Supporting Information for

Ag(I)-Catalyzed Intramolecular Transannulation of Enynone Tethered Donor-Acceptor Cyclopropanes: A New Synthesis of 2,3-Dihydronaphtho[1,2-b]furans

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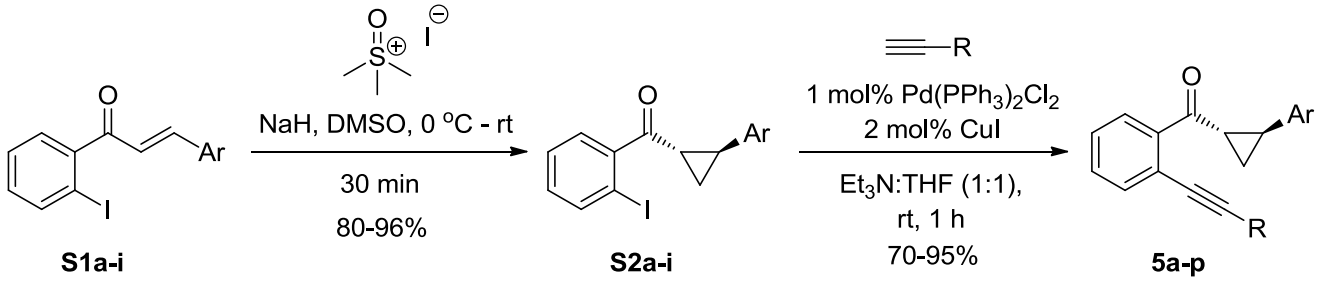
Contents

1. General methods

All the reactions were performed in an oven-dried glassware under argon atmosphere. Solvents were dried using standard methods. Unless otherwise stated, all the commercial reagents were used as received. The progress of the reaction was monitored by thin layer chromatography (Merck Silica gel 60 F-254, precoated plates on alumina). Column chromatographic purifications were performed on Merck silica gel (100-200 mesh). Melting points were recorded on a digital melting point apparatus and are uncorrected. ^{1}H-NMR spectra were recorded on Bruker Avance III FT-NMR spectrometers at 400 MHz or 500 MHz and ^{13}C-NMR spectra were recorded at 101 MHz, 126 MHz. ^{1}H-NMR chemical shifts reported in ppm relative to the TMS (δ = 0) and are abbreviated as follows: s (singlet), d (doublet), t (triplet), q (quartet), m (multiplet), br (broad). ^{13}C-NMR chemical shifts reported in ppm relative to the residual $CDCl_3$ signal (δ = 77.16). IR spectra recorded on a Perkin-Elmer FT-IR spectrometer. HRMS data obtained on a Bruker micro TOF-QII or Agilent 5975C high-resolution mass spectrometers.

2. Synthesis of enynone tethered donor-acceptor cyclopropanes 5



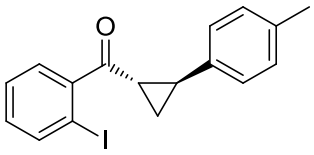
S1a: Ar = tolyl
S1b: Ar = phenyl
S1c: Ar = 1-naphthyl
S1d: Ar = (2-methoxy)phenyl
S1e: Ar = (4-methoxy)phenyl
S1f: Ar = (3,4-dimethoxy)phenyl
S1g: Ar = (4-chloro)phenyl
S1h: Ar = (3-nitro)phenyl
S1i: Ar = (4-nitro)phenyl

Iodochalcones **S1a-i** were prepared by aldol condensation of 2-iodoacetophenones with arylaldehydes.

General procedure 1. Cyclopropanation of chalcones S1: To a dry 100 ml round bottom flask charged with sodium hydride (3.3 mmol, 1.1 eq) under argon atmosphere was added anhydrous DMSO (20 ml). The suspension was stirred at 0 ^{o} C and trimethylsulfoxonium iodide (24 mmol, 8 eq) was slowly added to the contents. After bubbles were ceased (~20 min), a solution of chalcone **S1** (3 mmol, 1 eq) in anhydrous DMSO (10 mL) was added dropwise over 20 min. The contents were allowed to attain room temperature over 30 min for the completion of the reaction as judged by TLC. The reaction mixture was cooled to 0 ^{o} C and quenched by slow addition of ice cold water. The contents were extracted with ethyl acetate and the organic phase was successively washed with water, brine and dried over anhydrous sodium sulphate. The solvent was evaporated on a rotavapor and the resulting crude product was purified by silica gel column chromatography (elution with 0-5% EtOAc/Hexanes, unless otherwise stated) to give cyclopropyl ketone **S2**.

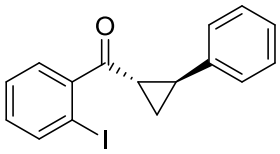
General procedure 2. Sonogashira coupling of S2: To a 25 mL oven dried round bottom flask under argon atmosphere was added $PdCl_2(PPh_3)_2$ (20 mg, 0.029 mmol), CuI (11 mg, 0.058 mmol) and 3 mL of Et_3N. The contents were stirred at

room temperature for 5 min. To reaction flask a premixed solution of 2-iodocyclopropyl ketone **S2** (2.87 mmol) and alkyne (3.44 mmol) in 5 mL THF was added. The reaction was continued for 1 h and quenched with a saturated solution of NH_4Cl (3 ml). The contents were extracted with ethyl acetate and the combined organic phase was washed with brine and dried over anhydrous Na_2SO_4. Solvent was evaporated on a rotavapor and the crude product was purified by silica gel column chromatography (eluent: 97:3 hexane:EtOAc) to afford **5.**



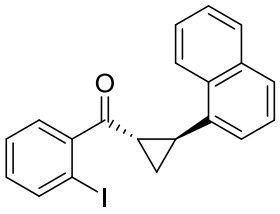
S2a

(2-iodophenyl)((*1S*,2S)-2-(p-tolyl)cyclopropyl)methanone (S2a):** Following general procedure-1, cyclopropanation of **S1a** gave **S2a** as a viscous liquid (91% yield, 0.988g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 1681, 1390, 1213 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.89 (dd, *J* = 7.9, 0.9 Hz, 1H), 7.44 (dd, *J* = 7.7, 1.7 Hz, 1H), 7.38 (td, *J* = 7.5, 1.0 Hz, 1H), 7.12 – 7.08 (m, 3H), 7.06-7.04 (m, 2H), 2.79 – 2.75 (m, 1H), 2.62 – 2.58 (m, 1H), 2.32 (s, 3H), 1.99 – 1.96 (m, 1H), 1.62 – 1.57 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 203.0, 145.4, 140.4, 136.9, 136.5, 131.7, 129.3, 128.6, 128.2, 126.2, 91.4, 33.1, 31.9, 21.2, 20.8; HRMS (APCI, *m/z*): calc. for $C_{17}H_{16}IO$ $[M+H]^+$ 363.0233, found 363.0240.



S2b

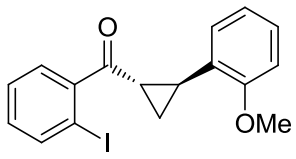
(2-iodophenyl)((*1S*,2S)-2-phenylcyclopropyl)methanone (S2b):** Following general procedure-1, cyclopropanation of **S1b** gave **S2b** as a viscous liquid (93% yield, 0.970g); R_f = 0.5 (9.5:0.5 hexanes:EtOAc); FT IR (neat): 1683, 1593, 1377 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.90 (d, *J* = 7.8 Hz, 1H), 7.44 – 7.36 (m, 2H), 7.8 (t, *J* = 7.0 Hz, 2H), 7.21 (dd, *J* = 14.6, 7.7 Hz, 1H), 7.16 (d, *J* = 7.4 Hz, 2H), 7.10 (t, *J* = 6.2 Hz, 1H), 2.86 – 2.76 (m, 1H), 2.67 – 2.60 (m, 1H), 2.03 – 1.96 (m, 1H), 1.64 – 1.5.8 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 202.9, 145.4, 140.5, 140.0, 131.8, 128.7, 128.6, 128.2, 126.8, 126.3, 91.4, 33.1, 32.0, 21.0; HRMS (ESI, *m/z*): calc. for $C_{16}H_{13}IONa$ $[M+Na]^+$ 370.9898, found 370.9903.



S2c

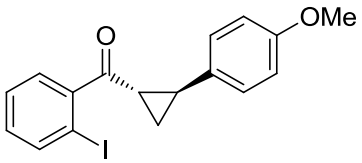
(2-iodophenyl)((*1S*,2S)-2-(naphthalen-1-yl)cyclopropyl)methanone (S2c):** Following general procedure-1, cyclopropanation of **S1c** gave **S2c** as a viscous liquid (85% yield, 1.013g); R_f = 0.45 (9:1 hexanes:EtOAc); FT IR (neat): 1680, 1492, 1231 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 8.22 (d, *J* = 8.2 Hz, 1H), 7.91 (d, *J* = 7.9 Hz, 1H), 7.84 (d, *J* = 7.4 Hz, 1H), 7.74 (d, *J* = 8.2 Hz, 1H), 7.57 – 7.45 (m, 3H), 7.37 (q, *J* = 7.2 Hz, 2H), 7.28 (d, *J* = 7.0 Hz, 1H), 7.09 (td, *J* = 7.8, 1.2 Hz, 1H), 3.41 – 3.32 (m, 1H), 2.66 – 2.56 (m, 1H), 2.10 – 2.00 (m, 1H), 1.85 – 1.75 (m, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ

203.3, 145.2, 140.6, 135.7, 133.6, 133.0, 131.8, 128.7, 128.6, 128.1, 127.8, 126.4, 126.1, 125.4, 124.2, 123.7, 91.5, 31.2, 29.1, 19.7; HRMS (ESI, *m/z*): Calc. for $C_{20}H_{15}IONa$ $[M+Na]^+$ 421.0059, found 421.0060.



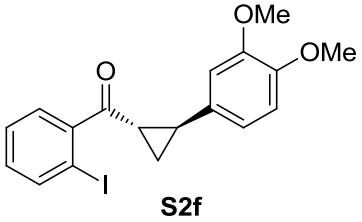
S2d

(2-iodophenyl)((*1S*,2S)-2-(2-methoxyphenyl)cyclopropyl)methanone (S2d):** Following general procedure-1, cyclopropanation of **S1d** gave **S2d** as a viscous liquid (83% yield, 0.941g); R_f = 0.5 (9:1 hexanes:EtOAc); FT IR (neat): 1681, 1515, 1249 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.89 (d, *J* = 7.9 Hz, 1H), 7.53 (d, *J* = 7.6 Hz, 1H), 7.37 (t, *J* = 7.5 Hz, 1H), 7.19 (t, *J* = 7.8 Hz, 1H), 7.08 (t, *J* = 7.5 Hz, 1H), 6.99 (d, *J* = 7.4 Hz, 1H), 6.87 (t, *J* = 7.6 Hz, 1H), 6.84 (d, *J* = 8.2 Hz, 1H), 3.80 (s, 3H), 3.00 – 2.88 (m, 1H), 2.56 – 2.44 (m, 1H), 1.97 – 1.91 (m, 1H), 1.65 – 1.59 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 203.3, 158.5, 145.4, 140.4, 131.5, 128.6, 128.2, 128.0, 127.9, 126.3, 120.5, 110.4, 91.4, 55.4, 31.5, 27.4, 18.6; HRMS (ESI, *m/z*): Calc. for $C_{17}H_{16}IO_2$ $[M+H]^+$ 379.0173, found 379.0189.



S2e

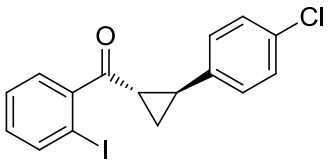
(2-iodophenyl)((*1S*,2S)-2-(4-methoxyphenyl)cyclopropyl)methanone (S2e):** Following general procedure-1, cyclopropanation of **S1e** gave **S2e** as a white solid (83% yield, 0.941g); R_f = 0.5 (9:1 hexanes: EtOAc); m. p. = 75 - 77 °C; FT-IR (neat): 1681, 1515, 1249 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.90 (dd, *J* = 7.9, 0.8 Hz, 1H), 7.44 (dd, *J* = 7.7, 1.8 Hz, 1H), 7.39 (td, *J* = 7.5, 1.0 Hz, 1H), 7.13 – 7.09 (m, 3H), 6.85 – 6.83 (m, 2H), 3.79 (s, 3H), 2.79 – 2.75 (m, 1H), 2.58 – 2.56 (m, 1H), 1.98 – 1.95 (m, 1H), 1.59 – 1.55 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 203.1, 158.6, 145.5, 140.5, 132.0, 131.7, 128.6, 128.2, 127.5, 114.1, 91.4, 55.5, 33.1, 31.7, 20.7; HRMS (ESI, *m/z*): Calc. for $C_{17}H_{16}IO_2$ $[M+H]^+$ 379.0173, found 379.0189.



S2f

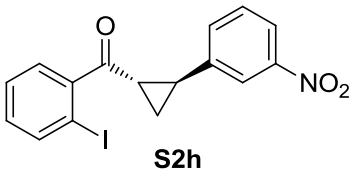
((*1S*,2S)-2-(3,4-dimethoxyphenyl)cyclopropyl)(2-iodophenyl)methanone (S2f):** Following general procedure-1, cyclopropanation of **S1f** gave **S2f** as a white solid (72% yield, 0.881g); R_f = 0.45 (8:2 hexane:EtOAc); m. p. = 80 - 82 °C; FT-IR (neat): 1682, 1519, 1238 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.90 – 7.86 (m, 1H), 7.44 (dd, *J* = 7.7, 1.7 Hz, 1H), 7.38 (td, *J* = 7.6, 0.9 Hz, 1H), 7.10 (td, *J* = 7.7, 1.7 Hz, 1H), 6.79 (d, *J* = 7.9 Hz, 1H), 6.73 – 6.67 (m, 2H), 3.86 (s, 3H), 3.84 (s, 3H), 2.80 – 2.73 (m, 1H), 2.62 – 2.55 (m, 1H), 1.98 – 1.92 (m, 1H), 1.62 – 1.54 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ

202.7, 148.9, 147.9, 145.2, 140.2, 132.3, 131.6, 128.4, 128.0, 118.1, 111.3, 109.9, 91.2, 55.9, 55.9, 32.8, 31.7, 20.5; HRMS (ESI, *m/z*): Calc. for $C_{18}H_{18}IO_3$ $[M+H]^+$ 409.0311, found 409.0295.



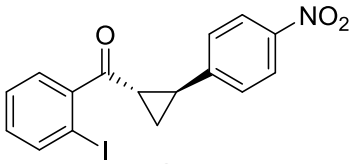
S2g

((*1S*,2S)-2-(4-chlorophenyl)cyclopropyl)(2-iodophenyl)methanone (S2g):** Following general procedure-1, cyclopropanation of **S1g** gave **S2g** as a viscous liqiud (78% yield, 0.891g); R_f = 0.5 (9:1 hexane:EtOAc); FT IR (neat): 1681, 1523, 1324 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.90 (dd, *J* = 8.0, 0.7 Hz, 1H), 7.44 - 7.38 (m, 2H), 7.27 – 7.24 (m, 2H), 7.14 - 7.11 (m, 1H), 7.10 – 7.07 (m, 2H), 2.79 – 2.75 (m, 1H), 2.63 – 2.60 (m, 1H), 2.00 – 1.97 (m, 1H), 1.59 – 1.55 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.7, 145.3, 140.5, 138.5, 132.5, 131.9, 128.8, 128.6, 128.2, 127.7, 91.4, 33.0, 31.2, 21.0; HRMS (APCI, *m/z*): Calc. for $C_{16}H_{13}ClIO$ $[M+H]^+$ 382.9686, found 382.9694.



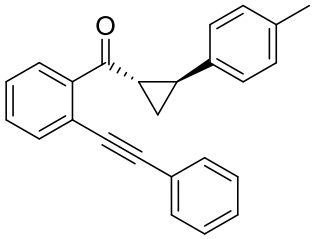
S2h

(2-iodophenyl)((*1S*,2S)-2-(3-nitrophenyl)cyclopropyl)methanone (S2h):** Following general procedure-1, cyclopropanation of **S1h** gave **S2h** as a viscous liquid (82% yield, 0.966g); R_f = 0.5 (9:1 hexanes: EtOAc); FT IR (neat): 1682, 1531, 1349 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.08 (ddd, *J* = 8.1, 2.2, 1.1 Hz, 1H), 7.99 (t, *J* = 1.9 Hz, 1H), 7.91 (d, *J* = 7.8 Hz, 1H), 7.54 (d, *J* = 7.8 Hz, 1H), 7.49 - 7.41 (m, 3H), 7.15 (ddd, *J* = 7.9, 7.1, 2.1 Hz, 1H), 2.93 - 2.89 (m, 1H), 2.76 - 2.73 (m, 1H), 2.07 - 2.03 (m, 1H), 1.69 - 1.66 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.2, 148.6, 145.0, 142.3, 140.5, 133.0, 132.1, 129.6, 128.7, 128.3, 121.8, 120.8, 91.4, 32.9, 30.6, 21.2; HRMS (ESI, m/z): Calc. for $C_{16}H_{12}INNaO_3$ $[M+Na]^+$ 415.9754, found 415.9765.



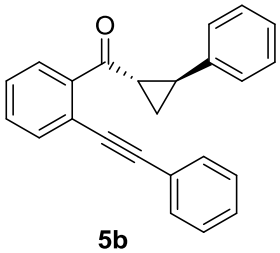
S2i

(2-iodophenyl)((*1S*,2S)-2-(4-nitrophenyl)cyclopropyl)methanone (S2i):** Following general procedure-1, cyclopropanation of **S1i** gave **S2i** as a white solid (83% yield, 0.978g); R_f = 0.45 (9:1 hexanes: EtOAc); m. p. = 102 - 104 ^oC; FT IR (neat): 1682, 1530, 1348 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.16 (dd, *J* = 8.7, 1.7 Hz, 2H), 7.92 (d, *J* = 8.0 Hz, 1H), 7.45 – 7.41 (m, 2H), 7.30 (d, *J* = 8.8 Hz, 2H), 7.17 – 7.13 (m, 1H), 2.91 – 2.87 (m 1H), 2.78 – 2.75 (m, 1H), 2.10 – 2.07 (m, 1H), 1.69 – 1.64 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.1, 148.0, 146.8, 145.0, 140.5, 132.1, 128.7, 128.4, 126.9, 124.0, 91.4, 33.5, 31.0, 21.8; HRMS (ESI, m/z): Calc. for $C_{16}H_{12}INNaO_3$ $[M+Na]^+$ 415.9754, found 415.9760.



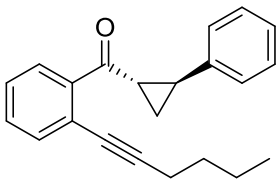
5a

(2-(phenylethynyl)phenyl)((*1S*,2S)-2-(p-tolyl)cyclopropyl)methanone (5a):** Following general procedure-2, Sonogashira coupling of **S2a** with phenylacetylene gave **5a** as a white solid (74% yield, 0.713g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); m. p. = 60 - 62 ^oC; FT IR (neat): 2215, 1668, 1391, 1209cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.65 (d, *J* = 7.6 Hz, 1H), 7.60 (d, *J* = 7.6 Hz, 1H), 7.45 (t, *J* = 7.5 Hz, 1H), 7.38 (t, *J* = 7.5 Hz, 1H), 7.33 – 7.22 (m, 5H), 7.00-6.9 (m, 4H), 3.20 - 3.11(m, 1H), 2.85 - 2.75 (m, 1H), 2.27 (s, 3H), 1.96 - 1.86 (m, 1H), 1.57 - 1.49 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 202.1, 141.9, 137.4, 136.1, 133.8, 131.7, 131.0, 129.3, 128.5, 128.4, 128.3, 126.1, 122.9, 121.6, 95.2, 87.9, 32.8, 30.8, 21.5, 21.1; HRMS (ESI, *m/z*): Calc. for $C_{25}H_{21}O$ $[M+H]^+$ 337.1580, found 337.1587.



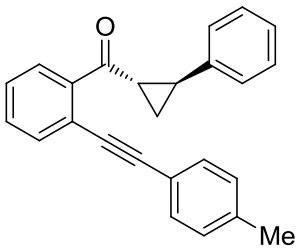
5b

((*1S*,2S)-2-phenylcyclopropyl)(2-phenylethynyl)phenyl)methanone (5b):** Following general procedure-2, Sonogashira coupling of **S2b** with phenylacetylene gave **5b** as a white solid (79% yield, 0.730g); R_f = 0.43 (9.5:0.5 hexanes: EtOAc); m. p. = 67 - 68 ^oC; FT IR (neat): 2202, 1671, 1524, 1245 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.66 (dd, *J* = 7.7, 1.1 Hz, 1H), 7.62 (dd, *J* = 7.7, 1.1 Hz, 1H), 7.45 (td, *J* = 7.5, 1.4 Hz, 1H), 7.39 (td, *J* = 7.5, 1.4 Hz, 1H), 7.31 - 7.24 (m, 5H), 7.22 -7.19 (m, 2H), 7.17-7.11 (m, 3H), 3.22 -3.17 (m, 1H), 2.86 - 2.81 (m, 1H), 1.95 -1.90 (m, 1H), 1.58 - 1.54 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 202.0, 141.9, 140.5, 133.8, 131.6, 131.0, 128.6, 128.6, 128.4, 128.4, 126.6, 126.2, 122.9, 121.5, 95.2, 87.9, 32.8, 30.8, 21.7; HRMS (ESI, *m/z*): Calc. for $C_{24}H_{18}ONa$ $[M+Na]^+$ 345.1212, found 345.1250.



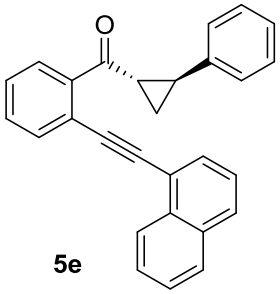
5c

(2-(hex-1-yn-1-yl)phenyl)((*1S*,2S)-2-phenylcyclopropyl)methanone (5c):** Following general procedure-2, Sonogashira coupling of **S2b** with 1-hexyne gave **5c** as a liquid (72% yield, 0.624g); R_f = 0.35(9.5:0.5 hexanes: EtOAc); FT IR (neat): 2228, 1670, 1396, 1209 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.57 (dd, *J* = 7.7, 1.3 Hz, 1H), 7.46 (d, *J* = 7.7 Hz, 1H), 7.38 (td, *J* = 7.5, 1.4 Hz, 1H), 7.33 – 7.26 (m, 3H), 7.22 – 7.17 (m, 1H), 7.16 – 7.12 (m, 2H), 3.20 - 3.13 (m, 1H), 2.79 - 2.71 (m, 1H), 1.99 - 1.89 (m, 3H), 1.53 - 1.48 (m, 1H), 1.42 - 1.29 (m, 4H), 0.88 (t, *J* = 7.1 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.6, 142.0, 140.9, 133.8, 130.9, 128.6, 128.2, 127.7, 126.5, 126.1, 122.5, 97.3, 79.0, 33.1, 31.1, 30.7, 22.2, 21.5, 19.0, 13.7; HRMS (ESI, *m/z*): Calc. for $C_{22}H_{21}O$ $[M-H]^-$ 301.1591, found 301.1587.



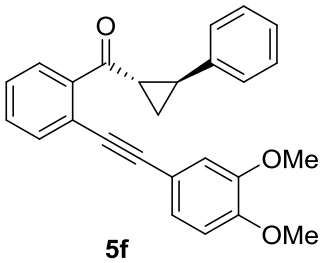
5d

((*1S*,2S)-2-phenylcyclopropyl)(2-(p-tolylethynyl)phenyl)methanone (5d):** Following general procedure-2, Sonogashira coupling of **S2b** with tolylacetylene gave **5d** as a white solid (84% yield, 0.810g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); m. p. = 108 - 110 ^oC; FT IR (neat): 2213, 1671, 1396, 1209 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.64 (d, *J* = 6.6 Hz, 1H), 7.60 (d, *J* = 7.4 Hz, 1H), 7.44 (t, *J* = 7.4 Hz, 1H), 7.36 (t, *J* = 7.5 Hz, 1H), 7.25 – 7.14 (m, 5H), 7.14 – 7.04 (m, 4H), 3.25 - 3.16 (m, 1H), 2.89 - 2.79 (m, 1H), 2.34 (s, 3H), 1.98 - 1.87 (m, 1H), 1.59 - 1.51 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 202.1, 141.8, 140.5, 138.8, 133.7, 131.5, 131.0, 129.2, 128.6, 128.3, 128.2, 126.5, 126.2, 121.8, 119.8, 95.5, 87.4, 32.8, 30.7, 21.6; HRMS (ESI, m/z): Calc. for $C_{25}H_{20}NaO$ $[M+Na]^+$ 359.1406, found 359.1397.



5e

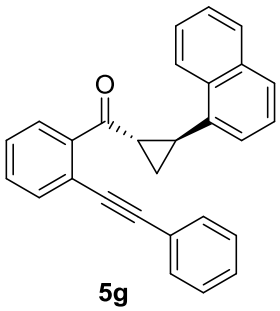
(2-(naphthalen-1-ylethynyl)phenyl)((*1S*,2S)-2-phenylcyclopropyl)methanone (5e):** Following general procedure-2, Sonogashira coupling of **S2b** with naphthylacetylene gave **5e** as a viscous liquid (88% yield, 0.939g); R_f = 0.45 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 2214, 1672, 1456, 1235 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 8.42 (d, *J* = 8.2 Hz, 1H), 7.83 (dd, *J* = 12.2, 8.2 Hz, 2H), 7.77 – 7.67 (m, 2H), 7.60 – 7.48 (m, 4H), 7.41 – 7.34 (m, 2H), 7.11 – 7.03 (m, 5H), 3.21 - 3.17 (m, 1H), 2.85 - 2.80 (m, 1H), 1.99 - 1.95 (m, 1H), 1.56 - 1.51 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 201.9, 141.9, 140.4, 134.0, 133.4, 133.3, 131.1, 130.7, 129.2, 128.5, 128.5, 128.4, 128.4, 127.0, 126.6, 126.5, 126.4, 126.1, 125.4, 121.7, 120.6, 93.3, 92.8, 32.9, 31.1, 21.5; HRMS (APCI, *m/z*): Calc. for $C_{28}H_{21}O$ $[M+H]^+$ 373.1582, found 373.1587.



5f

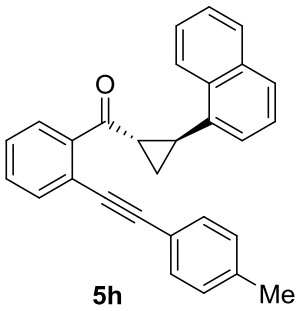
(2-((3,4-dimethoxyphenyl)ethynyl)phenyl)((*1S*,2S)-2-phenylcyclopropyl)methanone (5f):** Following general procedure-2, Sonogashira coupling of **S2b** with 3,4-dimethoxyphenylacetylene gave **5f** as a viscous liquid (86% yield, 0.942g); R_f = 0.35 (8:2 hexanes: EtOAc); FT-IR (neat): 2215, 1670, 1574, 1214 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.66

(dd, *J* = 7.8, 1.0 Hz, 1H), 7.61 (dd, *J* = 7.7, 0.8 Hz, 1H), 7.45 (td, *J* = 7.6, 1.3 Hz, 1H), 7.37 (td, *J* = 7.6, 1.2 Hz, 1H), 7.20 - 7.17 (m, 2H), 7.16 – 7.13 (m, 1H), 7.12 - 7.09 (m, 2H), 6.93 –6.91 (m, 2H), 6.77 – 6.76 (m, 1H), 3.90 (s, 3H), 3.86 (s, 3H), 3.23-3.16 (m, 1H), 2.85 - 2.80 (m, 1H), 1.96 - 1.90 (m, 1H), 1.57 - 1.52 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.1, 149.8, 148.7, 141.8, 140.5, 133.6, 131.1, 128.5, 128.4, 128.2, 126.6, 126.2, 125.1, 121.8, 115.1, 114.2, 111.1, 95.4, 86.7, 56.0, 32.6, 30.7, 21.6; HRMS (ESI, *m/z*): Calc. for $C_{26}H_{23}O_3$ $[M+H]^+$ 383.1661, found 383.1642.



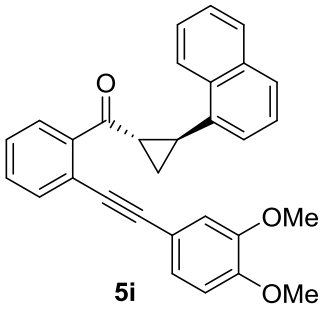
5g

((*1S*,2S)-2-(napthalene-1-yl)cyclopropyl)(2-(phenylethynyl)phenyl)methanone (5g):** Following general procedure-2, Sonogashira coupling of **S2c** with phenylacetylene gave **5g** as a viscous liquid (88% yield, 0.940g); R_f = 0.4 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 2211, 1670, 1458, 1232 cm^{-1}; ^{1}H NMR (400MHz, $CDCl_3$) δ 8.21 - 8.18 (m, 1H), 7.82 - 7.80 (m, 1H), 7.77 (dd, *J* = 7.7, 1 Hz, 1H), 7.70 (d, *J* = 7.8 Hz, 1H), 7.63 (dd, *J* = 7.6, 1 Hz, 1H), 7.49 - 7.39 (m, 4H), 7.33 - 7.21 (m, 7H), 3.41 – 3.35 (m, 1H), 3.19 – 3.14 (m, 1H), 2.04 – 2.00 (m, 1H), 1.79 -1.74 (m, 1H); ^{13}C NMR (100MHz, $CDCl_3$) δ 202.3, 141.9, 136.1, 133.9, 133.7, 133.1, 131.6, 131.1, 128.6, 128.4, 127.6, 126.3, 125.9, 125.4, 124.1, 123.6, 122.8, 121.6, 95.0, 88.0, 30.9, 28.4, 19.7; HRMS (ESI, *m/z*): Calc. for $C_{28}H_{21}O$ $[M+H]^+$ 373.1597, found 373.1587.



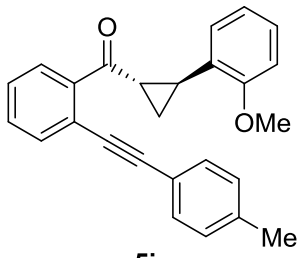
5h

((*1S*,2S)-2-(naphthalen-1-yl)cyclopropyl)(2-(p-tolylethynyl)phenyl)methanone (5h):** Following general procedure-2, Sonogashira coupling of **S2c** with *p*-tolylacetylene gave **5h** as a viscous liquid (76% yield, 0.841g); R_f = 0.4 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 2214, 1674, 1355, 1210 cm^{-1}; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.22 - 8.18 (m, 1H), 7.80 – 7.77 (m, 1H), 7.75 (dd, *J* = 7.7, 1.2 Hz, 1H), 7.69 (d, *J* = 8.0 Hz, 1H), 7.60 (d, *J* = 7.7 Hz, 1H), 7.45-7.42 (m, 3H), 7.37 (t, *J* = 7.6 Hz, 1H), 7.32 – 7.25 (m, 2H), 7.19-7.17 (m, 2H), 7.03 (d, *J* = 7.6Hz, 2H), 3.41 - 3.34 (m, 1H), 3.18-3.14 (m, 1H), 2.32 (s, 3H), 2.03-2.00 (m, 1H), 1.78 - 1.74 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.4, 141.9, 138.8, 136.1, 133.8, 133.6, 133.1, 131.5, 131.1, 129.2, 128.6, 128.3, 128.2, 127.6, 126.3, 126.0, 125.40, 124.1, 123.6, 121.8, 119.8, 95.3, 87.5, 30.9, 28.40, 21.6, 19.7; HRMS (ESI, *m/z*): Calc. for $C_{29}H_{23}O$ $[M+H]^+$ 387.1729, found 387.1743.



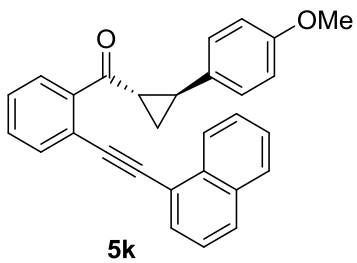
5i

(2-((3,4-dimethoxyphenyl)ethynyl)phenyl)((*1S*,2S)-2-(naphthalen-1-yl)cyclopropyl)methanone (5i):** Following general procedure-2, Sonogashira coupling of **S2c** with 3,4-dimethoxyphenylacetylene gave **5i** as a white solid (87% yield, 1.079g); R_f = 0.35 (8:2 hexanes: EtOAc); m. p. = 90 - 92 ^oC; FT IR (neat): 2201, 1672, 1514, 1249 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.22 – 8.17 (m, 1H), 7.82 – 7.77 (m, 1H), 7.75 (dd, *J* = 7.7, 0.9 Hz, 1H), 7.70 – 7.67 (m, 1H), 7.63 – 7.60 (m, 1H), 7.48 – 7.42 (m, 3H), 7.39 (td, *J* = 7.6, 1.2 Hz, 1H), 7.32 – 7.24 (m, 2H), 6.90 (dd, *J* = 8.3, 1.8 Hz, 1H), 6.85 (d, *J* = 1.7 Hz, 1H), 6.71 (d, *J* = 8.3 Hz, 1H), 3.88 (s, 3H), 3.77 (s, 3H), 3.39 - 3.34 (m, 1H), 3.20 - 3.15 (m, 1H), 2.05 - 2.00 (m, 1H), 1.77 - 1.72 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.4, 149.8, 148.6, 141.9, 136.1, 133.6, 133.6, 133.0, 131.1, 128.6, 128.3, 128.1, 127.6, 126.3, 125.9, 125.3, 125.0, 124.0, 123.6, 121.8, 115.1, 114.1, 111.0, 95.2, 86.7, 56.0, 55.9, 30.8, 28.3, 19.8; HRMS (ESI, *m/z*): Calc. for $C_{30}H_{25}O_3$ $[M+H]^+$ 433.1789, found 433.1798.



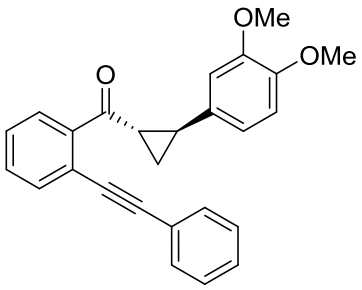
5j

((*1S*,2S)-2-(2-methoxyphenyl)cyclopropyl)(2-(p-tolylethynyl)phenyl)methanone (5j):** Following general procedure-2, Sonogashira coupling of **S2d** with p-tolylacetylene gave **5j** as a white solid (80% yield, 0.840g); R_f = 0.5 (8.5:1.5 hexanes: EtOAc); m. p. = 69 – 70 ^oC; FT IR (neat): 2215, 1674, 1494, 1248 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.69 (d, *J* = 7.6 Hz, 1H), 7.59 (d, *J* = 7.5 Hz, 1H), 7.42 (td, *J* = 7.5, 1.3 Hz, 1H), 7.36 (td, *J* = 7.5, 1.0 Hz, 1H), 7.26 (d, *J* = 7.9 Hz, 2H), 7.18 – 7.11 (m, 1H), 7.09 (d, *J* = 7.9 Hz, 2H), 6.95 (d, *J* = 7.0 Hz, 1H), 6.81 (t, *J* = 7.5 Hz, 1H), 6.77 (d, *J* = 8.2 Hz, 1H), 3.72 (s, 3H), 3.11 – 3.04 (m, 1H), 3.04 – 2.96 (m, 1H), 2.35 (s, 3H), 1.94 – 1.87 (m, 1H), 1.63 – 1.56 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 202.6, 158.5, 142.3, 138.8, 133.6, 131.6, 130.8, 129.2, 128.8, 128.3, 128.1, 127.6, 126.1, 121.6, 120.5, 120.0, 110.5, 95.1, 87.5, 55.4, 31.3, 26.3, 21.7, 19.4; HRMS (ESI, *m/z*): Calc. for $C_{26}H_{23}O_2$ $[M+H]^+$ 367.1713, found 367.1693.



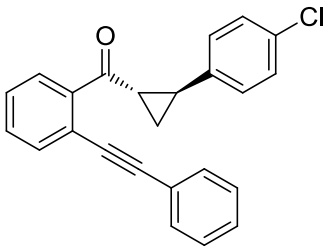
5k

***((1S*,2S*)*-2-(4-methoxyphenyl)cyclopropyl)(2-(naphthalen-1-ylethynyl)phenyl)methanone (5k):** Following general procedure-2, Sonogashira coupling of **S2e** with 1-naphthylacetylene gave **5k** as a viscous liquid (78% yield, 0.900g); R_f = 0.4 (9:1 hexanes: EtOAc); FT IR (neat): 2212, 1671, 1545, 1256 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.49 – 8.44 (m, 1H), 7.89 (d, *J* = 8.2 Hz, 1H), 7.86 (d, *J* = 8.2 Hz, 1H), 7.78 (t, *J* = 7.7 Hz, 2H), 7.63 (t, *J* = 7.7 Hz, 1H), 7.59 - 7.50 (series of m, 3H), 7.47 (td, *J* = 7.6, 1.2 Hz, 1H), 7.41 (t, *J* = 7.7 Hz, 1H), 6.99 (d, *J* = 7.2 Hz, 2H), 6.64 (d, *J* = 6.9 Hz, 2H), 3.73 (s, 3H), 3.21 – 3.18 (m, 1H) 2.89 – 2.82 (m, 1H), 2.02 – 1.98 (m, 1H), 1.57 – 1.51 (m, 1H).^{13}C NMR (125 MHz, $CDCl_3$) δ 201.9, 158.2, 141.8, 133.9, 133.3, 133.2, 132.2, 131.0, 130.6, 129.1, 128.5, 128.4, 128.3, 127.1, 126.9, 126.5, 126.3, 125.2, 121.5, 120.4, 113.7, 93.2, 92.6, 55.2, 32.7, 30.8, 21.2; HRMS (ESI, *m/z*): Calc. for $C_{29}H_{23}O_2$ $[M+H]^+$ 403.1691, found 403.1693.



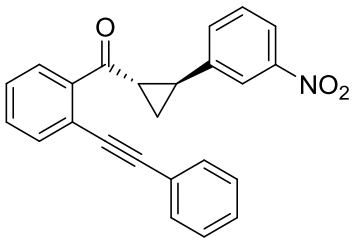
5l

((*1S*,2S)-2-(3,4-dimethoxyphenyl)cyclopropyl)(2-(phenylethynyl)phenyl)methanone (5l):** Following general procedure-2, Sonogashira coupling of **S2f** with phenylacetylene gave **5l** as a white solid (81% yield, 0.888g); R_f = 0.35 (8:2 hexanes: EtOAc); m. p. = 111 – 113 ^oC; FT IR (neat): 2215, 1668, 1519, 1259 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.68 (dd, *J* = 7.8, 1.1 Hz, 1H), 7.62 (d, *J* = 7.7 Hz, 1H), 7.49-7.43 (m, 1H), 7.42 – 7.36 (m, 1H), 7.32 – 7.27 (m, 1H), 7.25 (m, 4H), 6.69 – 6.61 (m, 3H), 3.81 (s, 3H), 3.74 (s, 3H), 3.22 – 3.15 (m, 1H), 2.82 – 2.78 (m, 1H), 1.93 - 1.86 (m, 1H), 1.56 - 1.51 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 202.0, 149.0, 147.9, 141.8, 133.9, 133.0, 131.6, 131.1, 128.7, 128.5, 128.4, 122.8, 121.6, 117.9, 111.3, 109.9, 95.3, 87.9, 56.0, 55.99, 55.85, 32.8, 30.9, 21.5; HRMS (ESI, *m/z*): Calc. for $C_{26}H_{23}O_3$ $[M+H]^+$ 383.1656, found 383.1642.



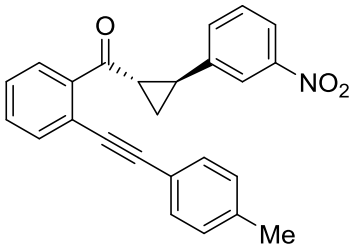
5m

((*1S*,2S)-2-(4-chlorophenyl)cyclopropyl)(2-(phenylethynyl)phenyl)methanone (5m):** Following general procedure-2, Sonogashira coupling of **S2g** with phenylacetylene gave **5m** as a white solid (85% yield, 0.868g); R_f = 0.4 (9.5:0.5 hexanes: EtOAc); m. p. = 79 - 81 ^oC; FT IR (neat): 2215, 1670, 1493, 1210 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.65 (d, *J* = 7.7 Hz, 1H), 7.61 (d, *J* = 7.6 Hz, 1H), 7.46 (td, *J* = 7.5, 1.2 Hz, 1H), 7.40 (td, *J* = 7.6, 0.9 Hz, 1H), 7.34 - 7.30 (m, 1H), 7.28 - 7.23 (m, 2H), 7.23-7.18 (m, 2H), 7.10 (d, *J* = 8.4 Hz, 2H), 7.00 (d, *J* = 8.4 Hz, 2H), 3.23 – 3.18 (m, 1H), 2.83 - 2.76 (m, 1H), 1.95 - 1.87 (m, 1H), 1.53 – 1.46 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 201.8, 141.6, 139.0, 133.9, 132.2, 131.5, 131.2, 128.7, 128.7, 128.5, 128.5, 128.4, 127.5, 122.6, 121.6, 95.5, 87.7, 32.8, 30.1, 21.7; HRMS (ESI, m/z): Calc. for $C_{24}H_{18}ClO$ $[M+H]^+$ 357.1041, found 357.1026.



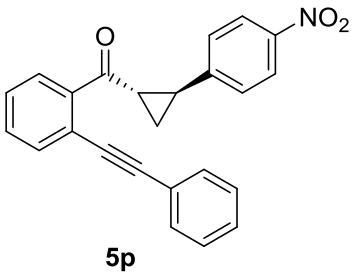
5n

((*1S*,2S)-2-(3-nitrophenyl)cyclopropyl)(2-(phenylethynyl)phenyl)methanone (5n):** Following general procedure-2, Sonogashira coupling of **S2h** with phenylacetylene gave **5n** as a brown solid (76% yield, 0.800g); R_f = 0.45 (9:1 hexanes: EtOAc); m. p. = 103 - 102 ^oC; FT IR (neat): 2211, 1671, 1530, 1350 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.66 (d, *J* = 7.6 Hz, 1H), 7.61 (d, *J* = 7.6 Hz, 1H), 7.45 (t, *J* = 7.4 Hz, 1H), 7.39 (t, *J* = 7.5 Hz, 1H), 7.32 - 7.22 (m, 2H), 7.03 (d, *J* = 8.5 Hz, 2H), 6.72 (d, *J* = 8.5 Hz, 2H), 3.74 (s, 3H), 3.20 - 3.10 (m, 1H), 2.85 – 2.75 (m, 1H), 1.93 – 1.87 (m, 1H), 1.54 – 1.48 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 201.2, 148.4, 142.8, 141.4, 133.9, 132.5, 131.4, 131.3, 129.3, 128.7, 128.6, 128.5, 128.4, 122.5, 121.7, 121.5, 120.5, 95.5, 87.6, 32.9, 29.7, 21.8; HRMS (ESI, *m/z*): Calc. for $C_{24}H_{18}NO_3$ $[M+H]^+$ 368.1282, found 368.1281.



5o

((*1S*,2S)-2-(3-nitrophenyl)cyclopropyl)(2-(p-tolylethynyl)phenyl)methanone (5o):** Following general procedure-2, Sonogashira coupling of **S2h** with *p*-tolylacetylene gave **5o** as an yellow solid (78% yield, 0.853g); R_f = 0.4 (9:1 hexanes: EtOAc); m. p. = 108 - 110 ^oC; FT IR (neat): 2215, 1670, 1530, 1350 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.88 - 7.84 (m, 2H), 7.67 (dd, *J* = 7.8, 1.1 Hz, 1H), 7.60 (dd, *J* = 7.7, 0.9 Hz, 1H), 7.48 (td, *J* = 7.6, 1.4 Hz, 1H), 7.43 - 7.39 (m, 2H), 7.30 - 7.25 (m, 1H), 7.09 (d, *J* = 8.1 Hz, 2H), 7.00 (d, *J* = 7.9 Hz, 2H), 3.36 (ddd, *J* = 8.4, 5.3, 4.1 Hz, 1H), 2.88 (ddd, *J* = 9.0, 6.5, 4.1 Hz, 1H), 2.34 (s, 3H), 1.99 (ddd, *J* = 9.4, 5.3, 4.3 Hz, 1H), 1.56 (ddd, *J* = 8.3, 6.5, 4.3 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 201.5, 148.4, 142.9, 141.4, 139.1, 133.9, 132.5, 131.4, 131.2, 129.3, 129.1, 128.5, 128.5, 121.9, 121.4, 120.6, 119.4, 95.9, 87.0, 33.0, 29.8, 21.9, 21.6; HRMS (APCI, *m/z*): Calc. for $C_{25}H_{20}NO_3$ $[M+H]^+$ 382.1420, found 382.1438.



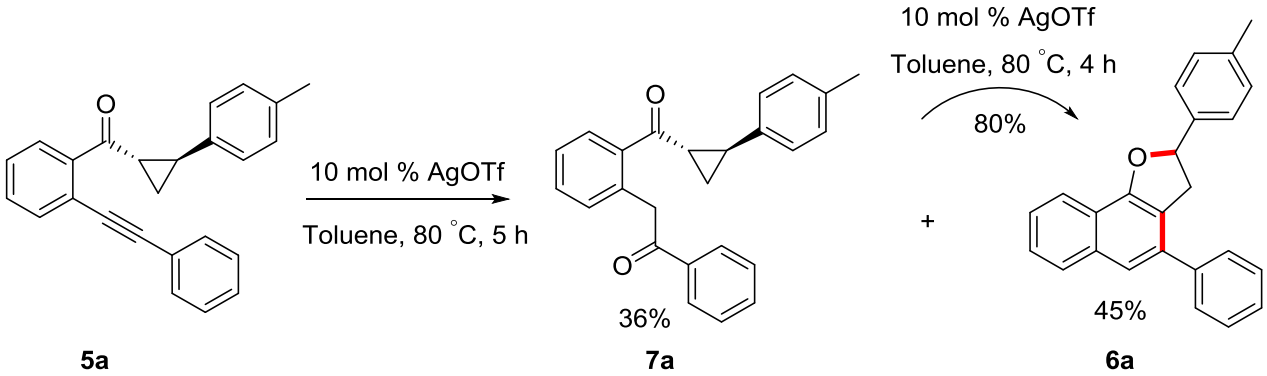
5p

((*1S*,2S)-2-(4-nitrophenyl)cyclopropyl)(2-(phenylethynyl)phenyl)methanone (5p):** Following general procedure-2, Sonogashira coupling of **S2i** with phenylacetylene gave **5p** as a yellow solid (77% yield, 0.811g); R_f = 0.45 (9:1 hexanes:

EtOAc); m. p. = 106 - 108 °C; FT IR (neat): 2215, 1671, 1531, 1349 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.89 (d, *J* = 8.7 Hz, 2H), 7.67 (dd, *J* = 7.7, 1.1 Hz, 1H), 7.61 (dd, *J* = 7.6, 0.7 Hz, 1H), 7.49 (td, *J* = 7.5, 1.4 Hz, 1H), 7.42 (td, *J* = 7.6, 1.2 Hz, 1H), 7.30 – 7.22 (m, 1H), 7.22 – 7.10 (m, 6H), 3.38 - 3.36 (m, 1H), 2.89 - 2.84 (m, 1H), 2.05 - 2.00 (m, 1H), 1.60 - 1.55 (m, 1H): ^{13}C NMR (100 MHz, $CDCl_3$) δ 201.2, 148.5, 146.5, 141.3, 134.0, 131.5, 131.3, 128.8, 128.7, 128.6, 128.3, 126.5, 123.8, 122.4, 121.7, 95.6, 87.5, 33.6, 30.2, 22.2; HRMS (APCI, *m/z*): Calc. for $C_{24}H_{18}NO_3$ $[M+H]^+$ 368.1289, found 368.1281.

3. Synthesis of 2,3-dihydronaphtho[1,2-b]furans 6

Preliminary study on transannulation



1-phenyl-2-(2-((*1S*,2S)-2-(p-tolyl)cyclopropanecarbonyl)phenyl)ethanone (7a):** To a solution of (2-(phenylethynyl)phenyl)cyclopropyl ketone **5a** (0.31 mmol) in dry toluene (1.5 mL) was added AgOTf (0.03 mmol, 10 mol %) and the mixture was stirred under argon at 80 °C. After 5 h, TLC analysis indicated complete consumption of the starting material and formation of two products. Solvent was evaporated under reduced pressure and the crude mixture was purified by flash column chromatography. Elution with ethyl acetate/hexanes (4:96) gave 2,3-dihydronaphtho[1,2-b]furan **6a** (45% yield, 0.047g) as a white solid. Continued elution with ethyl acetate/hexanes (5:95) gave the hydrated product **7a** (36% yield, 0.037g) as viscous liquid.

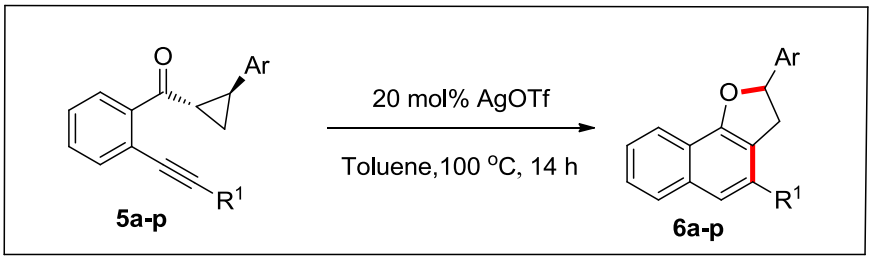
7a: R_f = 0.3 (8:2 hexanes: EtOAc); FT IR (neat): 1680, 1670, 1579, 1336 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.2 Hz, 2H), 7.83 (d, *J* = 7.6 Hz, 1H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.48 - 7.42 (m, 3H), 7.35 (t, *J* = 8.1 Hz, 1H), 7.23 (d, *J* = 7.9 Hz, 1H), 7.10 - 7.03 (m, 4H), 4.62 (ABq, *J* = 17.2 Hz, 2H), 2.75 - 2.70 (m, 1H), 2.56 - 2.51 (m, 1H), 2.31 (s, 3H), 1.80 - 1.75 (m, 1H), 1.48 - 1.44 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 202.1, 197.4, 139.0, 137.5, 137.2, 136.3, 134.3, 133.1, 132.6, 131.6, 129.4, 129.3, 128.7, 128.4, 127.2, 126.3, 44.0, 32.1, 30.5, 21.2, 19.3; HRMS (ESI, *m/z*): Calc. for $C_{29}H_{27}O_5$ $[M+H]^+$ 355.1702, found 355.1693.

Independently, reaction of hydrated product **7a** with 10 mol% AgOTf in toluene at 80 °C for 4 h furnished **6a** (80% yield, 0.030g).

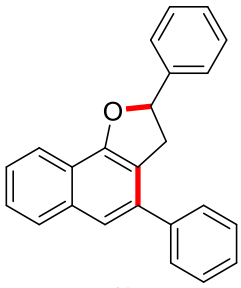
(*R)-4-phenyl-2-(p-tolyl)-2,3-dihydronaphtho[1,2-b]furan (6a):** R_f = 0.5 (9.5:0.5 hexane:EtOAc); m.p. 156 °C; FT IR (neat): 1595, 1461, 1031 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.06 - 8.04 (m, 1H), 7.86 - 7.84 (m, 1H), 7.54 (dd, *J* = 8.2, 1.2 Hz, 2H), 7.46 (s, 1H), 7.45 - 7.43 (m, 2H), 7.42 (t, *J* = 6.2 Hz, 2H), 7.35 (d, *J* = 8.0 Hz, 2H), 7.34 - 7.32 (m, 1H), 7.17 (d, *J* = 7.9 Hz, 2H), 5.97 – 5.92 (m, 1H), 3.85 (dd, *J* = 15.5, 9.6 Hz, 1H), 3.45 (dd, *J* = 15.5, 8.2 Hz, 1H), 2.34 (s, 3H); ^{13}C NMR

(125 MHz, $CDCl_3$) δ 155.6, 140.8, 139.4, 137.9, 137.1, 134.5, 129.5, 128.6, 128.4, 128.1, 127.4, 126.3, 125.9, 125.4, 121.8, 120.0, 119.9, 118.3, 85.0, 39.7, 21.3. HRMS (ESI, *m/z*): Calc. for $C_{25}H_{21}O$ $[M+H]^+$ 337.1590, found 337.1587.

General procedure for transannulation of 5

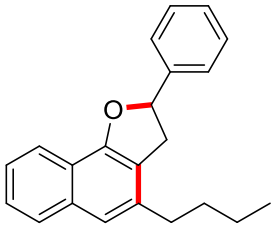


General procedure 3: To a solution of cyclopropyl ketone **5** (0.3 mmol) in toluene (1.5 mL) was added AgOTf (0.06 mmol, 20 mol %) and H_2O (0.6 mmol). The mixture was stirred at 100 °C for 14 h. After completion of the reaction (as indicated by TLC), solvent was evaporated under reduced pressure and the crude material was purified by flash column chromatography (eluent: EtOAc/hexanes, 4:96) to give the desired product **6**.



6b

(*R)-2,4-diphenyl-2,3-dihydronaphtho[1,2-b]furan (6b):** Sticky solid (79% yield, 0.076g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 1593, 1391, 1033 cm^{-1} ; ^1H NMR (400 MHz, $CDCl_3$) δ 8.11 (dd, *J* = 5.4, 4.2 Hz, 1H), 7.98 – 7.85 (m, 1H), 7.62 – 7.55 (m, 2H), 7.54 – 7.44 (m, 7H), 7.44 – 7.32 (m, 4H), 6.11 – 5.94 (m, 1H), 3.93 (dd, *J* = 15.5, 9.7 Hz, 1H), 3.50 (dd, *J* = 15.5, 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 155.5, 142.4, 140.6, 137.1, 134.6, 128.8, 128.6, 128.4, 128.1, 128.1, 127.4, 126.4, 125.9, 125.5, 121.8, 120.1, 119.8, 118.2, 84.9, 39.8; HRMS (ESI, *m/z*): Calc. for $C_{24}H_{19}O$ $[M+H]^+$ 323.1423, found 323.1430.

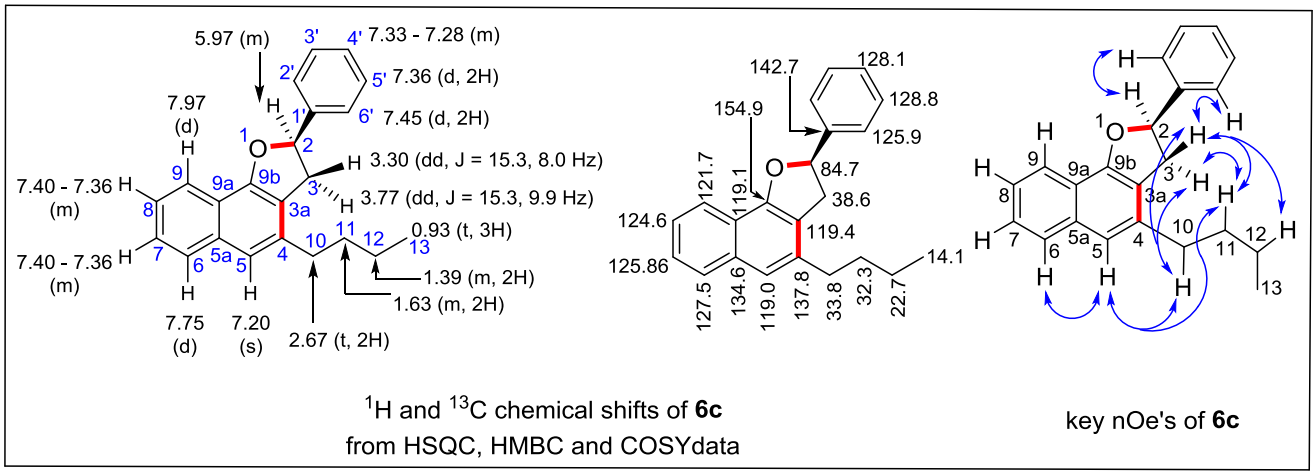


6c

(*R)-4-butyl-2-phenyl-2,3-dihydronaphtho[1,2-b]furan (6c):** Sticky solid (78% yield, 0.070g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 1591, 1358, 1059 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.97 (d, *J* = 7.9 Hz, 1H), 7.75 (d, *J* =

7.8 Hz, 1H), 7.45 (d, *J* = 7.6 Hz, 2H), 7.40 - 7.36 (m, 2H), 7.36 (d, *J* = 7.5 Hz, 2H), 7.33 - 7.28 (m, 1H), 7.20 (s, 1H), 5.97 (m, 1H), 3.77 (dd, *J* = 15.3, 9.9 Hz, 1H), 3.30 (dd, *J* = 15.3, 8.0 Hz, 1H), 2.67 (t, *J* = 7.8 Hz, 2H), 1.63 (m, 2H), 1.39 (m, 2H), 0.93 (t, *J* = 7.3 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 154.9, 142.7, 137.8, 134.6, 128.8, 128.1, 127.5, 125.9, 125.86, 124.6, 121.7, 119.4, 119.1, 119.0, 84.7, 38.6, 33.8, 32.3, 22.7, 14.1; HRMS (ESI, *m/z*): Calc. for $C_{22}H_{23}O$ $[M+H]^+$ 303.1759, found 303.1743.

The structure of **6c** was further confirmed by 2D NMR spectroscopy as follows.

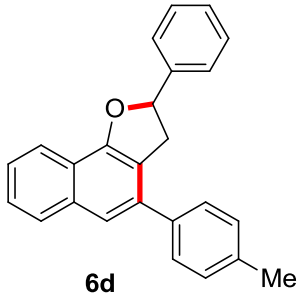


HSQCGP: 7.97 (d, *J* = 7.9 Hz, 1H) / 121.7; 7.75 (d, *J* = 7.8 Hz, 1H) / 127.5; 7.45 (d, *J* = 7.6 Hz, 2H) / 125.9; 7.40 - 7.36 (m, 2H) / 124.6 and 125.86; 7.36 (d, *J* = 7.5 Hz, 2H) / 128.8; 7.33 - 7.28 (m, 1H) / 128.1, 7.20 (s, 1H) / 119.0; 5.97 (m, 1H) / 84.7; 3.77 (dd, *J* = 15.3, 9.9 Hz, 1H) / 38.6; 3.30 (dd, *J* = 15.3, 8.0 Hz, 1H) / 38.6; 2.67 (t, *J* = 7.8 Hz, 2H) / 33.8; 1.63 (m, 2H) / 32.3; 1.39 (m, 2H) / 22.7; 0.93 (t, *J* = 7.3 Hz, 3H) / 14.1.

HMBCGP: 7.97 (d, *J* = 7.9 Hz, 1H) / 125.86, 134.6, 154.9 (weak); 7.75 (d, *J* = 7.8 Hz, 1H) / 119.0, 119.1, 124.6; 7.45 (d, *J* = 7.6 Hz, 2H) / 84.7, 125.9 (other ortho carbon), 128.1; 7.40 - 7.36 (m, 1H) (125.86) / 119.1 (weak), 121.7, 134.6; 7.40 - 7.36 (m, 1H) / 119.1, 127.5, 134.6 (weak); 7.36 (d, *J* = 7.5 Hz, 2H) / 128.8, 142.7; 7.33 - 7.28 (m, 1H) / 125.9; 7.20 (s, 1H) / 33.8, 119.1, 127.5, 134.6, 154.9 (weak); 5.97 (m, 1H) / 125.9; 3.77 (dd, *J* = 15.3, 9.9 Hz, 1H) / 84.7 (weak), 119.4, 142.7, 154.9; 3.30 (dd, *J* = 15.3, 8.0 Hz, 1H) / 84.7, 119.0, 142.7, 154.9; 2.67 (t, *J* = 7.8 Hz, 2H) / 22.7, 32.3, 119.0, 137.8; 1.63 (m, 2H) / 14.1, 22.7, 33.8, 137.8; 1.39 (m, 2H) / 14.1, 33.8; 0.93 (t, *J* = 7.3 Hz, 3H) / 22. 7, 32.3;

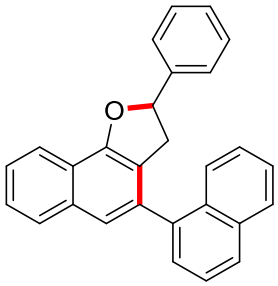
COSYPHPR: 7.97 (d) / 7.40 - 7.34 (m); 7.75 (d) / 7.42 - 7.36 (m); 7.45 (d) / 7.36 (d); 7.42 - 7.36 (m) / 7.75 (d); 7.40 -7.34 (m) / 7.97 (d); 7.36 (m) / 7.45 (d); 7.33 - 7.28 (m) / 7.36 (d); 7.20 (s, 1H) / none; 5.97 (m) / 3.77 (dd), 3.30 (dd); 3.77 (dd / 5.97(m), 3.30 (dd); 3.30 (dd) / 5.97 (m), 3.77 (dd); 2.67 (t) / 1.63 (m); 1.63 (m) / 2.66 (m), 1.39 (m); 1.39 (m) / 1.63 (m), 0.93 (m); 0.93 (t) / 1.39 (m)

NOESYPHPR (key nOe's: 7.75 (d) / 7.20 (s); 7.45 (d) / 5.97, 3.77 (dd), 3.30 (dd); 7.20 (s) / 2.67 (t), 1.63 (m), 1.39 (m); 5.97 (m) / 7.45 (d); 3.77 (dd) / 7.45 (d), 2.67 (t), 1.63 (m), 1.39 (m); 3.30 (dd) / 7.45, 2.67 (t), 1.63 (m), 1.39 (m).



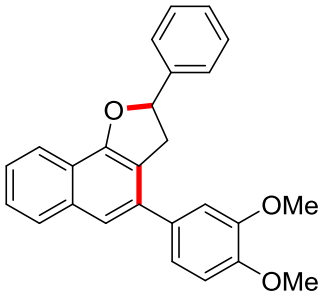
6d

(*R)-2-phenyl-4-(p-tolyl)-2,3-dihydronaphtho[1,2-b]furan (6d):** White solid (82% yield, 0.083g); R_f = 0.6 (9:1 hexanes: EtOAc); m. p. = 111 - 113 ^oC; FT IR (neat): 1594, 1390, 1033 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.98 - 7.95 (m, 1H), 7.76 - 7.74 (m, 1H), 7.40 - 7.32 (m, 7H), 7.27 (t, *J* = 7.3 Hz, 2H), 7.23 - 7.19 (m, 1H), 7.15 (d, *J* = 8.1 Hz, 2H), 5.88 (t, *J* = 8.9 Hz, 1H), 3.78 (dd, *J* = 15.5, 9.7 Hz, 1H), 3.36 (dd, *J* = 15.5, 8.1 Hz, 1H), 2.30 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 155.5, 142.4, 137.8, 137.2, 137.1, 134.6, 129.3, 128.8, 128.3, 128.1, 128.0, 126.3, 125.8, 125.3, 121.8, 119.9, 119.7, 118.2, 84.9, 39.8, 21.3; HRMS (ESI, *m/z*): Calc. for $C_{25}H_{20}O$ $[M]^+$ 336.1504 336.1509.



6e

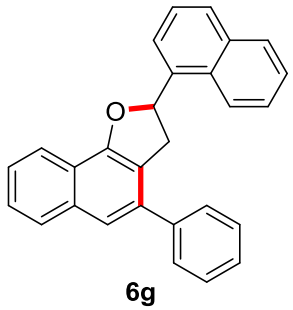
(*R)-4-(naphthalen-1-yl)-2-phenyl-2,3-dihydronaphtho[1,2-b]furan (6e):** Sticky solid (67% yield, 1:1 rotamers, 0.075g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 1593, 1377, 1072 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.12 (d, *J* = 7.6 Hz, 1H), 7.93 – 7.73 (m, 3.5H), 7.60 – 7.35 (m, 9H), 7.35 – 7.22 (m, 3.5H), 6.03 – 5.83 (m, 1H), 3.52 – 3.42 (m, 1H), 3.12 – 3.01 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 155.0, 154.9, 142.4, 142.3, 138.6, 136.0, 136.0, 134.4, 133.8, 131.6, 128.7, 128.5, 128.4, 128.1, 128.0, 128.0, 128.0, 126.8, 126.8, 126.3, 126.3, 126.2, 126.2, 126.0, 125.9, 125.7, 125.5, 125.5, 121.8, 121.5, 120.1, 120.1, 119.9, 84.9, 84.9, 77.4, 77.2, 76.9, 39.3, 39.0; HRMS (APCI, *m/z*): Calc. for $C_{28}H_{21}O$ $[M+H]^+$ 373.1570, found 373.1587.



6f

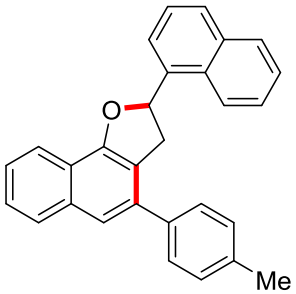
(*R)-4-(3,4-dimethoxyphenyl)-2-phenyl-2,3-dihydronaphtho[1,2-b]furan (6f):** White solid (69% yield, 0.079g); R_f = 0.5 (8:2 hexanes: EtOAc); m. p. = 152 - 154 ^oC; FT IR (neat): 1596, 1388, 1028 cm^{-1}; 1H NMR (500 MHz, $CDCl_3$) δ 8.14 – 8.06 (m, 1H), 7.93 – 7.85 (m, 1H), 7.54 – 7.46 (m, 5H), 7.41 (dd, J = 8.1, 6.8 Hz, 2H), 7.35 (ddd, J = 7.3, 3.7, 1.2 Hz, 1H),

7.12 (dt, J = 6.3, 2.0 Hz, 2H), 6.97 (d, J = 8.1 Hz, 1H), 6.08 – 5.98 (m, 1H), 3.963 (s, 3H), 3.959 (s, 3H), 3.93 (dd, J = 15.4, 10.0 Hz, 1H), 3.49 (dd, J = 15.4, 8.1 Hz, 1H); 13C NMR (125 MHz, $CDCl_3$) δ 155.5, 149.0, 148.61, 142.3, 136.9, 134.5, 133.5, 128.8, 128.1, 127.9, 126.4, 125.8, 125.3, 121.8, 120.8, 119.6, 119.6, 118.1, 111.8, 111.3, 84.9, 56.1, 56.1, 39.9; **HRMS** (ESI, *m/z*): Calc. for $C_{26}H_{23}O_3$ $[M+H]^+$ 383.1654, found 383.1642.



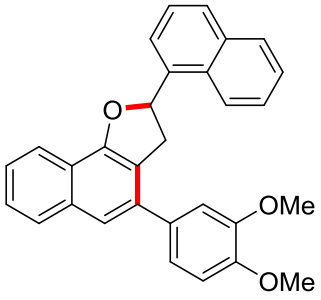
6g

(*R)-2-(naphthalen-1-yl)-4-phenyl-2,3-dihydronaphtho[1,2-b]furan (6g):** White solid (72% yield, 0.080g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); m. p. = 103 - 105 ^oC; FT IR (neat): 1599, 1465, 1034 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.19 – 8.14 (m, 1H), 7.99-7.94 (m, 1H), 7.93 – 7.86 (m, 2H), 7.81 (d, *J* = 8.2 Hz, 1H), 7.74 (d, *J* = 7.2 Hz, 1H), 7.55-7.48 (m, 7H), 7.46 – 7.43 (m, 1H), 7.40 (t, *J* = 7.5 Hz, 2H), 7.34 – 7.30 (m, 1H), 6.68 (dd, *J* = 9.8, 8.0 Hz, 1H),4.12 (dd, *J* = 15.5, 10.0 Hz, 1H), 3.51 (dd, *J* = 15.5, 7.8 Hz, 1H); ^{13}C NMR (126 MHz, $CDCl_3$) δ 155.5, 140.7, 137.8, 137.3, 134.6, 134.1, 130.2, 129.2, 128.6, 128.4, 128.2, 127.4, 126.44, 126.42, 125.8, 125.7, 125.6, 123.3, 122.8, 121.8, 120.2, 119.9, 118.3, 110.4, 82.9, 39.4, HRMS (APCI, *m/z*): Calc. for $C_{28}H_{21}O$ $[M+H]^+$ 373.1582, found 373.1587.



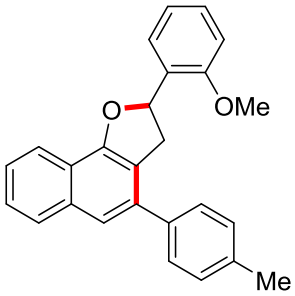
6h

(*R)-2-(naphthalen-1-yl)-4-(p-tolyl)-2,3-dihydronaphtho[1,2-b]furan (6h):** Sticky solid (62% yield, 0.072g); R_f = 0.45 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 1595, 1377, 1084 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 8.19 – 8.12 (m, 1H), 8.00 – 7.93 (m, 1H), 7.94 – 7.85 (m, 2H), 7.80 (d, *J* = 8.2 Hz, 1H), 7.74 (d, *J*= 7.1 Hz, 1H), 7.55 – 7.47 (m, 3H), 7.49 (d, *J* = 9.5 Hz, 2H), 7.43 – 7.42 (m, 1H), 7.40 (d, *J* = 8.1 Hz, 1H), 7.20 (d, *J* = 7.9 Hz, 2H), 6.67 (dd, *J* = 9.5, 8.2 Hz, 1H), 4.11 (dd, *J* = 15.5, 10.0 Hz, 1H), 3.50 (dd, *J* = 15.5, 7.8 Hz, 1H), 2.37 (s, 2H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.3, 137.7, 137.6, 137.1, 137.1, 134.5, 134.0, 129.8, 129.2, 129.1, 128.3, 128.2, 128.0, 126.3, 126.2, 125.7, 125.5, 125.3, 123.2, 122.6, 121.7, 119.9, 119.7, 118.2, 82.7, 39.4, 21.1; HRMS (ESI, *m/z*): Calc. for $C_{29}H_{23}O$ $[M+H]^+$ 387.1742, found 387.1743.



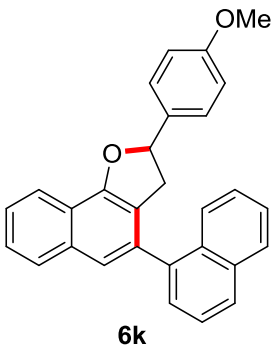
6i

(*R)-4-(3,4-dimethoxyphenyl)-2-(naphthalen-1-yl)-2,3-dihydronaphtho[1,2-b]furan (6i):** White solid (83% yield, 0.107g); R_f = 0.5 (7:3 hexanes: EtOAc); m. p. = 107 - 109 ^oC; FT IR (neat): 1583, 1458, 1027 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.18 – 8.13 (m, 1H), 7.99 – 7.95 (m, 1H), 7.93 – 7.87 (m, 2H), 7.81 (d, *J* = 8.2 Hz, 1H), 7.75 (d, *J* = 7.1 Hz, 1H), 7.55 – 7.49 (m, 6H), 7.07 – 7.03 (m, 2H), 6.89 (d, *J* = 8.5 Hz, 1H), 6.67 (dd, *J* = 9.6, 8.2 Hz, 1H), 4.11 (dd, *J* = 15.4, 10.0 Hz, 1H), 3.89 (s, 3H), 3.88 (s, 3H), 3.50 (dd, *J* = 15.4, 7.9 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 155.5, 149.1, 148.7, 137.8, 137.2, 134.6, 134.2, 134.1, 133.5, 130.0, 129.2, 128.5, 128.1, 126.5, 126.4, 125.9, 125.7, 125.5, 123.3, 122.8, 121.8, 120.8, 119.8, 118.3, 112.0, 111.4, 82.9, 56.2, 39.5; HRMS (ESI, *m/z*): Calc. for $C_{30}H_{25}O_3$ $[M+H]^+$ 433.1793, found 433.1798.



6j

(*R)-2-(2-methoxyphenyl)-4-(p-tolyl)-2,3-dihydronaphtho[1,2-b]furan (6j):** White solid (87% yield, 0.095g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); m. p. = 110 - 112 ^oC; FT-IR (neat): 1600, 1463, 1029 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 8.13 – 8.08 (m, 1H), 7.87 – 7.82 (m, 1H), 7.51 (dd, *J* = 7.6, 1.1 Hz, 1H), 7.48 – 7.41 (m, 5H), 7.28 – 7.21 (m, 3H), 6.92 (t, *J* = 7.5, 1H), 6.89 (d, *J* = 8.2 Hz, 1H), 6.27 (dd, *J* = 9.7, 7.5 Hz, 1H), 3.96 (dd, *J* = 15.6, 9.8 Hz, 1H), 3.84 (s, 3H), 3.26 (dd, *J* = 15.6, 7.4 Hz, 1H), 2.39 (s, 3H); ^{13}C NMR (126 MHz, $CDCl_3$) δ 155.9, 155.5, 138.0, 137.2, 137.1, 134.4, 131.1, 129.3, 128.6, 128.3, 128.1, 126.1, 125.7, 125.2, 121.8, 120.7, 119.7, 118.6, 110.3, 80.2, 55.5, 38.8, 21.3; HRMS (ESI, *m/z*): Calc. for $C_{26}H_{23}O_2$ $[M+H]^+$ 367.1614, found 367.1693.



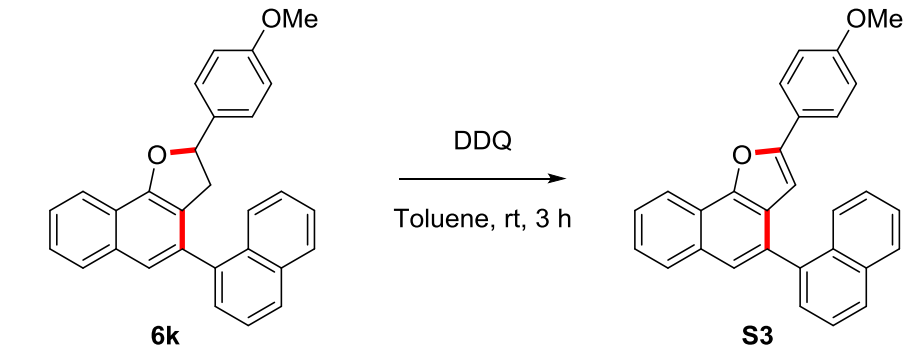
6k

(*R)-2-(4-methoxyphenyl)-4-(naphthalen-1-yl)-2,3-dihydronaphtho[1,2-b]furan (6k):** Sticky solid (62% yield, 1:1 rotamers, 0.074g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); FT IR (neat): 1599, 1260, 1031 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ

8.14 – 8.08 (m, 1H), 7.91 – 7.76 (m, 3H), 7.62 – 7.29 (Series of m, 10H), 6.87 - 6.83 (m, 2H), 5.93 – 5.86 (m, 1H), 3.77 (s, 1.5H), 3.76 (s, 1.5H), 3.46 – 3.38 (m, 1H), 3.11 - 3.02 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 159.5, 154.9, 154.9, 138.6, 136.0, 136.0, 134.4, 134.3, 133.8, 133.8, 131.7, 128.5, 128.4, 128.1, 128.0, 127.3, 126.8, 126.8, 126.3, 126.3, 126.2, 126.2, 125.97, 125.94, 125.5, 121.8, 121.4, 120.3, 120.3, 119.9, 114.1, 84.9, 84.88, 77.5, 77.2, 76.8, 55.4, 39.1, 38.8; HRMS (ESI, *m/z*): Calc. for $C_{29}H_{23}O_2$ $[M+H]^+$ 403.1701, found 403.1693.

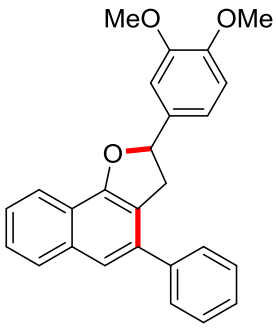
DDQ oxidation of 6k:

Upon aromatization of 1:1 rotameric mixture of **6k** with DDQ, naphthofuran **S3** was obtained in high yield.



6k (1:1 diastereomeric rotamers) **S3** Single product

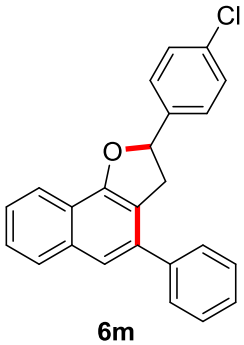
2-(4-methoxyphenyl)-4-(naphthalen-1-yl)naphtho[1,2-b]furan (S3): To a solution of **6k** (0.12 mmol) in toulene (1.5mL), DDQ was added (0.19 mmol) and stirred at room temperature. After 3 h, solvent was evoparated under vaccum and the crude reaction mixture was purified by a silca gel column using 2% EtOAc/Hexanes as the eluent to furnish naphthofuran **S3** as a white solid (98% yield, 0.047g). R_f = 0.55 (9.5:0.5 Hexanes: EtOAC); m. p. = 132 - 134 °C; FT.IR (neat): 1614, 1515, 1249, 1044 cm^{-1}; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.47 (d, *J* = 8.2 Hz, 1H), 8.02 - 7.93 (m 3H), 7.85 (d, *J* = 8.5 Hz, 1H), 7.79 (d, *J* = 8.8 Hz, 2H), 7.75 (s, 1H), 7.67 - 7.60 (m, 3H), 7.53 (t, *J* = 7.5 Hz, 2H), 7.40 (dd, *J* = 11.3, 4.0 Hz, 1H), 6.95 (d, *J* = 8.8 Hz, 2H), 6.65 (s, 1H), 3.85 (s, 3H); 13C NMR (100 MHz, $CDCl_3$) δ 159.9, 155.7, 149.8, 138.1, 134.0, 132.5, 132.0, 131.5, 128.7, 128.4, 128.2, 127.6, 126.6, 126.5, 126.3, 126.3, 126.1, 125.6, 125.3, 124.4, 123.7, 120.8, 120.1, 114.4, 101.1, 55.5; **HRMS** (ESI, *m/z*): Calc. for $C_{29}H_{21}O_2$ $[M+H]^+$ 401.1526, found 401.1536.



6l

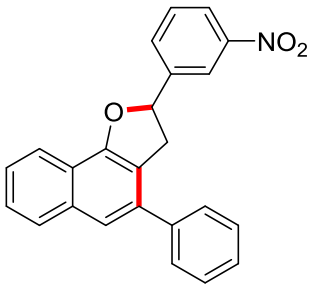
(*R)-2-(3,4-dimethoxyphenyl)-4-phenyl-2,3-dihydronaphtho[1,2-b]furan (6l):** Following general procedure-3, **5l** furnished **6l** as a sticky solid (85% yield, 0.097g); R_f = 0.5 (8:2 hexanes: EtOAc); FT IR (neat): 1611, 1515, 1266, 1032 cm^-

[1]; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.09 (d, *J* = 7.0 Hz, 1H), 7.89 (d, *J* = 8.1 Hz, 1H), 7.59 (d, *J* = 7.7 Hz, 2H), 7.52 - 7.46 (m, 5H), 7.40 (t, *J* = 7.3 Hz, 1H), 7.07 -7.03 (m, 2H), 6.90 (d, *J* = 8.0 Hz, 1H), 5.96 (t, *J* = 9.1 Hz, 1H), 3.91 (s, 3H), 3.90 (s, 3H), 3.86 (dd, *J* = 15.9, 9.8 Hz, 1H), 3.52 (dd, *J* = 15.4, 8.6 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 155.5, 149.4, 149.1, 140.7, 137.1, 134.6, 134.5, 128.7, 128.4, 128.1, 127.5, 126.4, 125.5, 121.8, 120.1, 119.8, 118.6, 118.5, 111.3, 109.2, 85.3, 56.1, 56.1, 39.7; **HRMS** (ESI, *m/z*): Calc. for $C_{26}H_{23}O_3$ $[M+H]^+$ 383.1623, found 383.1642.



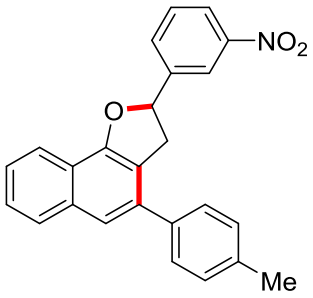
6m

(*R)-2-(4-chlorophenyl)-4-phenyl-2,3-dihydronaphtho[1,2-b]furan (6m):** Following general procedure-3, **5m** furnished **6m** as a white solid (73% yield, 0.078g); R_f = 0.5 (9.5:0.5 hexanes: EtOAc); m. p. = 79 - 81 ^oC; FT IR: 1594, 1520, 1346 cm^{-1}; **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.09 – 8.02 (m, 1H), 7.90 – 7.83 (m, 1H), 7.56 – 7.51 (m, 2H), 7.50 – 7.30 (series of m, 10H), 5.95 (dd, *J* = 9.2, 8.4 Hz, 1H), 3.88 (dd, *J* = 15.5, 9.7 Hz, 1H), 3.40 (dd, *J* = 15.5, 8.0 Hz, 1H); **^{13}C NMR** (100 MHz, $CDCl_3$) δ 155.3, 140.9, 140.6, 137.1, 134.6, 133.8, 128.9, 128.7, 128.4, 128.1, 127.5, 127.2, 126.4, 125.6, 121.7, 120.3, 119.7, 117.9, 84.1, 39.7; **HRMS** (APCI *m/z*): Calc. for $C_{24}H_{18}ClO$ $[M+H]^+$ 357.1031, found 357.1041.



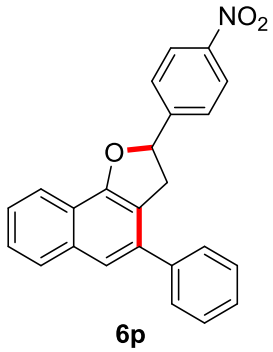
6n

(*R)-2-(3-nitrophenyl)-4-phenyl-2,3-dihydronaphtho[1,2-b]furan (6n):** Following general procedure-3, **5n** furnished **6n** as a sticky solid (93% yield, 0.102g); R_f = 0.5 (9:1 hexanes: EtOAc); FT IR (neat): 1593, 1531, 1347 cm^{-1}; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.34 (s, 1H), 8.17 (dd, *J* = 8.2, 1.2 Hz, 1H), 8.07 (dd, *J* = 5.9, 3.6 Hz, 1H), 7.92 – 7.84 (m, 1H), 7.81 (d, *J* = 7.7 Hz, 1H), 7.58 – 7.41 (m, 8H), 7.37 (t, *J* = 7.3 Hz, 1H), 6.12 – 6.06 (m, 1H), 4.00 (dd, *J* = 15.5, 9.8 Hz, 1H), 3.43 (dd, *J* = 15.5, 7.9 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 155.1, 148.7, 144.6, 140.5, 137.0, 134.7, 131.8, 129.9, 128.6, 128.4, 128.2, 127.6, 126.6, 125.8, 123.1, 121.6, 121.0, 120.8, 119.8, 117.5, 83.4, 39.7; **HRMS** (APCI, *m/z*): Calc. for $C_{24}H_{18}NO_3$ $[M+H]^+$ 368.1266, found 368.1281.



6o

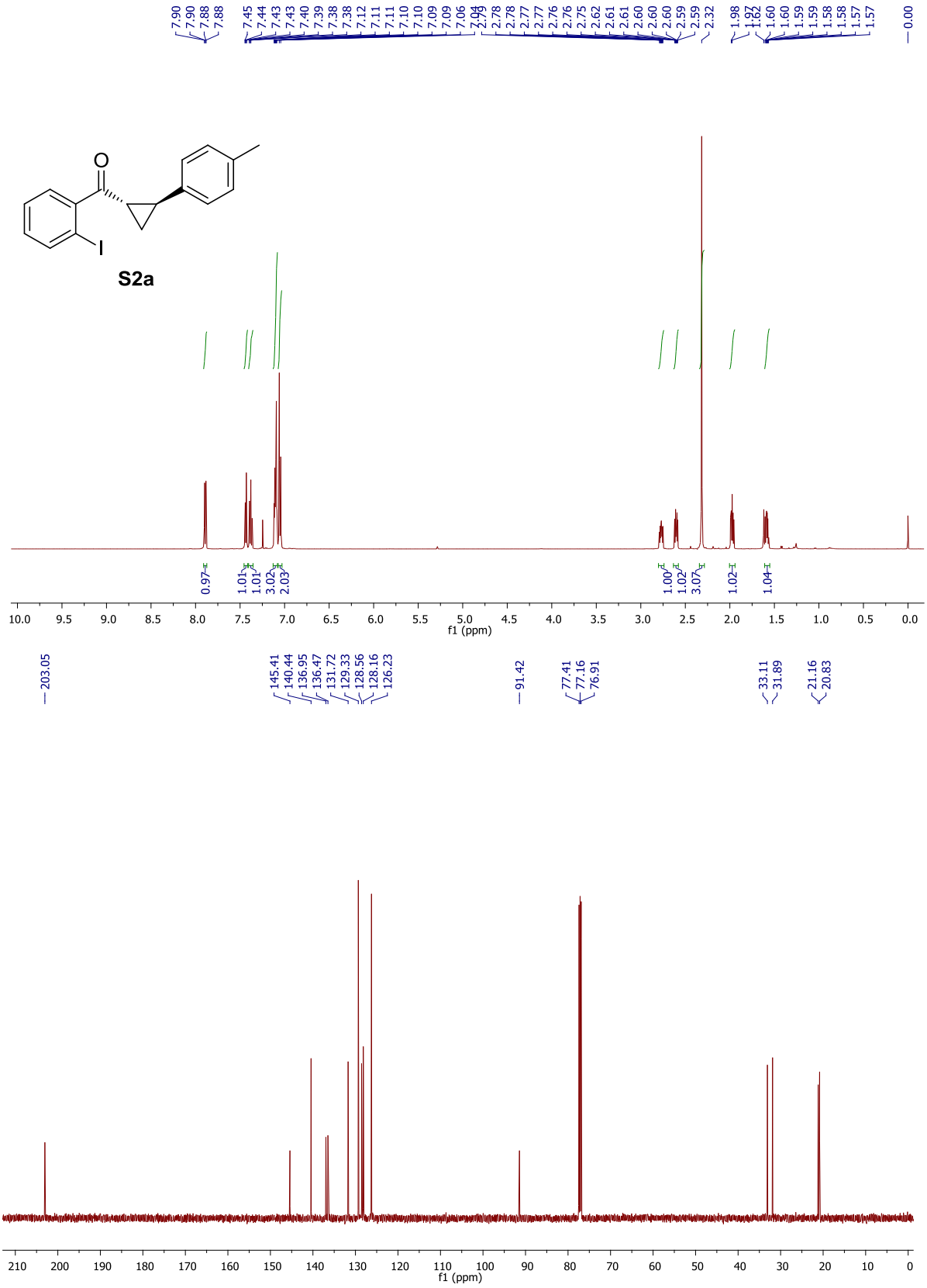
(*R)-2-(3-nitrophenyl)-4-(p-tolyl)-2,3-dihydronaphtho[1,2-b]furan (6o):** Following general procedure-3, **5o** furnished **6o** as a white solid (75% yield, 0.085g); R_f = 0.5 (9:1 hexanes: EtOAc); m. p. = 110 – 112 ^{o}C; FT IR (neat): 1531, 1348, 1080 cm^{-1}; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.36 (s, 1H), 8.20 (dd, *J* = 8.2, 1.3 Hz, 1H), 8.10 (dd, *J* = 6.1, 3.4 Hz, 1H), 7.90 (dt, *J* = 6.8, 3.5 Hz, 1H), 7.83 (d, *J* = 7.7 Hz, 1H), 7.57 (t, *J* = 8.0 Hz, 1H), 7.54 – 7.50 (m, 3H), 7.46 (d, *J* = 8.0 Hz, 2H), 7.29 (d, *J* = 7.9 Hz, 2H), 6.15 – 6.05 (m, 1H), 4.02 (dd, *J* = 15.4, 9.8 Hz, 1H), 3.46 (dd, *J* = 15.4, 7.8 Hz, 1H), 2.44 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 155.0, 148.6, 144.6, 137.5, 137.4, 136.9, 134.6, 131.8, 129.9, 129.4, 128.2, 128.1, 126.6, 125.7, 123.0, 121.5, 120.9, 120.5, 119.6, 117.5, 83.3, 39.7, 21.3; **HRMS** (APCI, *m/z*): Calc. for $C_{25}H_{20}NO_3$ $[M+H]^+$ 382.1435, found 382.1438.



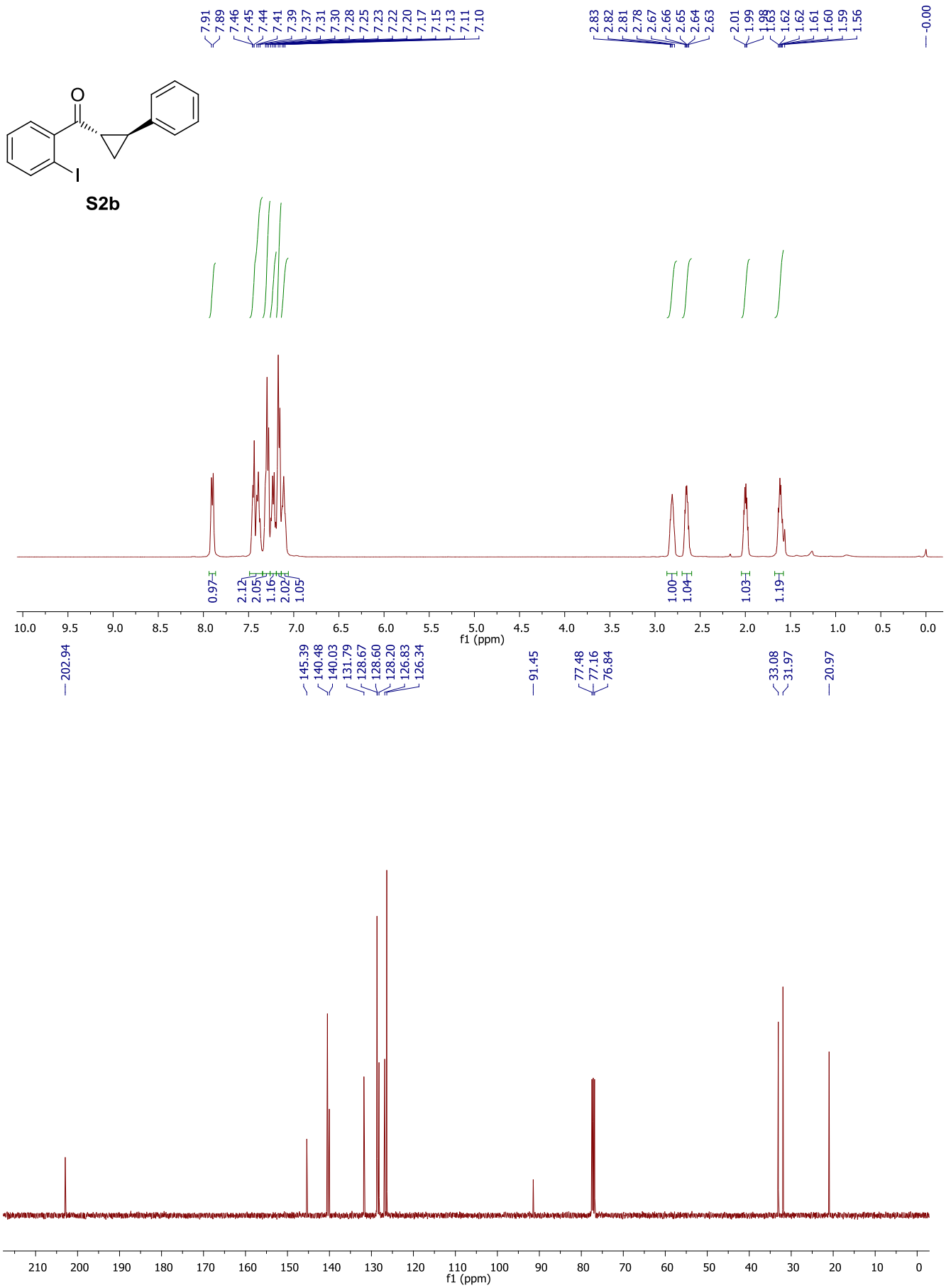
6p

(*R)-2-(4-nitrophenyl)-4-phenyl-2,3-dihydronaphtho[1,2-b]furan (6p):** Following general procedure-3, **12o** furnished **13o** as a white solid (80% yield, 0.088g); R_f = 0.5 (9:1 hexanes: EtOAc); m. p. = 138 – 139 ^{o}C; FT IR (neat): 1594, 1520, 1346 cm^{-1}; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.21 (d, *J*= 8.7 Hz, 2H), 8.10 – 8.02 (m, 1H), 7.90 – 7.85 (m, 1H), 7.60 (d, *J* = 8.7 Hz, 2H), 7.53 – 7.47 (m, 5H), 7.44 (t, *J* = 7.6 Hz, 2H), 7.38 -7.34 (m, 1H), 6.07 (dd, *J* = 9.7, 7.8 Hz, 1H), 3.98 (dd, *J* = 15.4, 9.9 Hz, 1H), 3.38 (dd, *J* = 15.4, 7.6 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 155.0, 149.7, 147.6, 140.4, 137.0, 134.6, 128.7, 128.3, 128.2, 127.6, 126.6, 126.4, 125.8, 124.1, 121.5, 120.7, 119.7, 117.4, 83.4, 39.6; **HRMS** (APCI, *m/z*): Calc. for $C_{24}H_{16}NO_3$ $[M-H]^-$ 366.1230, found 366.1125.

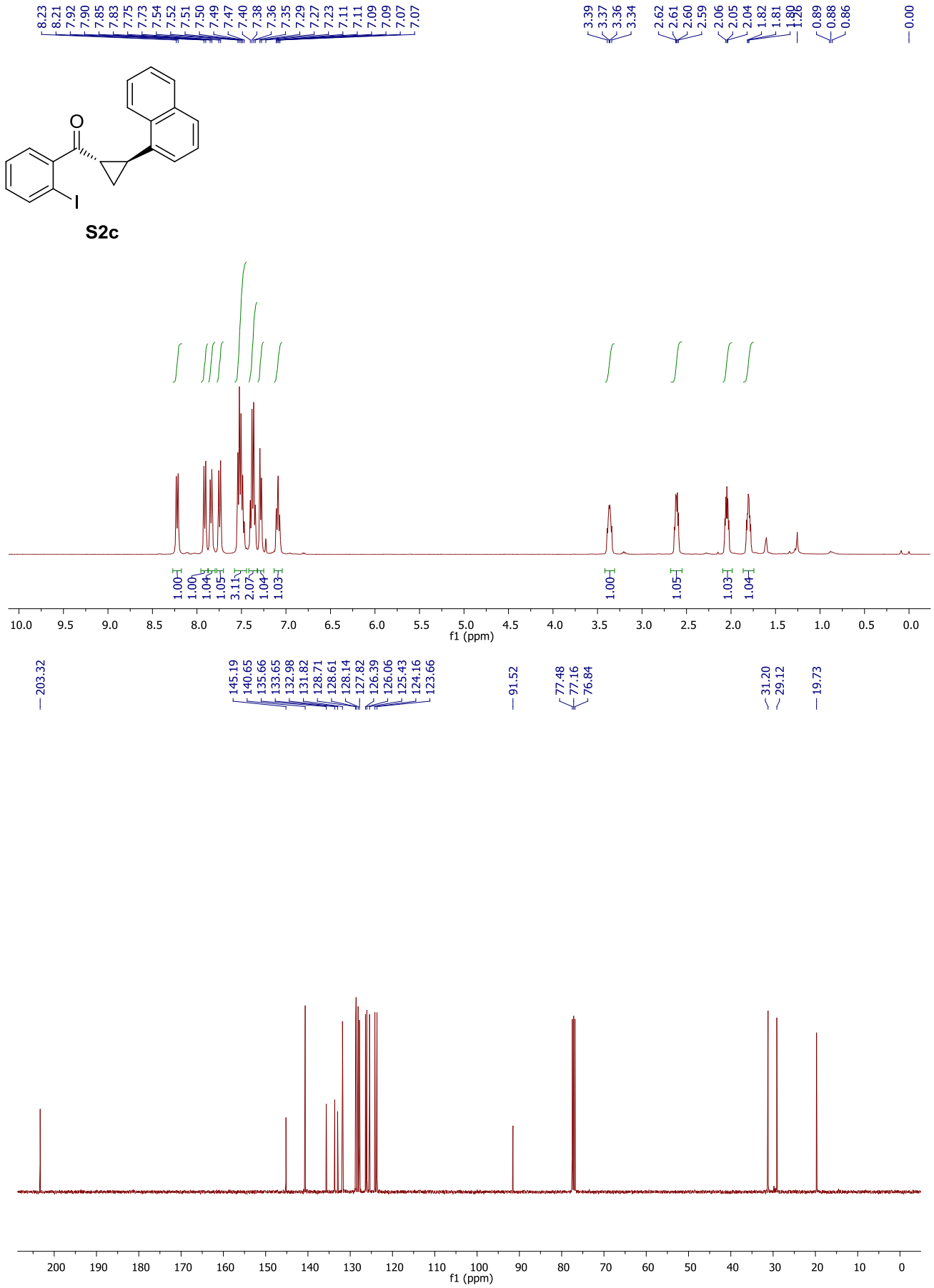
4. NMR Spectra



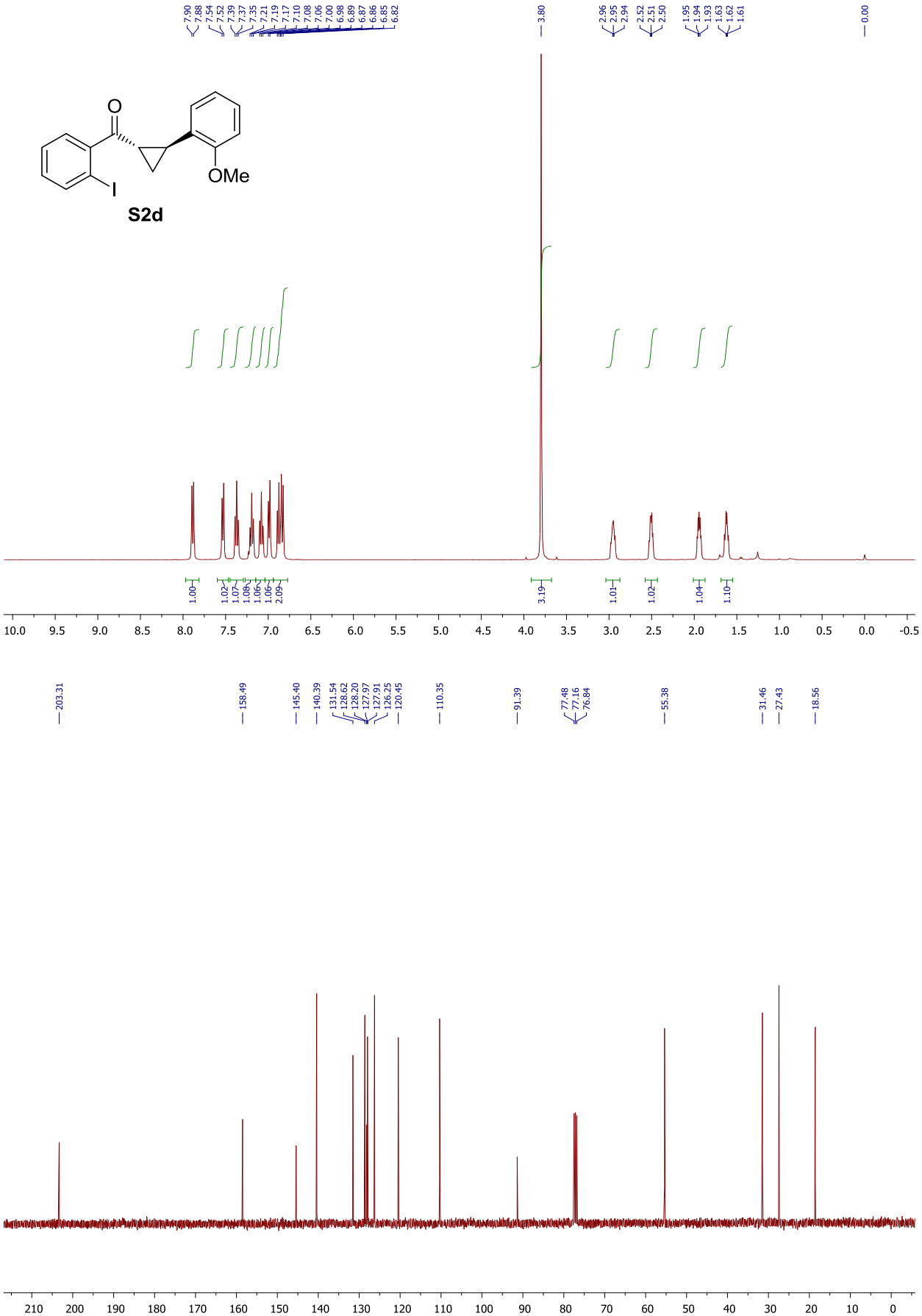
^{1}H and ^{13}C NMR spectra of **S2a**



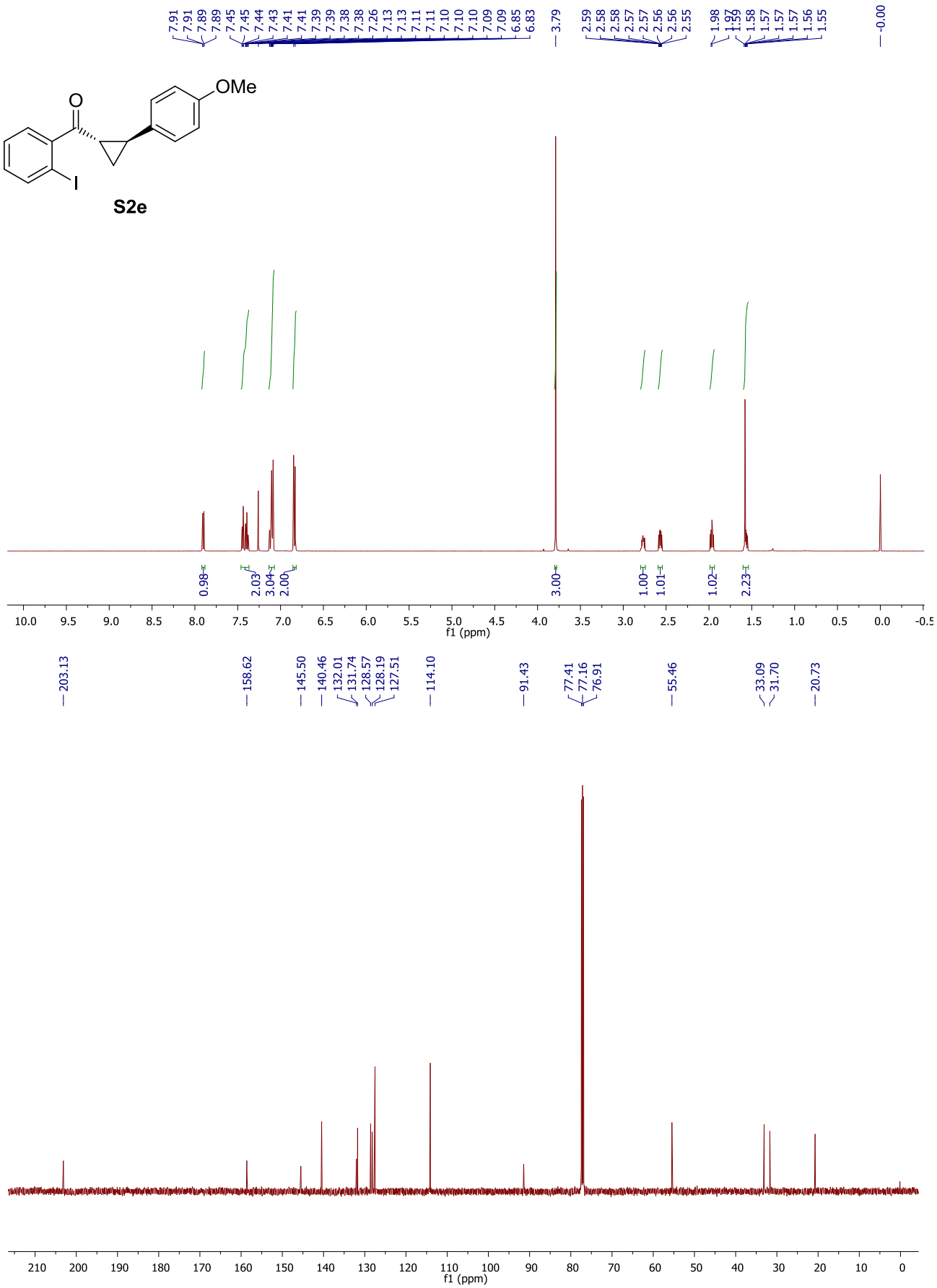
^{1}H and ^{13}C NMR spectra of **S2b**



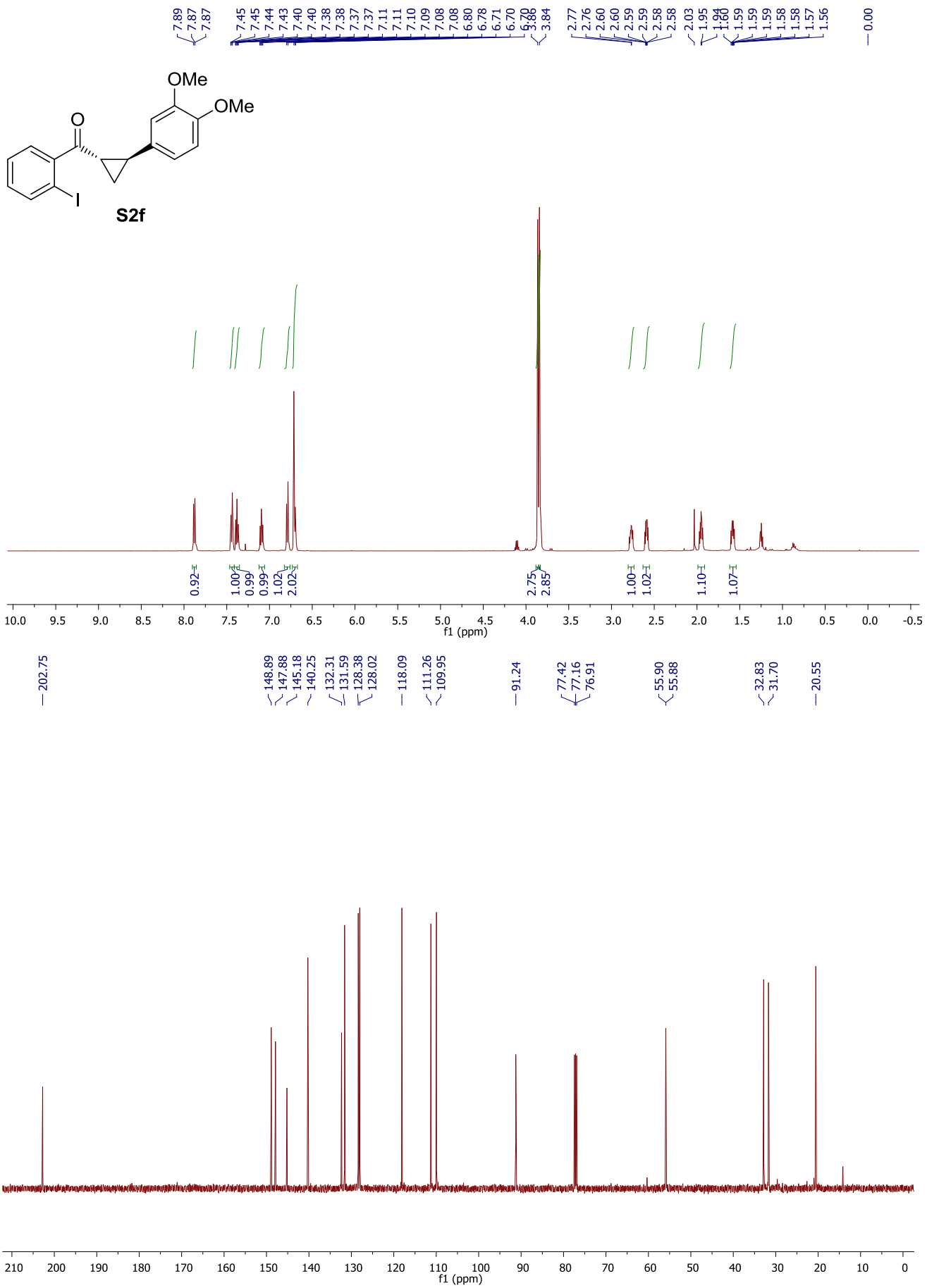
^{1}H and ^{13}C NMR spectra of **S2c**



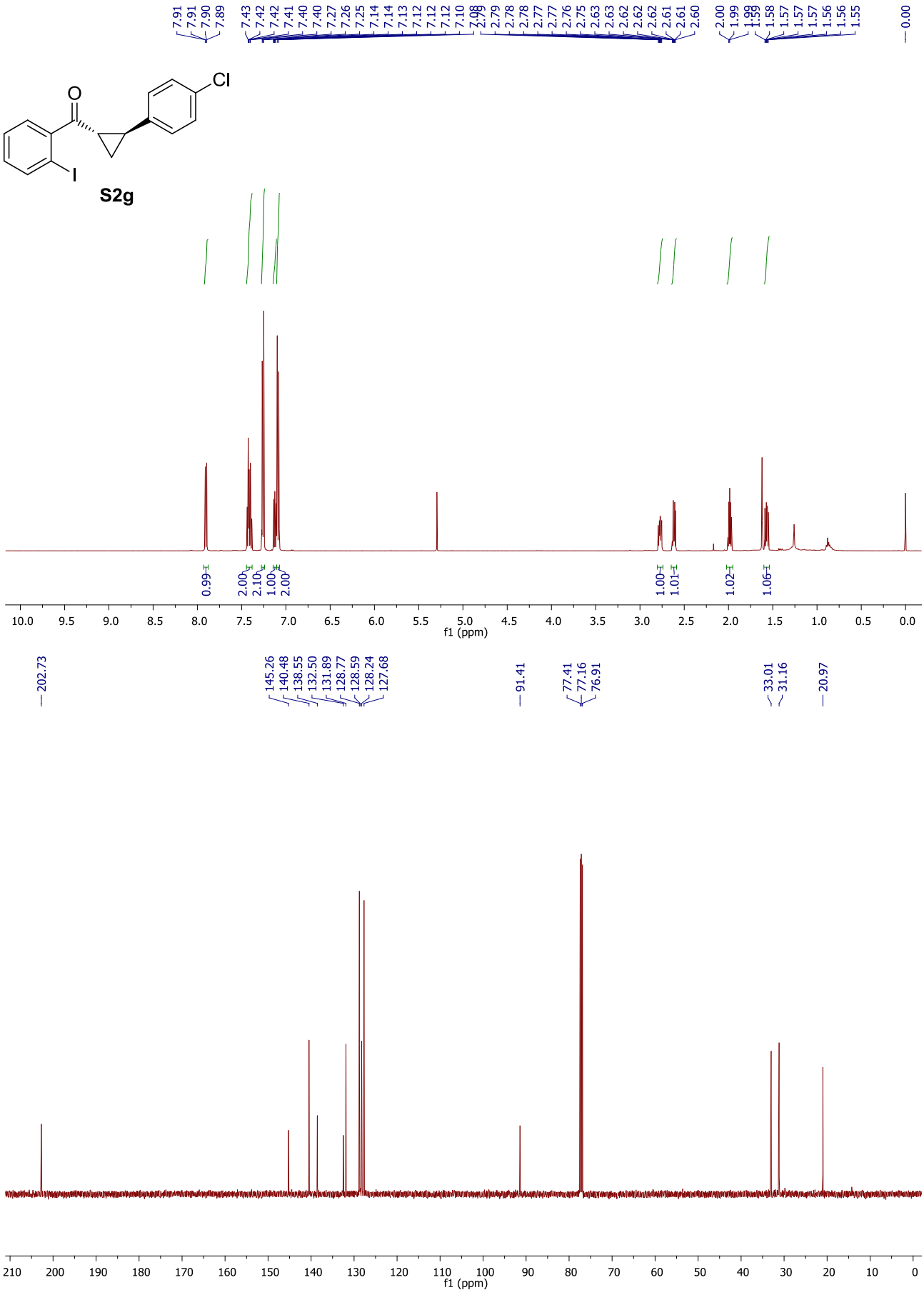
^{1}H and ^{13}C NMR spectra of **S2d**



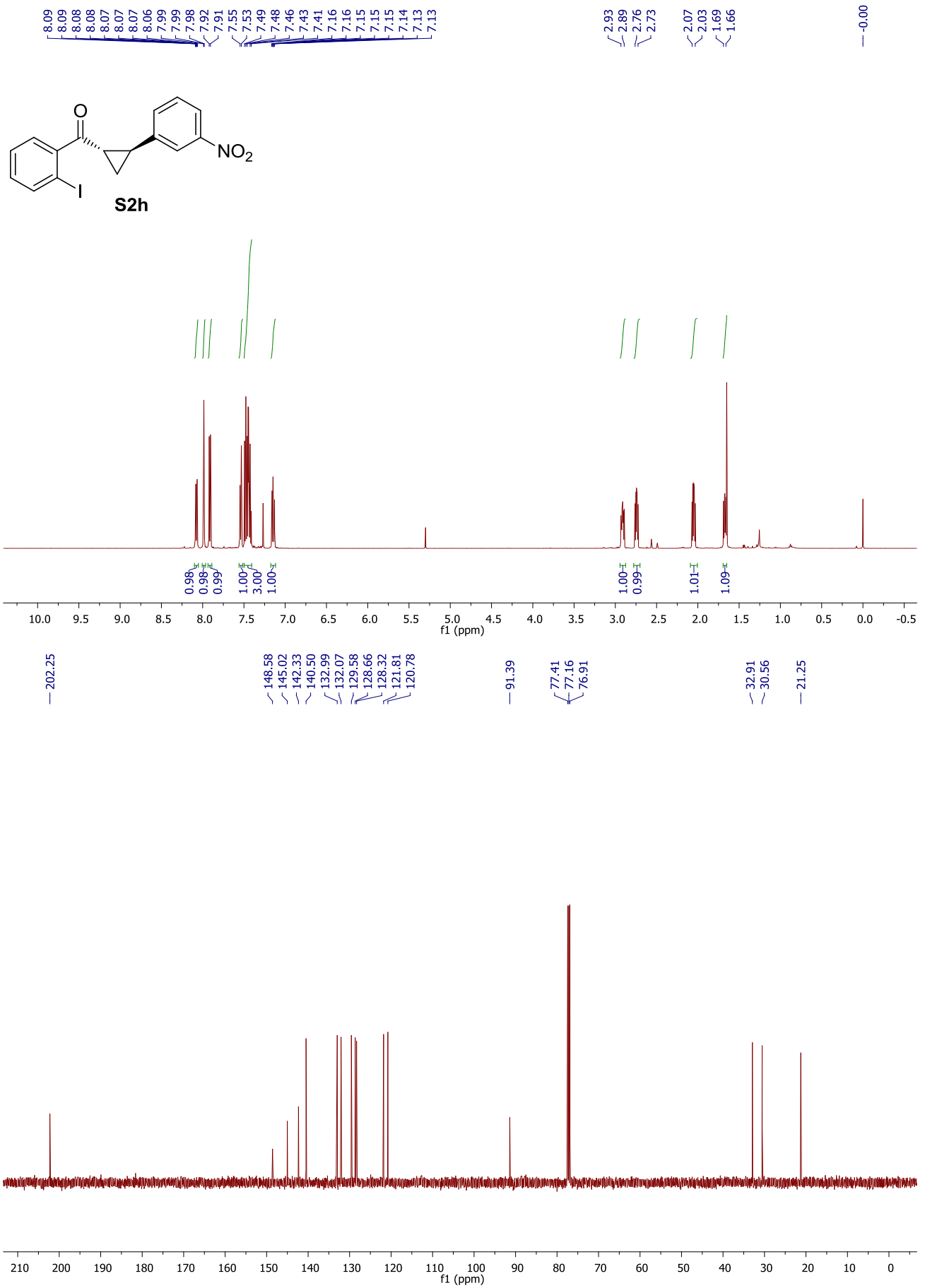
^{1}H and ^{13}C NMR spectra of **S2e**



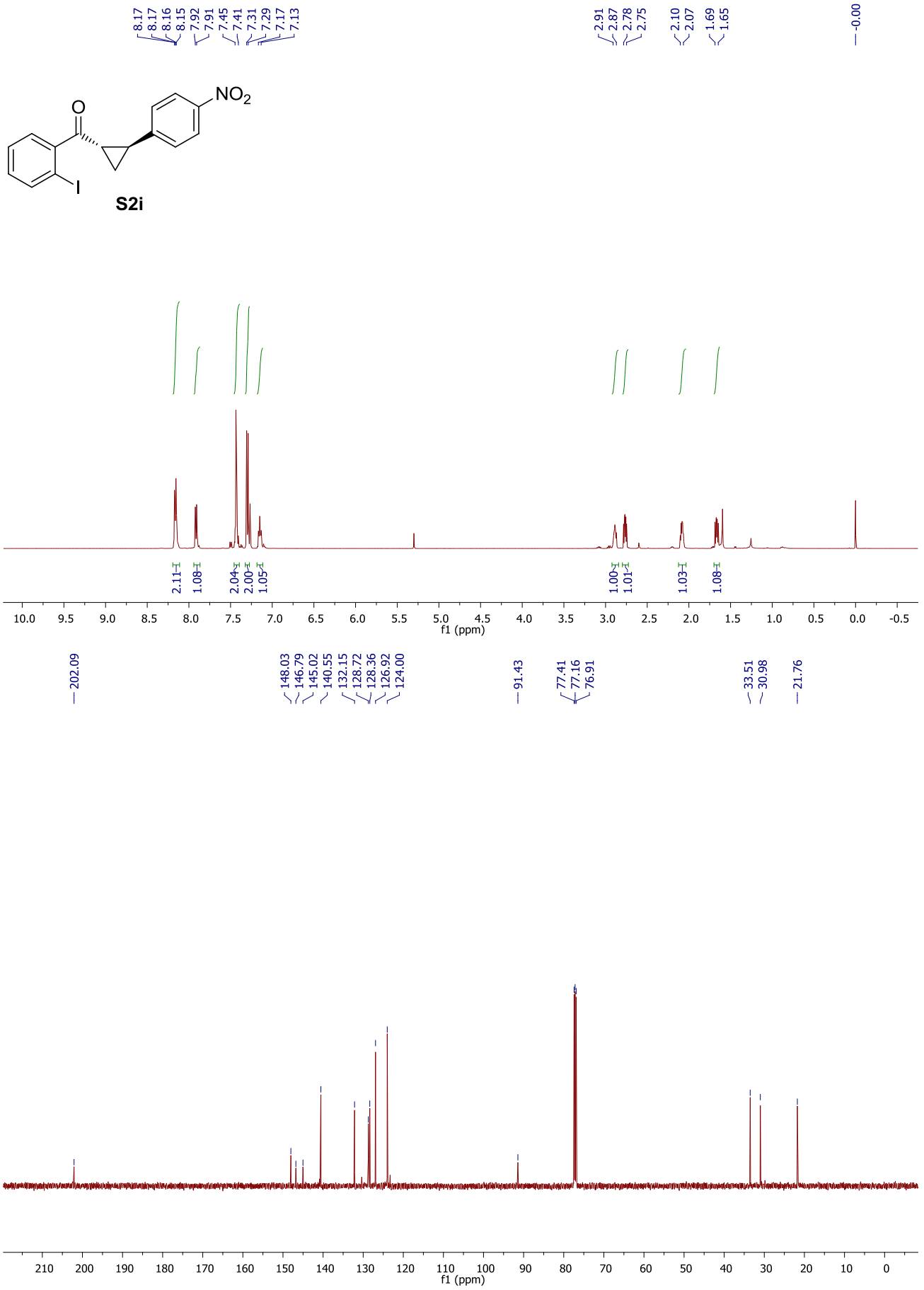
^{1}H and ^{13}C NMR spectra of **S2f**



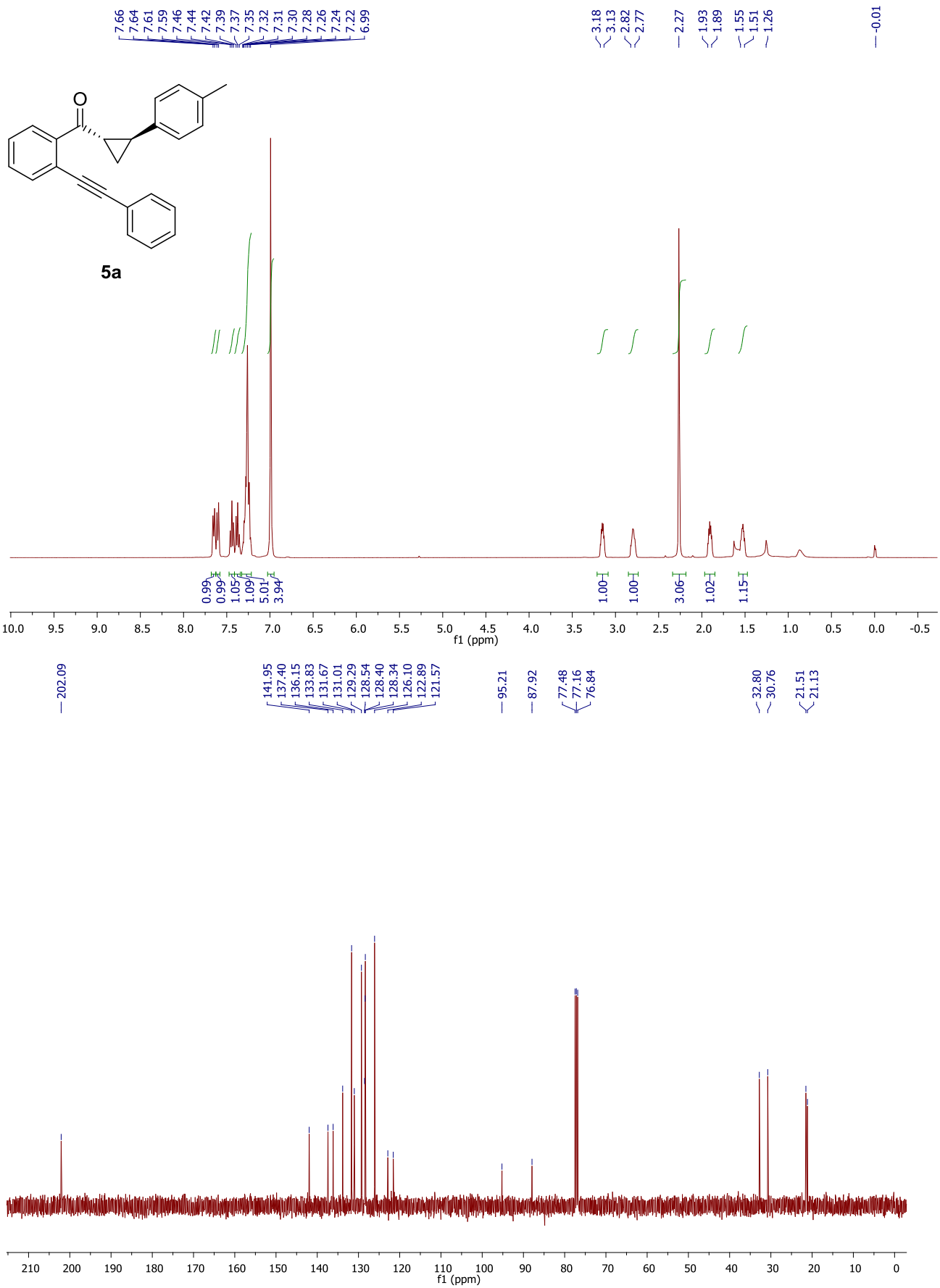
^{1}H and ^{13}C NMR spectra of **S2g**



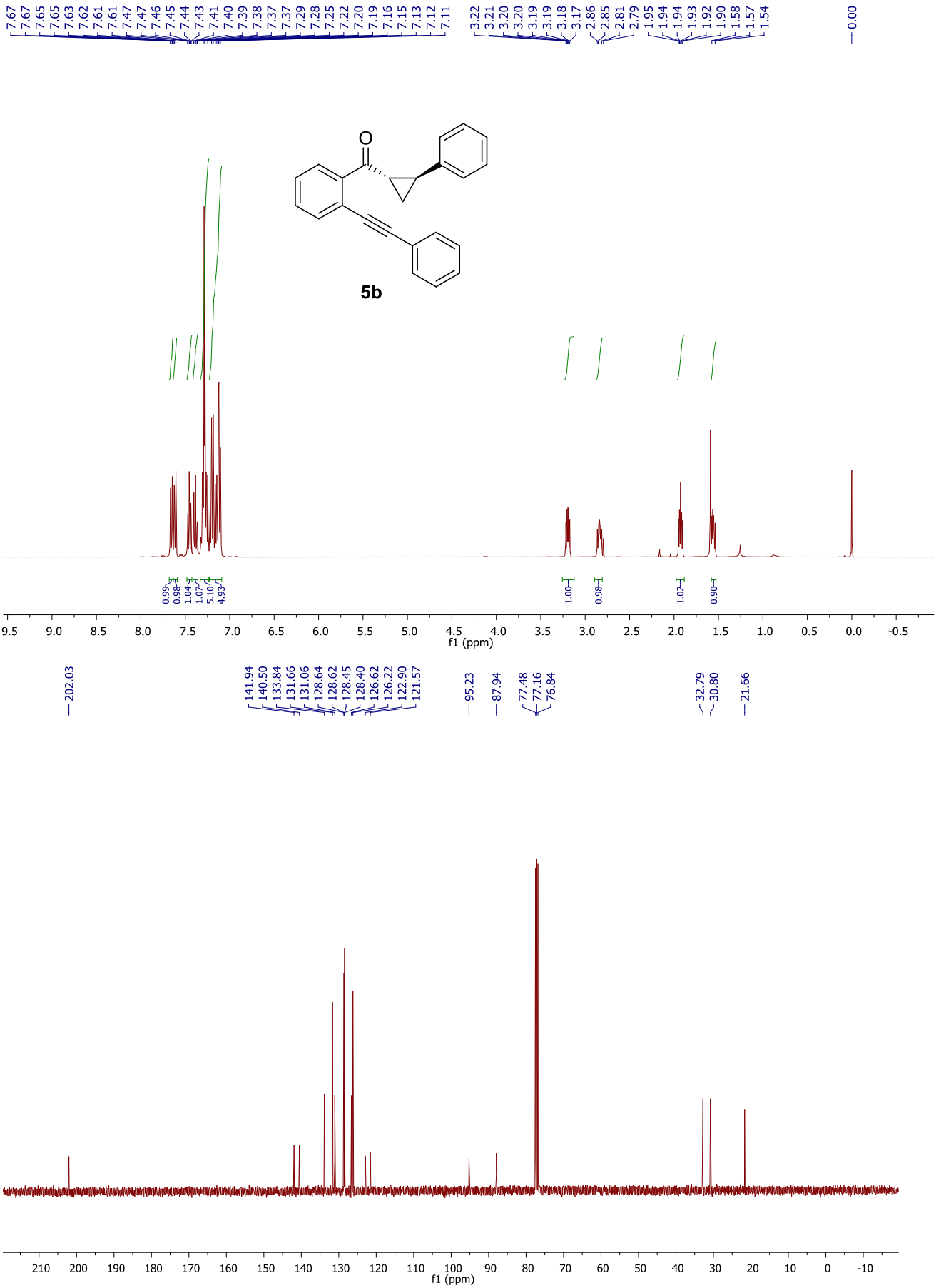
^{1}H and ^{13}C NMR spectra of **S2h**



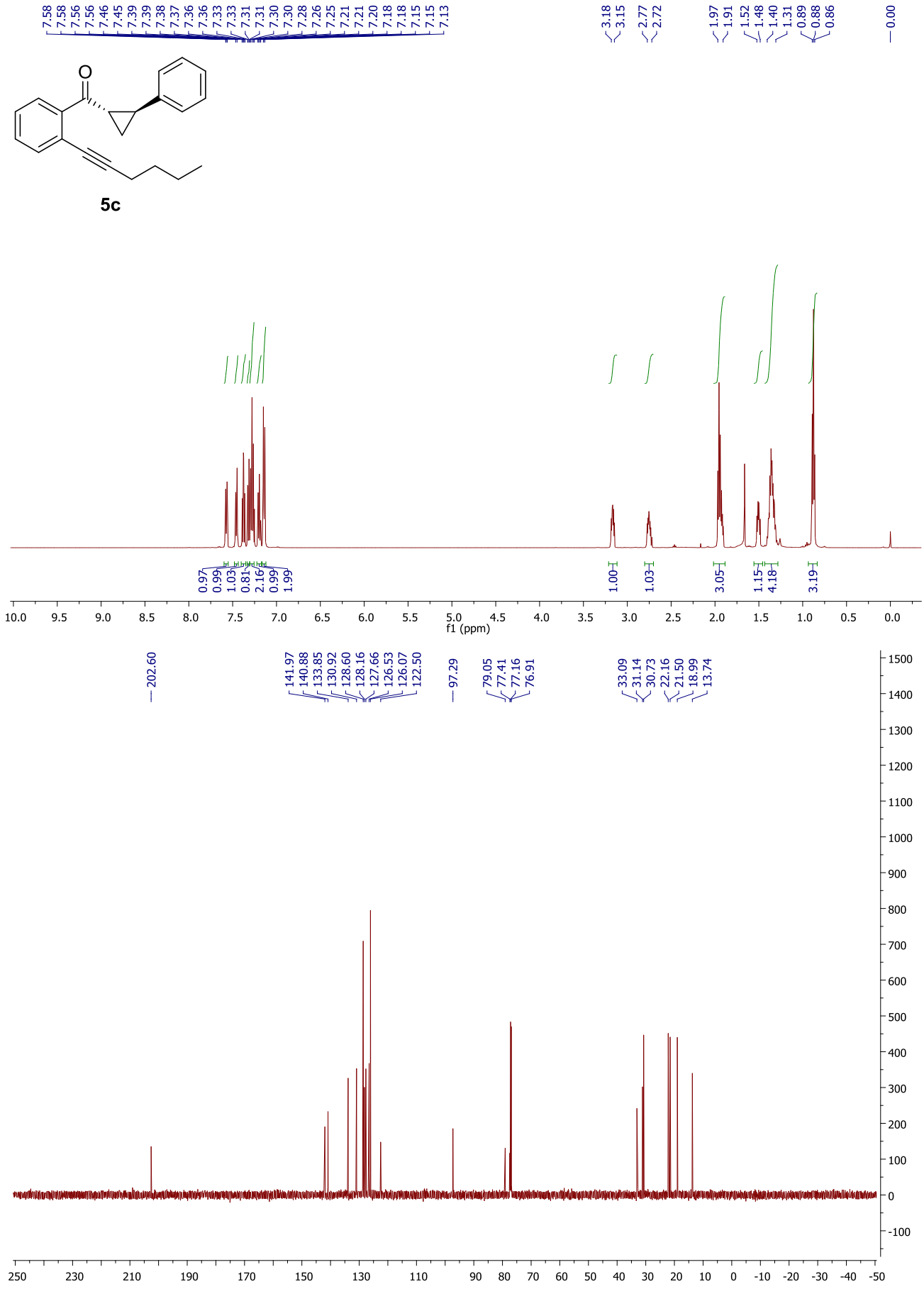
^{1}H and ^{13}C NMR spectra of **S2i**



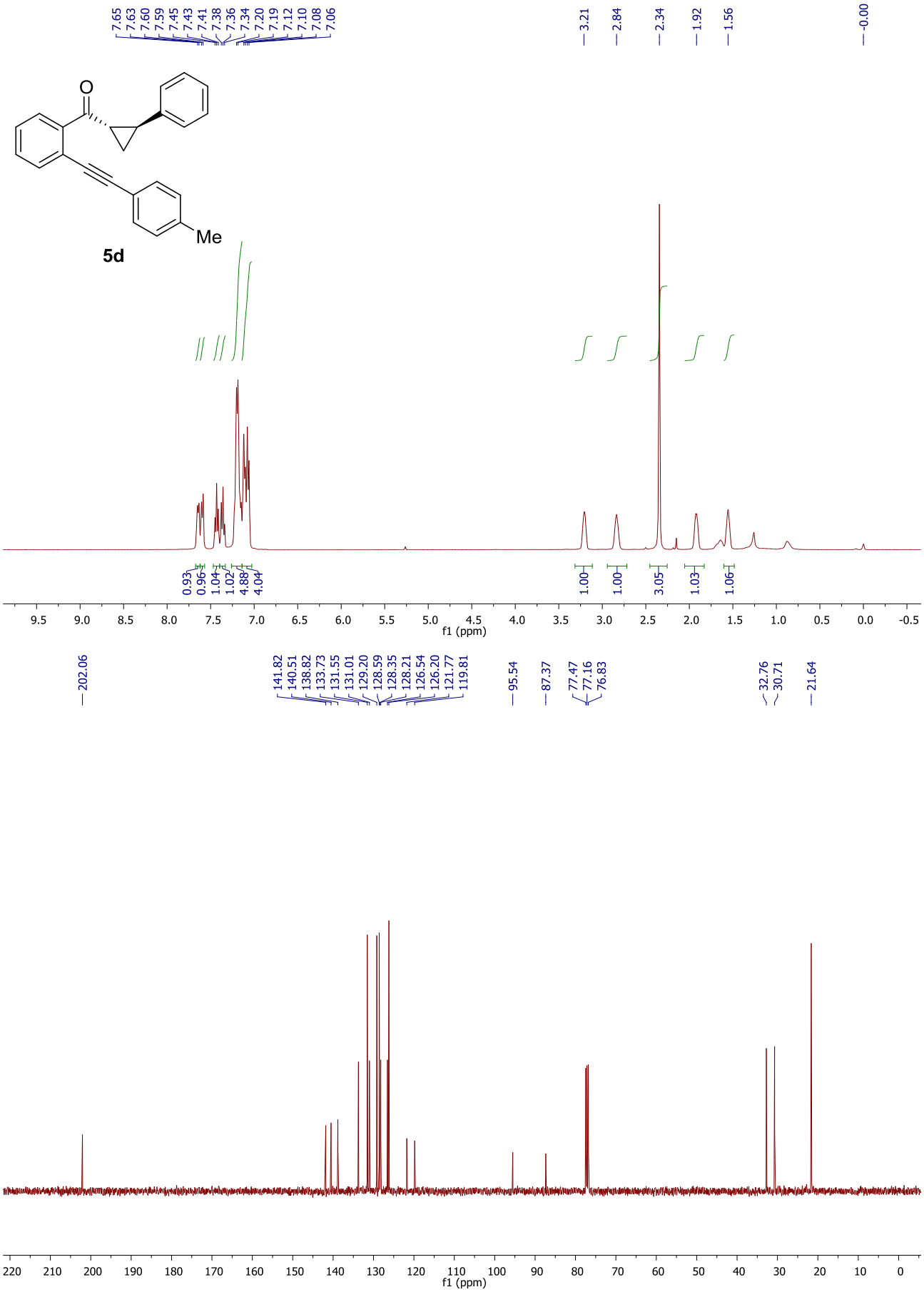
^{1}H and ^{13}C NMR spectra of **5a**



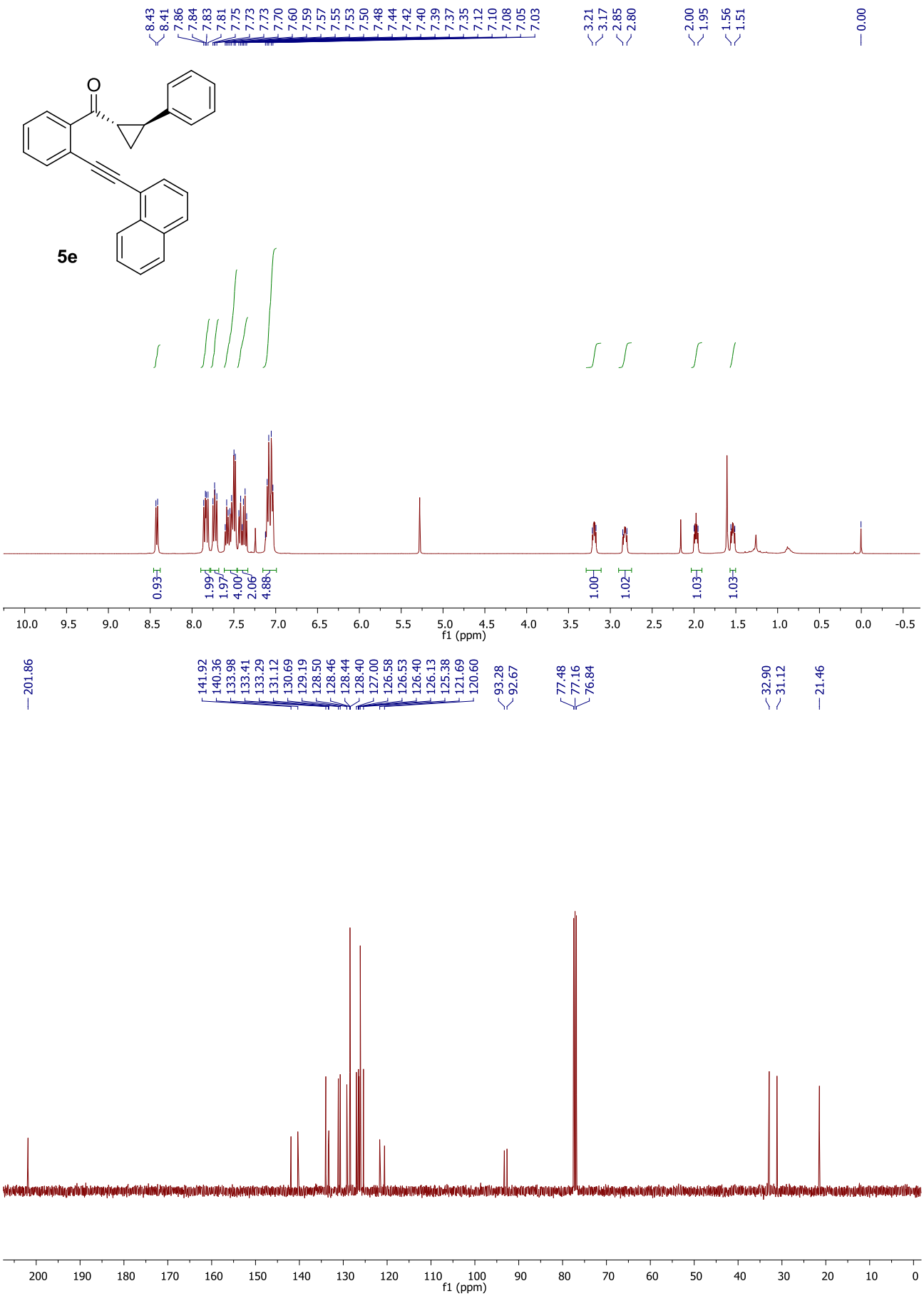
^{1}H and ^{13}C NMR spectra of **5b**



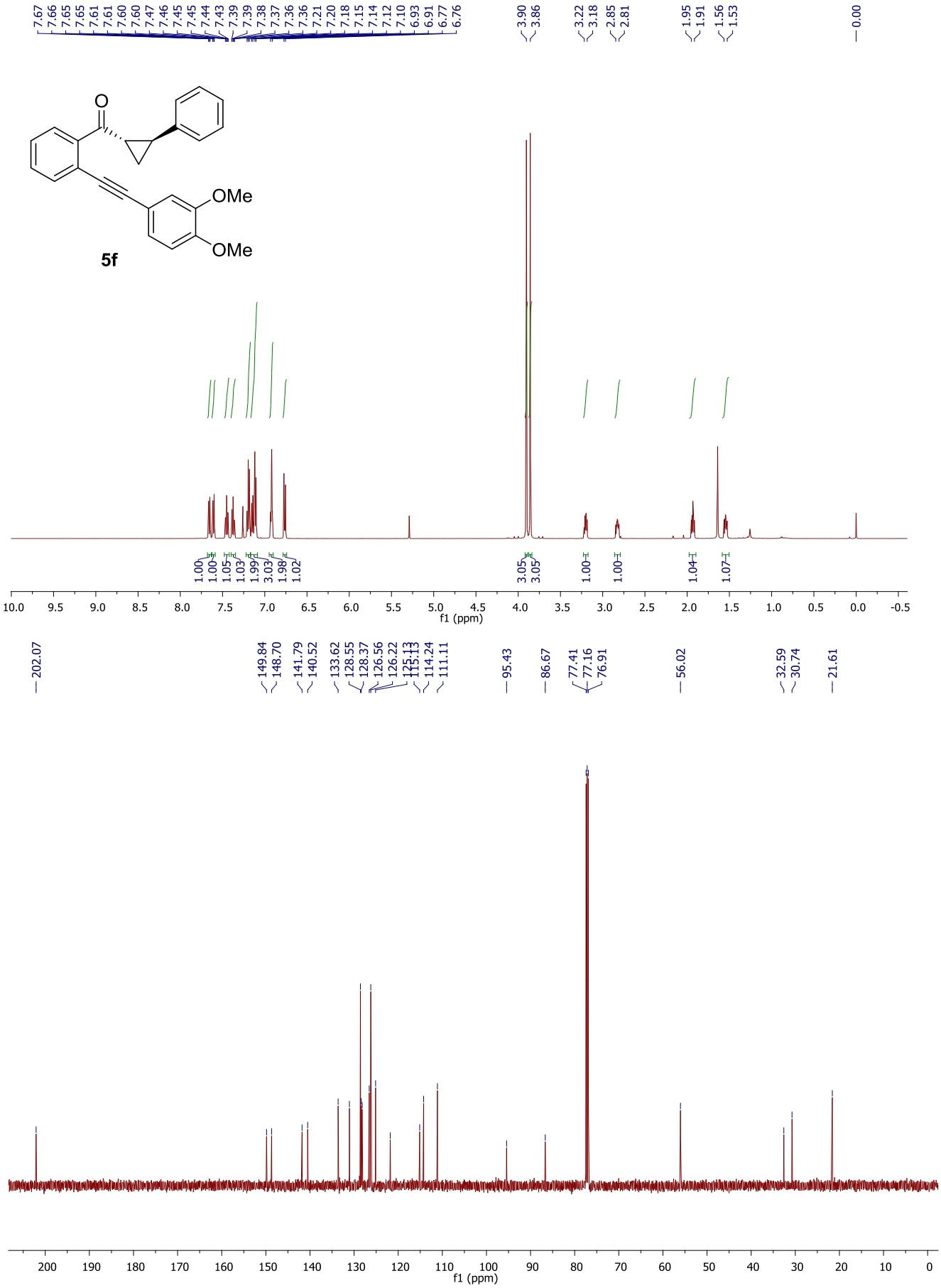
^{1}H and ^{13}C NMR spectra of **5c**



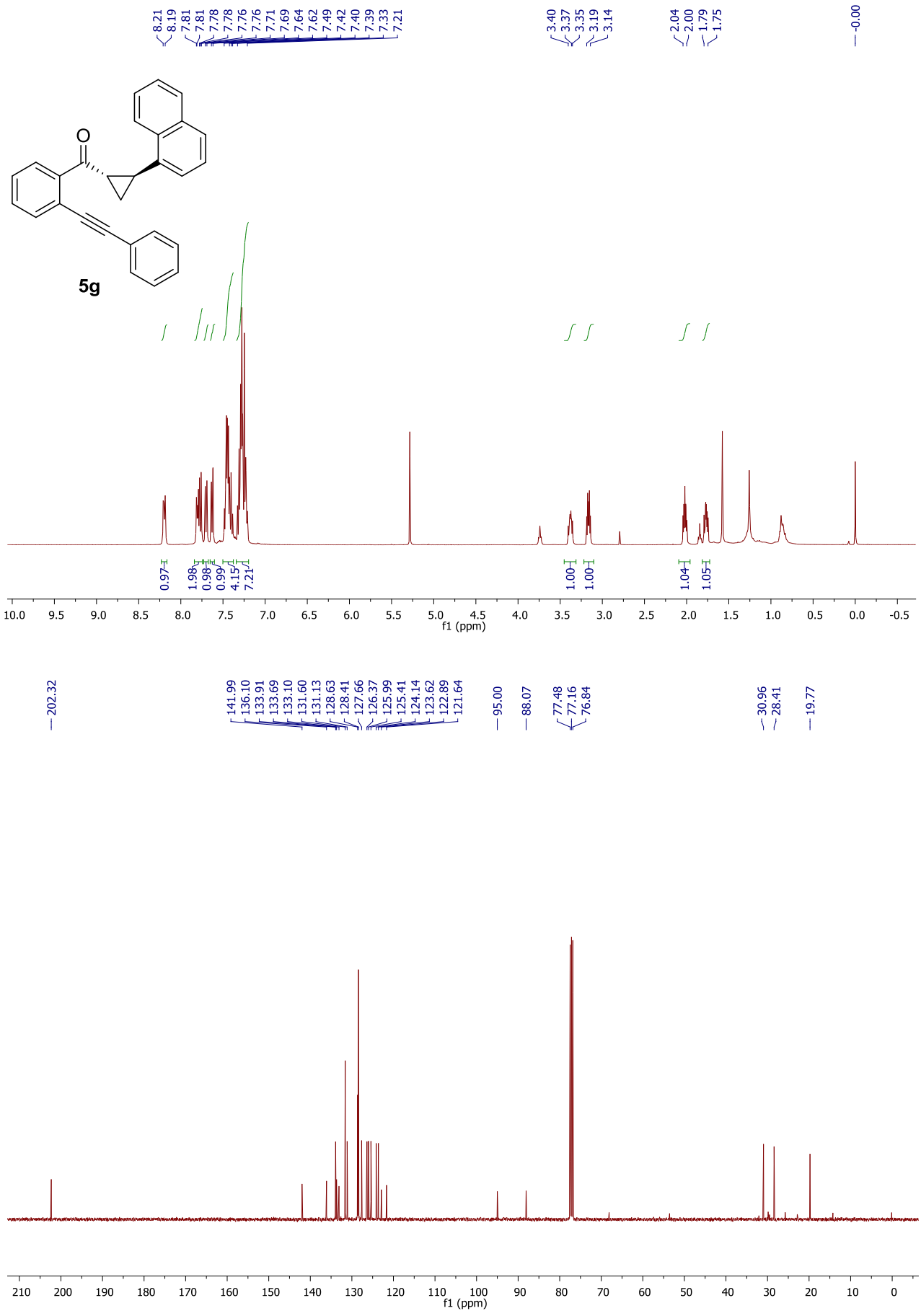
^{1}H and ^{13}C NMR spectra of **5d**



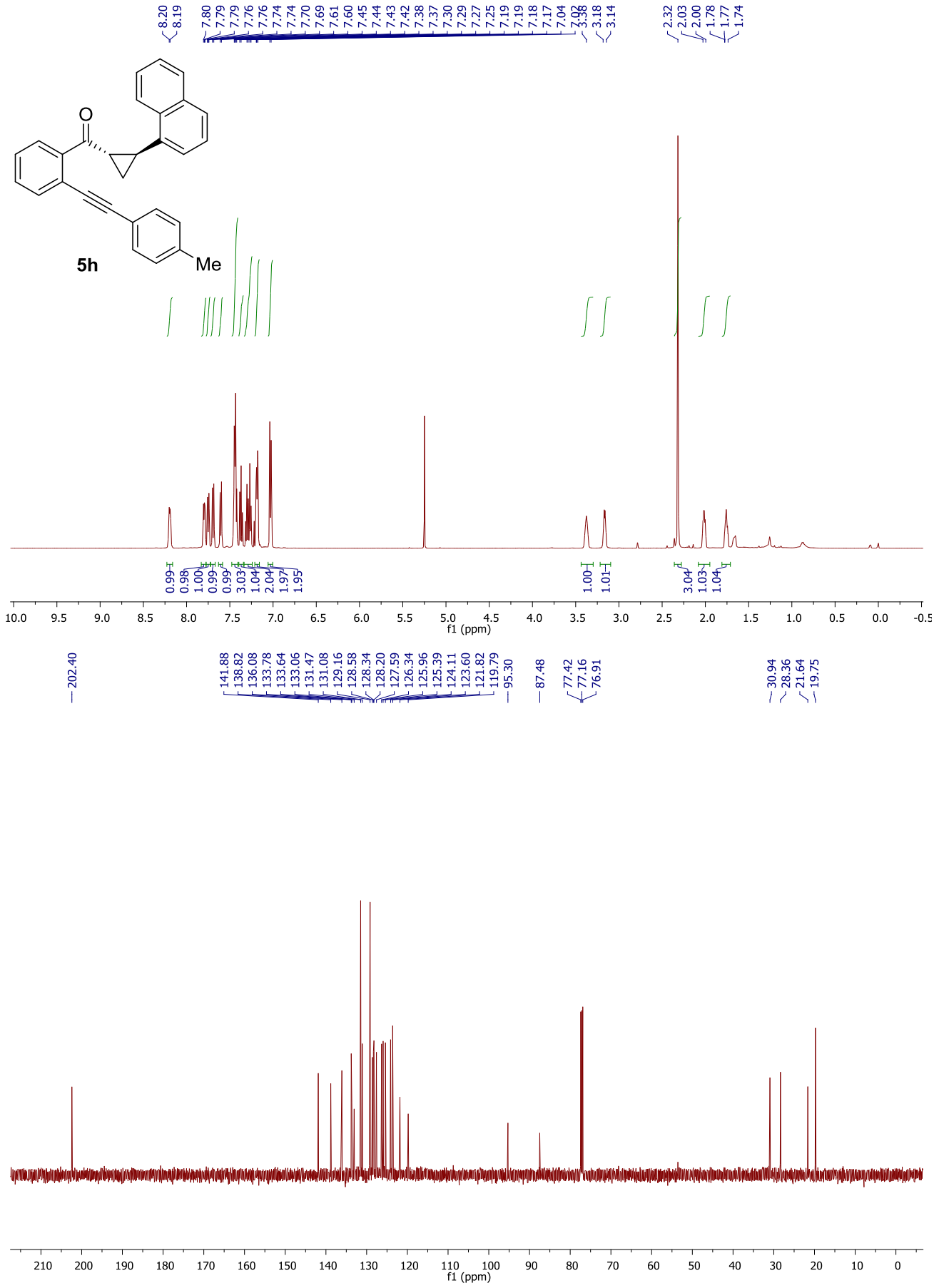
^{1}H and ^{13}C NMR spectra of **5e**



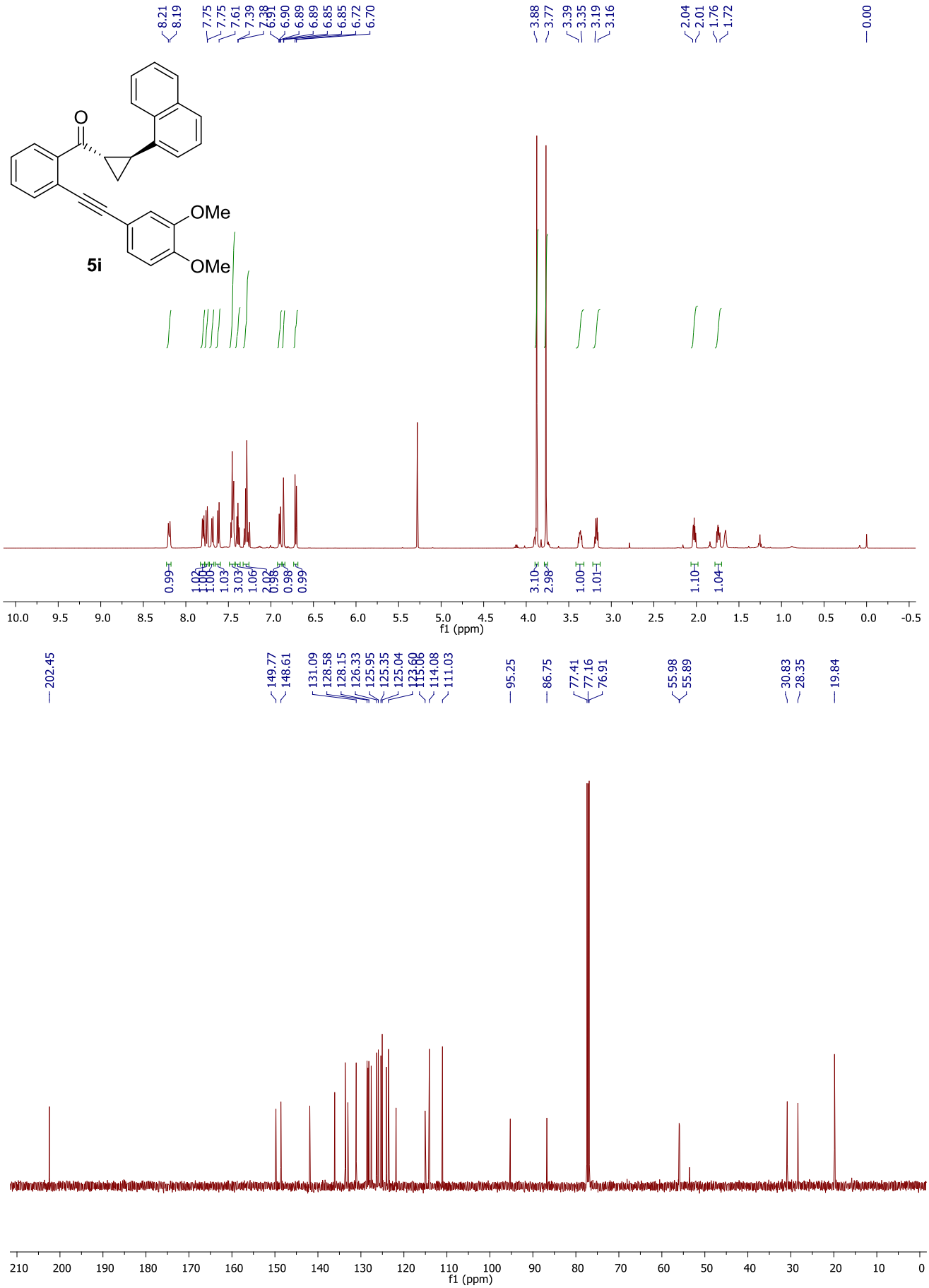
^{1}H and ^{13}C NMR spectra of **5f**



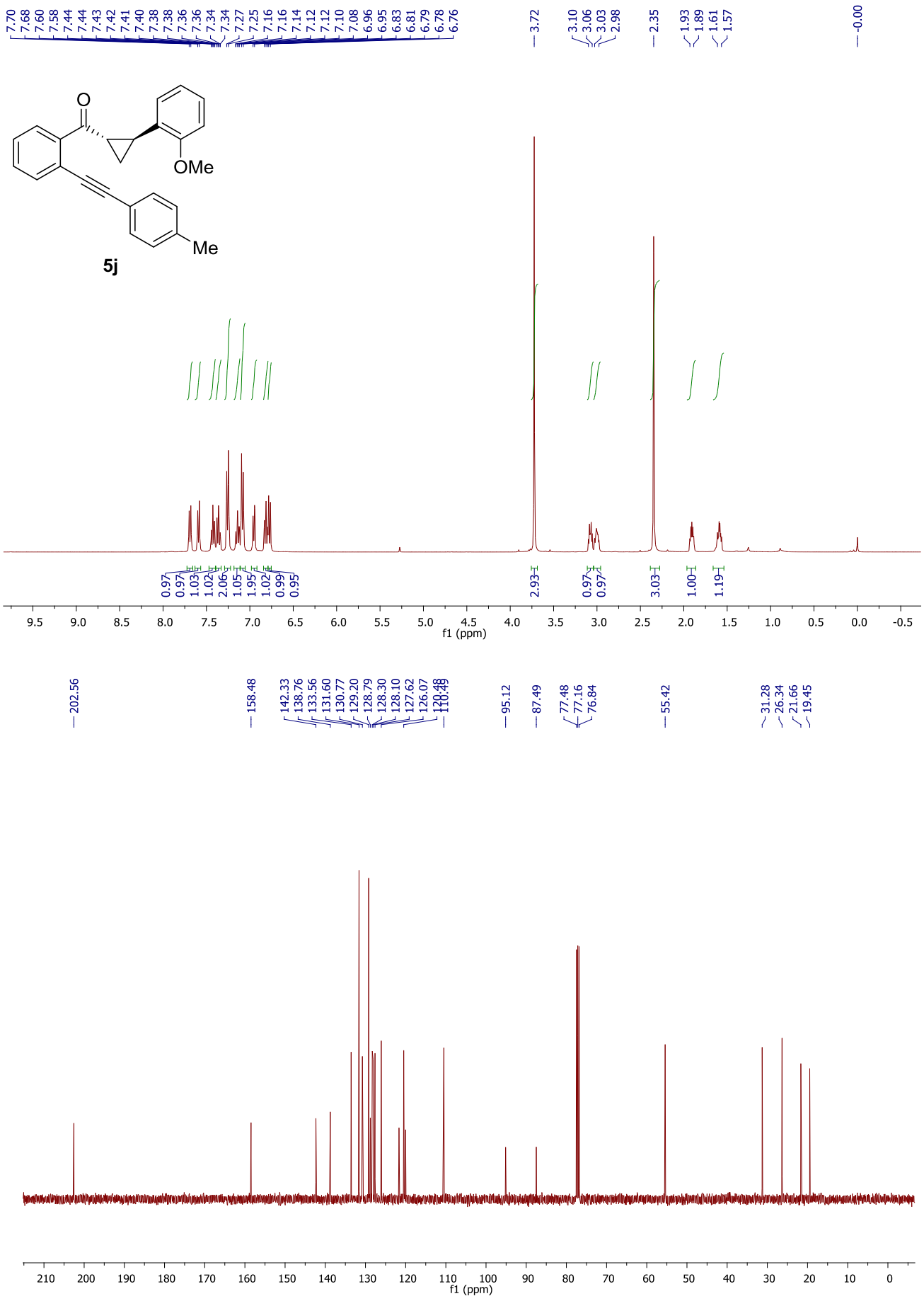
^{1}H and ^{13}C NMR spectra of **5g**



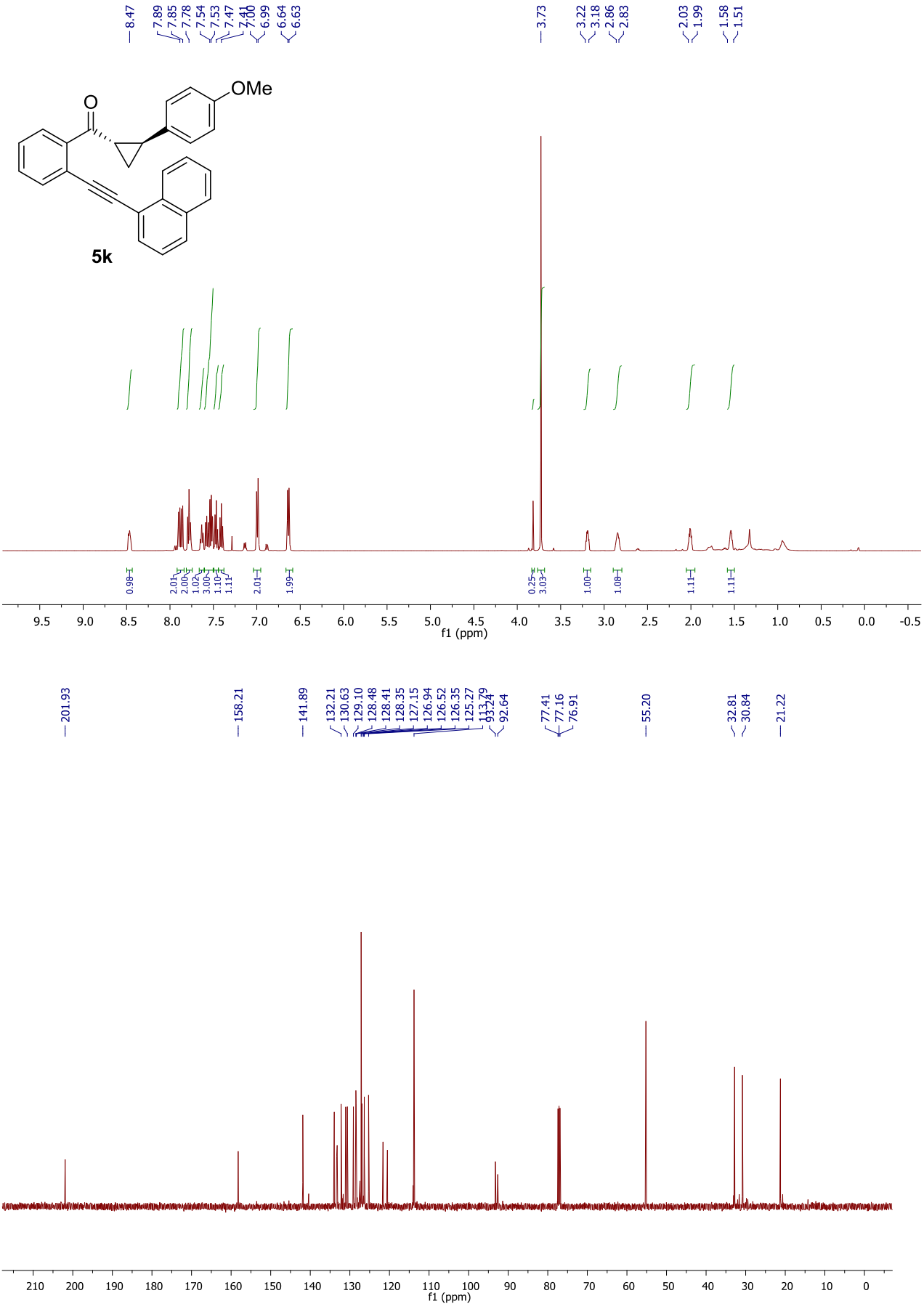
^{1}H and ^{13}C NMR spectra of **5h**



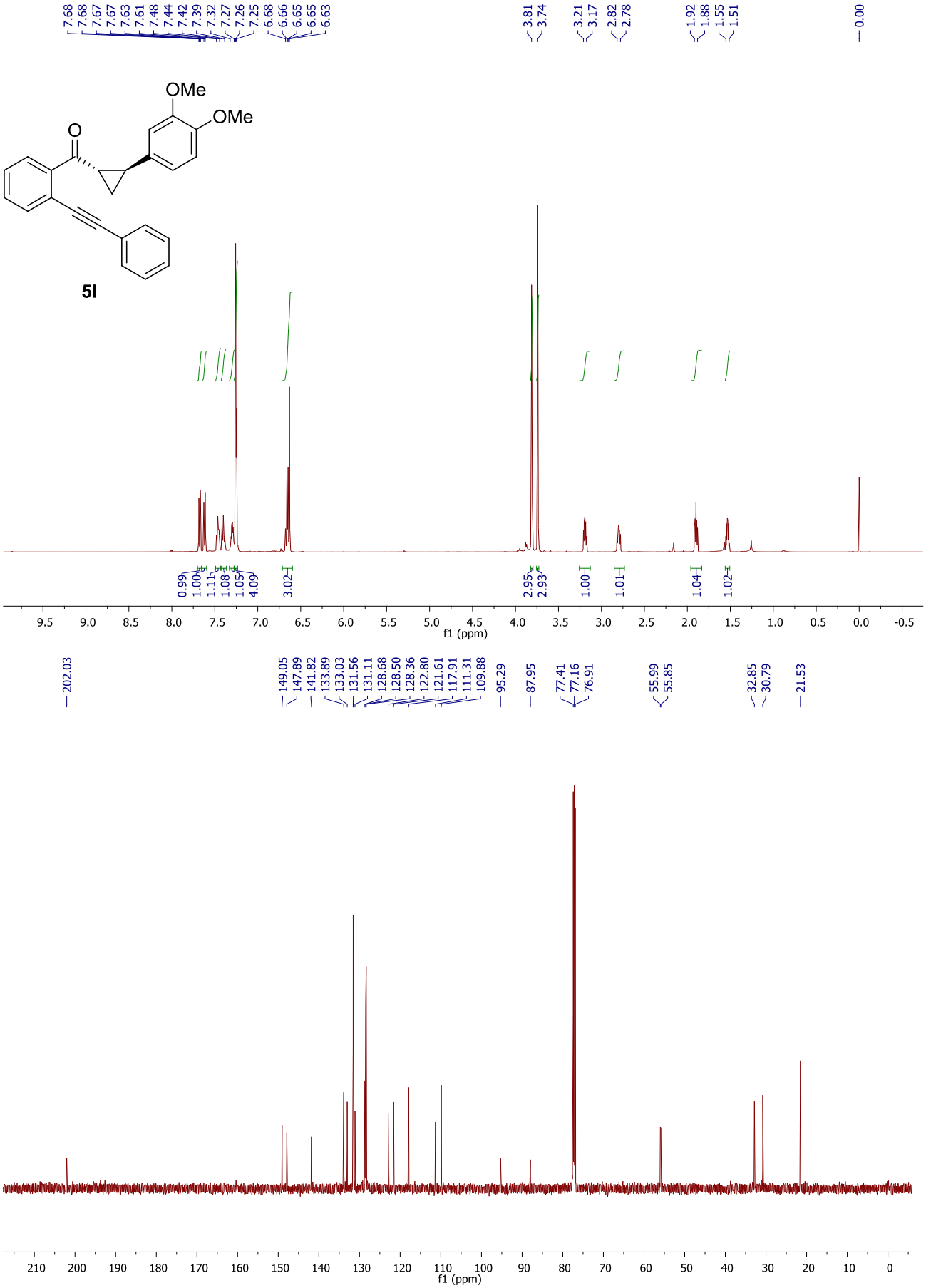
^{1}H and ^{13}C NMR spectra of **5i**



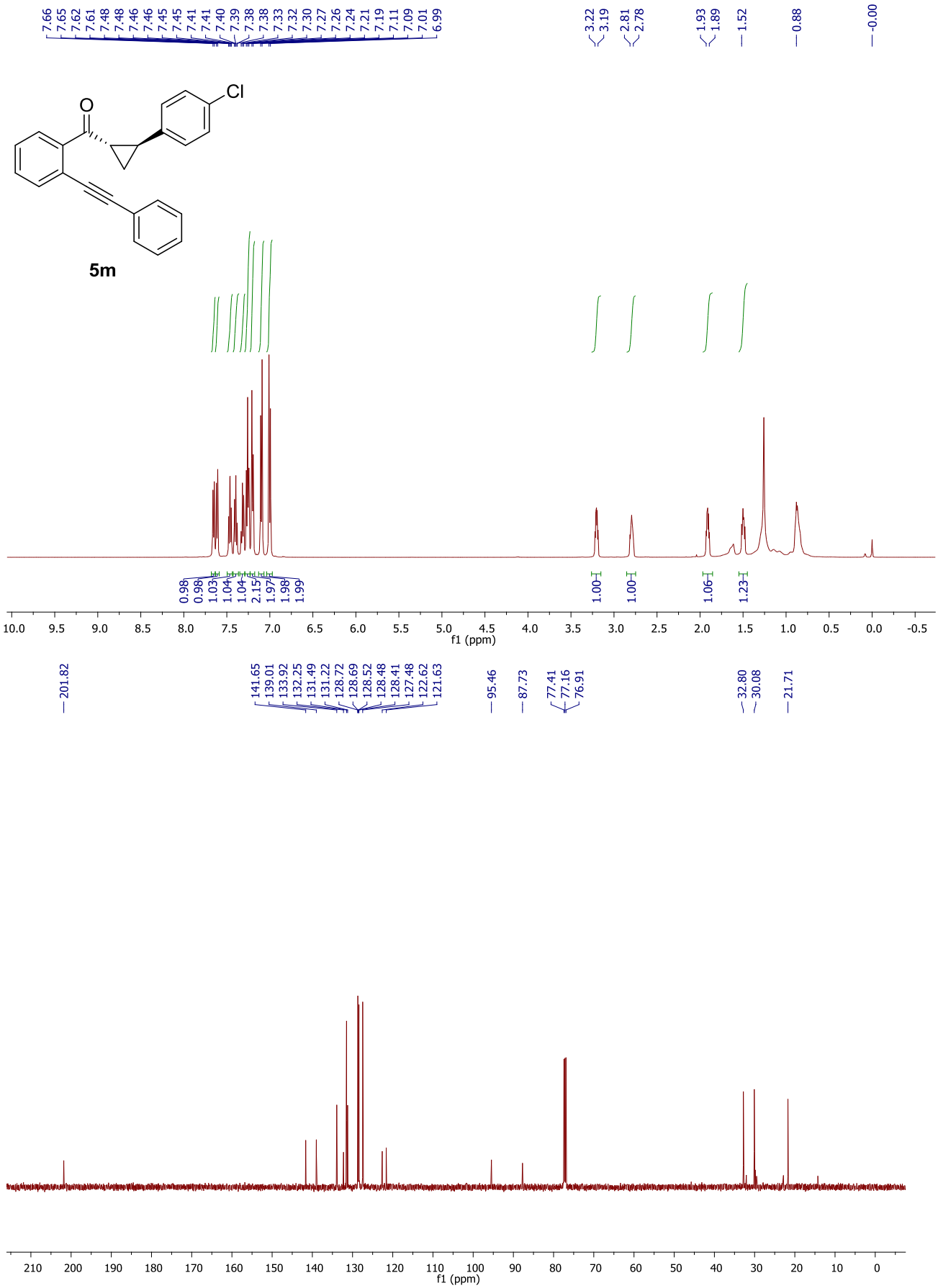
^{1}H and ^{13}C NMR spectra of **5j**



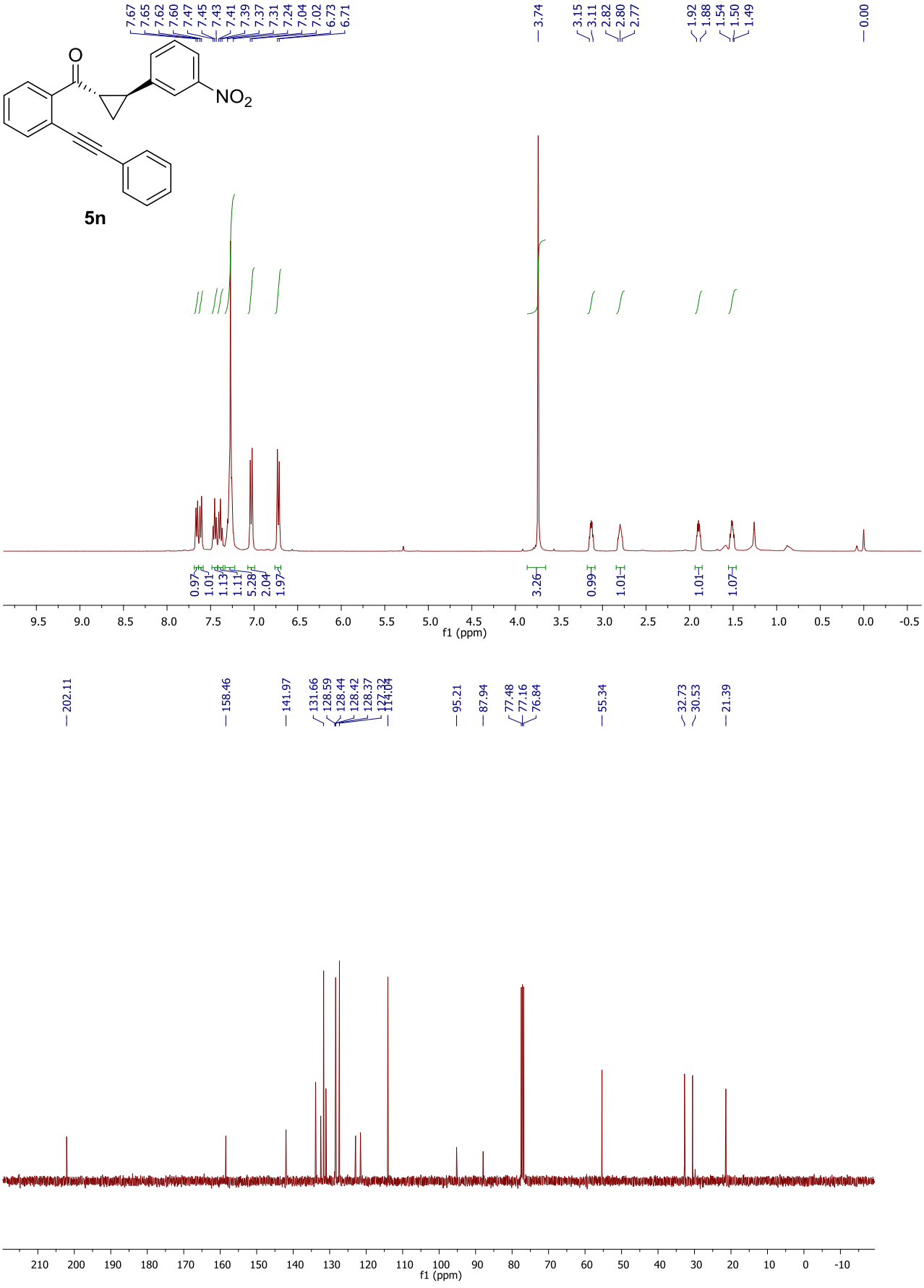
^{1}H and ^{13}C NMR spectra of **5k**



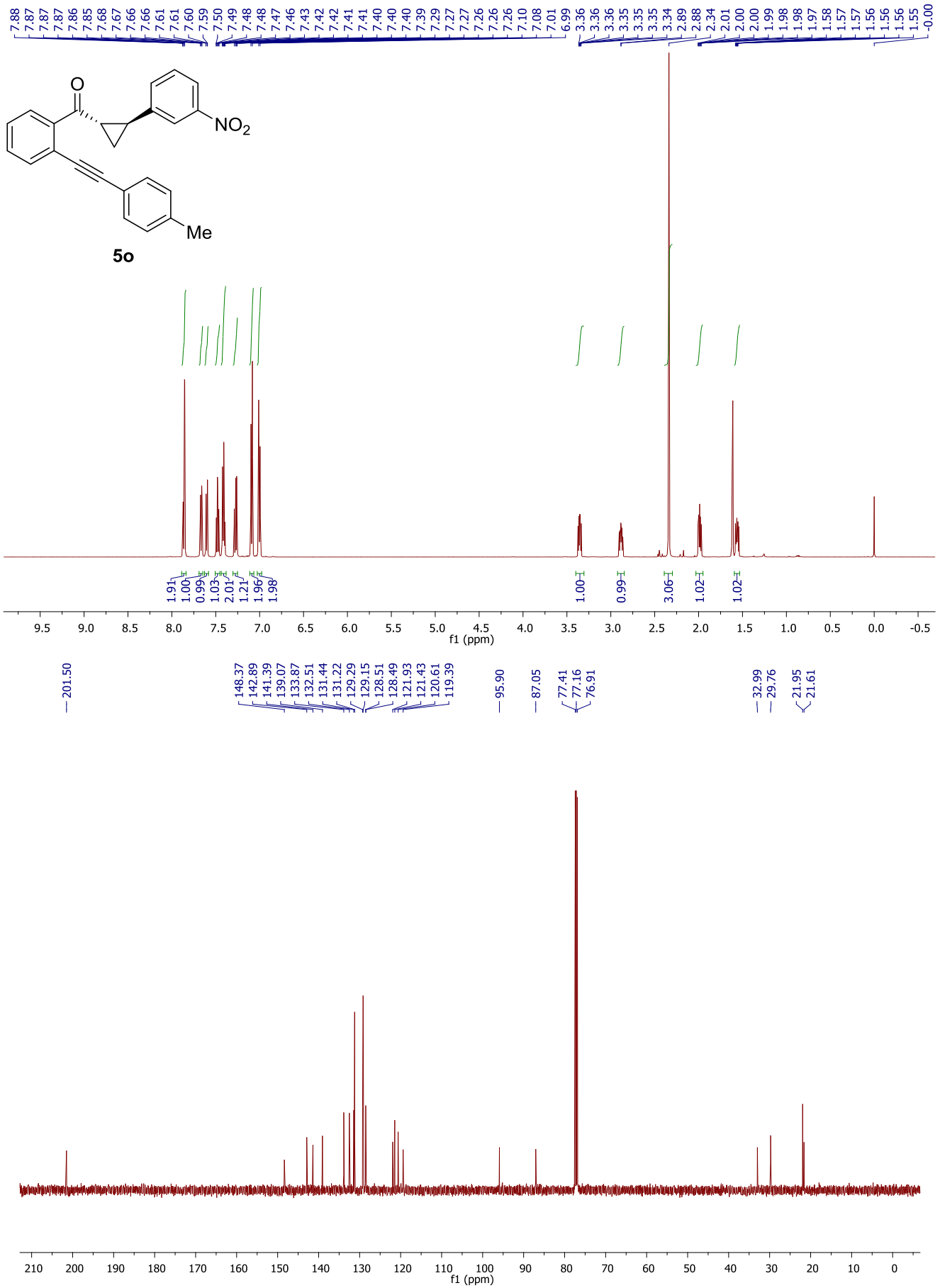
^{1}H and ^{13}C NMR spectra of **5l**



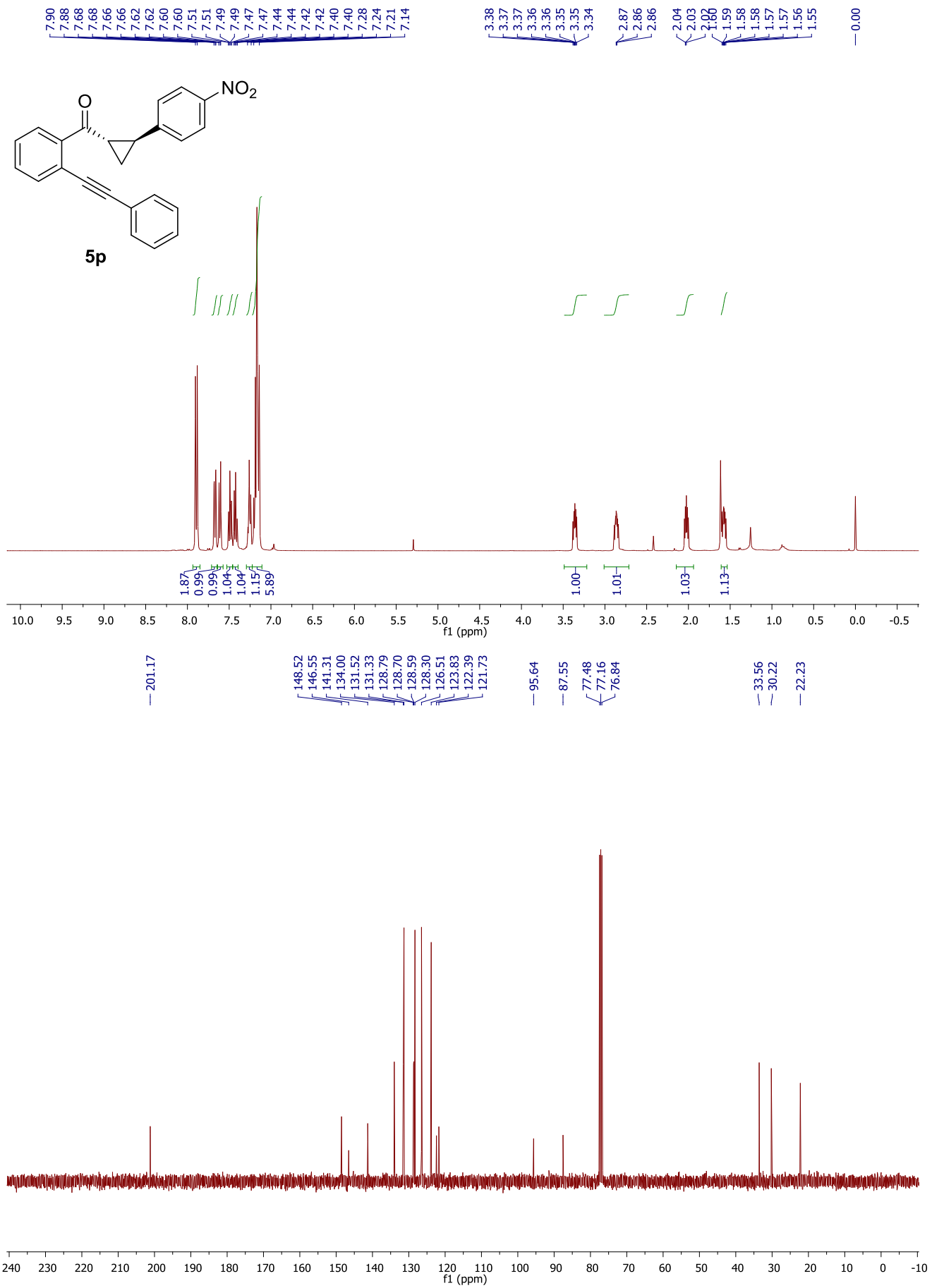
^{1}H and ^{13}C NMR spectra of **5m**



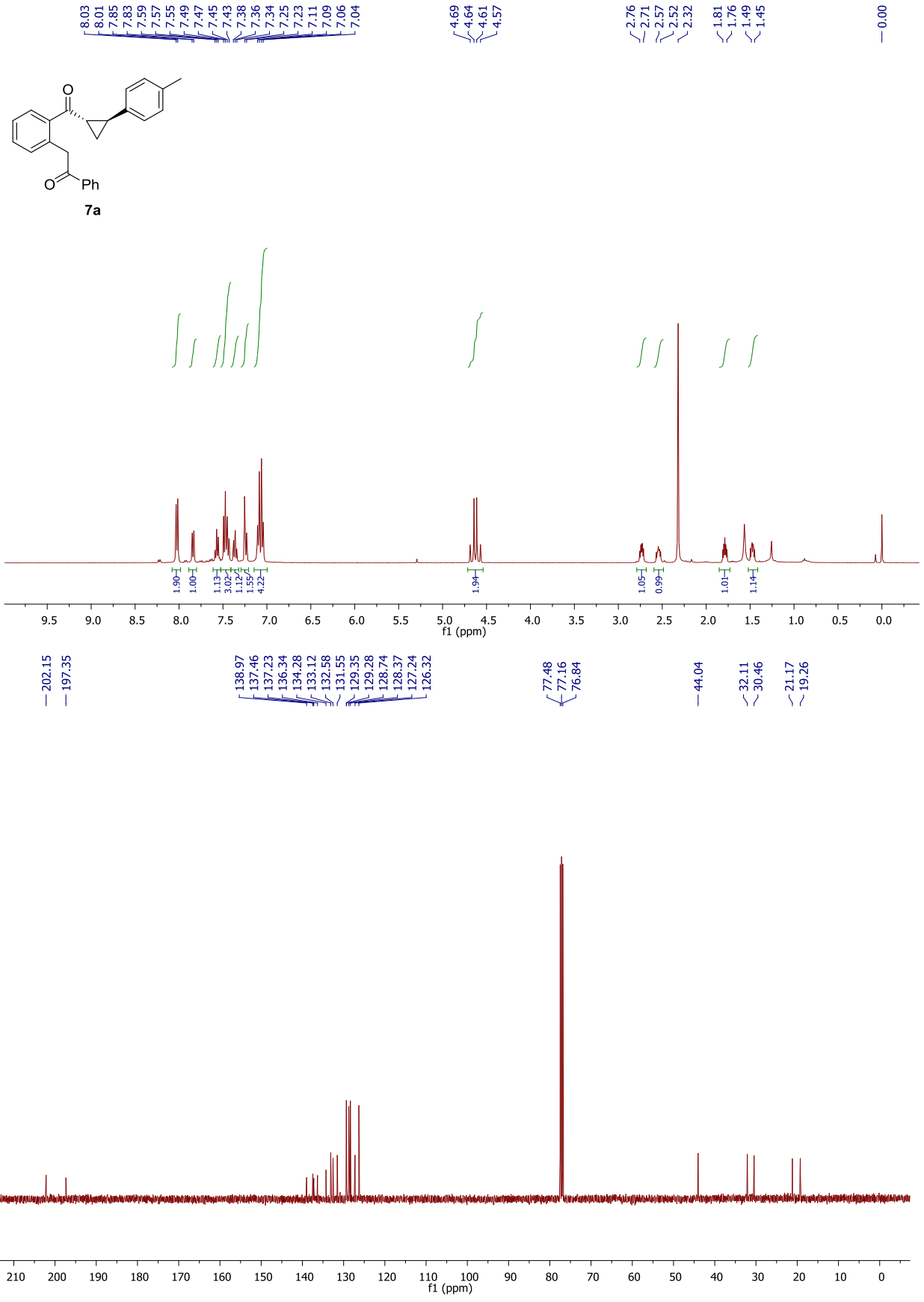
^{1}H and ^{13}C NMR spectra of **5n**



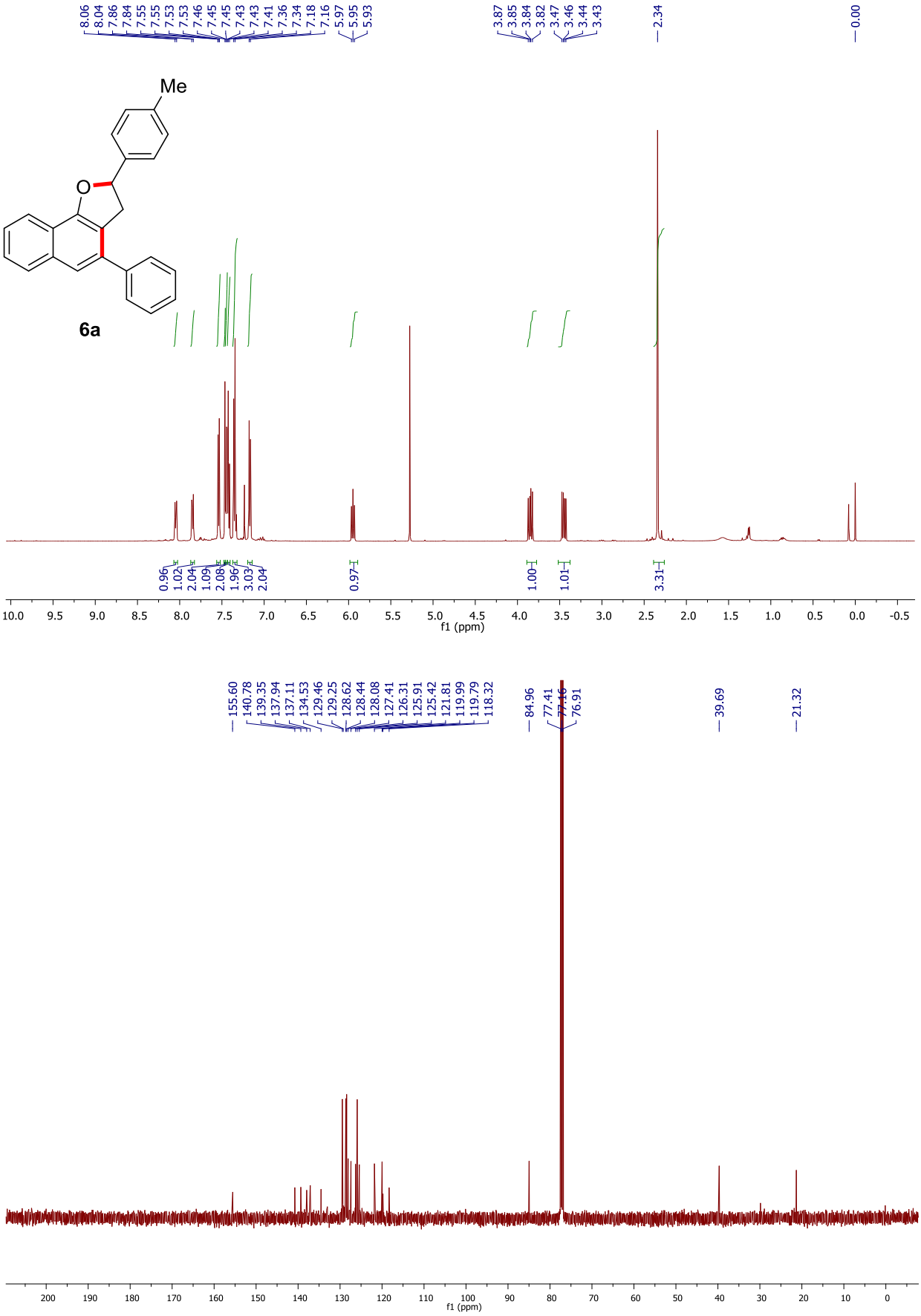
^{1}H and ^{13}C NMR spectra of **5o**



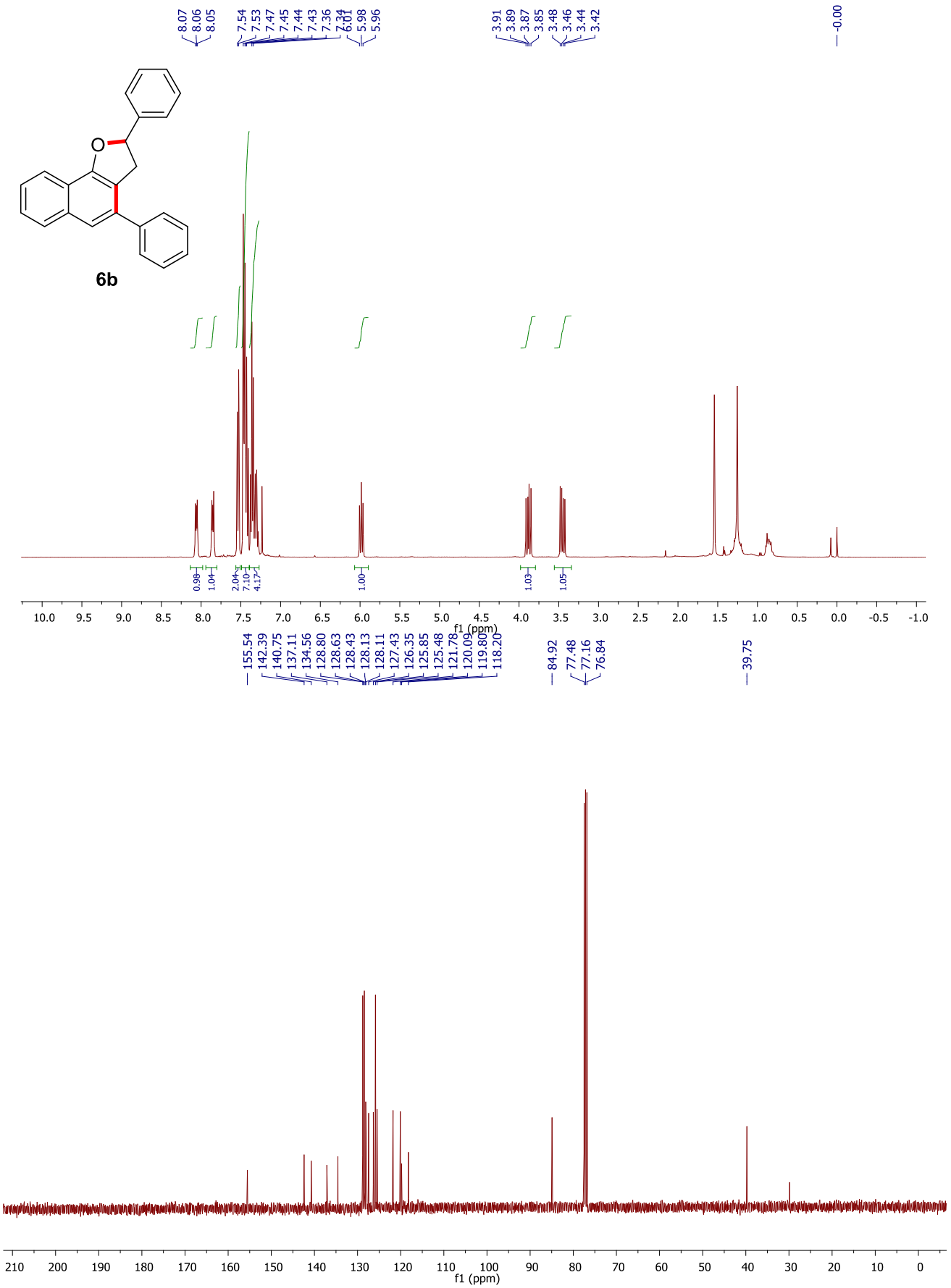
^{1}H and ^{13}C NMR spectra of **5p**



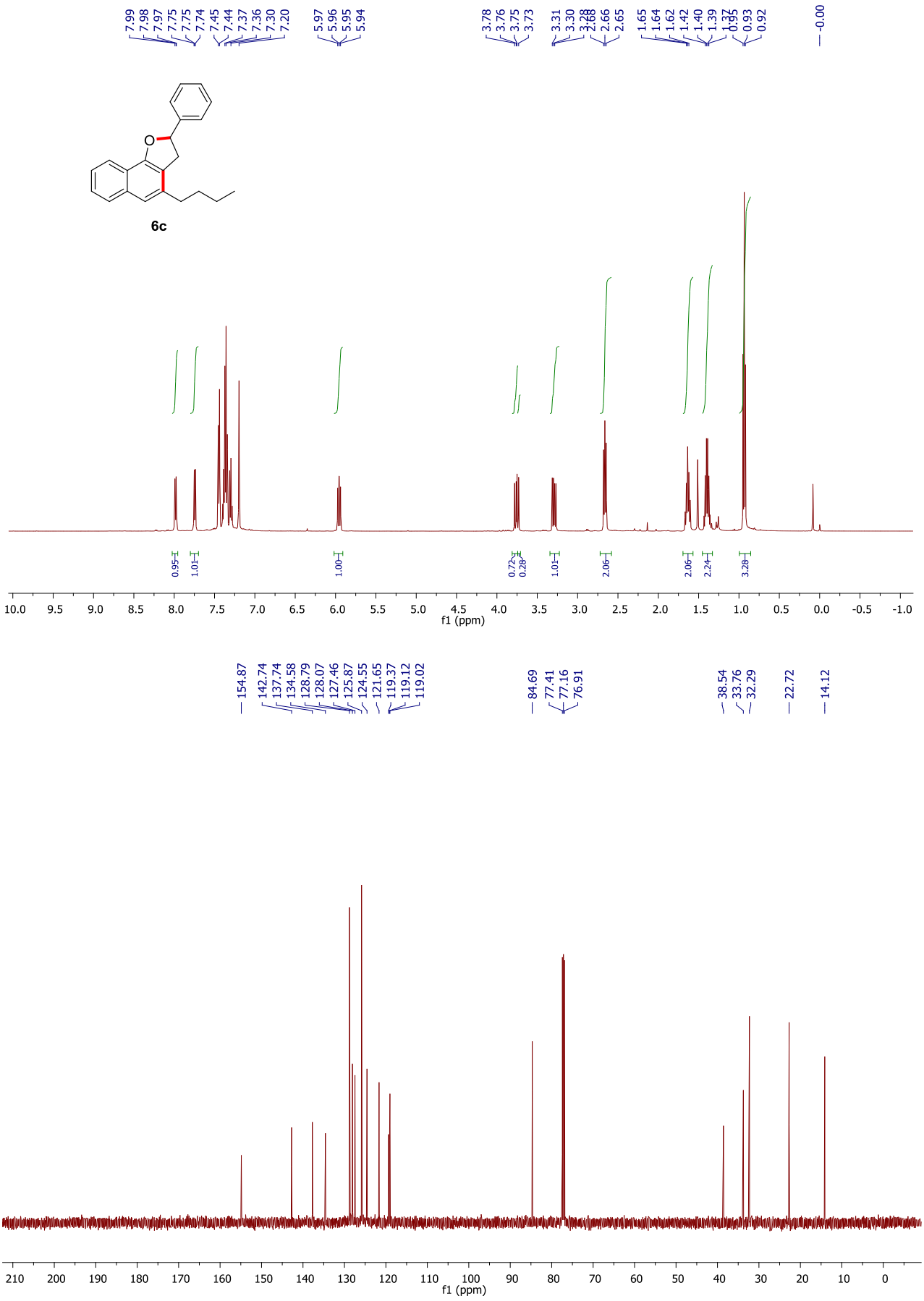
^{1}H and ^{13}C NMR spectra of **7a**



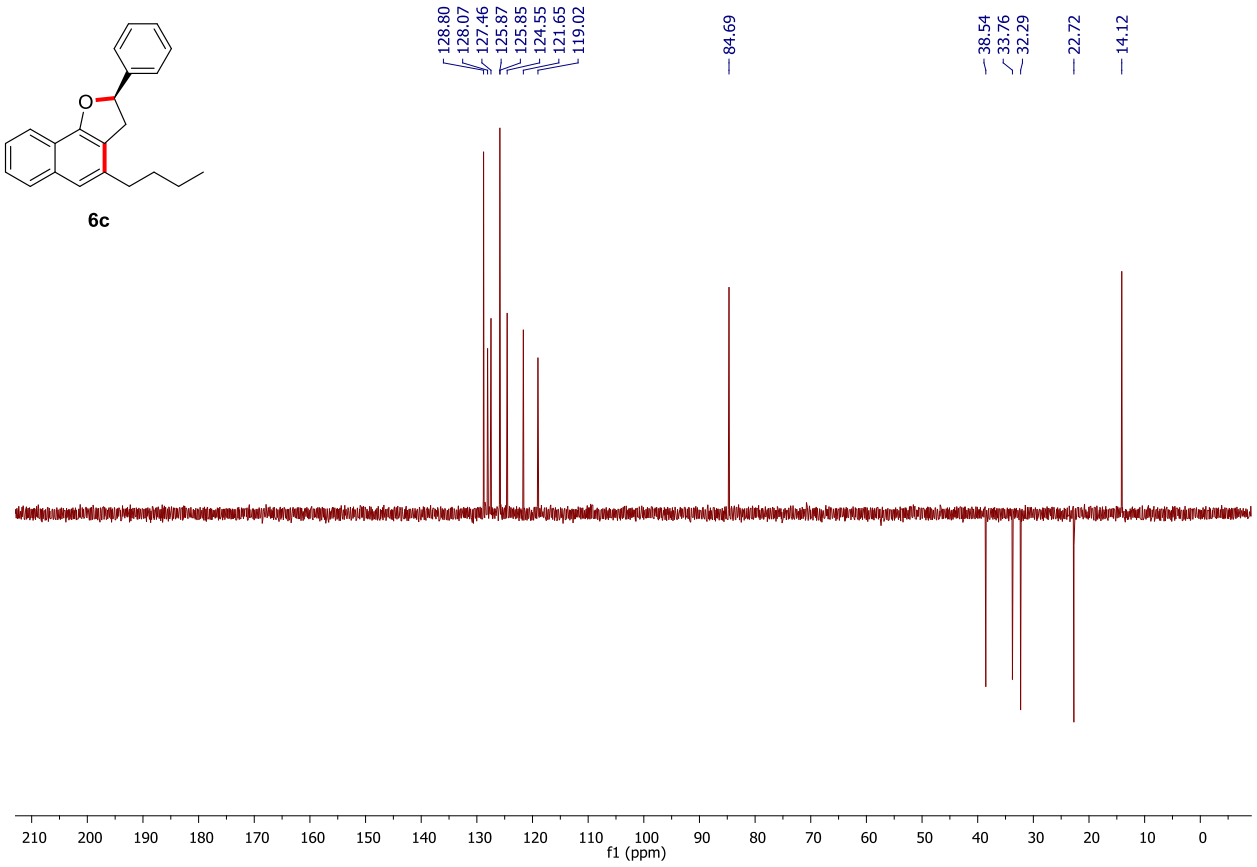
^{1}H and ^{13}C NMR spectra of **6a**



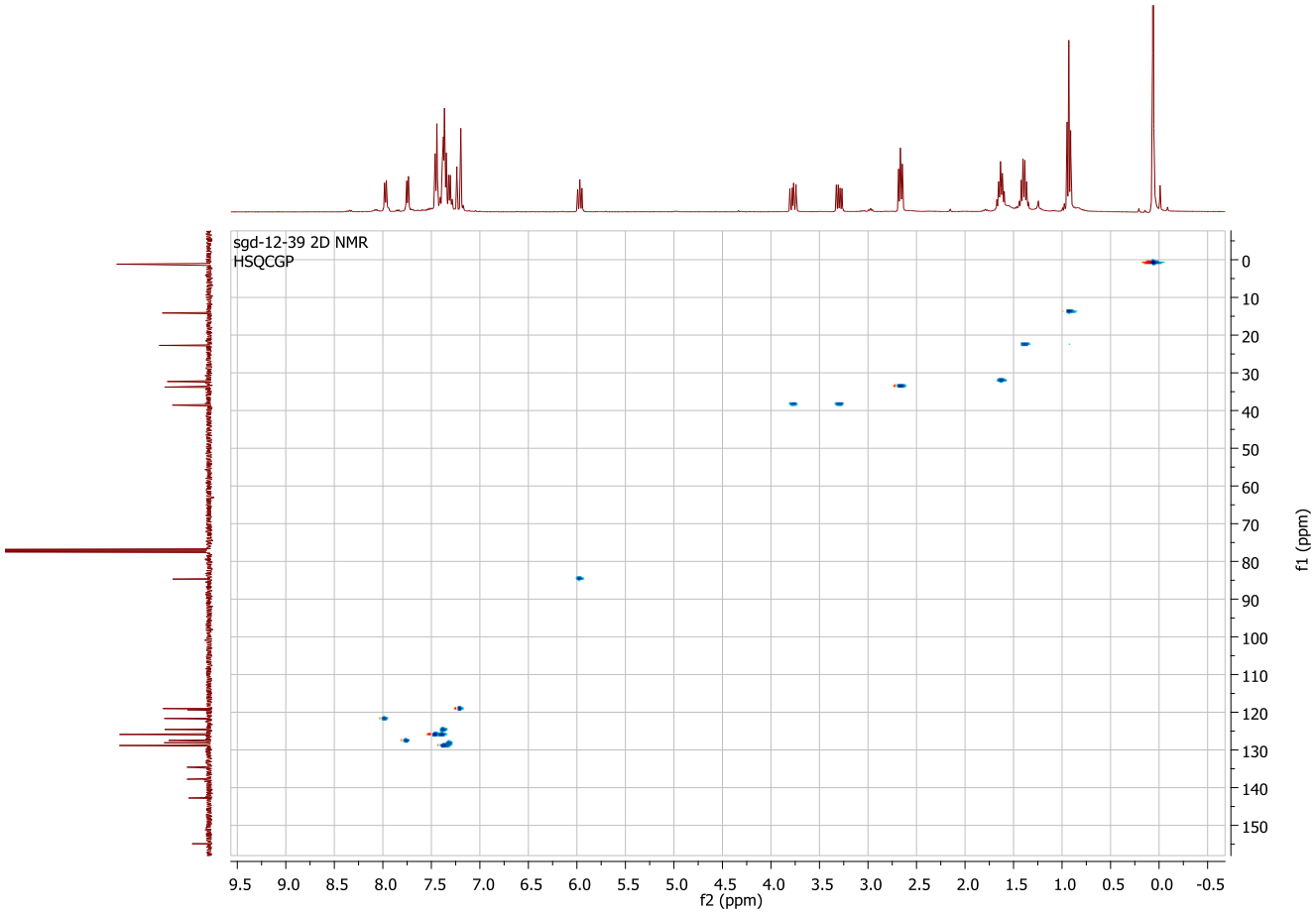
^{1}H and ^{13}C NMR spectra of **6b**

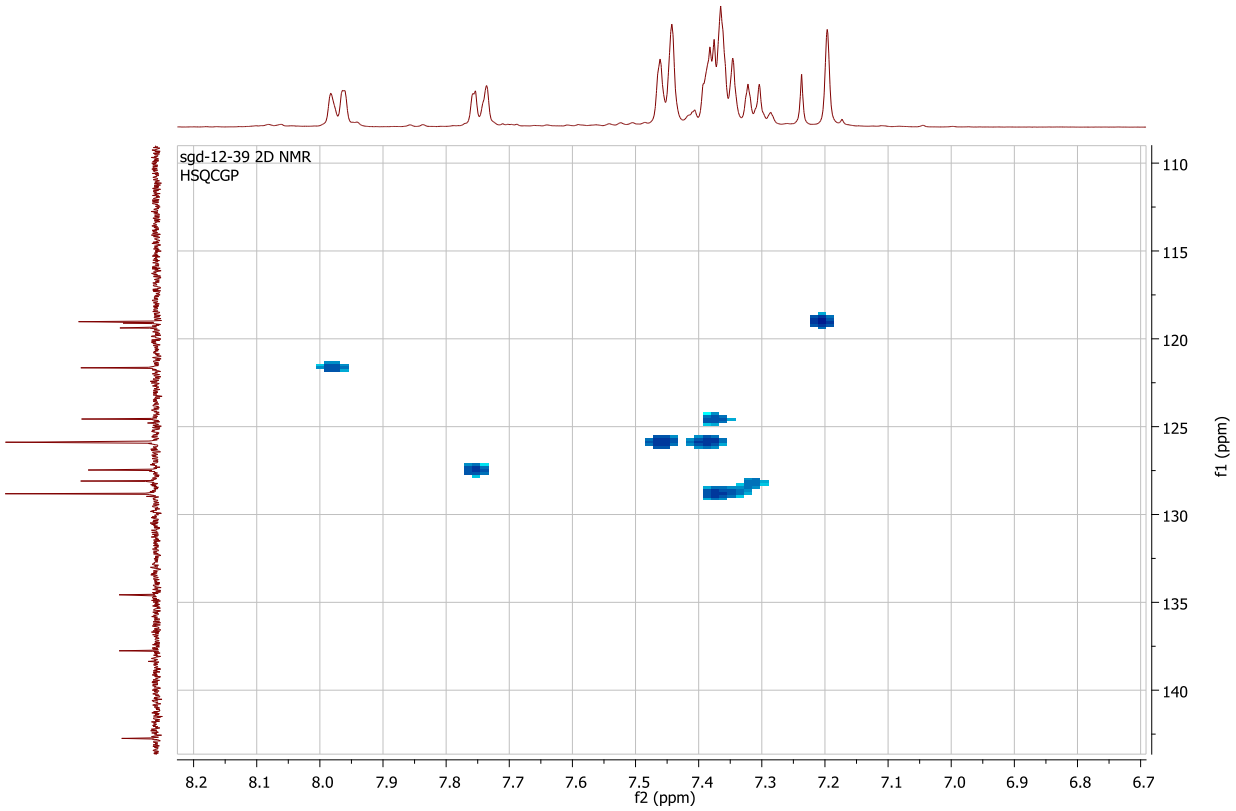


^{1}H and ^{13}C NMR spectrum of **6c**

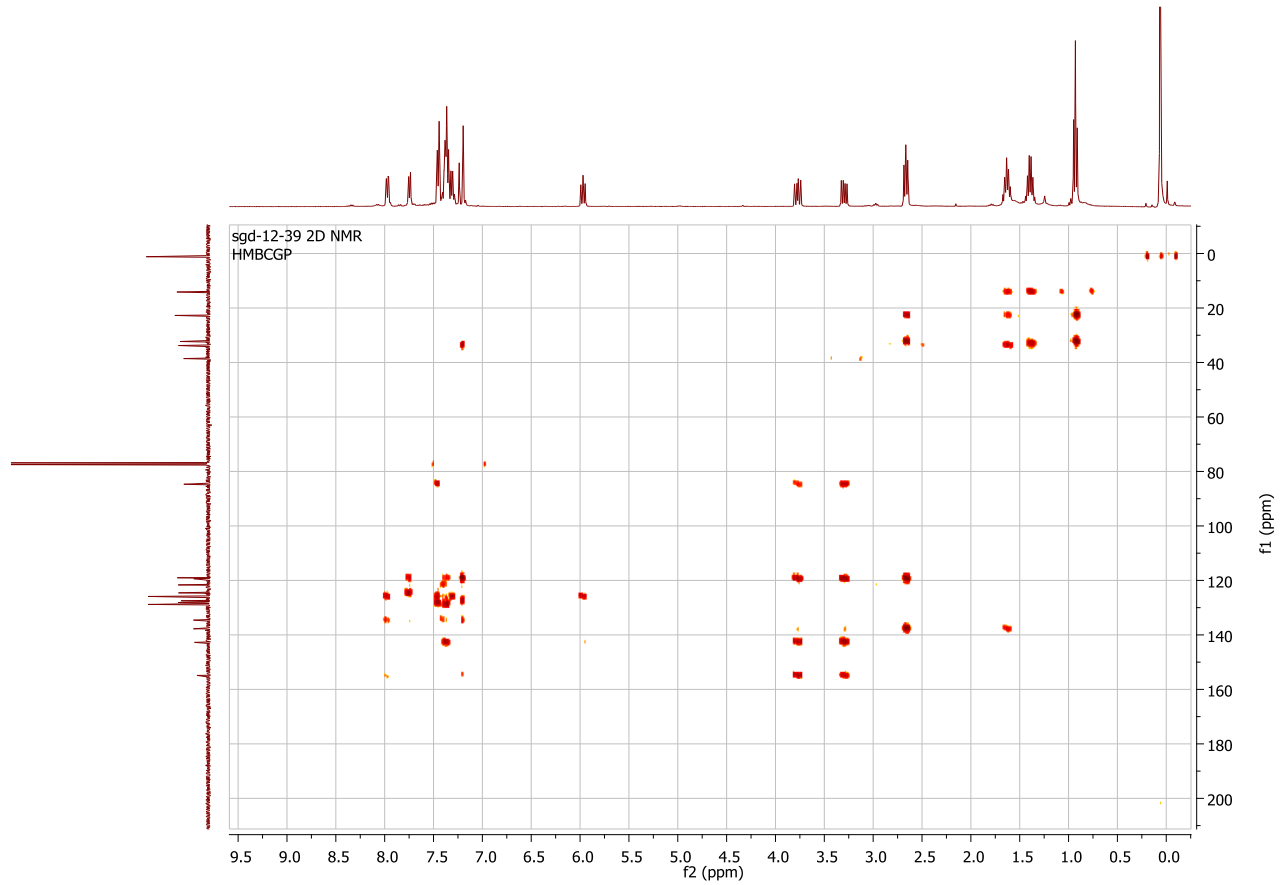


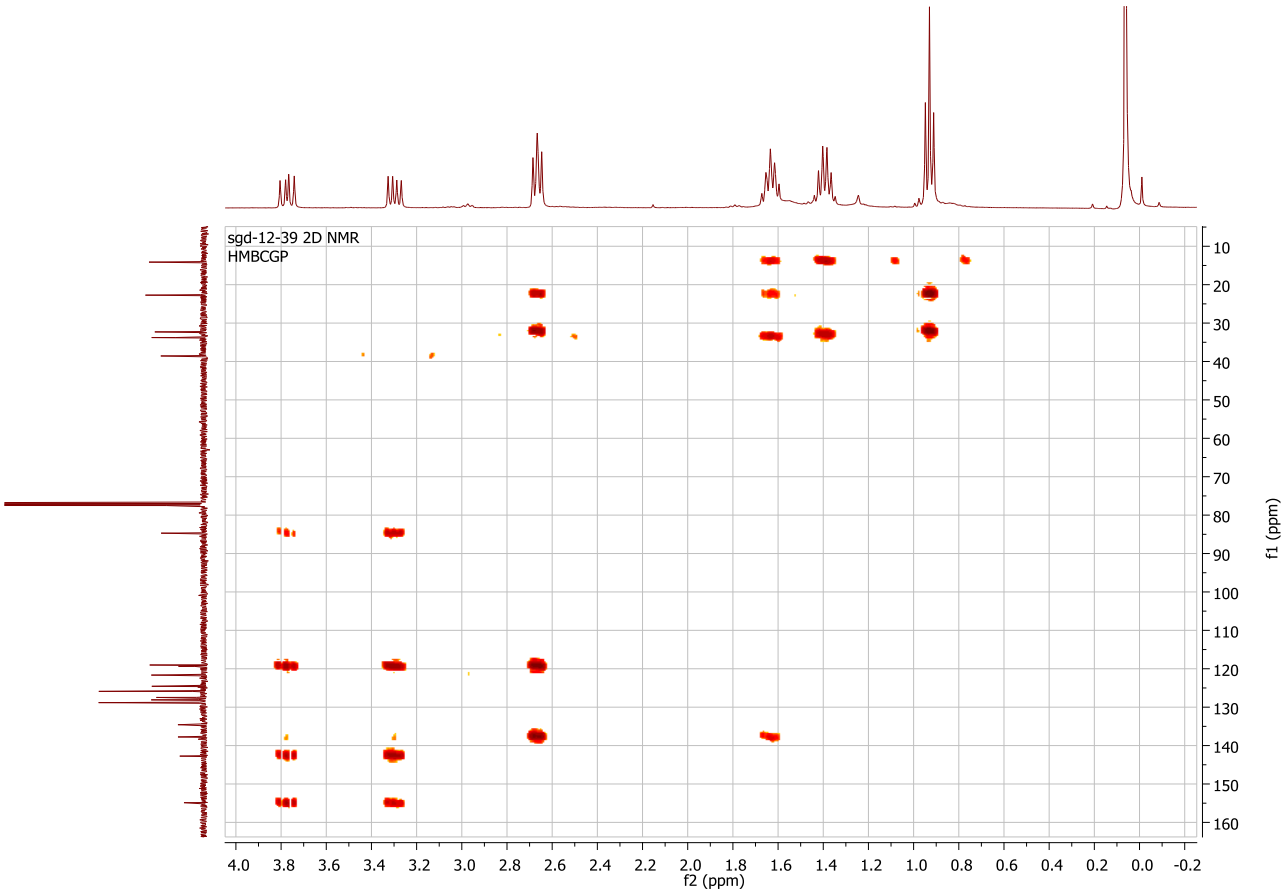
DEPT-135 NMR spectrum of **6c**



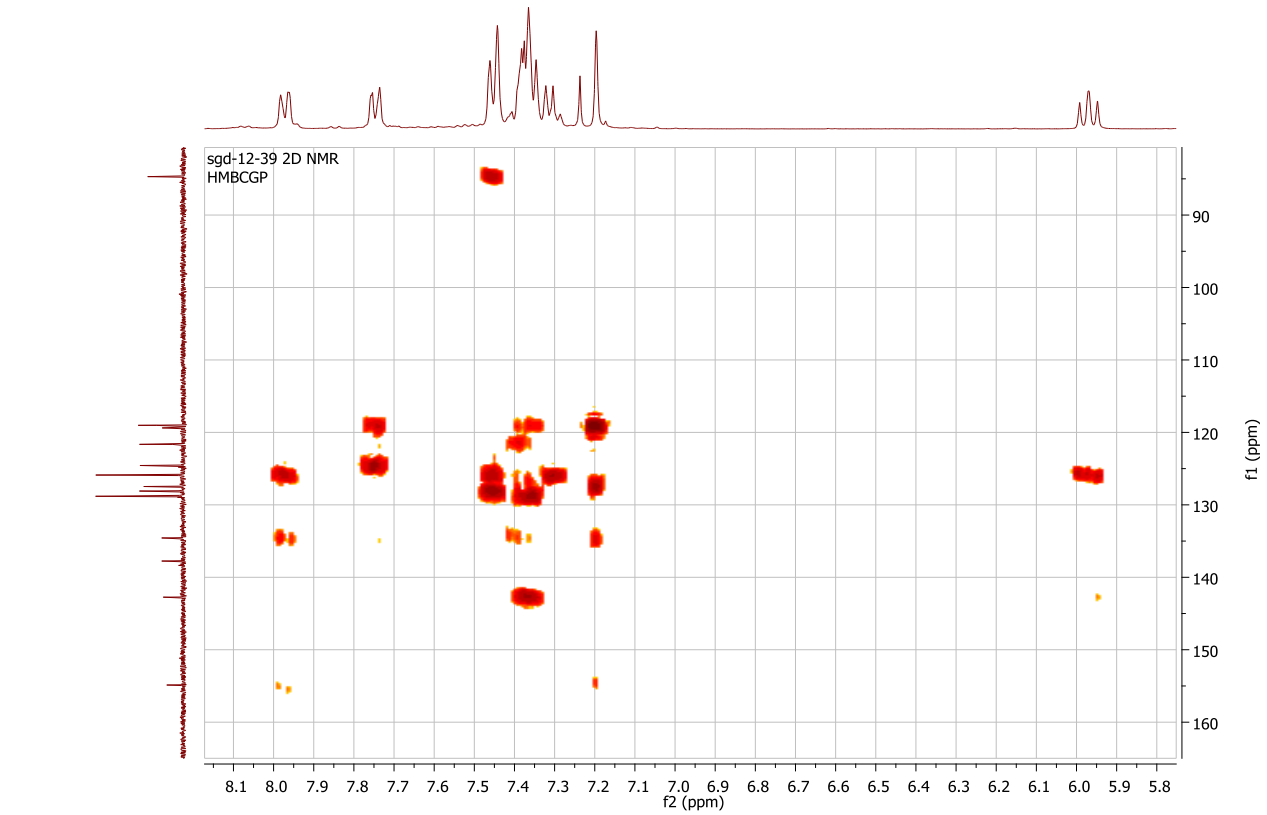


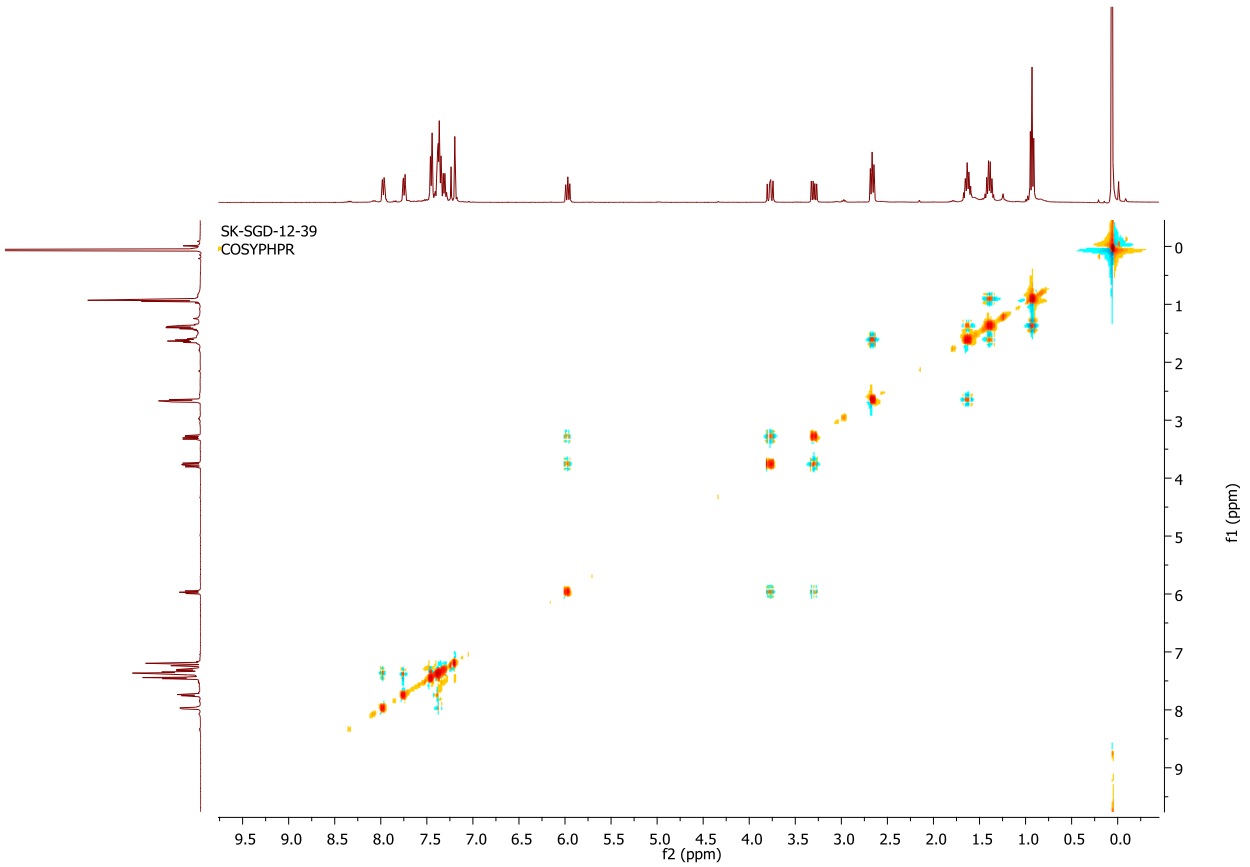
HSQCGP NMR spectrum of **6c**



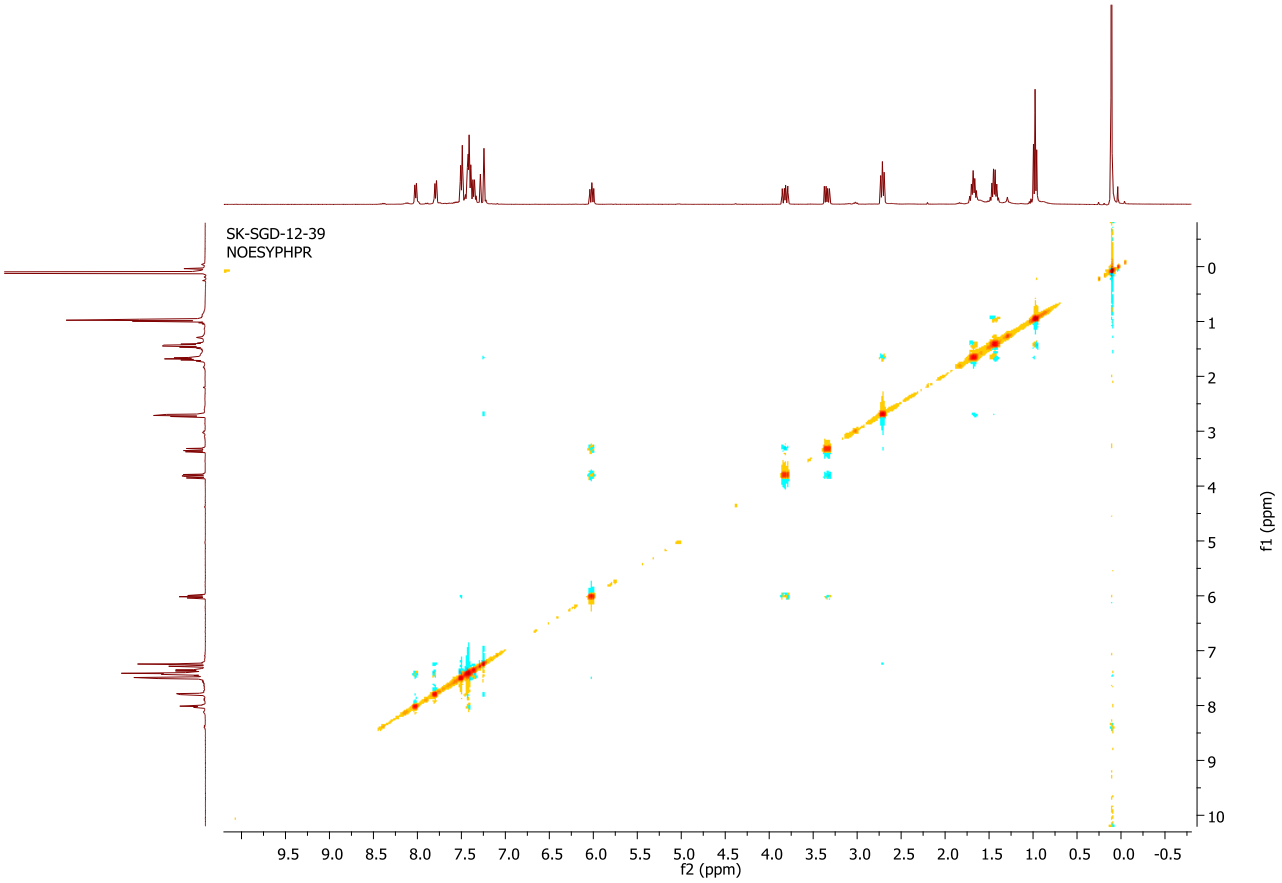


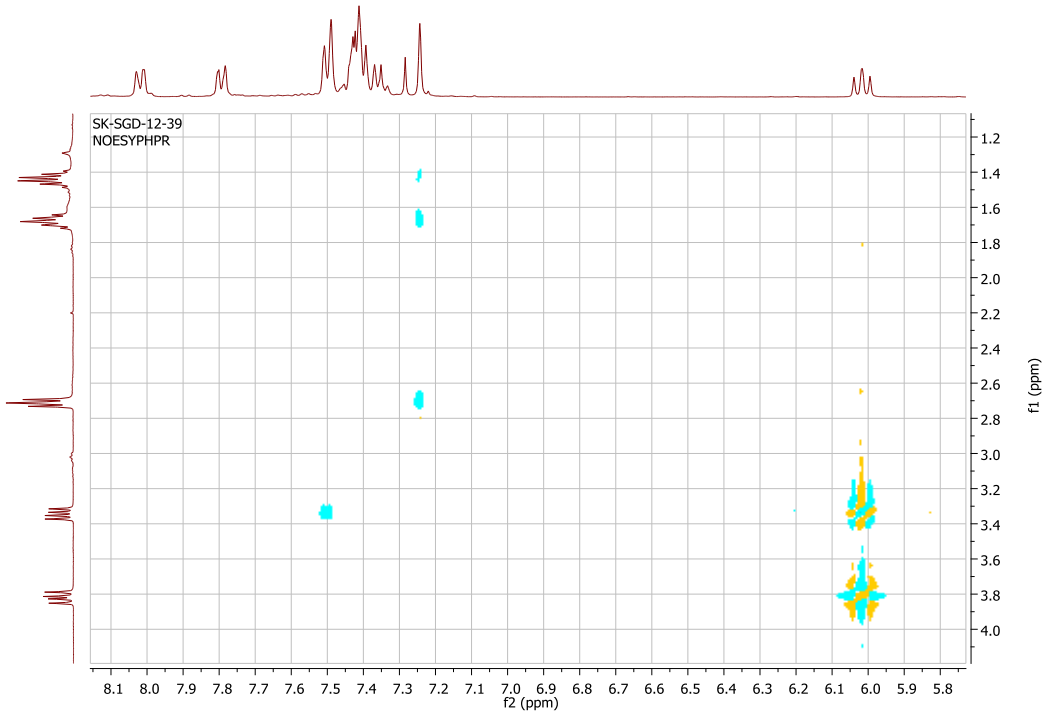
HMBCGP NMR spectrum of **6c**



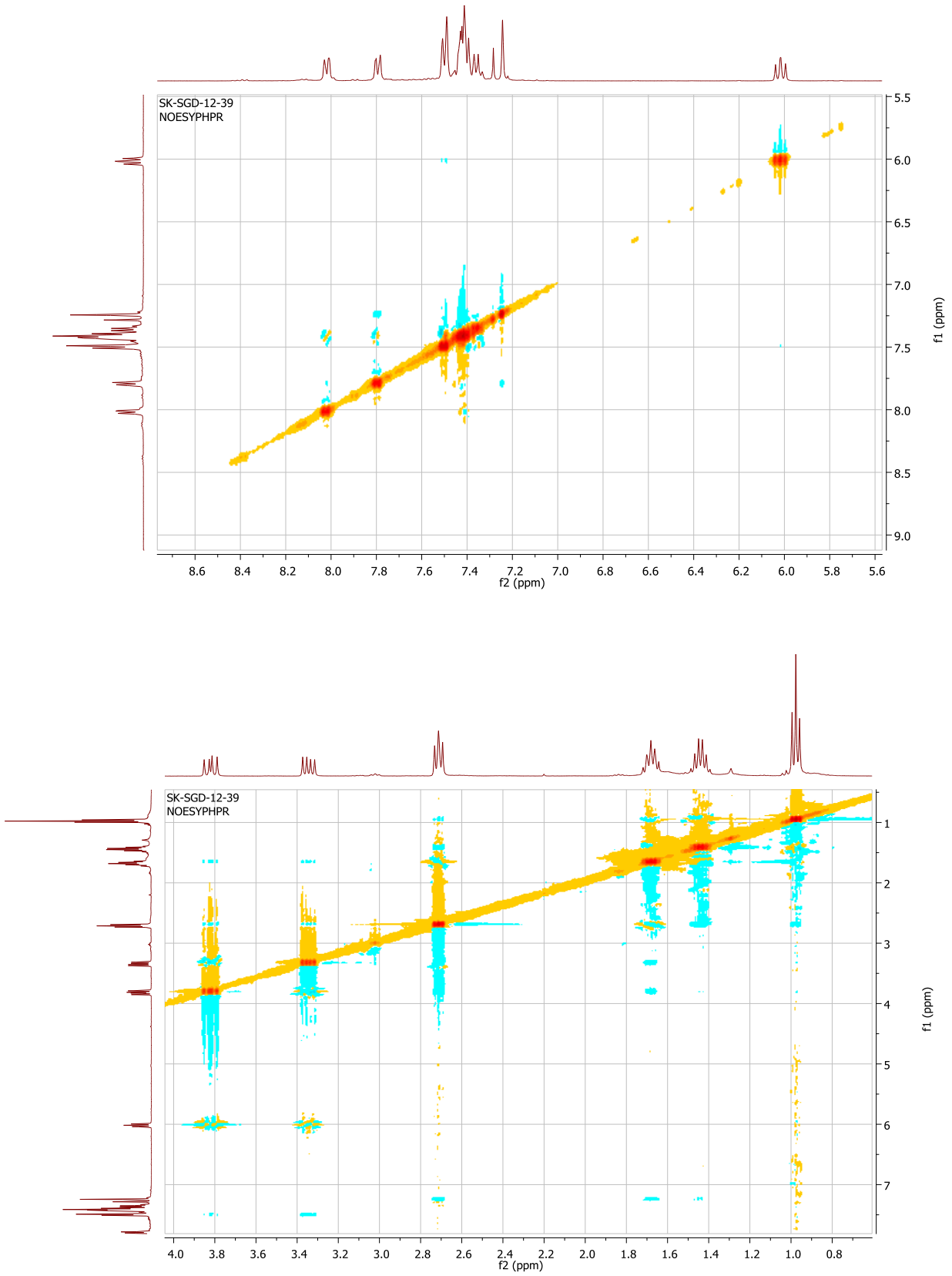


HMBCGP and COSY NMR spectrum of **6c**

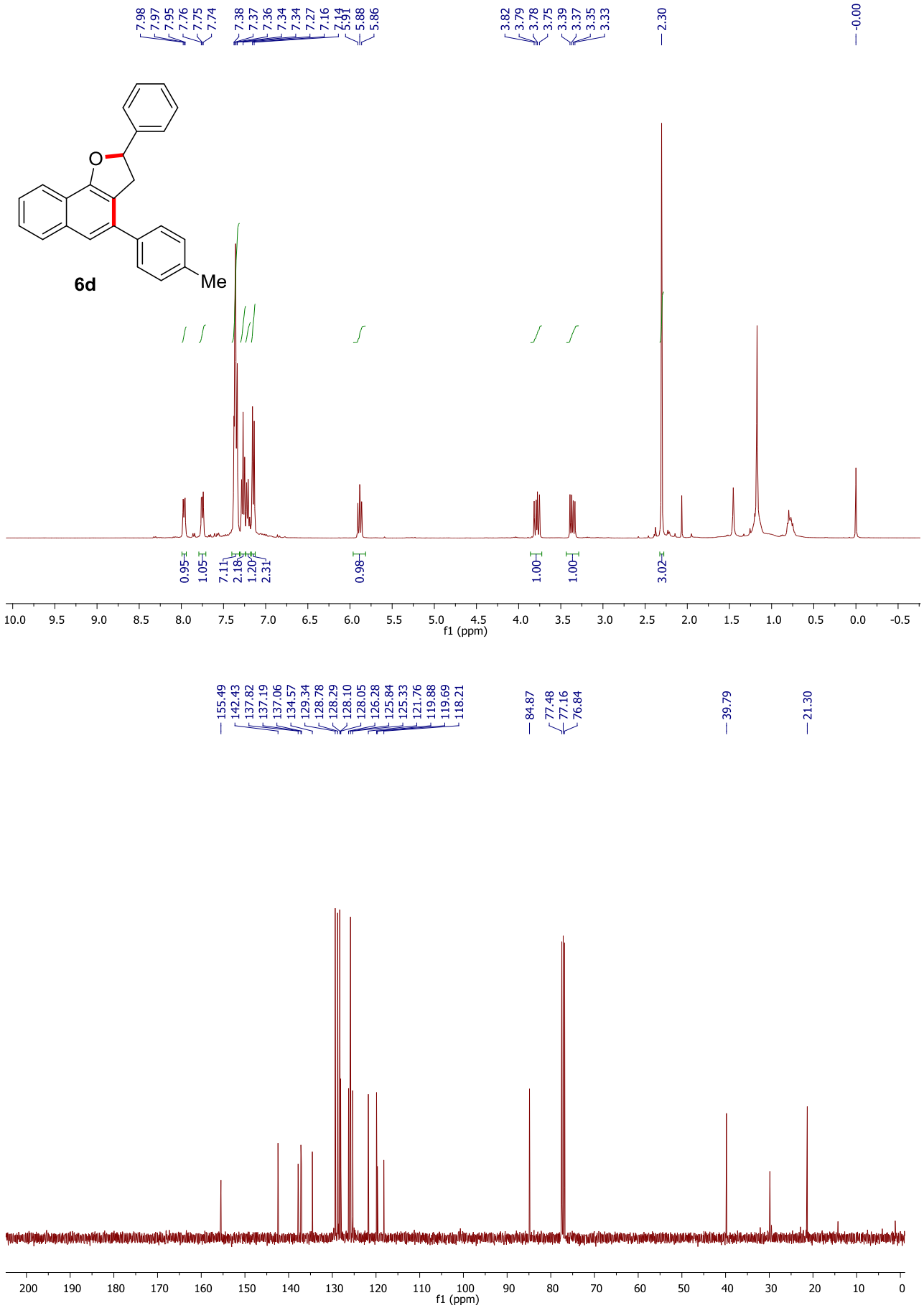




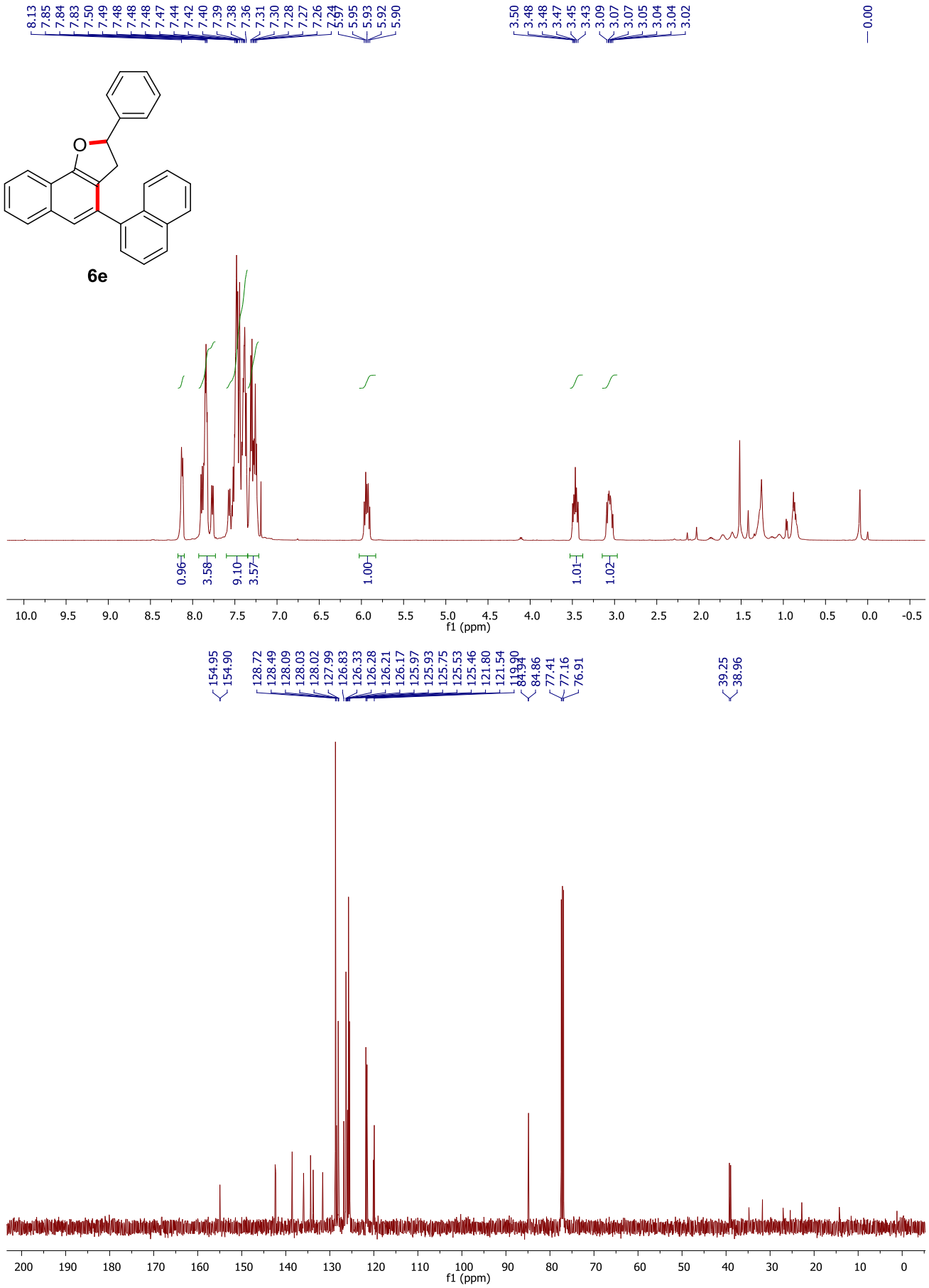
NOESY NMR spectrum of **6c**



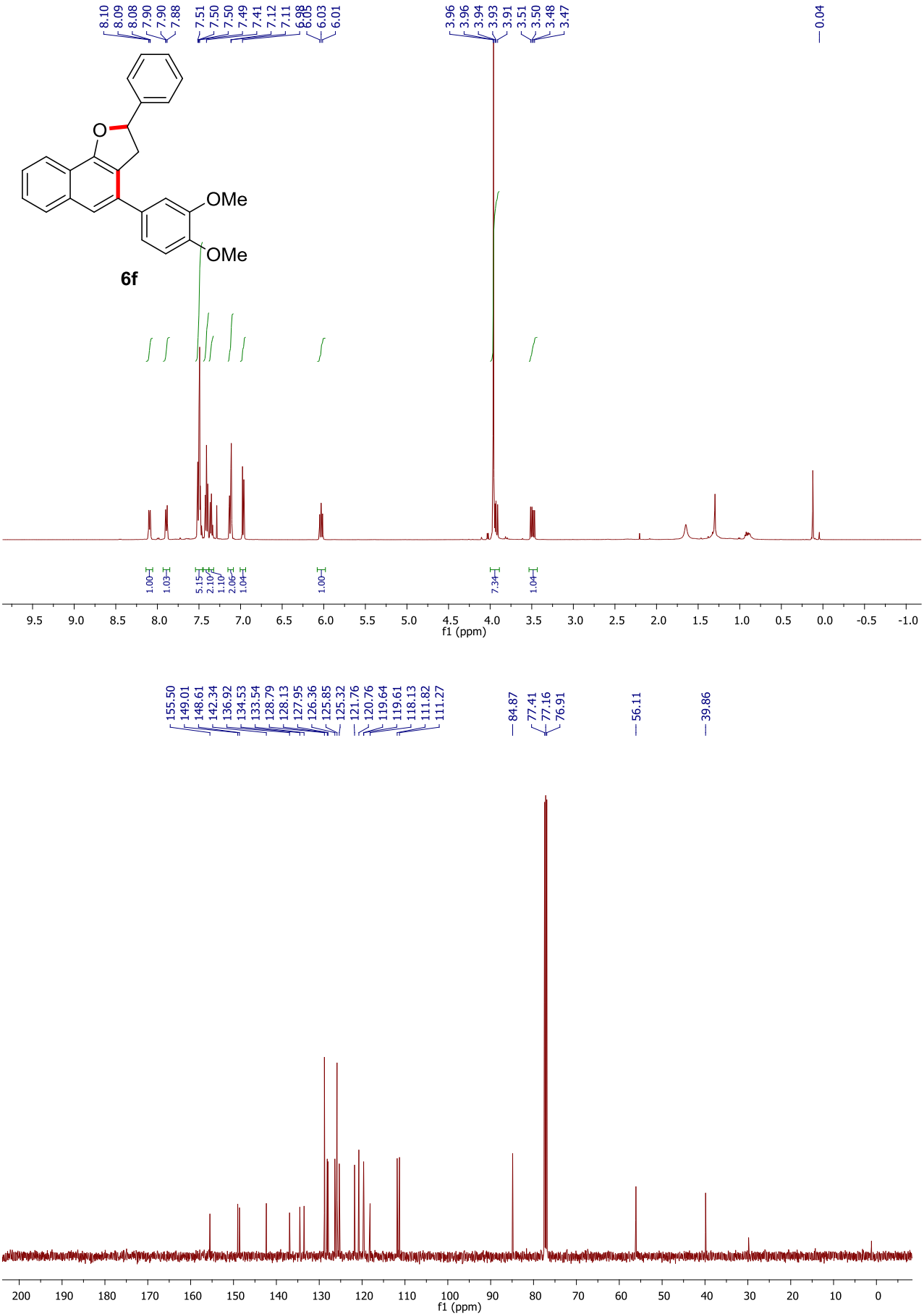
NOESY NMR spectrum of **6c**



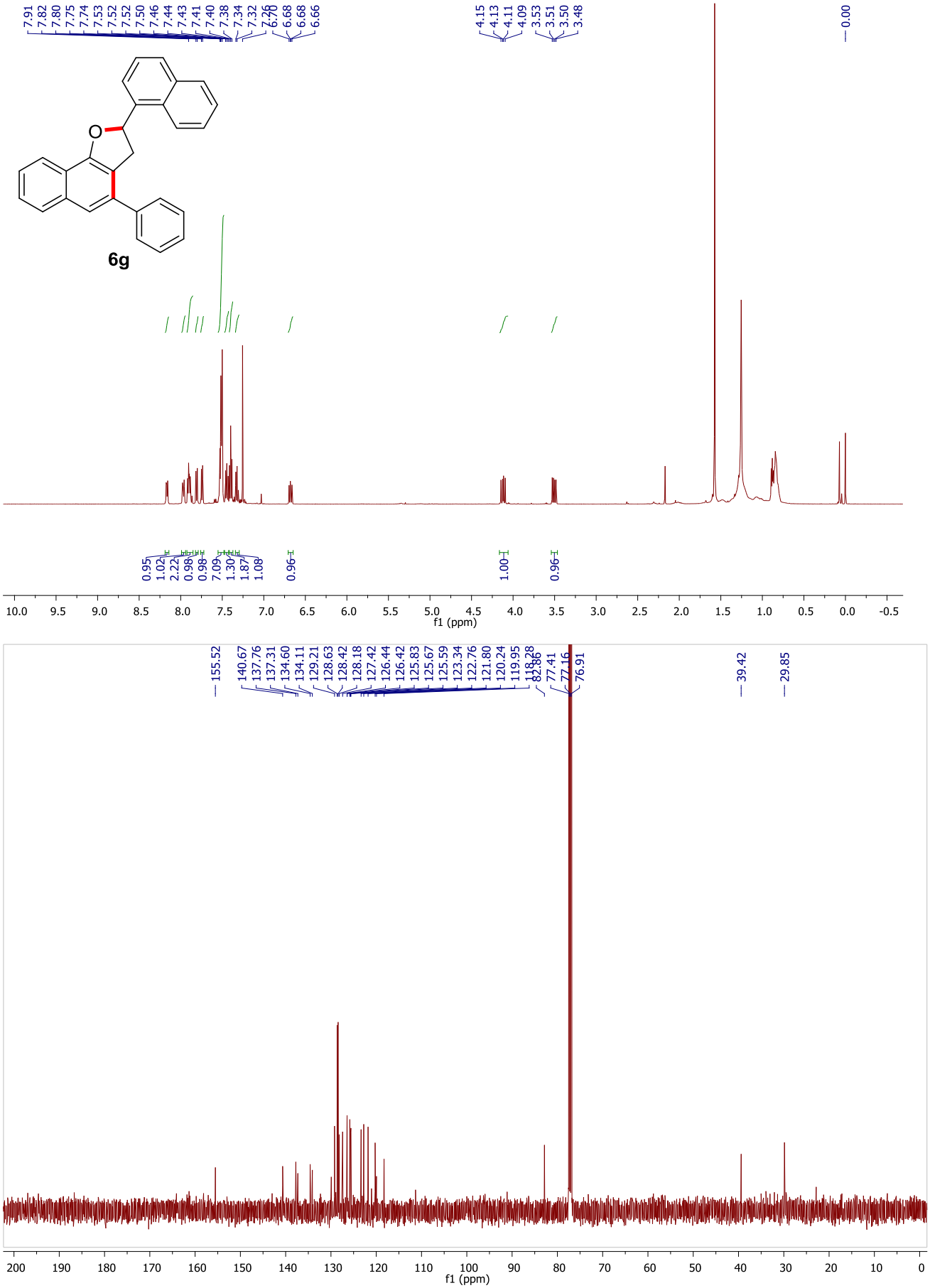
^{1}H and ^{13}C NMR spectra of **6d**



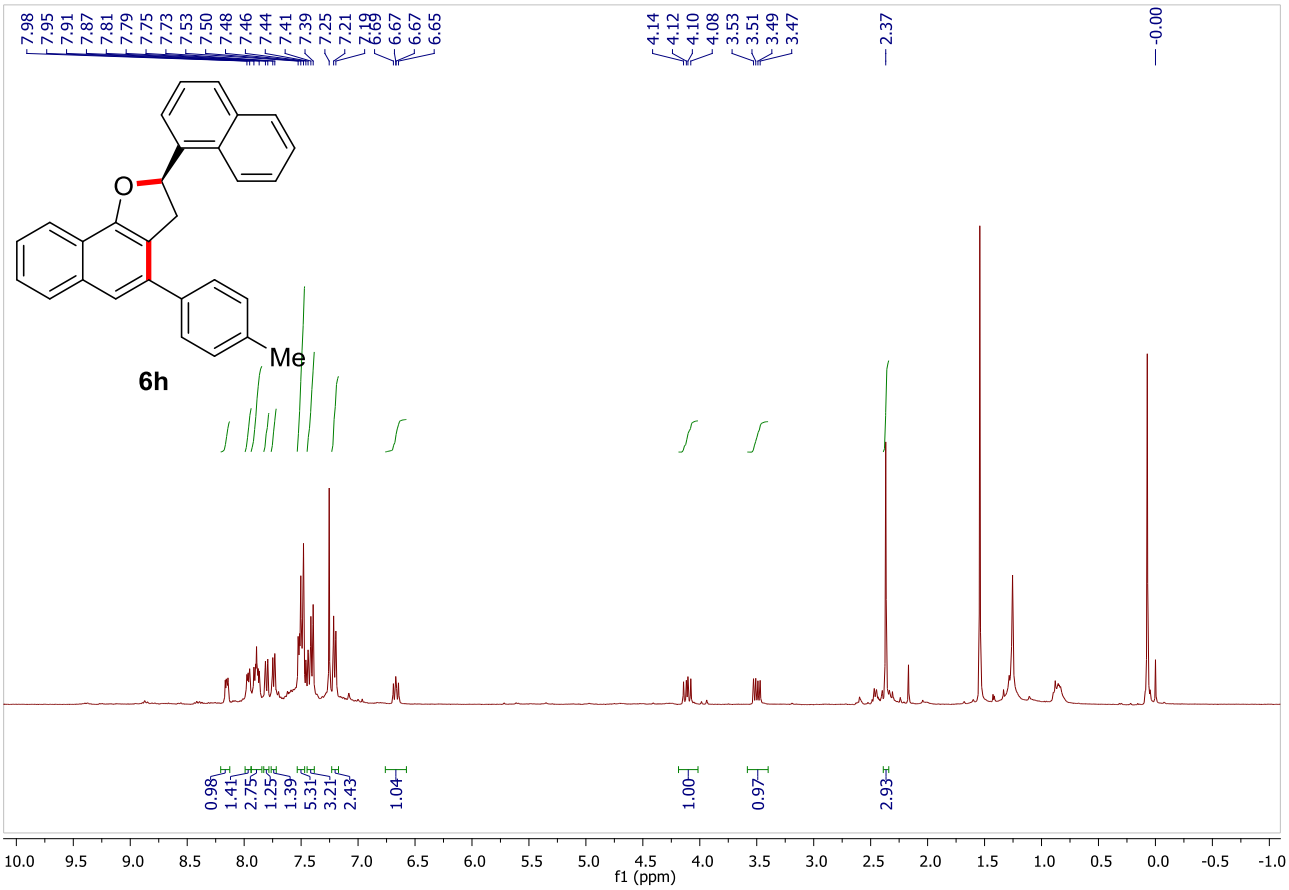
^{1}H and ^{13}C NMR spectra of **6e**

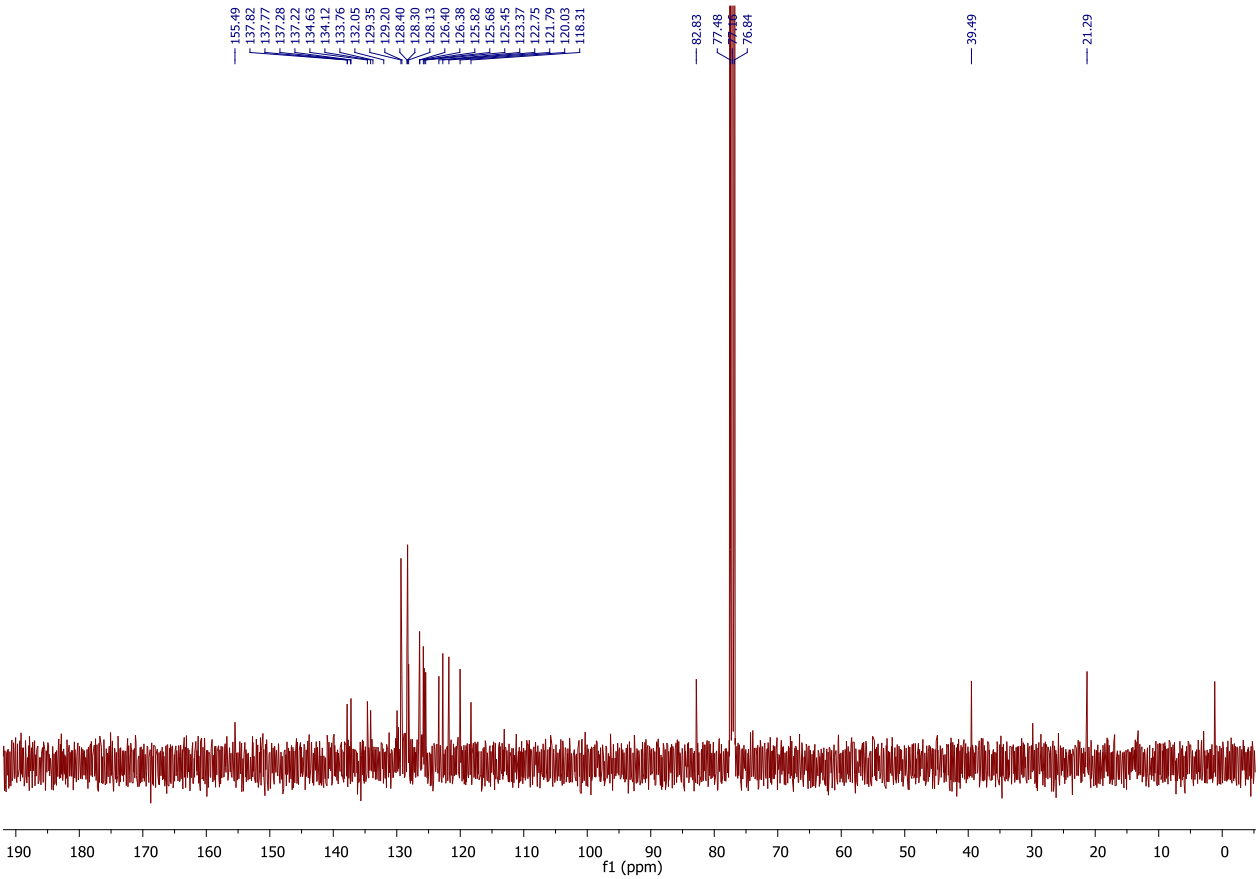


^{1}H and ^{13}C NMR spectra of **6f**

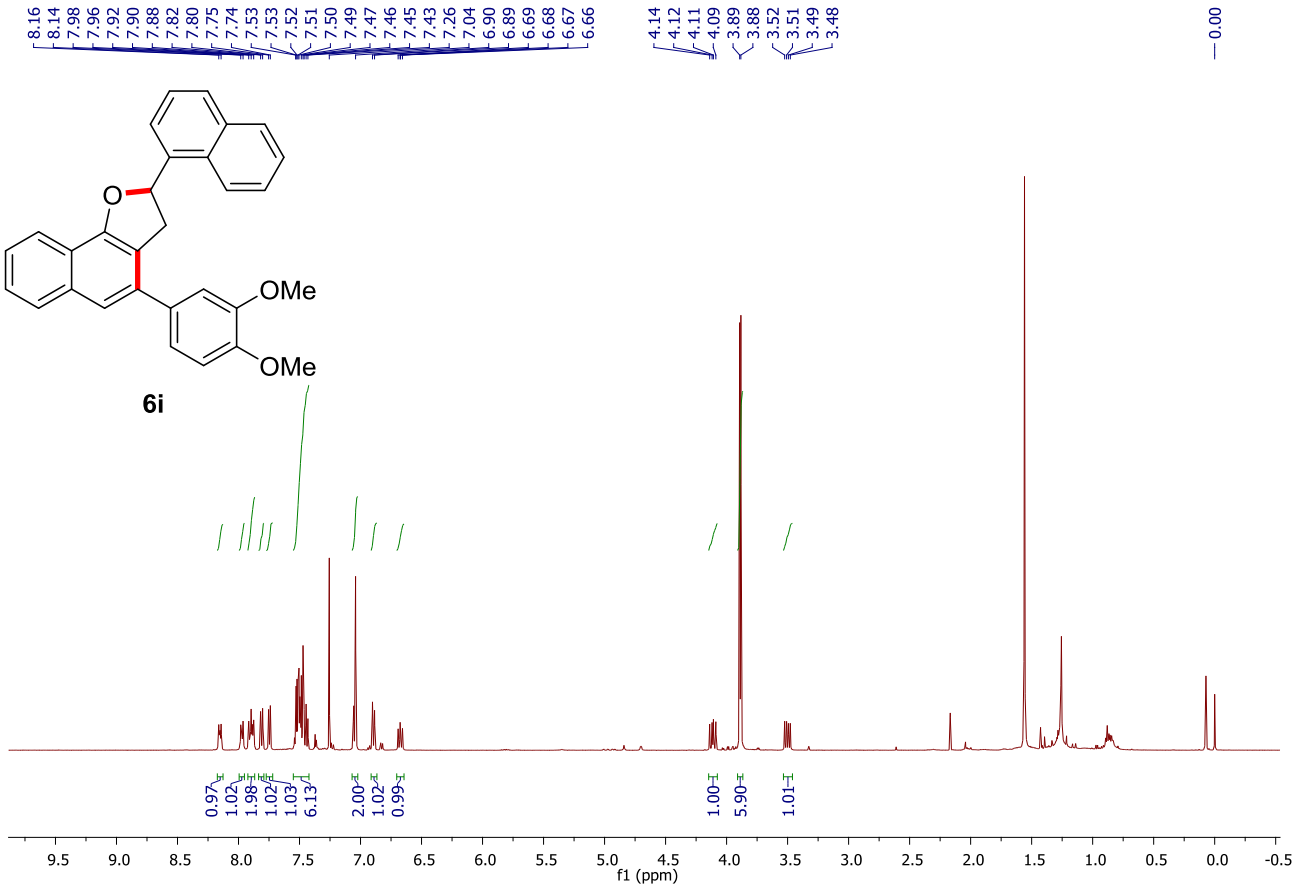


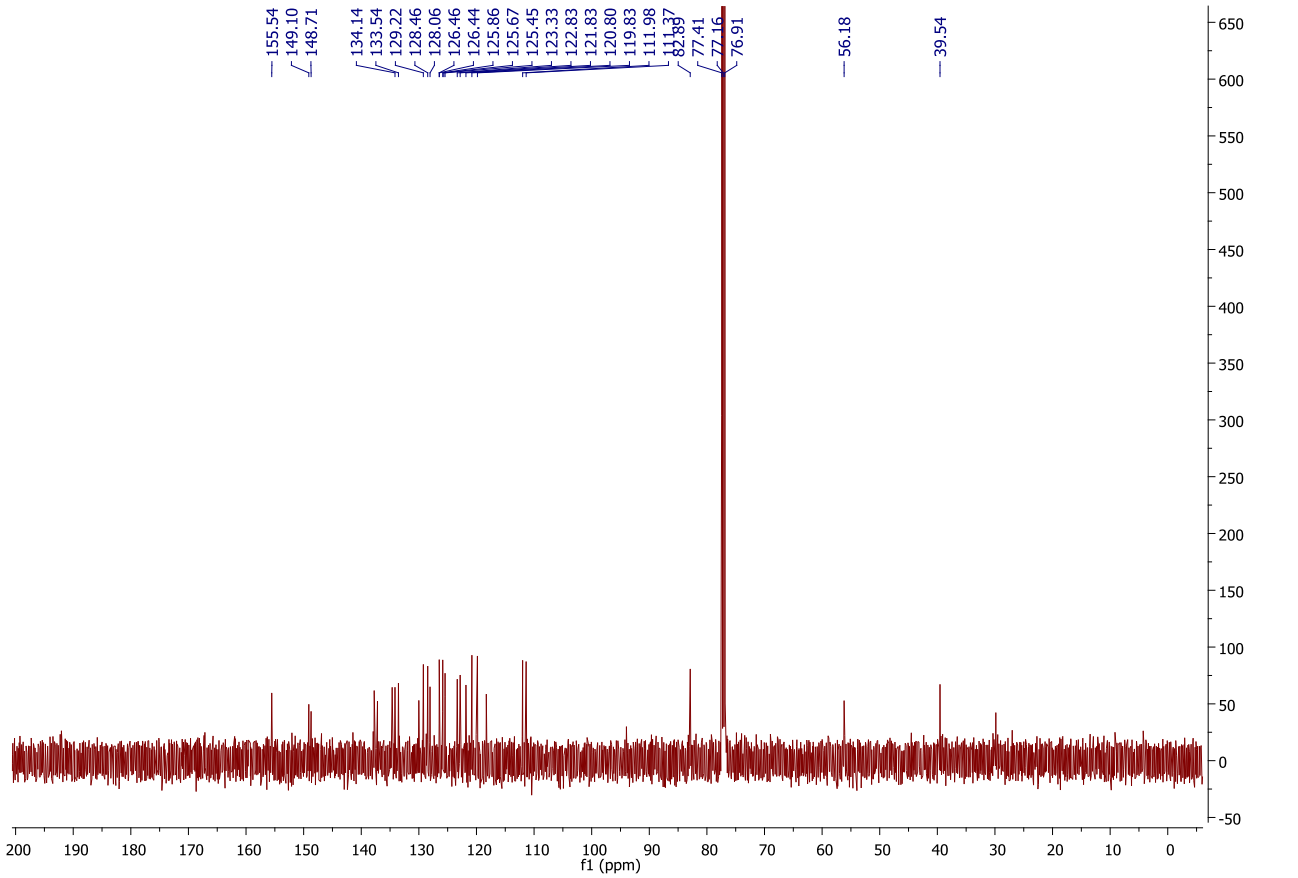
^{1}H and ^{13}C NMR spectra of **6g**



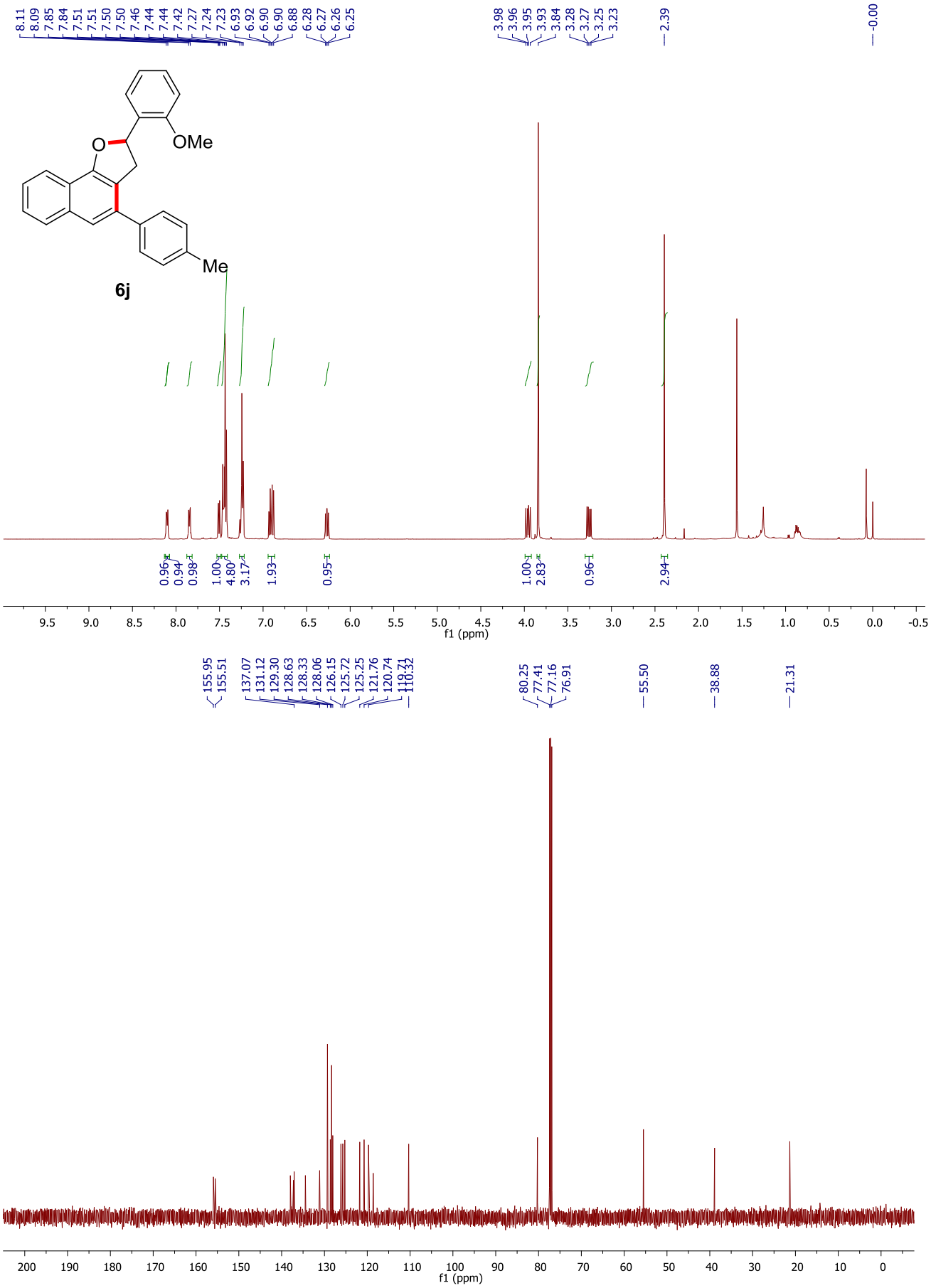


^{1}H and ^{13}C NMR spectra of **6h**

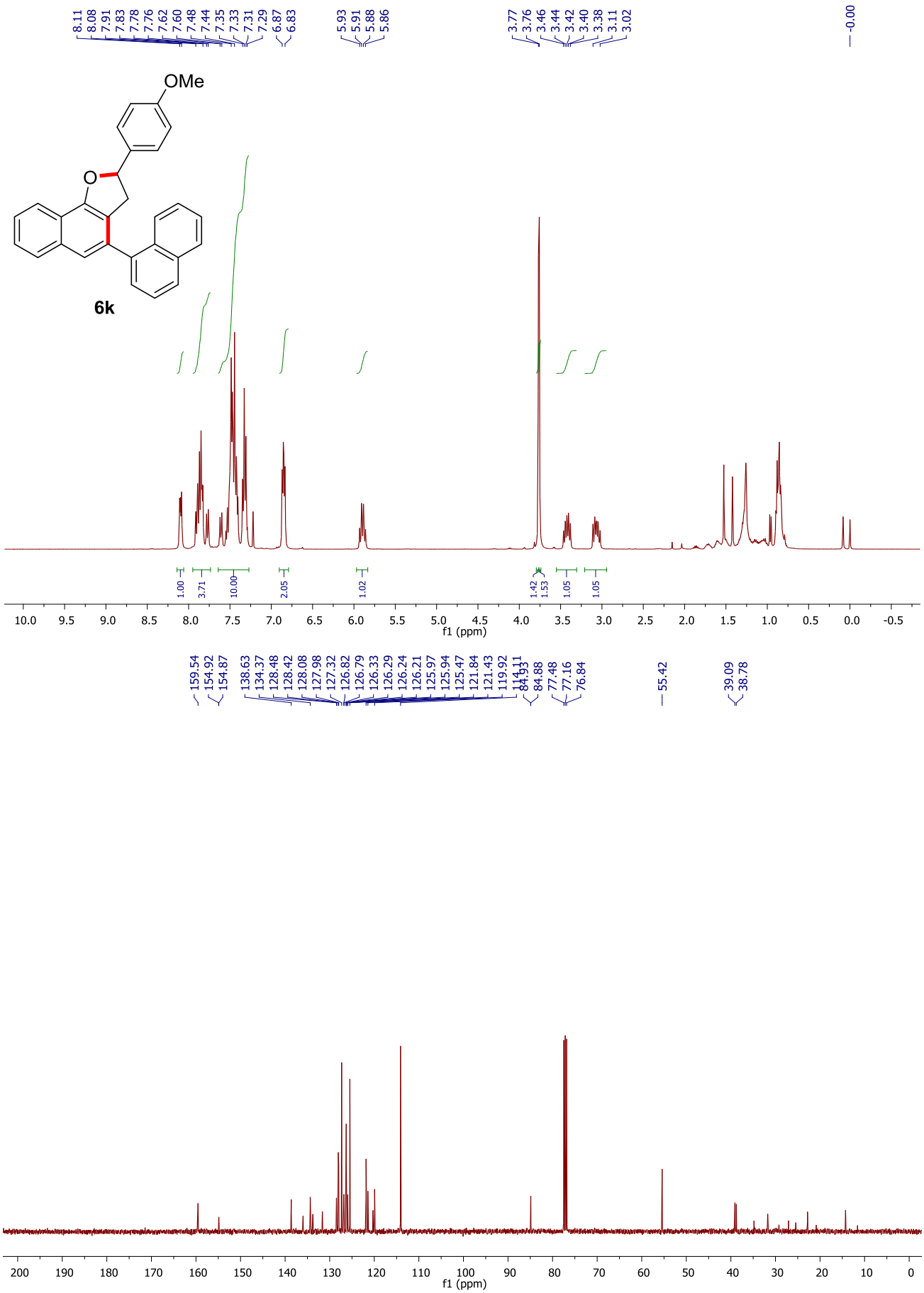




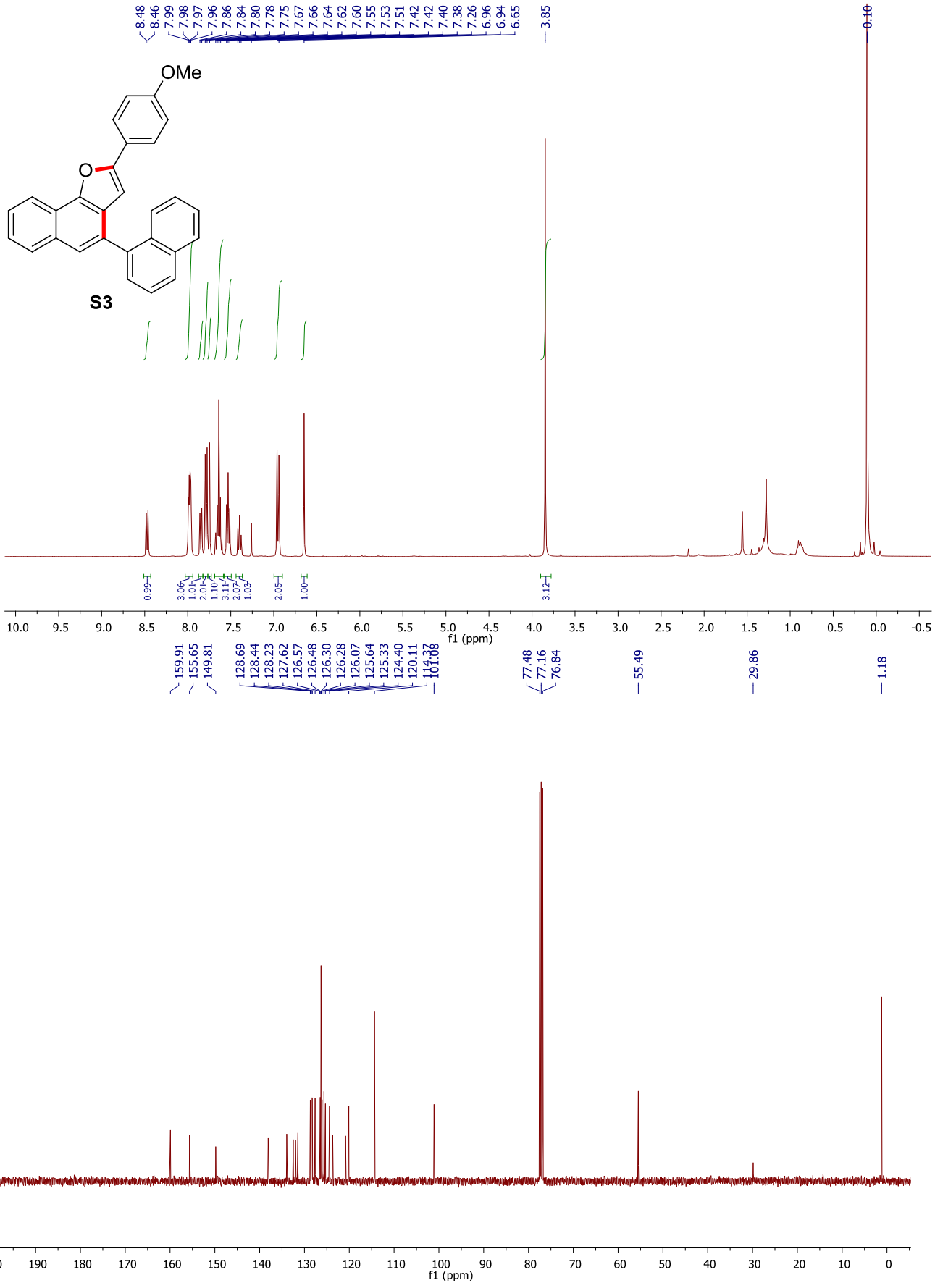
^{1}H and ^{13}C NMR spectra of **6i**



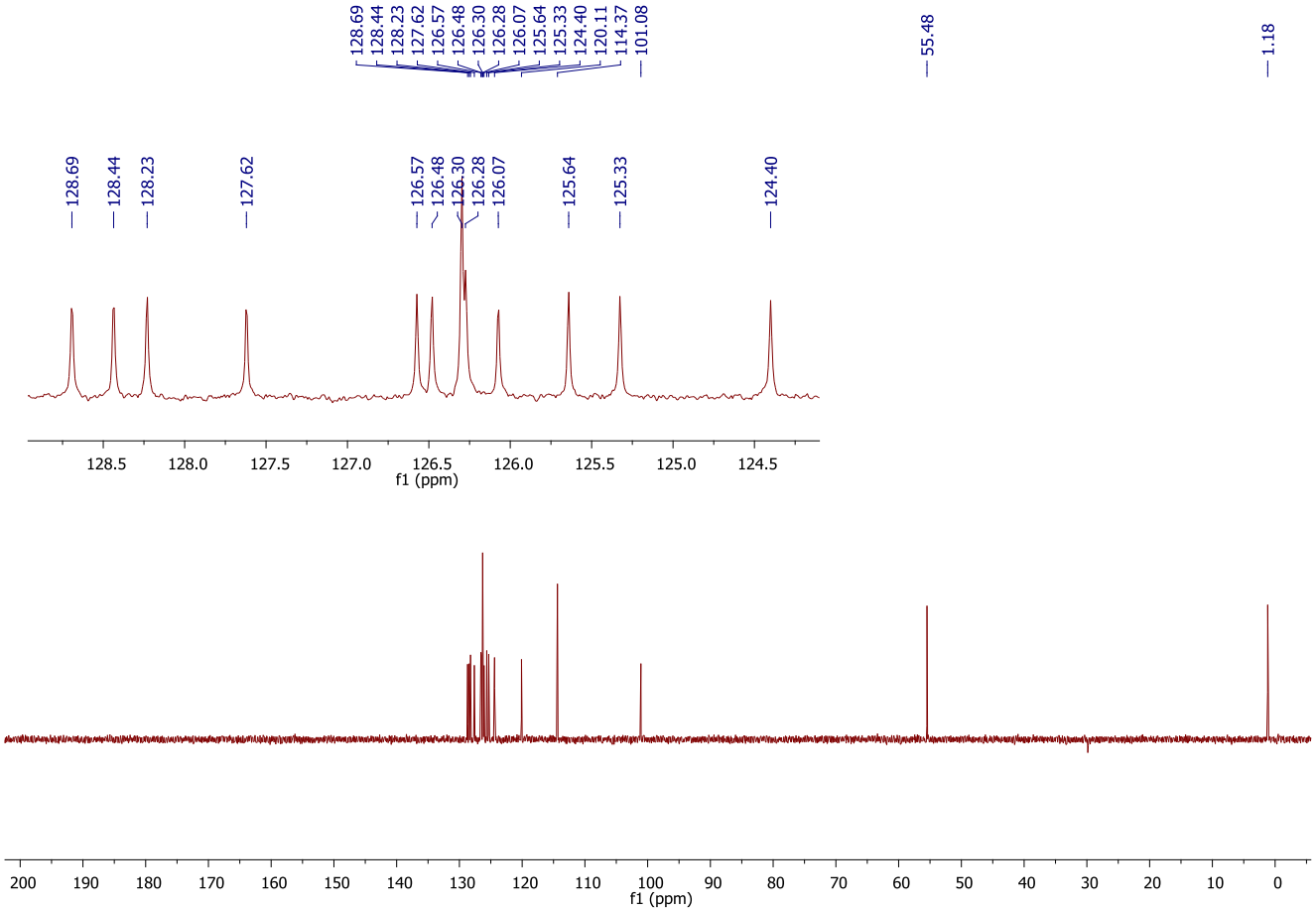
^{1}H and ^{13}C NMR spectra of **6j**



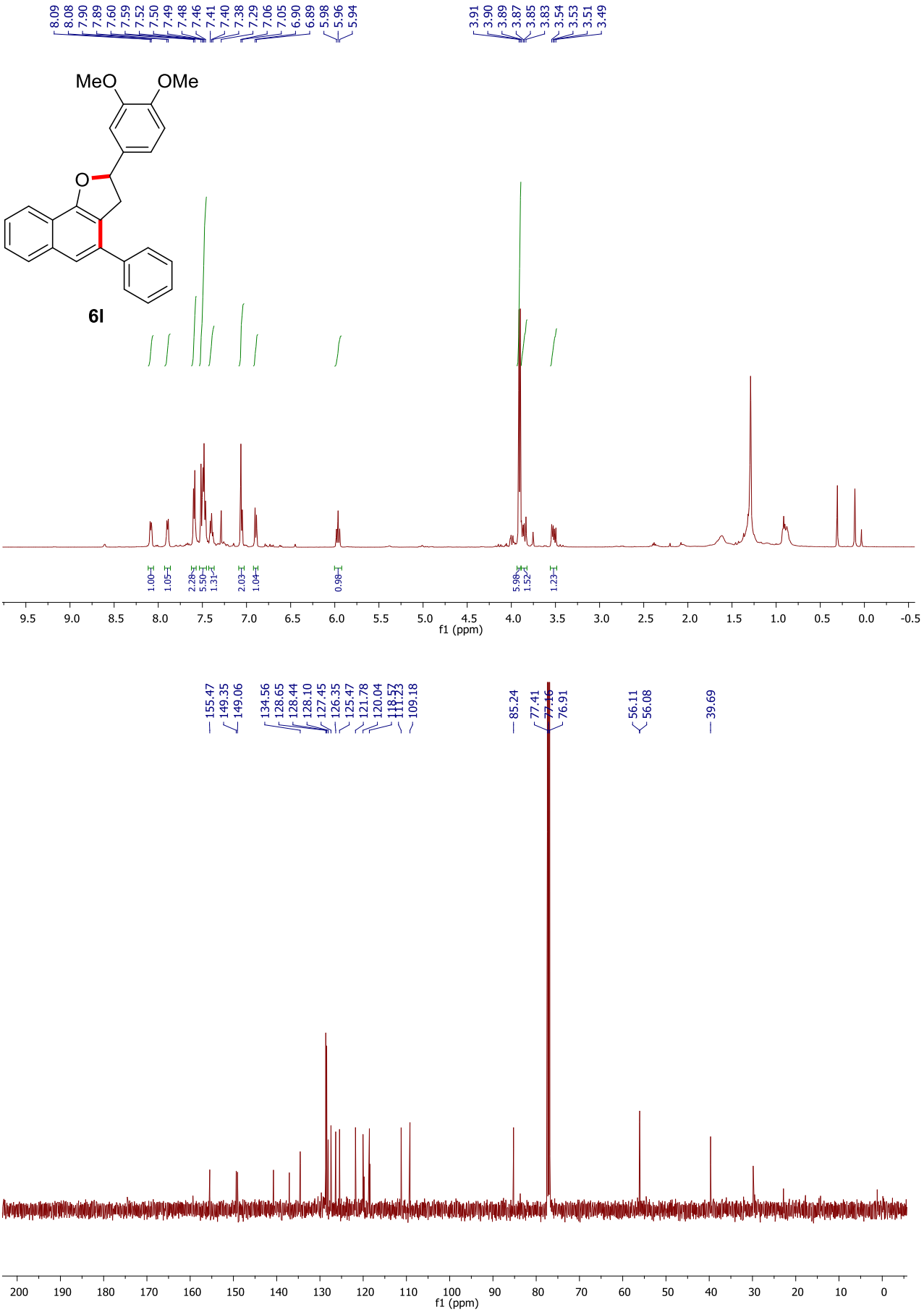
^{1}H and ^{13}C NMR spectra of **6k**



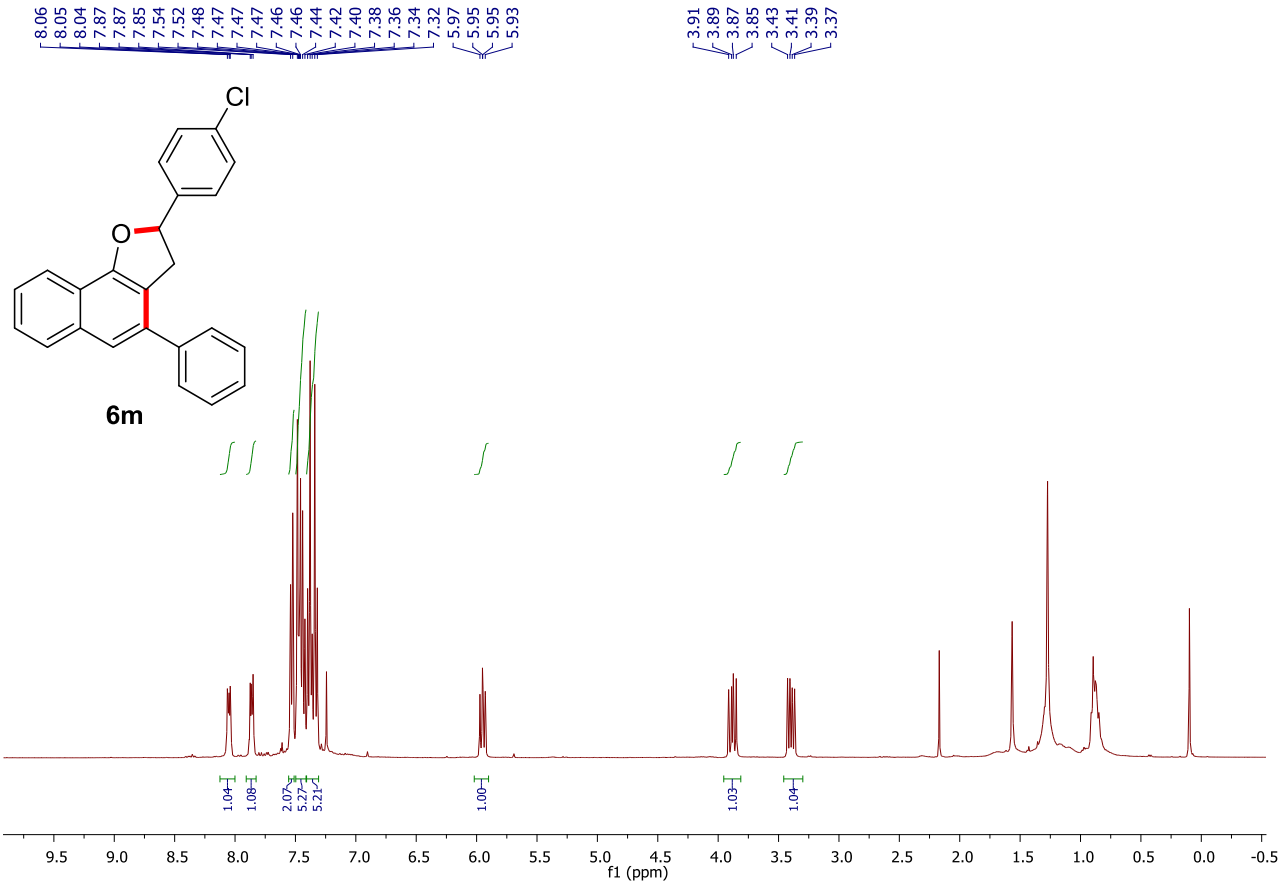
^{1}H and ^{13}C NMR spectra of **S3**

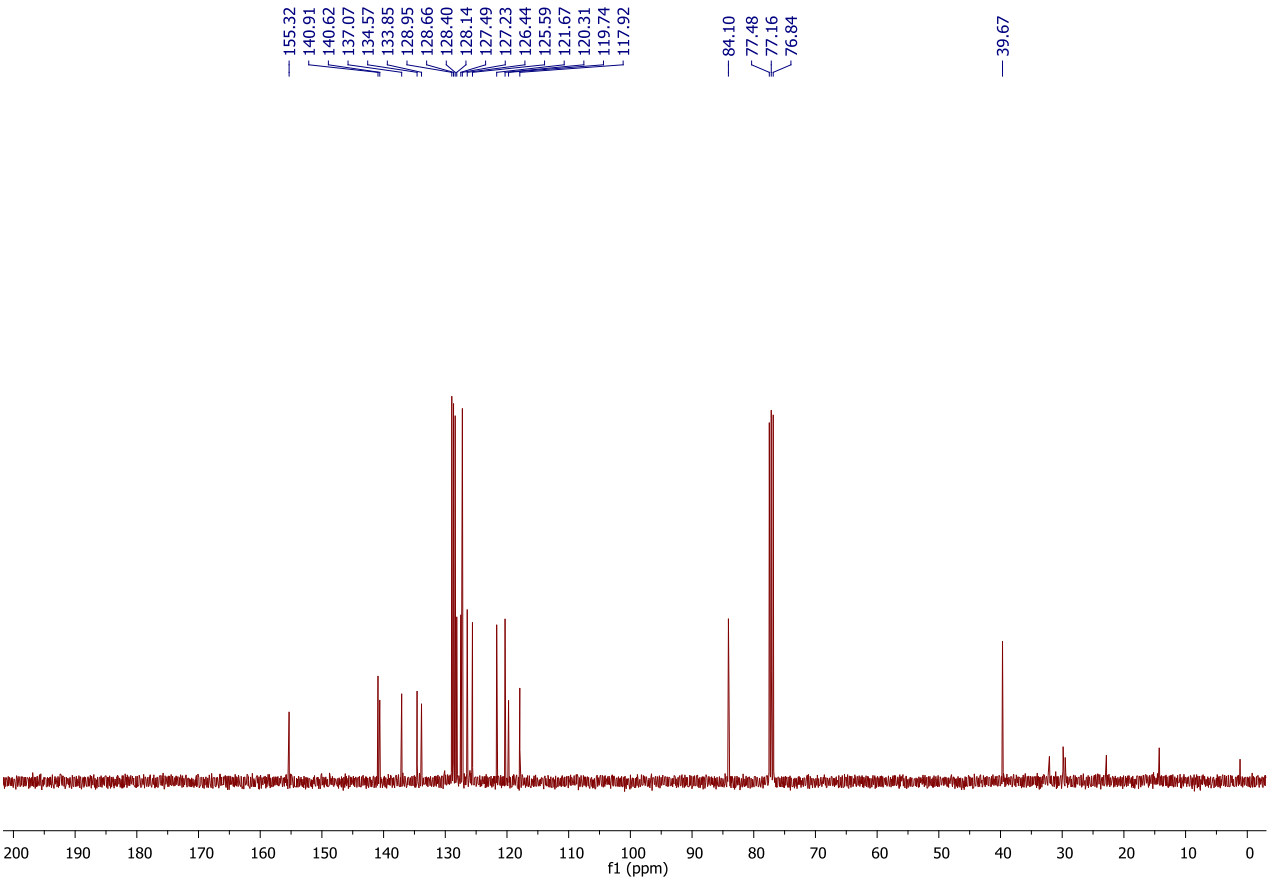


DEPT-135 NMR spectrum of S3

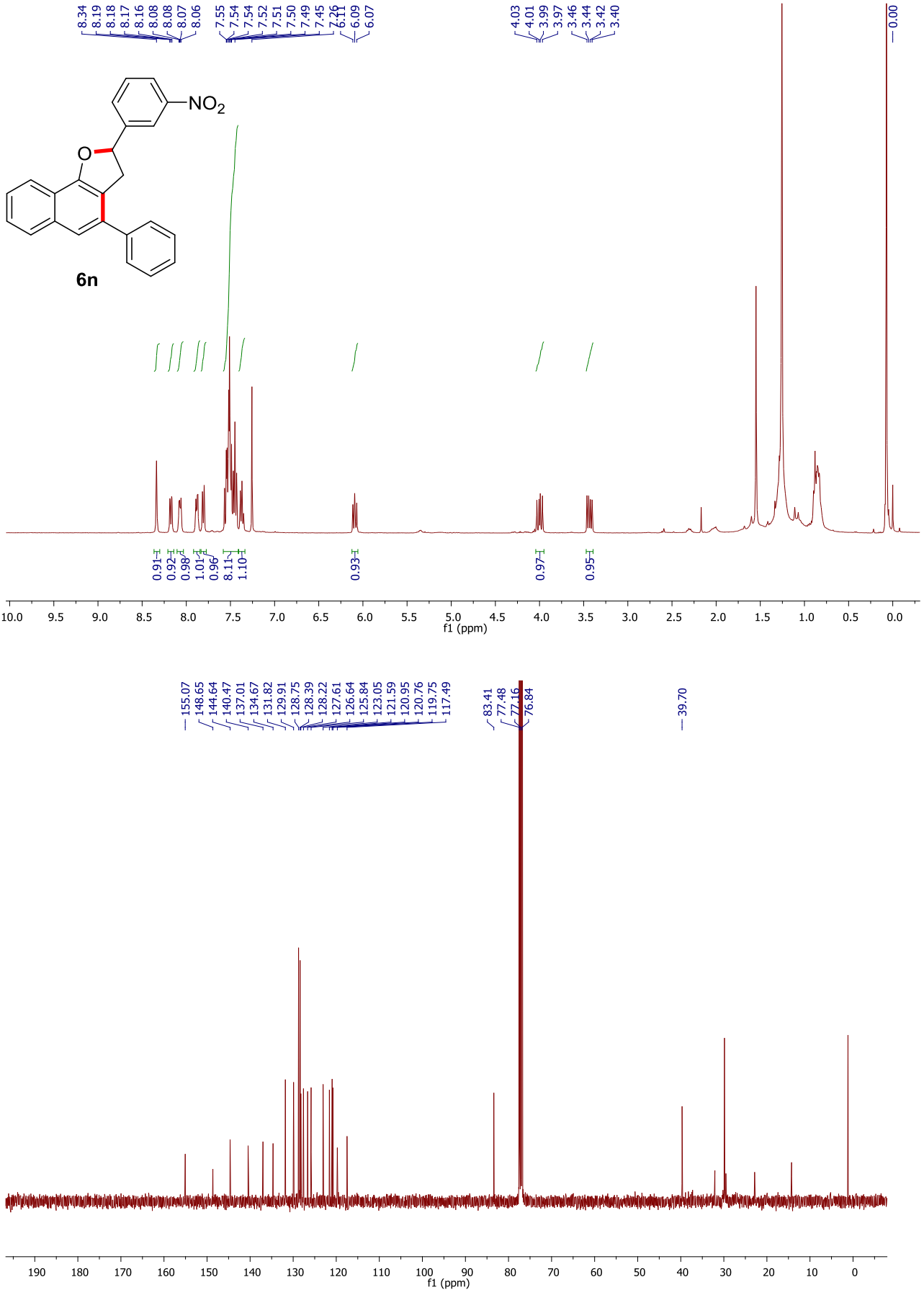


^{1}H and ^{13}C NMR spectra of **6l**

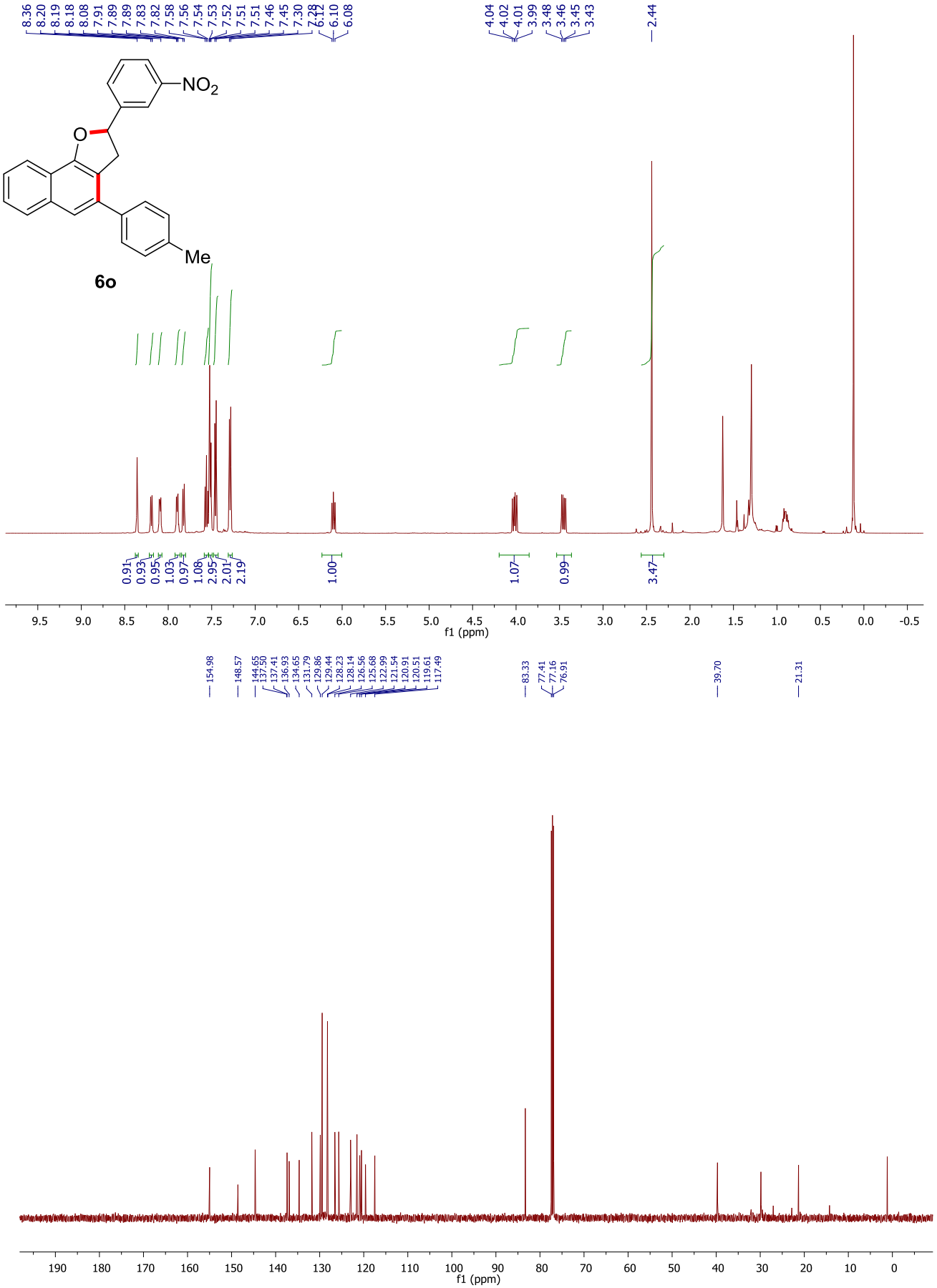




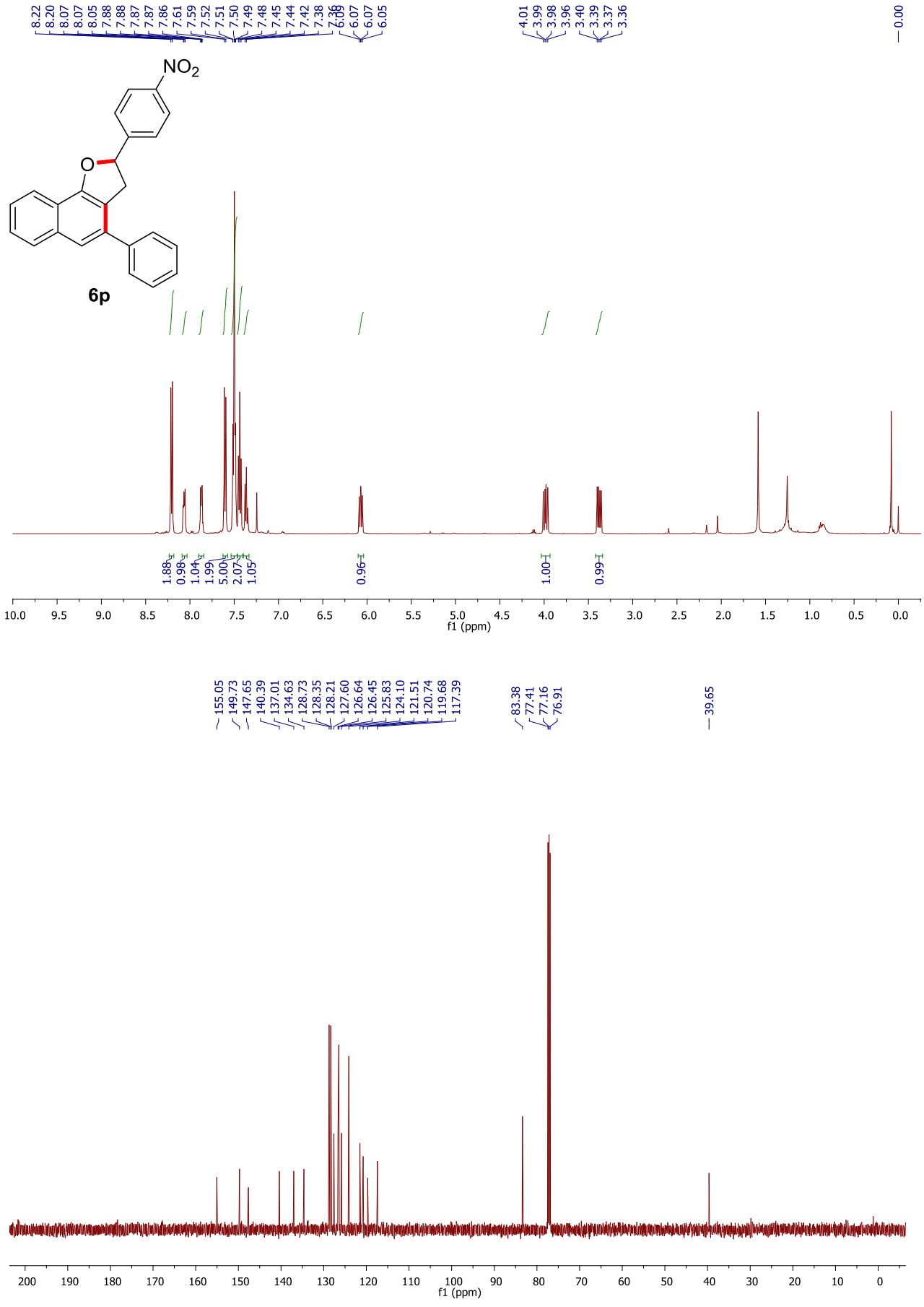
^{1}H and ^{13}C NMR spectra of **6m**



^{1}H and ^{13}C NMR spectra of **6n**



^{1}H and ^{13}C NMR spectra of **6o**



^{1}H and ^{13}C NMR spectra of **6p**