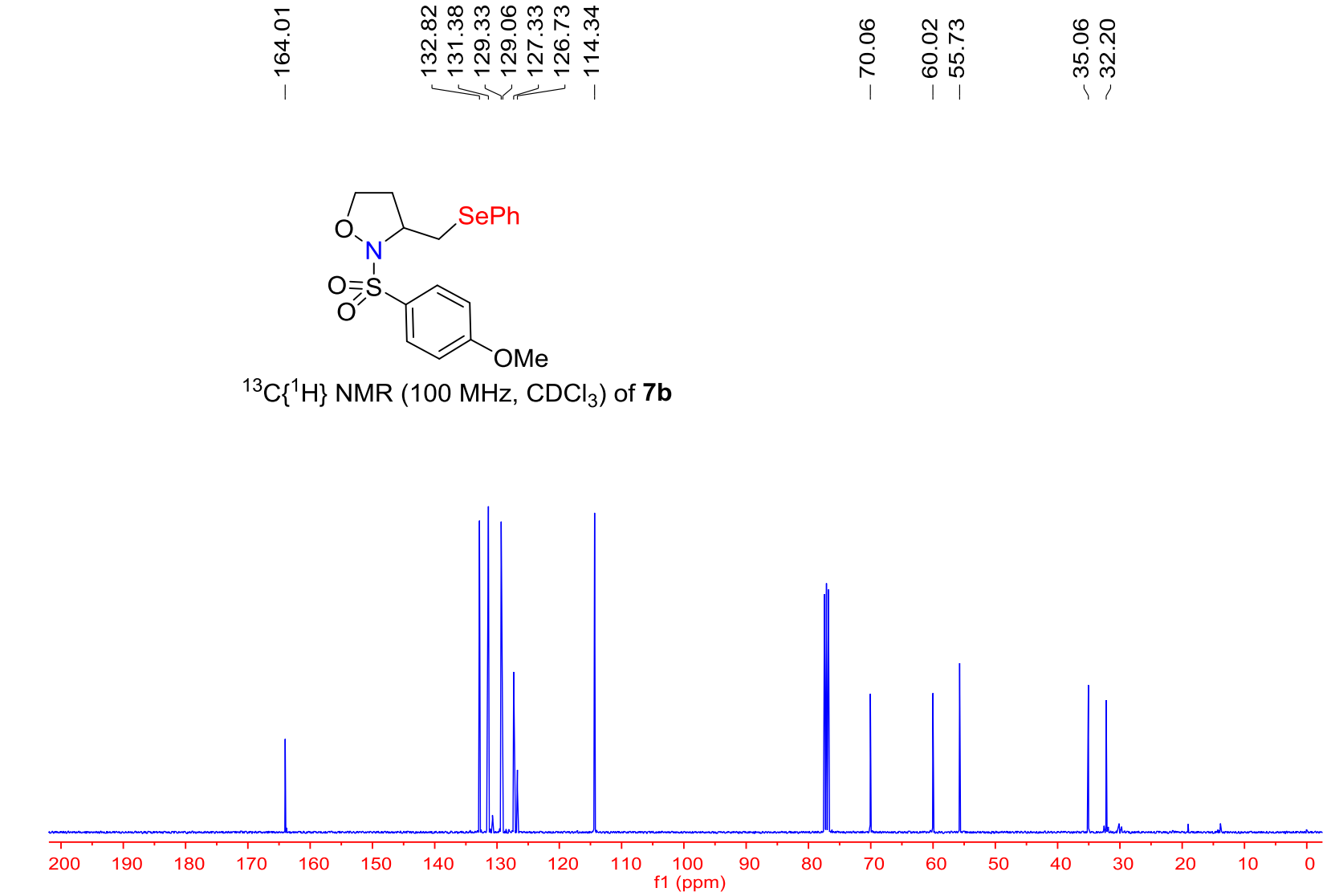

7.75 7.73 7.57 7.57 7.56 7.55 7.55 7.31 7.30 7.30 7.29 7.29 4.33 4.32 4.31 4.30 4.30 4.29 3.98 3.97 3.96 3.95 3.94 3.93 3.89 3.87 3.87 3.85 3.83 3.42 3.41 3.39 3.38 2.97 2.95 2.94 2.92 2.45 2.44 2.43 2.41 2.40 2.14 2.12 2.12 2.11 2.09
SePh
O
N
O
S
O
Me
1H NMR (400 MHz, CDCl3) of 7a
4.31 4.29 3.98 3.97 3.96 3.95 3.94 3.93 3.89 3.87 3.87 3.85 3.42 3.41 3.39 3.38 2.97 2.95 2.94 2.92
4.5 4.4 4.3 4.2 4.1 4.0 3.9 3.8 3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9
f1 (ppm)
1.96 1.94 4.97 1.00 1.06 0.99 0.99 0.98 4.08 0.96
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)



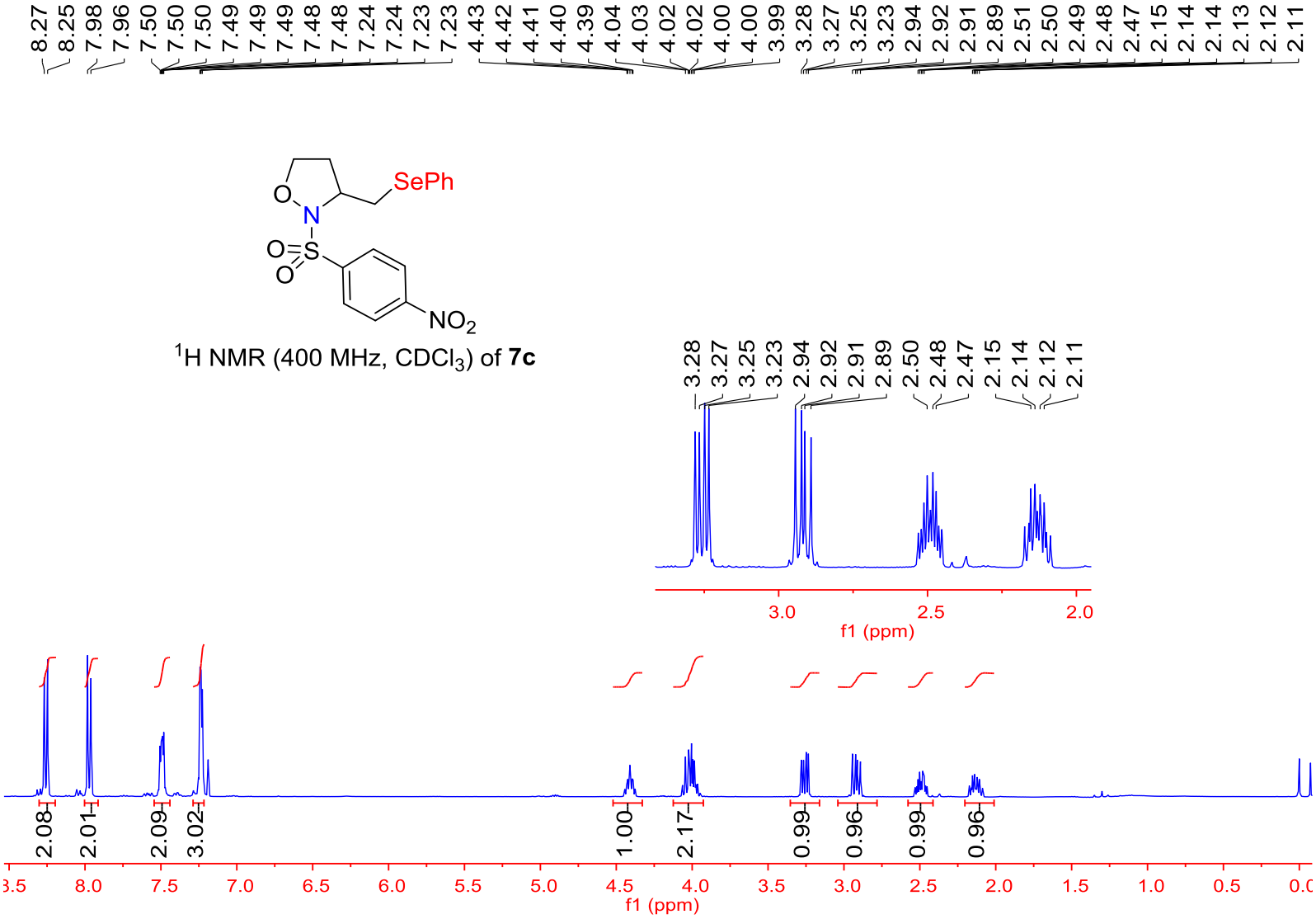
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7a**



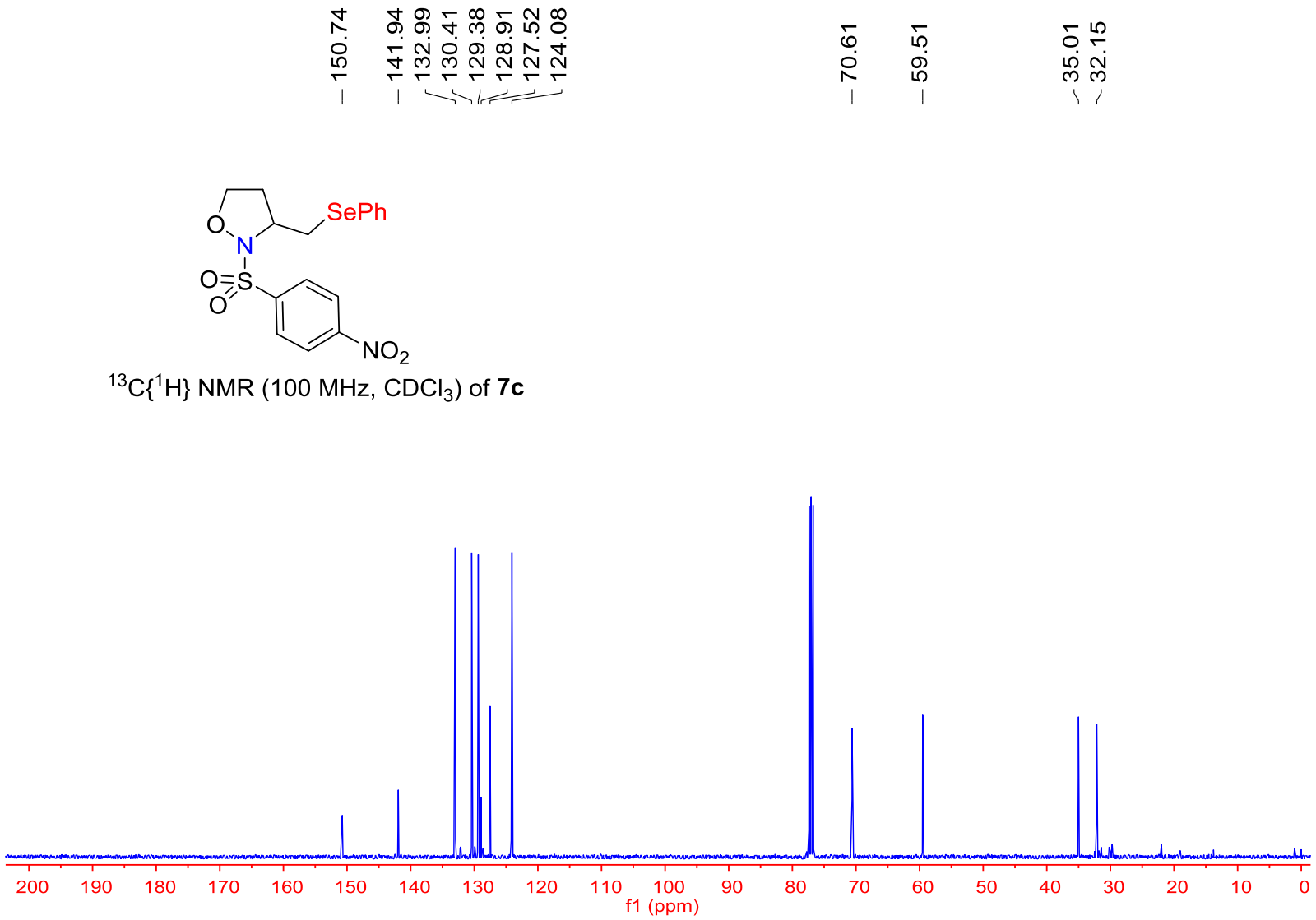
^{1}H NMR (400 MHz, $CDCl_3$) of **7b**



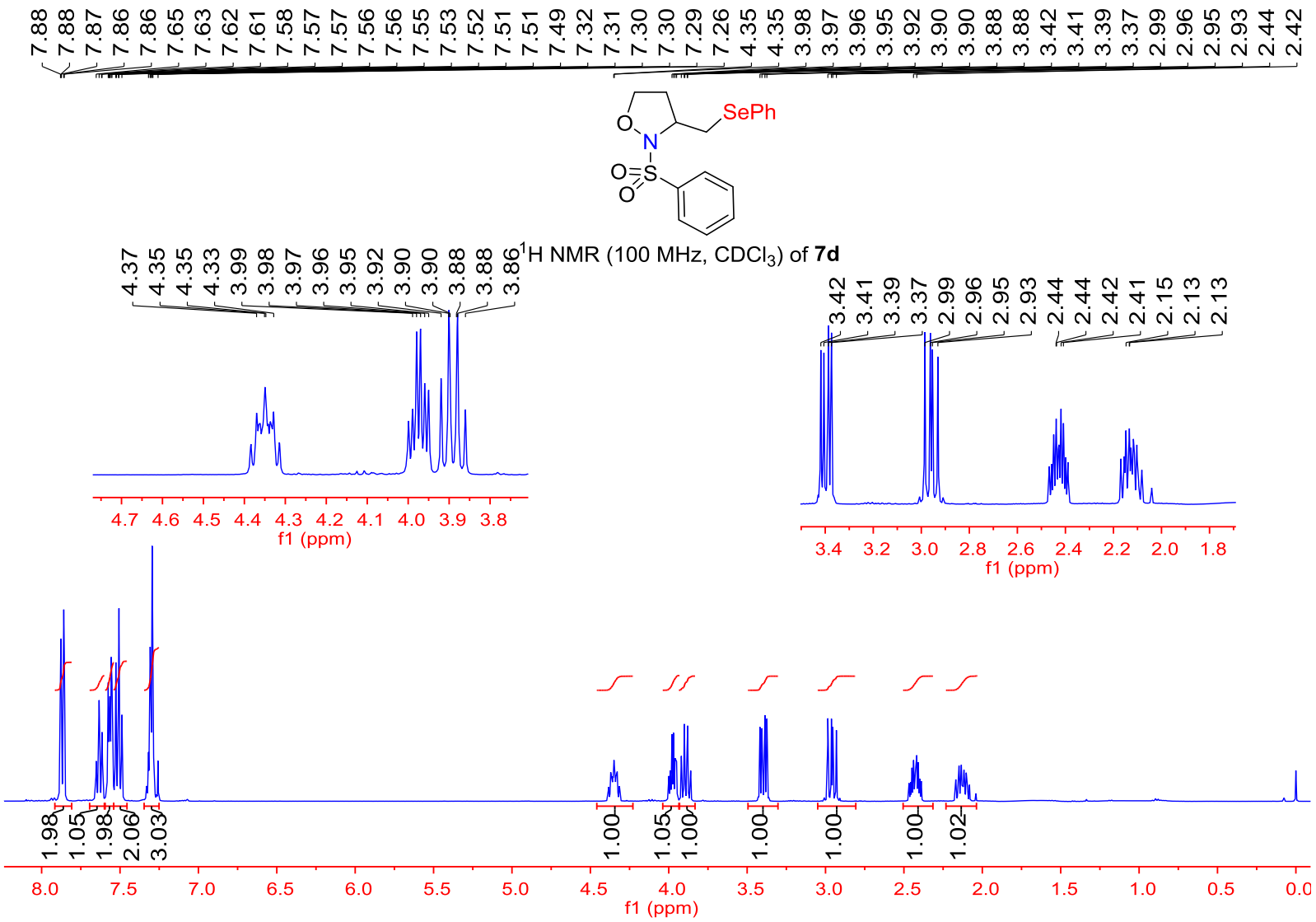
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7b**



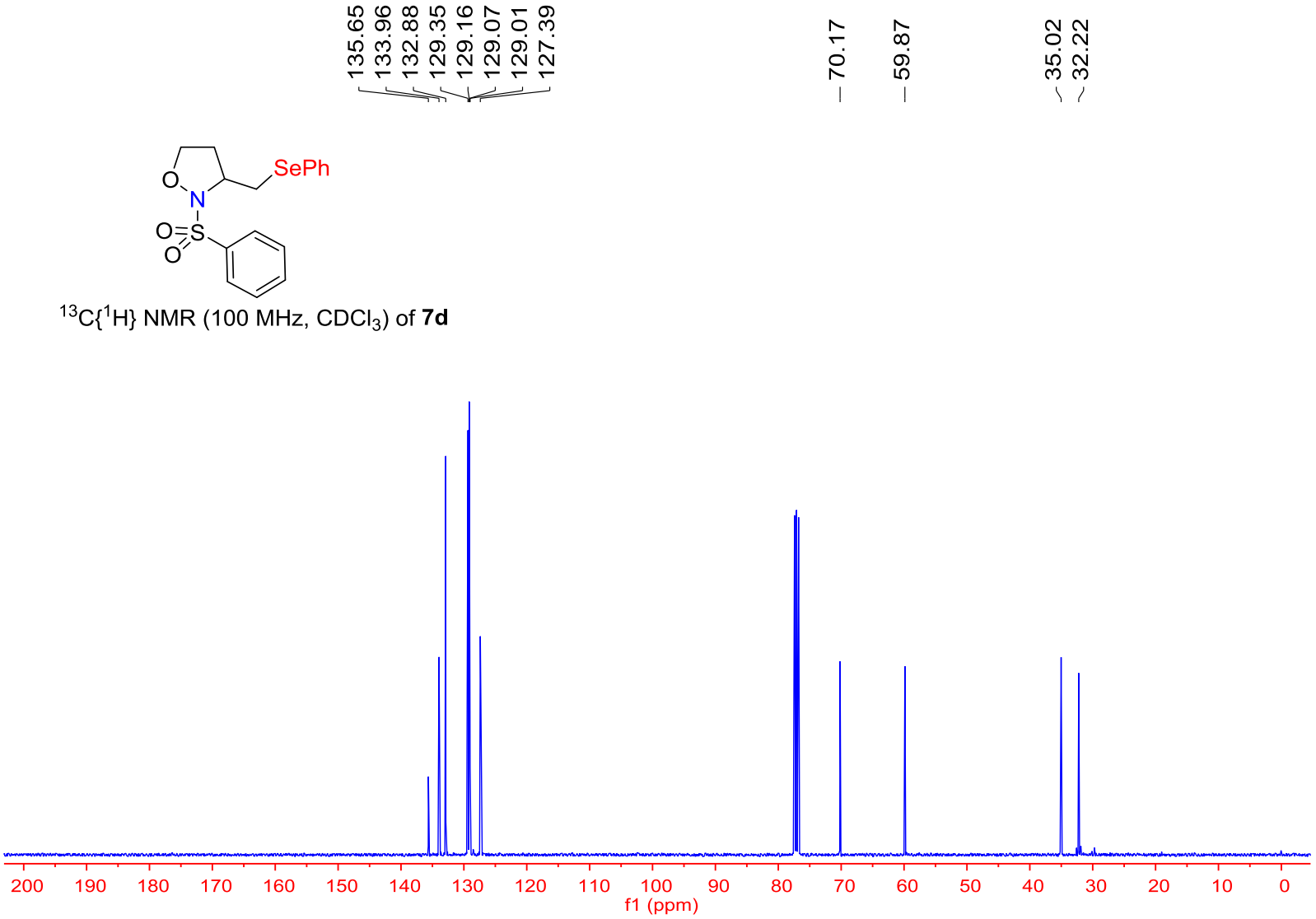
^{1}H NMR (400 MHz, $CDCl_3$) of **7c**



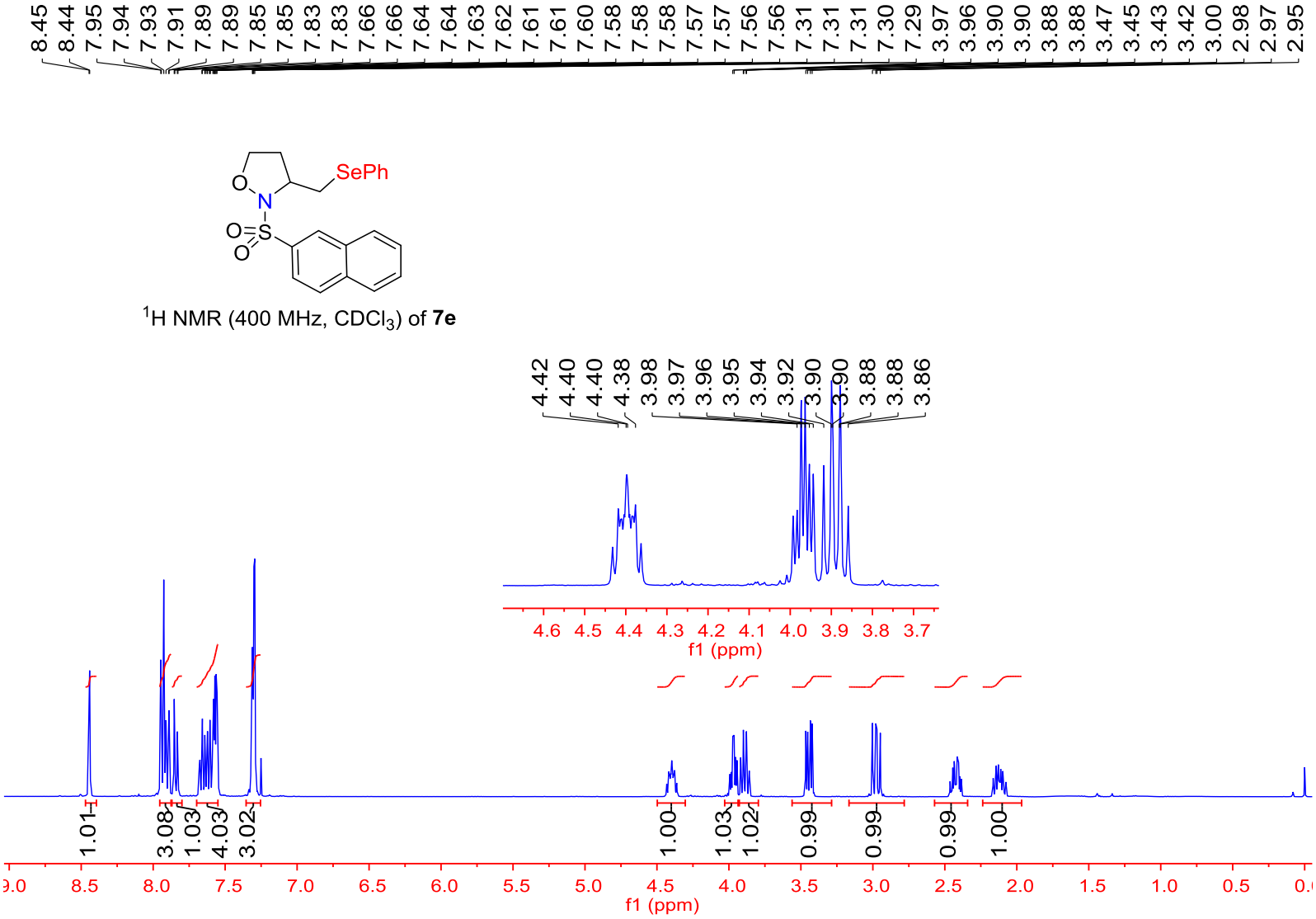
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7c**



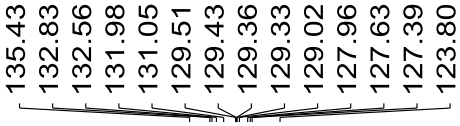
^{1}H NMR (100 MHz, $CDCl_3$) of **7d**

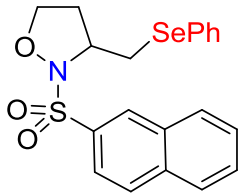


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7d**

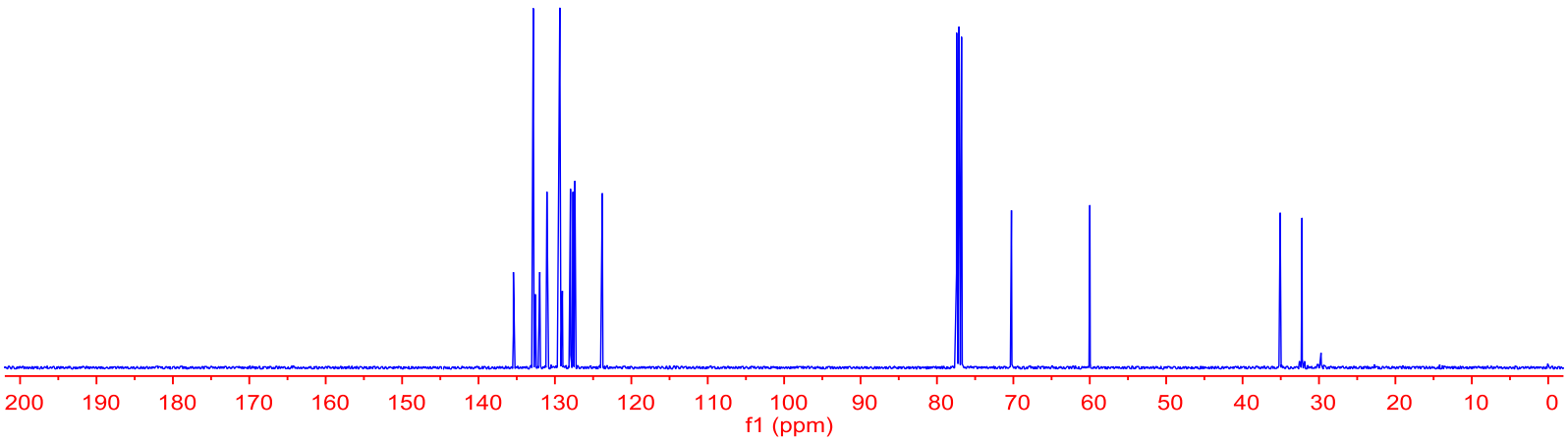


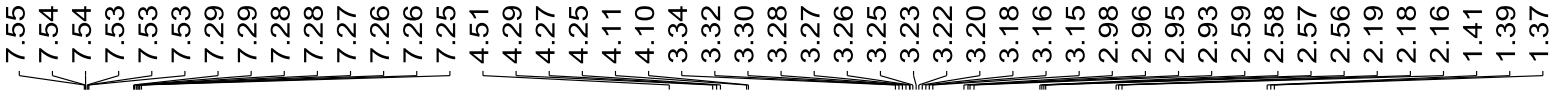
^{1}H NMR (400 MHz, $CDCl_3$) of **7e**

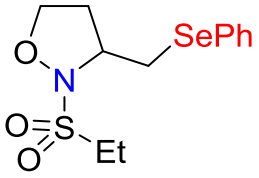




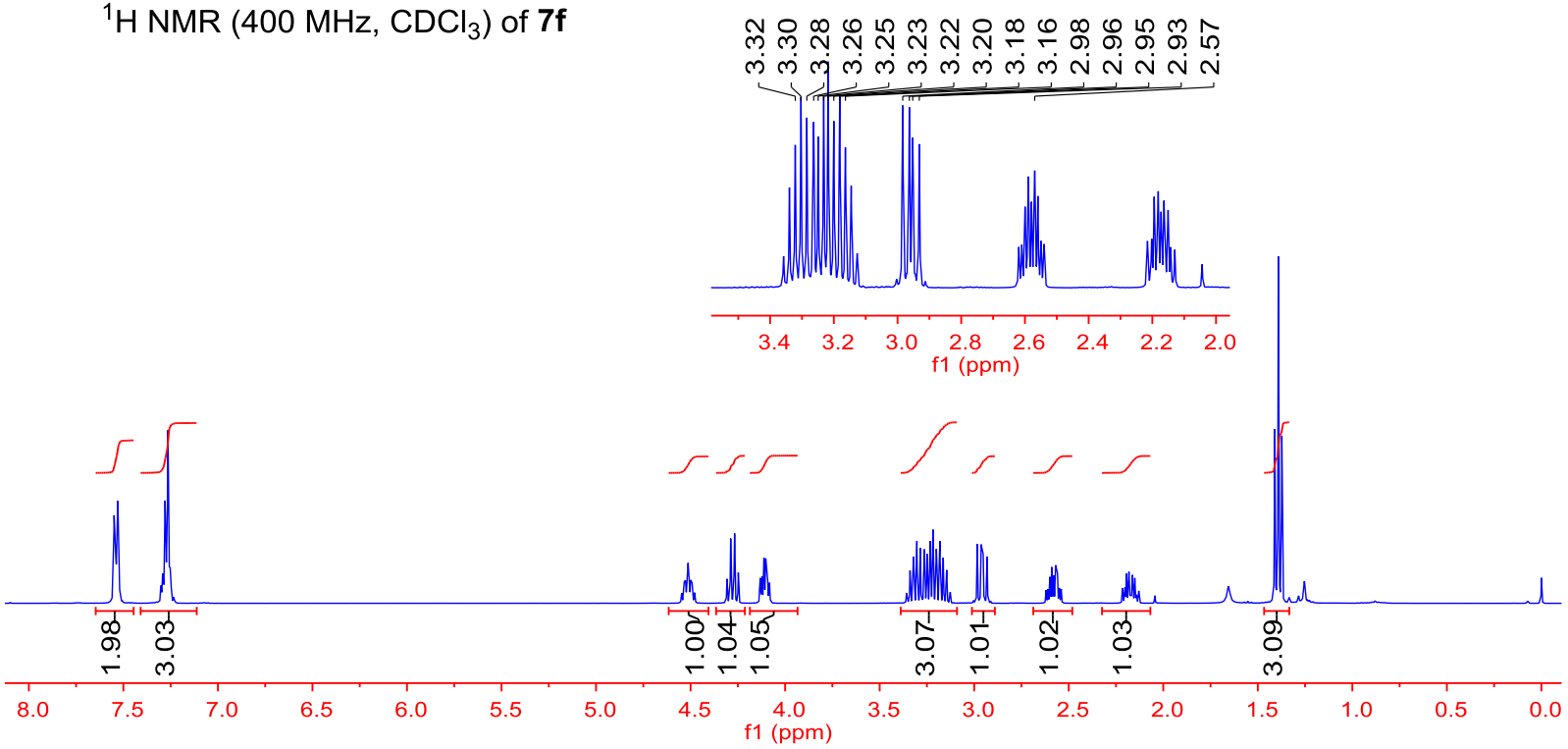
$^{13}C\{^{1}H\}$NMR (100 MHz, $CDCl_3$) of **7e**

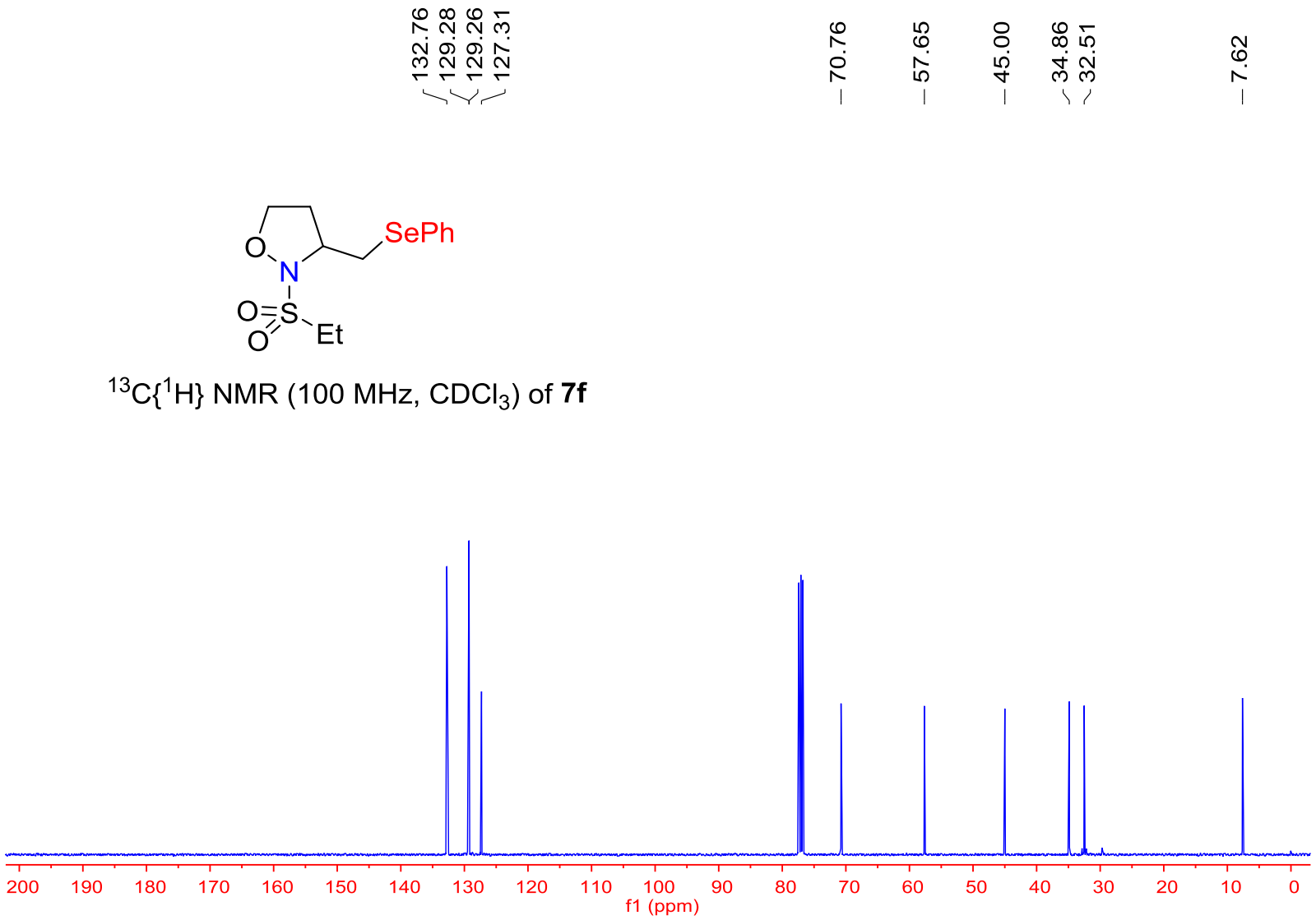




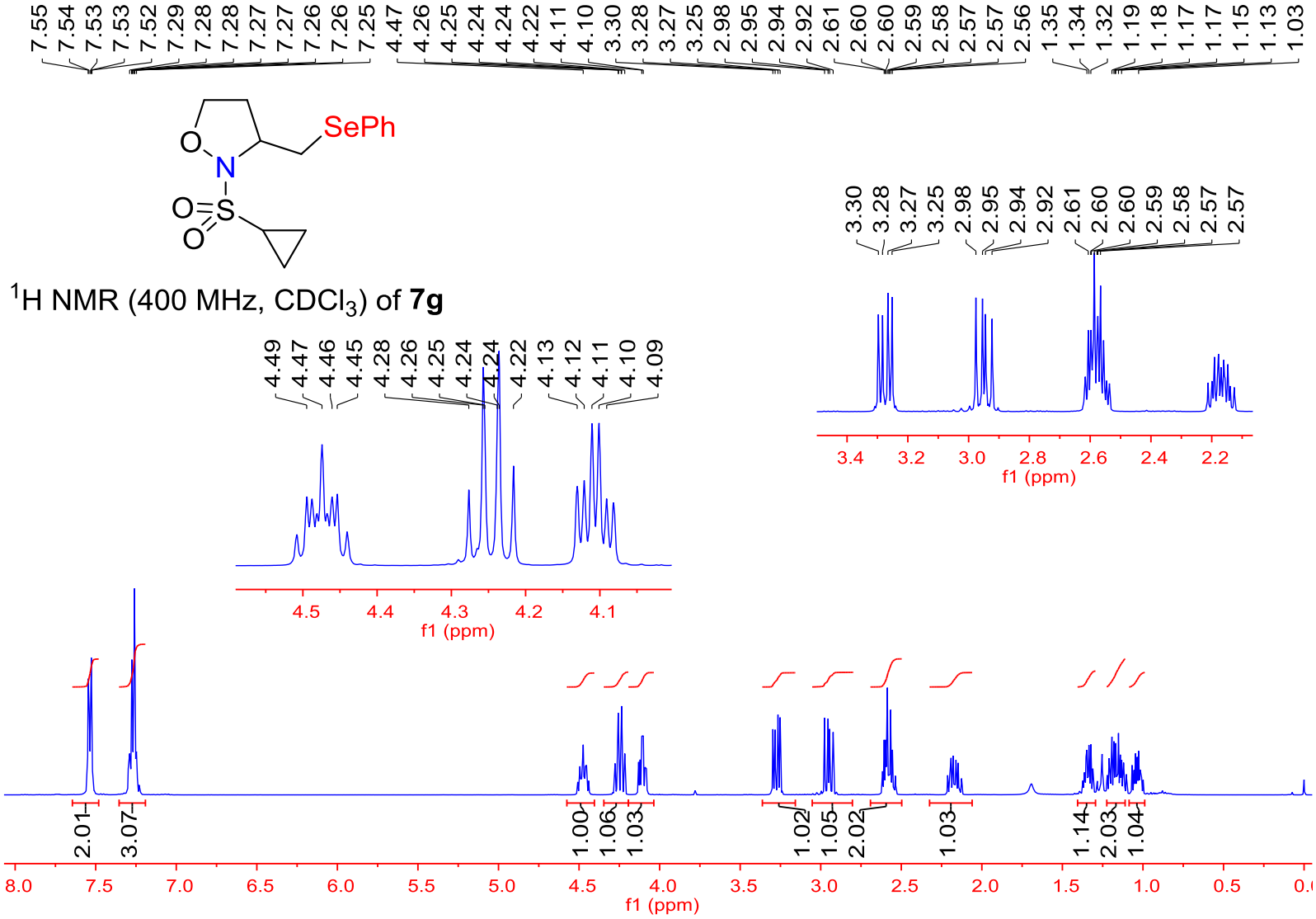


^{1}H NMR (400 MHz, $CDCl_3$) of **7f**

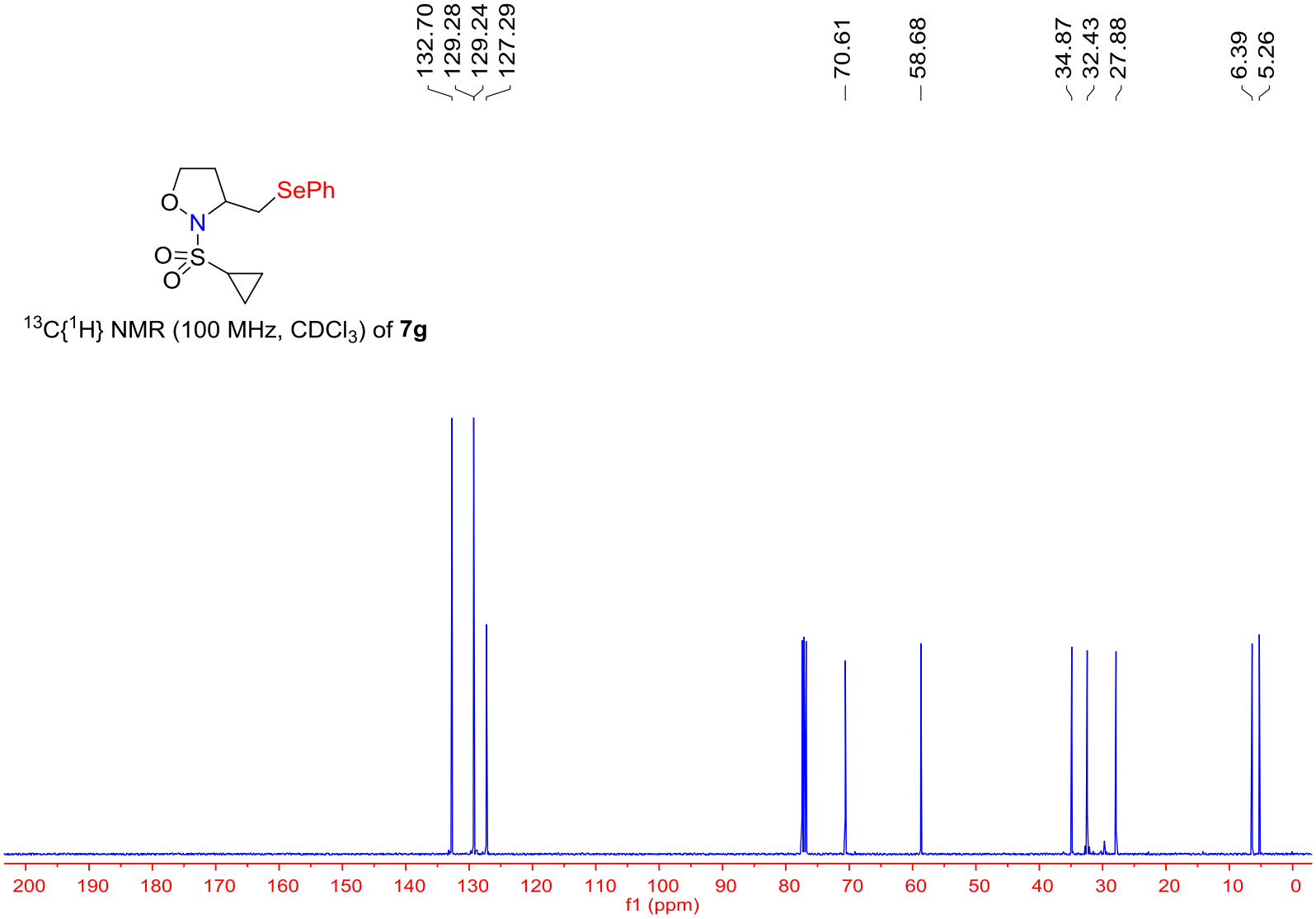




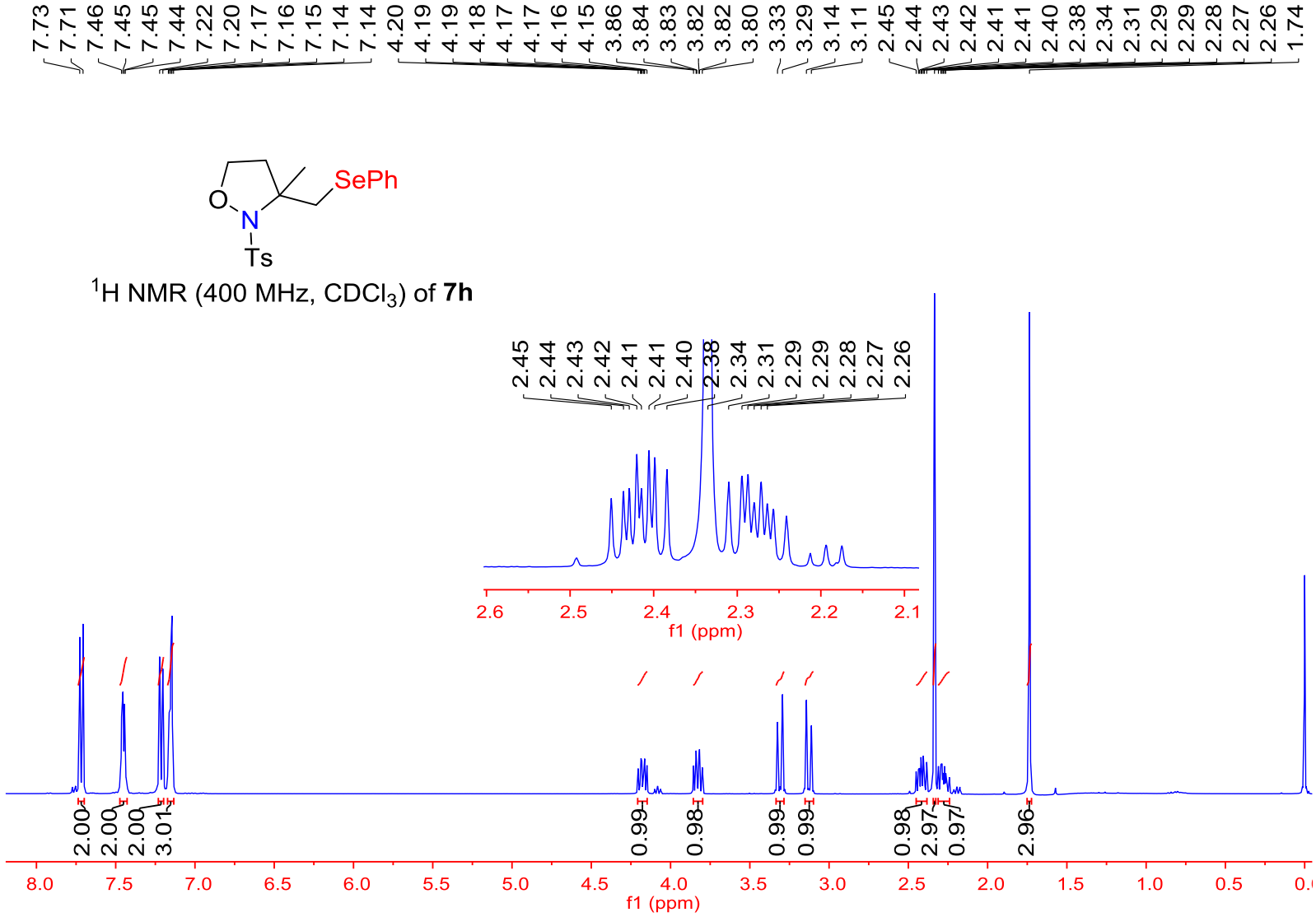
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7f**

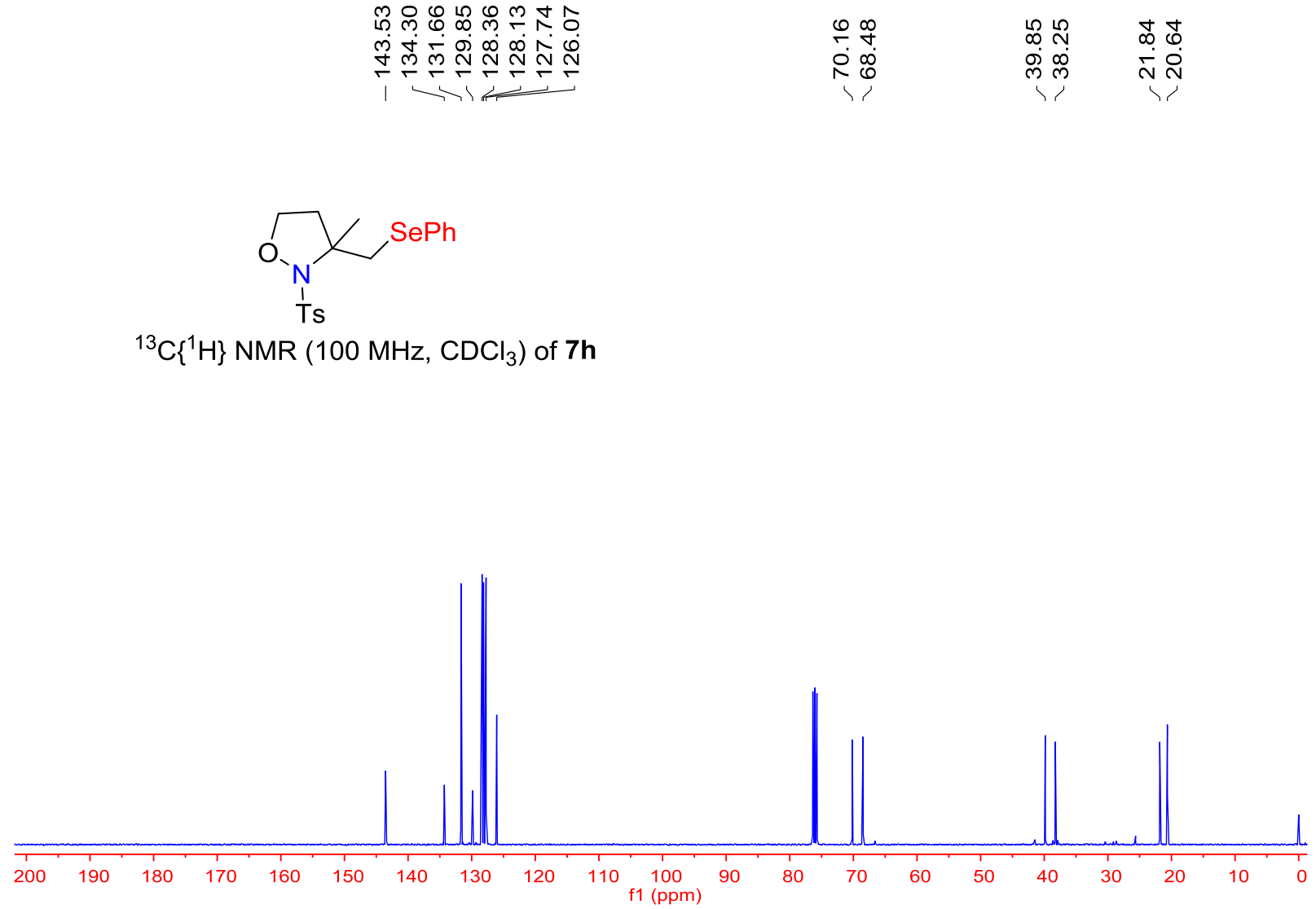


^{1}H NMR (400 MHz, $CDCl_3$) of **7g**

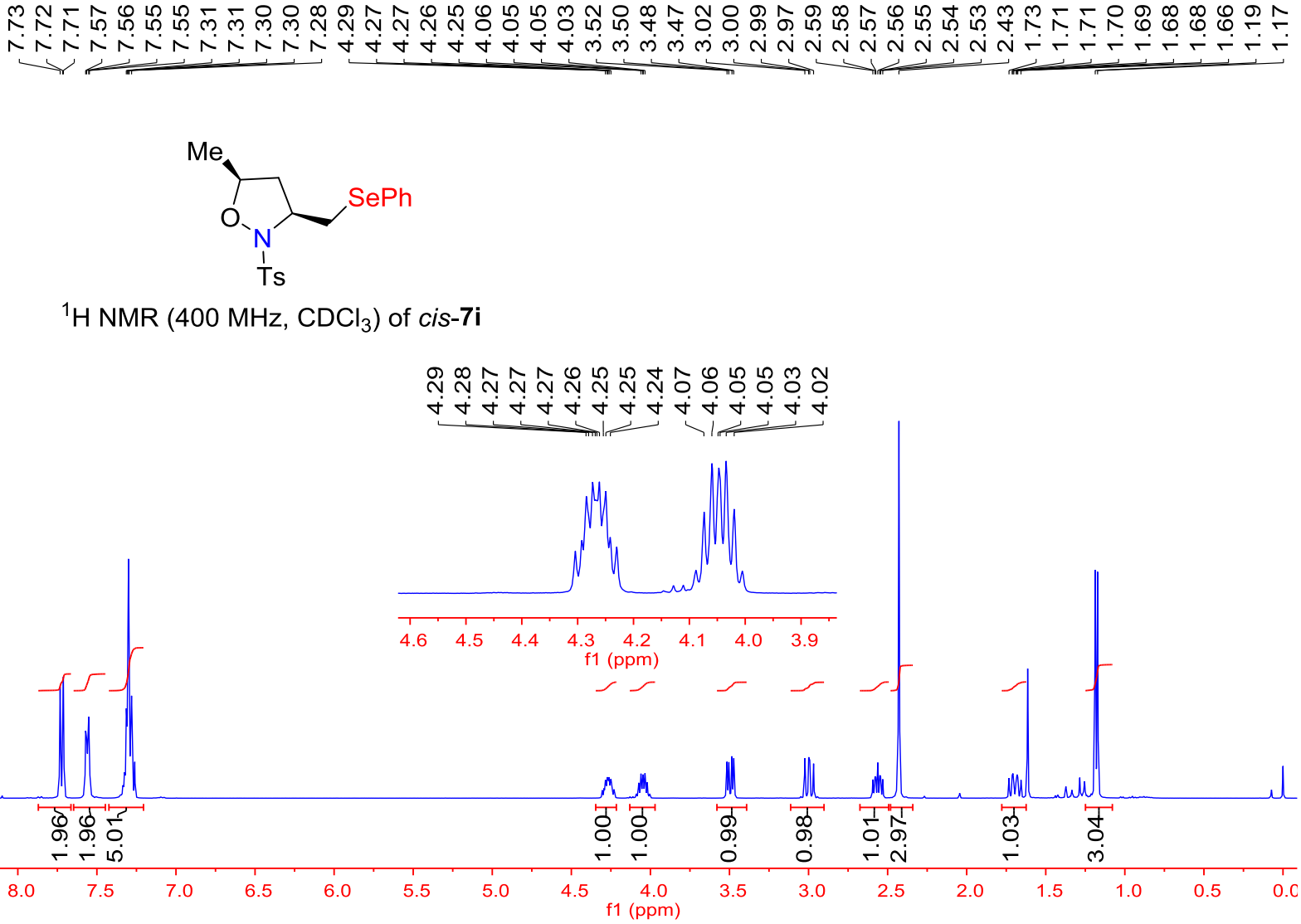


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7g**

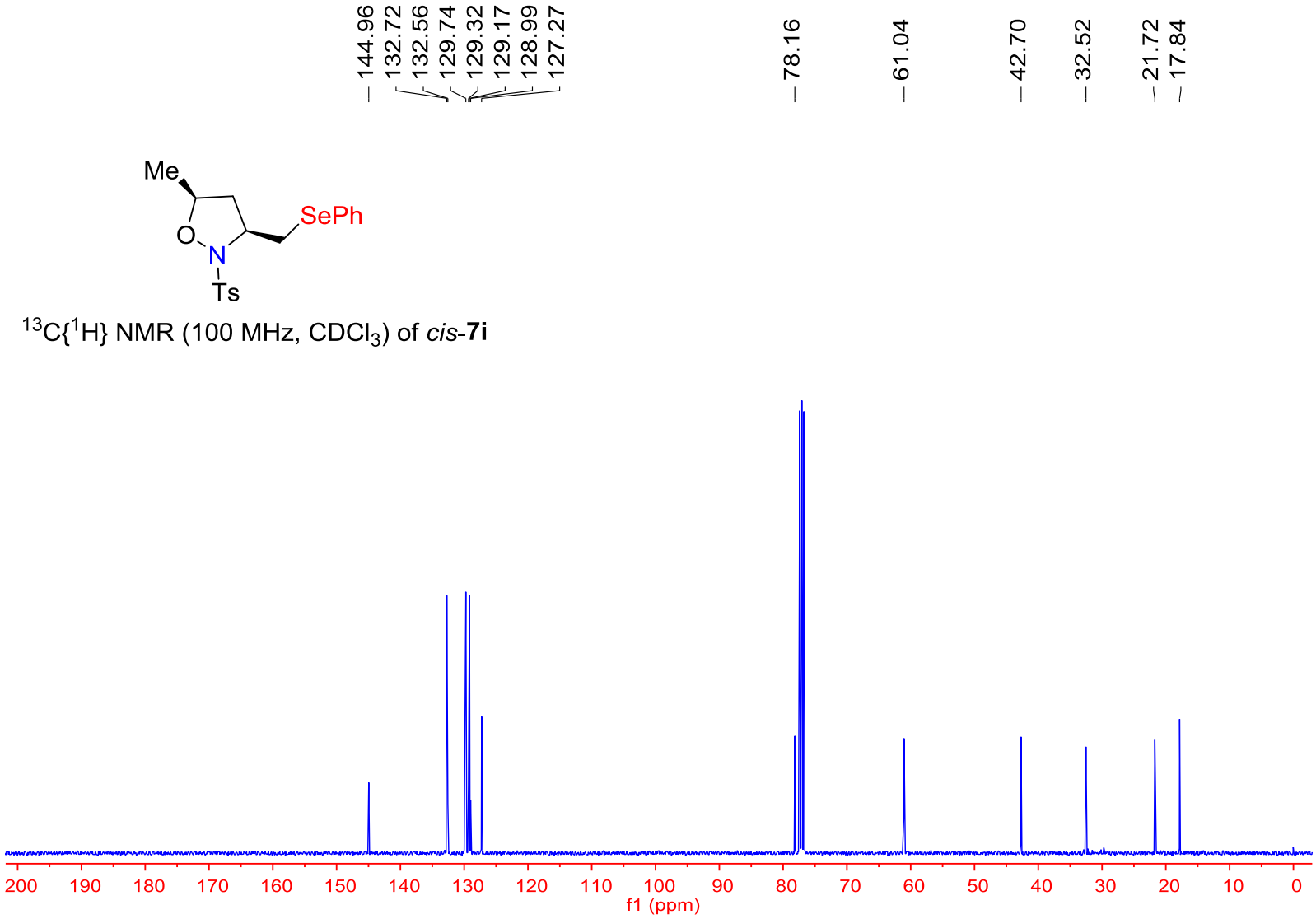

7.73 7.71 7.46 7.45 7.45 7.44 7.22 7.20 7.17 7.16 7.15 7.14 7.14 4.20 4.19 4.19 4.18 4.17 4.17 4.16 4.15 3.86 3.84 3.83 3.82 3.82 3.80 3.33 3.29 3.14 3.11 2.45 2.44 2.43 2.42 2.41 2.41 2.40 2.38 2.34 2.31 2.29 2.29 2.28 2.27 2.26 1.74
SePh
O
N
Ts
1H NMR (400 MHz, CDCl3) of 7h
2.45 2.44 2.43 2.42 2.41 2.41 2.40 2.38 2.34 2.31 2.29 2.29 2.28 2.27 2.26
2.6 2.5 2.4 2.3 2.2 2.1
f1 (ppm)
2.00 2.00 2.00 3.01 0.99 0.98 0.99 0.99 0.98 2.97 0.97 2.96
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)



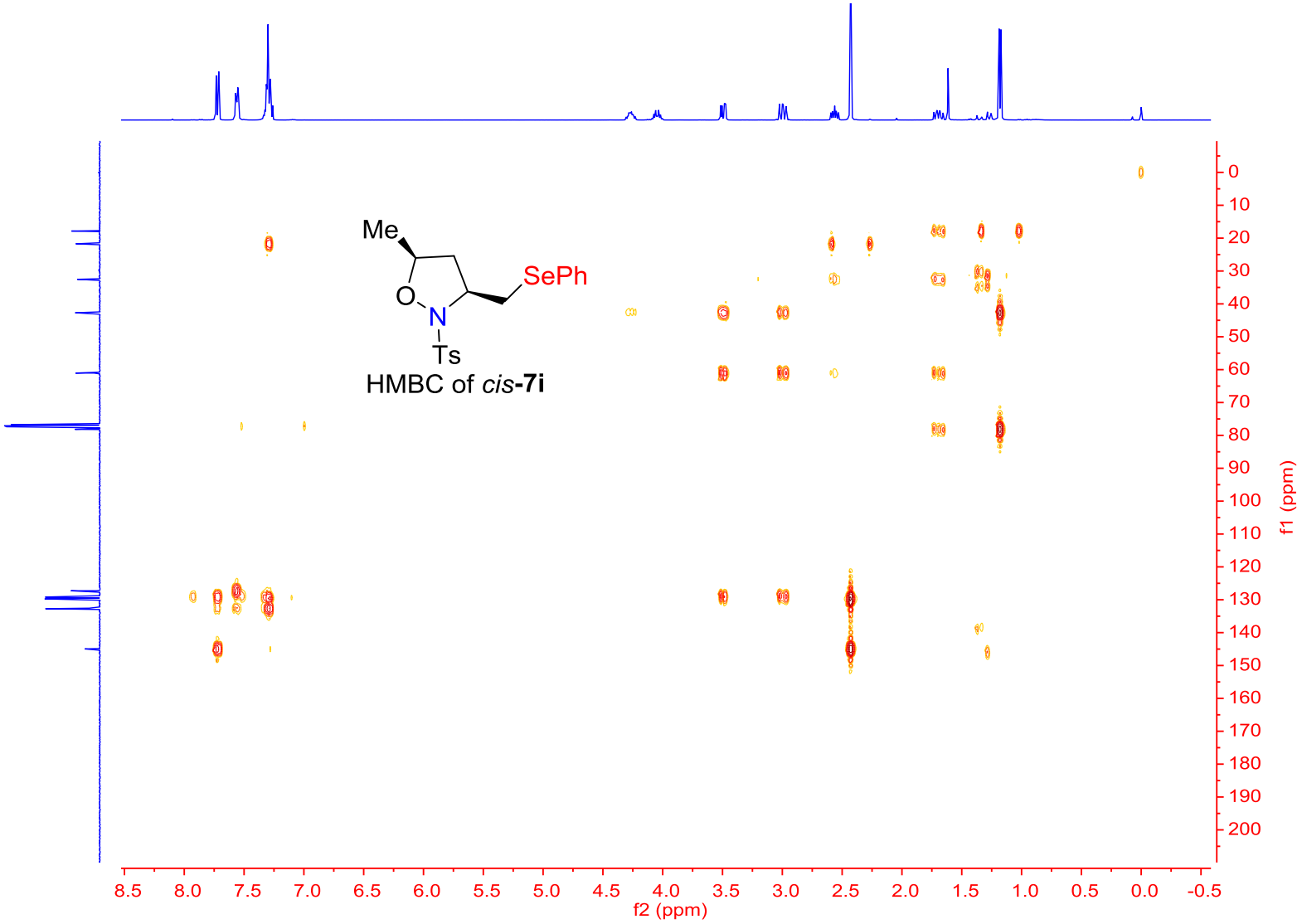
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7h**

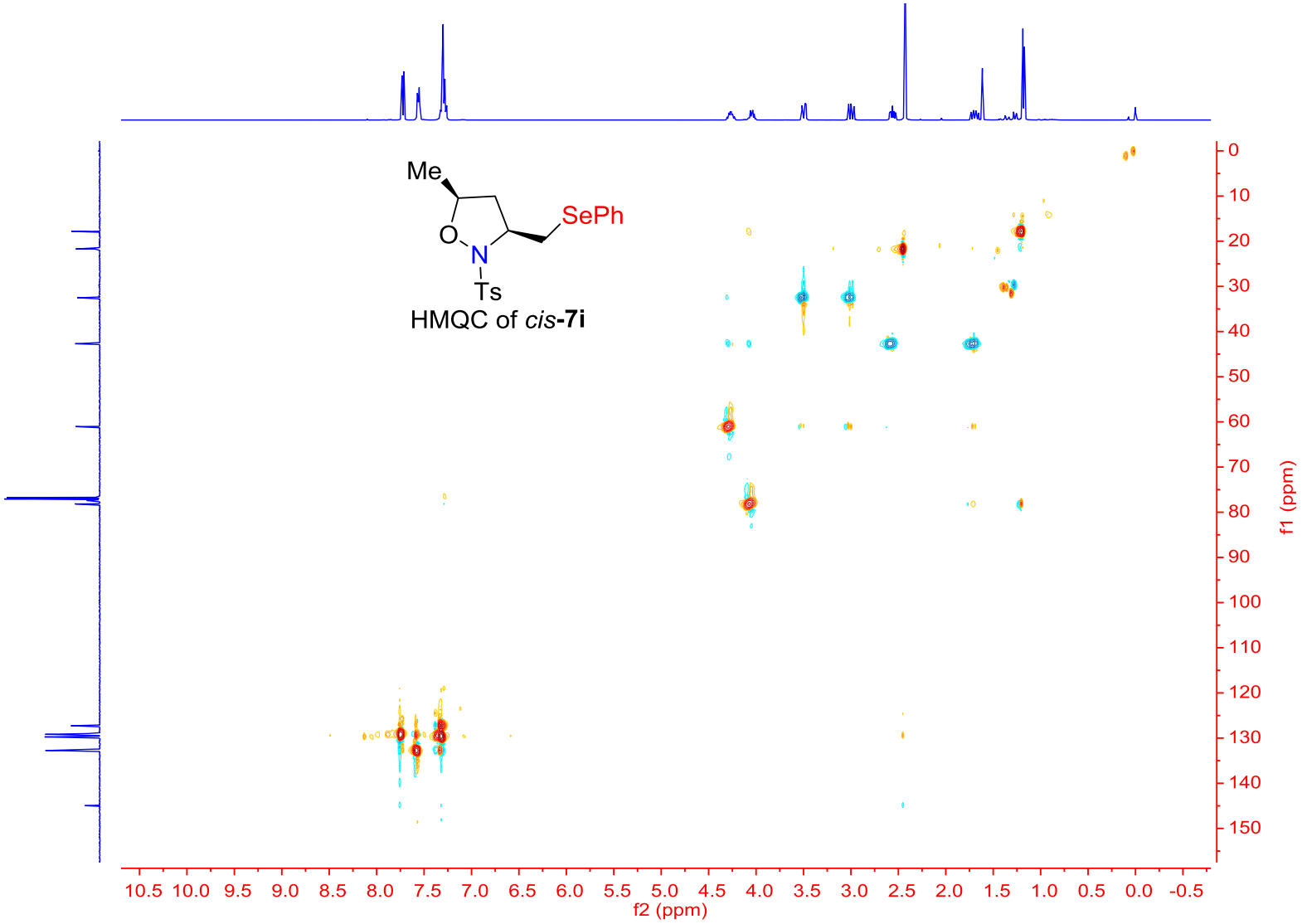


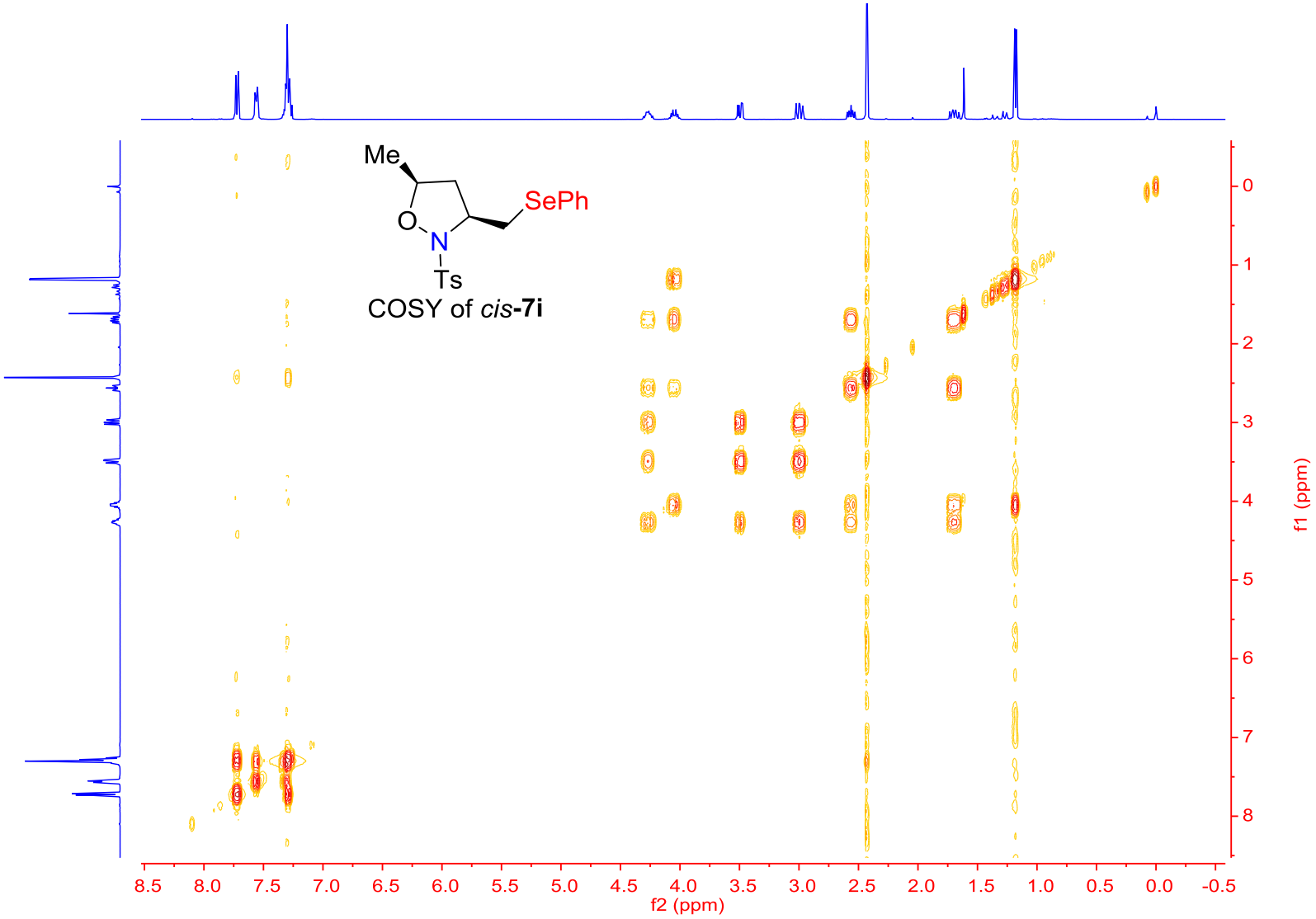
^{1}H NMR (400 MHz, $CDCl_3$) of *cis*-**7i**

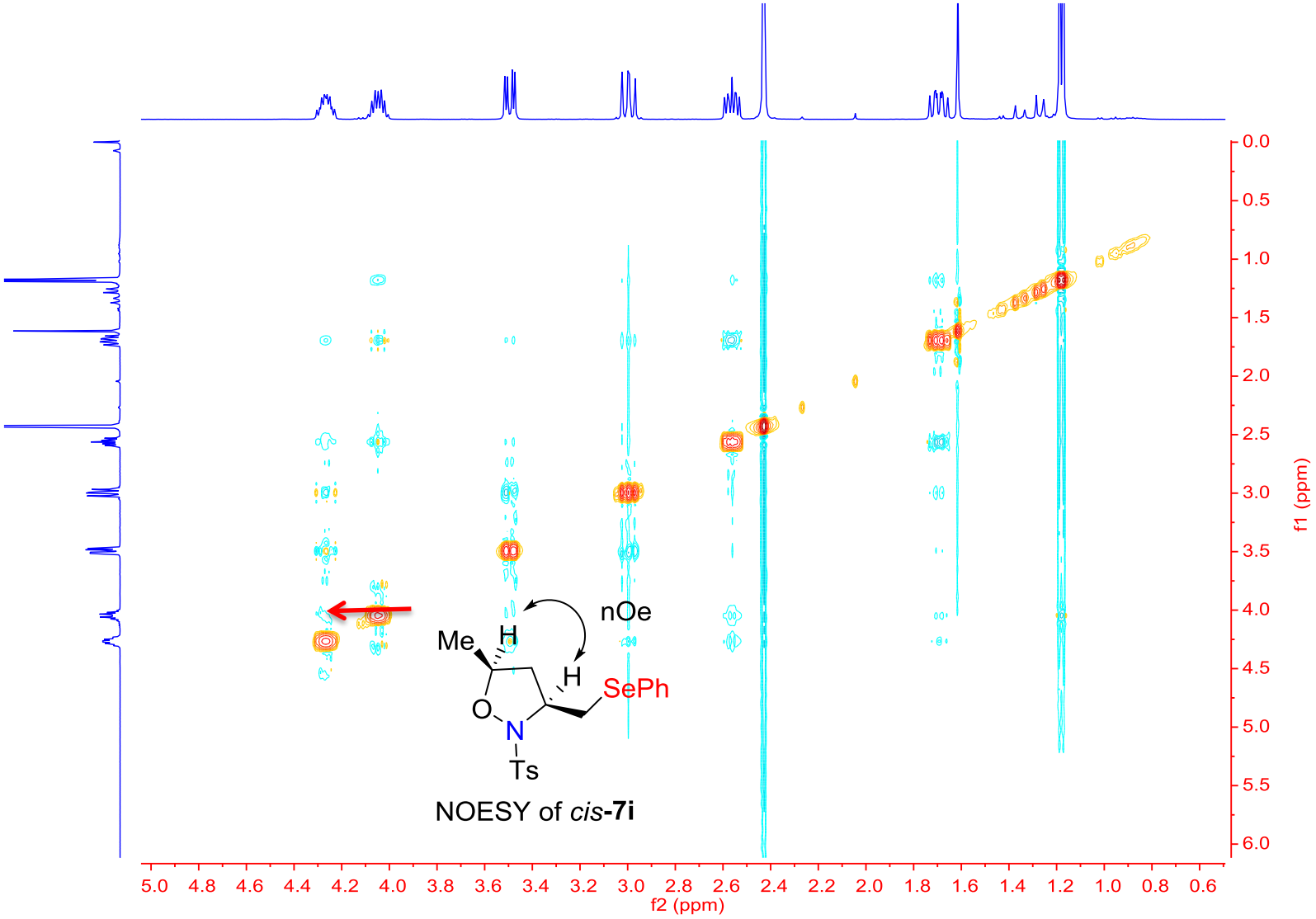


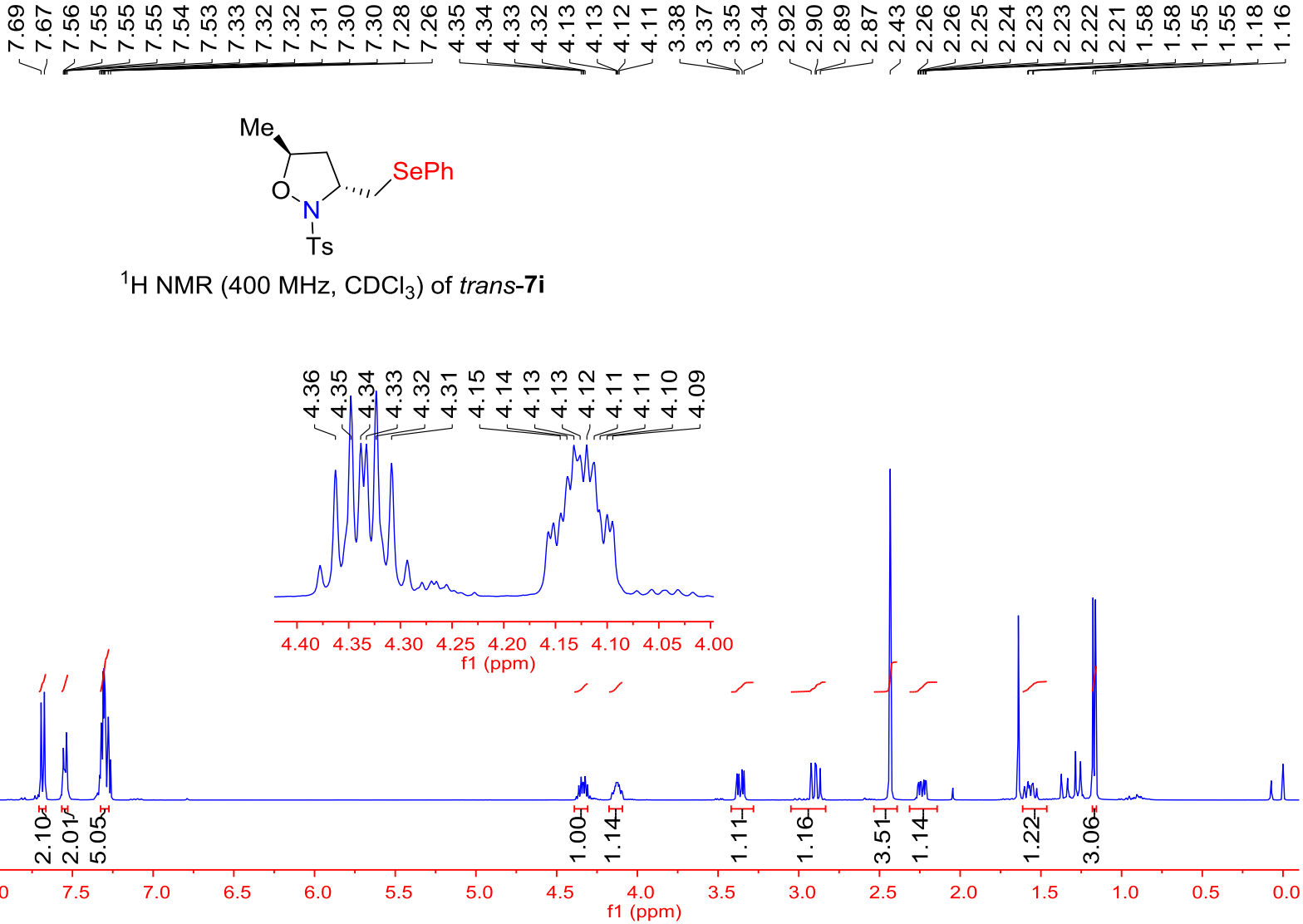
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *cis*-**7i**


Me
SePh
O
N
Ts
HMBC of *cis*-**7i**
f2 (ppm)
f1 (ppm)


Me
SePh
O
N
Ts
HMQC of *cis*-**7i**
f1 (ppm)
f2 (ppm)

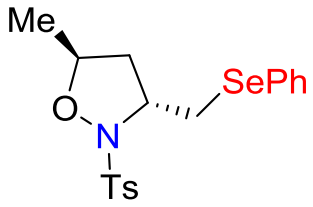

Me
SePh
O
N
Ts
COSY of *cis*-**7i**
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
f2 (ppm)
0
1
2
3
4
5
6
7
8
f1 (ppm)


nOe
Me
H
H
SePh
O
N
Ts
NOESY of *cis*-**7i**
f2 (ppm)
f1 (ppm)

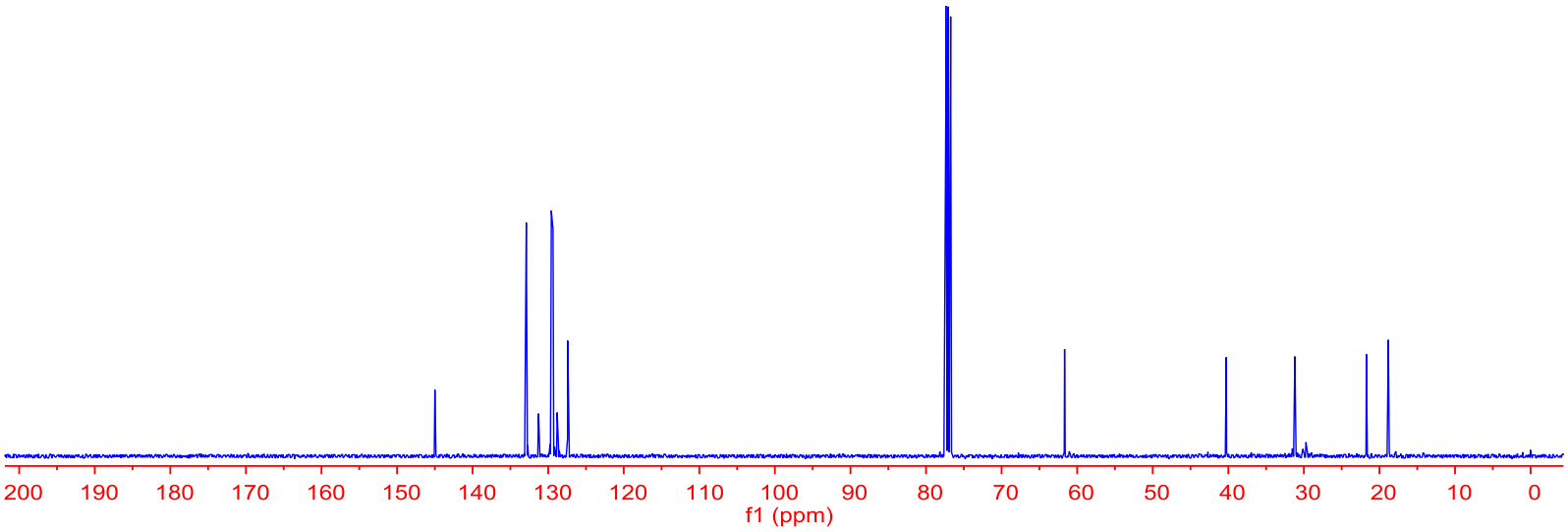


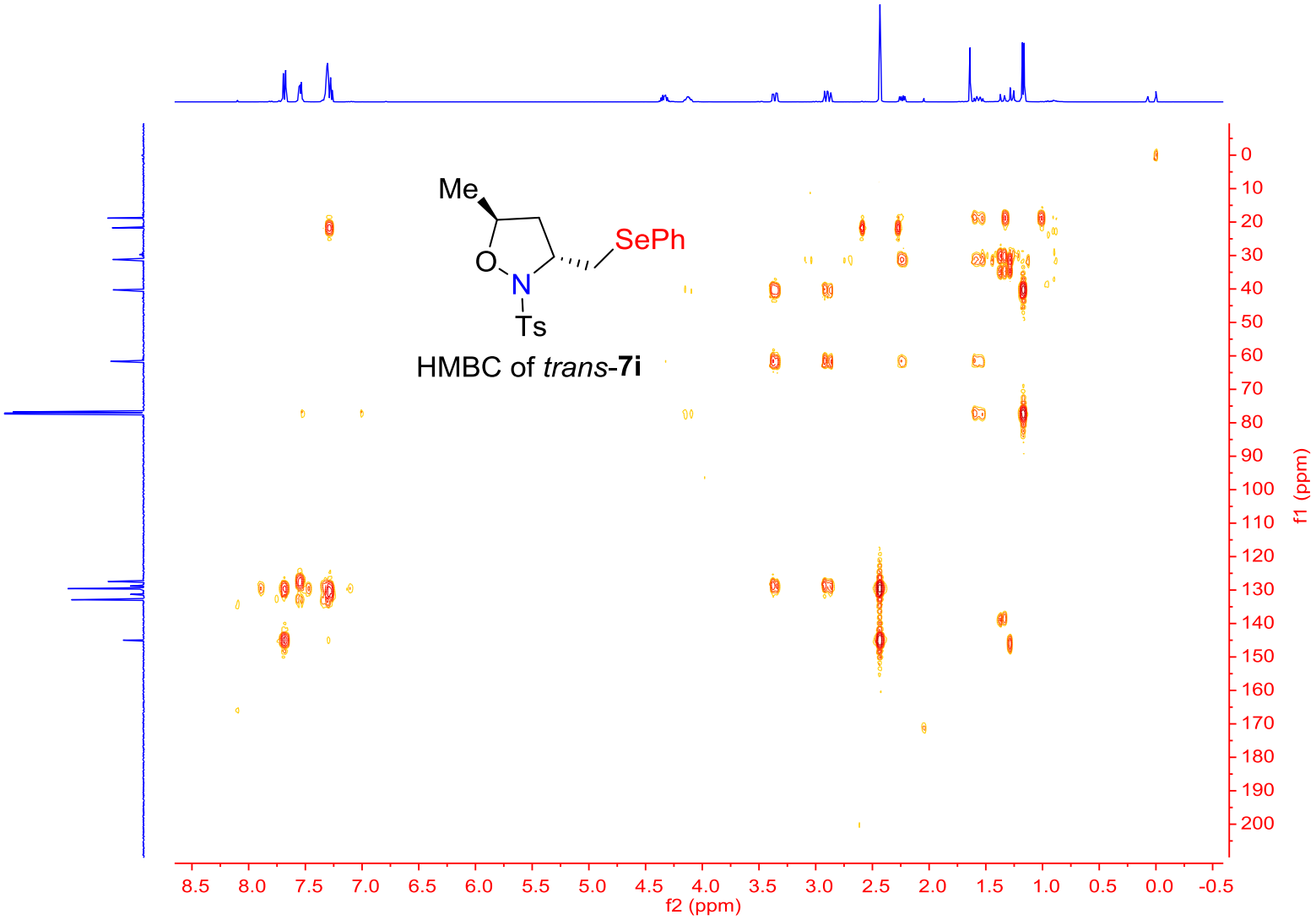
^{1}H NMR (400 MHz, $CDCl_3$) of *trans*-**7i**

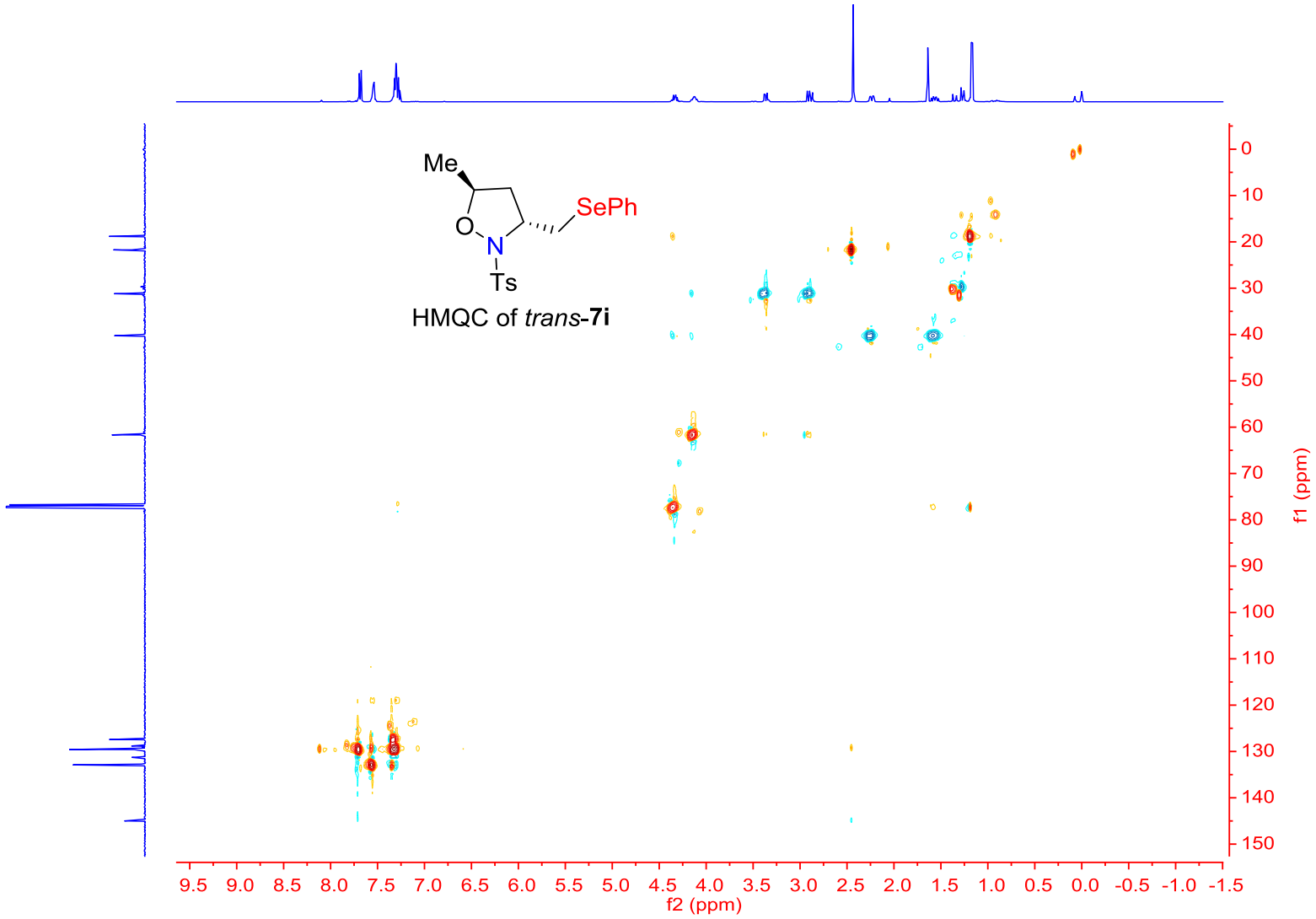
144.99
132.90
131.28
129.58
129.48
129.36
128.81
127.42
61.67
40.27
31.20
21.73
18.82

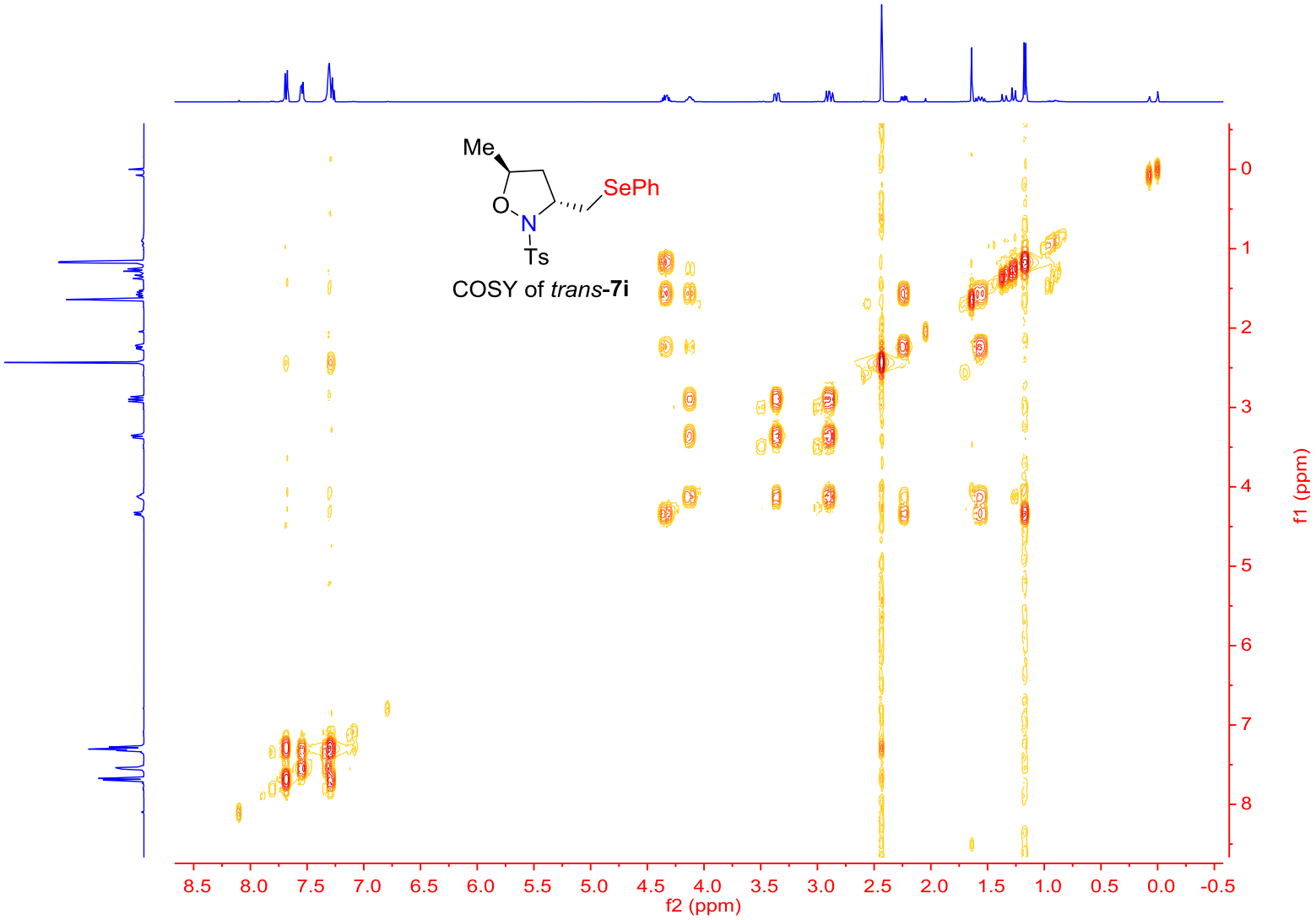


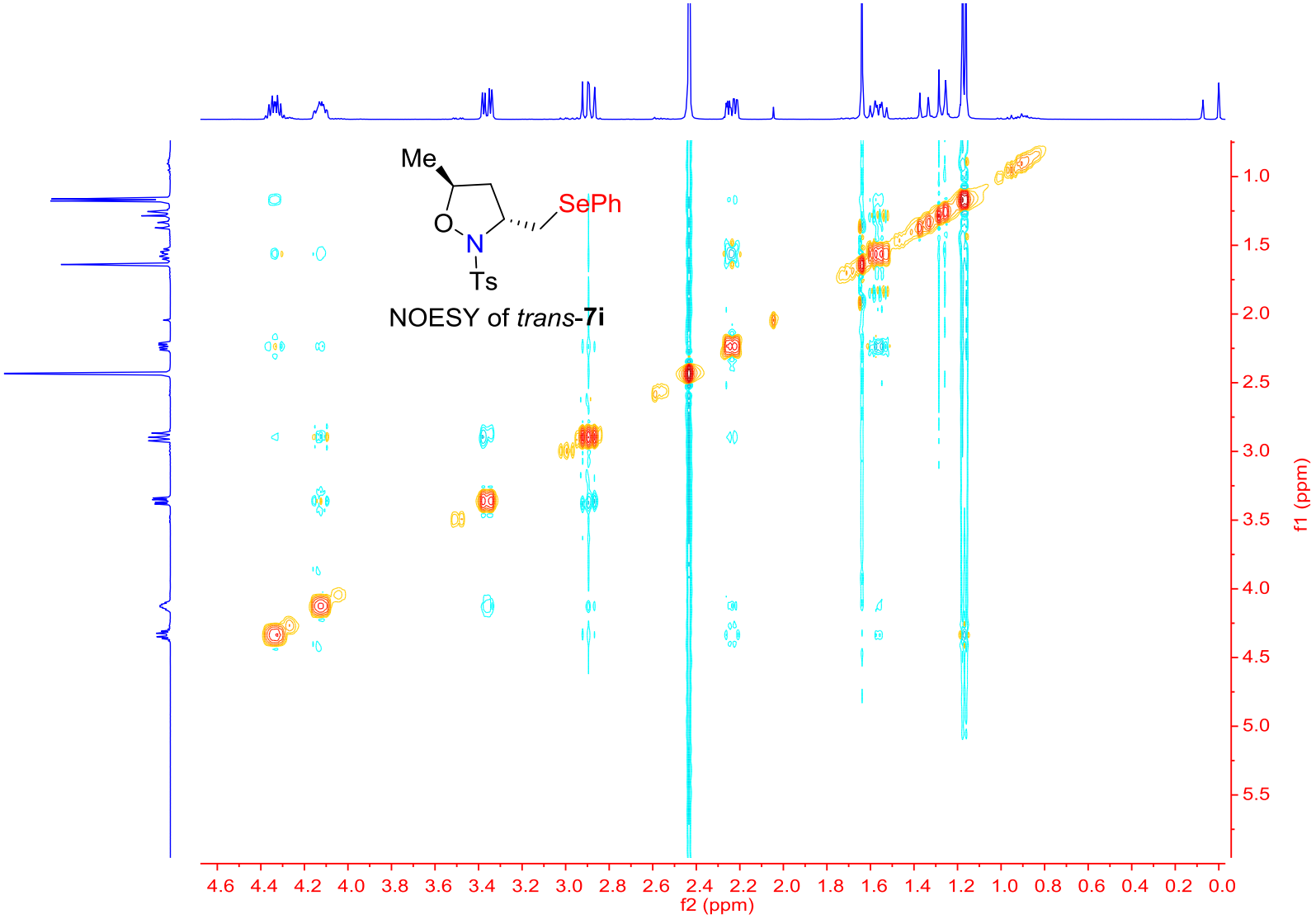
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *trans*-**7i**

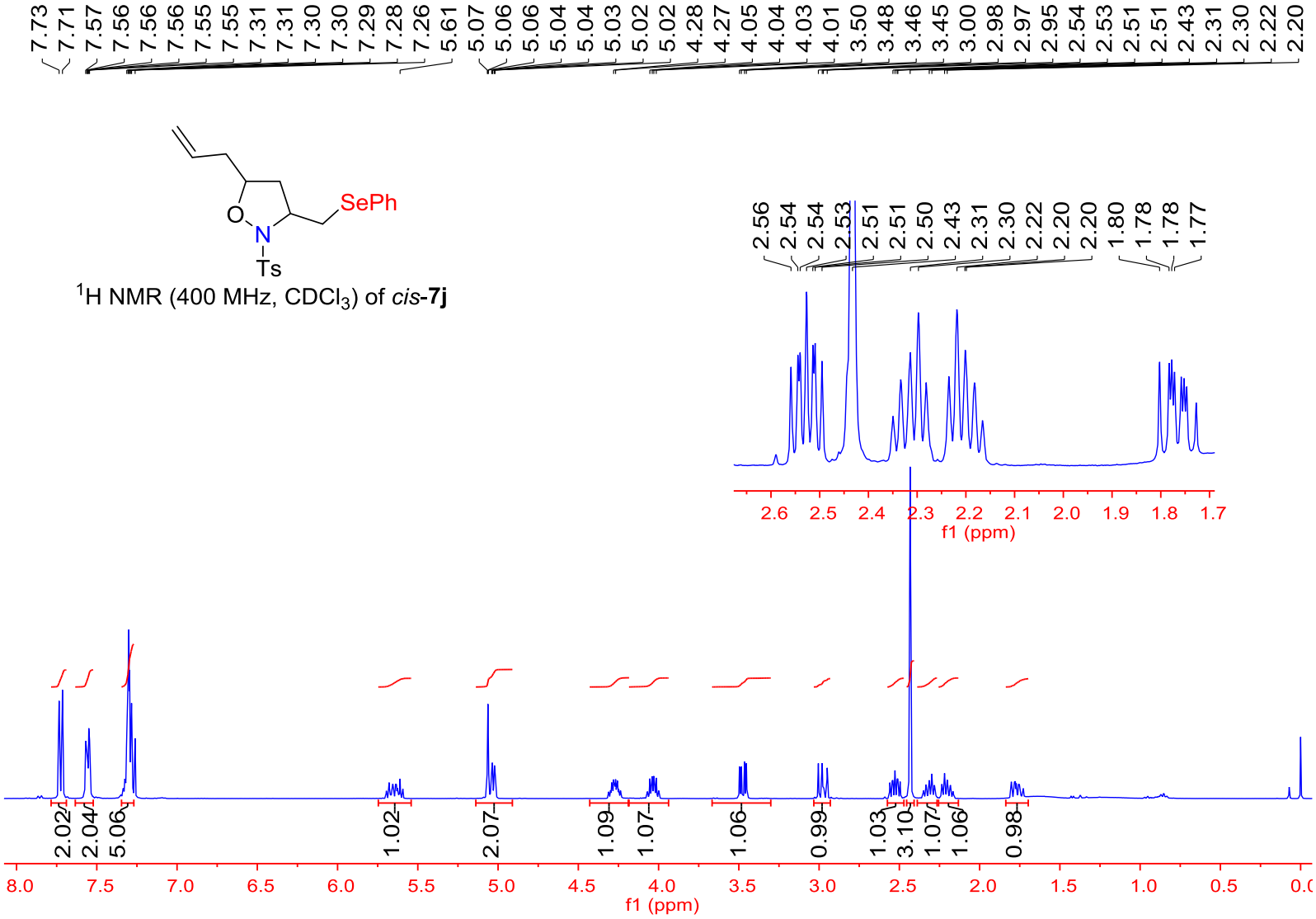



Me
SePh
O
N
Ts
HMBC of *trans*-**7i**
f2 (ppm)
f1 (ppm)

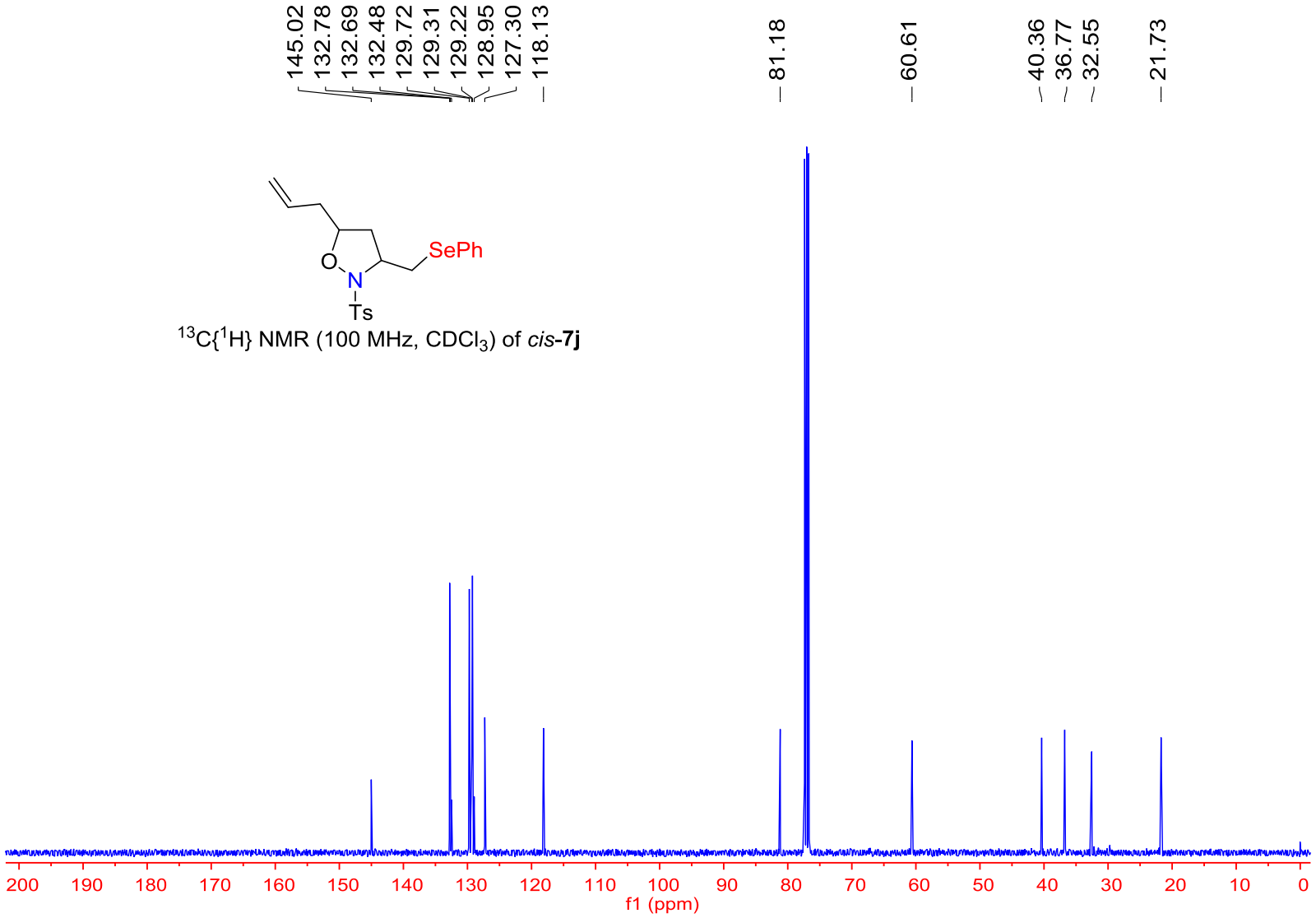

Me
SePh
O
N
Ts
HMQC of *trans*-**7i**
f1 (ppm)
f2 (ppm)


Me
SePh
O
N
Ts
COSY of *trans*-**7i**
8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f2 (ppm)
0 1 2 3 4 5 6 7 8
f1 (ppm)

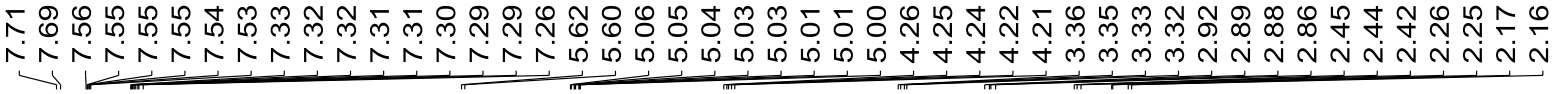

Me
O
N
Ts
SePh
NOESY of *trans*-**7i**
4.6 4.4 4.2 4.0 3.8 3.6 3.4 3.2 3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0.0
f2 (ppm)
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
f1 (ppm)

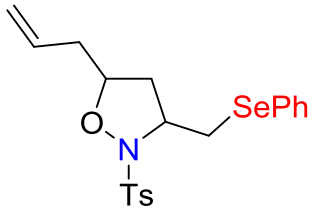


^{1}H NMR (400 MHz, $CDCl_3$) of *cis*-**7j**

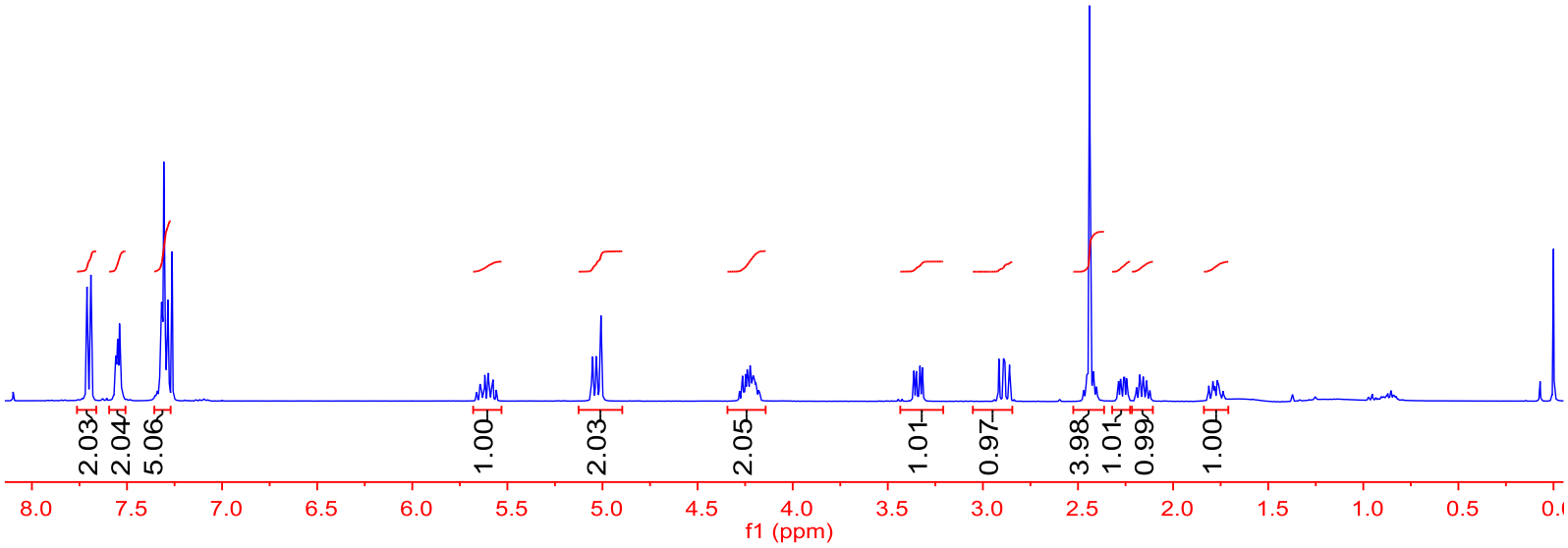


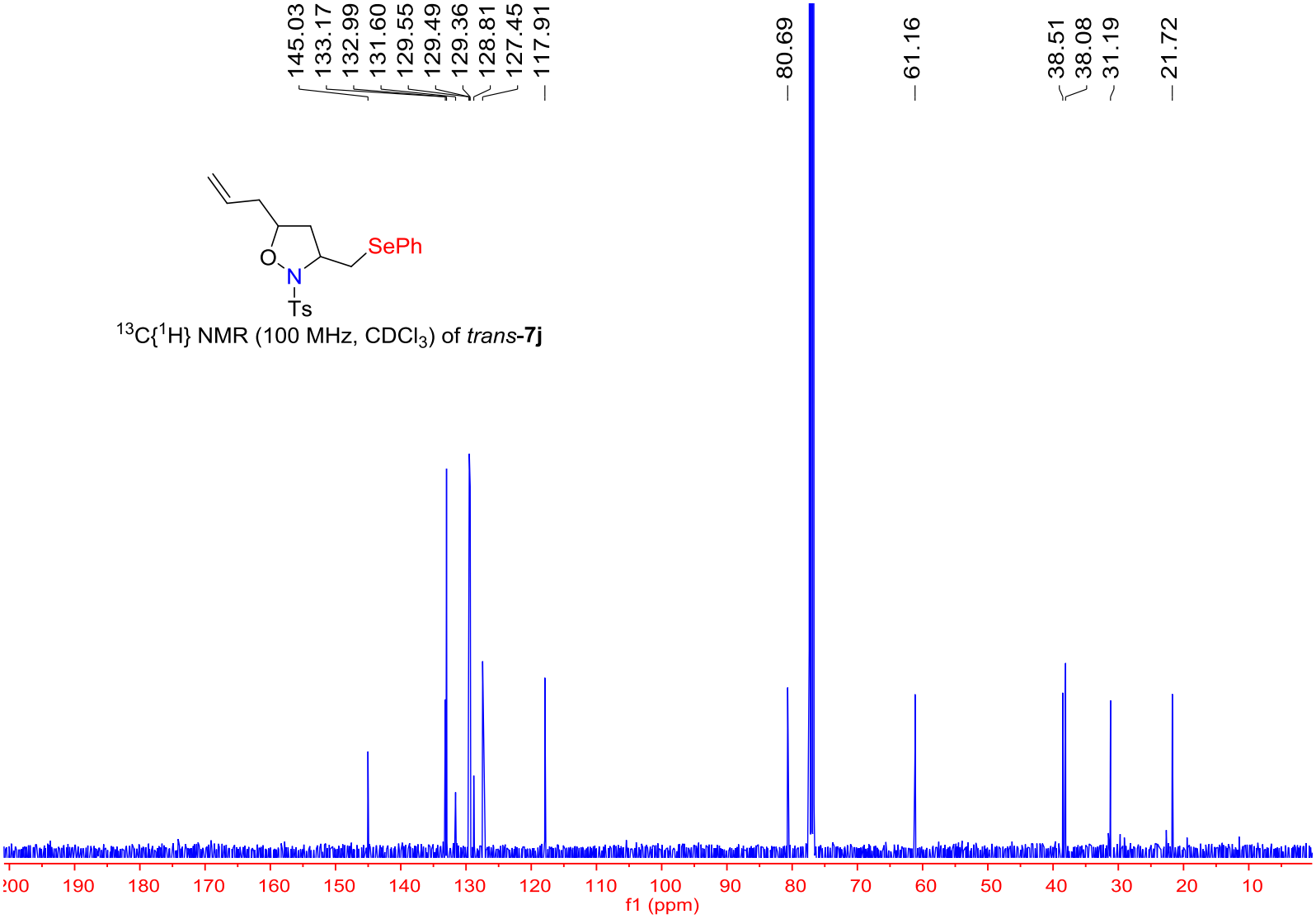
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *cis*-**7j**



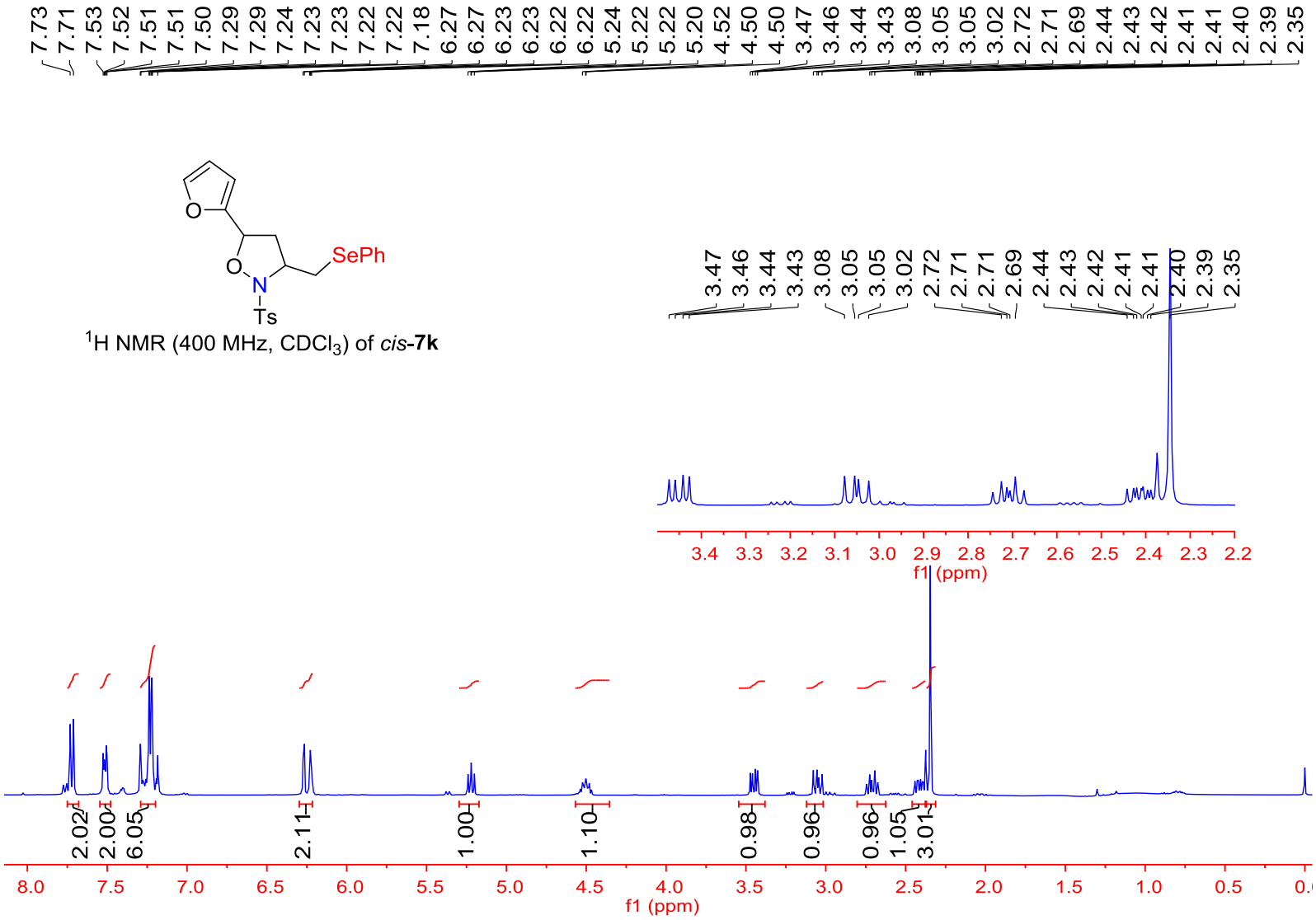


^{1}H NMR (400 MHz, $CDCl_3$) of *trans*-**7j**

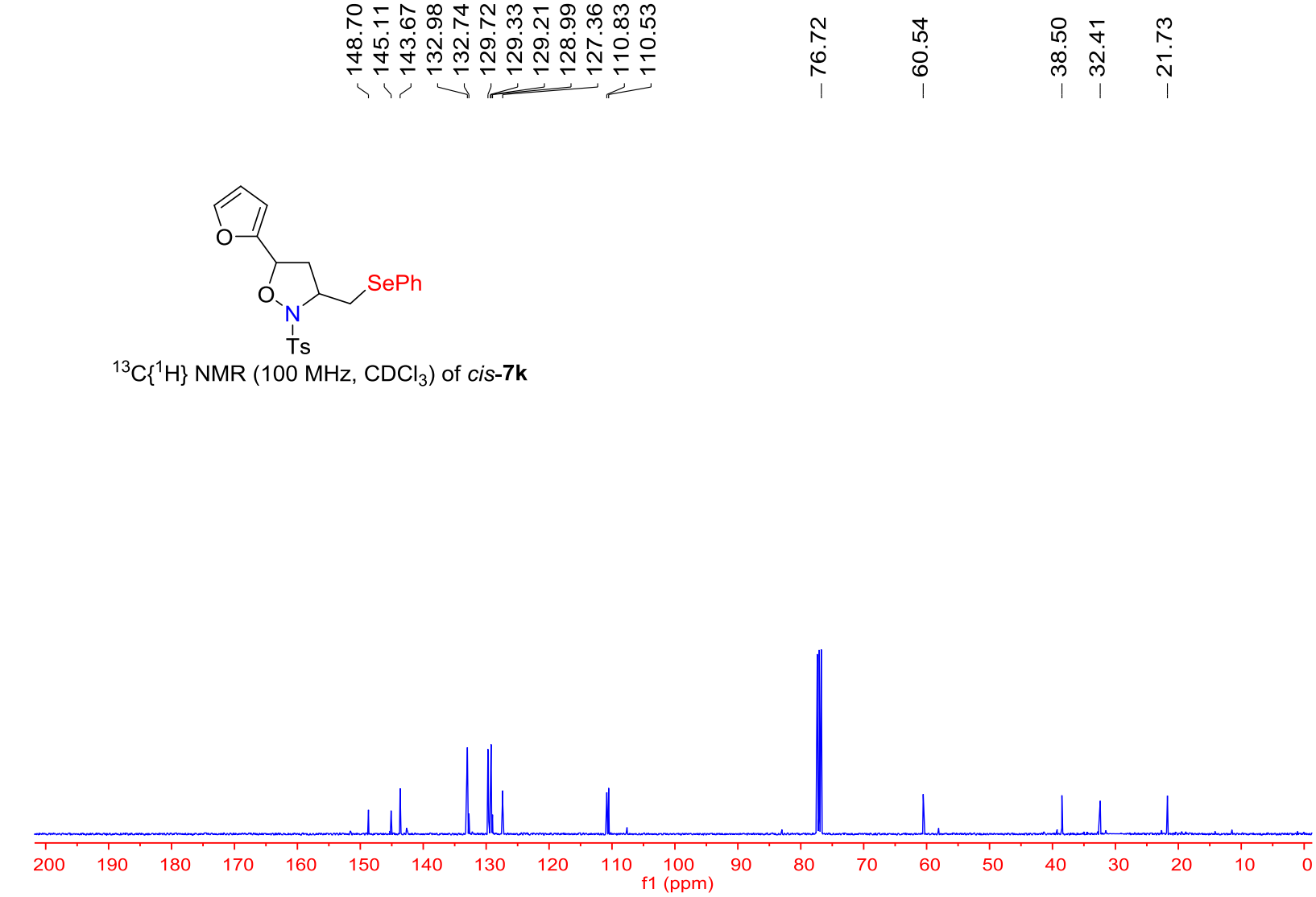




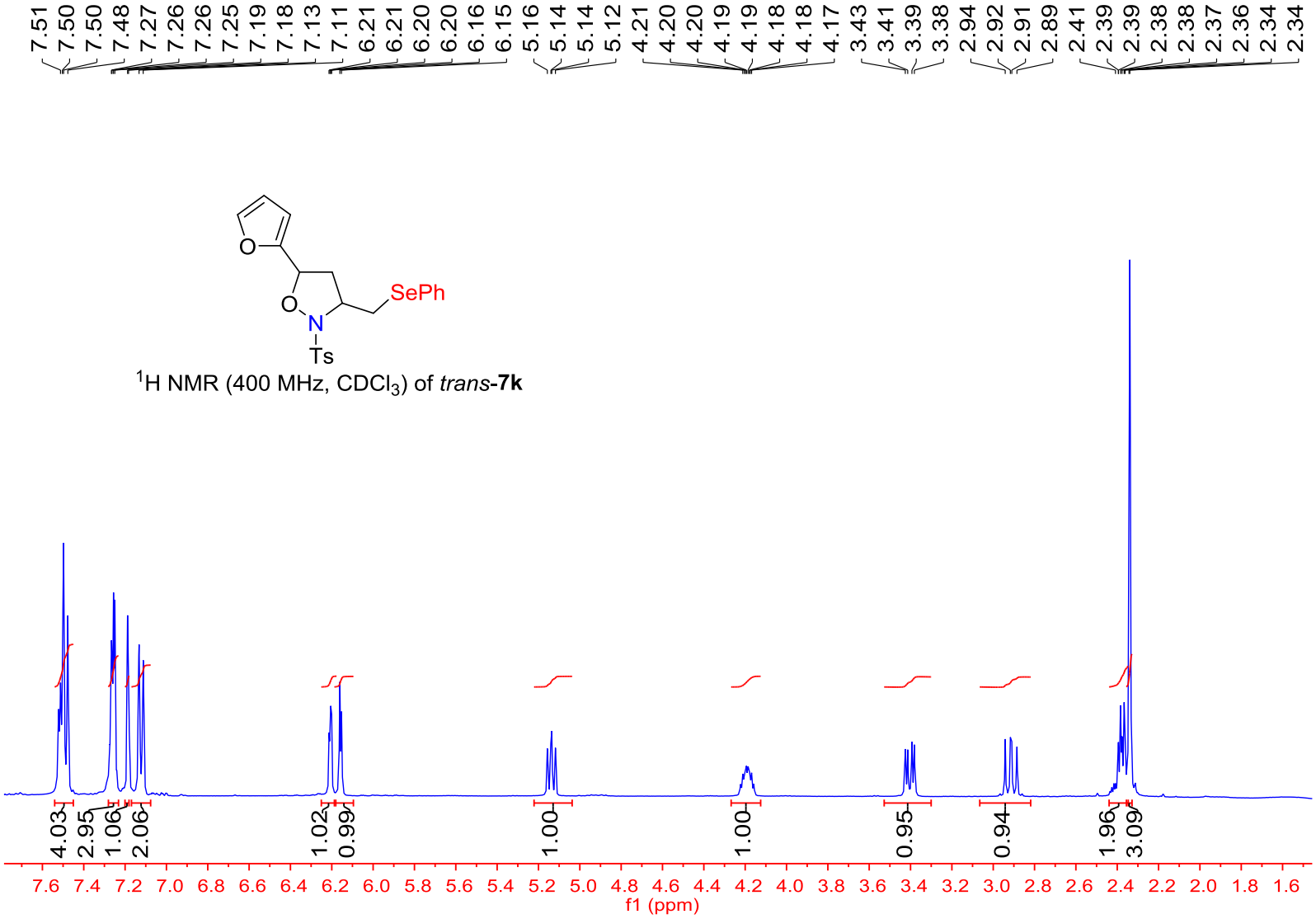
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *trans*-**7j**



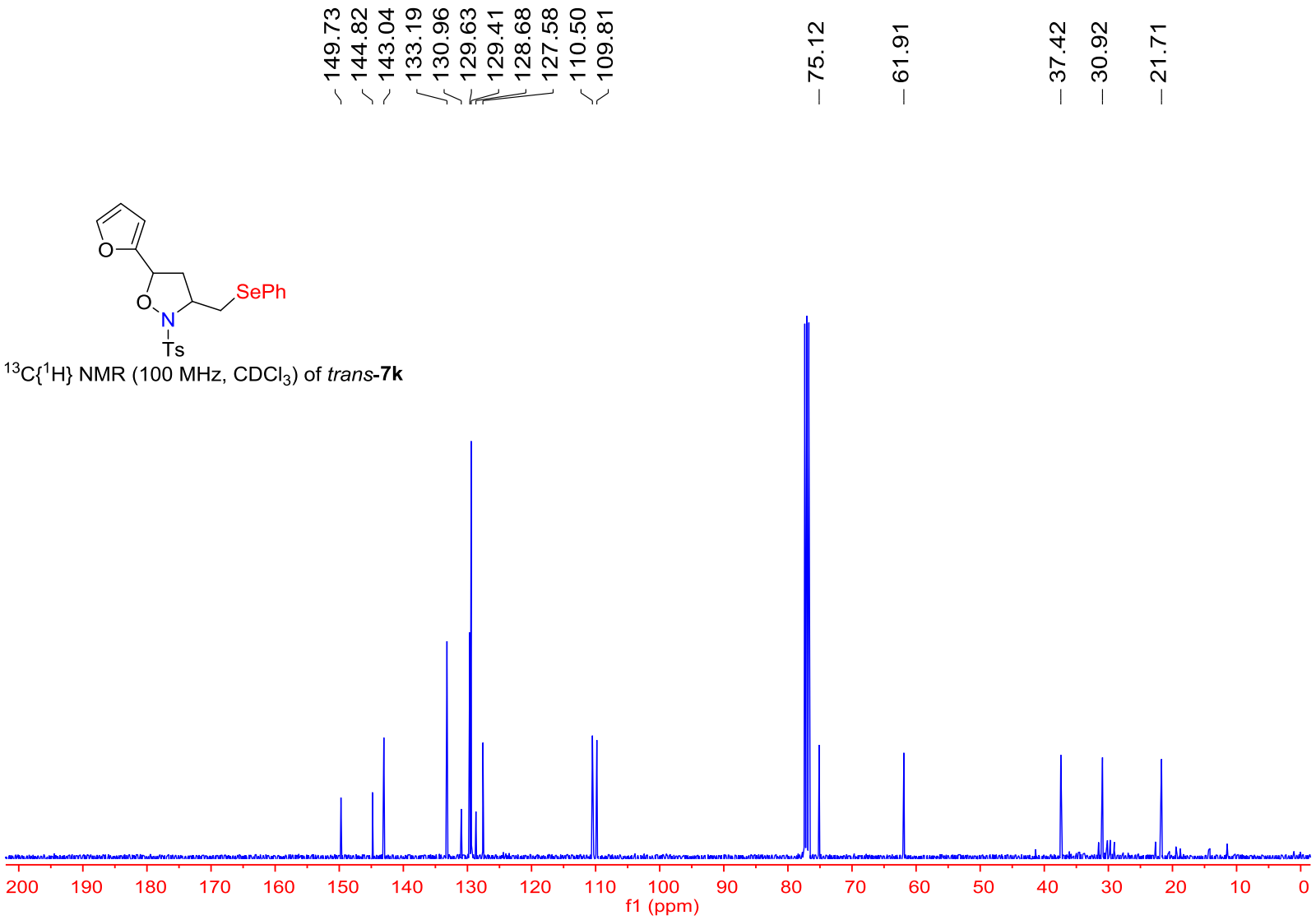
^{1}H NMR (400 MHz, $CDCl_3$) of *cis*-**7k**



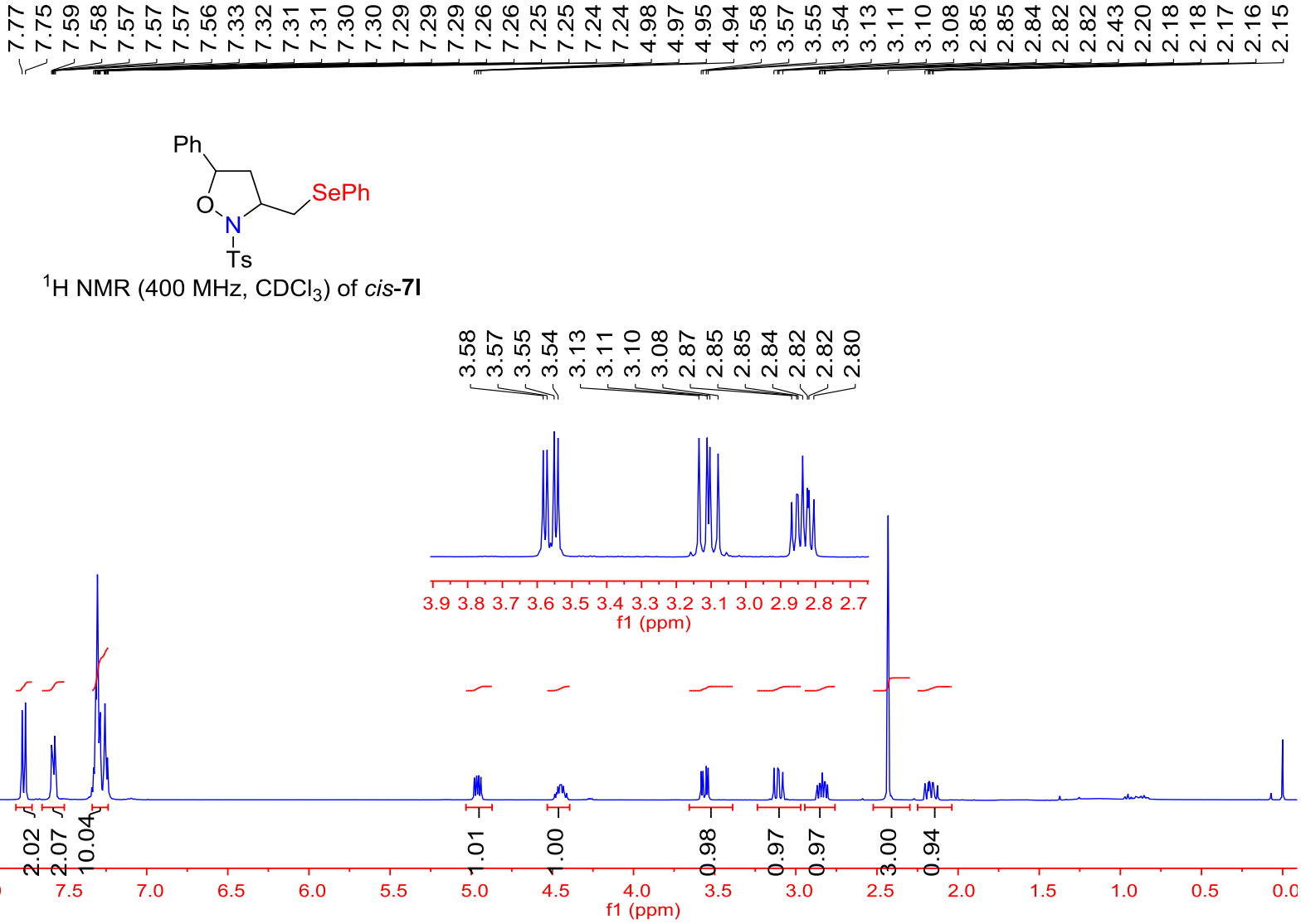
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *cis*-**7k**



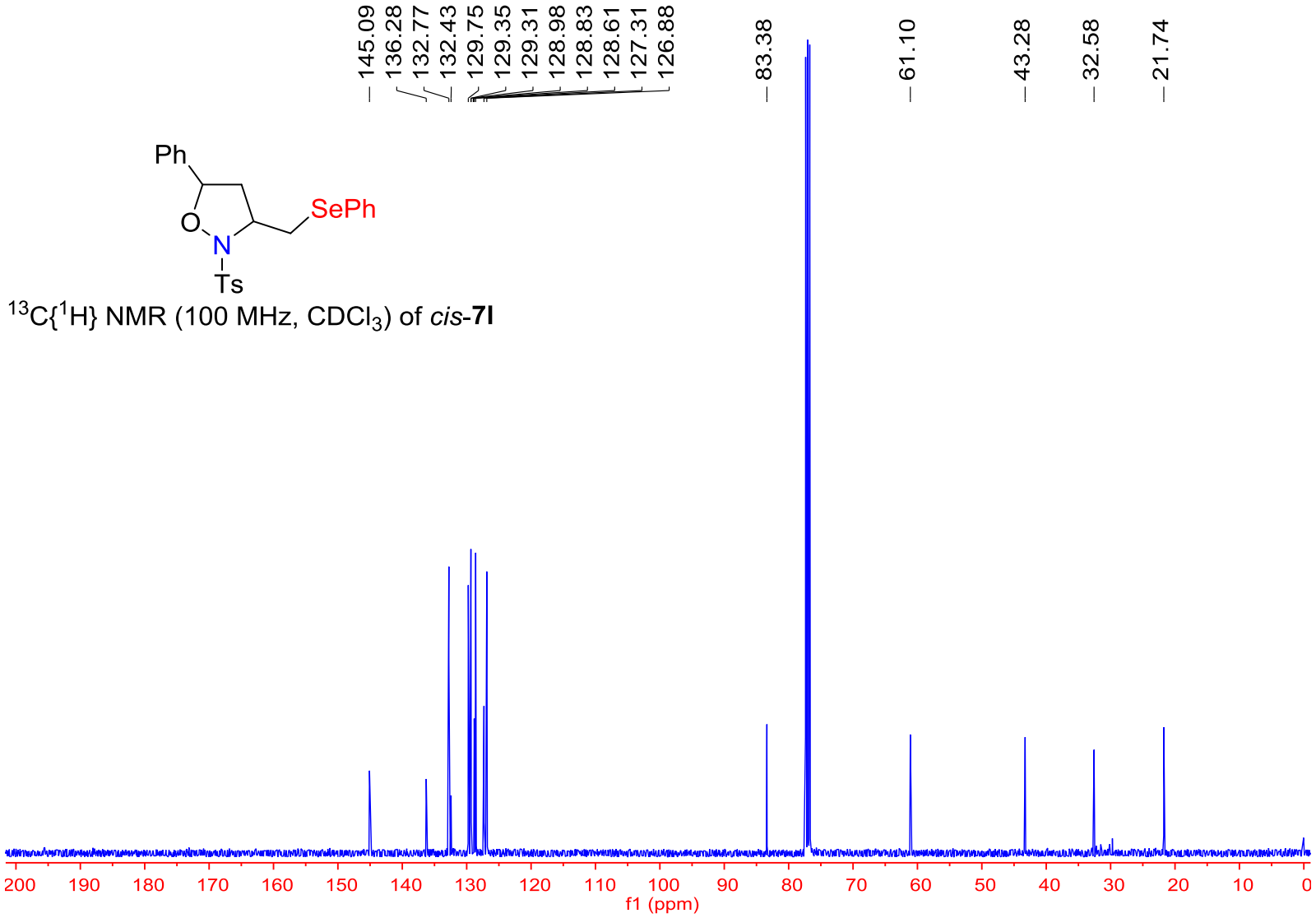
^{1}H NMR (400 MHz, $CDCl_3$) of *trans*-**7k**



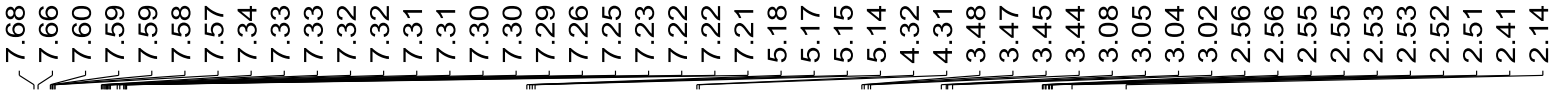
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *trans*-**7k**

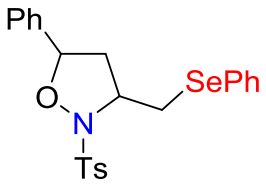


^{1}H NMR (400 MHz, $CDCl_3$) of *cis*-**7l**

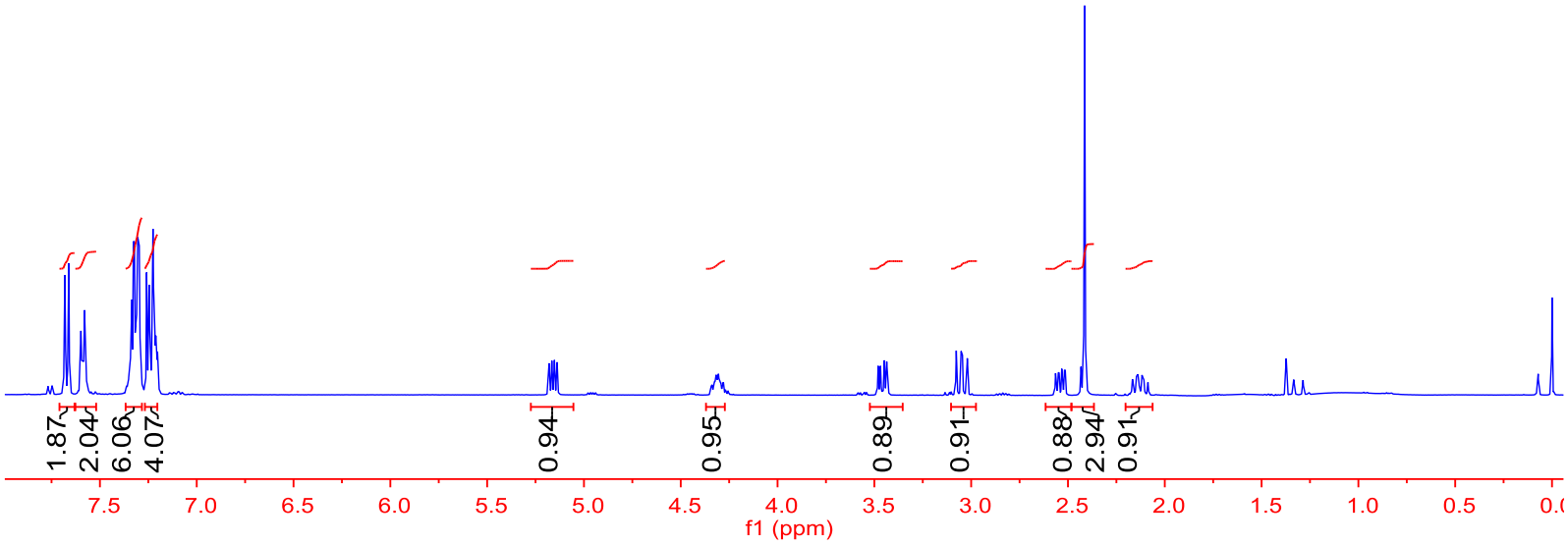


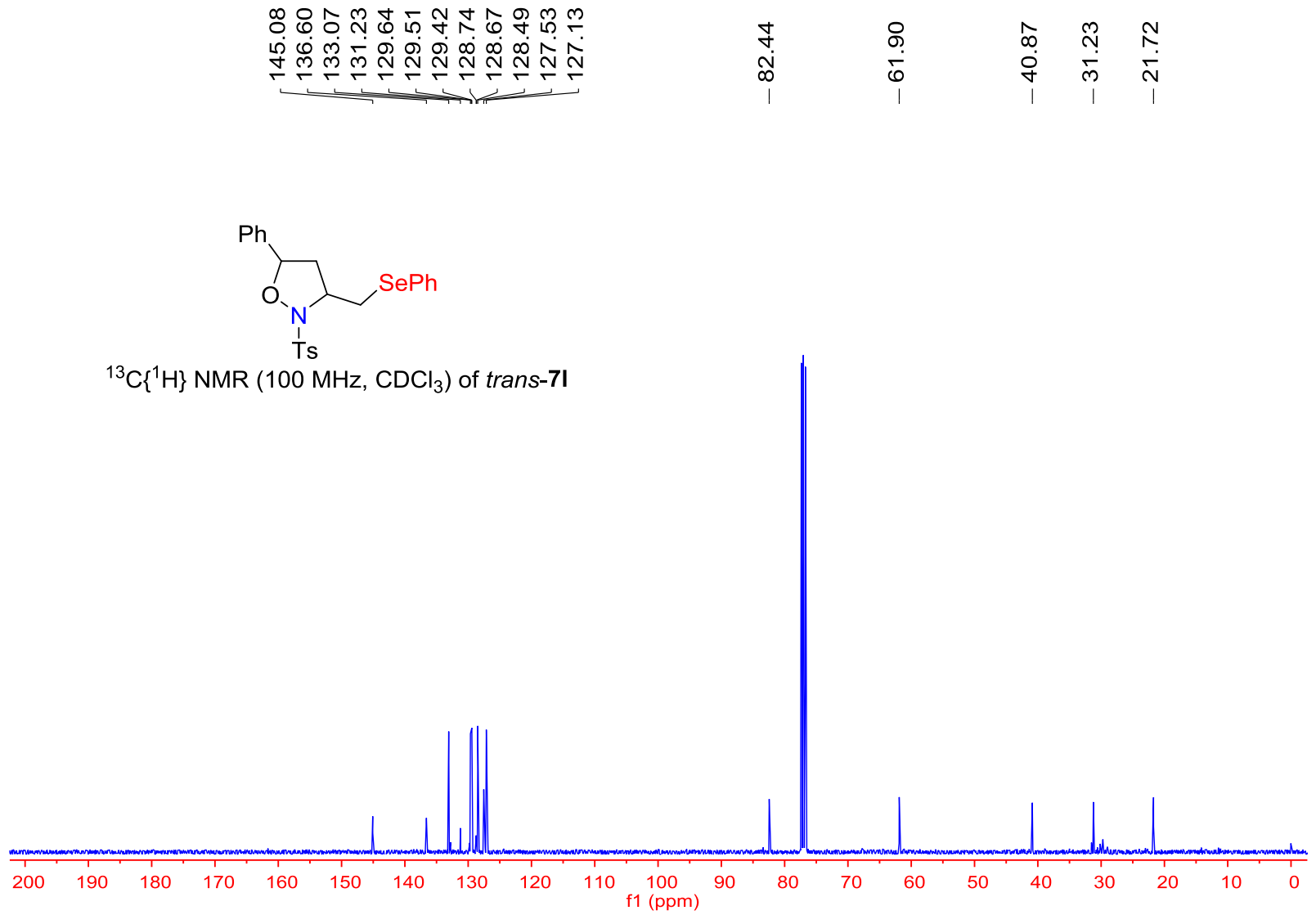
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *cis*-**7l**



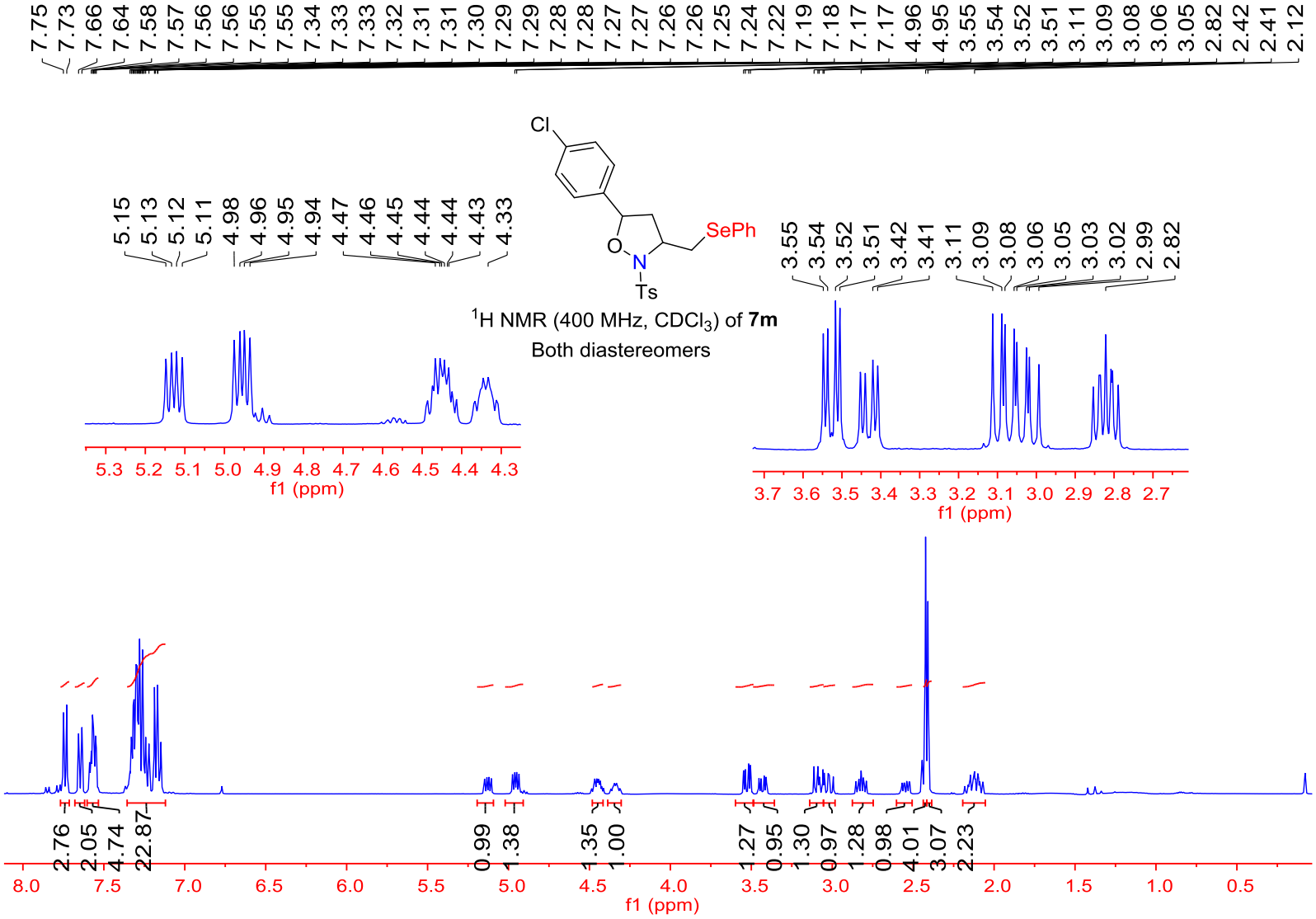


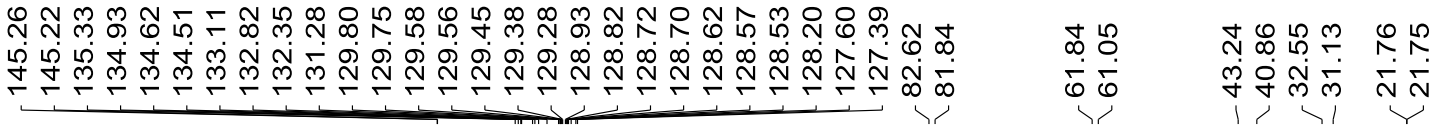
^{1}H NMR (400 MHz, $CDCl_3$) of *trans*-**7l**

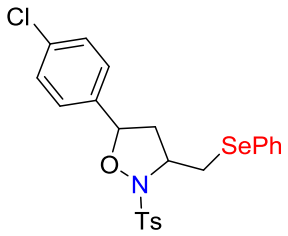




$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of *trans*-**7l**

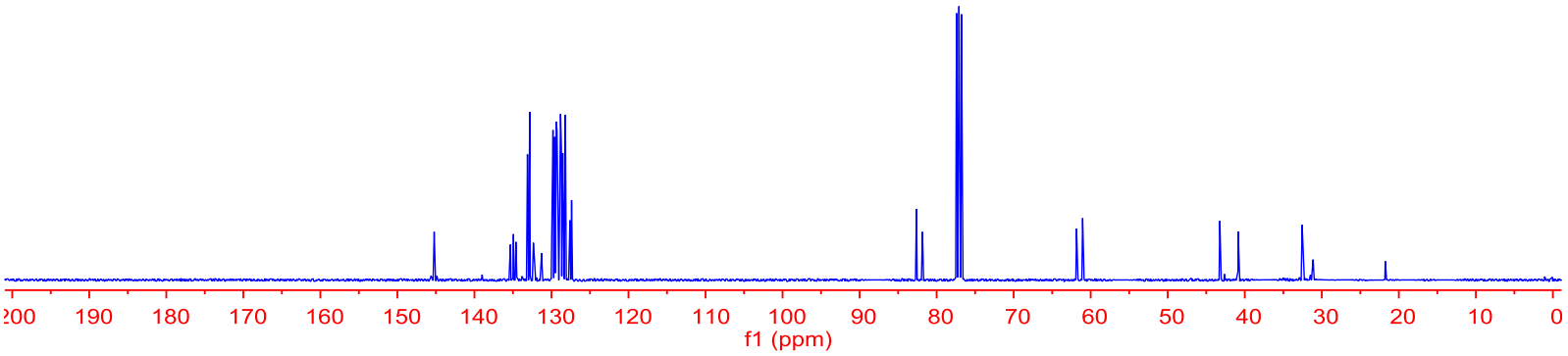

7.75 7.73 7.66 7.64 7.58 7.57 7.56 7.56 7.55 7.55 7.34 7.33 7.33 7.32 7.31 7.31 7.30 7.29 7.29 7.28 7.28 7.27 7.27 7.26 7.26 7.25 7.24 7.22 7.19 7.18 7.17 7.17 4.96 4.95 3.55 3.54 3.52 3.51 3.11 3.09 3.08 3.06 3.05 2.82 2.42 2.41 2.12
Cl
SePh
O
N
Ts
^{1}H NMR (400 MHz, $CDCl_3$) of **7m**
Both diastereomers
5.15 5.13 5.12 5.11 4.98 4.96 4.95 4.94 4.47 4.46 4.45 4.44 4.44 4.43 4.33
3.55 3.54 3.52 3.51 3.42 3.41 3.11 3.09 3.08 3.06 3.05 3.03 3.02 2.99 2.82
5.3 5.2 5.1 5.0 4.9 4.8 4.7 4.6 4.5 4.4 4.3
f1 (ppm)
3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8 2.7
f1 (ppm)
2.76 2.05 4.74 22.87 0.99 1.38 1.35 1.00 1.27 0.95 1.30 0.97 1.28 0.98 4.01 3.07 2.23
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

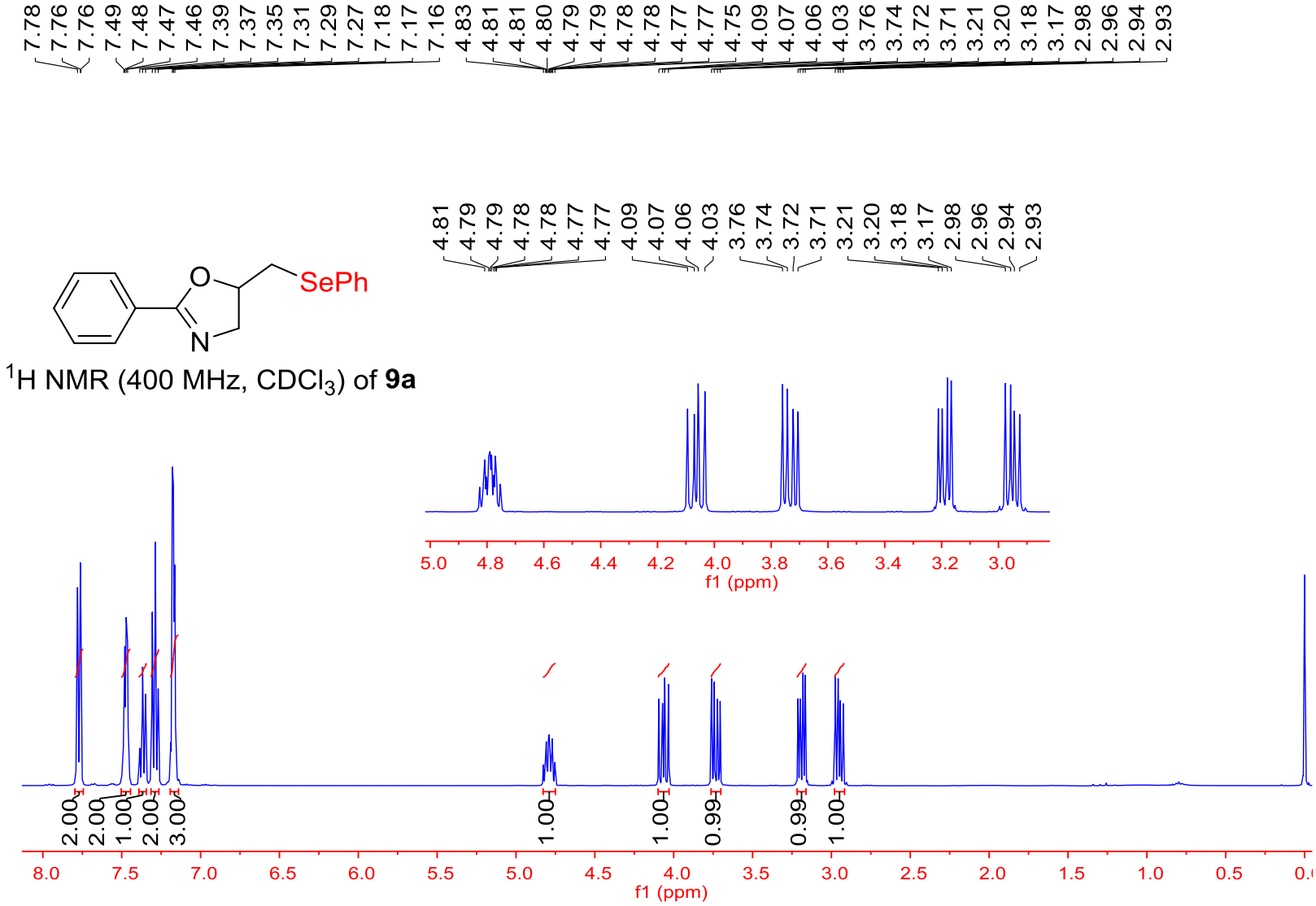


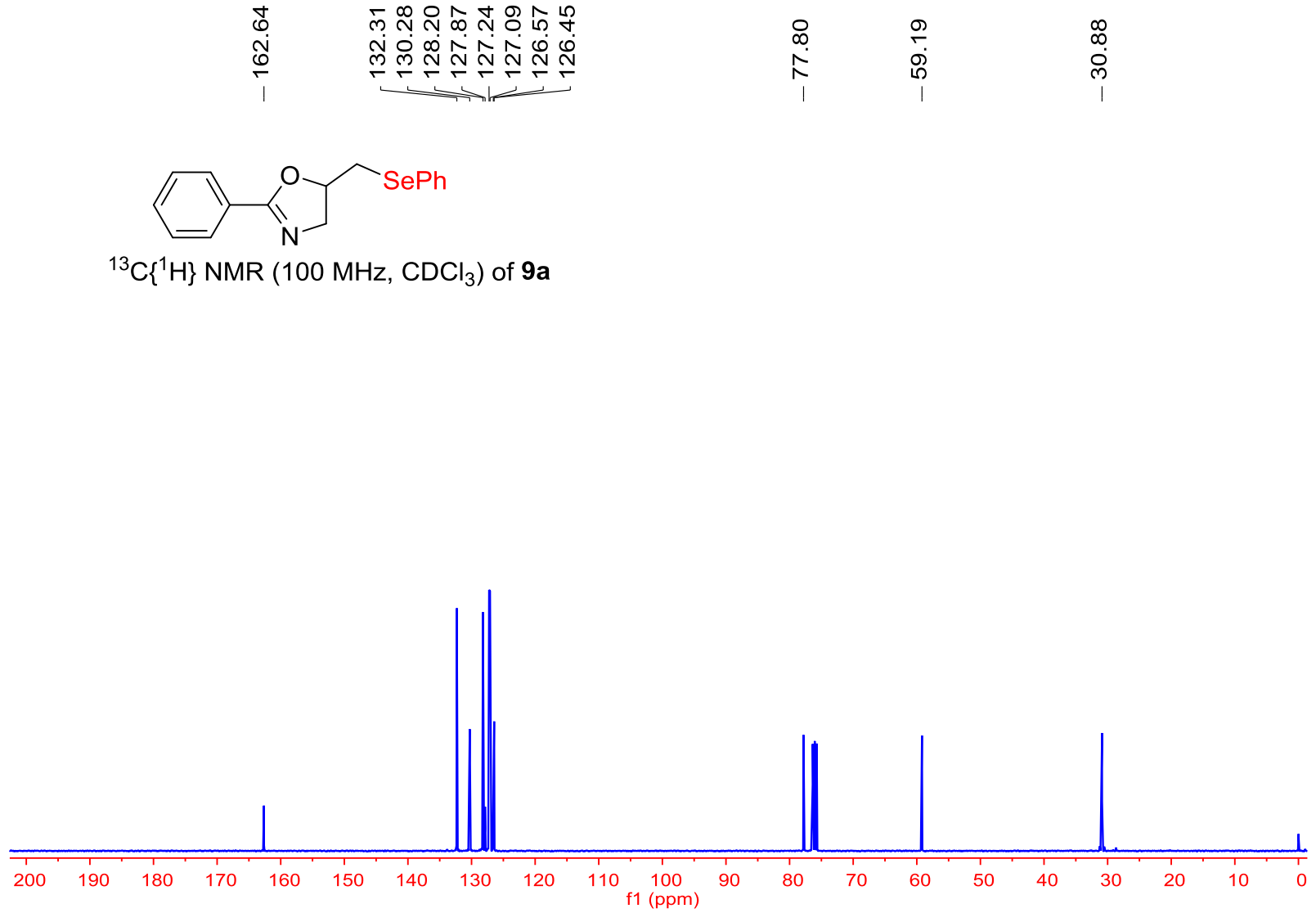


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **7m**

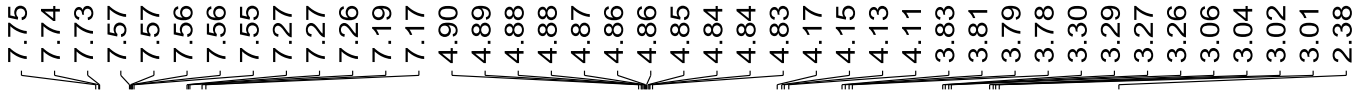
Both diastereomers

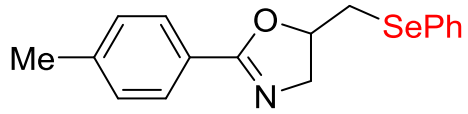



7.78
7.76
7.76
7.49
7.48
7.47
7.46
7.39
7.37
7.35
7.31
7.29
7.27
7.18
7.17
7.16
4.83
4.81
4.81
4.80
4.79
4.79
4.78
4.78
4.77
4.77
4.75
4.09
4.07
4.06
4.03
3.76
3.74
3.72
3.71
3.21
3.20
3.18
3.17
2.98
2.96
2.94
2.93
O
N
SePh
1H NMR (400 MHz, CDCl3) of 9a
f1 (ppm)
2.00
2.00
1.00
2.00
3.00
1.00
1.00
0.99
0.99
1.00
f1 (ppm)

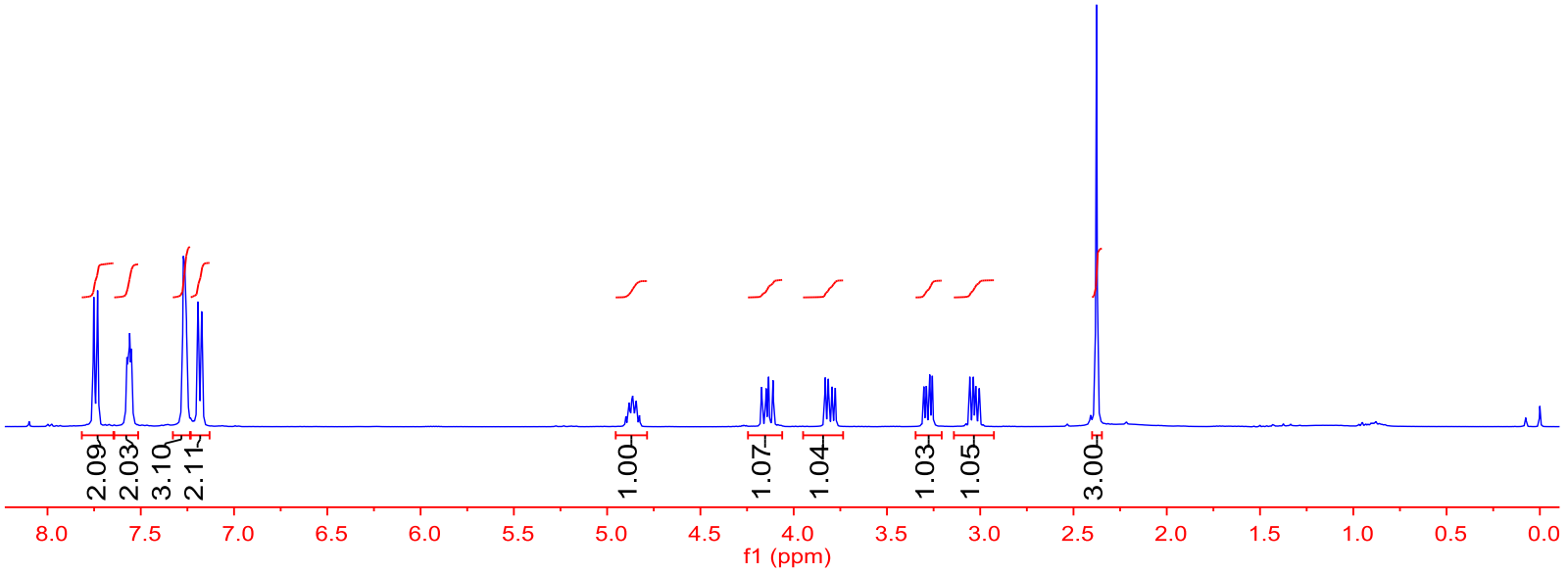


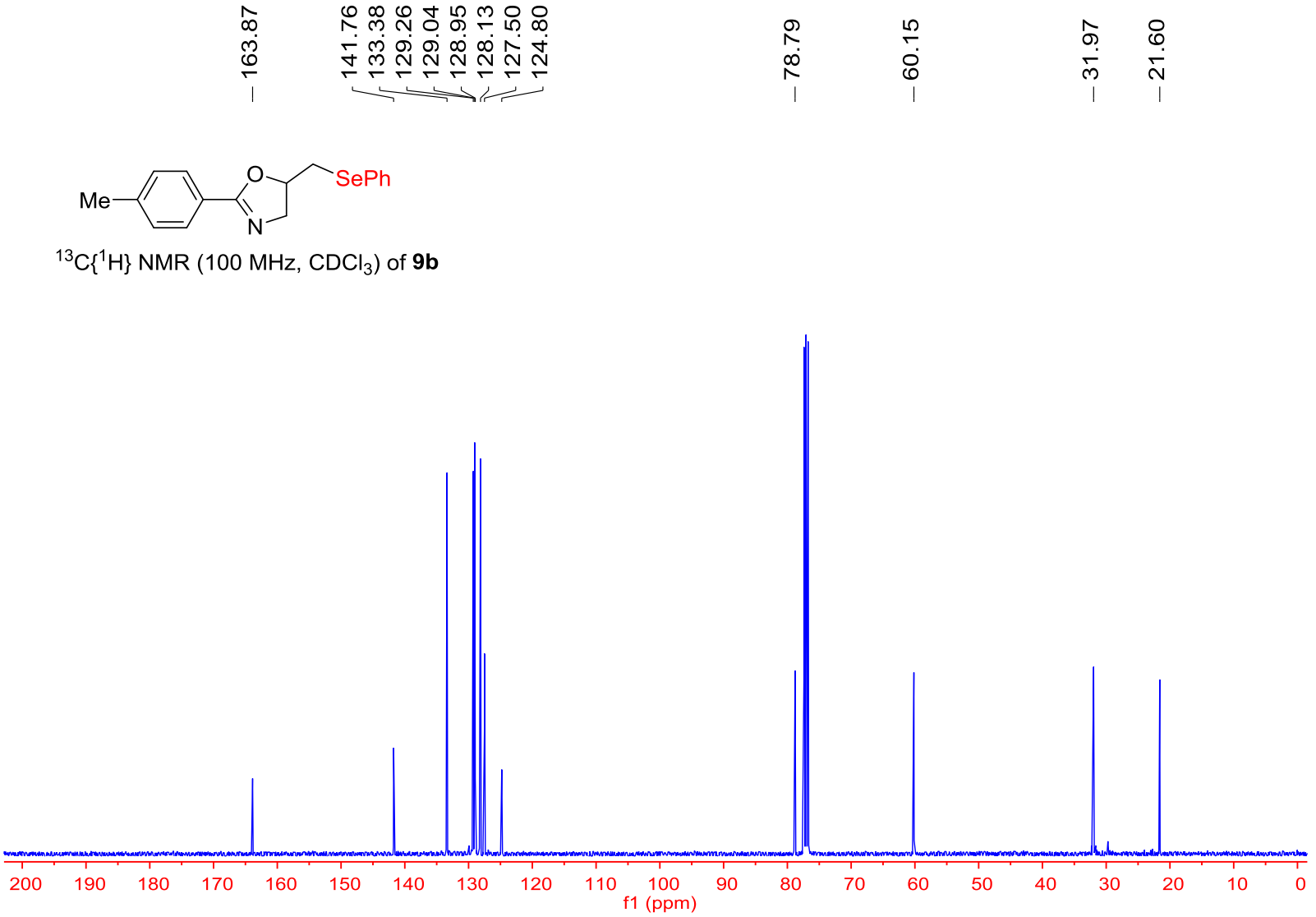
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9a**



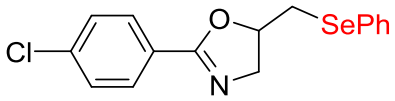


^{1}H NMR (400 MHz, $CDCl_3$) of **9b**

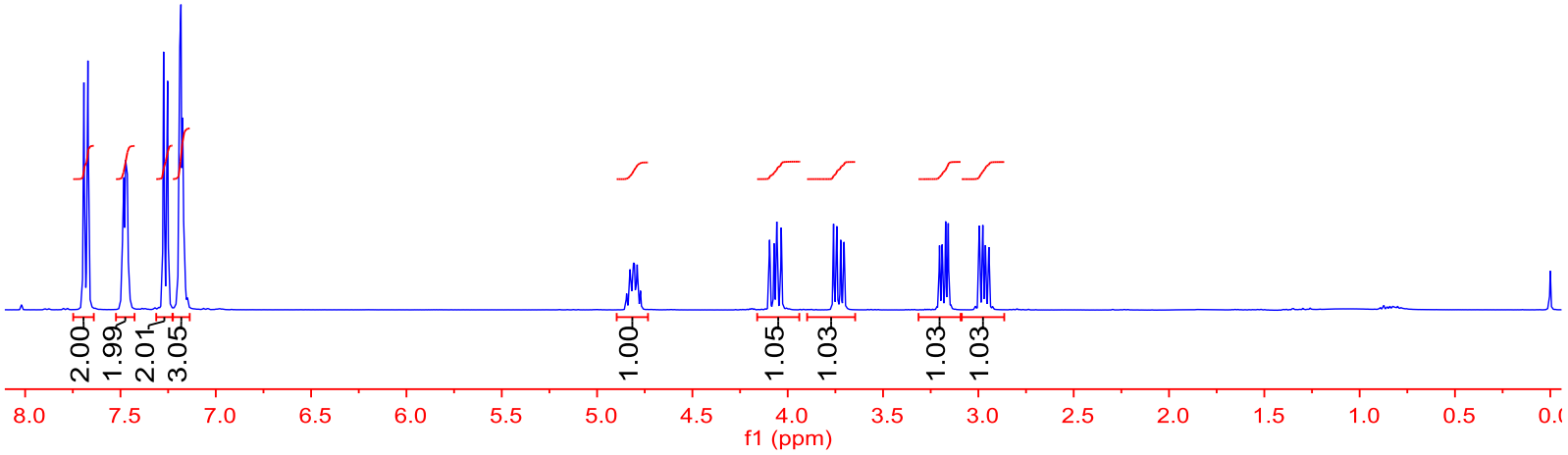


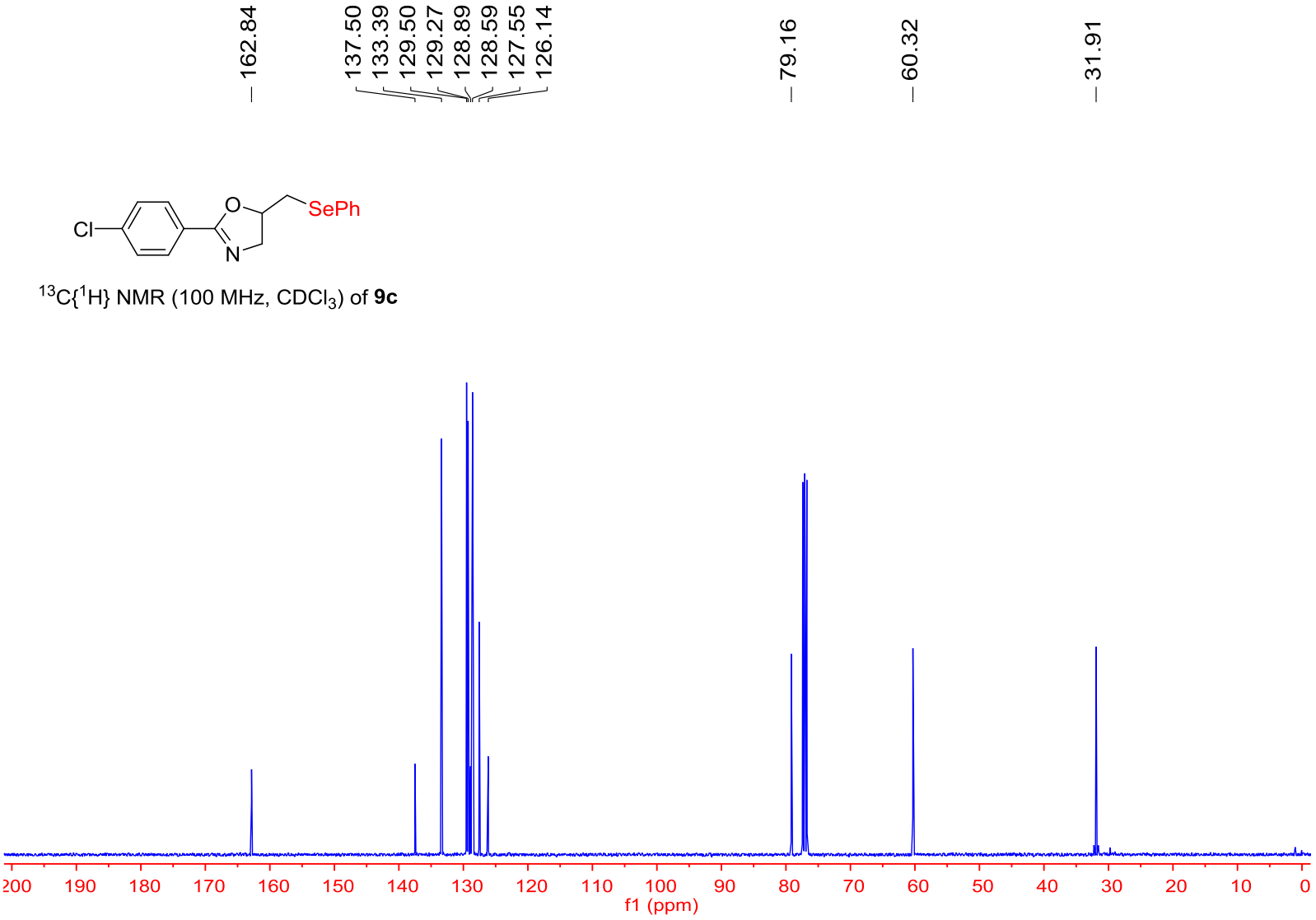


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9b**

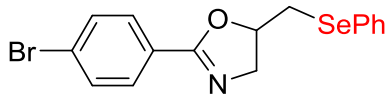


^{1}H NMR (400 MHz, $CDCl_3$) of **9c**

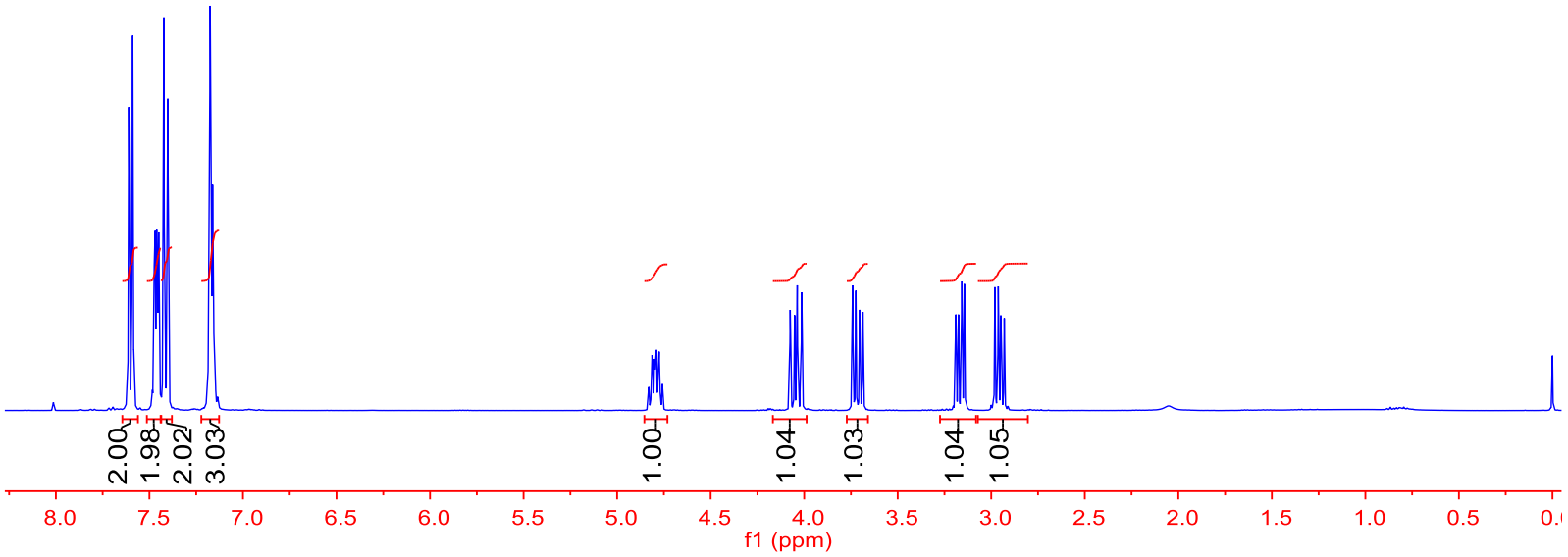


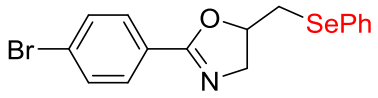


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9c**

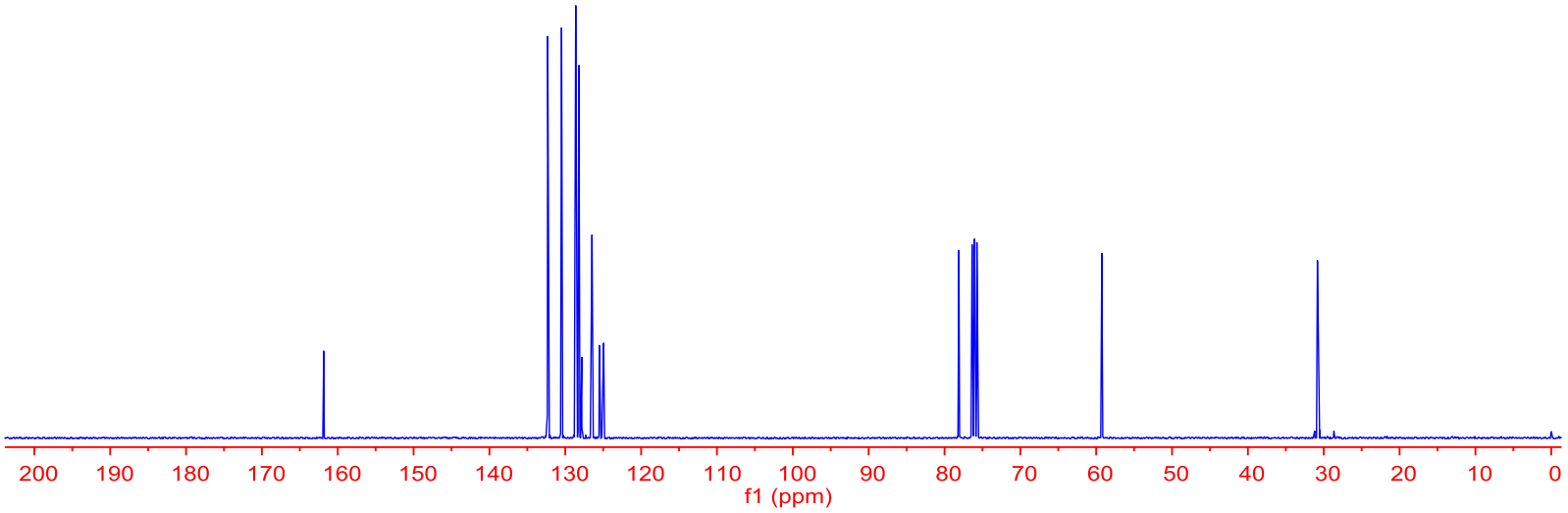


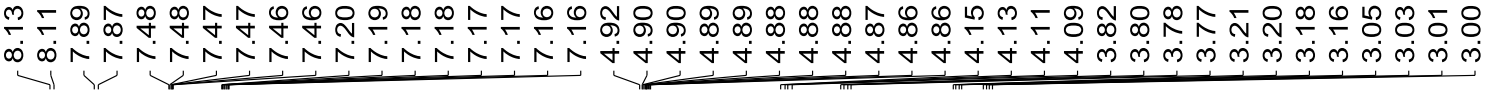
^{1}H NMR (400 MHz, $CDCl_3$) of **9d**

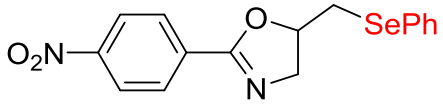




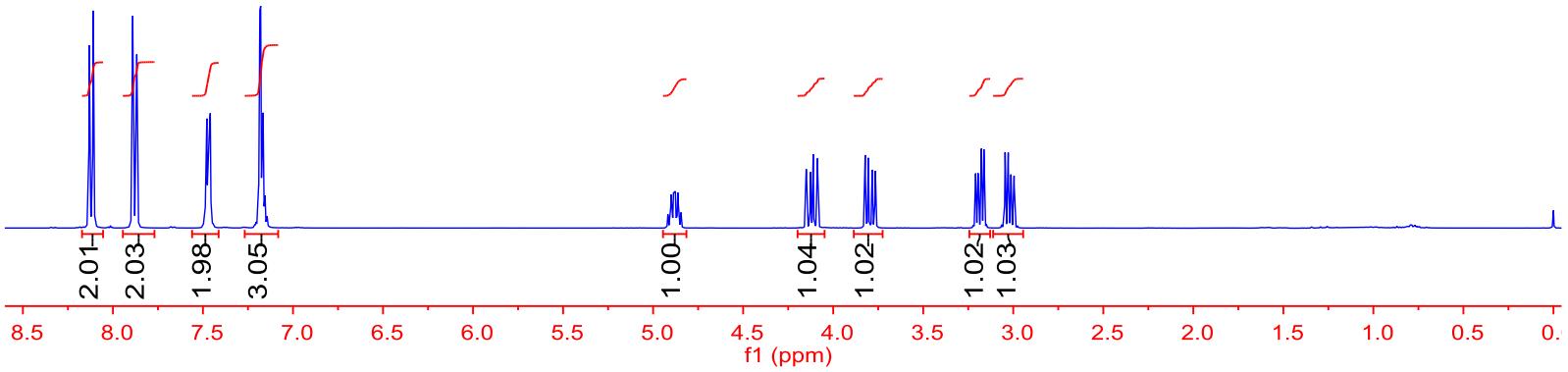
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9d**

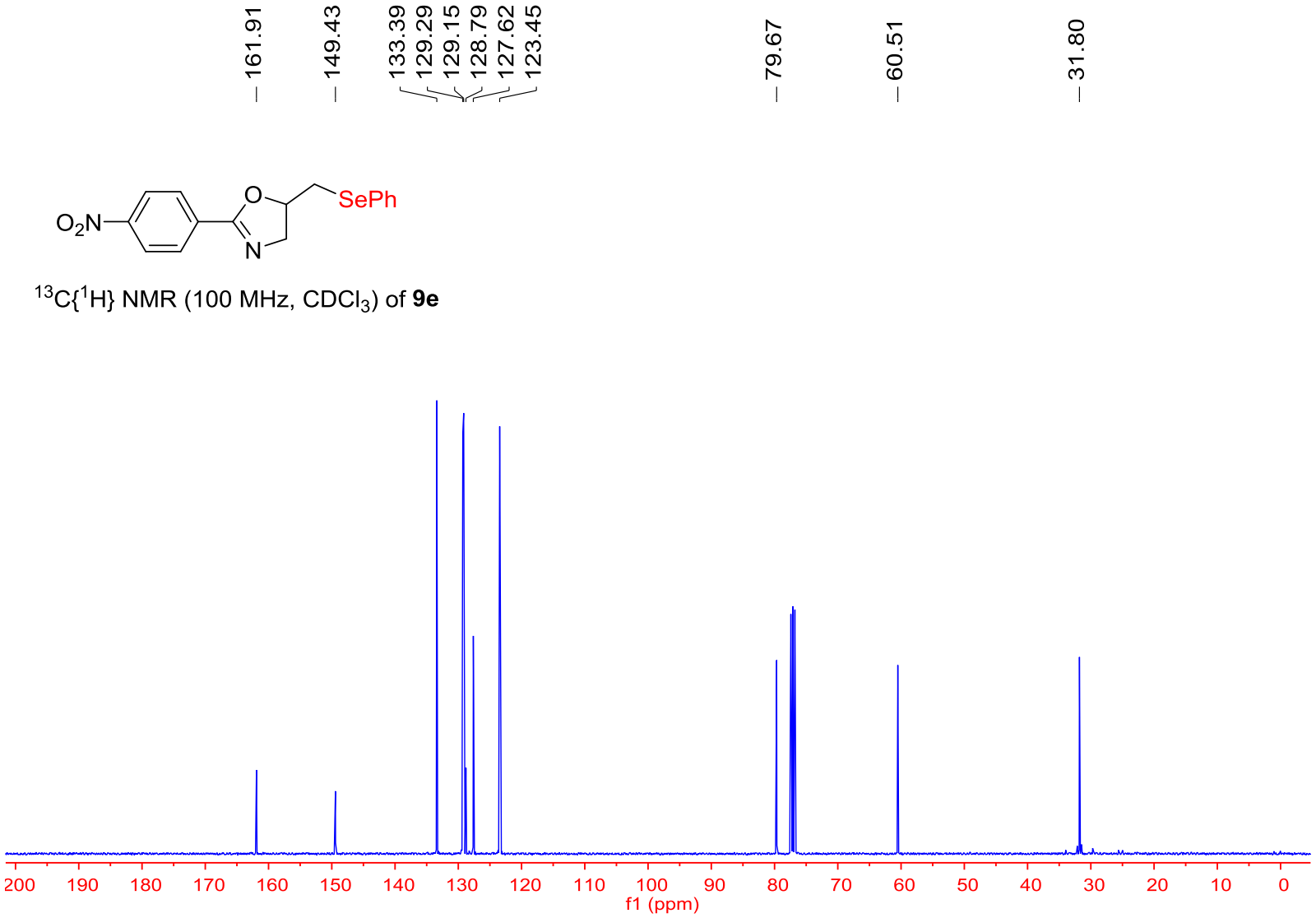




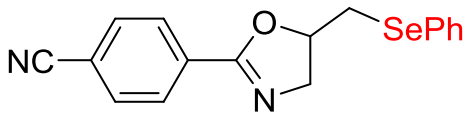


^{1}H NMR (400 MHz, $CDCl_3$) of **9e**

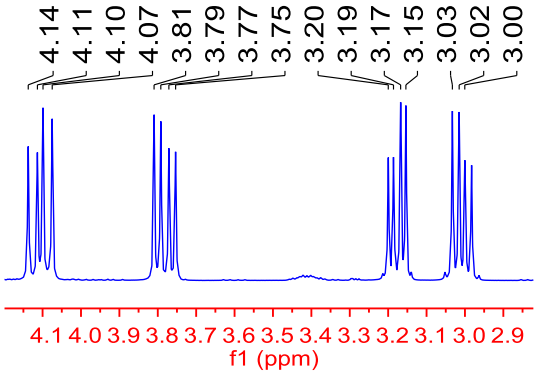


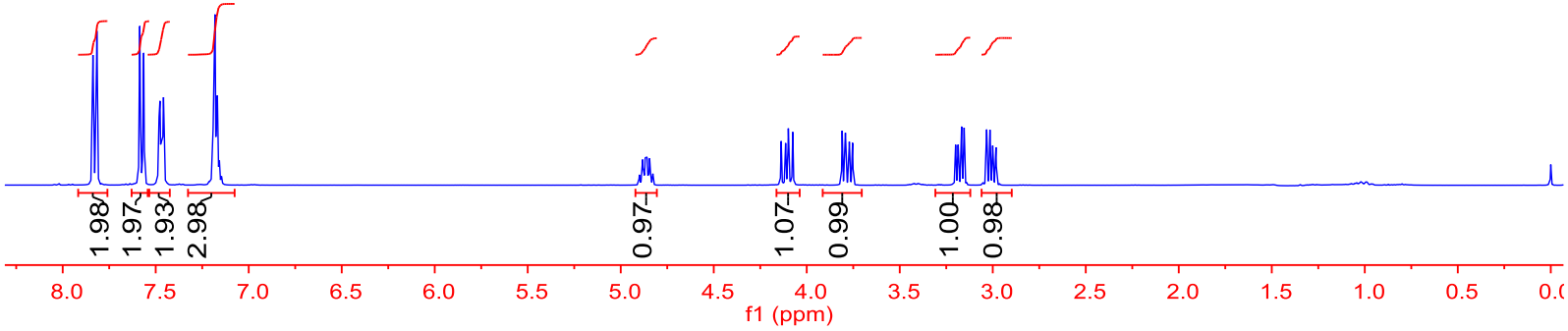


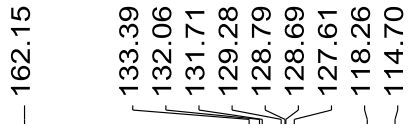
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9e**

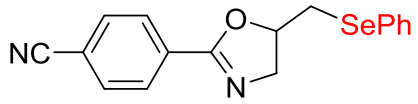


^{1}H NMR (400 MHz, $CDCl_3$) of **9f**

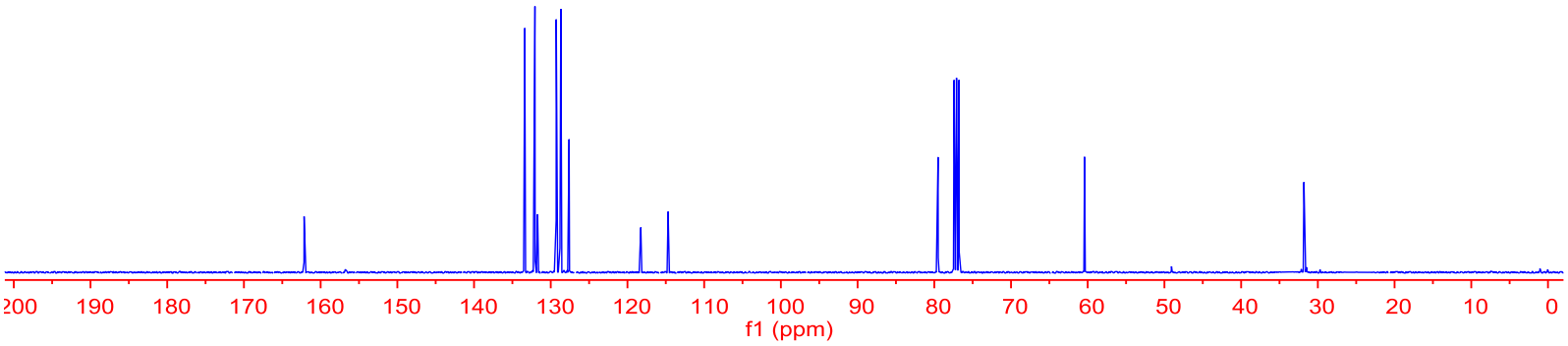


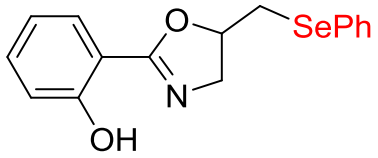




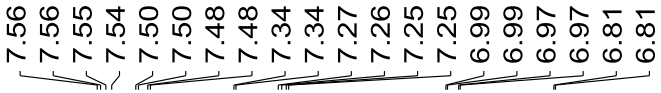


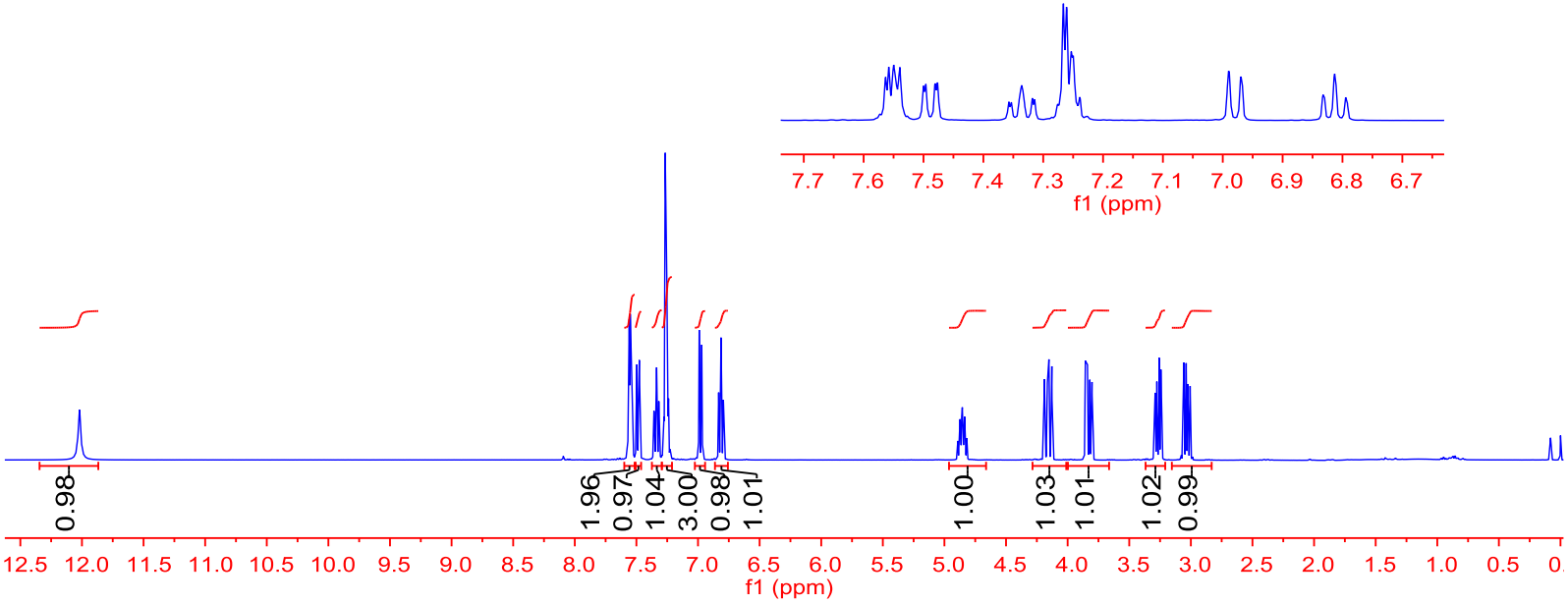
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9f**

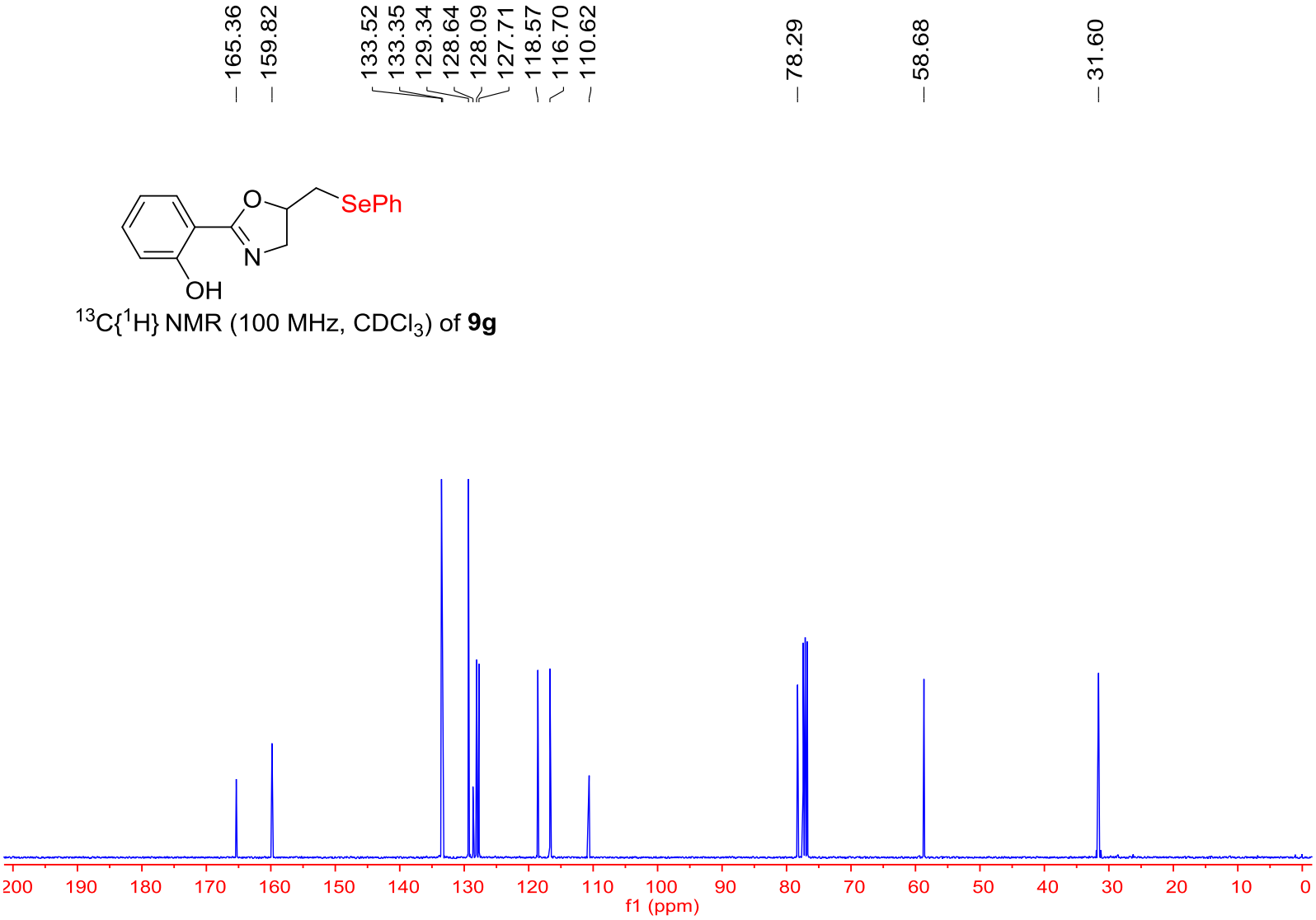




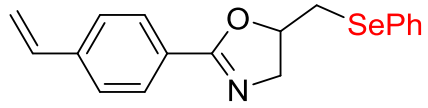
^{1}H NMR (400 MHz, $CDCl_3$) of **9g**



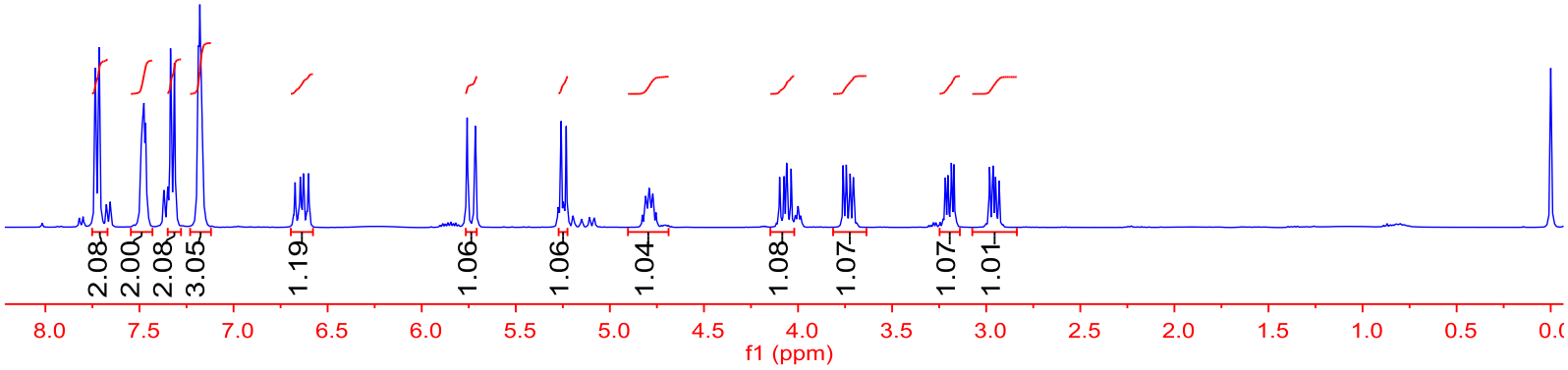


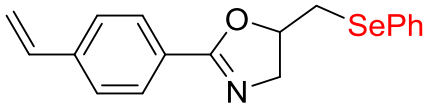


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9g**

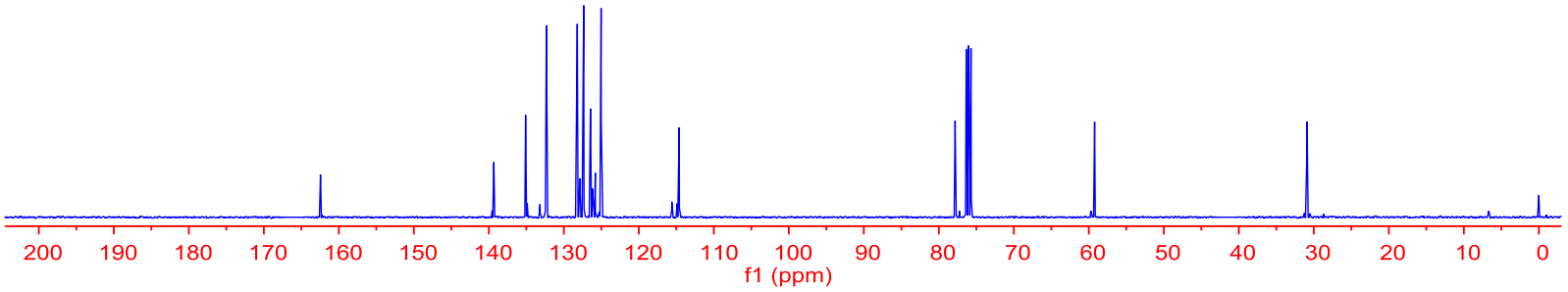


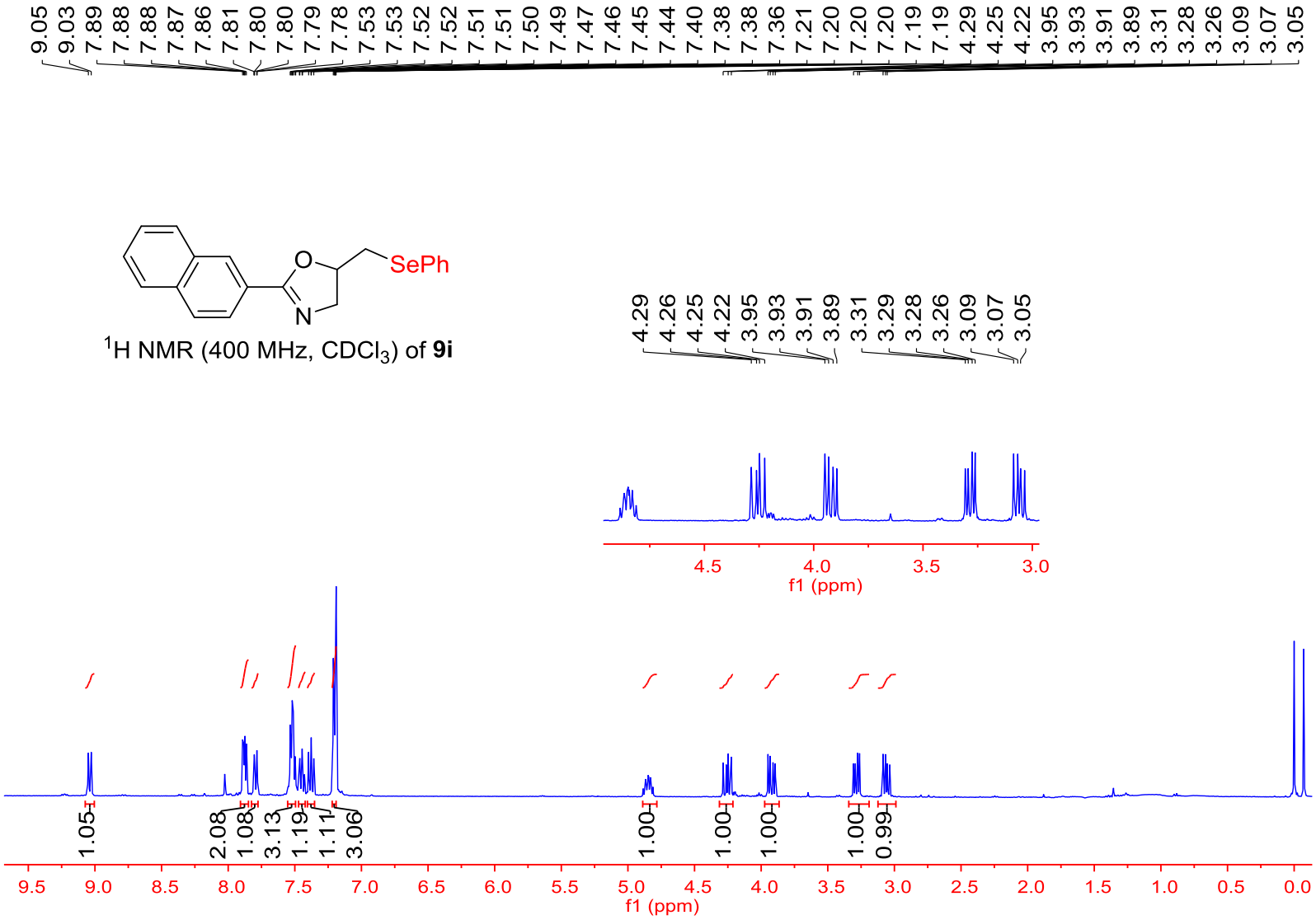
^{1}H NMR (400 MHz, $CDCl_3$) of **9h**

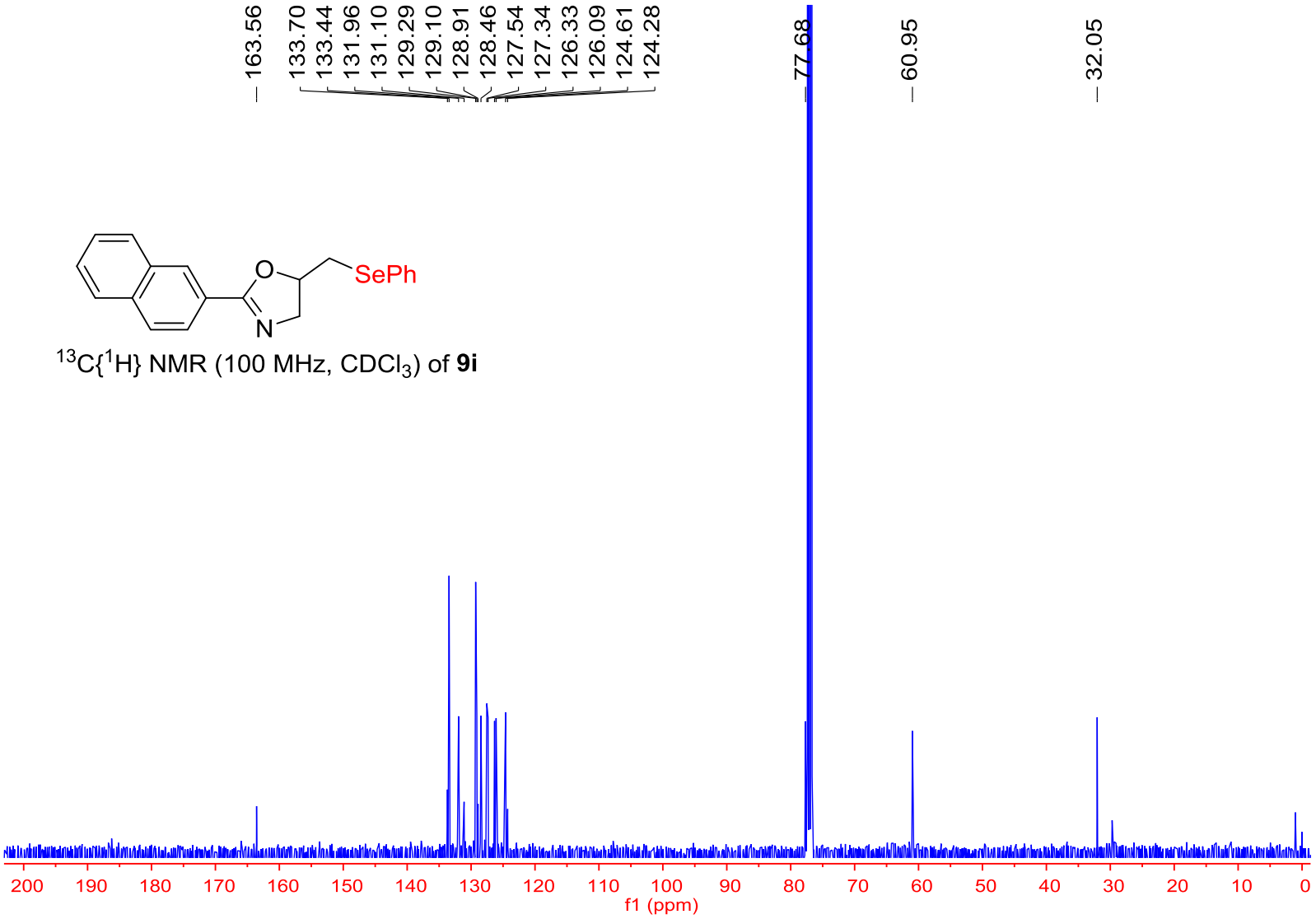




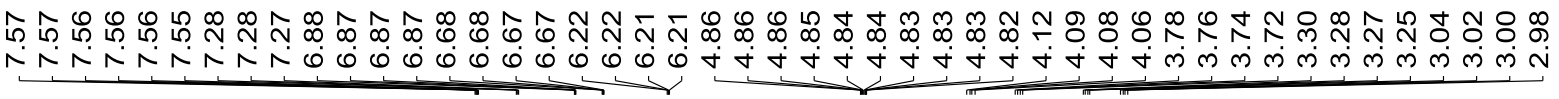
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9h**

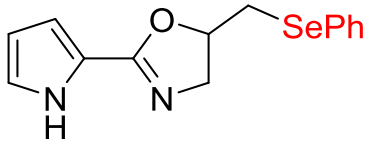



9.05 9.03 7.89 7.88 7.88 7.87 7.86 7.81 7.80 7.80 7.79 7.78 7.53 7.53 7.52 7.52 7.51 7.51 7.50 7.49 7.47 7.46 7.45 7.44 7.40 7.38 7.38 7.36 7.21 7.20 7.20 7.20 7.19 7.19 4.29 4.25 4.22 3.95 3.93 3.91 3.89 3.31 3.28 3.26 3.09 3.07 3.05
O
SePh
N
1H NMR (400 MHz, CDCl3) of 9i
4.29 4.26 4.25 4.22 3.95 3.93 3.91 3.89 3.31 3.29 3.28 3.26 3.09 3.07 3.05
4.5 4.0 3.5 3.0
f1 (ppm)
1.05 2.08 1.08 3.13 1.19 1.11 3.06 1.00 1.00 1.00 1.00 0.99
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

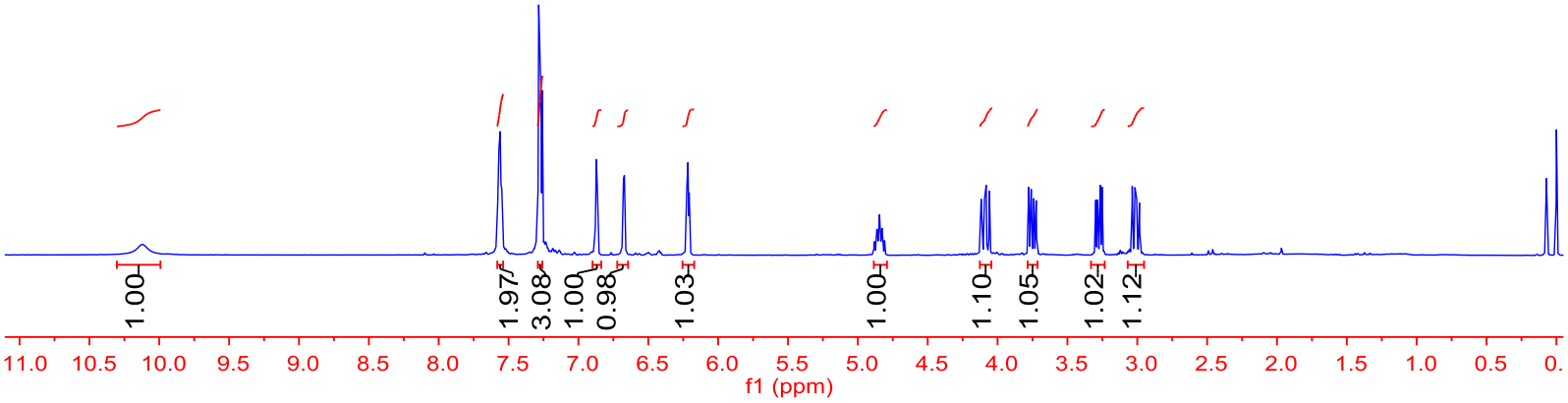


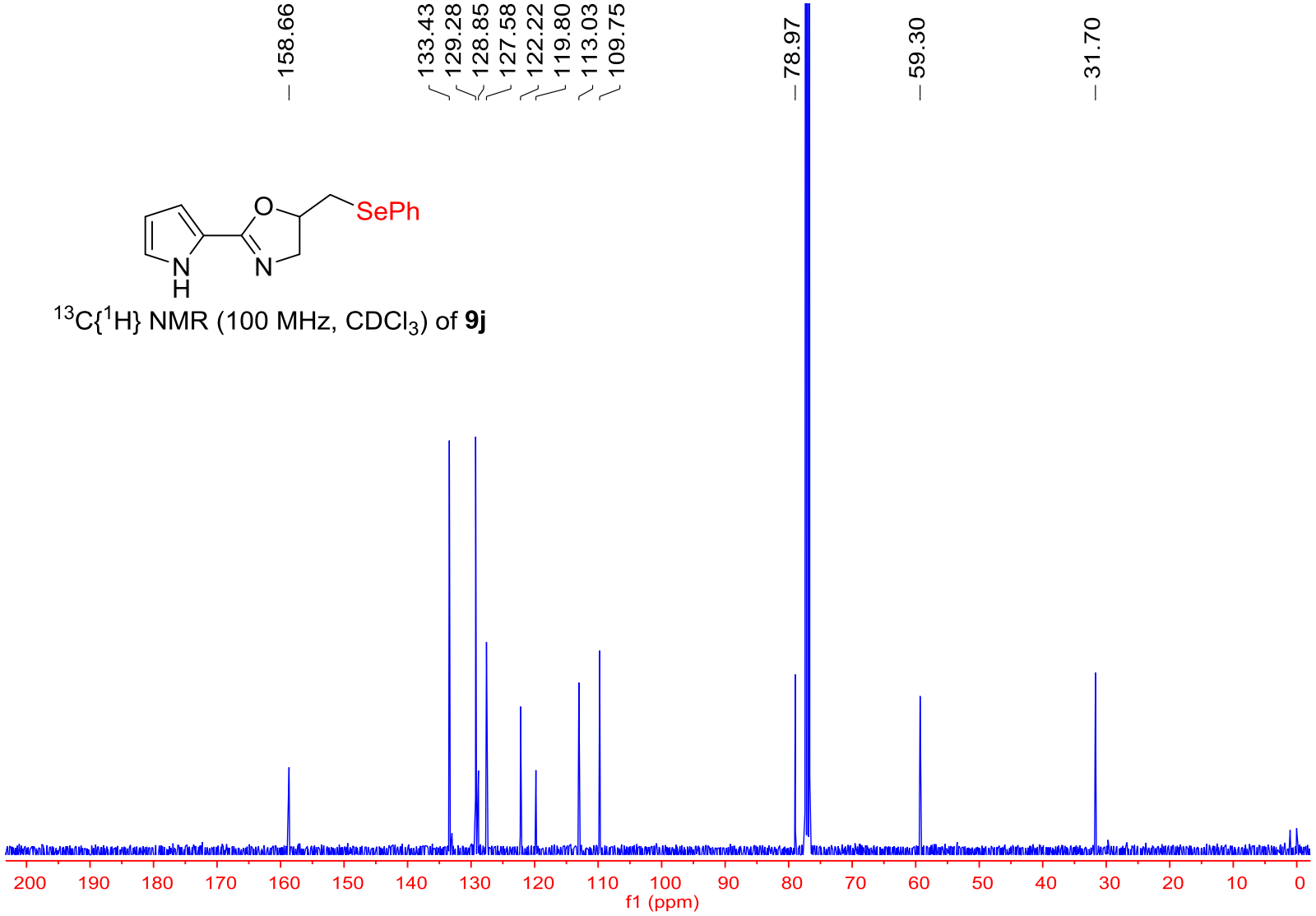
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9i**



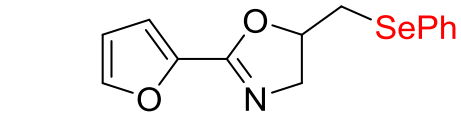


^{1}H NMR (400 MHz, $CDCl_3$) of **9j**

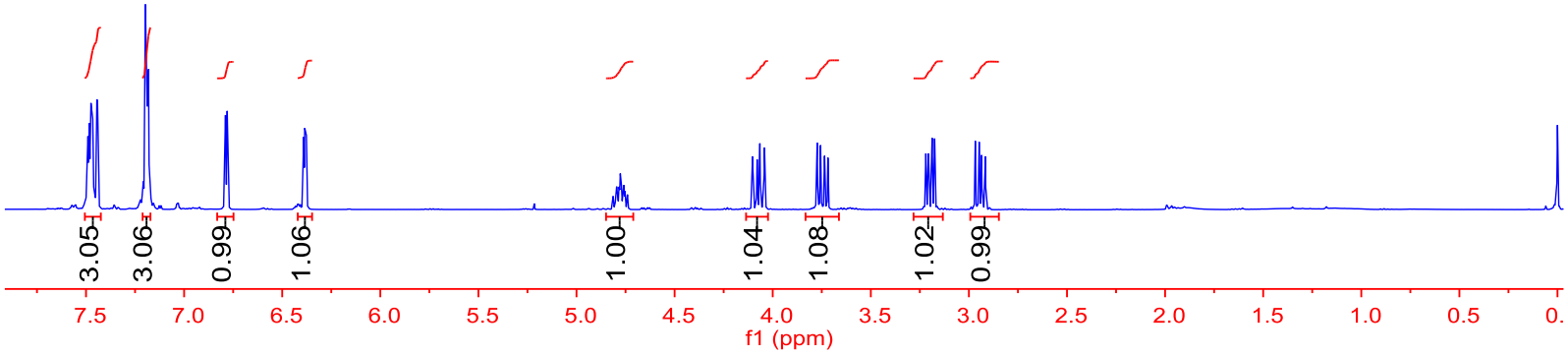




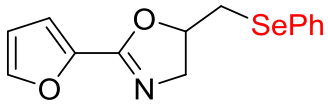
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9j**



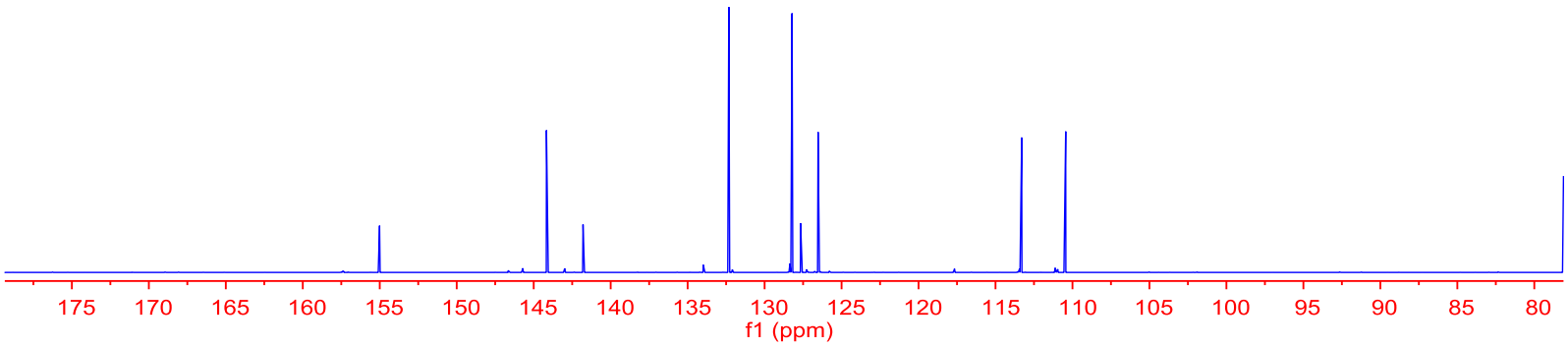
^{1}H NMR (400 MHz, $CDCl_3$) of **9k**

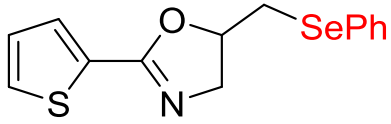


155.01
144.17
141.79
133.98
132.32
128.22
126.53
113.30
110.44

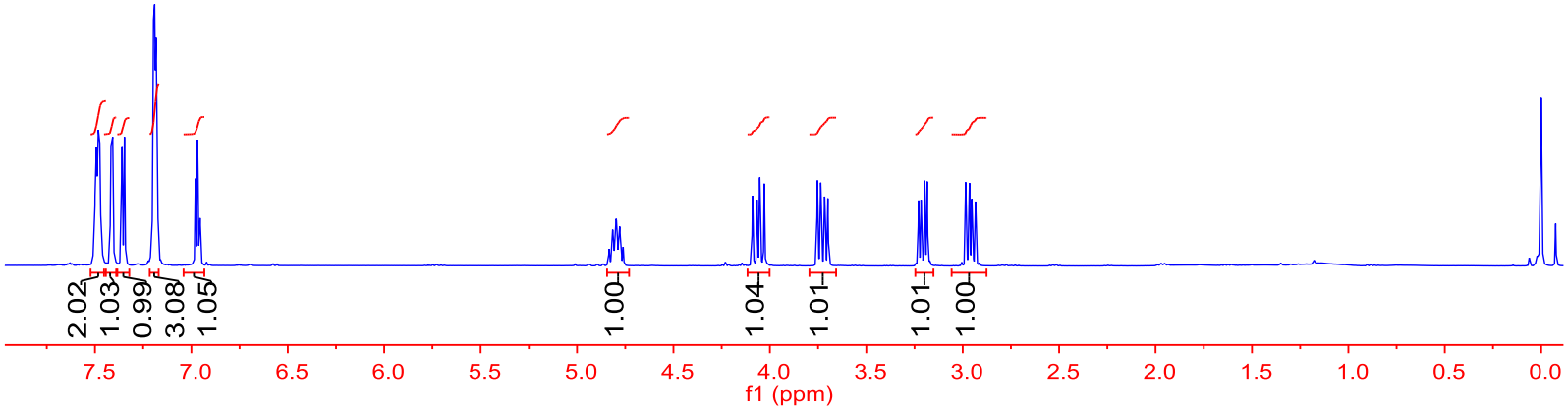


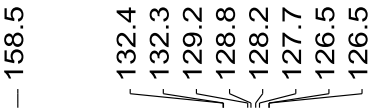
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9k**

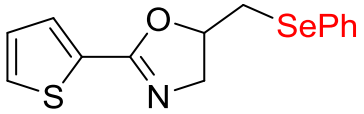




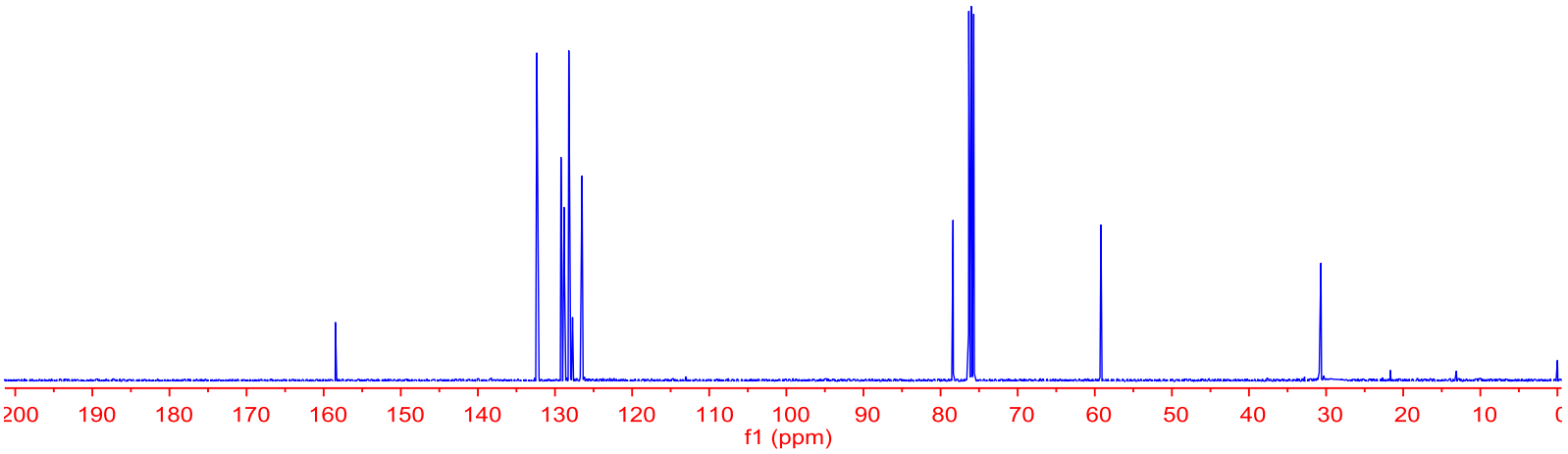
^{1}H NMR (400 MHz, $CDCl_3$) of **9l**

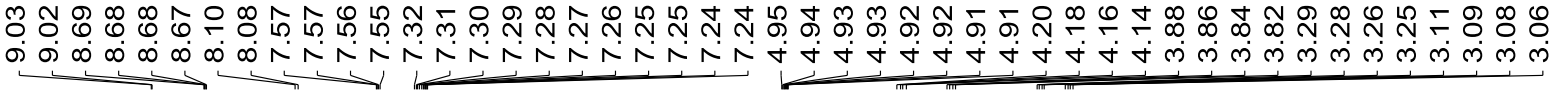


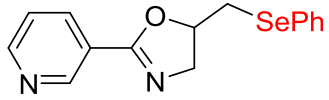




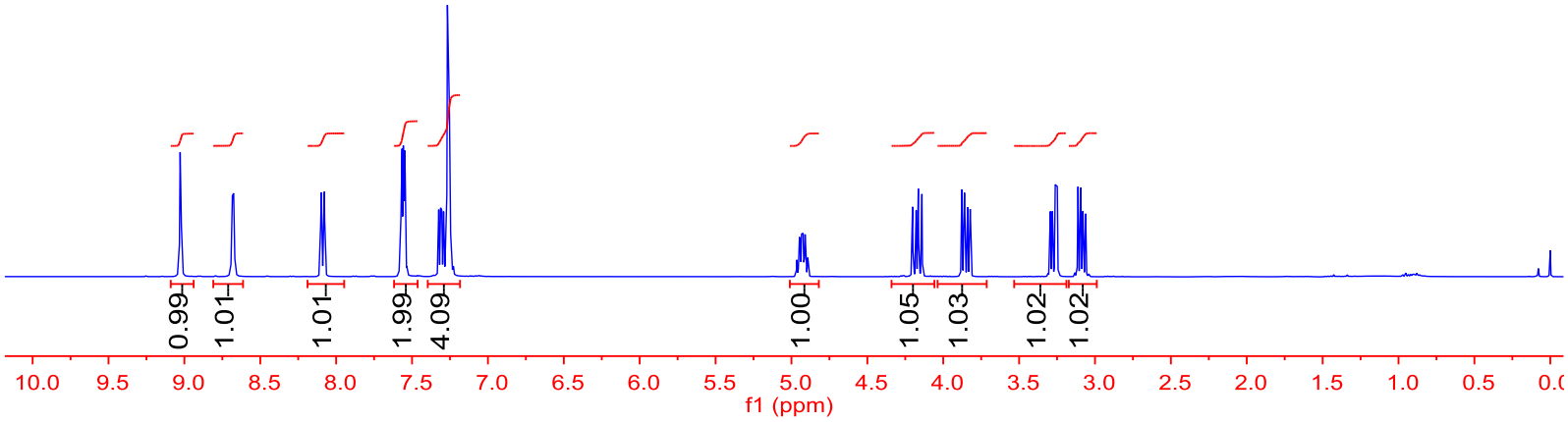
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9l**

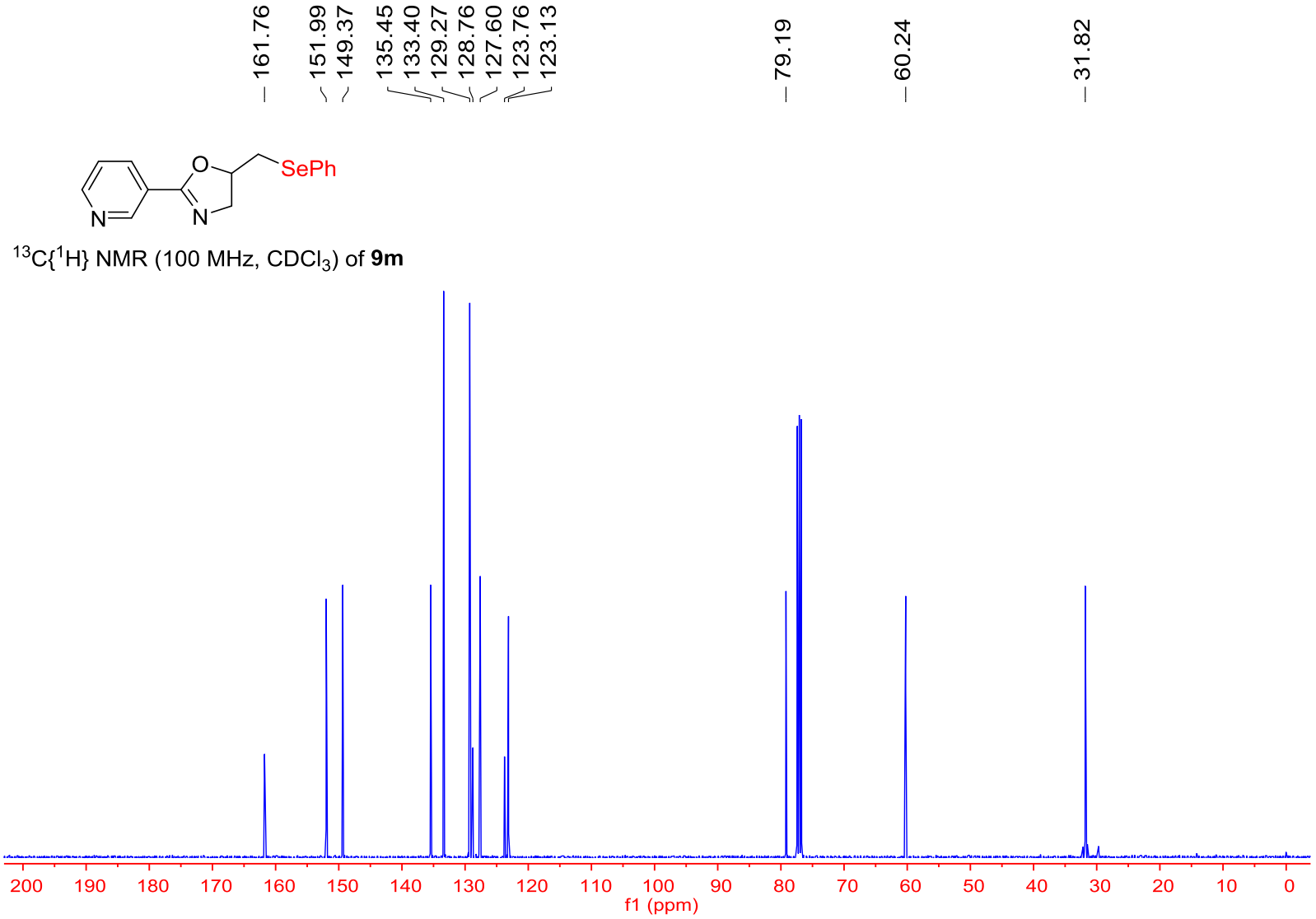




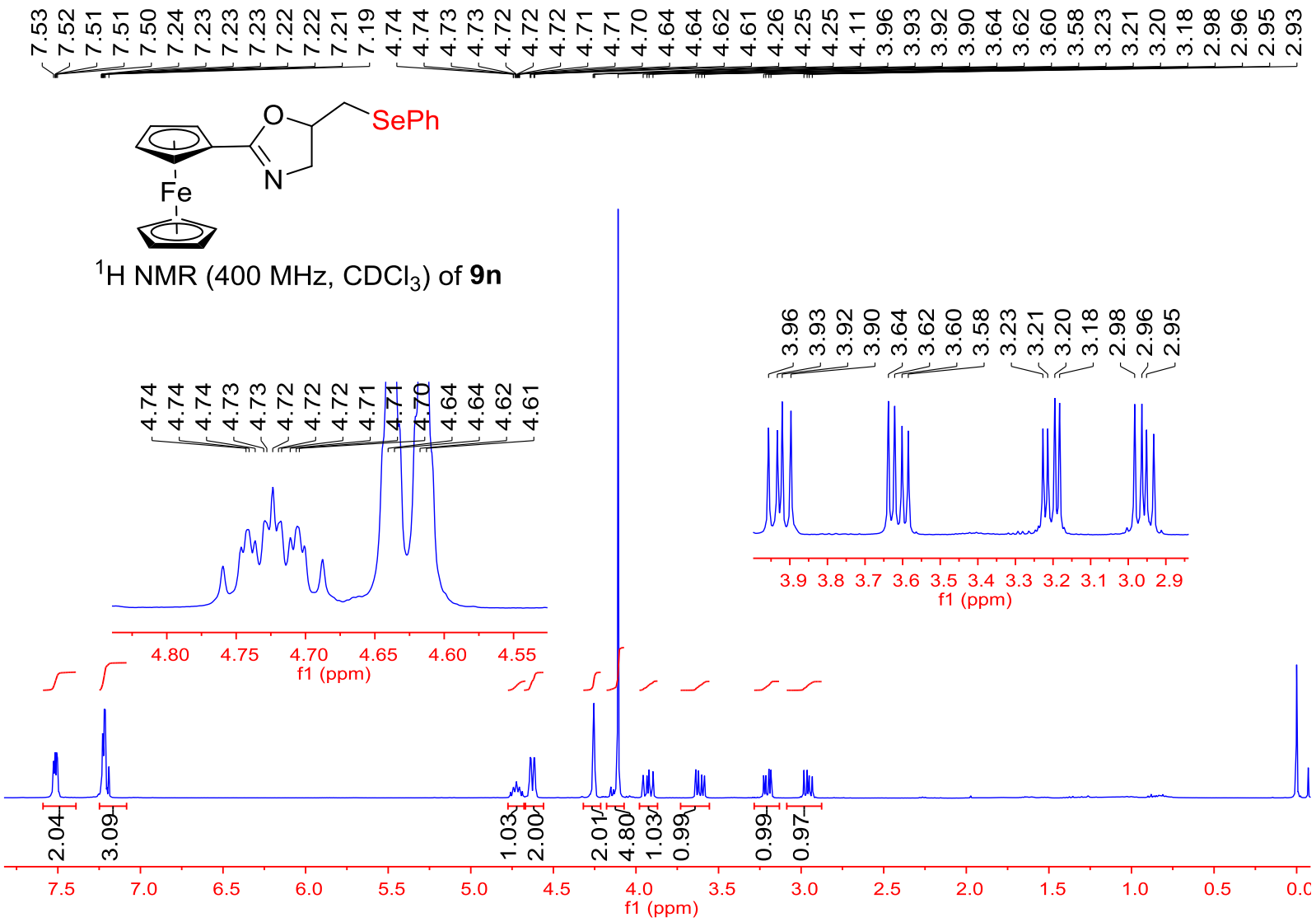


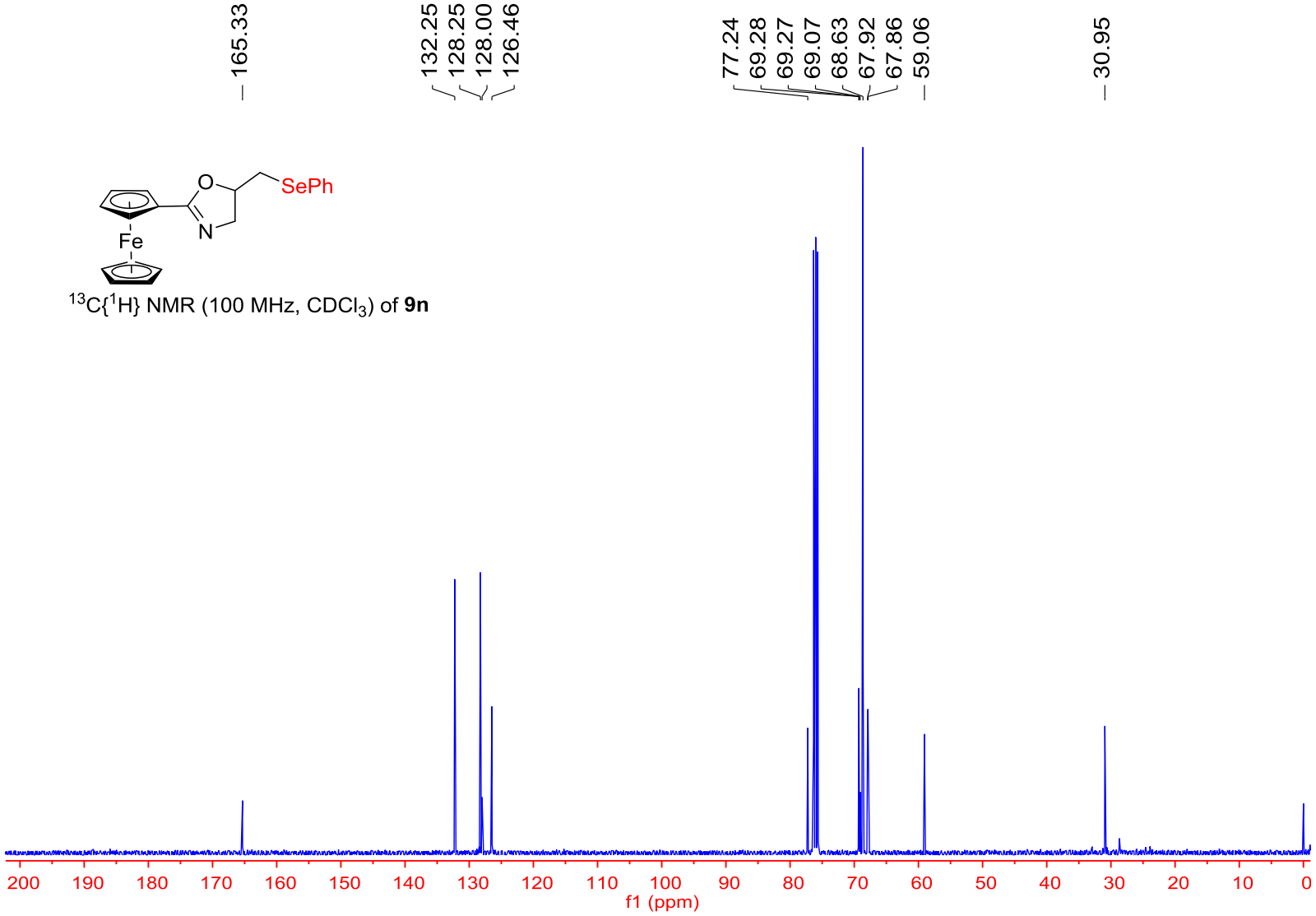
^{1}H NMR (400 MHz, $CDCl_3$) of **9m**



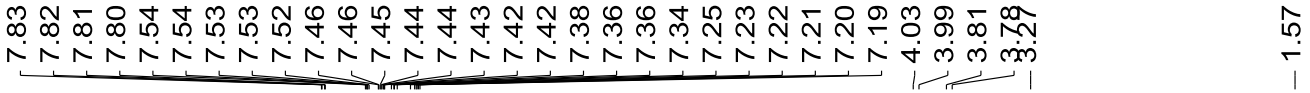


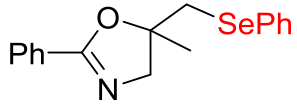
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9m**


7.53 7.52 7.51 7.51 7.50 7.24 7.23 7.23 7.23 7.22 7.22 7.21 7.19
4.74 4.74 4.73 4.73 4.72 4.72 4.72 4.71 4.71 4.70 4.64 4.64 4.62 4.61 4.26 4.25 4.25 4.11
3.96 3.93 3.92 3.90 3.64 3.62 3.60 3.58 3.23 3.21 3.20 3.18 2.98 2.96 2.95 2.93
O
N
SePh
Fe
1H NMR (400 MHz, CDCl3) of 9n
4.80 4.75 4.70 4.65 4.60 4.55
f1 (ppm)
3.9 3.8 3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9
f1 (ppm)
2.04 3.09 1.03 2.00 2.01 4.80 1.03 0.99 0.99 0.97
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

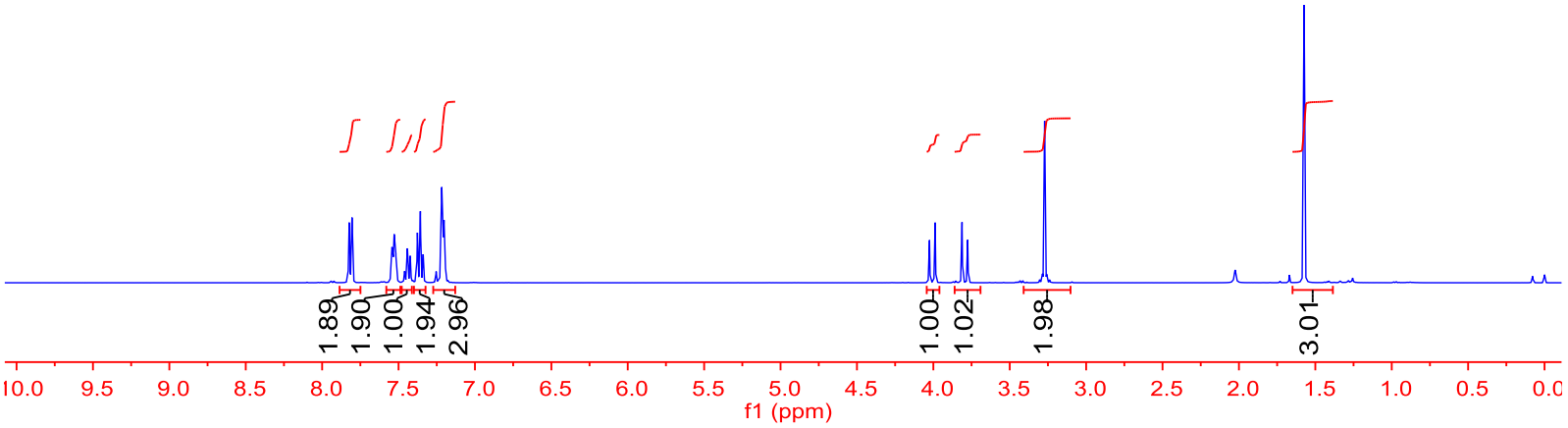


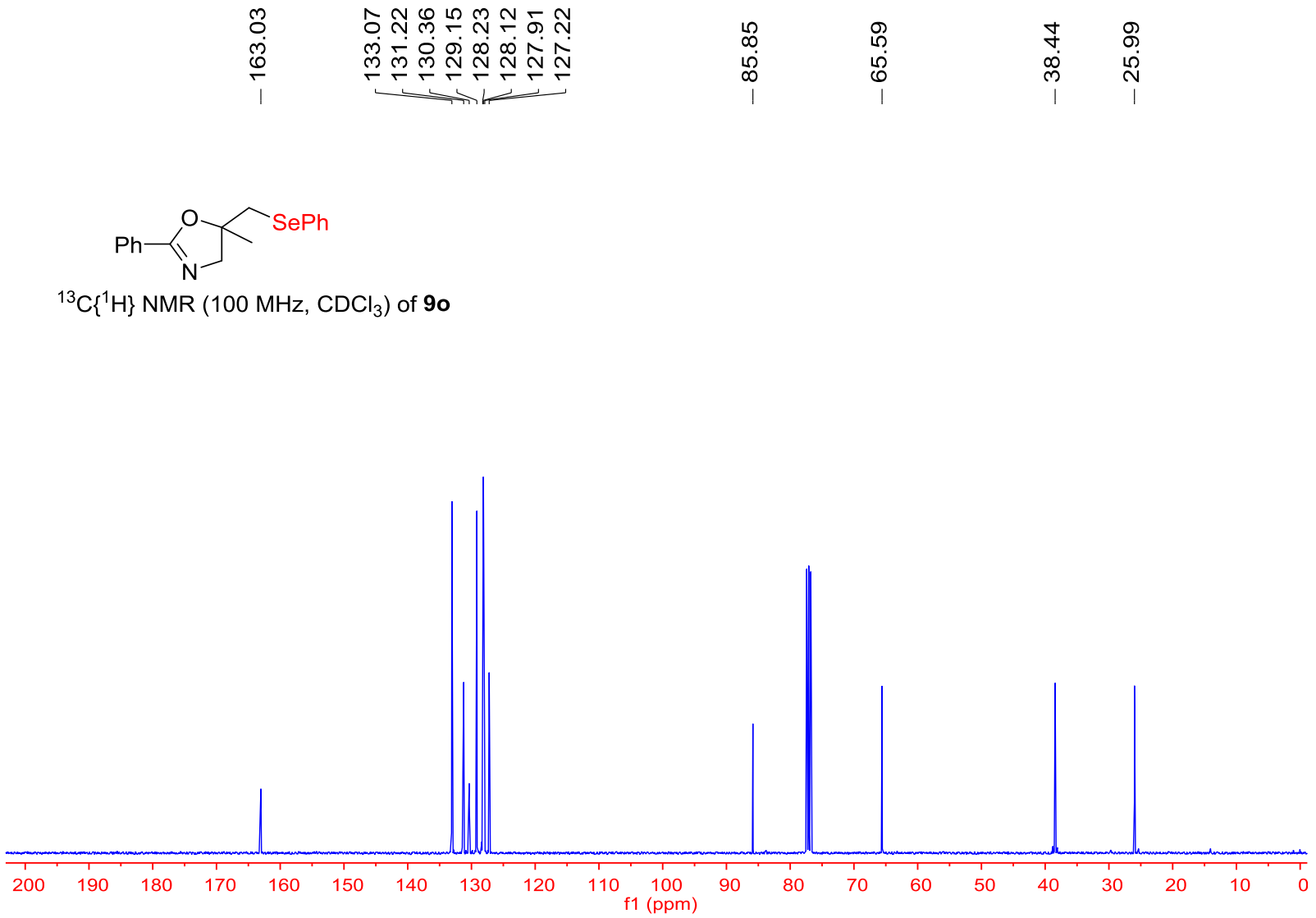
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9n**



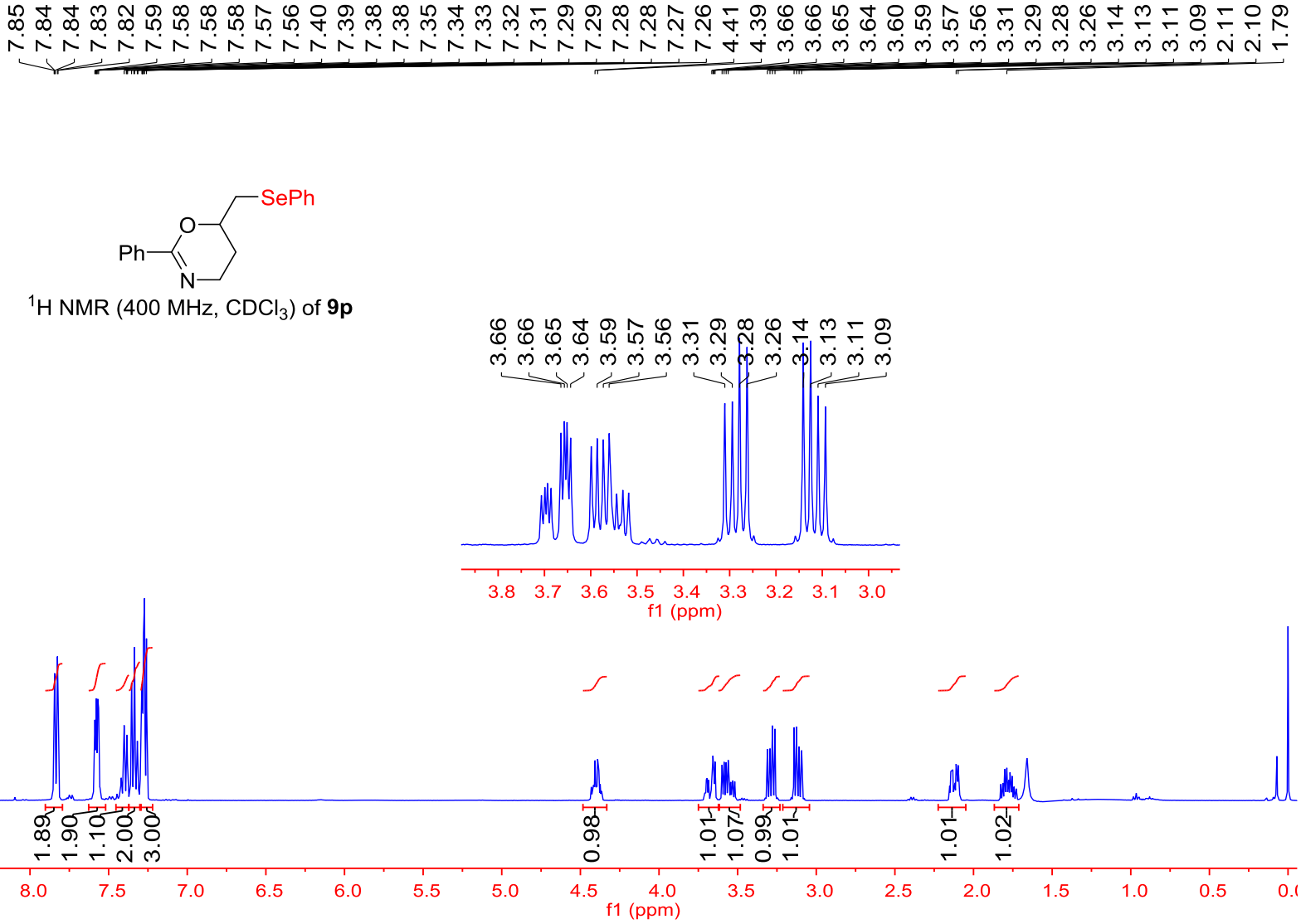


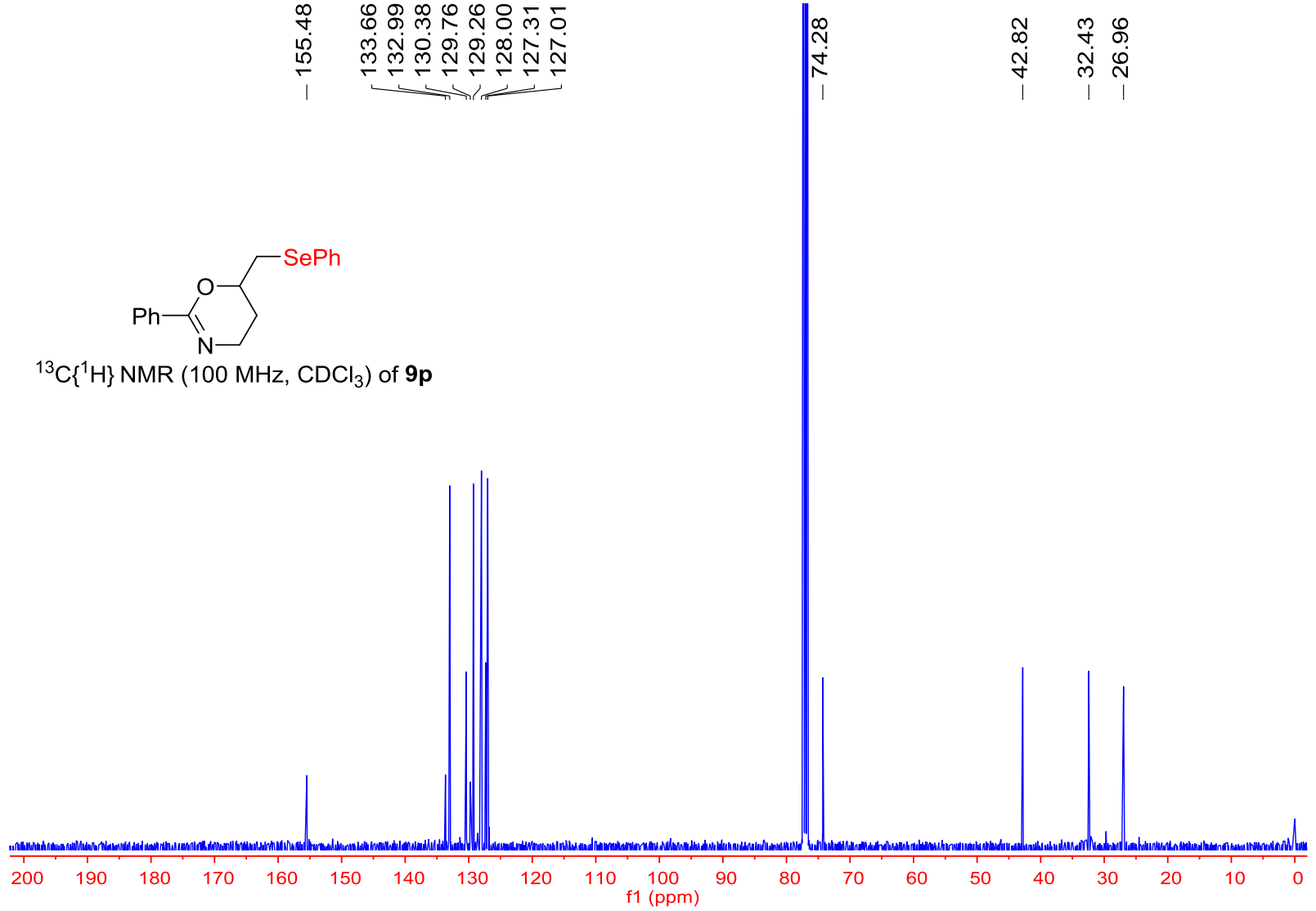
^{1}H NMR (400 MHz, $CDCl_3$) of **9o**



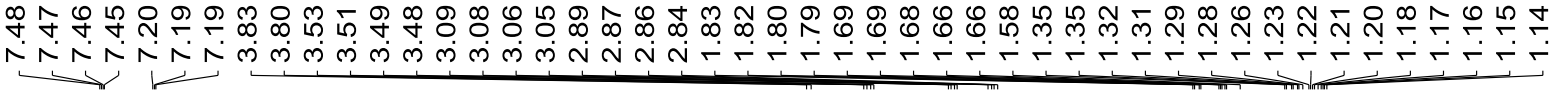


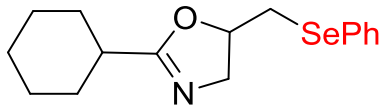
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9o**


7.85 7.84 7.84 7.83 7.82 7.59 7.58 7.58 7.58 7.57 7.56 7.40 7.39 7.38 7.38 7.35 7.34 7.33 7.32 7.31 7.29 7.29 7.28 7.28 7.27 7.26 4.41 4.39 3.66 3.66 3.65 3.64 3.60 3.59 3.57 3.56 3.31 3.29 3.28 3.26 3.14 3.13 3.11 3.09 2.11 2.10 1.79
SePh
O
Ph
N
1H NMR (400 MHz, CDCl3) of 9p
3.66 3.66 3.65 3.64 3.59 3.57 3.56 3.31 3.29 3.28 3.26 3.14 3.13 3.11 3.09
3.8 3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0
f1 (ppm)
1.89 1.90 1.10 2.00 3.00 0.98 1.01 1.07 0.99 1.01 1.01 1.02
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

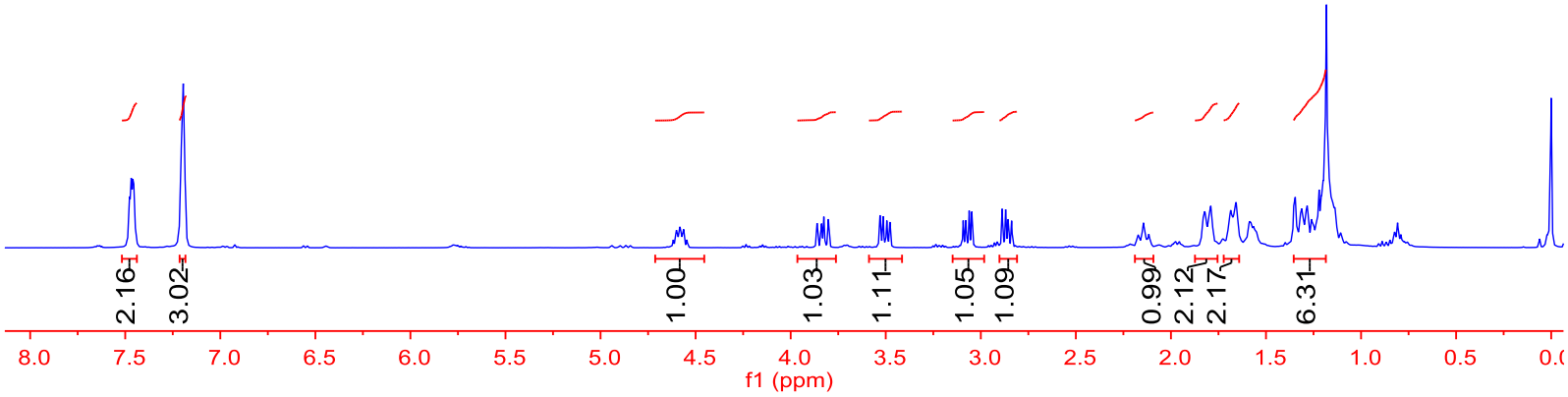


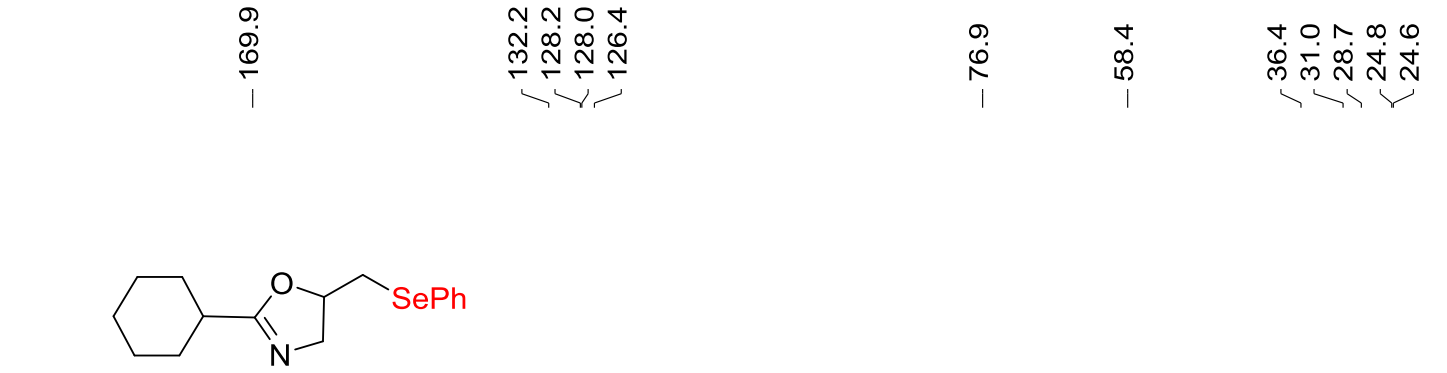
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9p**



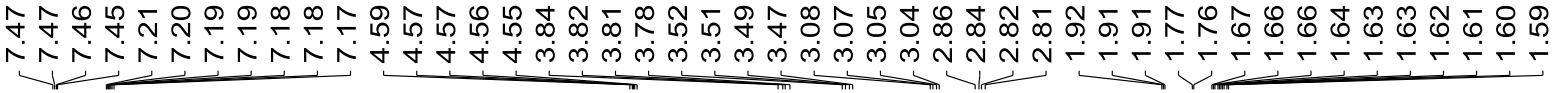


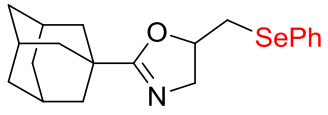
^{1}H NMR (400 MHz, $CDCl_3$) of **9q**



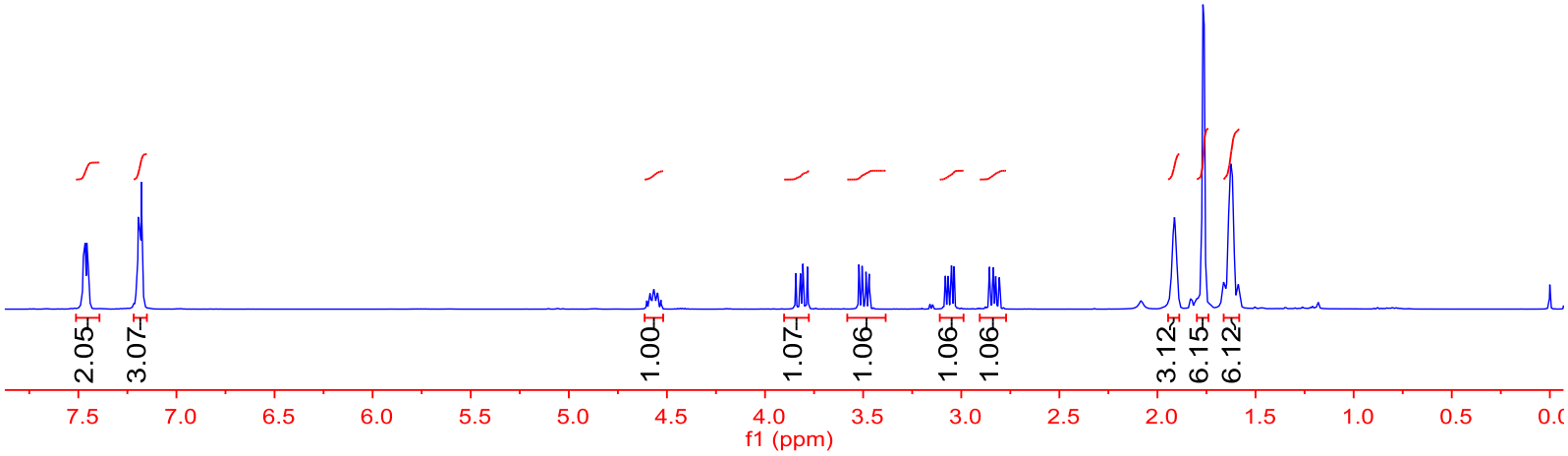


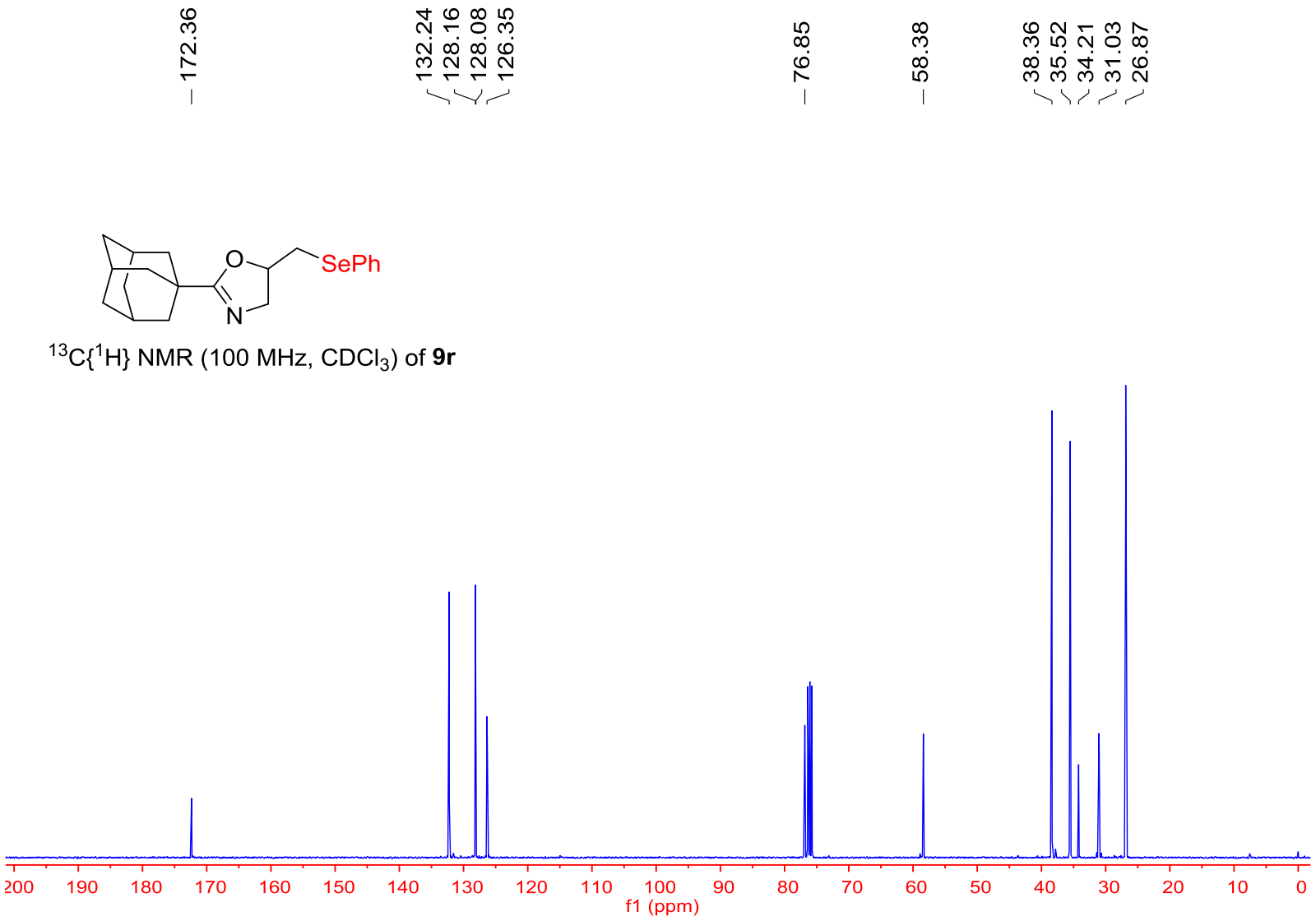
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9q**



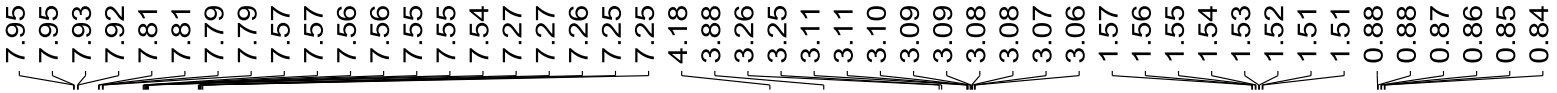


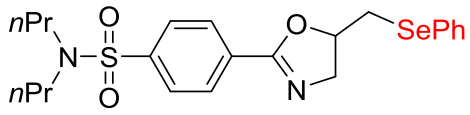
^{1}H NMR (400 MHz, $CDCl_3$) of **9r**



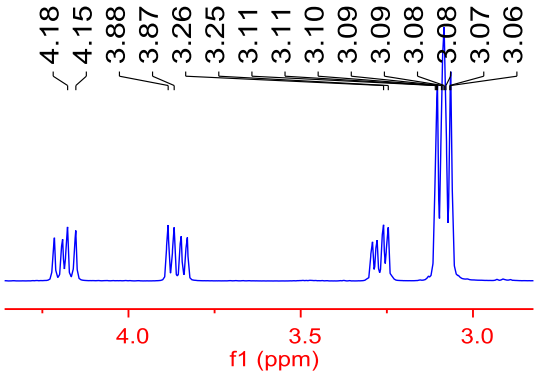


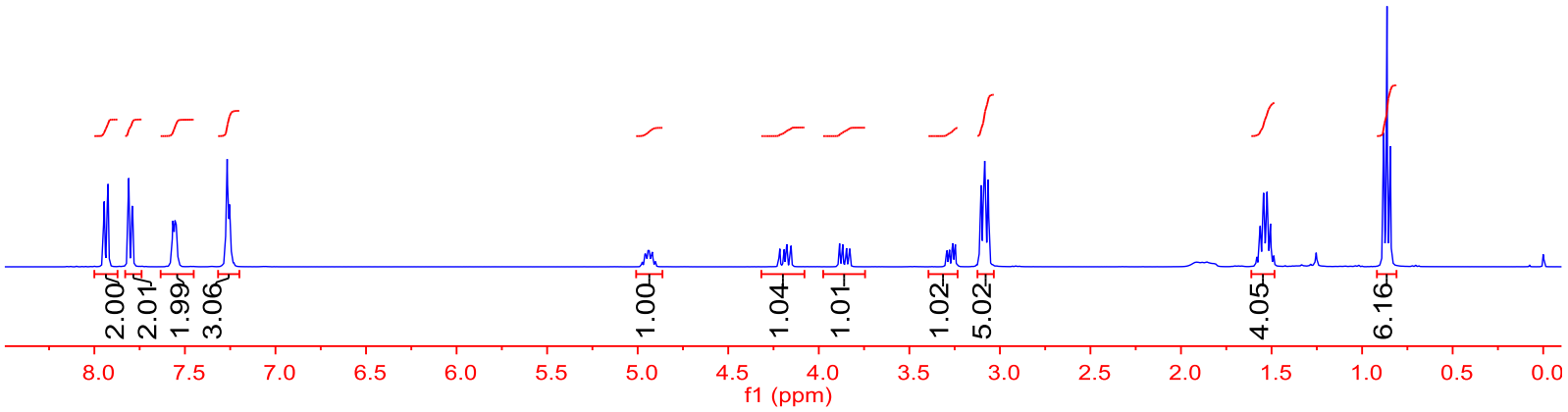
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9r**

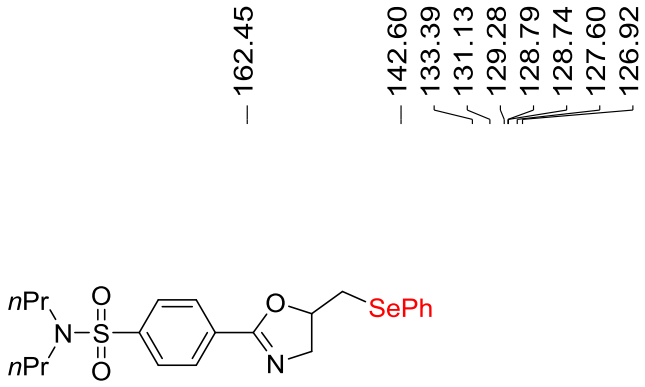




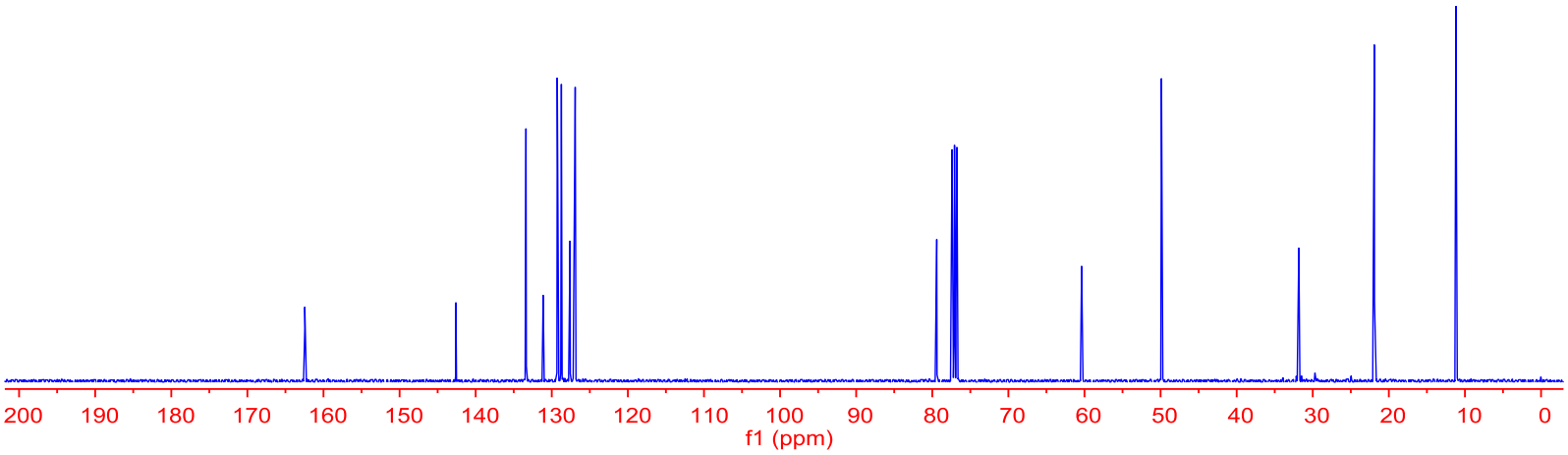
^{1}H NMR (400 MHz, $CDCl_3$) of **9s**

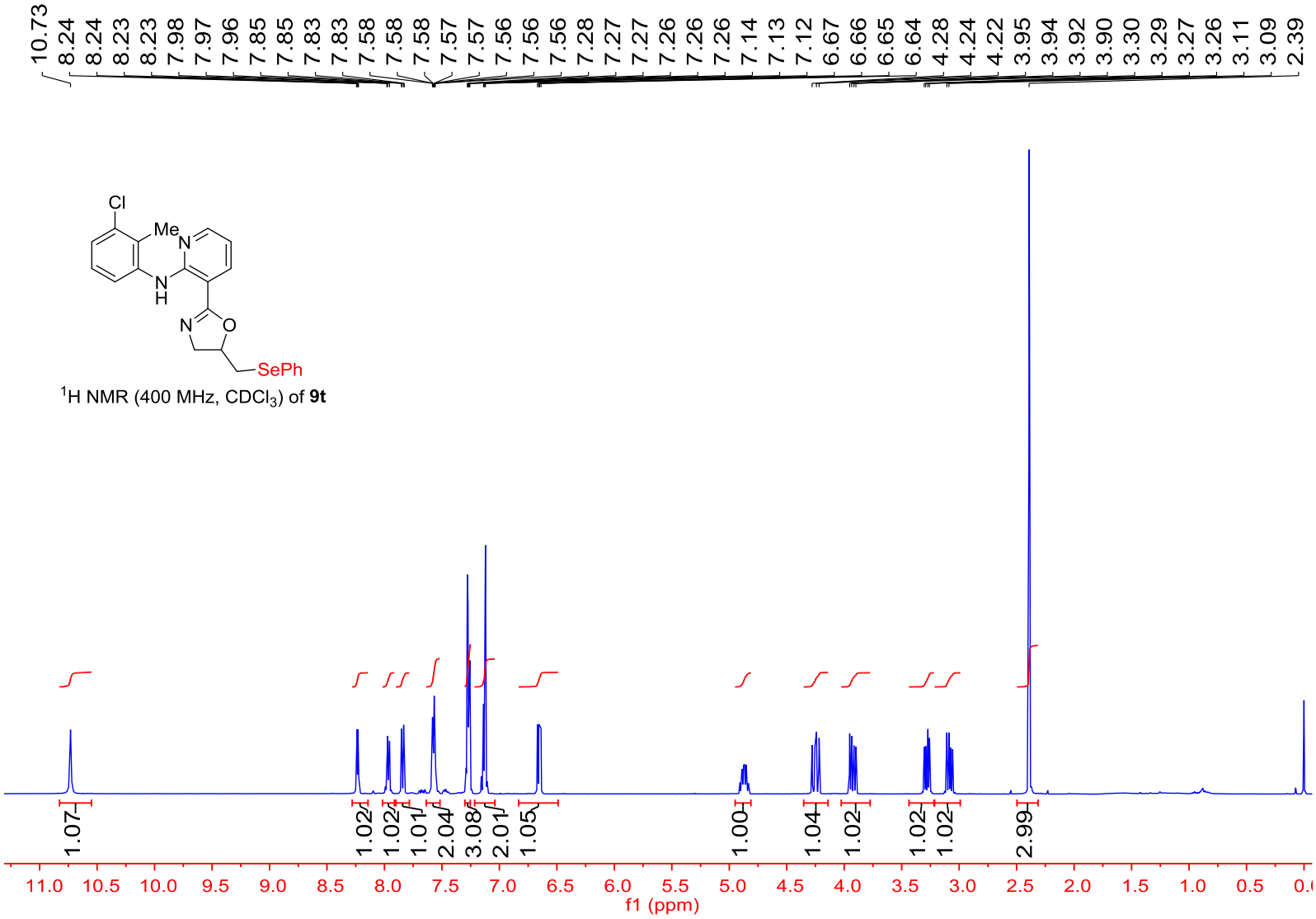




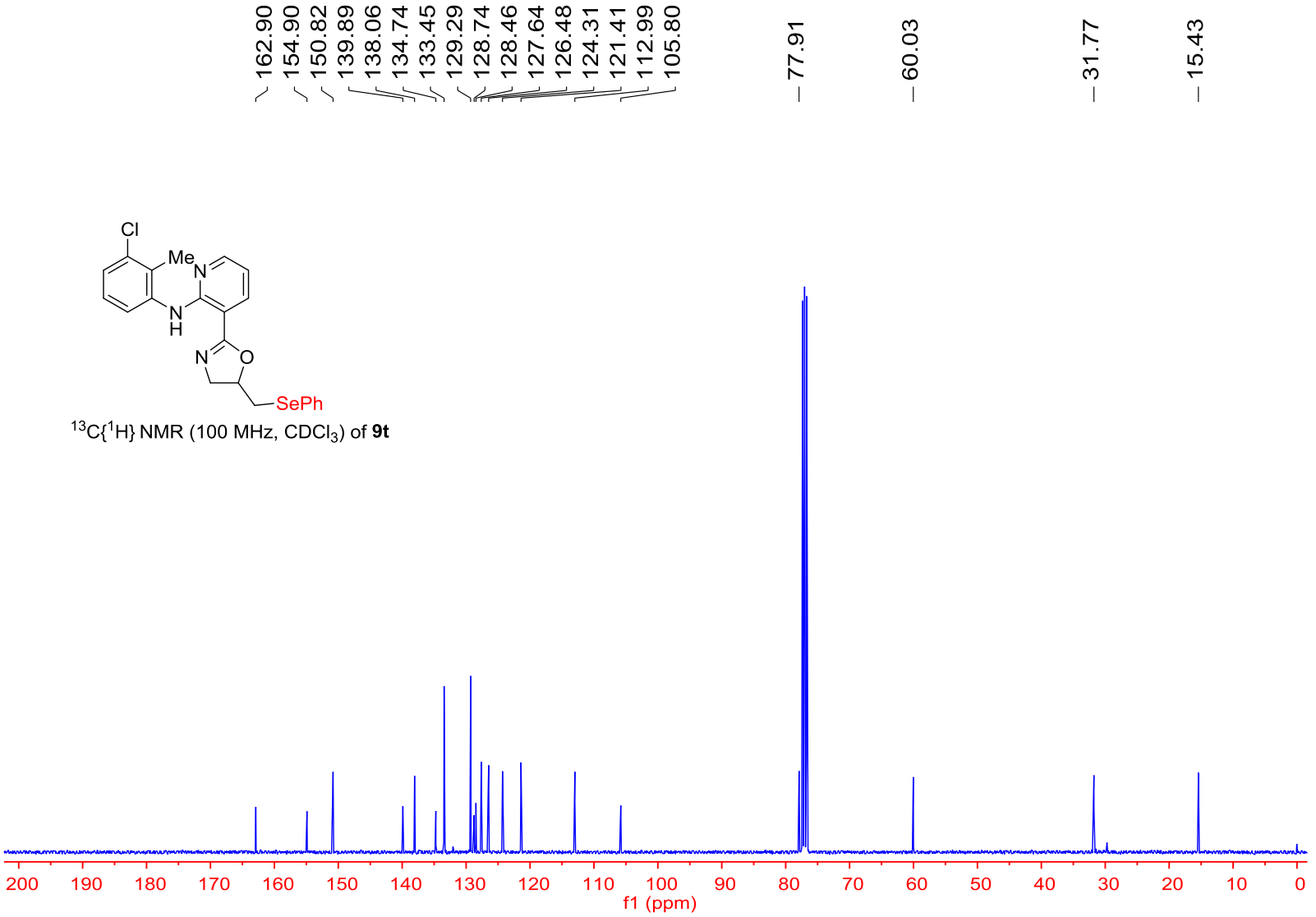


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9s**

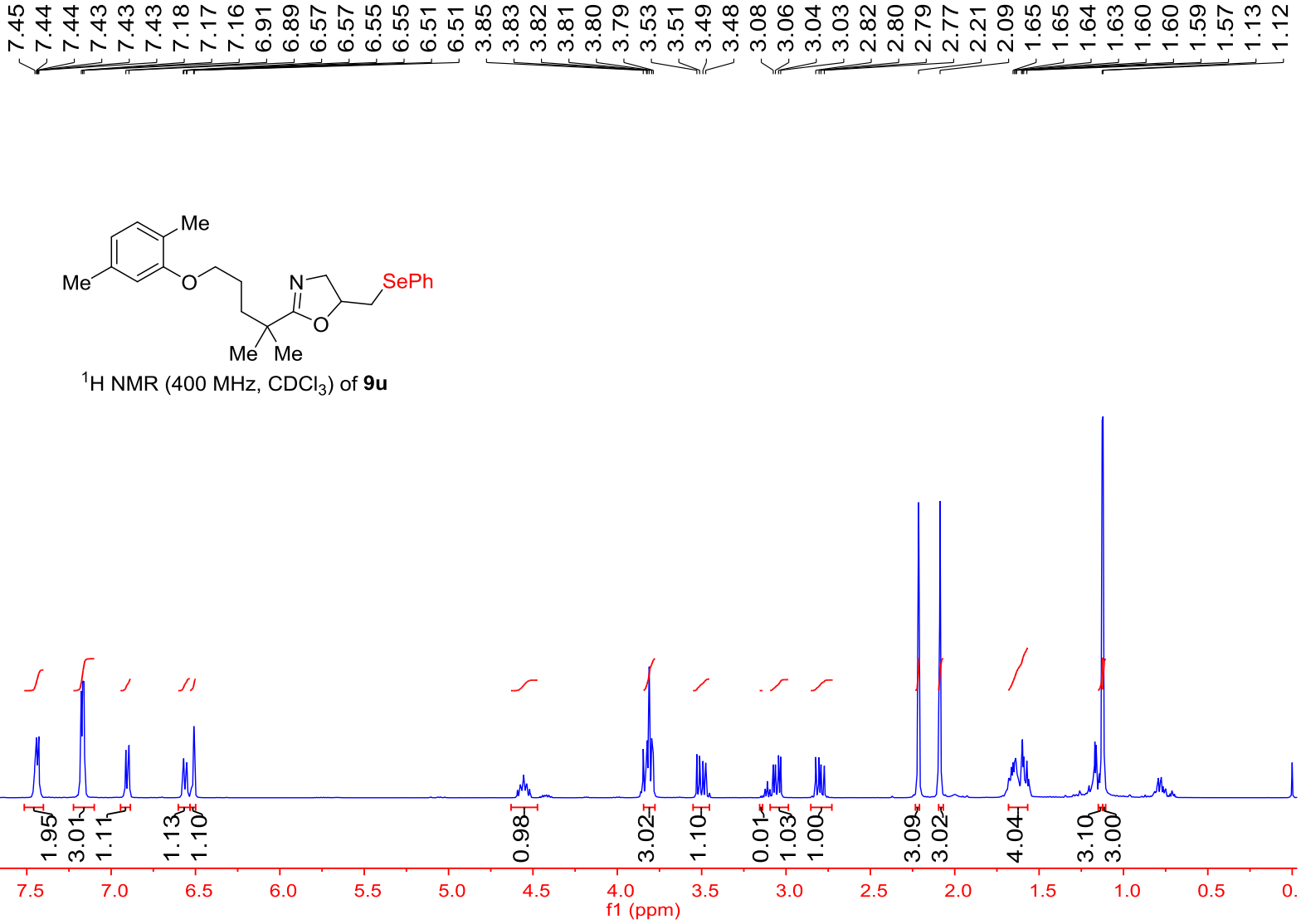




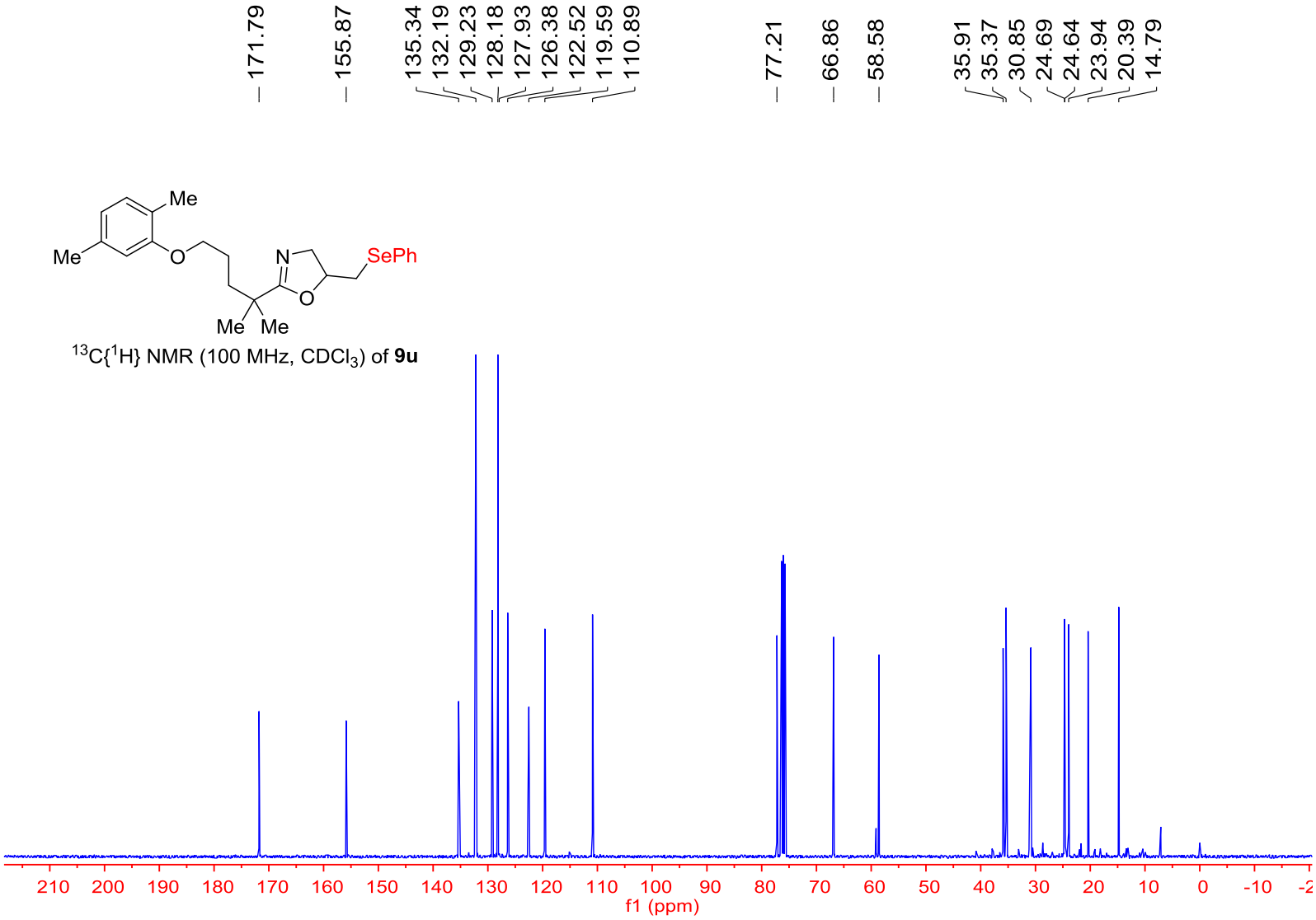
^{1}H NMR (400 MHz, $CDCl_3$) of **9t**



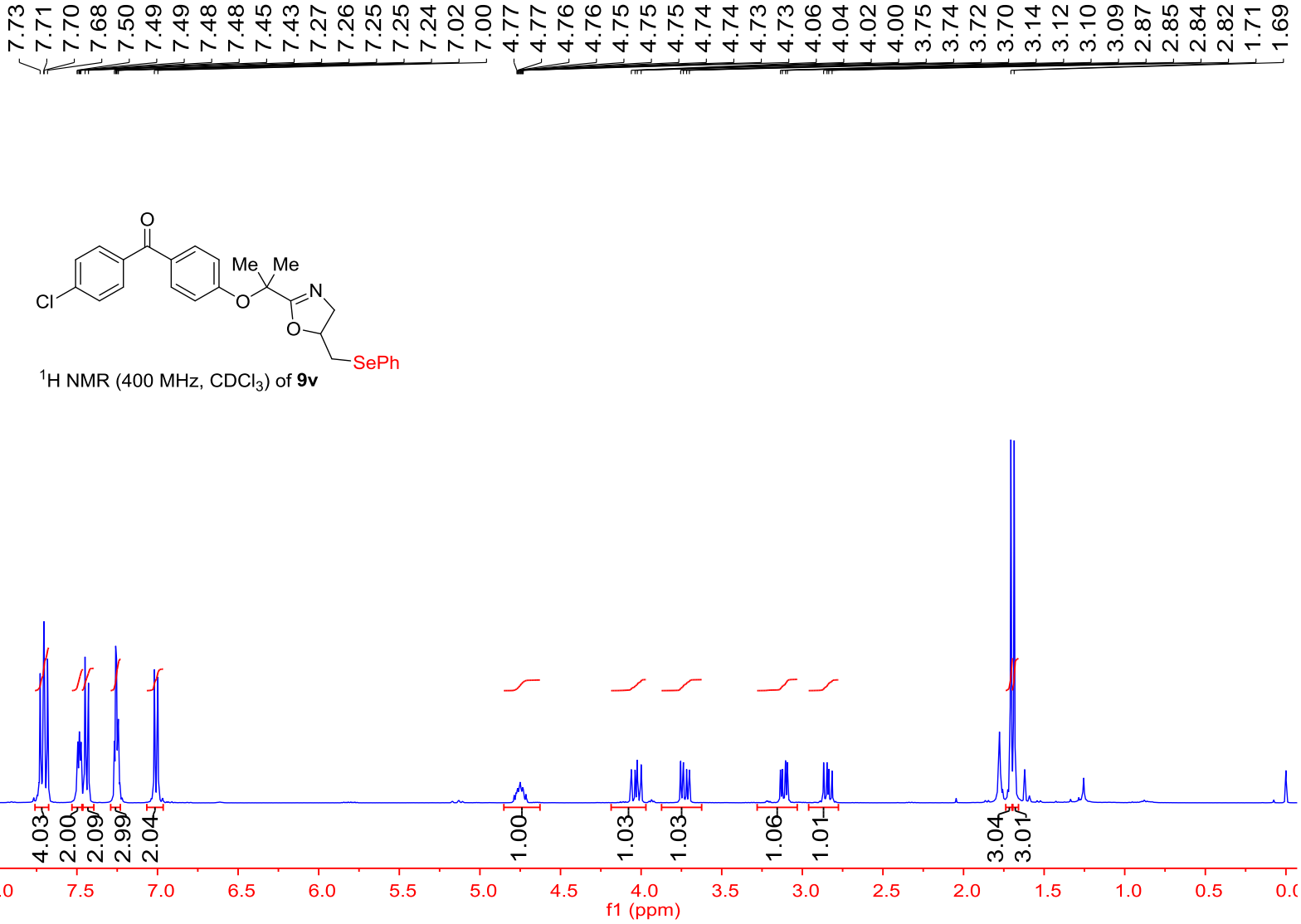
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9t**

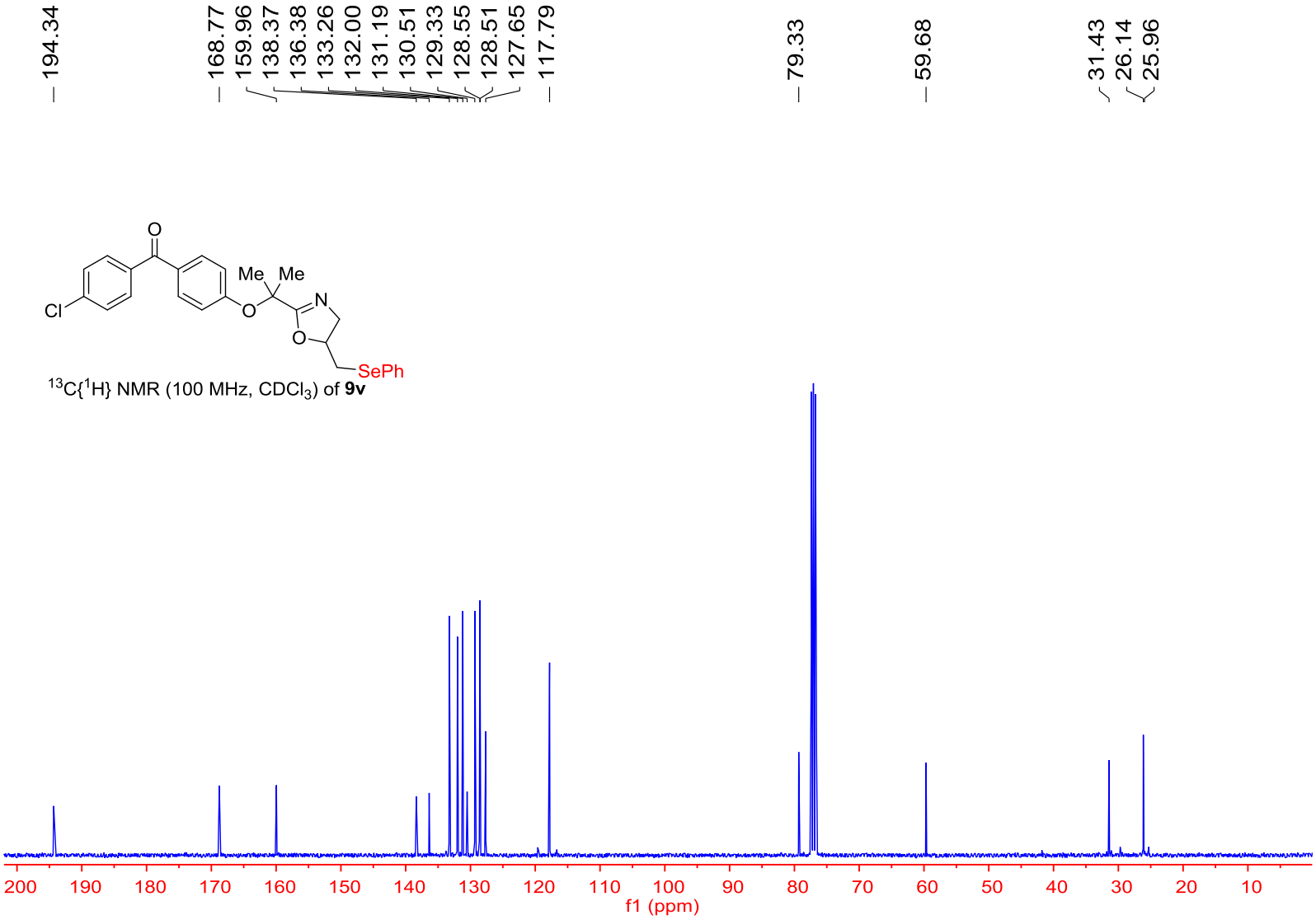


^{1}H NMR (400 MHz, $CDCl_3$) of **9u**

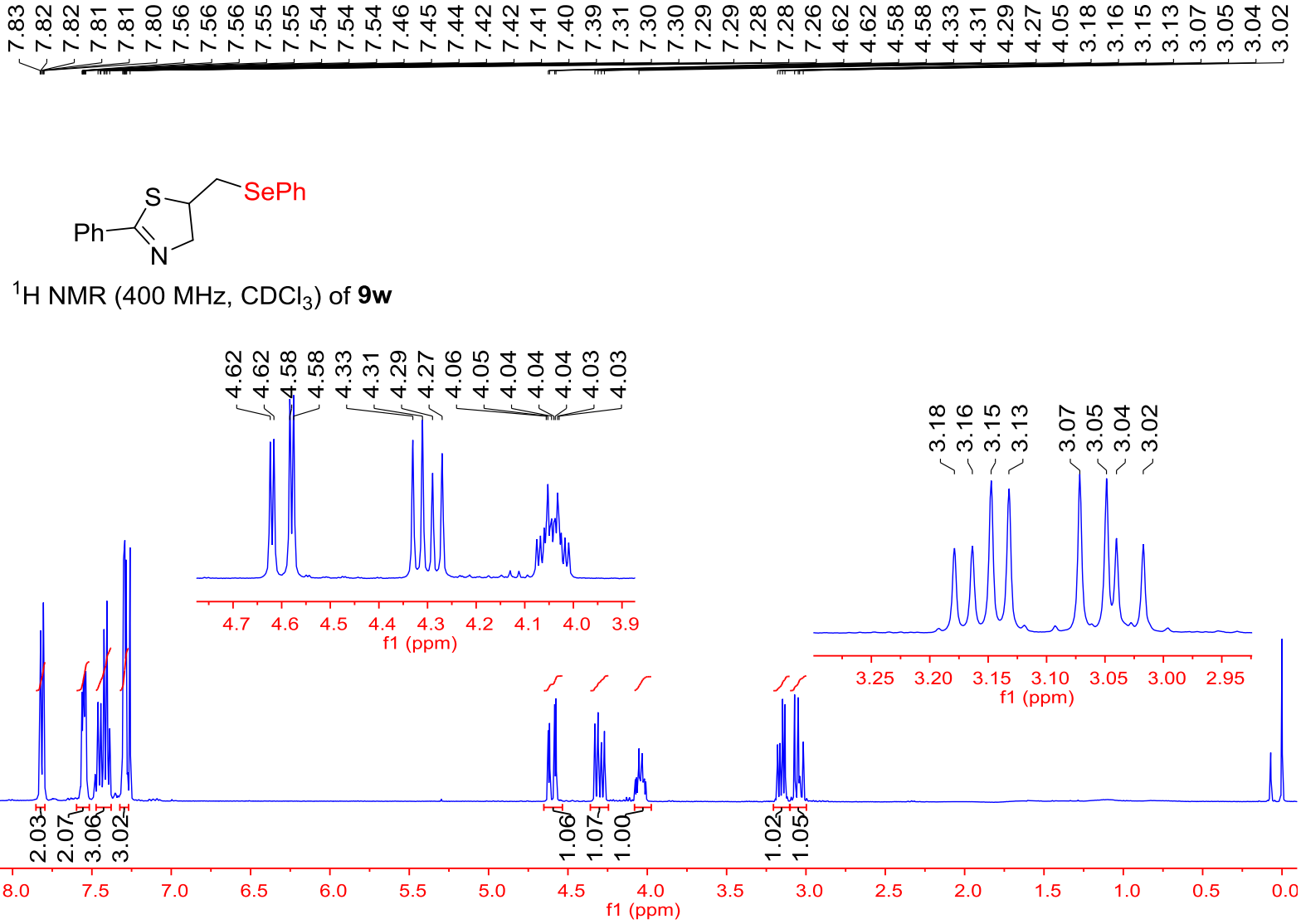


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9u**

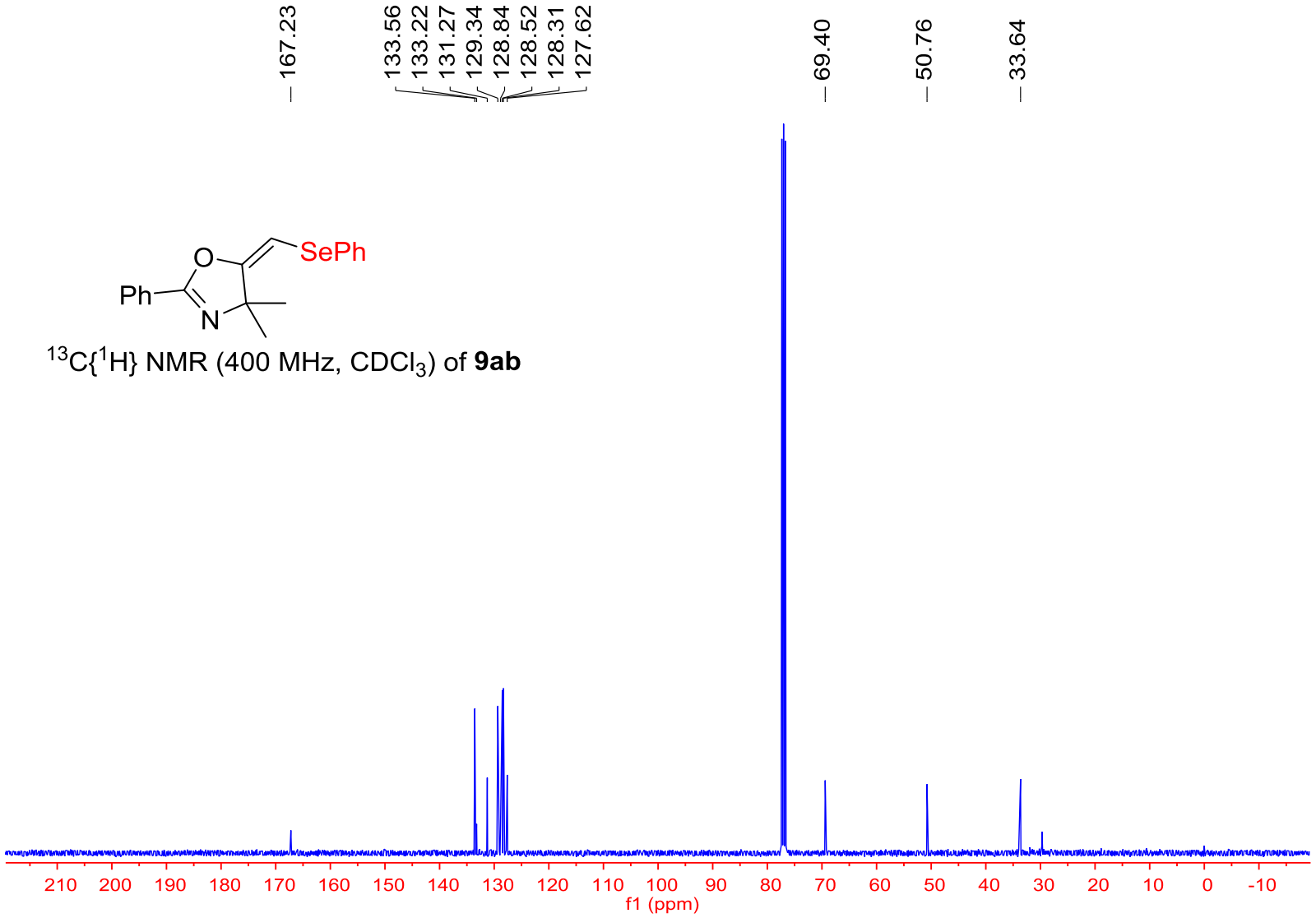

7.73
7.71
7.70
7.68
7.50
7.49
7.49
7.48
7.48
7.45
7.43
7.27
7.26
7.25
7.25
7.24
7.02
7.00
4.77
4.77
4.76
4.76
4.75
4.75
4.75
4.74
4.74
4.73
4.73
4.06
4.04
4.02
4.00
3.75
3.74
3.72
3.70
3.14
3.12
3.10
3.09
2.87
2.85
2.84
2.82
1.71
1.69
O
Me
Me
Cl
O
N
O
SePh
^{1}H NMR (400 MHz, $CDCl_3$) of **9v**
4.03
2.00
2.09
2.99
2.04
1.00
1.03
1.03
1.06
1.01
3.04
3.01
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
f1 (ppm)



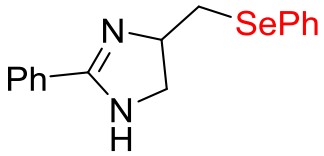
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9v**



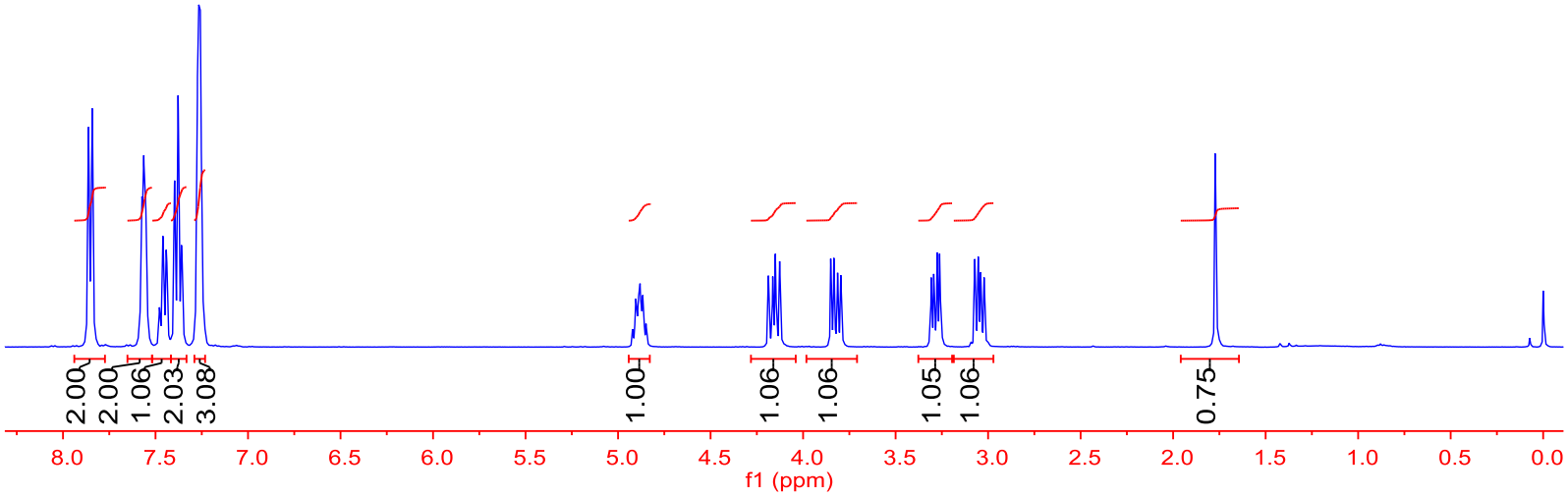
^{1}H NMR (400 MHz, $CDCl_3$) of **9w**

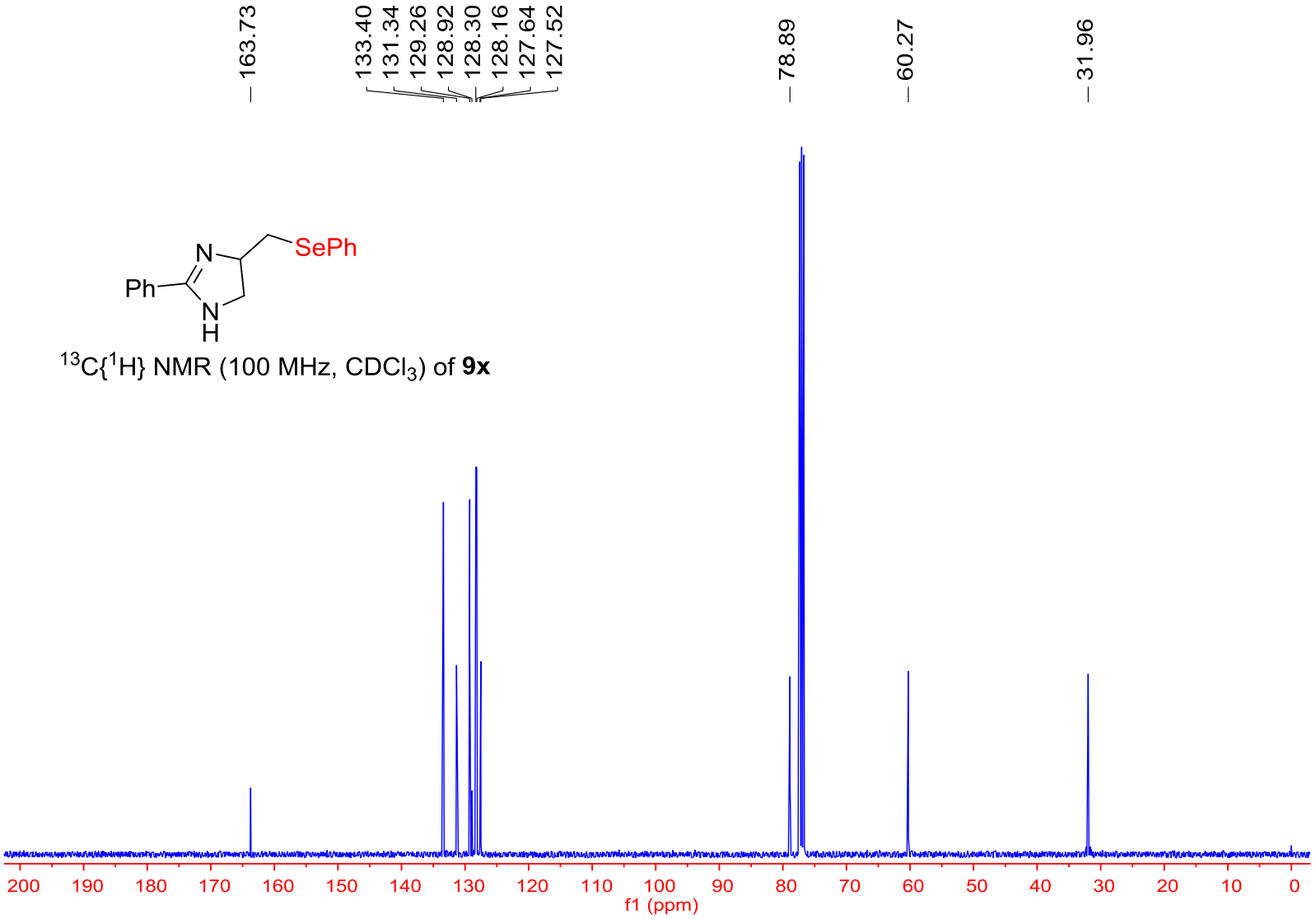


$^{13}C\{^{1}H\}$ NMR (400 MHz, $CDCl_3$) of **9ab**

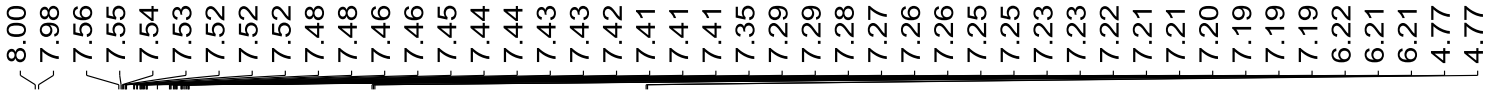


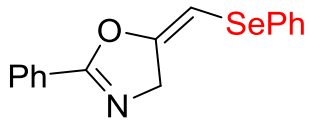
^{1}H NMR (400 MHz, $CDCl_3$) of **9x**



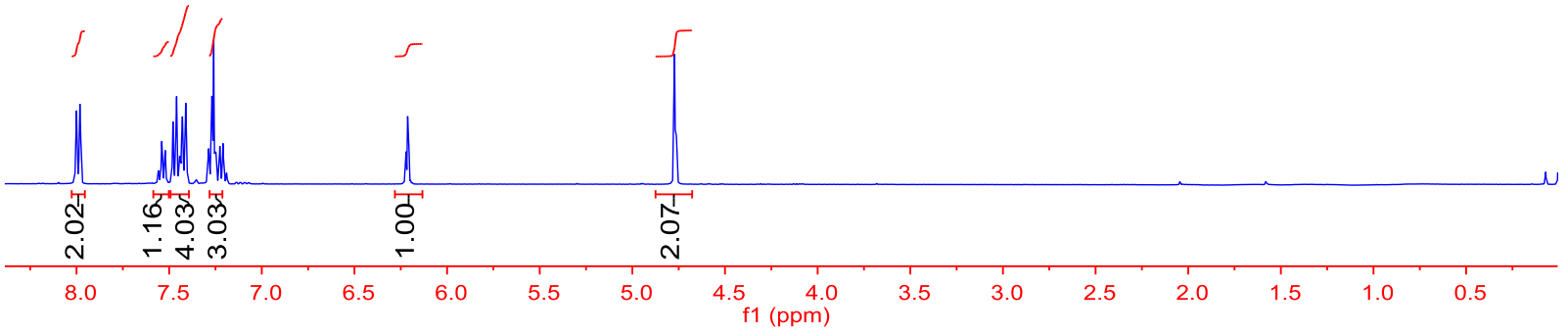


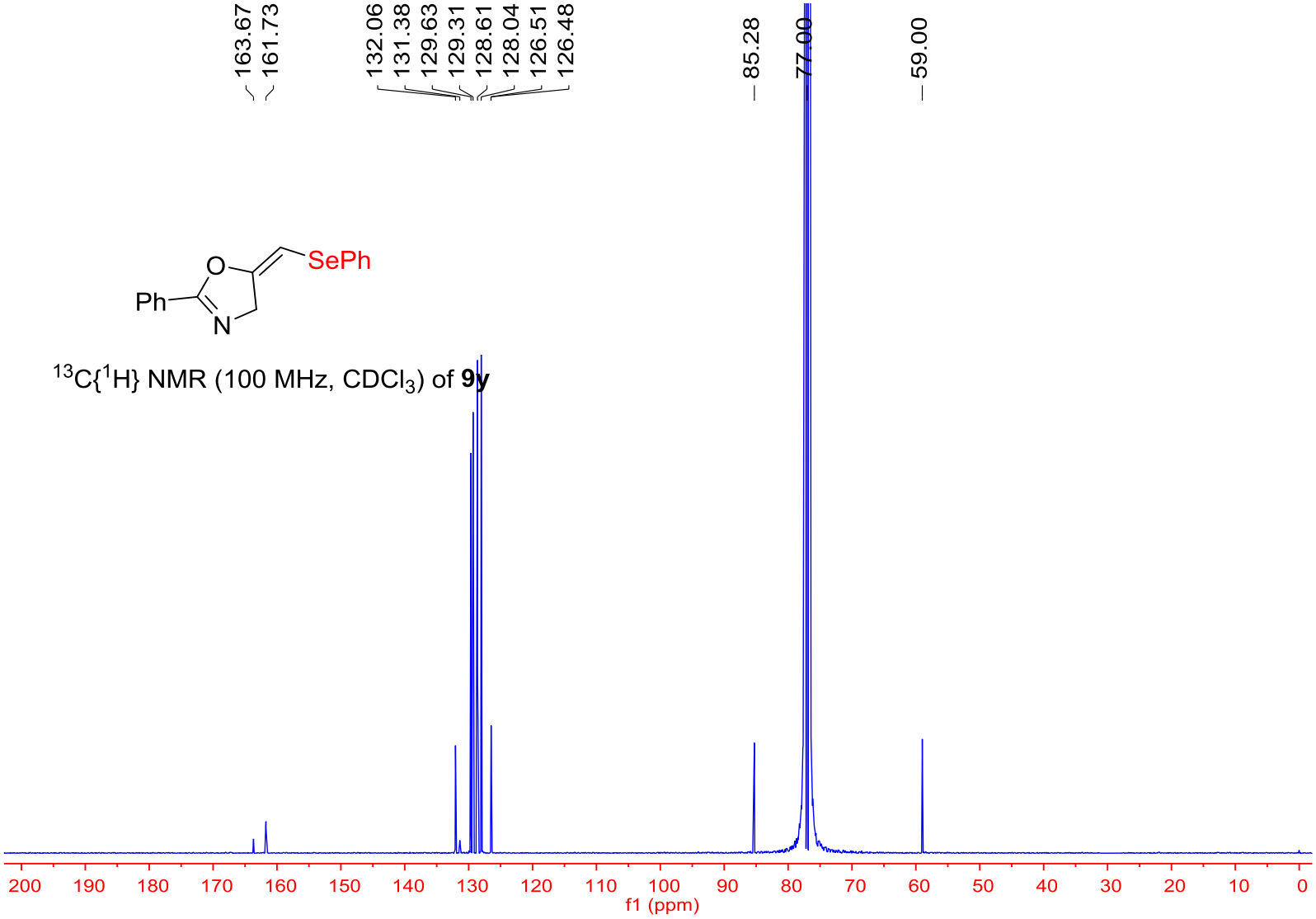
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9x**



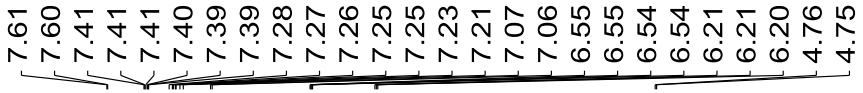


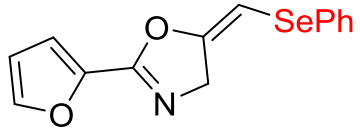
^{1}H NMR (400 MHz, $CDCl_3$) of **9y**



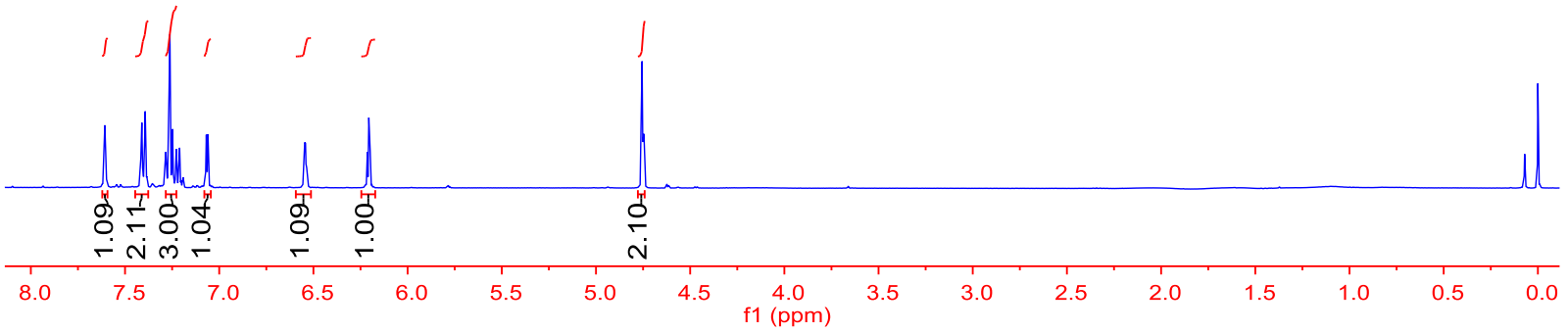


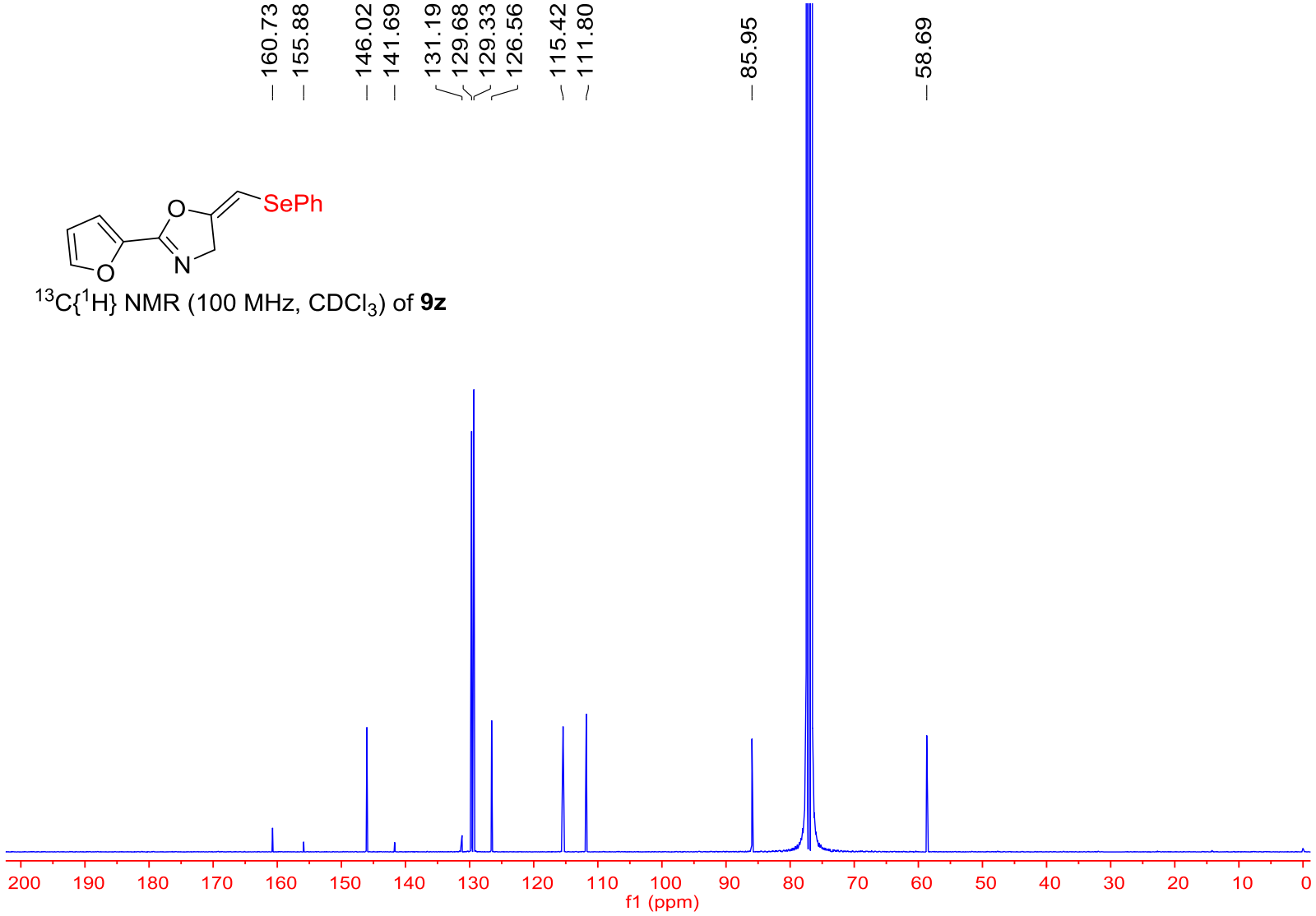
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9y**



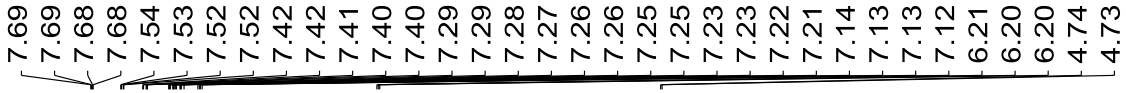


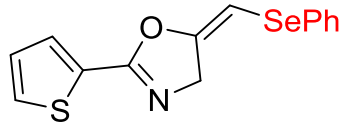
^{1}H NMR (400 MHz, $CDCl_3$) of **9z**



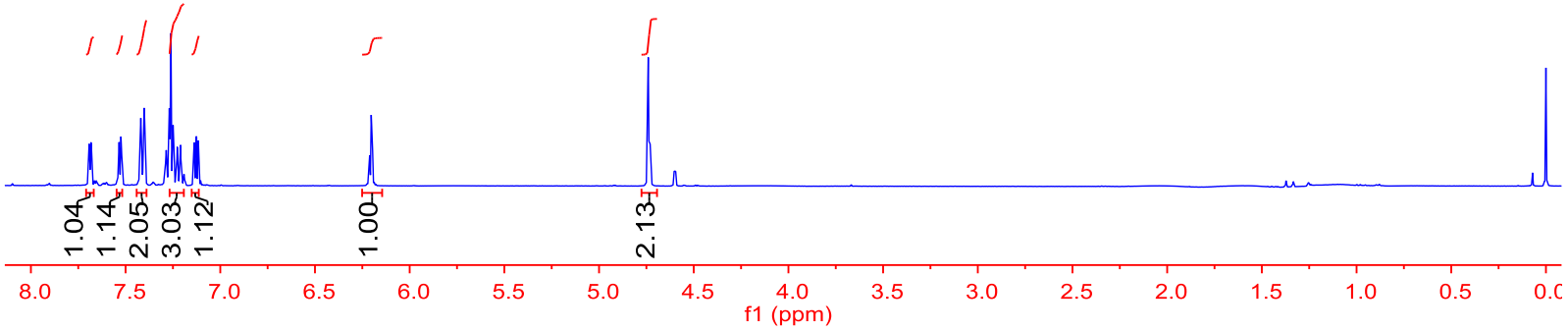


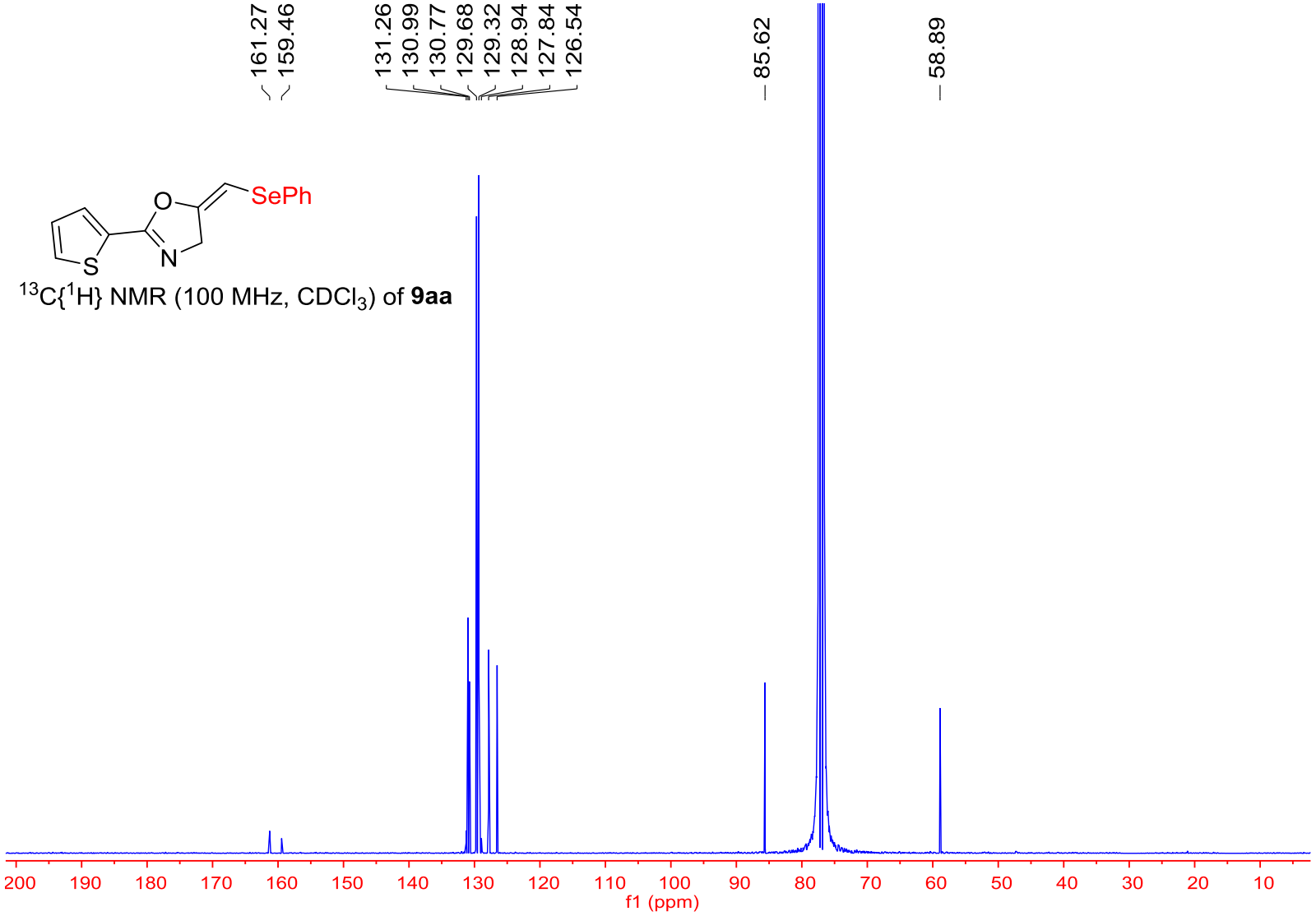
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9z**



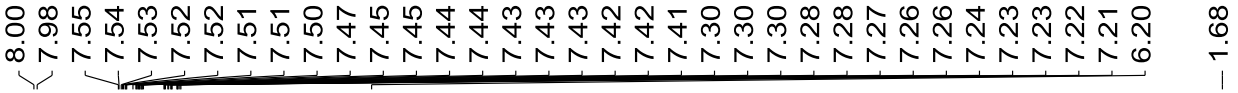


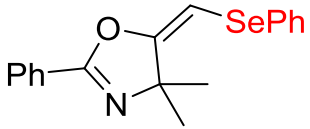
^{1}H NMR (400 MHz, $CDCl_3$) of **9aa**



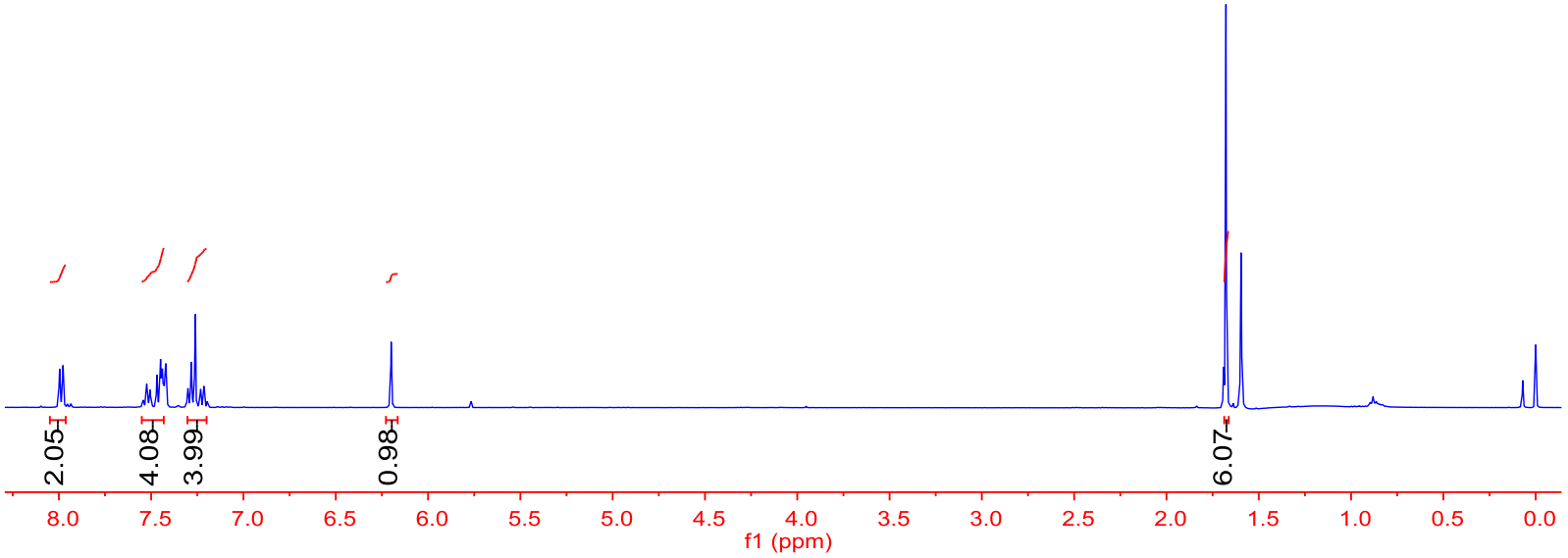


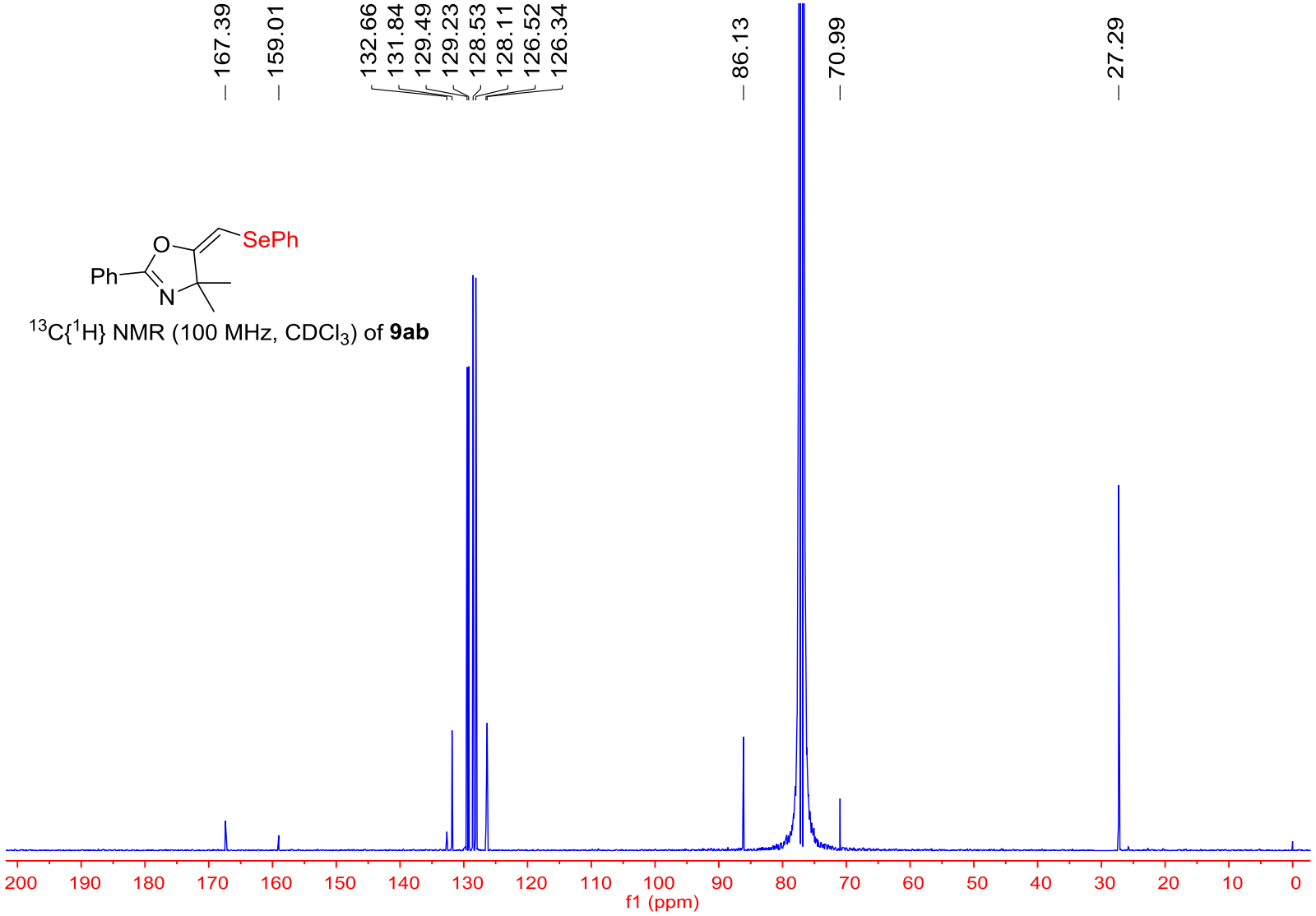
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9aa**



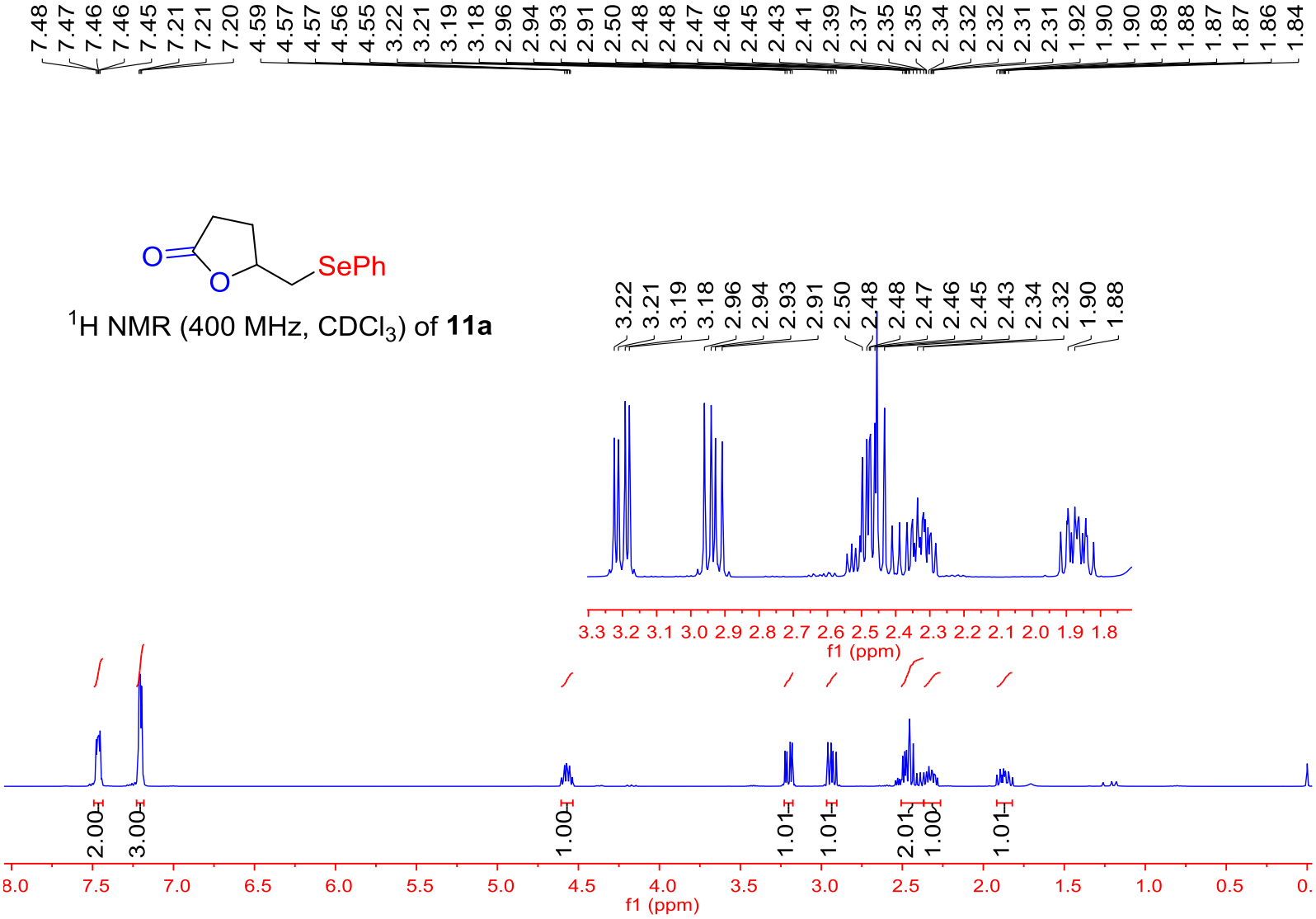


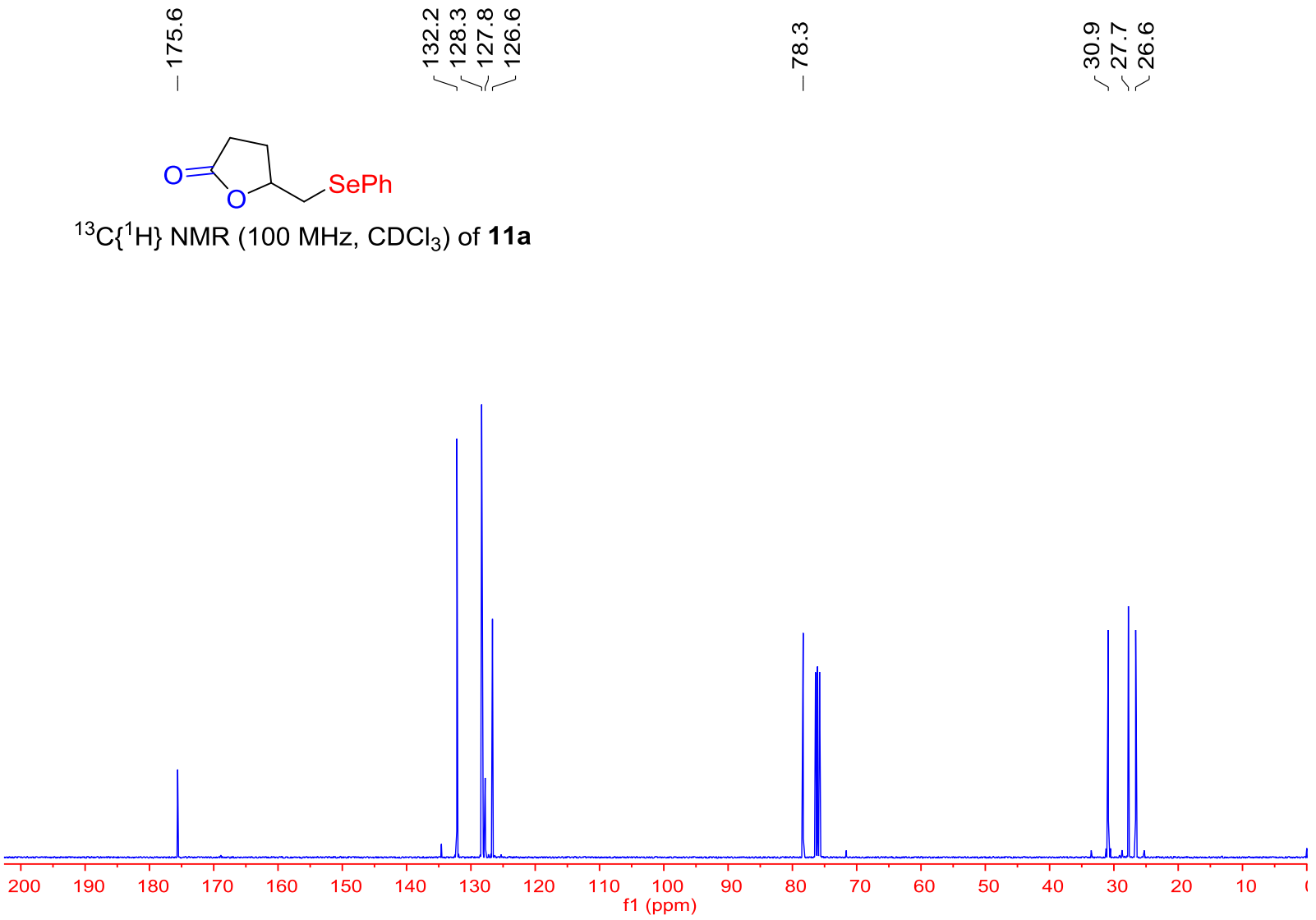
^{1}H NMR (400 MHz, $CDCl_3$) of **9ab**



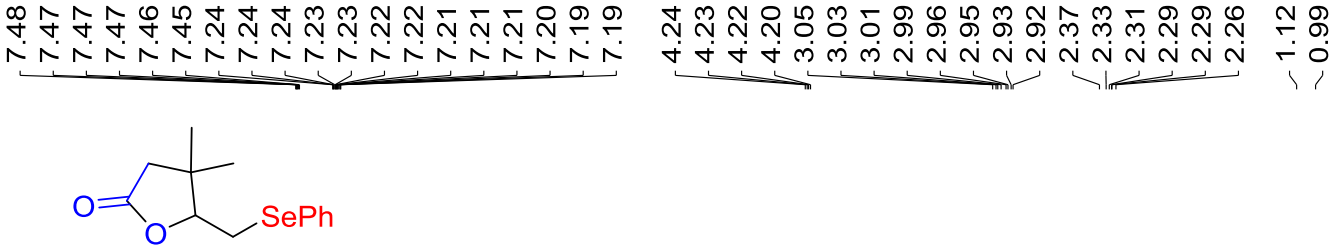


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **9ab**

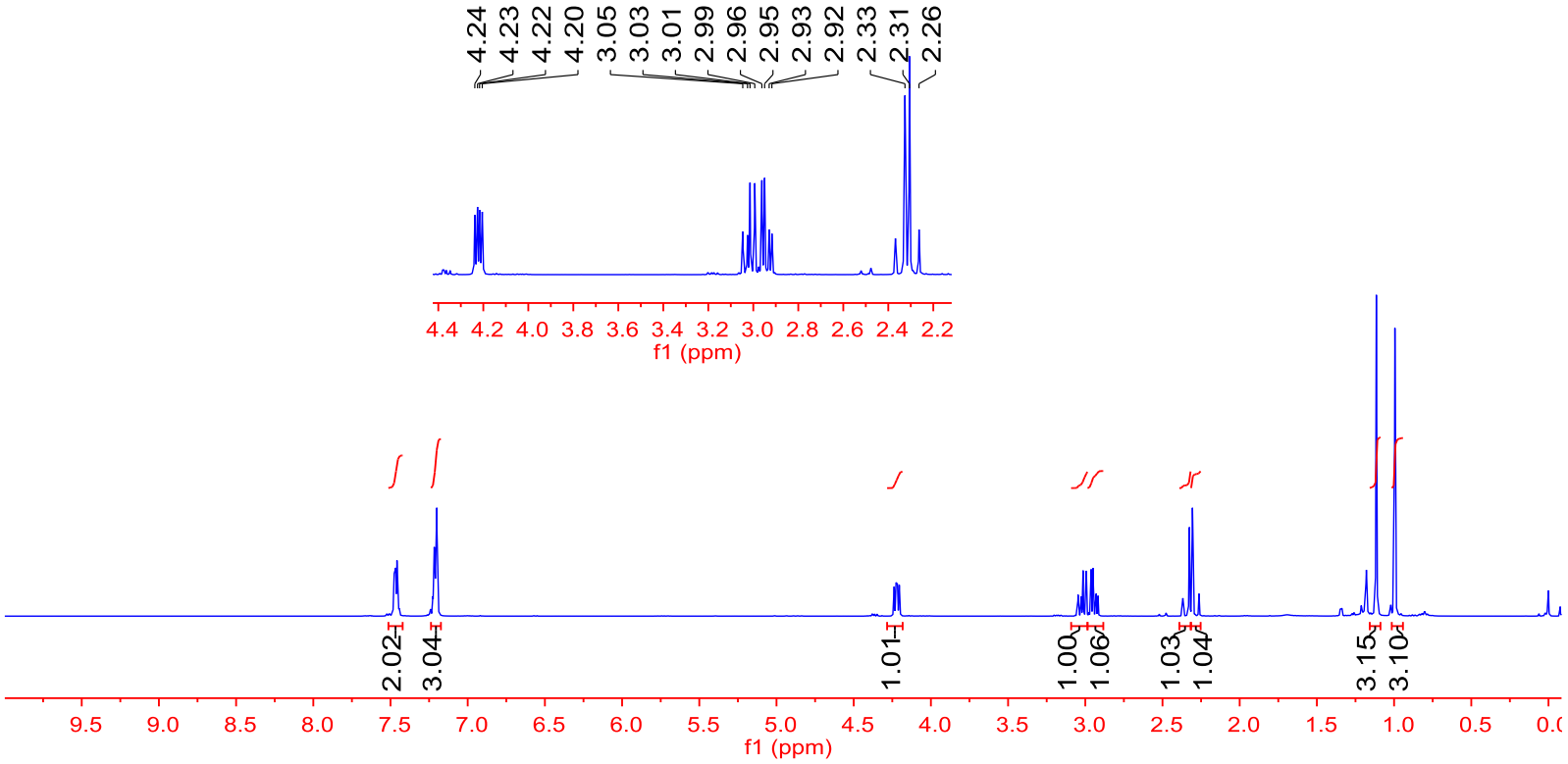

7.48 7.47 7.46 7.46 7.45 7.21 7.21 7.20 4.59 4.57 4.57 4.56 4.55 3.22 3.21 3.19 3.18 2.96 2.94 2.93 2.91 2.50 2.48 2.48 2.47 2.46 2.45 2.43 2.41 2.39 2.37 2.35 2.35 2.34 2.32 2.32 2.31 2.31 1.92 1.90 1.90 1.89 1.88 1.87 1.87 1.86 1.84
O
O
SePh
1H NMR (400 MHz, CDCl3) of 11a
3.22 3.21 3.19 3.18 2.96 2.94 2.93 2.91 2.50 2.48 2.48 2.47 2.46 2.45 2.43 2.34 2.32 1.90 1.88
3.3 3.2 3.1 3.0 2.9 2.8 2.7 2.6 2.5 2.4 2.3 2.2 2.1 2.0 1.9 1.8
f1 (ppm)
2.00
3.00
1.00
1.01
1.01
2.01
1.00
1.01
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.
f1 (ppm)

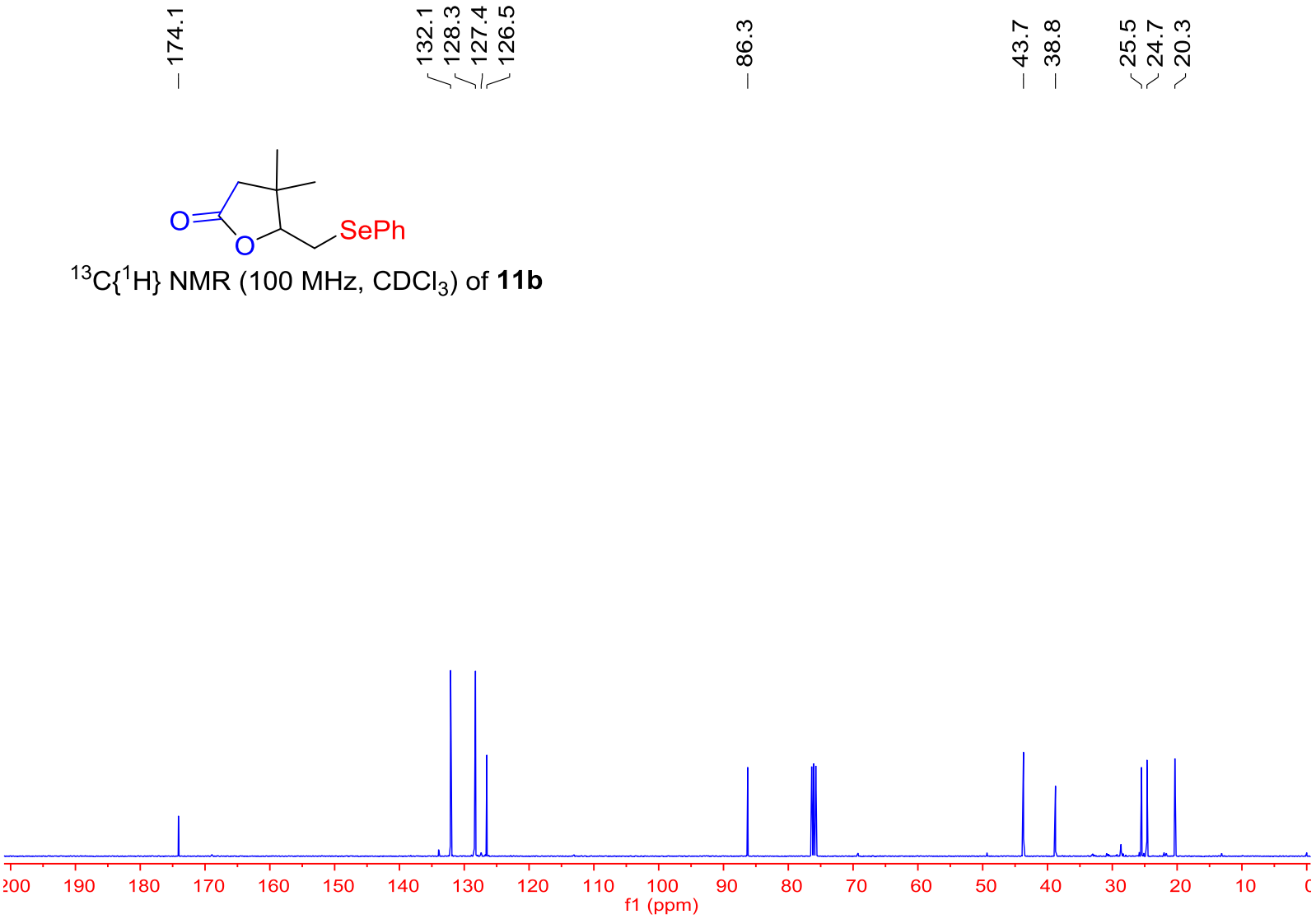


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11a**

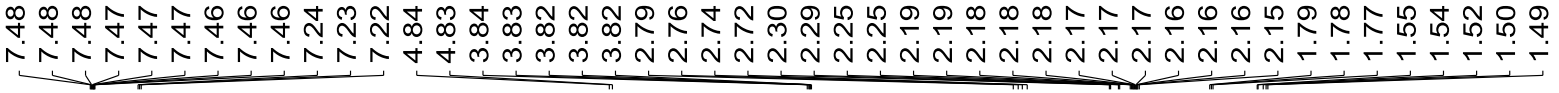


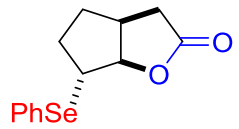
^{1}H NMR (400 MHz, $CDCl_3$) of **11b**



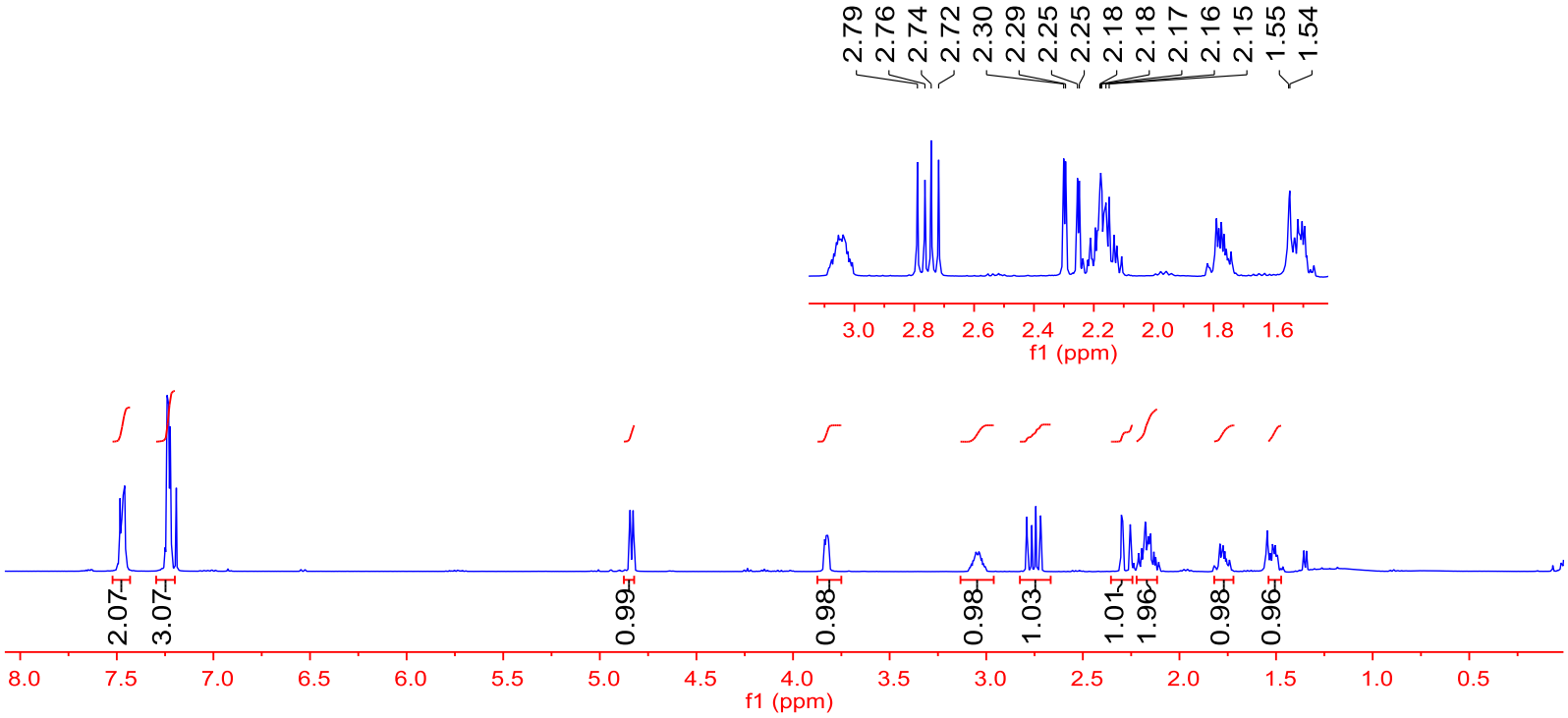


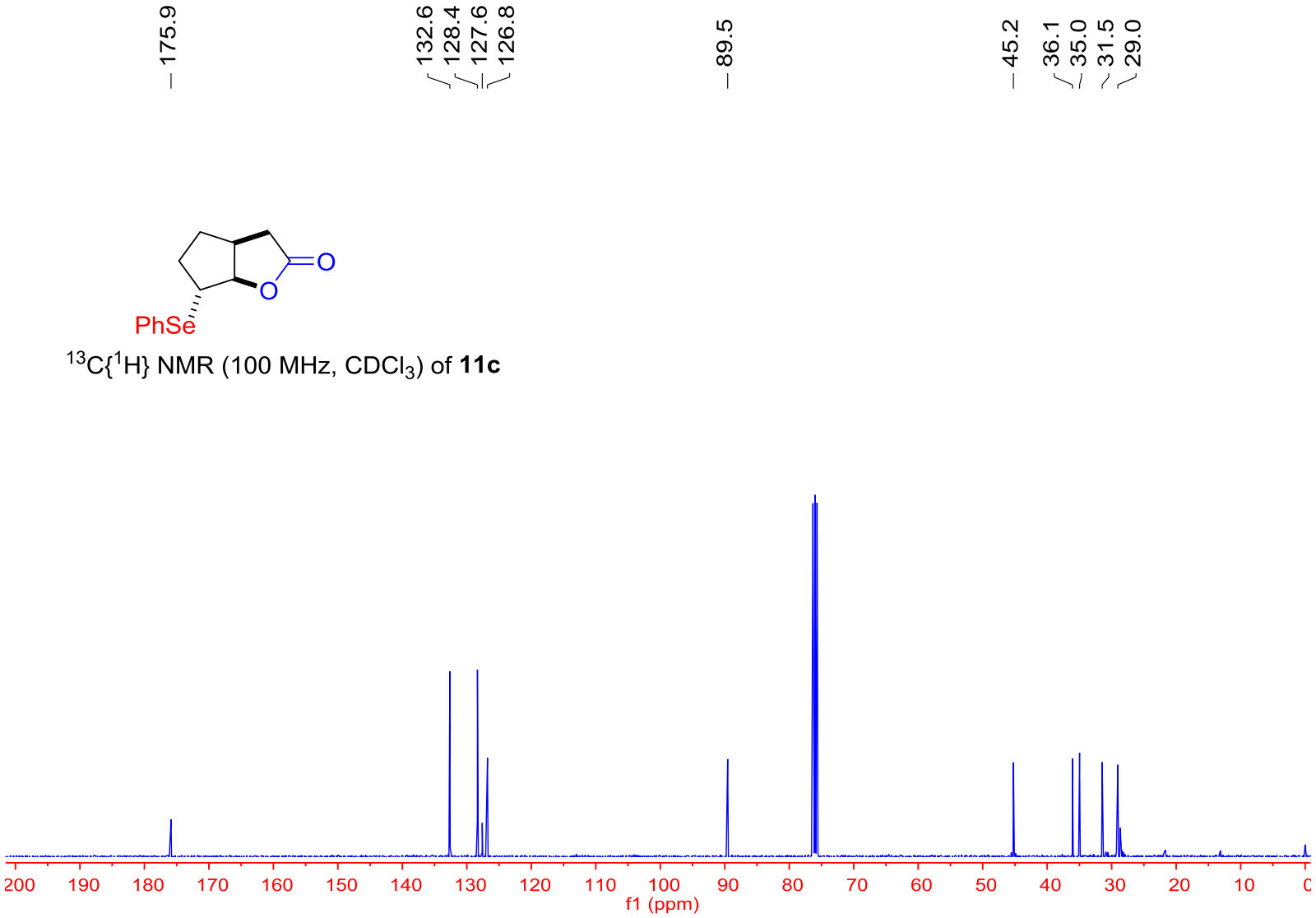
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11b**



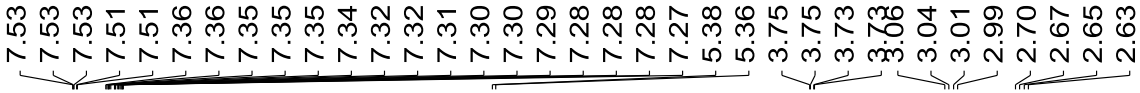


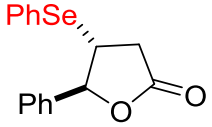
^{1}H NMR (400 MHz, $CDCl_3$) of **11c**



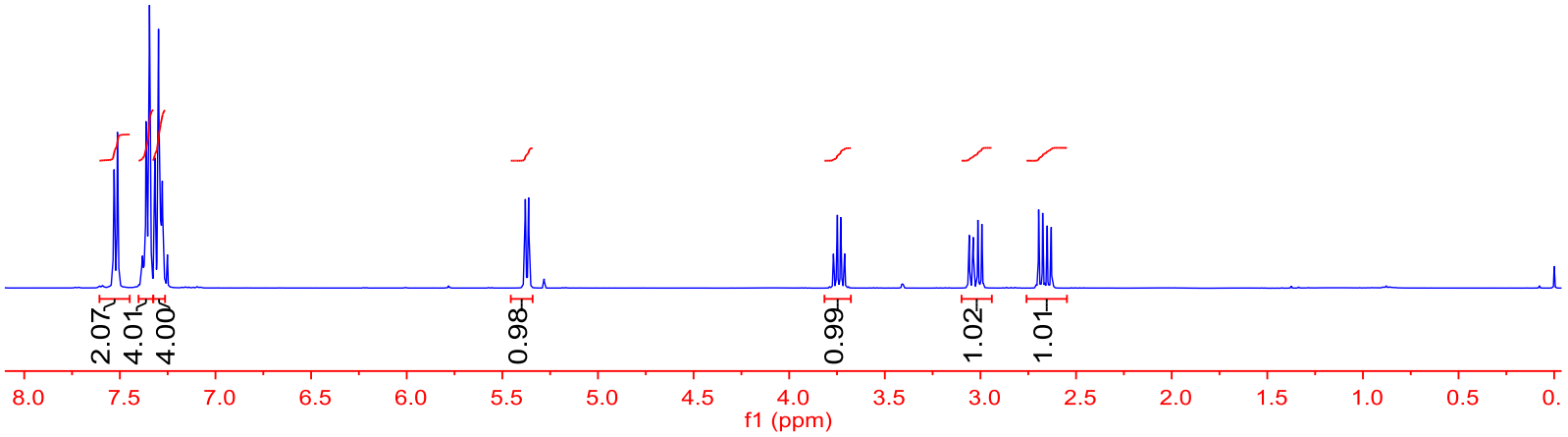


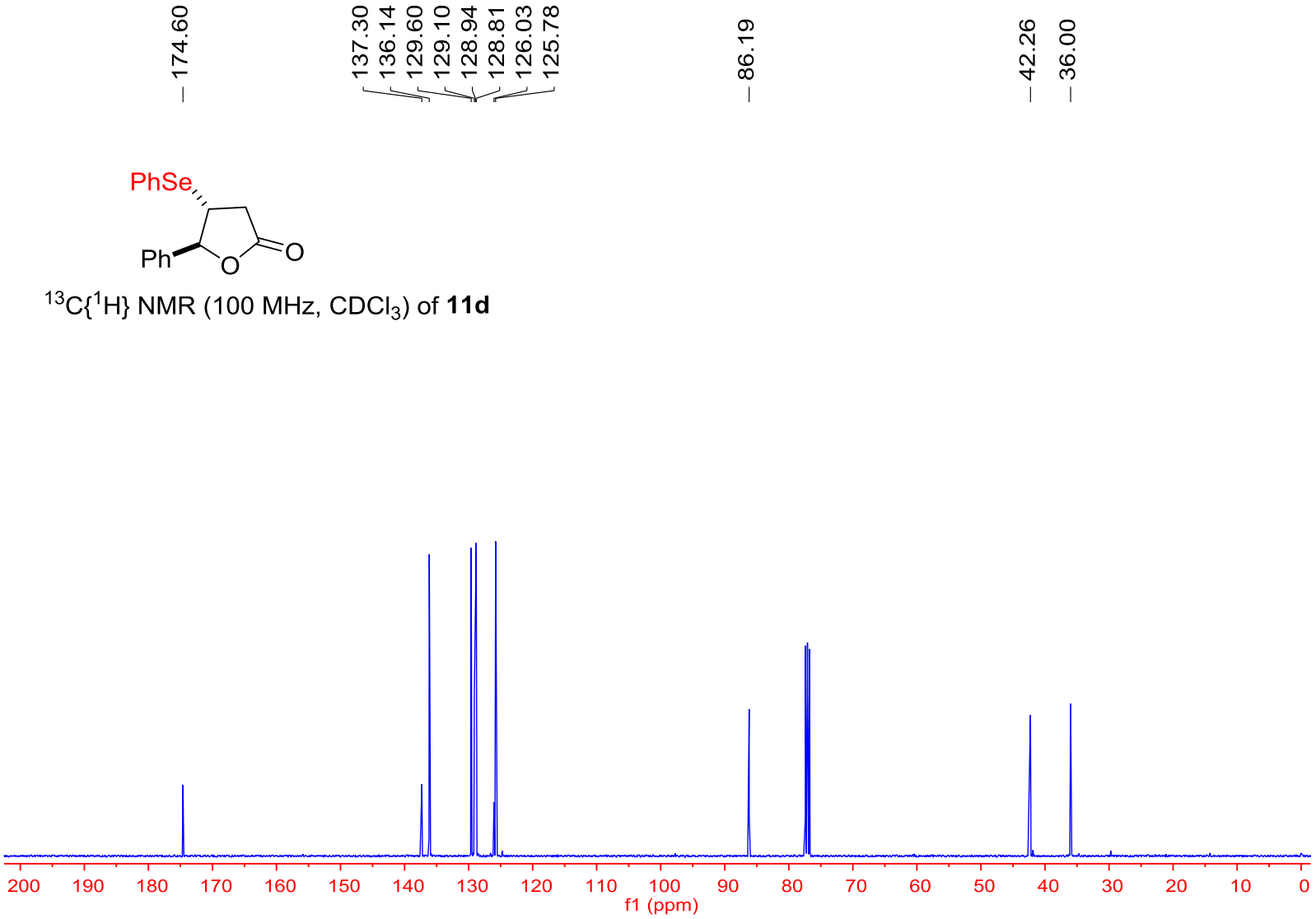
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11c**



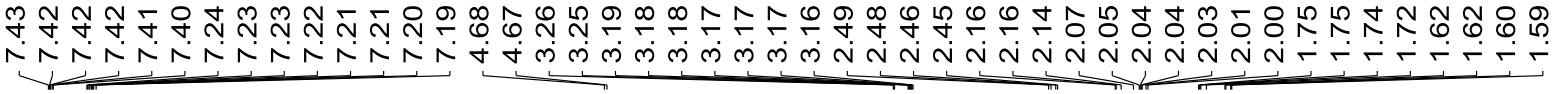


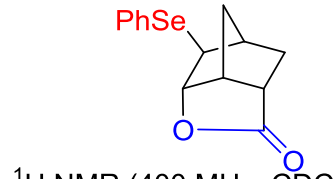
^{1}H NMR (400 MHz, $CDCl_3$) of **11d**



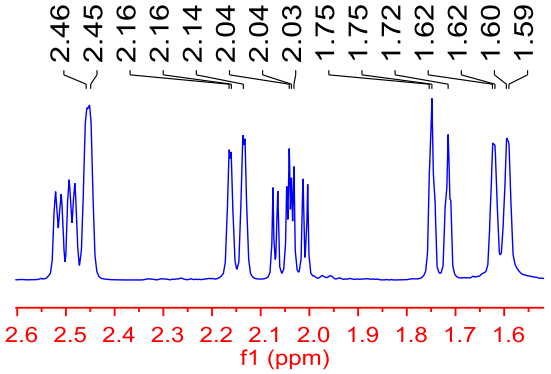


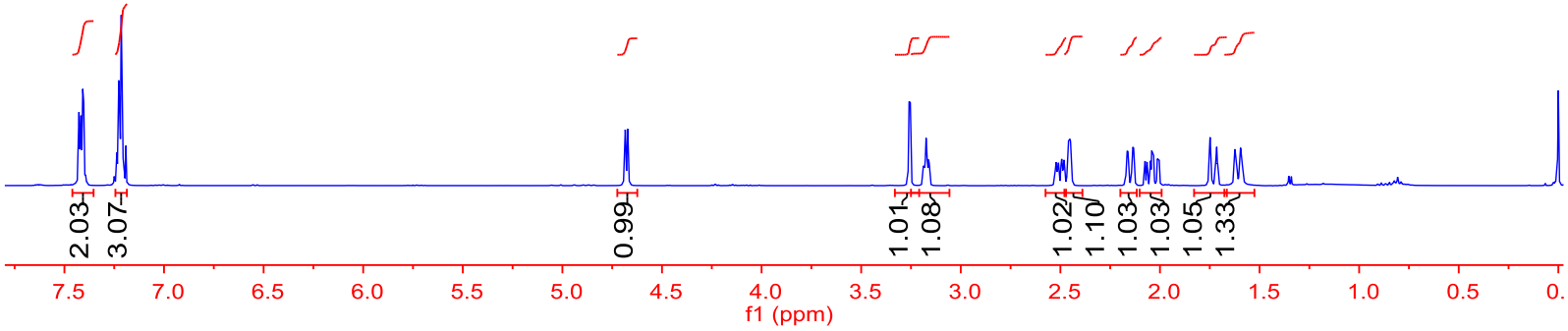
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11d**

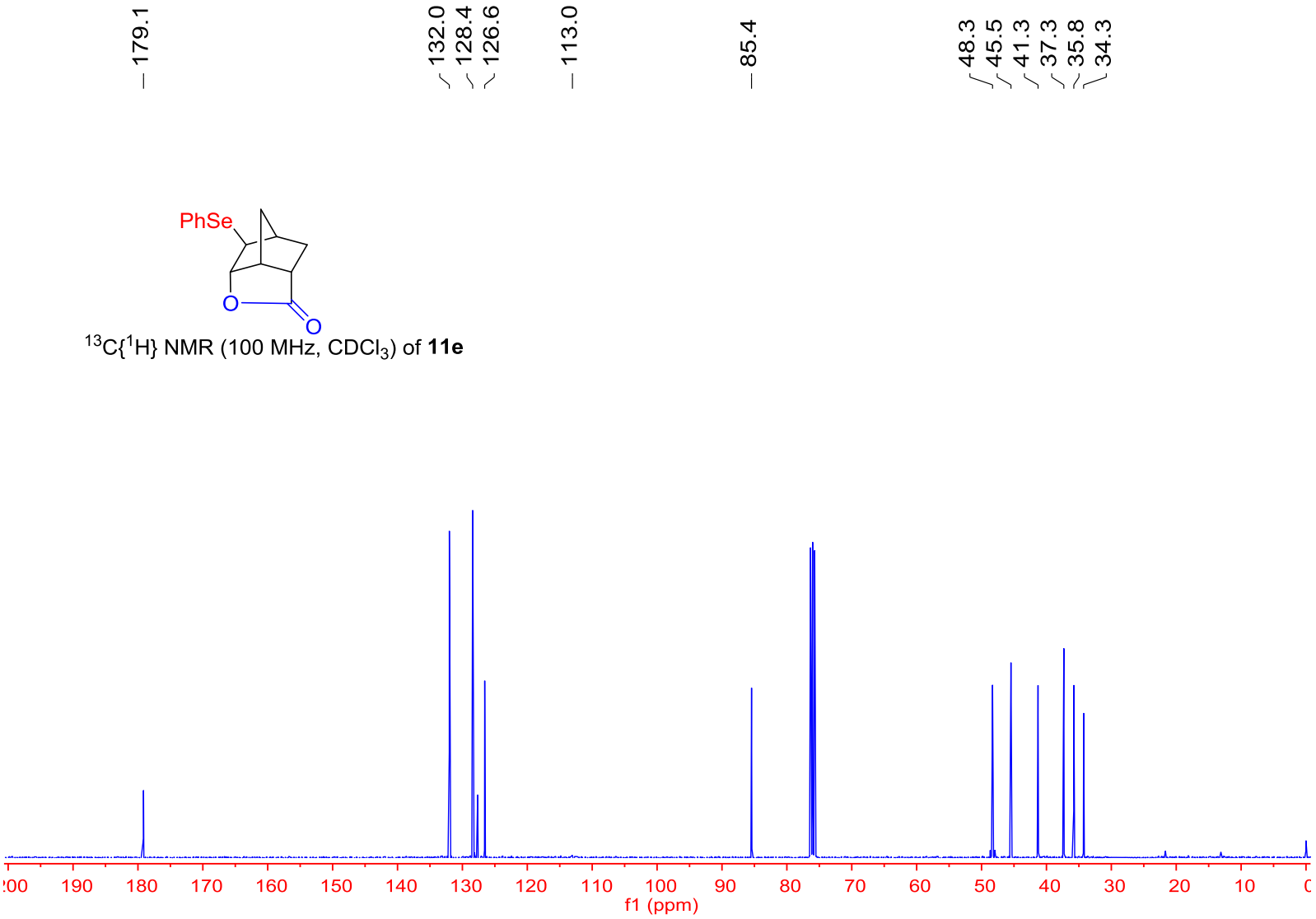




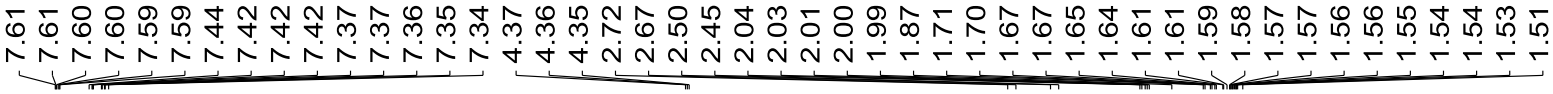
^{1}H NMR (400 MHz, $CDCl_3$) of **11e**

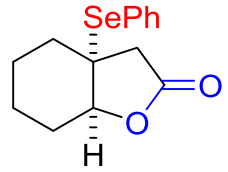




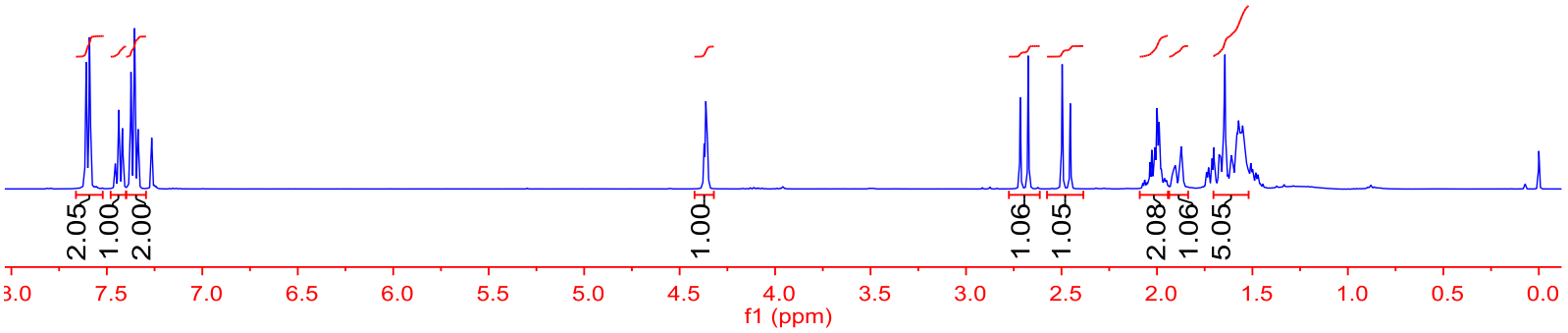


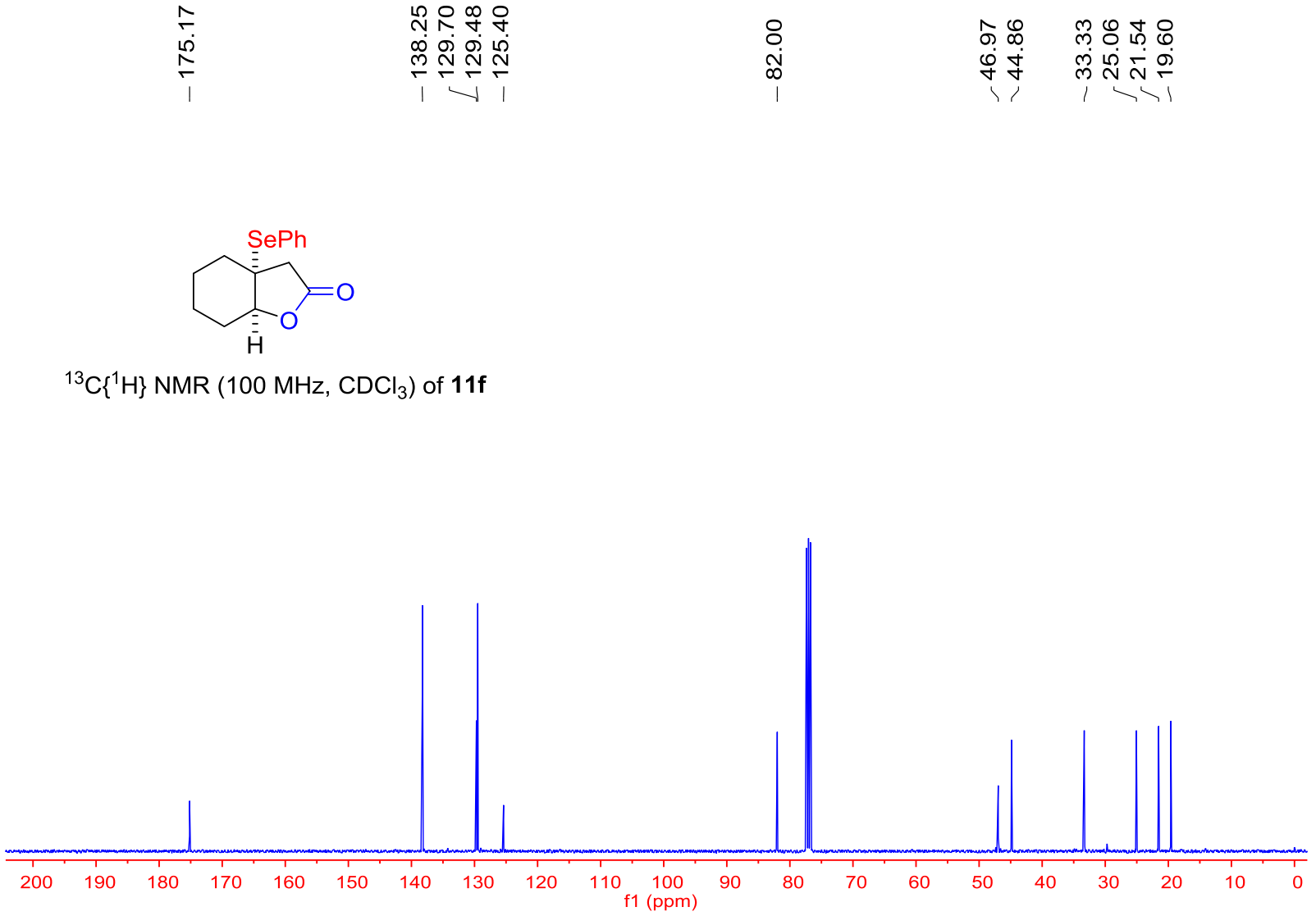
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11e**



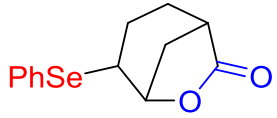


^{1}H NMR (400 MHz, $CDCl_3$) of **11f**

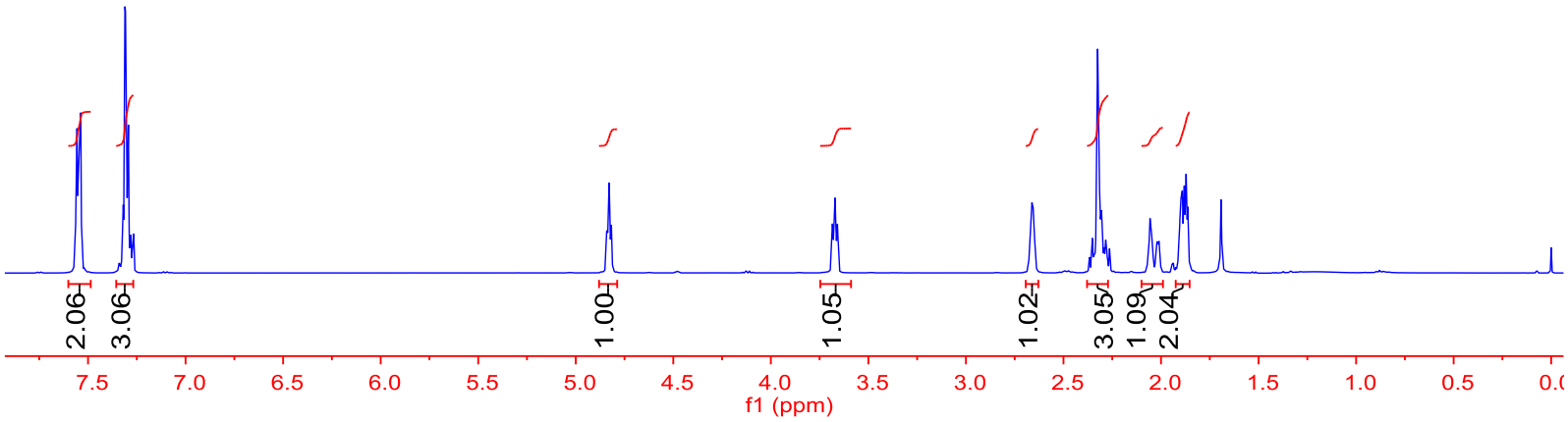


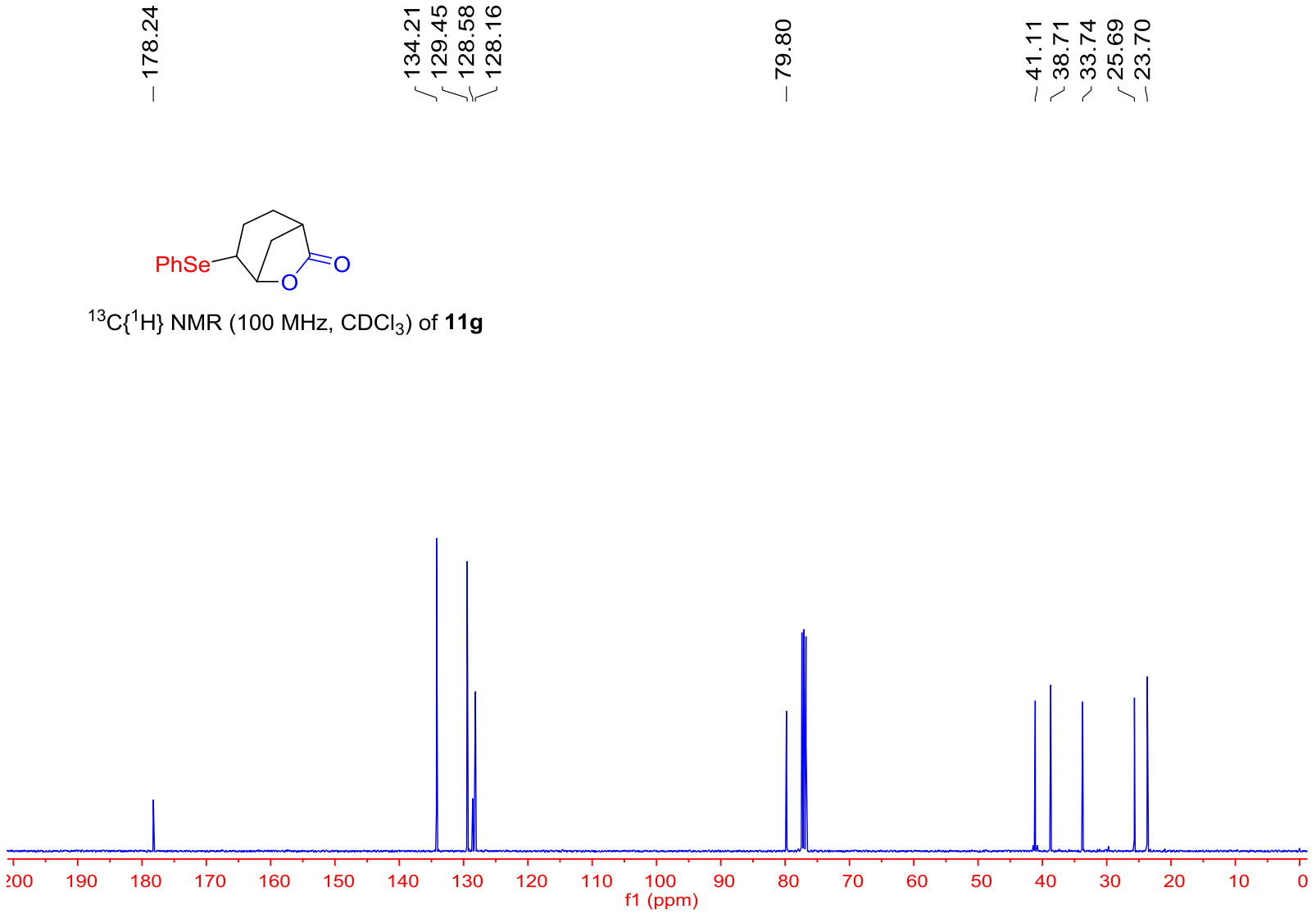


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11f**

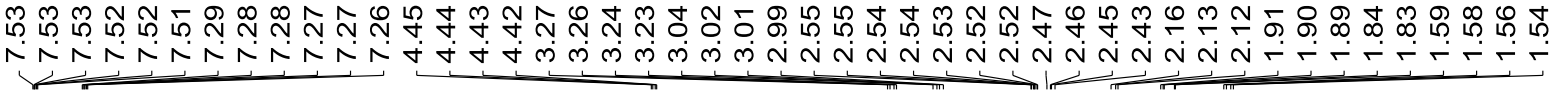


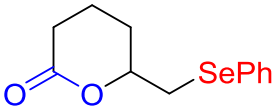
^{1}H NMR (400 MHz, $CDCl_3$) of **11g**



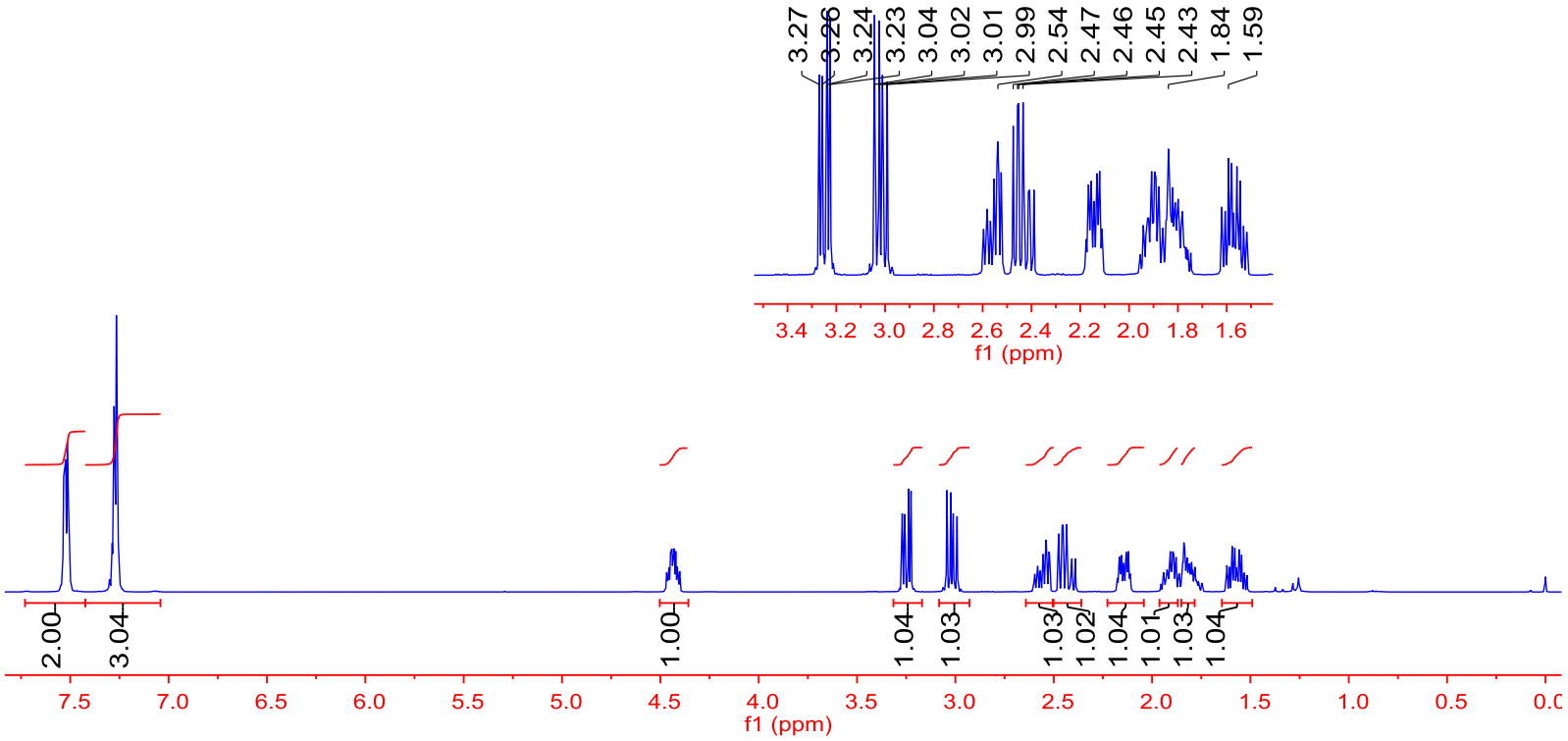


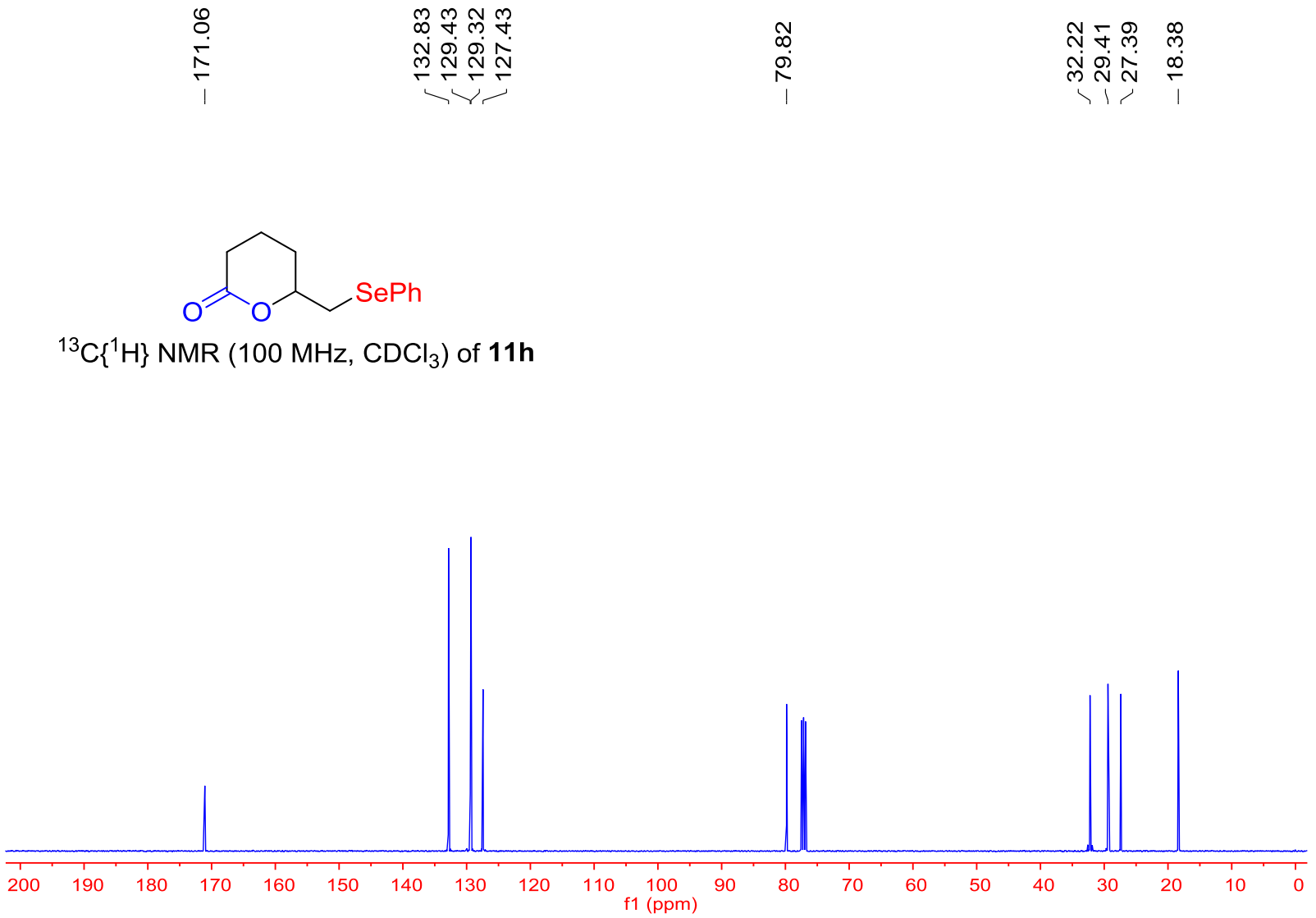
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11g**



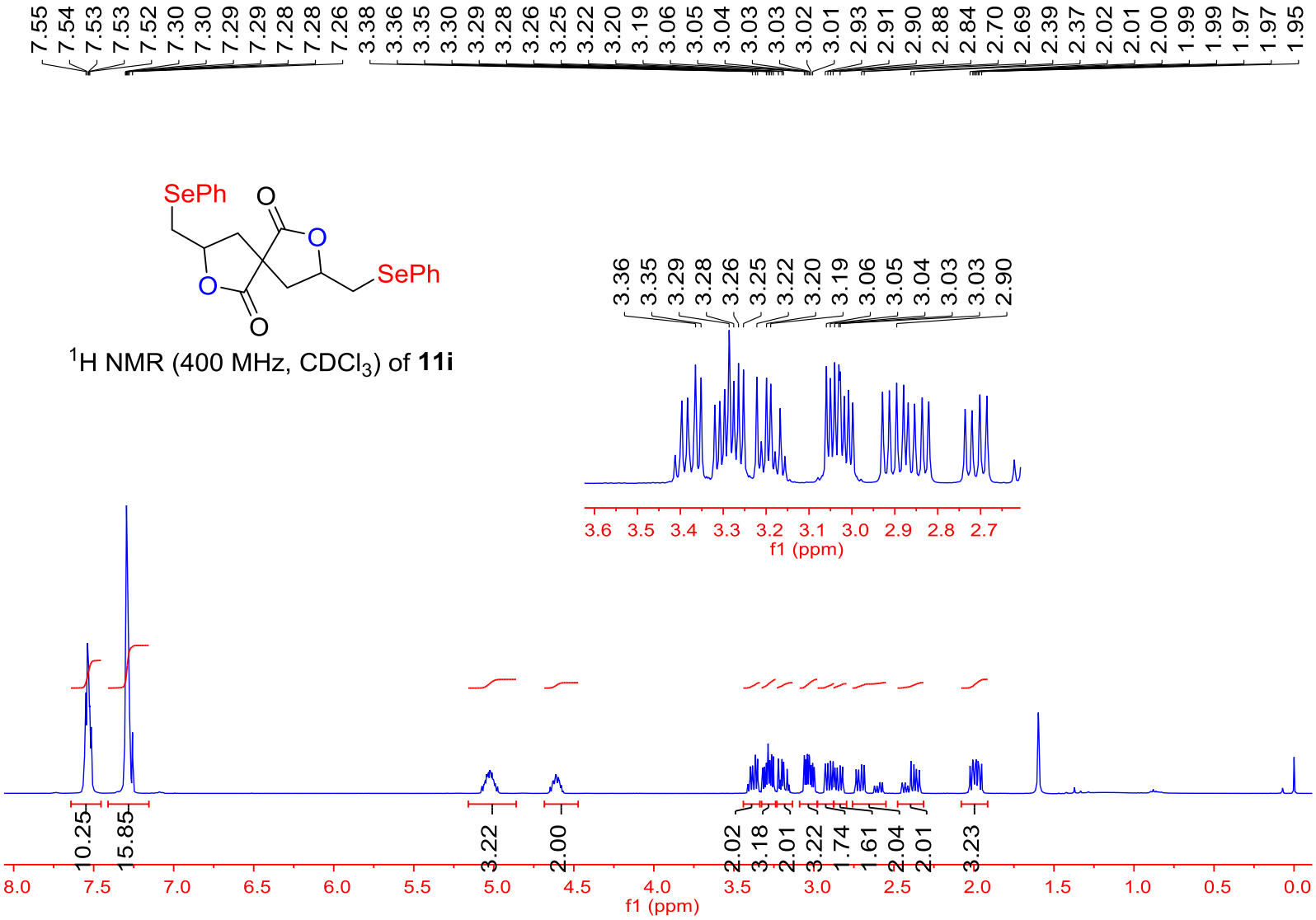


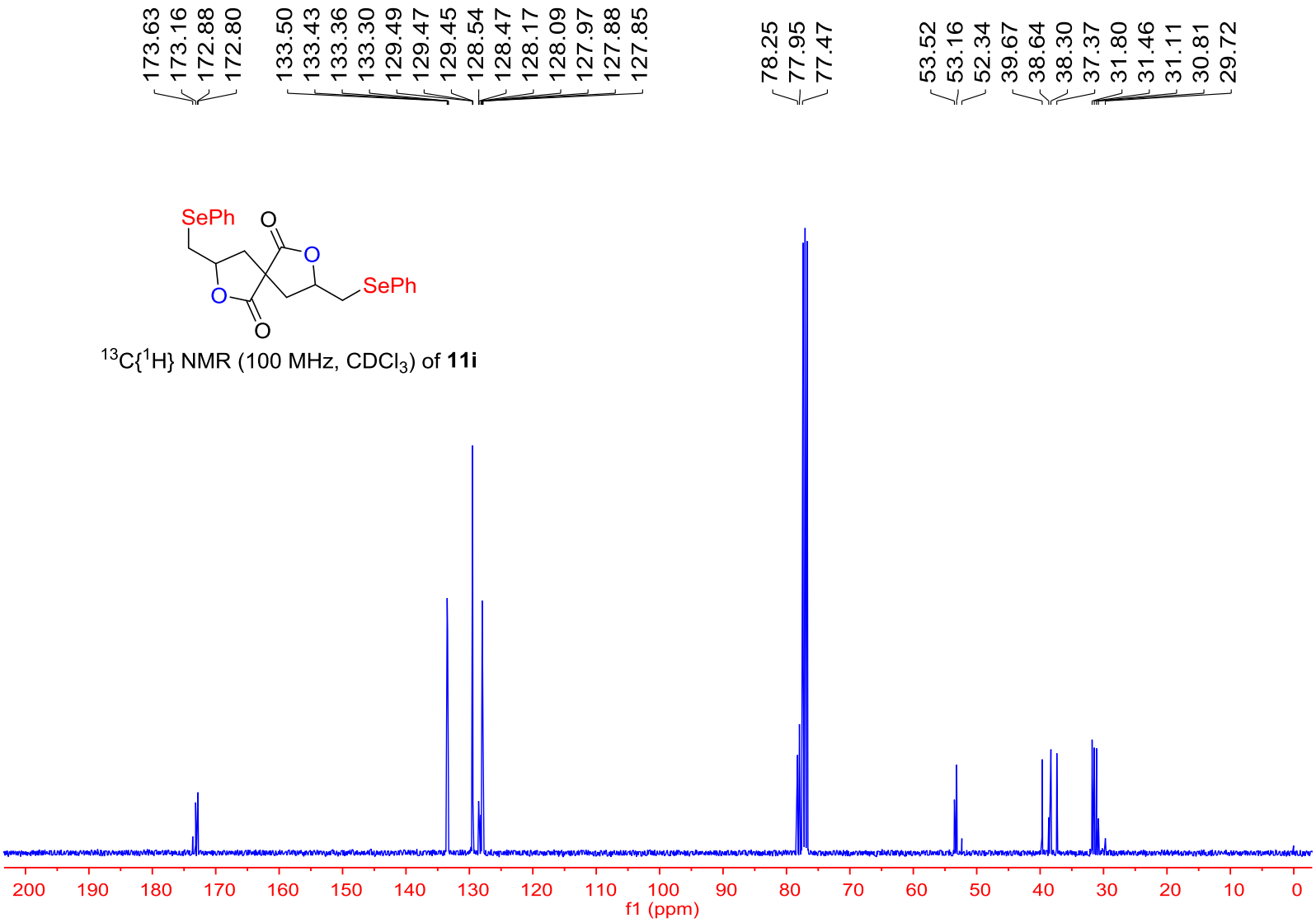
^{1}H NMR (400 MHz, $CDCl_3$) of **11h**



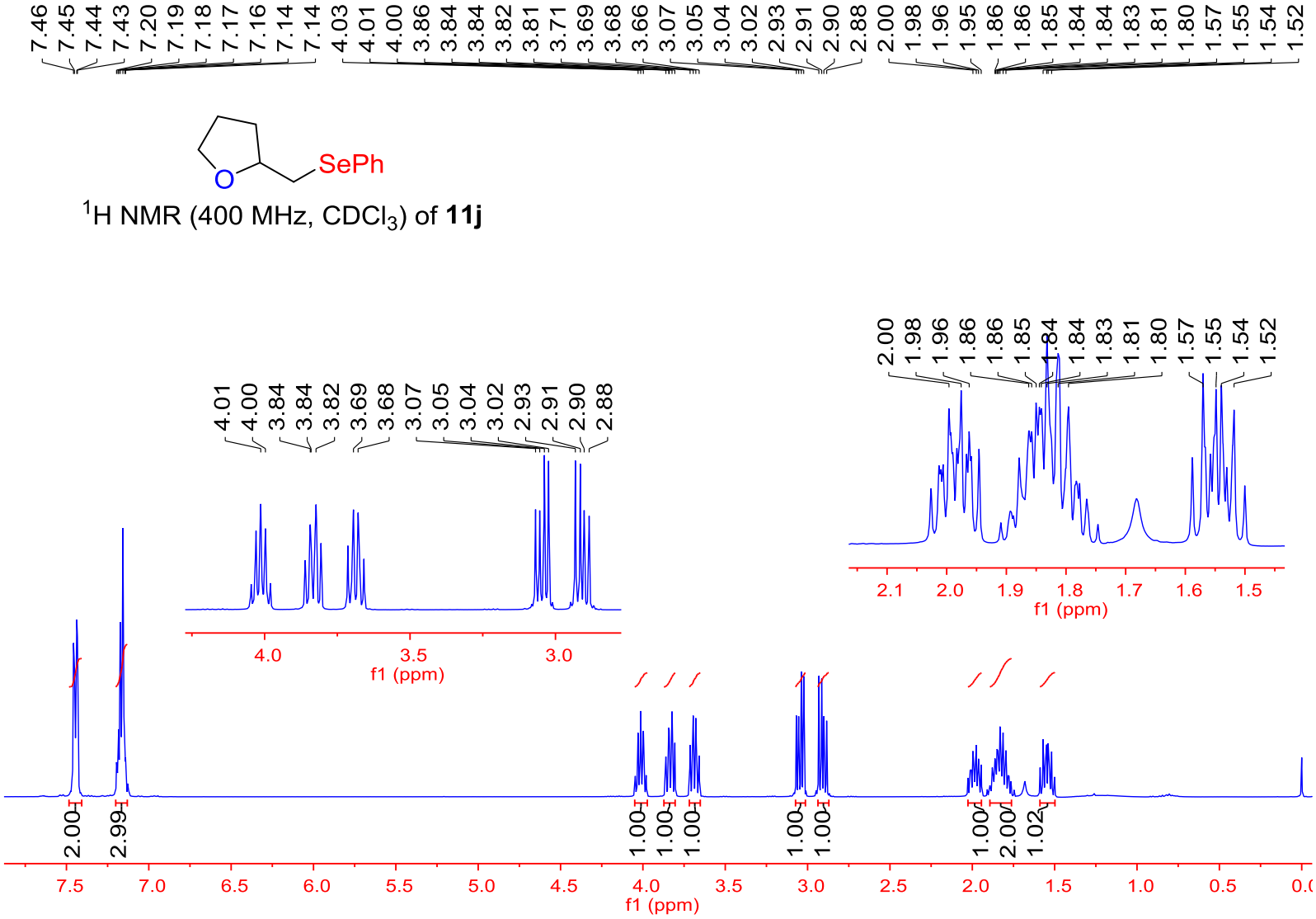


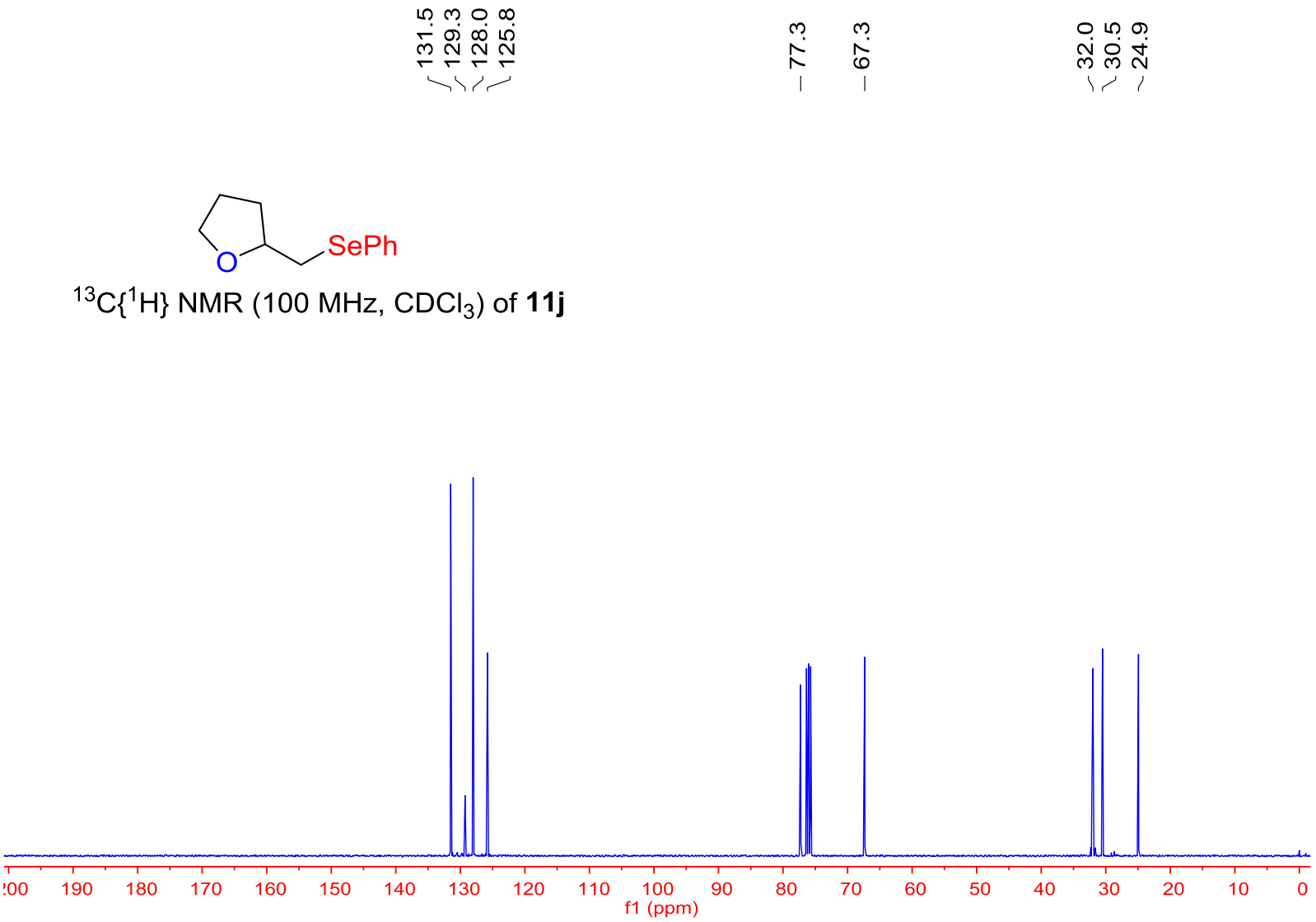
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11h**


7.55 7.54 7.53 7.53 7.52 7.30 7.30 7.29 7.29 7.28 7.28 7.26
3.38 3.36 3.35 3.30 3.29 3.28 3.26 3.25 3.22 3.20 3.19 3.06 3.05 3.04 3.03 3.03 3.02 3.01 2.93 2.91 2.90 2.88 2.84 2.70 2.69 2.39 2.37 2.02 2.01 2.00 1.99 1.99 1.97 1.97 1.95
SePh
O
O
O
O
SePh
1H NMR (400 MHz, CDCl3) of 11i
3.36 3.35 3.29 3.28 3.26 3.25 3.22 3.20 3.19 3.06 3.05 3.04 3.03 3.03 2.90
3.6 3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8 2.7
f1 (ppm)
10.25 15.85 3.22 2.00 2.02 3.18 2.01 3.22 1.74 1.61 2.04 2.01 3.23
8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

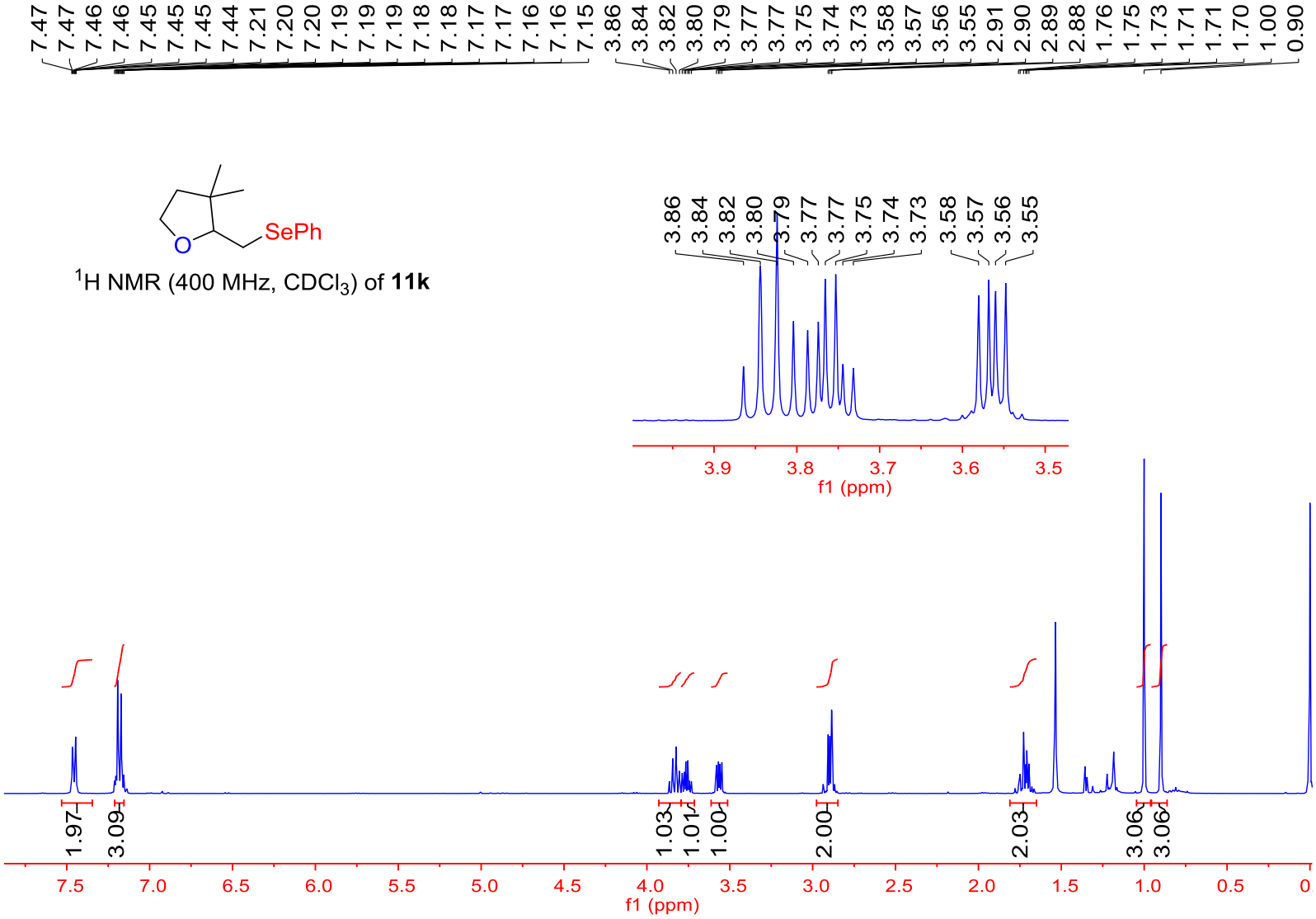


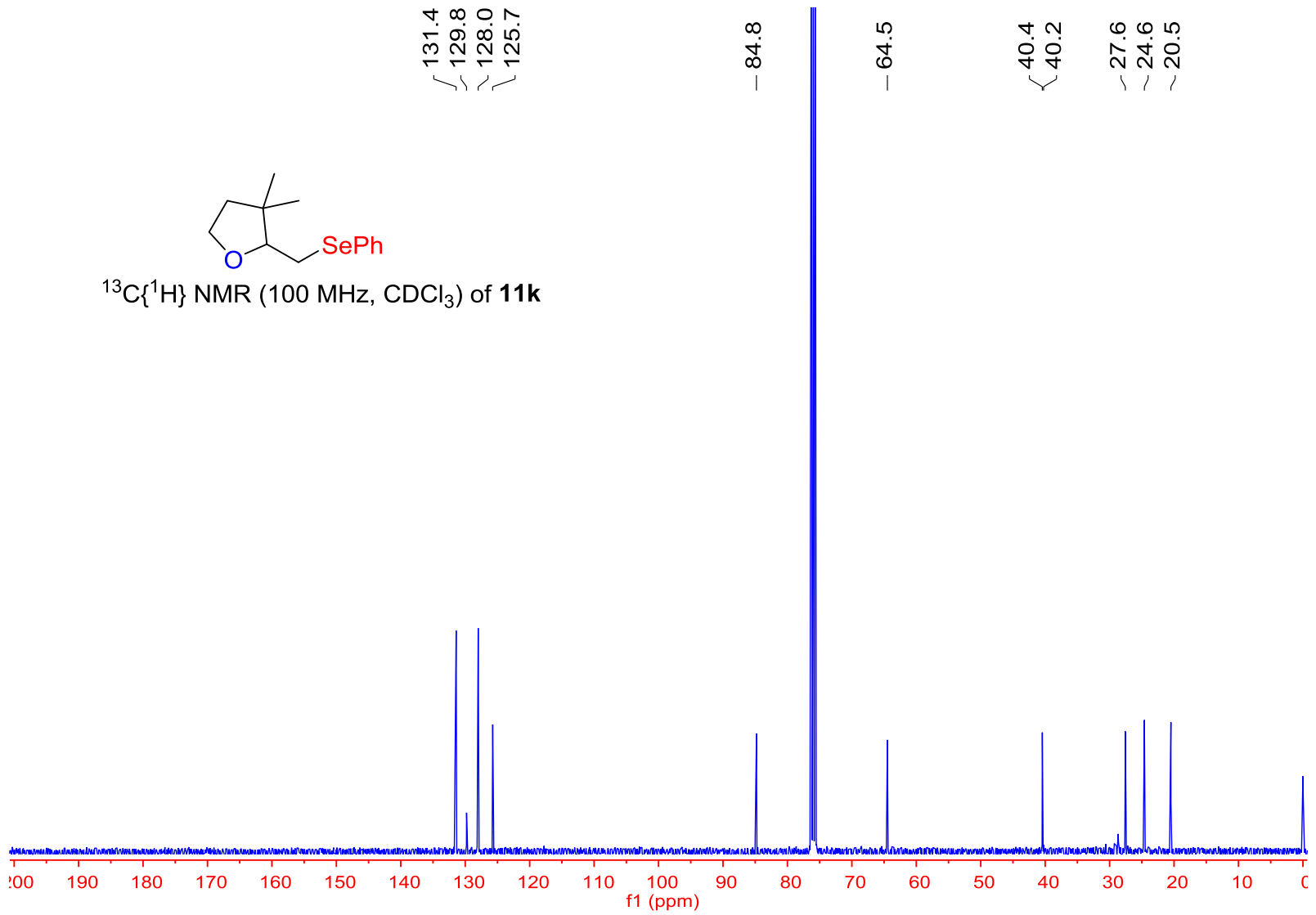
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11i**


7.46 7.45 7.44 7.43 7.20 7.19 7.18 7.17 7.16 7.14 7.14
4.03 4.01 4.00 3.86 3.84 3.84 3.82 3.81 3.71 3.69 3.68 3.66 3.07 3.05 3.04 3.02 2.93 2.91 2.90 2.88
2.00 1.98 1.96 1.95 1.86 1.86 1.85 1.84 1.84 1.83 1.81 1.80 1.57 1.55 1.54 1.52
O
SePh
1H NMR (400 MHz, CDCl3) of 11j
f1 (ppm)
2.00 2.99 1.00 1.00 1.00 1.00 1.00 1.00 2.00 1.02

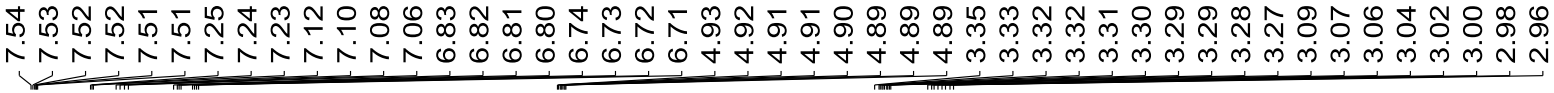


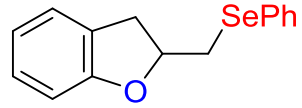
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11j**


7.47 7.47 7.46 7.46 7.45 7.45 7.45 7.44 7.21 7.20 7.20 7.19 7.19 7.19 7.18 7.18 7.17 7.17 7.16 7.16 7.15
3.86 3.84 3.82 3.80 3.79 3.77 3.77 3.75 3.74 3.73 3.58 3.57 3.56 3.55 2.91 2.90 2.89 2.88 1.76 1.75 1.73 1.71 1.71 1.70 1.00 0.90
SePh
O
^{1}H NMR (400 MHz, $CDCl_3$) of **11k**
3.86 3.84 3.82 3.80 3.79 3.77 3.77 3.75 3.74 3.73 3.58 3.57 3.56 3.55
3.9 3.8 3.7 3.6 3.5
f1 (ppm)
1.97 3.09 1.03 1.01 1.00 2.00 2.03 3.06 3.06
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0
f1 (ppm)

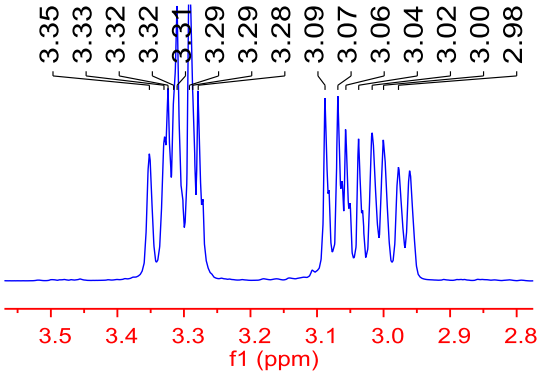


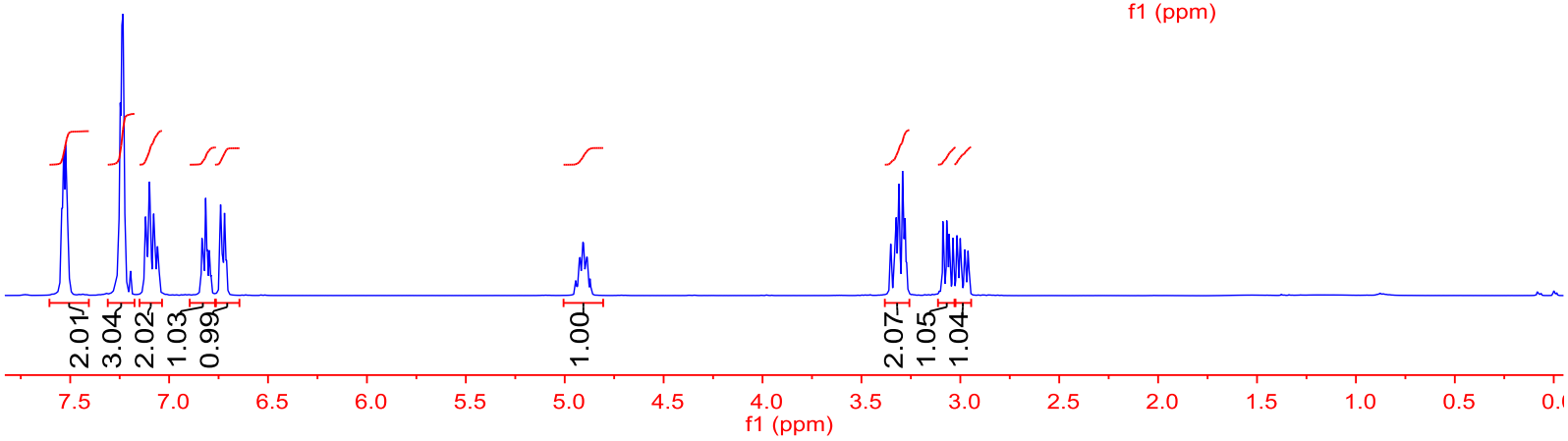
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11k**

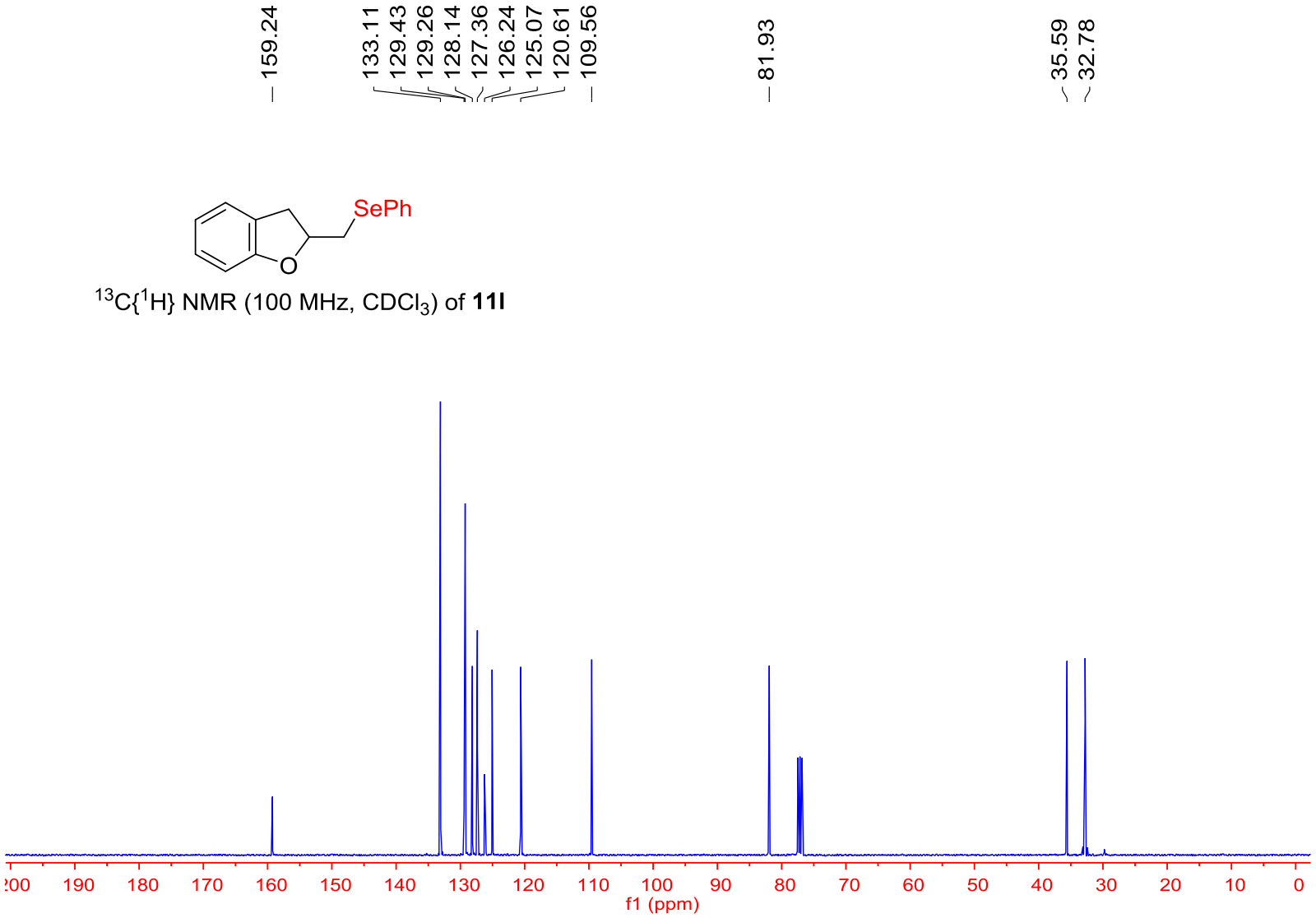




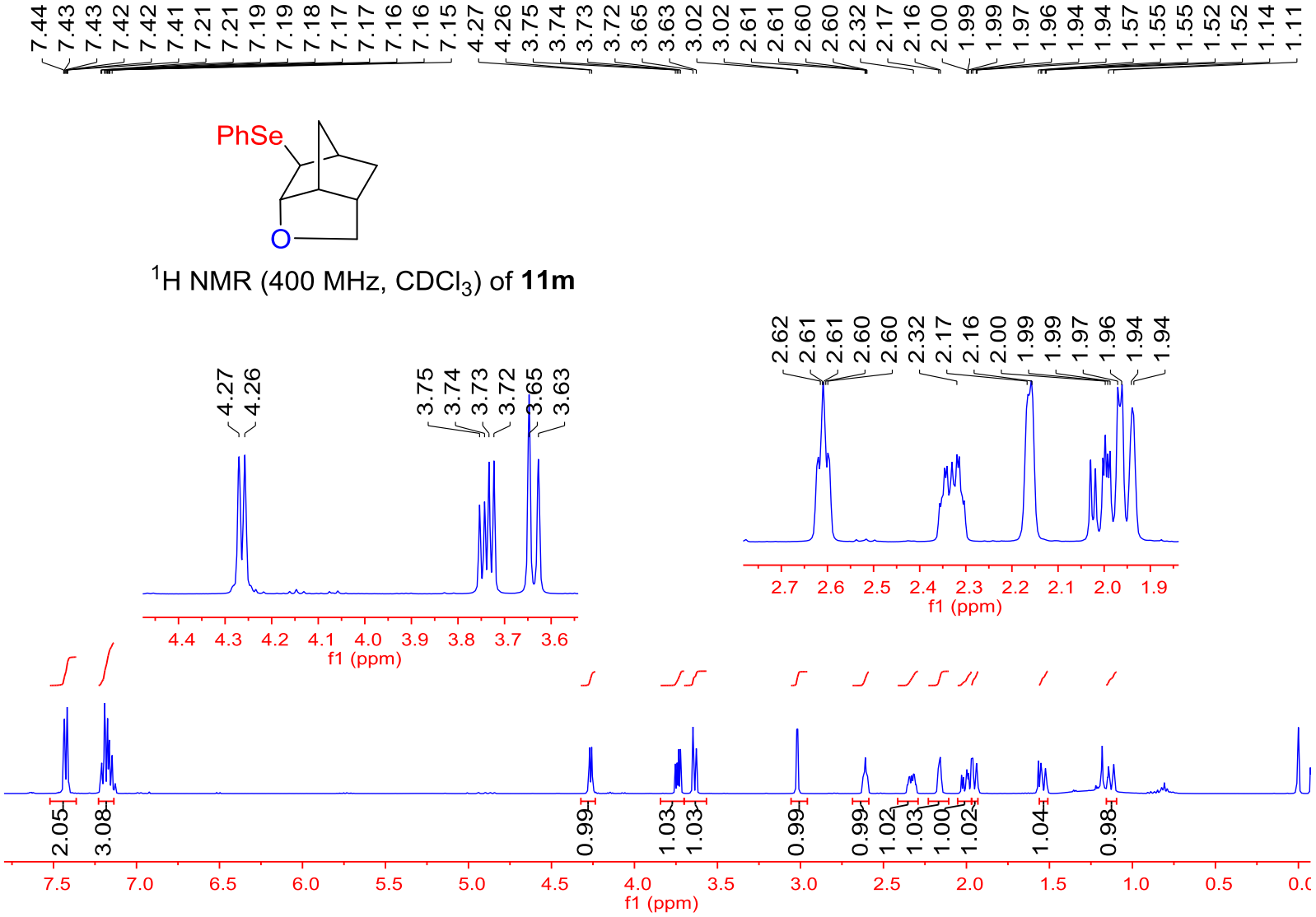
^{1}H NMR (400 MHz, $CDCl_3$) of **11l**

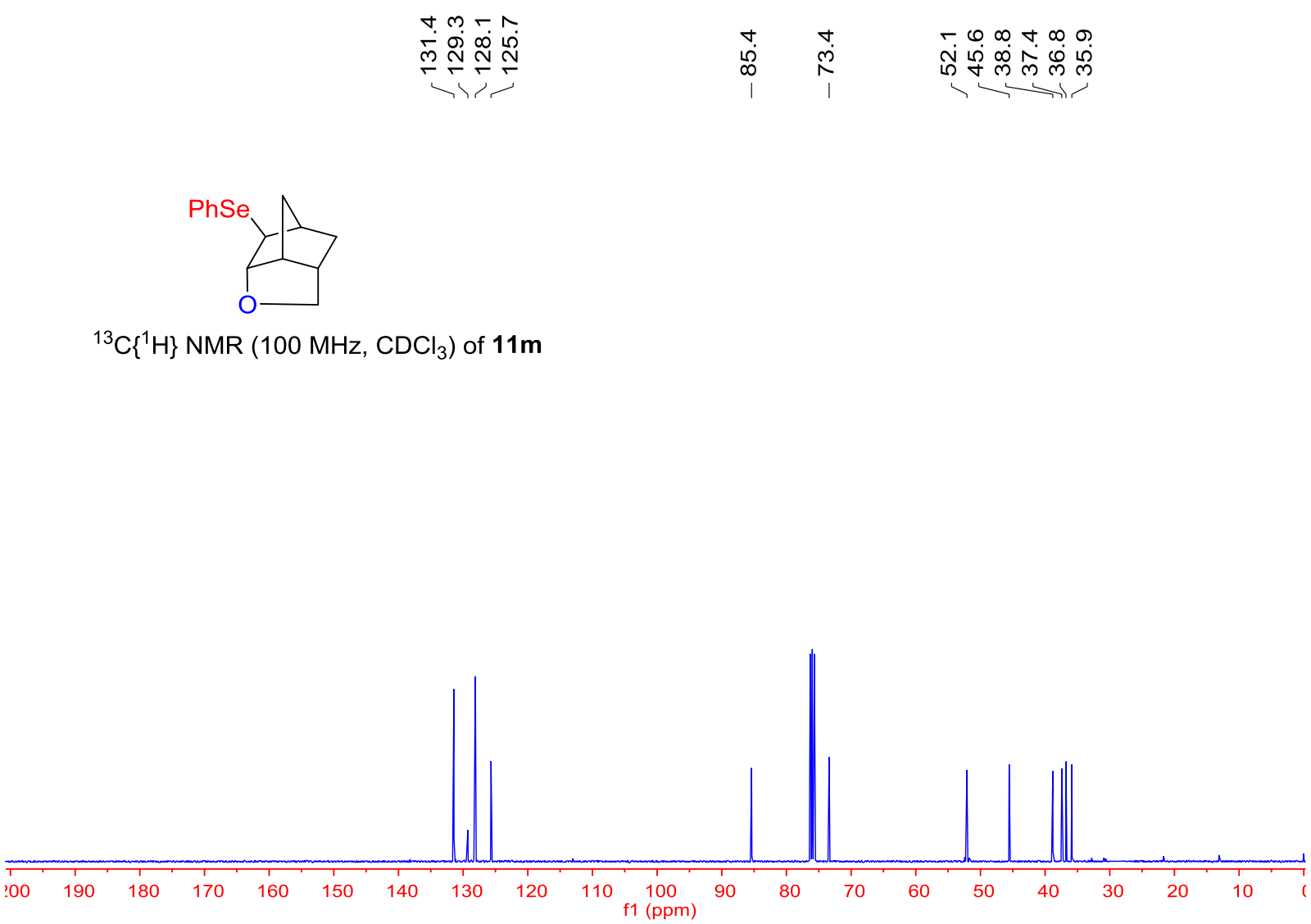






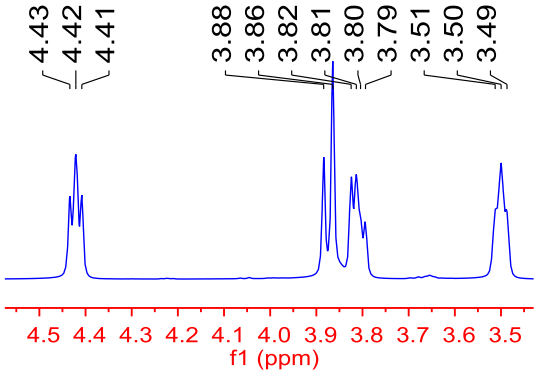
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11l**

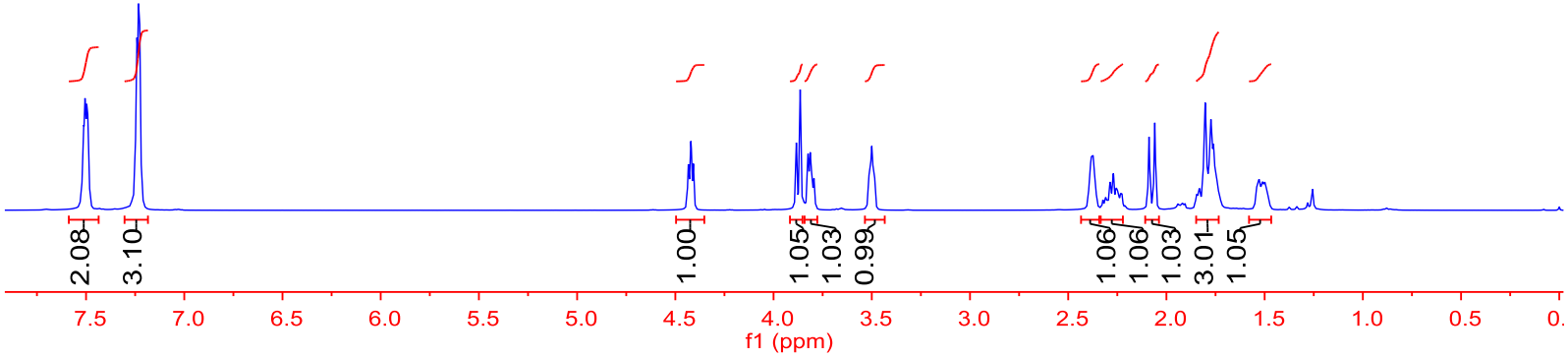

7.44 7.43 7.43 7.42 7.42 7.41 7.21 7.21 7.19 7.19 7.18 7.17 7.17 7.16 7.16 7.15 4.27 4.26 3.75 3.74 3.73 3.72 3.65 3.63 3.02 3.02 2.61 2.61 2.60 2.60 2.32 2.17 2.16 2.00 1.99 1.99 1.97 1.96 1.94 1.94 1.57 1.55 1.55 1.52 1.52 1.14 1.11
PhSe
O
^{1}H NMR (400 MHz, $CDCl_3$) of **11m**
4.27 4.26 3.75 3.74 3.73 3.72 3.65 3.63
4.4 4.3 4.2 4.1 4.0 3.9 3.8 3.7 3.6
f1 (ppm)
2.62 2.61 2.61 2.60 2.60 2.32 2.17 2.16 2.00 1.99 1.99 1.97 1.96 1.94 1.94
2.7 2.6 2.5 2.4 2.3 2.2 2.1 2.0 1.9
f1 (ppm)
2.05 3.08 0.99 1.03 1.03 0.99 0.99 1.02 1.03 1.00 1.02 1.04 0.98
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

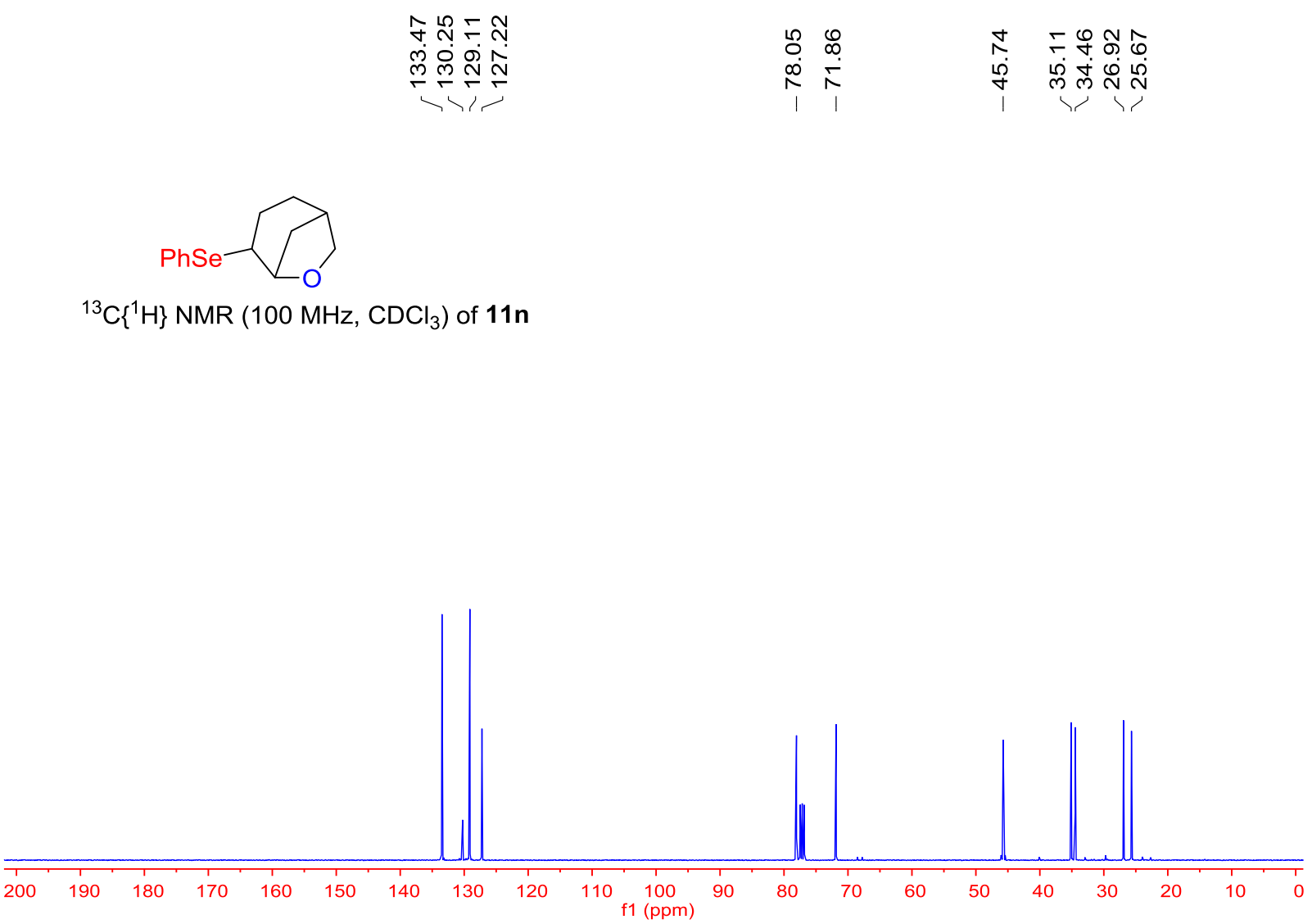


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11m**

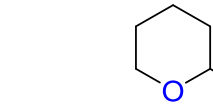
^{1}H NMR (400 MHz, $CDCl_3$) of **11n**



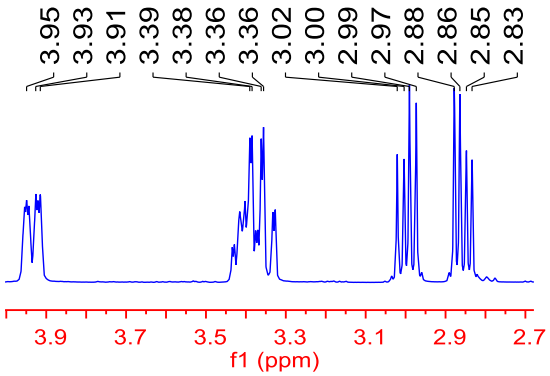


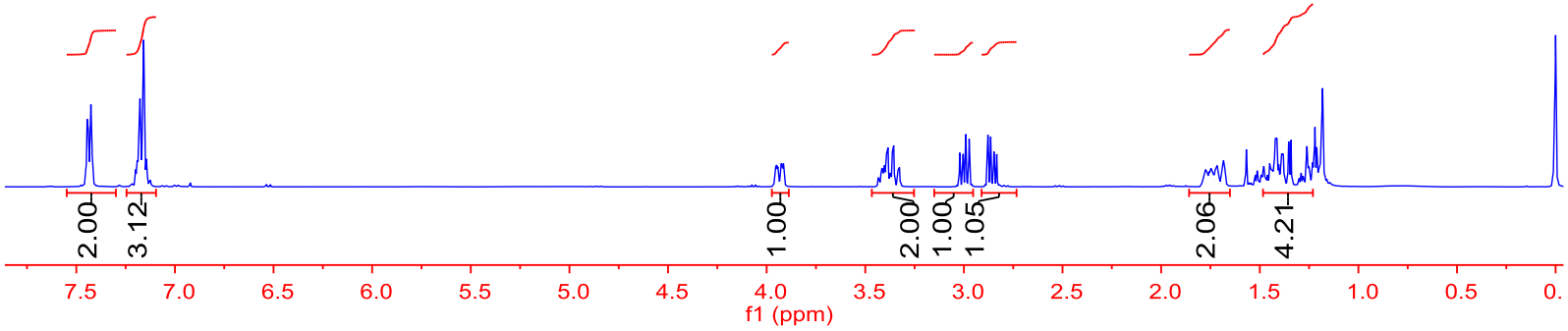


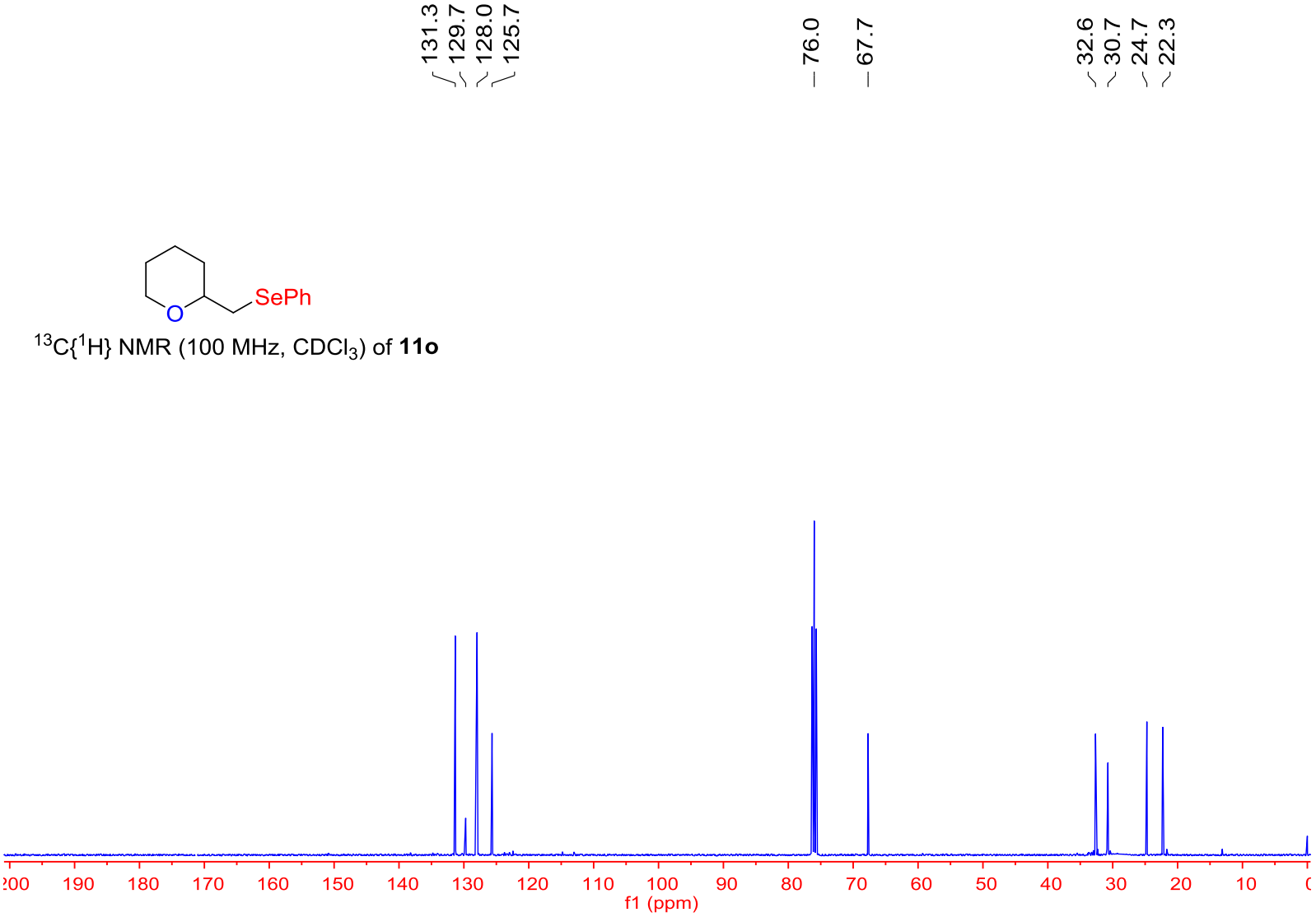
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11n**



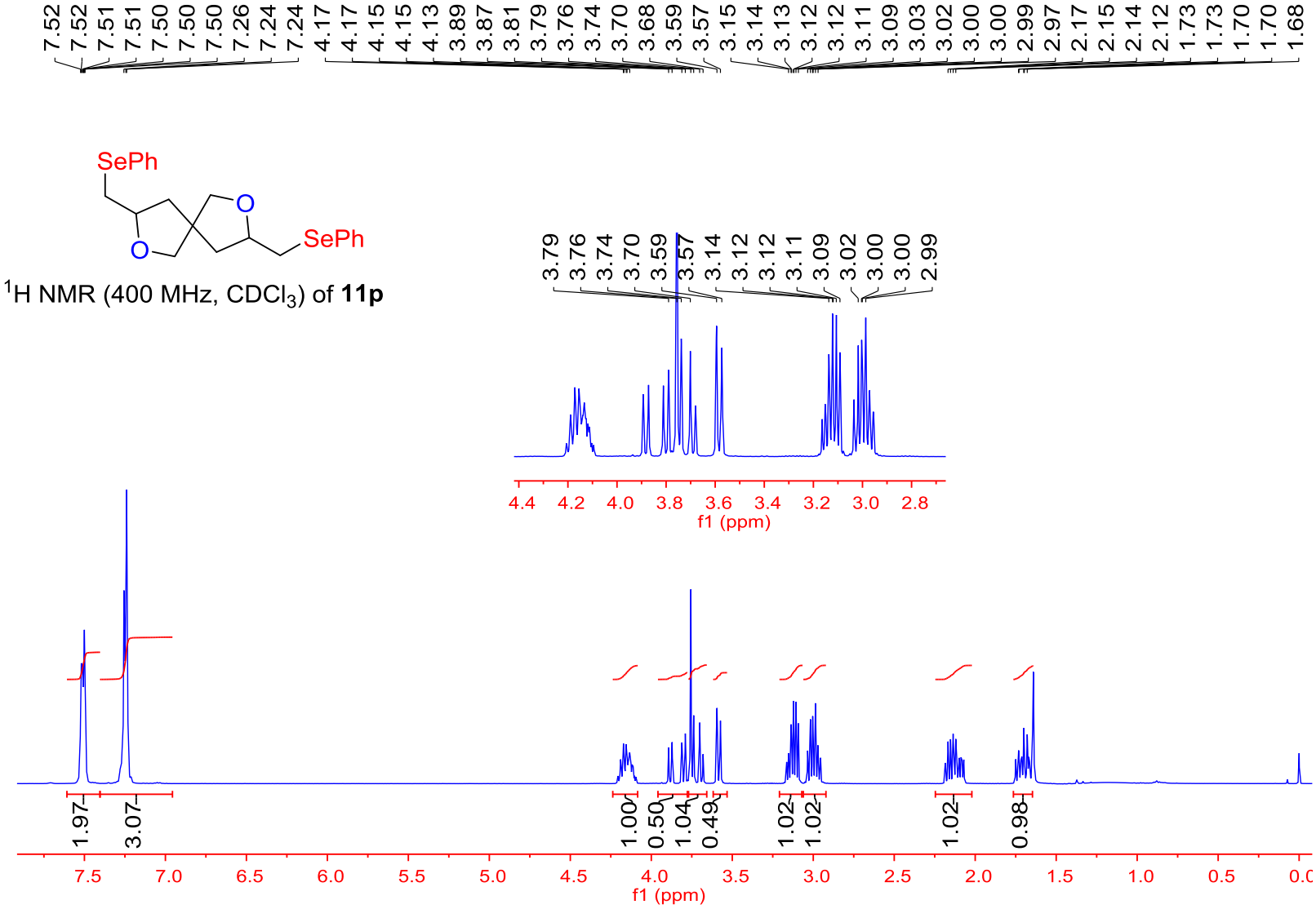
^{1}H NMR (400 MHz, $CDCl_3$) of **11o**

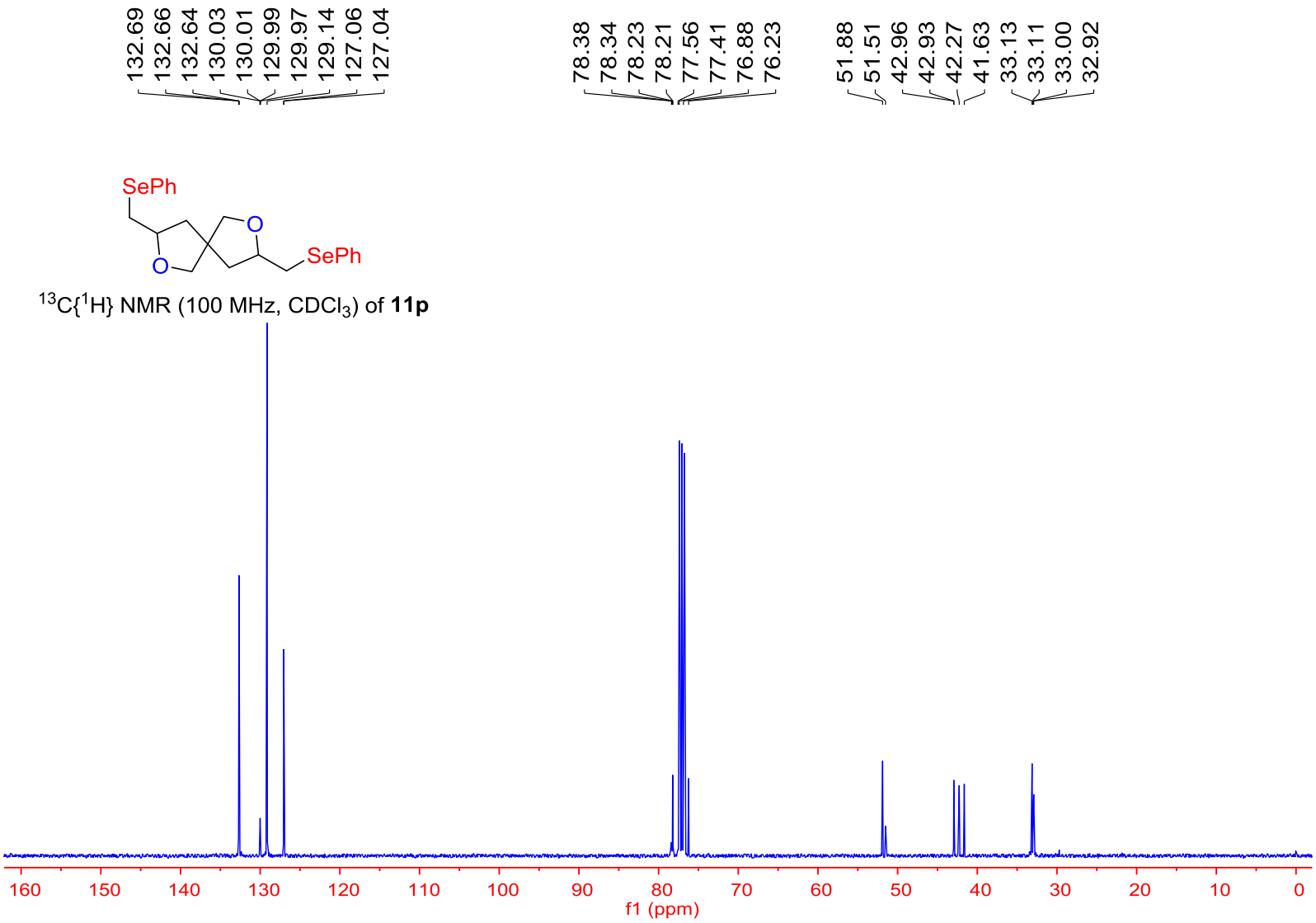




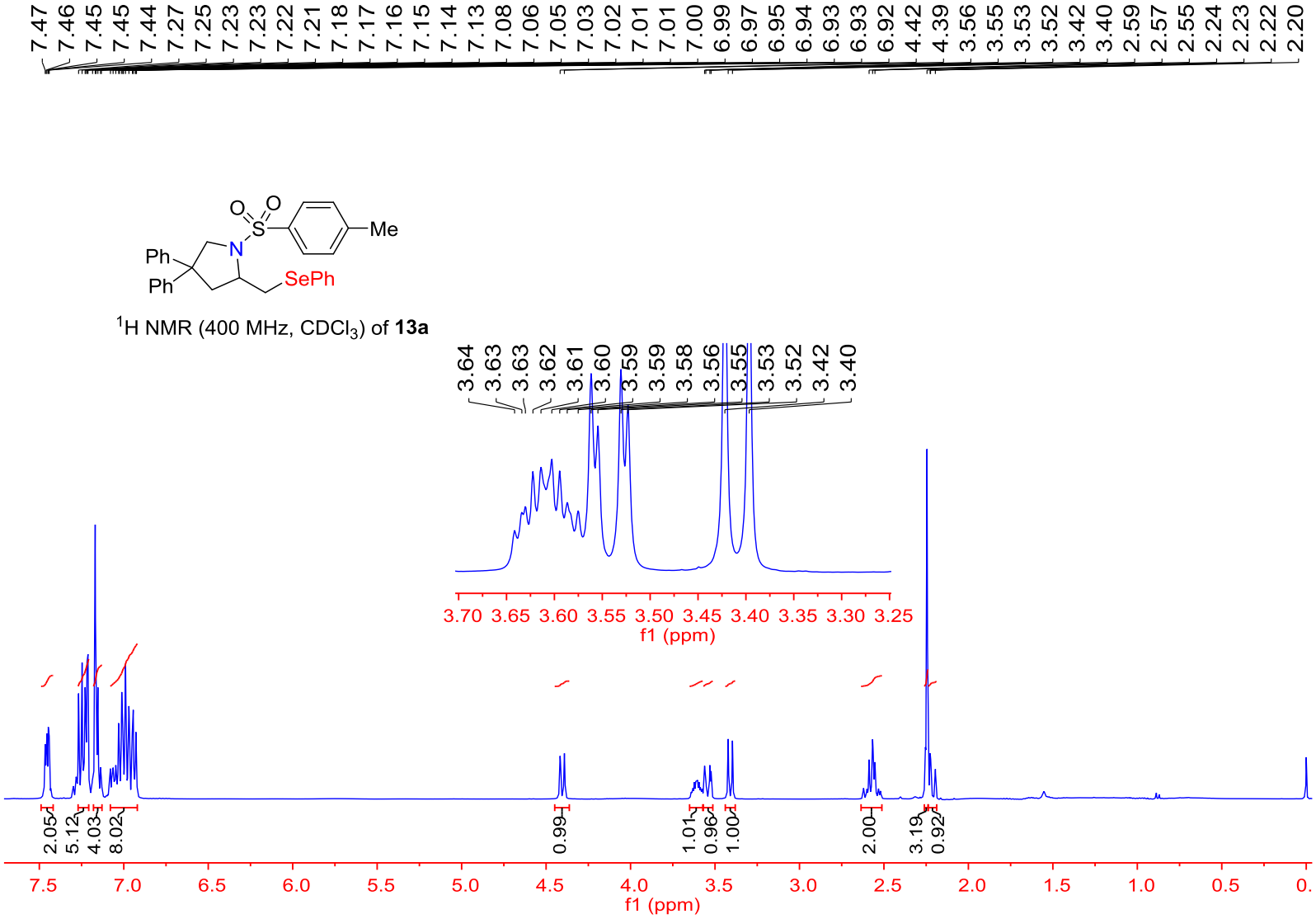


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11o**

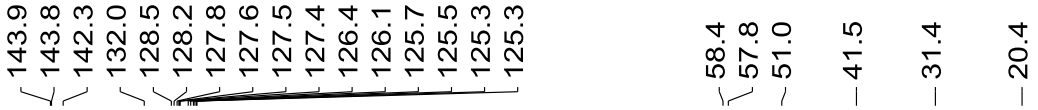

7.52 7.52 7.51 7.51 7.50 7.50 7.50 7.26 7.24 7.24
4.17 4.17 4.15 4.15 4.13 3.89 3.87 3.81 3.79 3.76 3.74 3.70 3.68 3.59 3.57
3.15 3.14 3.13 3.12 3.12 3.11 3.09 3.03 3.02 3.00 3.00 2.99 2.97 2.17 2.15 2.14 2.12 1.73 1.73 1.70 1.70 1.68
SePh
SePh
O
O
1H NMR (400 MHz, CDCl3) of 11p
3.79 3.76 3.74 3.70 3.59 3.57 3.14 3.12 3.12 3.11 3.09 3.02 3.00 3.00 2.99
4.4 4.2 4.0 3.8 3.6 3.4 3.2 3.0 2.8
f1 (ppm)
1.97 3.07 1.00 0.50 1.04 0.49 1.02 1.02 1.02 0.98
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

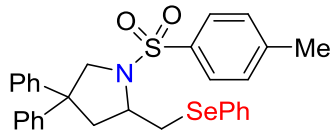


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **11p**

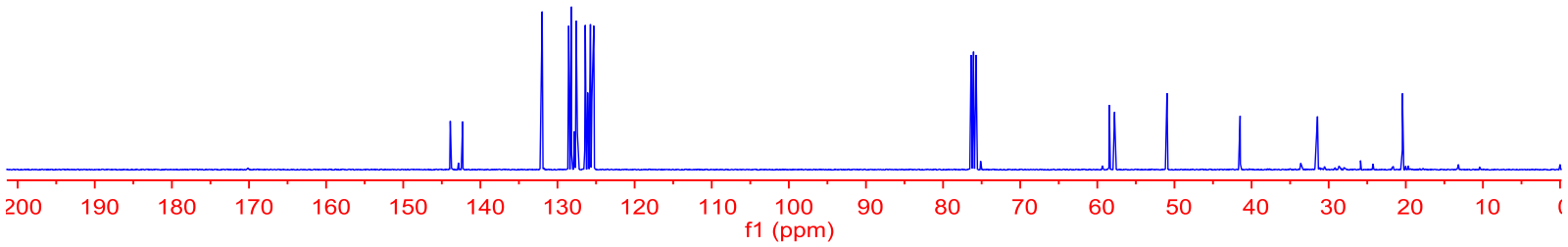


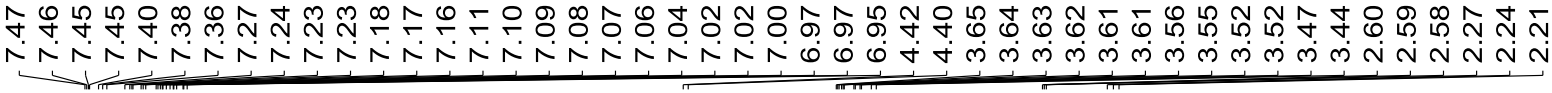
^{1}H NMR (400 MHz, $CDCl_3$) of **13a**

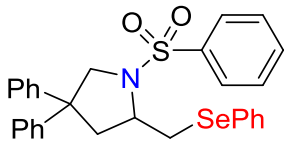




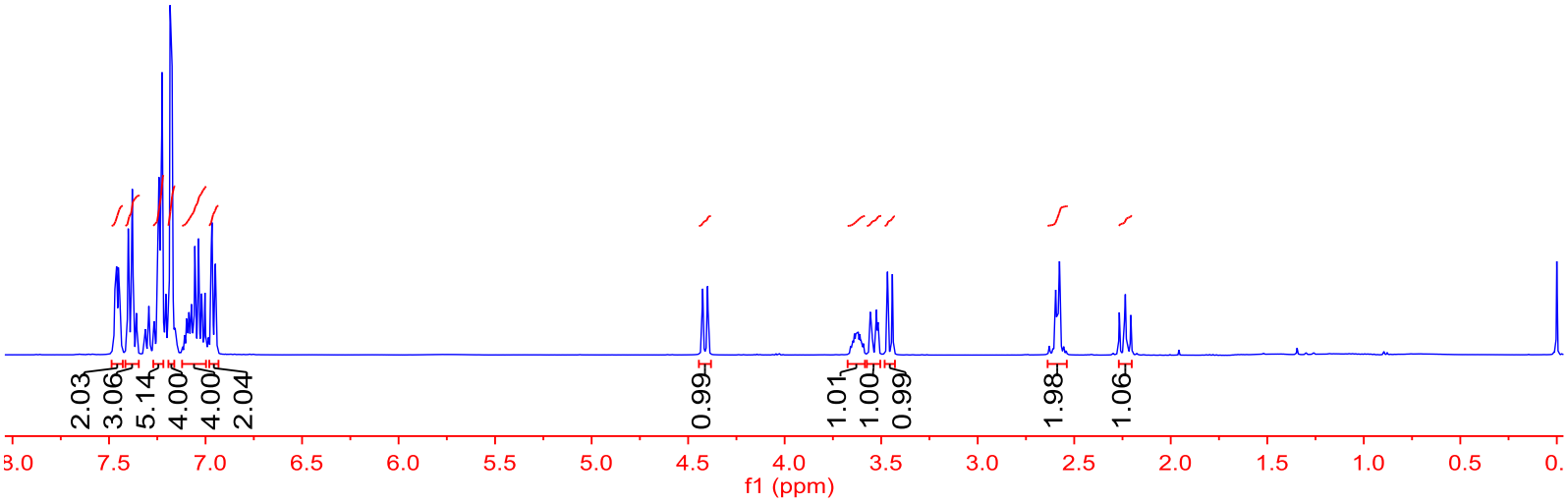
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13a**

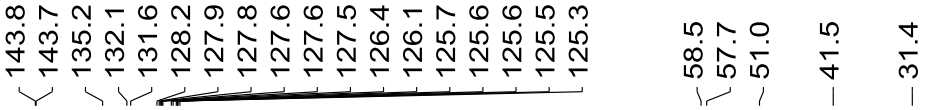


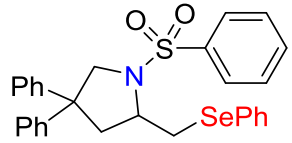




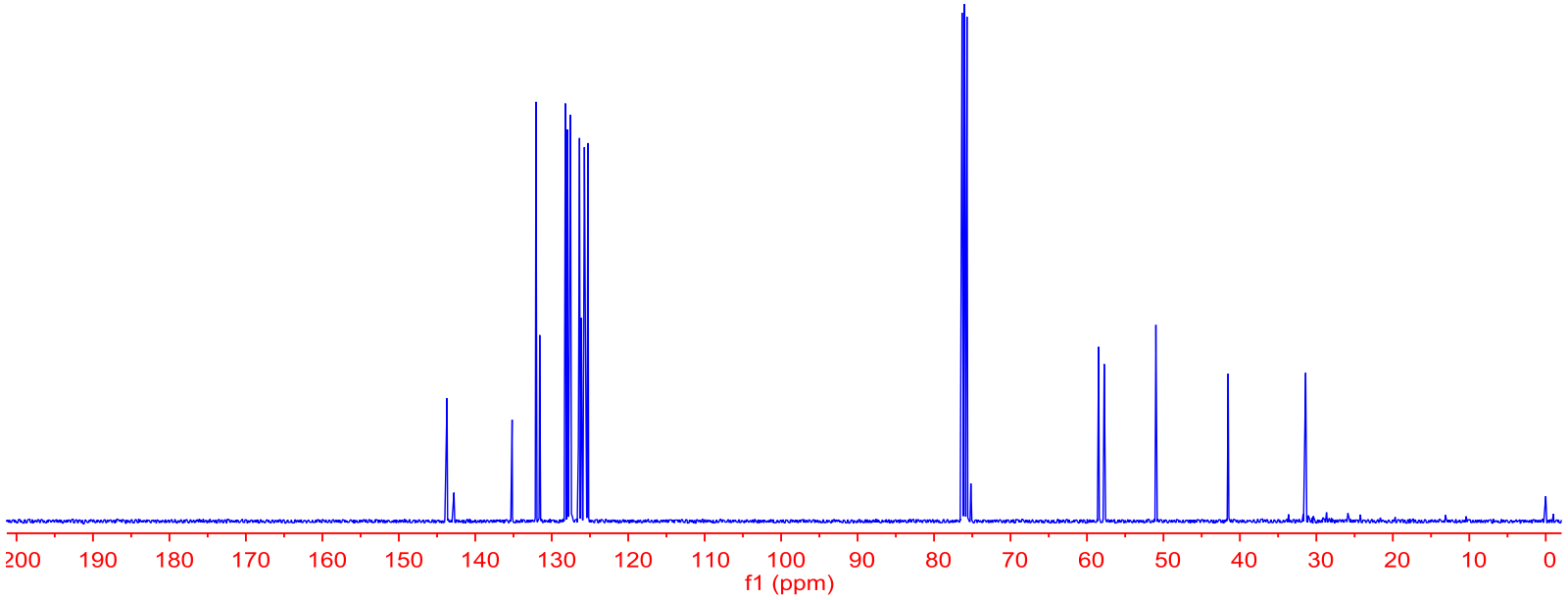
^{1}H NMR (400 MHz, $CDCl_3$) of **13b**

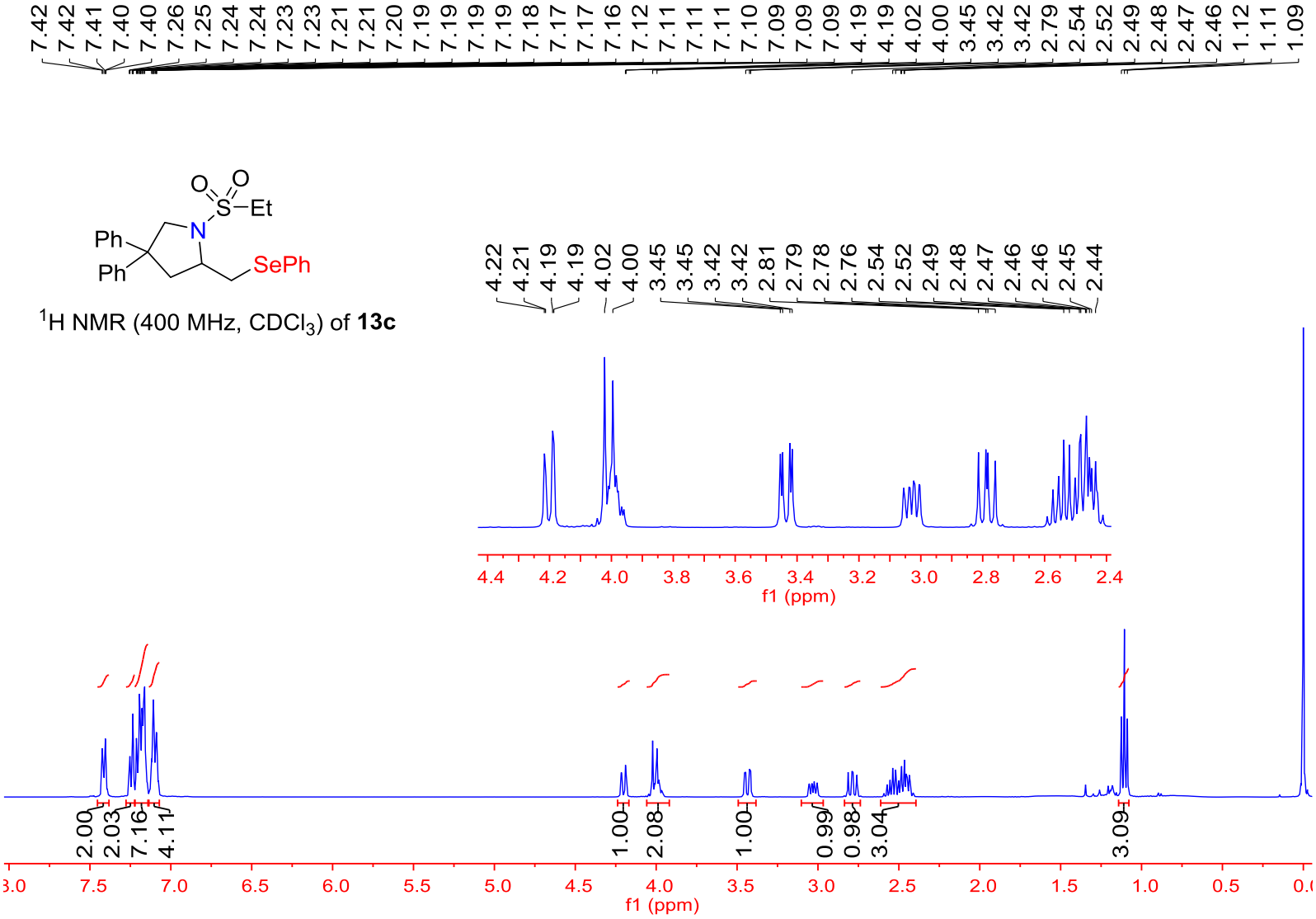




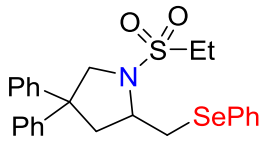


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13b**

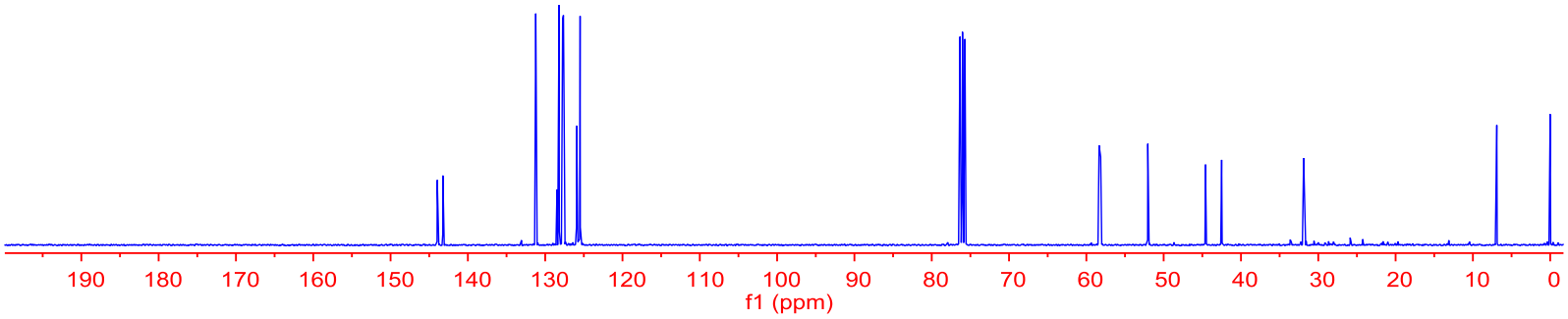


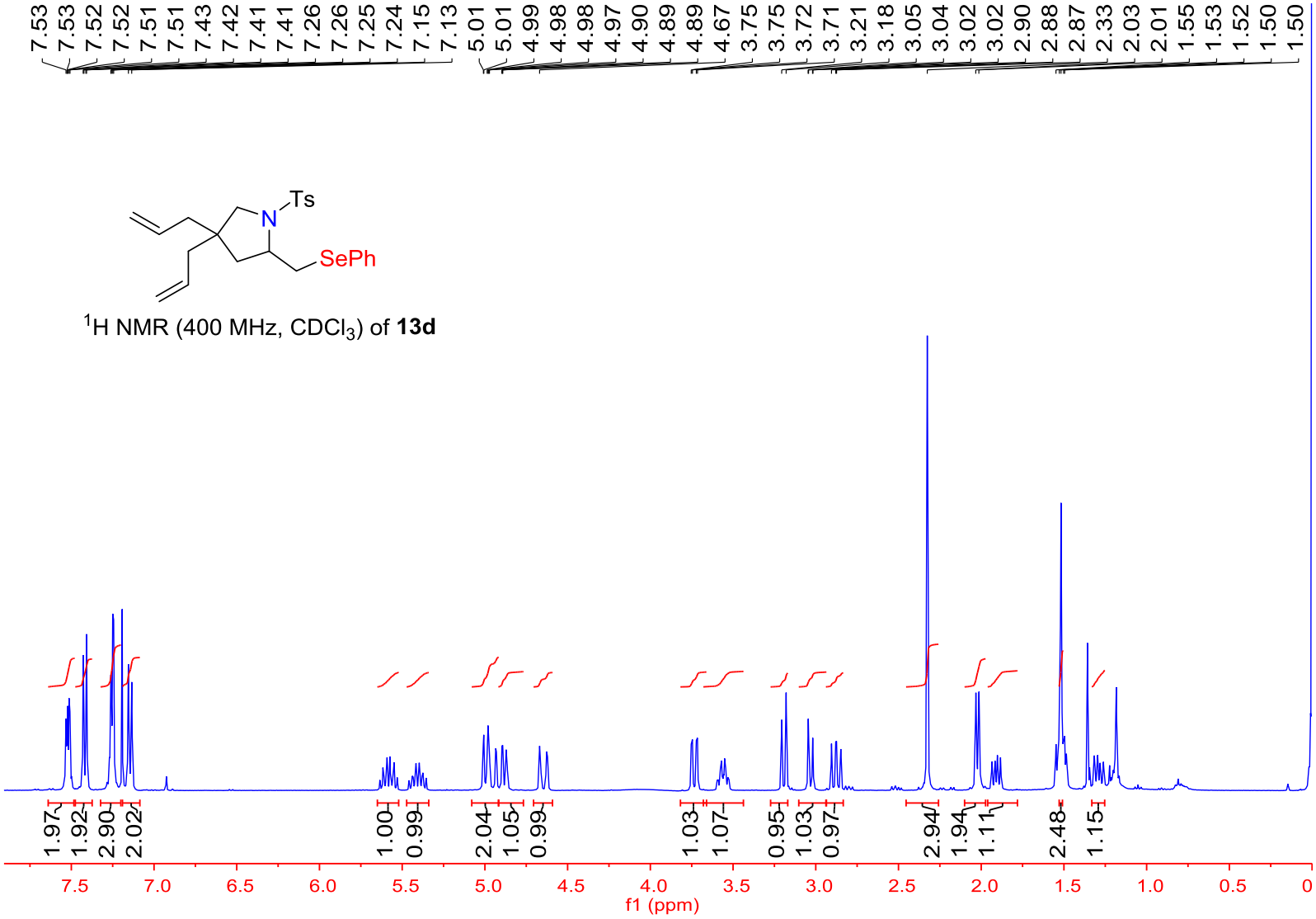


^{1}H NMR (400 MHz, $CDCl_3$) of **13c**

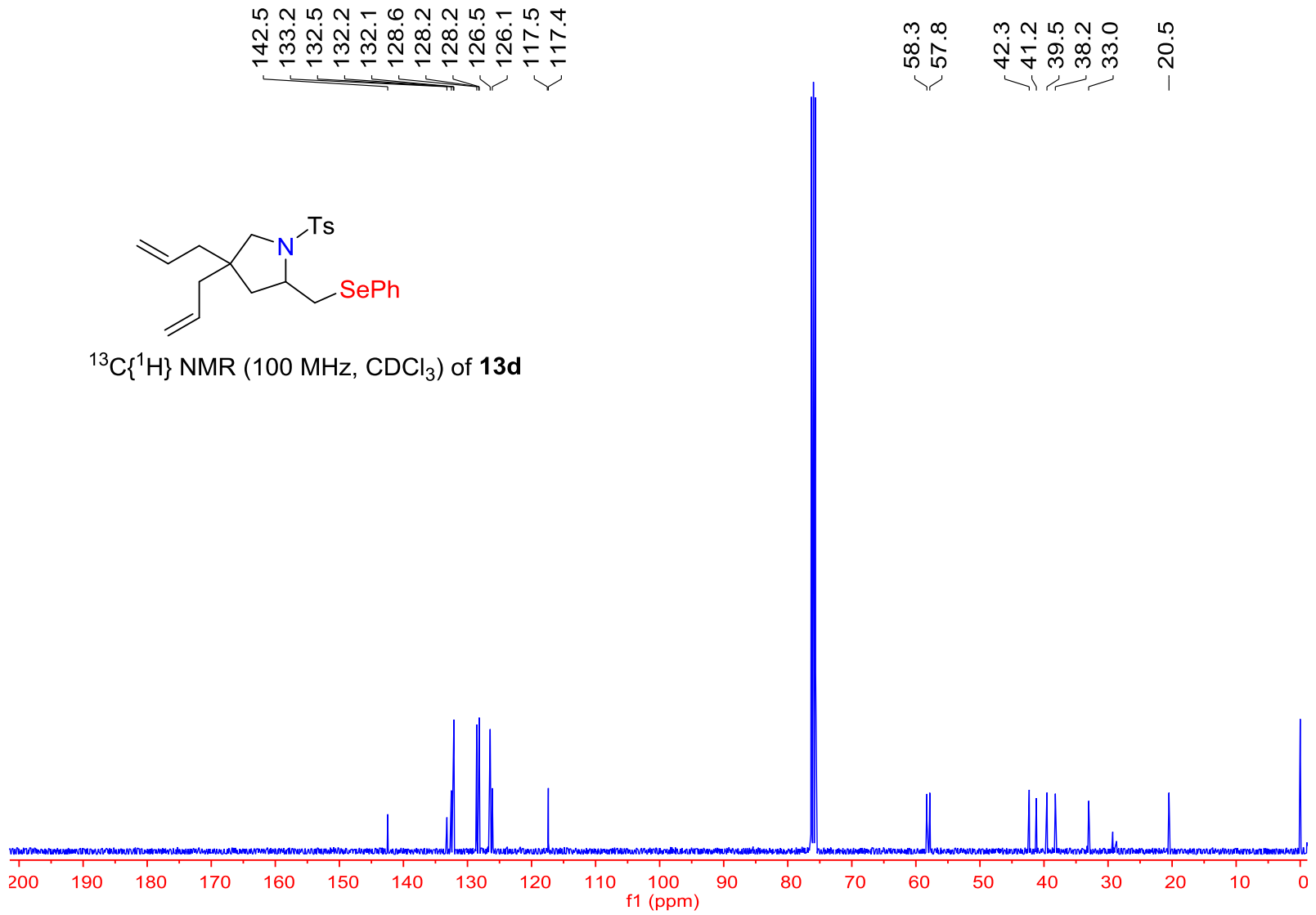


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13c**

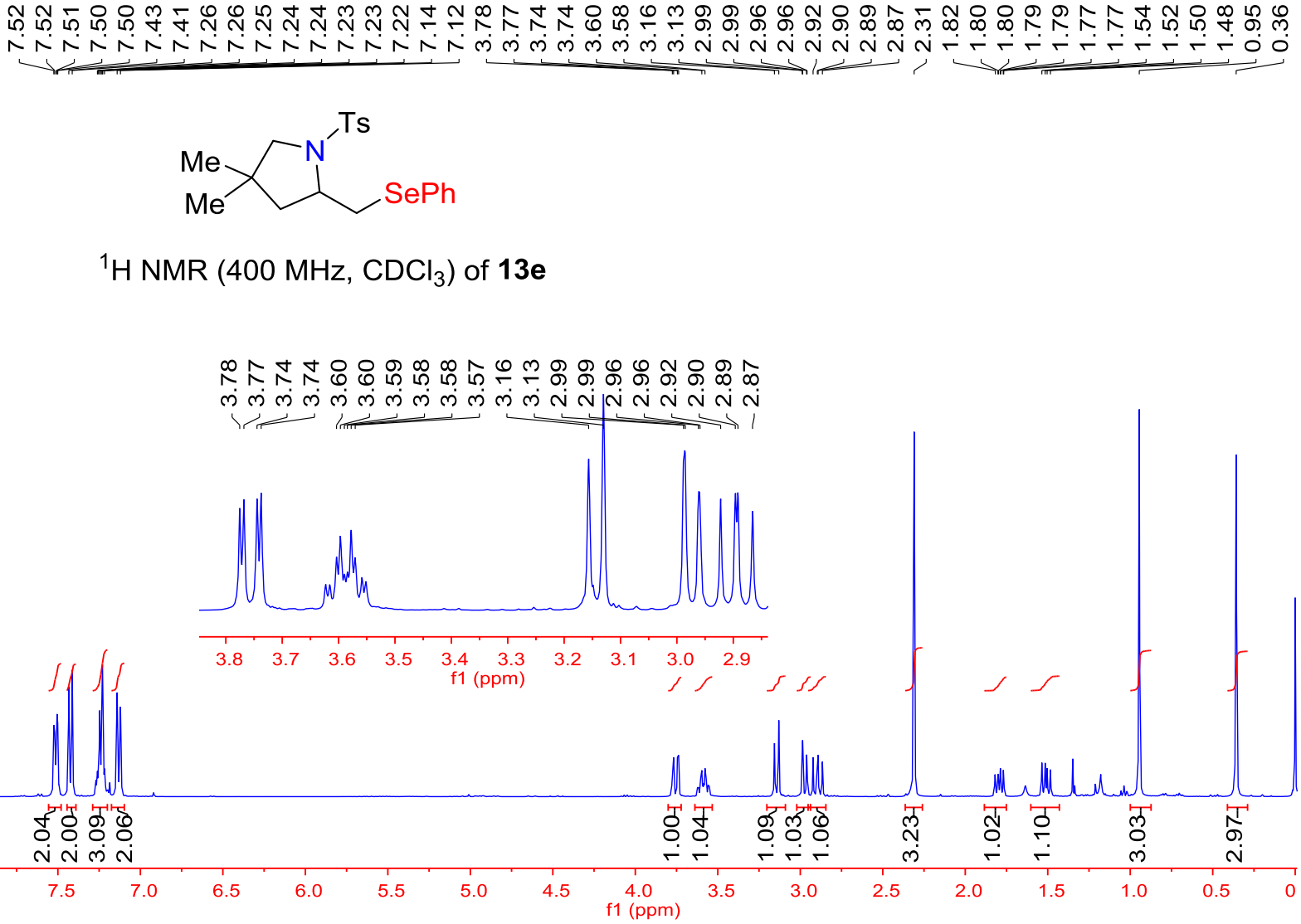




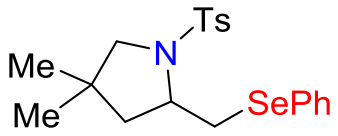
^{1}H NMR (400 MHz, $CDCl_3$) of **13d**



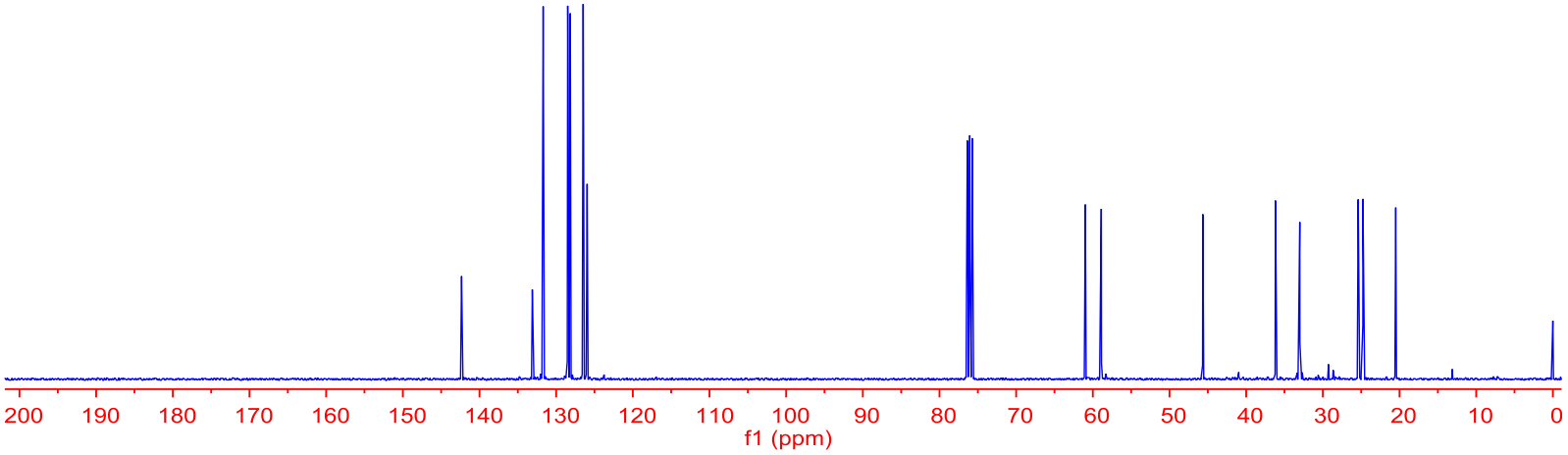
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13d**

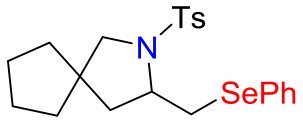


^{1}H NMR (400 MHz, $CDCl_3$) of **13e**

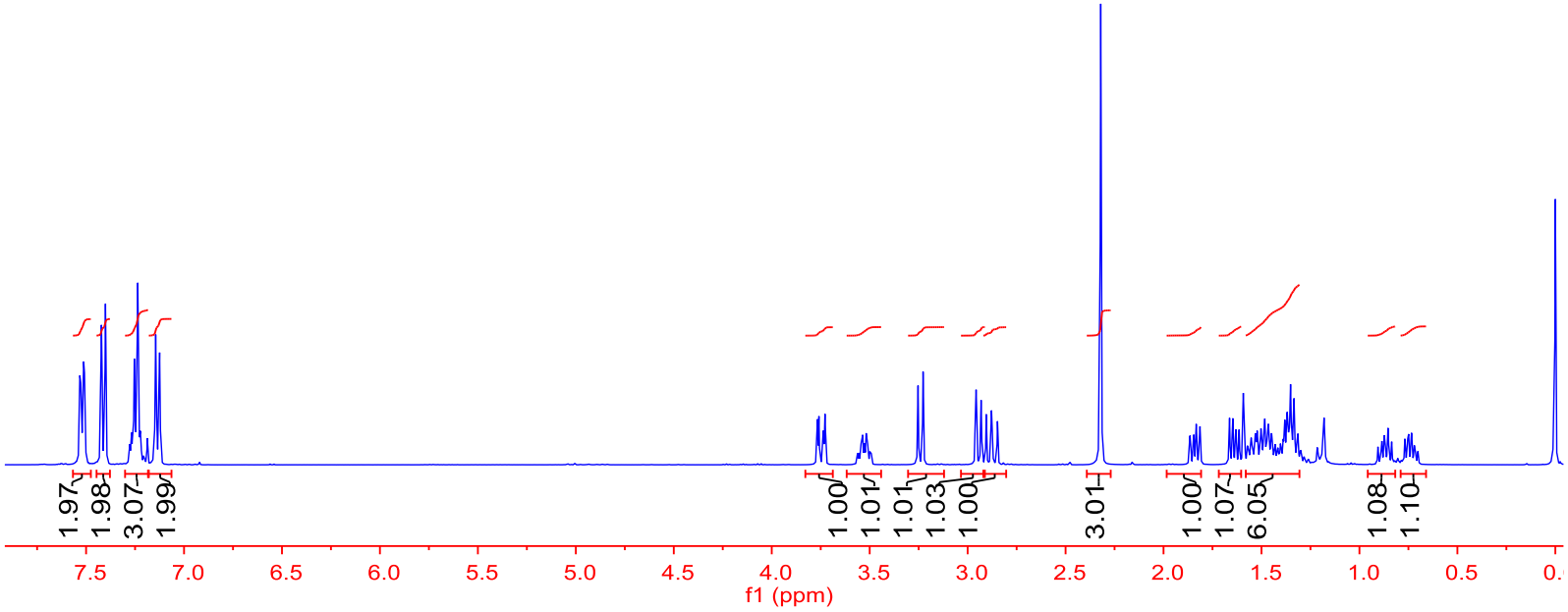


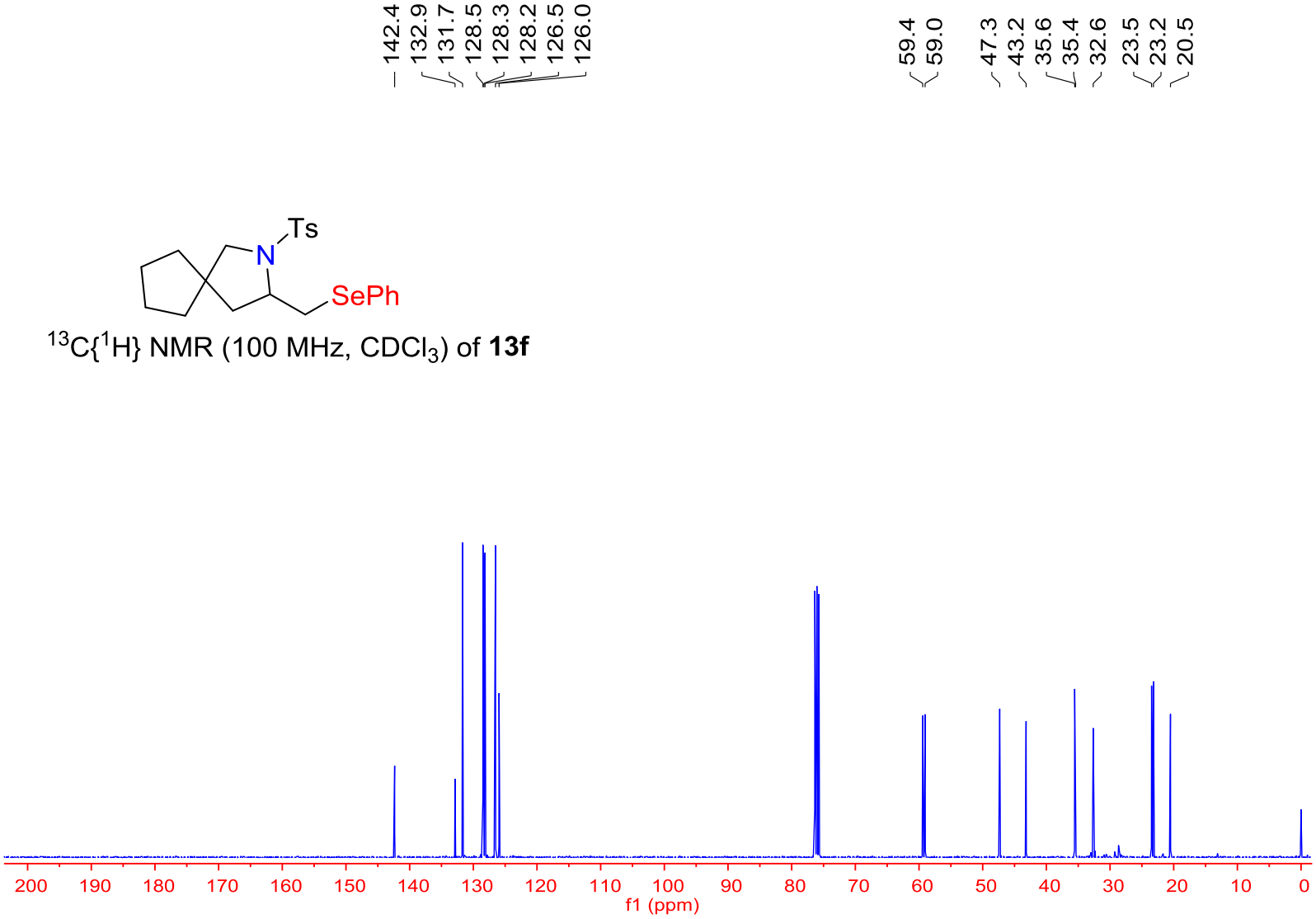
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13e**



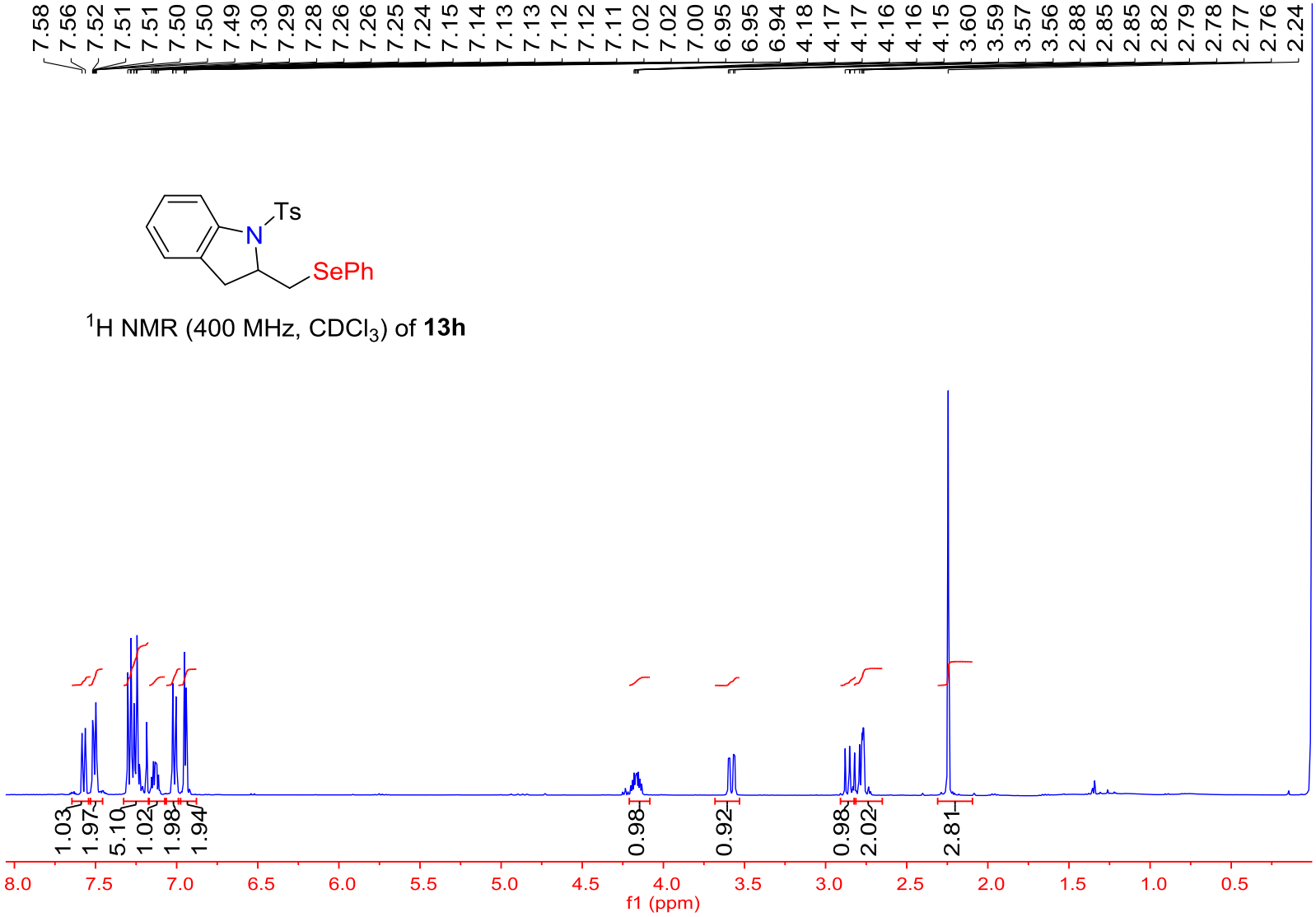


^{1}H NMR (400 MHz, $CDCl_3$) of **13f**

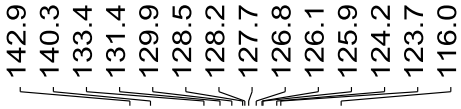


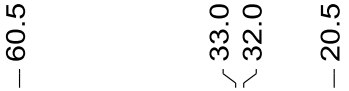


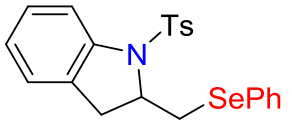
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13f**



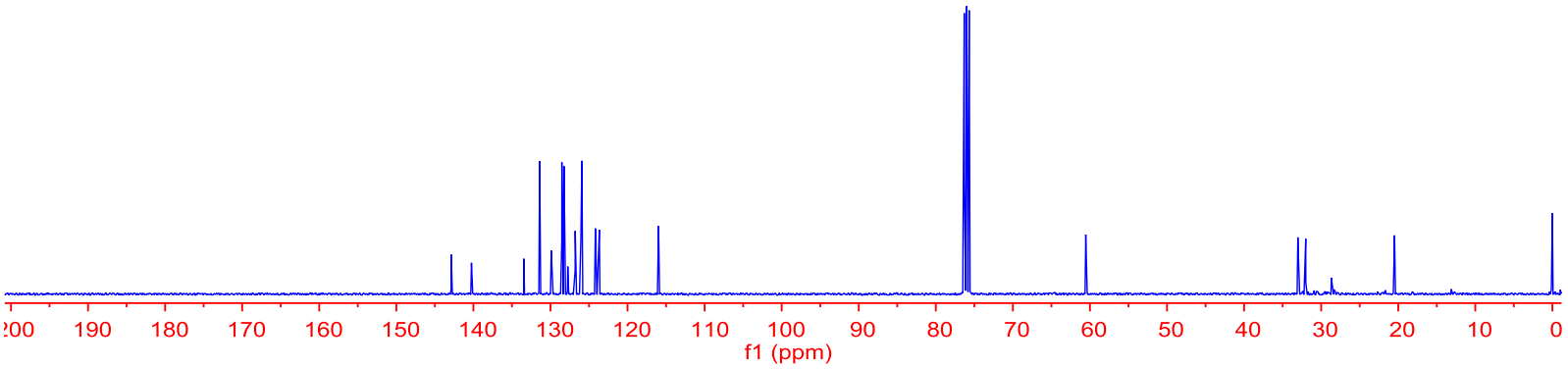
^{1}H NMR (400 MHz, $CDCl_3$) of **13h**

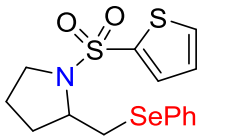




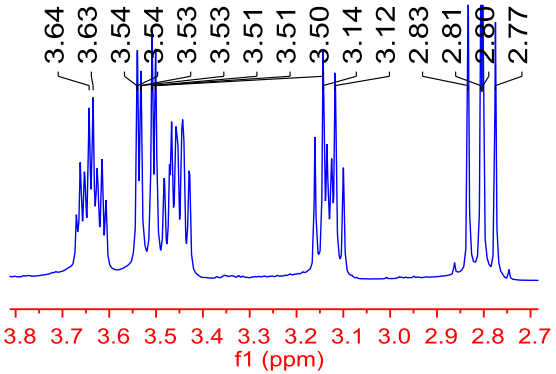


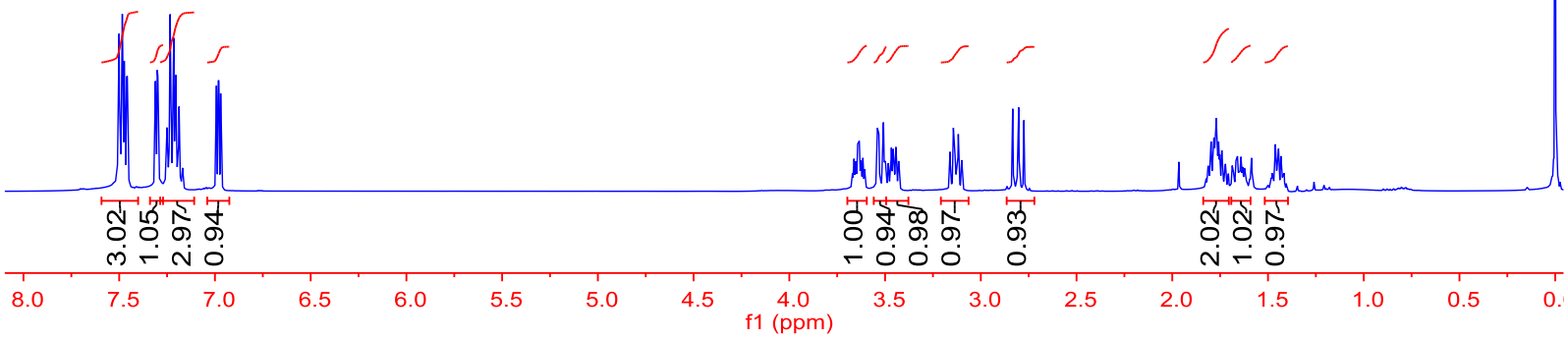
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13g**

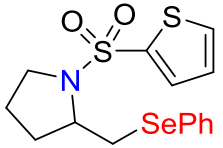




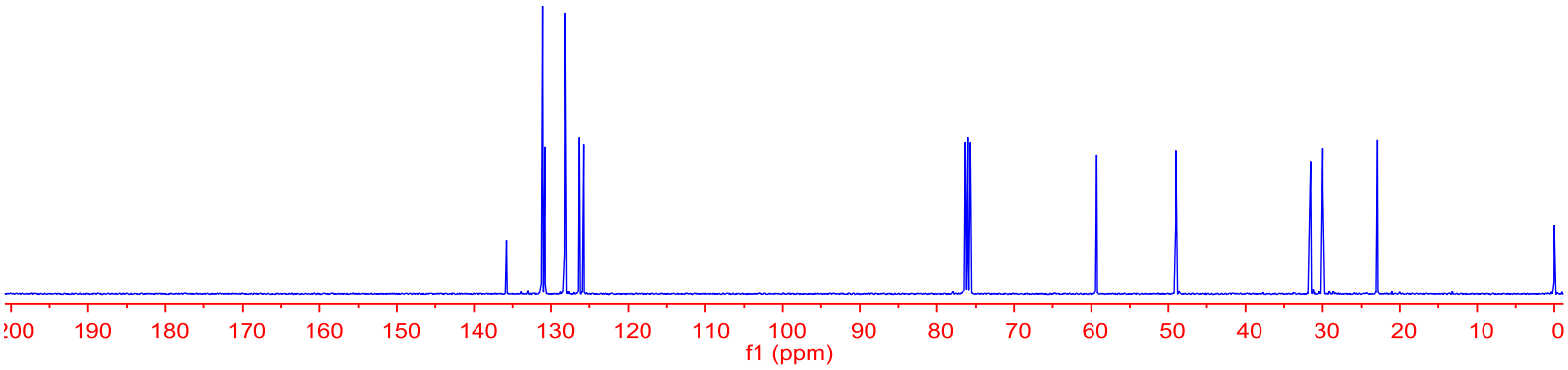
^{1}H NMR (400 MHz, $CDCl_3$) of **13h**

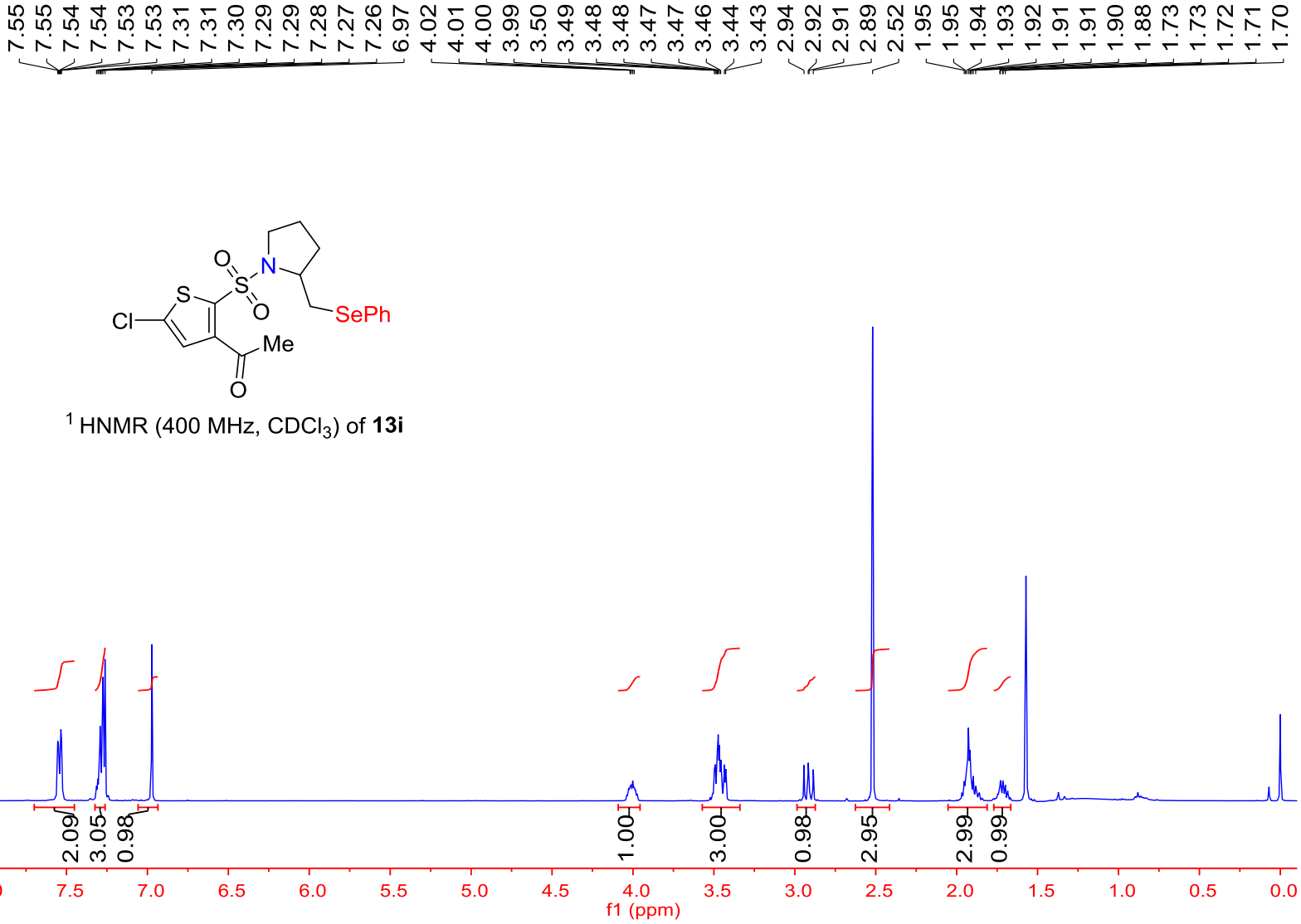




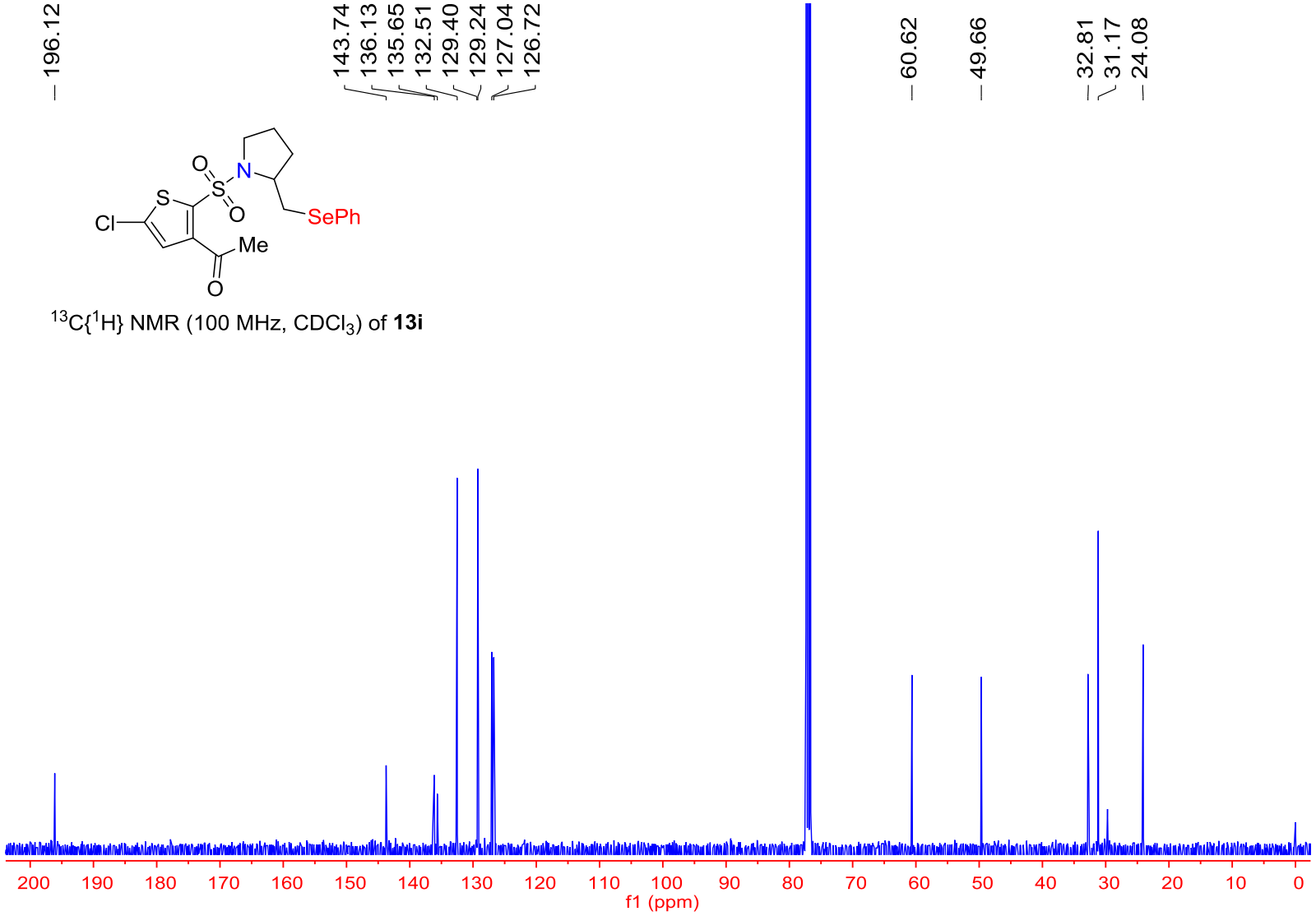


$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13h**

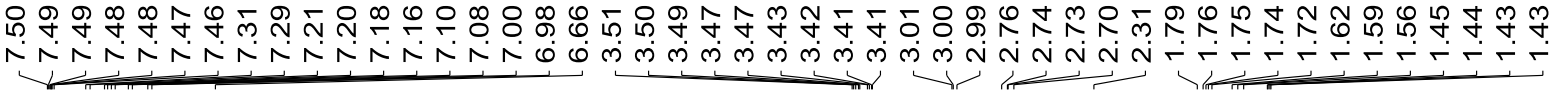


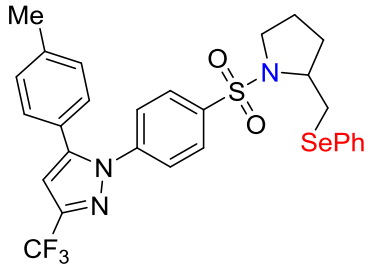


^{1}HNMR (400 MHz, $CDCl_3$) of **13i**

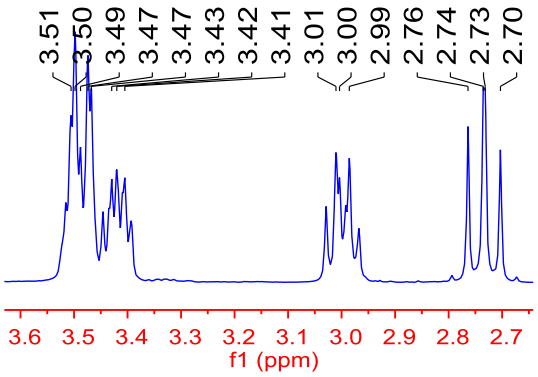


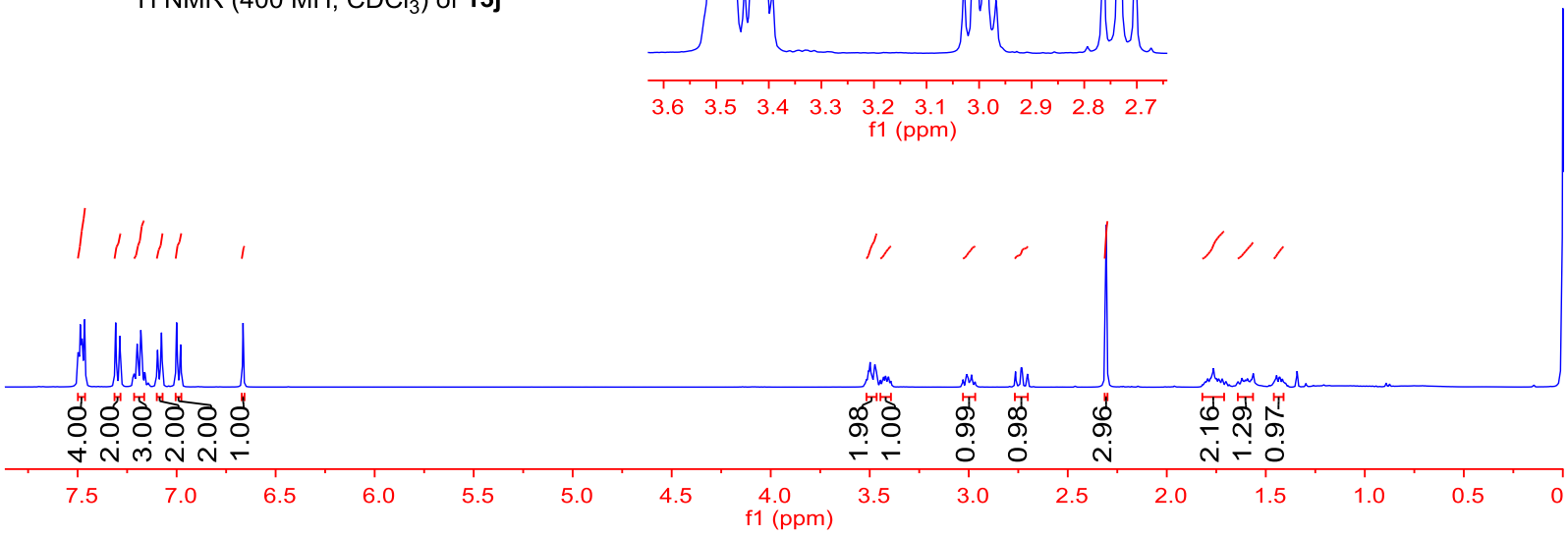
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13i**

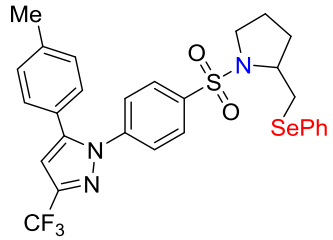




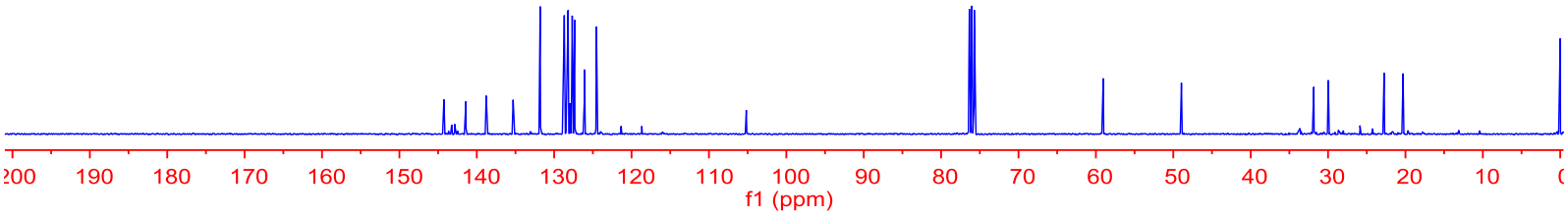
^{1}H NMR (400 MH, $CDCl_3$) of **13j**

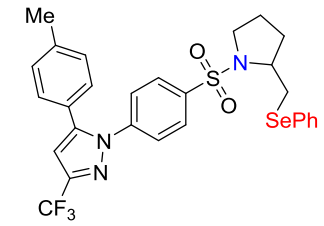




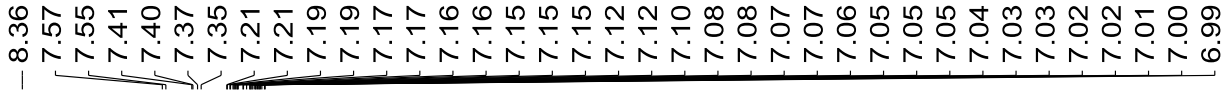


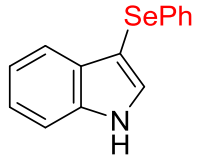
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **13j**



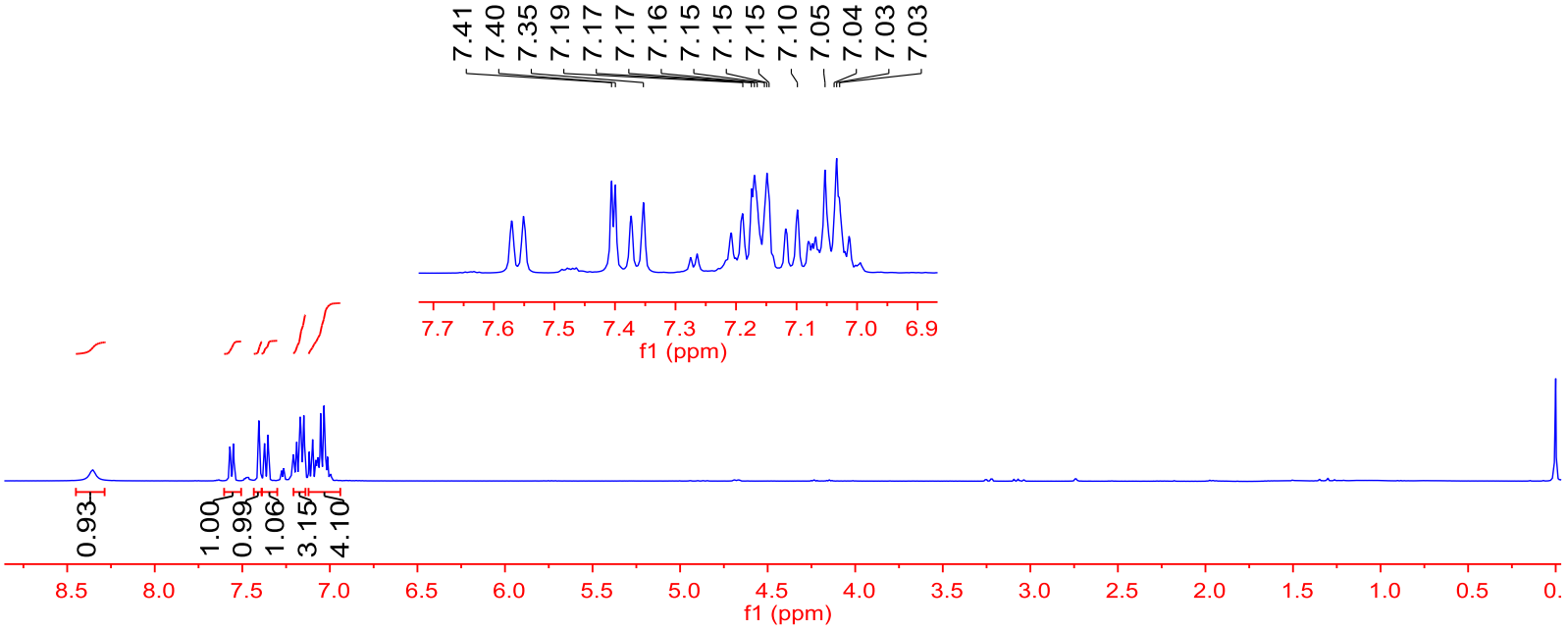


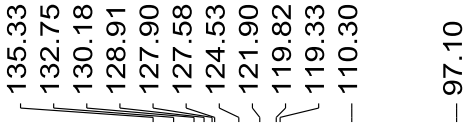
^{19}F NMR (376 MHz, $CDCl_3$) of **13j**

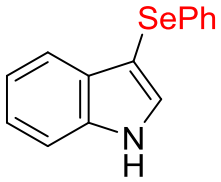




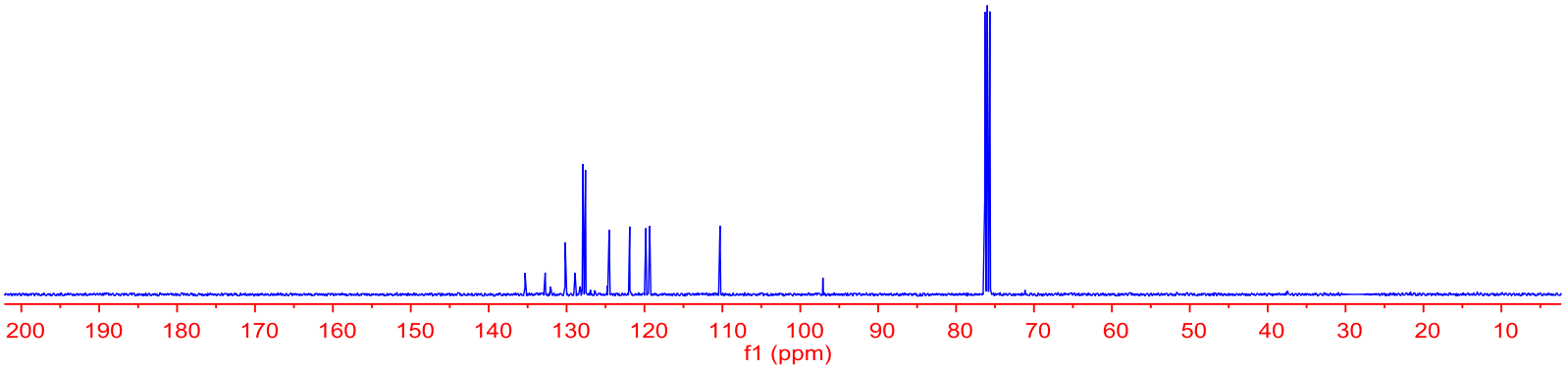
^{1}H NMR (400 MHz, $CDCl_3$) of **14**

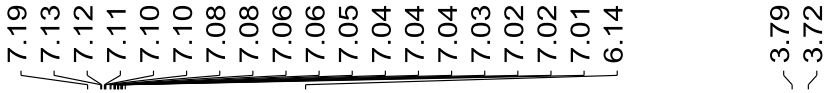


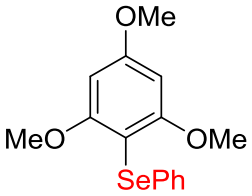




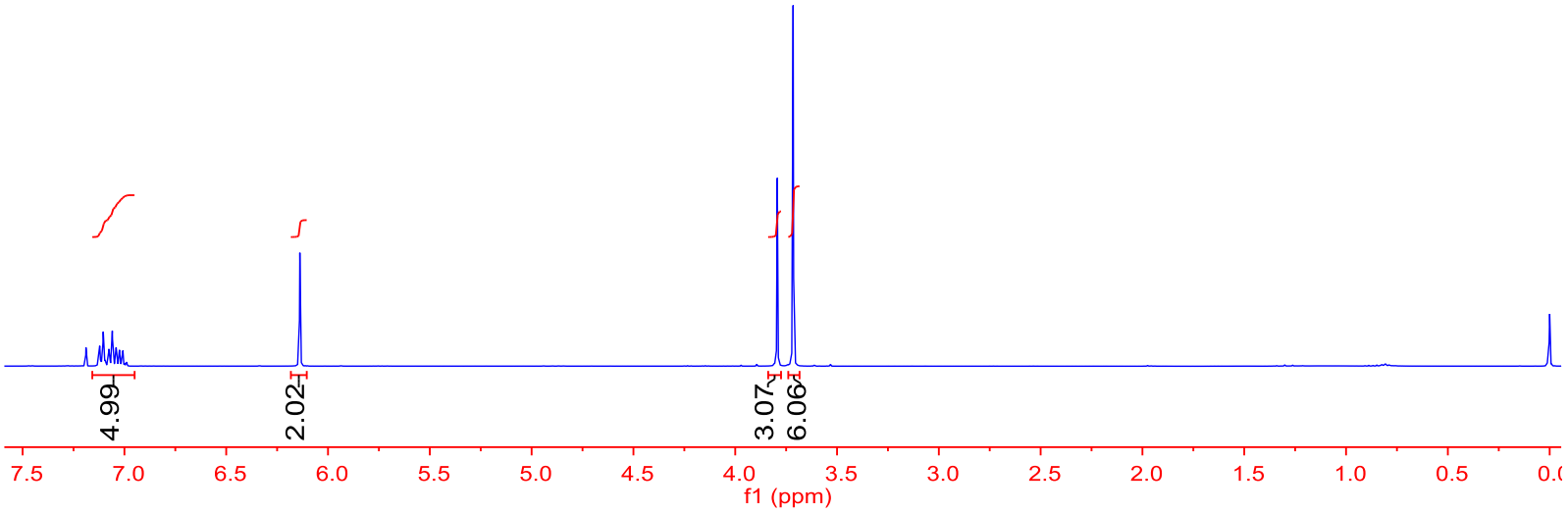
$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$) of **14**

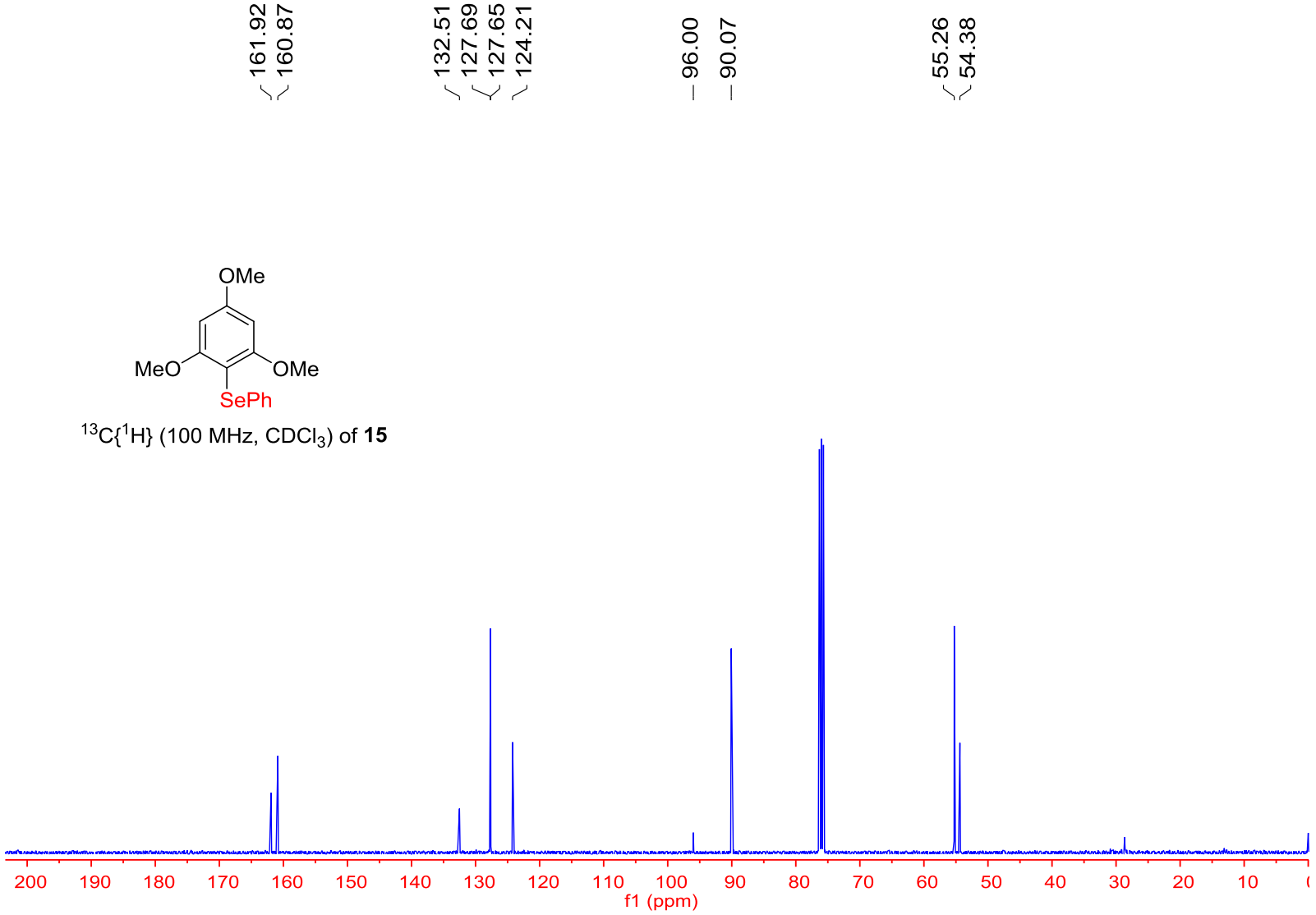






^{1}H NMR (400 MHz, $CDCl_3$) of **15**





$^{13}C\{^{1}H\}$ (100 MHz, $CDCl_3$) of **15**