Supporting Information

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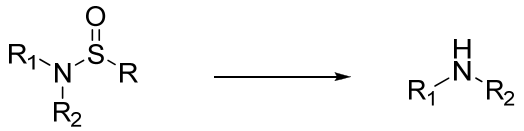
1. General information

Melting points were obtained on a XT-4 melting-point apparatus and were uncorrected. The infrared (IR) spectra were measured on a Nicolet Avatar 360 FTIR spectrometer with 4 cm^{-1} resolution and 32 scans between wavenumber of 4000 cm^{-1} and 400 cm^{-1}. Samples were prepared as KBr disks with 1mg of samples in 100mg of KBr. Proton nuclear magnetic resonance (^{1}H-NMR) spectra were obtained on a Bruker Avance 400 spectrometer at 400 MHz. Carbon-13 nuclear magnetic resonance (^{13}C-NMR) was obtained on Bruker Avance 400 spectrometer at 100 MHz. Chemical shifts are reported as δ values in parts per million (ppm) relative to tetramethylsilane (TMS) for all recorded NMR spectra. High Resolution Mass spectra were taken on AB QSTAR Pulsar mass spectrometer or Aglient LC/MSD TOF mass spectrometer. Optical rotations were recorded on a UV-210A spectrometer. All new compounds were characterized by IR, ^{1}H NMR, ^{13}C NMR and HRMS. The known compounds were characterized by ^{1}H NMR and ^{13}C NMR. Silica gel (200–300 mesh) for column chromatography and silica GF_{254} for TLC were produced by Qingdao Marine Chemical Company (China). THF used in the reactions were dried by distillation over metallic sodium and benzophenone. All experiments were carried out using ultrapure water. Starting materials and reagents used in reactions were obtained commercially from Acros, Aldrich, Fluka and were used without purification, unless otherwise indicated.

2. Experimental section

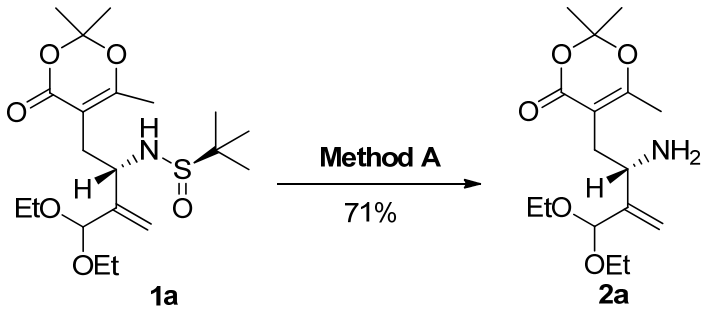
2.1 Procedures and analytical data of compounds 1a-1x and 2a-2x

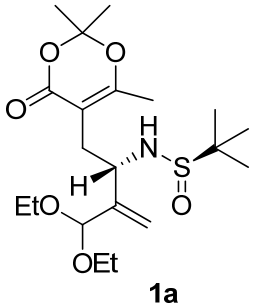


1a-1x **2a-2x**

Method A: (For acid sensitive substrates) To a solution of sulfinyl amines (0.5 mmol) in THF/H_2O (1:1, 10 mL) was added Na_2CO_3 (1.5 mmol, 3.0 eq.) and DMAP (0.1 mmol, 0.2 eq.). The reaction mixture was stirred for 5 min at 20 ^oC before addition of I_2 (1.25 mmol, 2.5 eq.) under an argon atmosphere. The resulting mixture was then stirred at 20 ^oC under argon for 16-24 h. After consumption of starting materials, the reaction was quenched by water (5 mL) and aqueous sodium thiosulphate (2N, 0.1 mL) at room temperature. The mixture was extracted with CH_2Cl_2 (3 × 5 mL), and the combined organic phases were dried (Na_2SO_4), and concentrated. The residue was chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02 or ethyl acetate : Et_3N= 1 : 0.01) to afford the product.

Method B: (Other substrates less labile to acids) To a solution of sulfinyl amines (0.5 mmol) in THF/H_2O (5:1, 10 mL) was added iodine (0.1 mmol, 0.2 eq.). The reaction mixture was then stirred at 50 ^oC under air or under nitrogen until completely consumption of sulfinyl amines. The reaction mixture was cooled to room temperature and diluted with water (15-20 mL). After removal of THF under reduced pressure, an aqueous solution of sodium thiosulphate (0.2 N, 0.2 mL) was added. The resulting mixture was then washed with Et_2O (3 × 5 mL), and the aqueous phase was treated with saturated aqueous solution of $NaHCO_3$ (5 ml). The resulting aqueous mixture was then extracted with CH_2Cl_2 (3 × 5 mL) and the combined organic phases were washed with brine and dried over Na_2SO_4. After filtration, the solvent was removed under reduced pressure to afford the amines. Chromatography on basic aluminium oxide might be required for some amines.



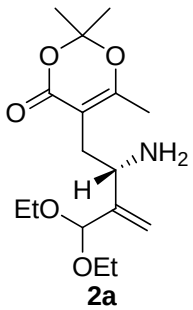


(*R*)-*N*-((*S*)-3-(diethoxymethyl)-1-(2,2,6-trimethyl-4-oxo-4*H*-1,3-dioxin-5-yl)but-3-en-2-yl)-2-methylpropane-2-sulfinamide

1a

$C_{20}H_{35}NO_6S$ Mol. Wt.: 417.56

1a: Yellow oil. $[\alpha]_D^{20}$= -112.6 (*c* 0.73, $CHCl_3$). IR ν_{max} (cm^{-1}): 3278, 2973, 1708, 1639, 1207, 1157, 1063, 925, 782, 587. ^1H NMR (400 MHz, $CDCl_3$): δ 5.33 (2H, d, *J* = 8.4 Hz), 4.84 (1H, s), 4.53 (1H, d, *J* = 2.8 Hz), 4.08-4.04 (1H, m), 3.72-3.64 (1H, m), 3.62-3.55 (1H, m), 3.51-3.44 (2H, m), 2.74 (1H, dd, J_1 = 4.0 Hz, J_2 = 15.2 Hz), 2.60 (1H, dd, J_1 = 8.8 Hz, J_2 = 15.2 Hz), 2.05 (3H, s), 1.70 (3H, s), 1.63 (3H, s), 1.23-1.21 (6H, m), 1.20 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 166.67, 164.53, 146.85, 115.95, 105.57, 103.41, 102.12, 62.56, 62.53, 55.84, 55.60, 31.96, 25.53, 25.16, 22.87, 18.04, 15.31, 15.21. HRMS (EI+) *m/z* found: 417.2183, Calcd for $C_{19}H_{33}NO_6S$ (M^+): 417.2185.



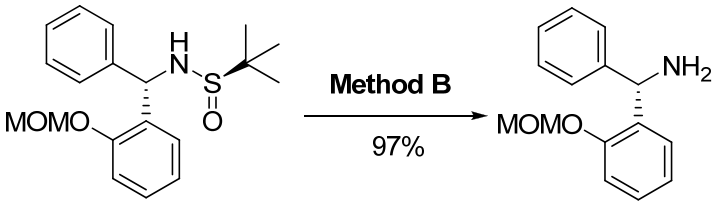
(*S*)-5-(2-amino-3-(diethoxymethyl)but-3-en-1-yl)-2,2,6-trimethyl-4*H*-1,3-dioxin-4-one

2a

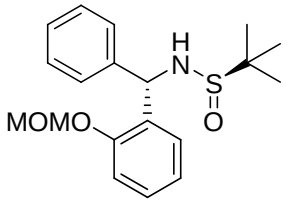
$C_{16}H_{27}NO_5$ Mol. Wt.: 313.39

2a: **1a** was deprotected by **Method A** to obtain **2a** in 71% yield as colorless oil. $[\alpha]_D^{20}$= -19.7 (*c* 1.00, $CHCl_3$). IR ν_{max} (cm^{-1}): 2976, 1720, 1642, 1392, 1271, 1206, 1057, 919,

827. ^{1}H NMR (400 MHz, $CDCl_3$): δ 5.24 (2H, d, J = 3.2 Hz), 4.88 (1H, s), 3.68-3.57 (3H, m), 3.52-3.43 (2H, m), 2.62 (1H, dd, J_1 = 4.8 Hz, J_2 = 14.0 Hz), 2.42 (1H, dd, J_1 = 9.2 Hz, J_2 = 14.0 Hz), 2.02 (3H, s), 1.66 (3H, s), 1.64 (3H, s), 1.59 (2H, s), 1.23-1.19 (6H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 164.48, 162.95, 150.26, 112.90, 104.93, 103.62, 103.44, 62.53, 62.26, 52.49, 32.55, 25.26, 17.90, 15.30. HRMS (EI+) *m/z* found: 313.1889, Calcd for $C_{16}H_{27}NO_5$ (M^+): 313.1889.



1b **2b**

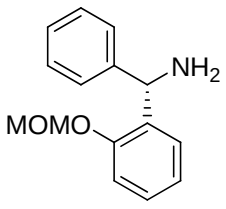


(*R*)-*N*-((*S*)-(2-(methoxymethyl)phenyl)(phenyl)methyl)-2-methylpropane-2-sulfinamide

$C_{19}H_{25}NO_3S$ Mol. Wt.: 347.47

1b

1b: Colorless oil. $[\alpha]_D^{20}$ = -78.9 (*c* 0.50, $CHCl_3$). IR ν_{max} (cm^{-1}): 2954, 1595, 1486, 1455, 1236, 1156, 1070, 997, 754, 700. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.50 (1H, d, J = 7.6 Hz), 7.38 (2H, d, J = 7.6 Hz), 7.30-7.19 (4H, m), 7.08-7.01 (2H, m), 6.04 (1H, d, J = 4.8 Hz), 5.11 (2H, q, J = 5.2 Hz), 3.81 (1H, d, J = 4.8 Hz), 3.27 (3H, s), 1.25 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.55, 142.65, 130.58, 128.69, 128.65, 128.39, 127.57, 121.73, 114.20, 94.18, 56.79, 56.12, 56.05, 22.81. HRMS (EI+) *m/z* found: 347.1565, Calcd for $C_{19}H_{25}NO_3S$ (M^+): 347.1555.



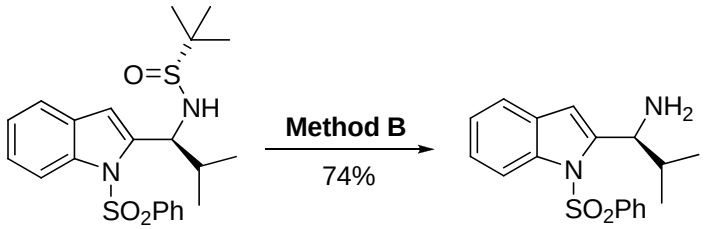
(*S*)-(2-(methoxymethyl)phenyl)(phenyl)methanamine

$C_{15}H_{17}NO_2$ Mol. Wt.: 243.30

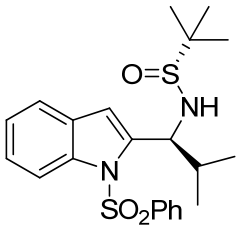
2b

2b: **1b** was deprotected by **Method B** to obtain **2b** in 97% yield as colorless oil. $[\alpha]_D^{20}$ = -29.8 (*c* 0.5, $CHCl_3$); lit[1] $[\alpha]_D^{20}$ = +37.7 (*c* 0.5, $CHCl_3$) for R-configuration. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.40-7.37 (3H, m), 7.29 (2H, t, *J* = 8.0 Hz), 7.22-7.18 (2H, m), 7.06 (1H, d, *J* = 8.0 Hz), 7.00 (1H, t, *J* = 7.6 Hz), 5.51 (1H, s,), 5.13 (2H, q), 3.29 (3H, s), 2.55 (2H, br s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.33, 144.86, 134.37, 128.27, 128.19, 127.69, 127.10, 126.73, 121.92, 114.10, 94.24, 56.04, 54.29.

Ref. 1: M. Atobe, N. Yamazaki, C. Kibayashi, *J. Org. Chem.* **2004**, *69*, 5595-5607.



1c **2c**



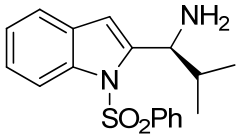
1c

(*R*)-2-methyl-*N*-((*S*)-2-methyl-1-(1-(phenylsulfonyl)-1*H*-indol-2-yl)propyl)propane-2-sulfinamide

$C_{22}H_{28}N_2O_3S_2$ Mol. Wt.: 432.60

1c: White powder, mp 134-135 °C. $[\alpha]_D^{20}$ = +143.6 (*c* 1.20, $CHCl_3$), lit[2] $[\alpha]_D^{20}$ = +145.3 (*c* 1.20, $CHCl_3$). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.20 (1H, d, *J* = 8.4 Hz), 7.79 (2H, d, *J* = 7.6 Hz), 7.49 (1H, t, *J* = 7.6 Hz), 7.44-7.37 (3H, m), 7.31-7.26 (1H, m), 7.22 (1H, t, *J* = 7.6 Hz), 6.58 (1H, s), 5.21 (1H, d, *J* = 3.6 Hz), 3.49 (1H, s), 2.47-2.39 (1H, m), 1.25 (9H, s), 1.14 (3H, d, *J* = 6.8 Hz), 0.87 (3H, d, *J* = 6.8 Hz). ^{13}C NMR (100 MHz, $CDCl_3$): δ 142.69, 138.24, 137.71, 133.93, 129.58, 129.32, 126.67, 124.71, 124.07, 120.83, 115.53, 111.64, 57.99, 56.11, 33.84, 22.73, 20.07, 16.47.

Ref. 2: L. Cheng, L. Liu, Y. Sui, D. Wang, Y.-J. Chen, *Tetrahedron: Asymmetry* **2007**, *18*, 1833-1843.

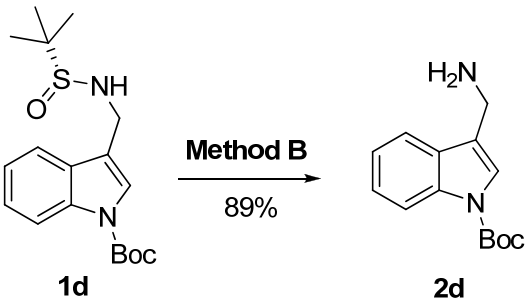


(*S*)-2-methyl-1-(1-(phenylsulfonyl)-1*H*-indol-2-yl)propan-1-amine

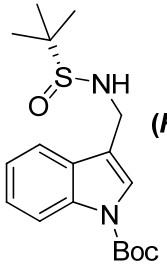
$C_{18}H_{20}N_2O_2S$ Mol. Wt.: 328.43

2c

2c: **1c** was deprotected by **Method B** and chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02) to afford **2c** in 74% yield as colorless oil. $[\alpha]_D^{20}$= 99.7 (*c* 0.5, $CHCl_3$). IR ν_{max} (cm^{-1}): 2961, 1594, 1451, 1368, 1178, 1089, 1035, 745, 684, 629, 580. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.19 (1H, d, *J* = 8.4 Hz), 7.71 (2H, d, *J* = 7.6 Hz), 7.49 (1H, t, *J* = 7.2 Hz), 7.43 (1H, d, *J* = 7.2 Hz), 7.37 (2H, t, *J* = 7.6 Hz), 7.30-7.20 (2H, m), 6.60 (1H, s,), 4.39 (1H, d, *J* = 5.6 Hz), 2.25-2.17 (1H, m), 1.51 (2H, br s), 0.94-0.90 (6H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 147.00, 138.93, 137.70, 133.80, 129.83, 129.26, 126.32, 124.47, 123.98, 120.71, 115.44, 108.86, 54.94, 33.85, 20.61, 17.07. HRMS (EI+) *m/z* found: 328.1243, Calcd for $C_{18}H_{20}N_2O_2S$ (M^+): 328.1245.



1d **2d**



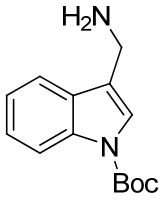
(*R*)-*tert*-butyl 3-((1,1-dimethylethylsulfinamido)methyl)-1*H*-indole-1-carboxylate

$C_{18}H_{26}N_2O_3S$ Mol. Wt.: 350.48

1d

1d: Yellow oil. $[\alpha]_D^{20}$= -0.7 (*c* 0.34, $CHCl_3$). IR ν_{max} (cm^{-1}): 2972, 1731, 1457, 1368, 1261, 1161, 1086, 754. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.14 (1H, d, *J* = 8.0 Hz), 7.60-7.57 (2H, m), 7.35-7.31 (1H, m), 7.27-7.23 (1H, m), 4.51-4.34 (2H, m),

3.45-3.42 (1H, m), 1.67 (9H, s), 1.23 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 149.68, 135.93, 129.42, 124.81, 124.57, 122.78, 119.49, 117.72, 115.48, 83.96, 55.95, 40.65, 28.30, 22.78. HRMS (EI+) *m/z* found: 350.1657, Calcd for $C_{18}H_{26}N_2O_3S$ (M^+): 350.1664.

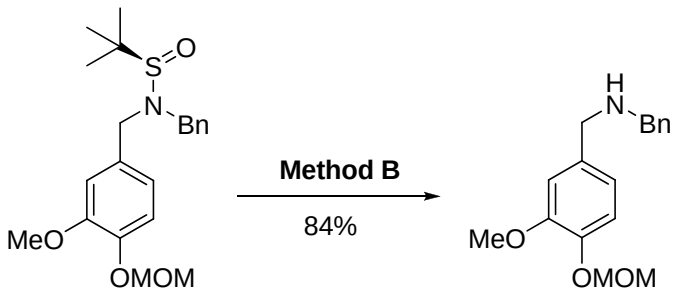


***tert*-butyl 3-(aminomethyl)-1*H*-indole-1-carboxylate**

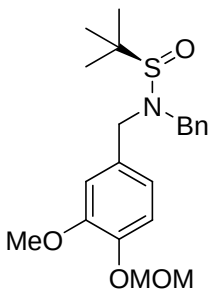
$C_{14}H_{18}N_2O_2$ Mol. Wt.: 246.30

2d

2d: **1d** was deprotected by **Method B** to obtain **2d** in 89% yield as yellow oil. IR ν_{max} (cm^{-1}): 2976, 1729, 1454, 1377, 1258, 1160, 1088, 753. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.14 (1H, d, *J* = 7.6 Hz), 7.56 (1H, d, *J* = 8.0 Hz), 7.50 (1H, s), 7.32 (1H, t, *J* = 7.2 Hz), 7.25 (1H, d, *J* = 7.2 Hz), 4.00 (2H, s), 1.66 (11H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 149.87, 135.94, 129.56, 124.58, 122.80, 122.58, 122.49, 118.93, 115.47, 83.57, 37.50, 28.31. HRMS (EI+) *m/z* found: 246.1365, Calcd for $C_{14}H_{18}N_2O_2$ (M^+): 246.1368.



1e **2e**

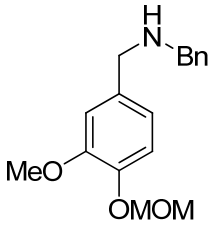


(*R*)-*N*-benzyl-*N*-(3-methoxy-4-(methoxymethoxy)benzyl)-2-methylpropane-2-sulfinamide

$C_{21}H_{29}NO_4S$ Mol. Wt.: 391.52

1e

1e: Yellow oil. $[\alpha]_D^{20}$= +34.3 (*c* 0.5, $CHCl_3$). IR ν_{max} (cm^{-1}): 1596, 1510, 1449, 1262, 1142, 1074, 1000, 922, 752, 705, 592. ^1H NMR (400 MHz, $CDCl_3$): δ 7.34-7.27 (5H, m), 7.07 (1H, s), 6.89-6.82 (2H, m), 5.19 (2H, s), 4.29-4.17 (2H, m), 4.06-3.97 (2H, m), 3.87 (3H, s), 3.51 (3H, s), 1.21 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 149.21, 146.45, 137.12, 129.57, 128.86, 128.55, 127.49, 122.96, 117.27, 111.69, 95.60, 58.68, 56.23, 56.04, 51.59, 23.43. HRMS (EI+) *m/z* found: 391.1818, Calcd for $C_{21}H_{29}NO_4S$ (M^+): 391.1817.

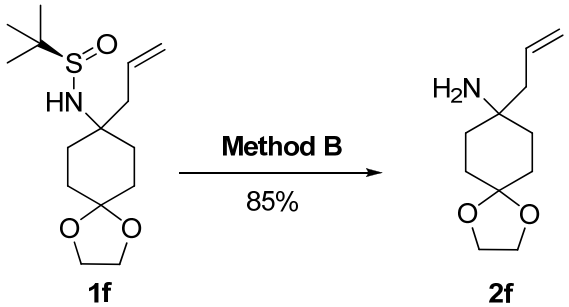


2e

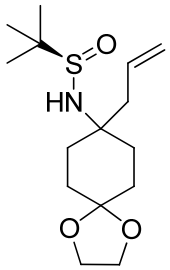
***N*-benzyl-1-(3-methoxy-4-(methoxymethoxy)phenyl)methanamine**

$C_{17}H_{21}NO_3$ Mol. Wt.: 287.35

2e: **1e** was deprotected by **Method B** and chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02) to afford **2e** in 84% yield as yellow oil. IR ν_{max} (cm^{-1}): 2943, 1600, 1510, 1453, 1262, 1145, 1079, 1002, 925, 742. ^1H NMR (400 MHz, $CDCl_3$): δ 7.35-7.30 (4H, m), 7.26-7.23 (1H, m), 7.14 (1H, d, J = 1.4 Hz), 6.95 (1H, dd, J_1 = 1.6 Hz, J_2 = 8.4 Hz), 6.85 (1H, d, J = 8.4 Hz), 5.23 (2H, s), 3.86 (3H, s), 3.79 (2H, s), 3.73 (2H, s), 3.52 (3H, s), 1.76 (1H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 148.89, 146.50, 140.42, 133.20, 128.47, 128.28, 127.01, 122.11, 116.65, 111.79, 95.61, 56.30, 56.06, 53.15, 52.79. HRMS (EI+) *m/z* found: 287.1523, Calcd for $C_{17}H_{21}NO_3$ (M^+): 287.1521.



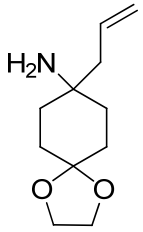
1f **2f**



1f

(*R*)-*N*-(8-allyl-1,4-dioxaspiro[4.5]decan-8-yl)-2-methylpropane-2-sulfinamide
$C_{15}H_{27}NO_3S$ Mol. Wt.: 301.44

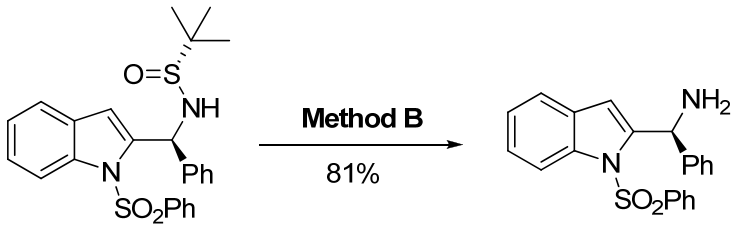
1f: White powder, mp 84-86 °C. $[\alpha]_D^{20}$ = -34.6 (*c* 0.31, $CHCl_3$). IR ν_{max} (cm^{-1}): 3234, 2938, 1633, 1469, 1428, 1373, 1247, 1148, 1033, 987, 930, 849, 607. ^1H NMR (400 MHz, $CDCl_3$): δ 5.89-5.78 (1H, m), 5.16-5.12 (2H, m), 3.91 (4H, s), 3.20 (1H, s), 2.49 (1H, dd, J_1 = 7.7 Hz, J_2 = 13.7 Hz), 2.28 (1H, dd, J_1 = 7.4 Hz, J_2 = 13.7 Hz), 2.07-2.00 (1H, m), 1.78-1.61 (5H, m), 1.58-1.53 (2H, m), 1.20 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 133.11, 120.04, 108.49, 64.39, 64.34, 56.15, 46.08, 34.83, 32.37, 30.48, 22.92. HRMS (EI+) *m/z* found: 301.1712, Calcd for $C_{15}H_{27}NO_3S$ (M^+): 301.1712.



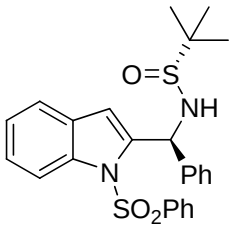
2f

8-allyl-1,4-dioxaspiro[4.5]decan-8-amine
$C_{11}H_{19}NO_2$ Mol. Wt.: 197.27

2f: **1f** was deprotected by **Method B** to obtain **2f** in 85% yield as yellow oil. IR ν_{max} (cm^{-1}): 2937, 1601, 1443, 1375, 1270, 1105, 1037, 924. ^1H NMR (400 MHz, $CDCl_3$): δ 5.90-5.80 (1H, m), 5.14-5.08 (2H, m), 3.91 (4H, t, *J* = 3.2 Hz), 2.96 (2H, br s), 2.21 (2H, d, *J* = 7.2 Hz), 1.81-1.75 (2H, m), 1.68-1.54 (6H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 133.42, 119.11, 108.64, 64.34, 51.19, 45.86, 37.32, 34.96, 30.73. HRMS (EI+) *m/z* found: 197.1408, Calcd for $C_{11}H_{19}NO_2$ (M^+): 197.1416.



1g **2g**

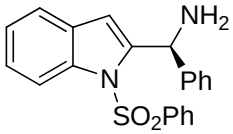


1g

(*R*)-2-methyl-*N*-((*S*)-phenyl(1-(phenylsulfonyl)-1*H*-indol-2-yl)methyl)propane-2-sulfinamide
$C_{25}H_{26}N_2O_3S_2$ Mol. Wt.: 466.62

1g: White powder, mp 188-190 ^oC. $[\alpha]_D^{20}$ = +38.6 (*c* 1.20, $CHCl_3$), lit[2] $[\alpha]_D^{20}$ = +38.0 (*c* 1.20, $CHCl_3$). ^1H NMR (400 MHz, $CDCl_3$): δ 8.14 (1H, d, *J* = 8.4 Hz), 7.57-7.50 (3H , m), 7.50-7.35 (3H, m), 7.32-7.22 (7H, m), 6.92 (1H, s), 6.56 (1H, s), 3.69 (1H, brs), 1.25 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 141.81, 140.38, 138.37, 137.66, 133.73, 129.26, 129.18, 128.94, 128.45, 128.39, 126.66, 124.94, 123.96, 121.08, 115.19, 112.22, 56.83, 56.28, 22.81.

Ref. 2: L. Cheng, L. Liu, Y. Sui, D. Wang, Y.-J. Chen, *Tetrahedron: Asymmetry* **2007**, *18*, 1833-1843.

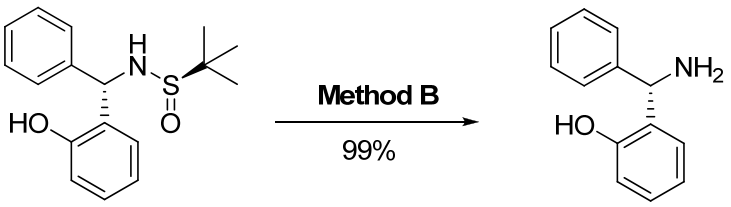


2g

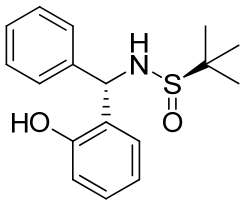
(*S*)-phenyl(1-(phenylsulfonyl)-1*H*-indol-2-yl)methanamine
$C_{21}H_{18}N_2O_2S$
Mol. Wt.: 362.44

2g: **1g** was deprotected by **Method B** to obtain **2g** in 81% yield as yellow oil. $[\alpha]_D^{20}$ = -125.0 (*c* 0.53, $CHCl_3$). IR ν_{max} (cm^{-1}): 3063, 1595, 1447, 1368, 1176, 1087, 915, 743, 695, 583. ^1H NMR (400 MHz, $CDCl_3$): δ 8.15 (1H, d, *J* = 8.4 Hz), 7.59-7.56 (2H , m), 7.47 (1H, t, *J* = 7.2 Hz), 7.39 (1H, d, *J* = 7.6 Hz), 7.33-7.19 (9H, m), 6.39 (1H, s), 5.84 (1H, s), 2.04 (2H, brs). ^{13}C NMR (100 MHz, $CDCl_3$): δ 146.51, 142.88, 138.87, 137.74, 133.76, 129.41, 129.23, 128.56, 127.56, 126.37, 124.80, 123.94, 121.01, 115.15, 110.83, 53.45. HRMS (EI+) *m/z* found: 362.1097, Calcd for $C_{21}H_{18}N_2O_2S$

(M^+): 362.1089.



1h **2h**

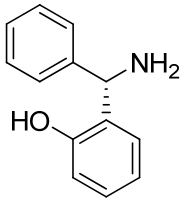


1h

(*R*)-*N*-((*S*)-(2-hydroxyphenyl)(phenyl)methyl)-2-methylpropane-2-sulfinamide
$C_{17}H_{21}NO_2S$ Mol. Wt.: 303.42

1h: White powder, mp 62-63 ^oC. $[\alpha]_D^{20}$= -36.3 (*c* 0.5, $CHCl_3$), lit[3] $[\alpha]_D^{20}$= +70.0 (*c* 1.01, $CHCl_3$) for (S_S, R)-configuration. ^1H NMR (400 MHz, $CDCl_3$): δ 8.44 (1H, s), 7.40 (2H, d, *J* = 7.2 Hz), 7.33 (2H, t, *J* = 7.2 Hz), 7.28 (1H, d, *J* = 7.2 Hz), 7.17 (1H, t, *J* = 7.2 Hz), 7.04 (1H, d, *J* = 7.6 Hz), 6.90 (1H, d, *J* = 8.0 Hz), 6.81 (1H, t, *J* = 7.6 Hz), 5.92 (1H, d, *J* = 4.0 Hz), 4.10 (1H, d, *J* = 3.6 Hz), 1.25 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.26, 141.31, 129.52, 129.28, 128.96, 127.90, 127.65, 126.70, 120.36, 117.78, 56.72, 56.67, 22.87.

Ref. 3: Z. Huang, H. Lai, Y. Qin, *J. Org. Chem.* **2007**, *72*, 1373-1378.



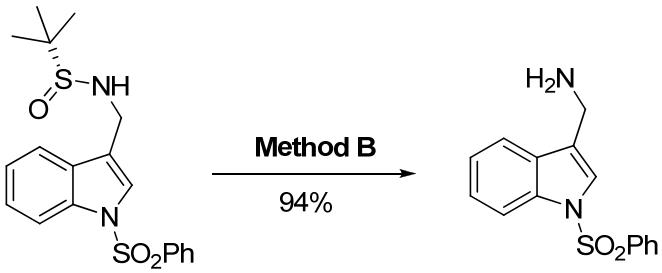
2h

(*S*)-2-(amino(phenyl)methyl)phenol
$C_{13}H_{13}NO$ Mol. Wt.: 199.25

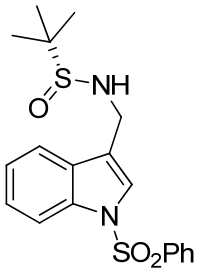
2h: **1h** was deprotected by **Method B** to obtain **2h** in 99% yield as yellow powder. $[\alpha]_D^{20}$= +144.8 (*c* 0.32, $CHCl_3$), lit[4] $[\alpha]_D^{20}$= +109.2 (*c* 0.60, $CHCl_3$). ^1H NMR (400 MHz, $CDCl_3$): δ 7.38-7.35 (4H, m), 7.32-7.29 (1H, m), 7.16 (1H, t, *J* = 7.6 Hz), 6.90 (1H, d, *J* = 8.0 Hz), 6.79 (1H, d, *J* = 7.2 Hz), 6.73 (1H, t, *J* = 7.2 Hz), 5.31 (1H, s). ^{13}C NMR

(100 MHz, $CDCl_3$): δ 157.89, 143.03, 129.03, 128.73, 127.90, 127.04, 126.29, 119.20, 117.46, 59.93.

Ref. 4: Y.-Q. Wang C.-B. Yu, D.-W. Wang, X.-B. Wang, Y.-G. Zhou, *Org. Lett.*, **2007**, *10*, 2071-2074.



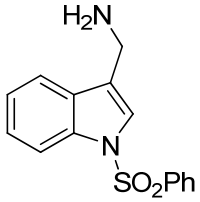
1i **2i**



1i

(*R*)-2-methyl-*N*-((1-(phenylsulfonyl)-1*H*-indol-3-yl)methyl)propane-2-sulfinamide
$C_{19}H_{22}N_2O_3S_2$ Mol. Wt.: 390.52

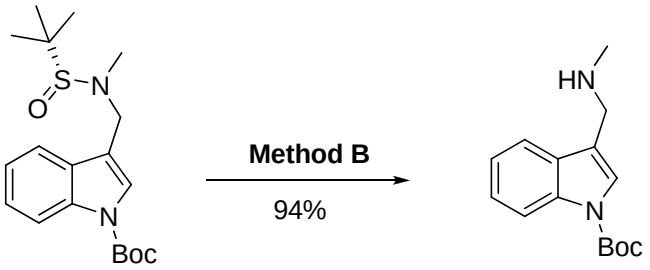
1i: White powder, mp 65-66 °C. $[\alpha]_D^{20}$ = -6.0 (*c* 0.52, $CHCl_3$). IR ν_{max} (cm^{-1}): 3179, 2953, 2864, 1614, 1447, 1366, 1278, 1176, 1109, 1044, 967, 755, 600, 565. ^1H NMR (400 MHz, $CDCl_3$): δ 7.99 (1H, d, *J* = 8.4 Hz), 7.88 (2H, d, *J* = 8.0 Hz), 7.57-7.51 (3H, m), 7.45-7.41 (2H, m), 7.34 (1H, t, *J* = 8.0 Hz), 7.27-7.23 (1H, m), 4.47-4.31 (2H, m), 3.49-3.48 (1H, m), 1.20 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 138.23, 135.56, 133.96, 129.67, 129.39, 126.88, 125.21, 124.62, 123.48, 120.00, 113.84, 55.99, 40.53, 22.71. HRMS (EI+) *m/z* found: 390.1054, Calcd for $C_{19}H_{22}N_2O_3S_2$ (M^+): 390.1072.



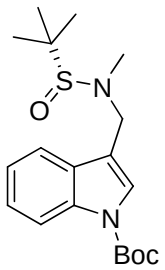
(1-(phenylsulfonyl)-1*H*-indol-3-yl)methanamine
$C_{15}H_{14}N_2O_2S$ Mol. Wt.: 286.35

2i

2i: **1i** was deprotected by **Method B** to obtain **2i** in 94% yield as yellow oil. IR ν_{max} (cm^{-1}): 2921, 1601, 1445, 1365, 1279, 1175, 1121, 971, 755, 597. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.00 (1H, d, *J* = 8.4 Hz), 7.87 (2H, d, *J* = 7.6 Hz), 7.52-7.47 (3H, m), 7.42-7.38 (2H, m), 7.34-7.30 (1H, m), 7.25-7.21 (1H, m), 3.97 (2H, s), 1.56 (2H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 138.37, 135.63, 133.80, 129.89, 129.30, 126.80, 124.98, 123.30, 122.69, 119.57, 113.85, 37.49. HRMS (EI+) *m/z* found: 286.0768, Calcd for $C_{15}H_{14}N_2O_2S$ (M^+): 286.0776.



1j **2j**

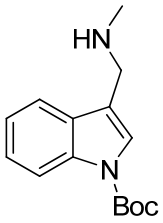


(*R*)-*tert*-butyl 3-((*N*,2-dimethylpropan-2-ylsulfinamido)methyl)-1*H*-indole-1-carboxylate
$C_{19}H_{28}N_2O_3S$ Mol. Wt.: 364.50

1j

1j: White powder, mp 74-76 °C. $[\alpha]_D^{20}$= +19.2 (*c* 0.56, $CHCl_3$), IR ν_{max} (cm^{-1}): 3127, 2969, 1721, 1452, 1353, 1247, 1161, 1064, 901, 751. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.09 (1H, d, *J* = 7.6 Hz), 7.59 (1H, d, *J* = 8.0 Hz), 7.53 (1H, s), 7.31-7.27 (1H, m), 7.23-7.19 (1H, m), 4.29 (2H, m), 2.63 (3H, s), 1.65 (9H, s), 1.19 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 149.61, 135.64, 129.60, 124.63, 122.66, 119.35, 116.62, 115.25,

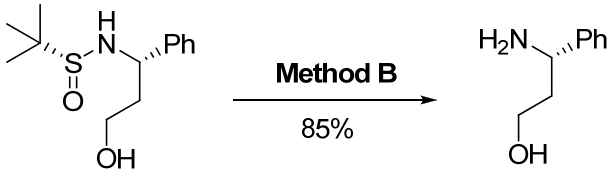
83.81, 58.54, 48.21, 33.38, 28.16, 23.51. HRMS (EI+) *m/z* found: 364.1815, Calcd for $C_{19}H_{28}N_2O_3S$ (M^+): 364.1821.



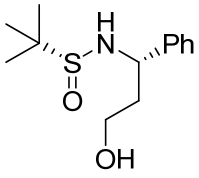
***tert*-butyl 3-((methylamino)methyl)-1*H*-indole-1-carboxylate**
$C_{15}H_{20}N_2O_2$ Mol. Wt.: 260.33

2j

2j: **1j** was deprotected by **Method B** to obtain **2j** in 94% yield as yellow oil. IR ν_{max} (cm^{-1}): 2974, 1730, 1608, 1452, 1377, 1257, 1160, 1081, 1016, 853, 754. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.14 (1H, d, *J* = 7.6 Hz), 7.59 (1H, d, *J* = 8.0 Hz), 7.52 (1H, s), 7.33-7.29 (1H, m), 7.25-7.21 (1H, m), 3.87 (2H, s), 2.5 (3H, s), 1.66 (10H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 149.85, 135.82, 130.10, 124.50, 123.57, 122.59, 119.49, 119.14, 115.38, 83.54, 46.71, 36.40, 28.31. HRMS (EI+) *m/z* found: 260.1522, Calcd for $C_{15}H_{20}N_2O_2$ (M^+): 260.1525.



1k **2k**

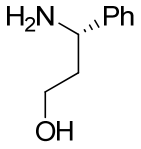


***(R)*-*N*-((*S*)-3-hydroxy-1-phenylpropyl)-2-methylpropane-2-sulfinamide**
$C_{13}H_{21}NO_2S$ Mol. Wt.: 255.38

1k

1k: White powder, mp 110-111 °C. $[\alpha]_D^{20}$ = -10.7 (*c* 0.50, $CHCl_3$), IR ν_{max} (cm^{-1}): 3275, 3124, 2945, 1460, 1395, 1222, 1062, 1021, 928, 697, 667, 552. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.35-7.32 (4H, m), 7.30-7.26 (1H, m), 4.63-4.58 (1H, m), 4.01 (1H, d, *J* = 5.2 Hz), 3.73-3.68 (1H, m), 3.62-3.57 (1H, m), 2.95 (1H, s), 2.15-2.07 (1H, m), 2.05-1.97 (1H, m), 1.18 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 142.54, 128.81,

127.77, 127.14, 59.37, 56.40, 55.44, 40.23, 22.83. HRMS (EI+) *m/z* found: 255.1288, Calcd for $C_{13}H_{21}NO_2S$ (M^+): 255.1293.

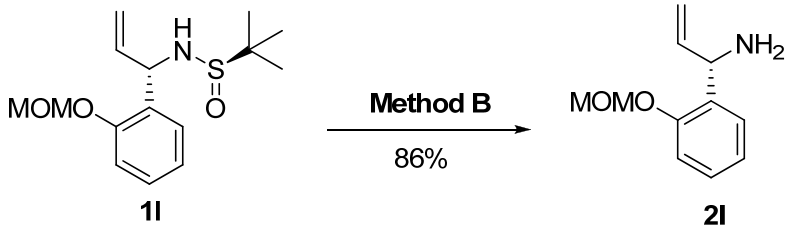


(*S*)-3-amino-3-phenylpropan-1-ol
$C_9H_{13}NO$ Mol. Wt.: 151.21

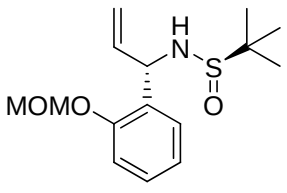
2k

2k: **1k** was deprotected by **Method B** to obtain **2k** in 85% yield as yellow powder. $[\alpha]_D^{20}$= +19.8 (*c* 0.45, $CHCl_3$), lit[5] $[\alpha]_D^{20}$= +21.9 (*c* 1.00, $CHCl_3$). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.36-7.22 (5H, m), 4.13-4.10 (1H, m), 3.76 (2H, t, *J* = 5.4 Hz), 3.12 (3H, s), 1.92-1.85 (2H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 145.72, 128.80, 127.31, 125.93, 61.68, 56.01, 39.73.

Ref. 5: P. You, J. Qiu, E. Su, D. Wei, *Eur. J. Org. Chem.* **2013**, 557–565.



1l **2l**

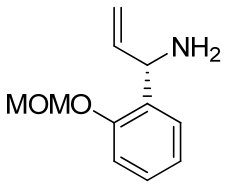


(*R*)-*N*-((*S*)-1-(2-(methoxymethoxy)phenyl)allyl)-2-methylpropane-2-sulfinamide
$C_{15}H_{23}NO_3S$ Mol. Wt.: 297.41

1l

1l: A 9:1 selectivity favoring the S-epimer. Yellow oil. $[\alpha]_D^{20}$= -48.3 (*c* 0.50, $CHCl_3$). IR ν_{max} (cm^{-1}): 3224, 2958, 1595, 1485, 1233, 1152, 1061, 1000, 917, 756. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.29-7.22 (2H, m), 7.13 (1H, d, *J* = 8.4 Hz), 7.00 (1H, t, *J* = 7.2 Hz), 6.17-6.08 (0.9H, m) (5.99-5.91 (0.1H, m)), 5.35 (1H, t, *J* = 5.6 Hz), 5.26-5.15 (4H, m), 3.75 (1H, d, *J* = 5.6 Hz), 3.48 (3H, s), 1.20 (8.1H, s) (1.24 (0.9H, s)). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.76, 139.23, 129.63, 128.88 (129.10), 128.53 (127.87),

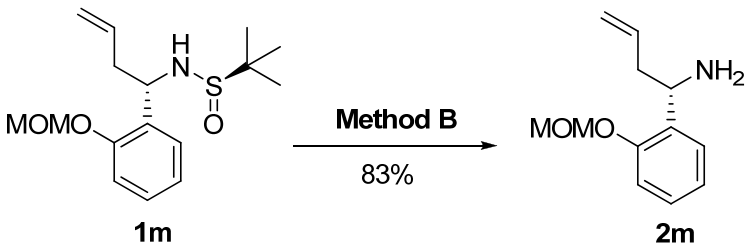
122.00 (122.13), 116.15 (116.98), 114.42, 94.55, 57.06, 56.36, 55.96 (55.84), 22.70 (22.81). HRMS (EI+) *m/z* found: 297.1395, Calcd for $C_{15}H_{23}NO_3S$ (M^+): 297.1399.



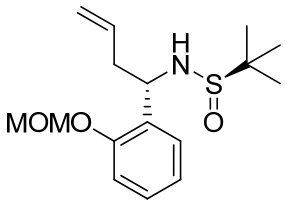
(*S*)-1-(2-(methoxymethoxy)phenyl)prop-2-en-1-amine
$C_{11}H_{15}NO_2$ Mol. Wt.: 193.24

2l

2l: **1l** was deprotected by **Method B** to obtain **2l** in 86% yield as yellow oil. IR ν_{max} (cm^{-1}): 2944, 1594, 1487, 1234, 1154, 1080, 997, 921, 756. $[\alpha]_D^{20}$ = -18.4 (*c* 0.70, $CHCl_3$). ^1H NMR (400 MHz, $CDCl_3$): δ 7.29 (1H, dd, J_1 = 1.2 Hz, J_2 = 7.6 Hz), 7.21-7.17 (1H, m), 7.08 (1H, d, *J* = 8.0 Hz), 6.98 (1H, t, *J* = 7.4 Hz), 6.14-6.06 (1H, m), 5.26-5.19 (3H, m), 5.11 (1H, d, *J* = 10.4 Hz), 4.85 (1H, d, *J* = 5.6 Hz), 3.48 (3H, s), 2.26 (2H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.50, 141.08, 133.22, 128.24, 127.39, 122.05, 114.26, 113.69, 94.52, 56.23, 52.83. HRMS (EI+) *m/z* found: 193.1091, Calcd for $C_{11}H_{15}NO_2$ (M^+): 193.1103.



1m **2m**

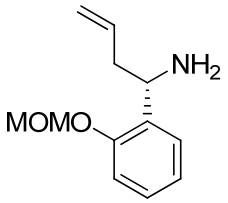


(*R*)-*N*-((*S*)-1-(2-(methoxymethoxy)phenyl)but-3-enyl)-2-methylpropane-2-sulfinamide
$C_{16}H_{25}NO_3S$ Mol. Wt.: 311.44

1m

1m: A 4:1 selectivity favoring the S-epimer. Yellow oil. $[\alpha]_D^{20}$ = -120.7 (*c* 0.5, $CHCl_3$). IR ν_{max} (cm^{-1}): 1593, 1485, 1232, 1156, 1067, 996, 919, 757, 651. ^1H NMR (400 MHz, $CDCl_3$): δ 7.30-7.26 (1H, m), 7.26-7.19 (1H, m), 7.10 (1H, d, *J* = 8.4 Hz), 6.99 (1H, t, *J* = 7.6 Hz), 5.79-5.69 (1H, m), 5.23 (2H, m), 5.79-5.69 (1.6H, m) (5.06-5.00 (0.4H, m)), 4.94-4.90 (0.8H, m) (4.73 (0.2H, q)), 3.79 (0.8H, d, *J* = 4.0 Hz) (3.89 (0.2H, d, *J*

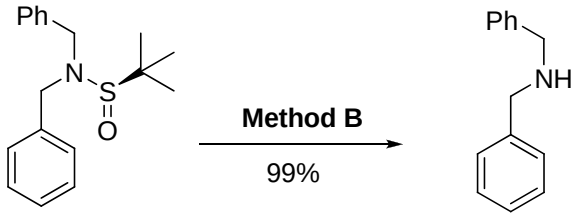
= 5.1 Hz)), 3.50 (3H, s), 2.70-2.63 (1H, m), 2.59-2.49 (1H, m), 1.19 (7.2H, s) (1.21 (1.8H, s)). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.67 (154.52), 134.67, 130.71 (130.99), 128.45 (128.74), 128.05, 121.72 (121.92), 118.85 (117.65), 114.21, 94.58, 56.31 (56.15), 55.82 (55.03), 52.12, 41.99 (40.74), 22.71. HRMS (EI+) *m/z* found: 311.1555, Calcd for $C_{16}H_{25}NO_3S$ (M^+): 311.1555.



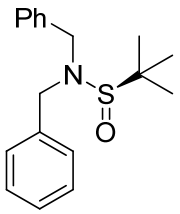
2m

(*S*)-1-(2-(methoxymethoxy)phenyl)but-3-en-1-amine
$C_{12}H_{17}NO_2$ Mol. Wt.: 207.27

2m: **1m** was deprotected by **Method B** to obtain **2m** in 83% yield as yellow oil. $[\alpha]_D^{20}$ = -23.6 (*c* 0.5, $CHCl_3$). IR ν_{max} (cm^{-1}): 3425, 2922, 1633, 1595, 1489, 1233, 1154, 1079, 998, 920, 757. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.33 (1H, dd, J_1 = 1.2 Hz, J_2 = 7.6 Hz), 7.20-7.16 (1H, m), 7.07 (1H, d, J = 7.6 Hz), 6.98 (1H, t, J = 7.6 Hz), 5.80-5.69 (1H, m), 5.21 (2H, t, J = 7.2 Hz), 5.11-5.03 (2H, m), 4.35-4.32 (1H, m), 3.45 (3H, s), 3.15 (2H, br s), 2.60-2.53 (1H, m), 2.48-2.41 (1H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.49, 135.50, 133.09, 128.13, 127.09, 121.90, 117.53, 114.05, 94.53, 56.21, 50.01, 41.52. HRMS (EI+) *m/z* found: 207.1270, Calcd for $C_{12}H_{17}NO_2$ (M^+): 207.1259.



1n **2n**

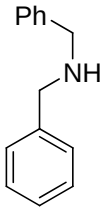


(*R*)-*N*,*N*-dibenzyl-2-methylpropane-2-sulfinamide
$C_{18}H_{23}NOS$ Mol. Wt.: 301.45

1n

1n: White powder[6], mp 54-56 °C. $[\alpha]_D^{20}$ = +35.6 (*c* 0.51, $CHCl_3$). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.33-7.25 (10H, m), 4.28 (2H, d, *J* = 15.4 Hz), 4.05 (2H, d, *J* = 15.4 Hz), 1.21 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 137.01, 128.86, 128.59, 127.54, 58.72, 51.70, 23.41.

Ref. 6: P. Sun, S. M. Weinreb, *J. Org. Chem.* **1997**, *62*, 8604-8608.

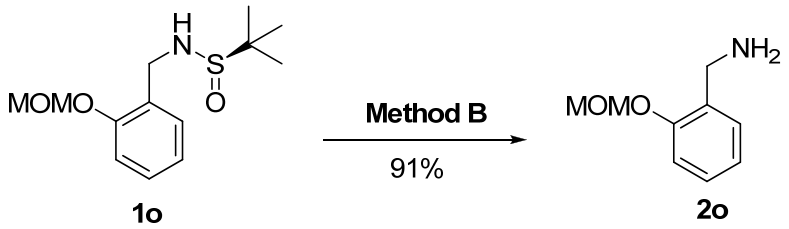


dibenzylamine
$C_{14}H_{15}N$ Mol. Wt.: 197.28

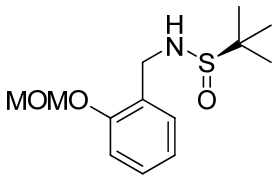
2n

2n: **1n** was deprotected by **Method B** to obtain **2n** in 99% yield as colorless oil[7]. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.36-7.29 (8H, m), 7.27-7.22 (2H, m), 3.81 (4H, s), 2.27 (1H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 139.98, 128.55, 128.38, 127.18, 53.11.

Ref. 7: (a) Y.-H. Chang, Y. Nakajima, F. Ozawa, *Organometallics* **2013**, 32, 2210-2215. (b) P. Rattanaburi, B. Khumraksa, M. Pattarawarapan, *Tetrahedron Lett.* **2012**, *53*, 2689-2693. (c) X. Cui, X. Dai, Y. Deng, F. Shi, *Chem. Eur. J.* **2013**, *19*, 3665-3675.



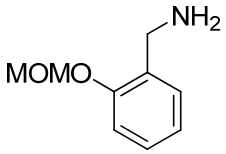
1o **2o**



1o

(*R*)-*N*-(2-(methoxymethoxy)benzyl)-2-methylpropane-2-sulfinamide
$C_{13}H_{21}NO_3S$ Mol. Wt.: 271.38

1o: Yellow oil. $[\alpha]_D^{20}$ = -43.8 (*c* 0.65, $CHCl_3$). IR ν_{max} (cm^{-1}): 2955, 1596, 1487, 1398, 1235, 1156, 1068, 1000, 758. ^1H NMR (400 MHz, $CDCl_3$): δ 7.30 (1H, d, *J* = 7.6 Hz), 7.27-7.24 (1H, m), 7.11 (1H, d, *J* = 8.0 Hz), 6.99 (1H, t, *J* = 7.6 Hz), 5.22 (2H, s), 4.47 (1H, dd, J_1 = 4.8 Hz, J_1 = 13.6 Hz), 4.19 (1H, dd, J_1 = 4.8 Hz, J_1 = 13.6 Hz), 3.69 (1H, t, *J* = 6.4 Hz), 3.49 (3H, s), 1.22 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.32, 129.69, 129.11, 127.89, 121.99, 114.27, 94.70, 56.33, 55.94, 45.43, 22.75. HRMS (EI+) *m/z* found: 271.1246, Calcd for $C_{13}H_{21}NO_3S$ (M^+): 271.1242.

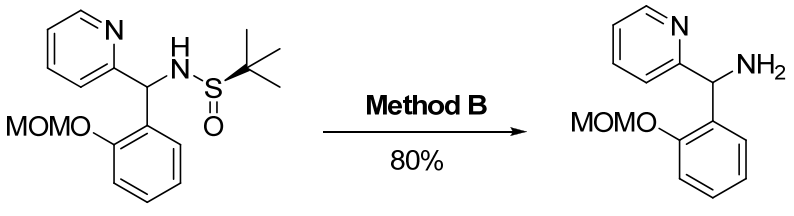


2o

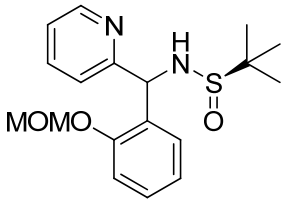
(2-(methoxymethoxy)phenyl)methanamine
$C_9H_{13}NO_2$ Mol. Wt.: 167.21

2o: **1o** was deprotected by **Method B** to obtain **2o** in 91% yield as yellow oil[8]. ^1H NMR (400 MHz, $CDCl_3$): δ 7.26-7.18 (2H, m), 7.08 (1H, d, *J* = 8.0 Hz), 6.99-6.95 (1H, m), 5.23 (2H, s), 3.84 (2H, s), 3.49 (3H, s), 1.99 (2H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.18, 132.43, 128.76, 128.26, 121.94, 114.02, 94.47, 56.23, 42.62.

Ref. 8: H. Rahaman, Á. Madarász, I. Pápai, P. M. Pihko, *Angew. Chem. Int. Ed.* **2011**, *50*, 6123-6127.



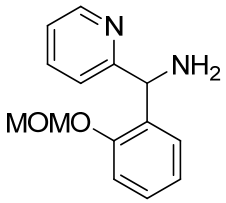
1p **2p**



1p

(*R*)-*N*-((2-(methoxymethoxy)phenyl)(pyridin-2-yl)methyl)-2-methylpropane-2-sulfinamide
$C_{18}H_{24}N_2O_3S$ Mol. Wt.: 348.46

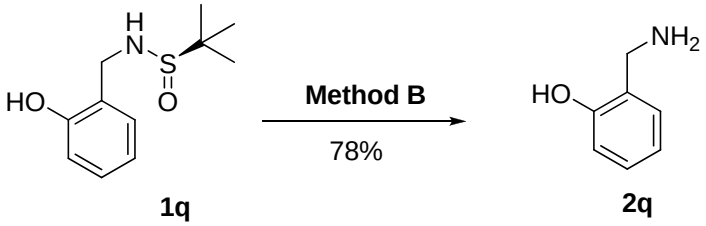
1p: Yellow oil. $[\alpha]_D^{20}$= +20.4 (*c* 0.13, $CHCl_3$). IR ν_{max} (cm^{-1}): 3240, 3060, 2967, 1585, 1482, 1237, 1154, 1070, 993, 911, 757, 621, 555. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.51 (1H, d, *J* = 4.4 Hz), 7.59 (2H, t, *J* = 7.6 Hz), 7.40 (1H, t, *J* = 7.6 Hz), 7.19 (1H, t, *J* = 7.2 Hz), 7.13-7.06 (2H, m), 6.98 (1H, t, *J* = 7.6 Hz), 6.09 (1H, d, *J* = 6.4 Hz), 5.22-5.16 (2H, m), 3.40 (3H, s), 1.19 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 160.70, 154.14, 149.08, 136.52, 131.06, 128.92, 122.28, 122.19, 122.11, 114.10, 94.53, 56.55, 56.24, 55.88, 22.77. HRMS (EI+) *m/z* found: 348.1505, Calcd for $C_{18}H_{24}N_2O_3S$ (M^+): 348.1508.



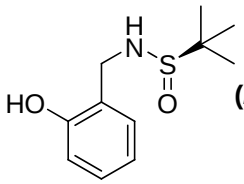
2p

(2-(methoxymethoxy)phenyl)(pyridin-2-yl)methanamine
$C_{14}H_{16}N_2O_2$ Mol. Wt.: 244.29

2p: **1p** was deprotected by **Method B** to obtain **2p** in 80% yield as yellow oil. $[\alpha]_D^{20}$= +79.5 (*c* 0.12, $CHCl_3$). IR ν_{max} (cm^{-1}): 2906, 1589, 1483, 1234, 1154, 1079, 997, 922, 756 . ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.57 (1H, d, *J* = 4.0 Hz), 7.58 (1H, t, *J* = 7.6 Hz), 7.35 (1H, d, *J* = 7.6 Hz), 7.27-7.19 (2H, m), 7.13-7.06 (2H, m), 7.00 (1H, t, *J* = 7.2 Hz), 5.55 (1H, s,), 5.16-5.13 (2H, m), 3.33 (3H, s), 2.35 (2H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 163.36, 154.39, 149.08, 136.36, 133.67, 128.37, 127.97, 122.11, 121.79, 114.10, 94.36, 56.11, 55.38. HRMS (EI+) *m/z* found: 244.1209, Calcd for $C_{14}H_{16}N_2O_2$ (M^+): 244.1212.



1q **2q**

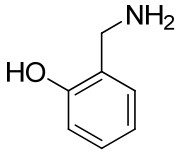


(*R*)-*N*-(2-hydroxybenzyl)-2-methylpropane-2-sulfinamide
$C_{11}H_{17}NO_2S$ Mol. Wt.: 227.32

1q

1q: White powder, mp 110-112 °C. $[\alpha]_D^{20}$ = -100.5 (*c* 0.35, $CHCl_3$); lit[9] $[\alpha]_D^{20}$ = -69.6 (*c* 0.29, EtOAc). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.61-8.52 (1H, m), 7.16-7.12 (2H, m), 6.85-6.79 (2H, m), 4.36-4.17 (2H, m), 4.13 (1H, s), 1.25 (9H, s,). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.93, 129.87, 129.78, 124.06, 119.88, 116.77, 56.40, 46.85, 22.80.

Ref. 9: (a) Z. Zhang, P. Rooshenas, H. Hausmann, P. R. Schreiner, *Synthesis* **2009**, *9*, 1531-1544. (b) D. Pei, Z. Wang, S. Wei, Y. Zhang, J. Sun, *Org. Lett.* **2006**, *8*, 5913-5915.

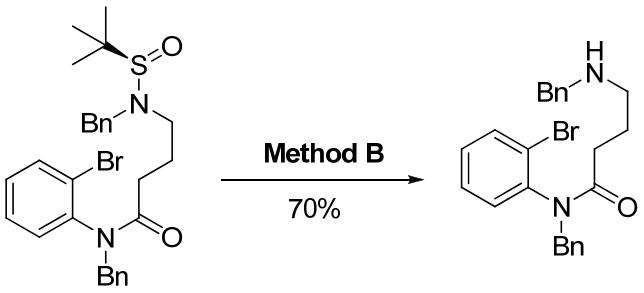


2-(aminomethyl)phenol
C_7H_9NO Mol. Wt.: 123.15

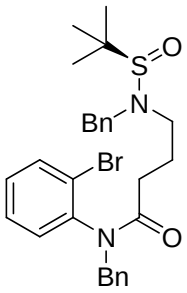
2q

2q: **1q** was deprotected by **Method B** to obtain **2q** in 78% yield as white powder[10], mp 86-87 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.17 (1H, t, *J* = 7.6 Hz), 6.97 (1H, d, *J* = 7.2 Hz), 6.85 (1H, d, *J* = 8.0 Hz), 6.78 (1H, t, *J* = 7.2 Hz), 4.12 (2H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.51, 128.79, 128.05, 124.09, 119.12, 116.86, 45.51.

Ref. 10: (a) H. E. Zauqq, D. Schaef, *J . Org. Chem.* **1963**, *28*, 2925-2927. (b) Z.-I. Irene, A. Venkataraman, B. Manju, R. II L. Jackson, A. O. John, B.Olivier, *Chem. Res. Toxicol.* **2010**, *23*, 240-250. (c) S. Durot, C. Policar, F. Cisnetti, F. Lambert, J.-P. Renault, G. Pelosi, G. Blain, H. Korri-Youssoufi, J.-P. Mahy, *Eur. J. Inorg. Chem.* **2005**, 3513-3523.



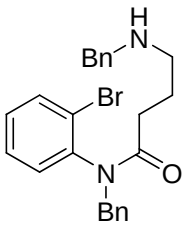
1r **2r**



(*R*)-*N*-benzyl-4-(*N*-benzyl-2-methylpropan-2-ylsulfinamido)-*N*-(2-bromophenyl)butanamide
$C_{28}H_{33}BrN_2O_2S$ Mol. Wt.: 541.54

1r

1r: Yellow oil. $[\alpha]_D^{20}$ = +4.3 (*c* 0.52, MeOH). IR ν_{max} (cm^{-1}): 2958, 1665, 1466, 1396, 1278, 1201, 1070, 1022, 927, 732. ^1H NMR (400 MHz, $CDCl_3$): δ 7.67 (1H, m), 7.30-7.16 (12H, m), 6.73-6.69 (1H, m), 5.69 (1H, dd, J_1 = 7.2 Hz, J_2 = 14.4 Hz), 4.26 (1H, dd, J_1 = 2.4 Hz, J_2 = 15.6 Hz), 4.09 (1H, dd, J_1 = 6.0 Hz, J_2 = 15.6 Hz), 3.97 (1H, dd, J_1 = 4.4 Hz, J_2 = 14.0 Hz), 2.95-2.92 (1H, m), 2.79-2.70 (1H, m), 1.91-1.83 (4H, m), 1.16 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 171.80, 140.61, 137.28, 137.06, 133.98, 131.58, 131.52, 129.95, 129.42, 129.39, 128.61, 128.50, 127.64, 127.43, 123.87, 58.31, 51.53, 31.86, 31.77, 24.00, 23.88, 23.46, 23.43. HRMS (EI+) *m/z* found: 540.1461, Calcd for $C_{28}H_{33}BrN_2O_2S$ (M^+): 540.1446.

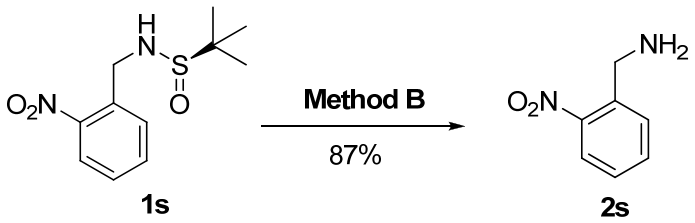


***N*-benzyl-4-(benzylamino)-*N*-(2-bromophenyl)butanamide**
$C_{24}H_{25}BrN_2O$ Mol. Wt.: 437.37

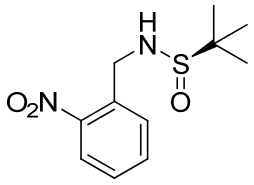
2r

2r: **1r** was deprotected by **Method B** and chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02) to afford **2r** in 70% yield as yellow oil. IR ν_{max} (cm^{-1}): 2925, 1662, 1467, 1393, 1276, 1203, 1025, 733. ^1H

NMR (400 MHz, $CDCl_3$): δ 7.66 (1H, dd, J_1 = 1.6 Hz, J_2 = 7.6 Hz), 7.30-7.12 (12H, m), 6.75 (1H, dd, J_1 = 1.6 Hz, J_2 = 7.6 Hz), 5.65 (1H, d, J = 14.4 Hz), 3.98 (1H, d, J = 14.0 Hz), 3.71 (3H, s), 2.62-2.51 (2H, m), 2.04 (2H, t, J = 7.6 Hz), 1.87-1.78 (2H, m), 1.52 (1H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 172.58, 140.79, 140.53, 137.19, 133.90, 131.55, 129.80, 129.34, 128.41, 128.37, 128.14, 127.53, 126.88, 123.93, 53.78, 51.46, 48.74, 32.05, 25.45. HRMS (EI+) *m/z* found: 436.1171, Calcd for $C_{24}H_{25}BrN_2O$ (M^+): 436.1150.



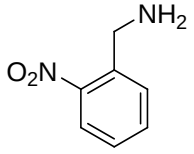
1s **2s**



1s

(*R*)-2-methyl-*N*-(2-nitrobenzyl)propane-2-sulfinamide
$C_{11}H_{16}N_2O_3S$ Mol. Wt.: 256.32

1s: Yellow oil. $[\alpha]_D^{20}$ = -34.9 (*c* 0.57, $CHCl_3$). IR ν_{max} (cm^{-1}): 3244, 3183, 2966, 1606, 1524, 1463, 1336, 1179, 1048, 794, 728, 668, 599. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.98 (1H, d, J = 8.6 Hz), 7.62-7.56 (2H, m), 7.48-7.43 (1H, m), 4.58 (2H, d, J = 6.4 Hz), 3.92 (1H, t, J = 6.4 Hz), 1.18 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 148.82, 134.18, 133.70, 131.59, 129.03, 125.23, 56.26, 47.65, 22.61. HRMS (EI+) *m/z* found: 256.0888, Calcd for $C_{11}H_{16}N_2O_3S$ (M^+): 256.0882.

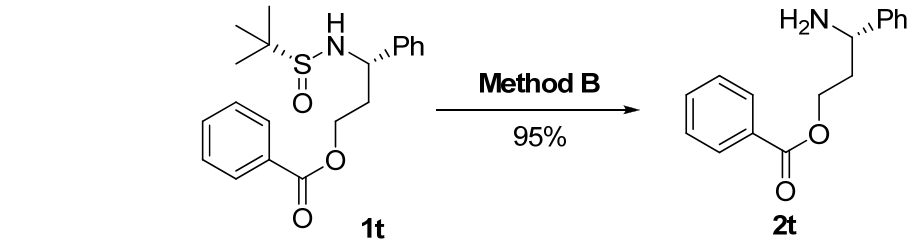


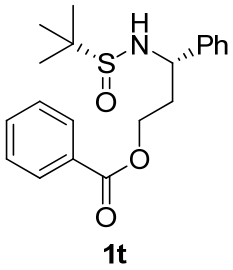
2s

(2-nitrophenyl)methanamine
$C_7H_8N_2O_2$ Mol. Wt.: 152.15

2s: **1s** was deprotected by **Method B** to obtain **2s** in 87% yield as yellow oil. IR ν_{max} (cm^{-1}): 1605, 1522, 1347, 854, 787, 737, 669. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.96

(1H, d, J = 8.4 Hz), 7.61-7.56 (2H, m), 7.41-7.37 (1H, m), 4.07 (2H, s), 1.73 (2H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 148.52, 138.55, 133.78, 130.65, 127.97, 124.95, 44.13. HRMS (EI+) *m/z* found: 152.0586, Calcd for $C_7H_8N_2O_2$ (M^+): 152.0586.

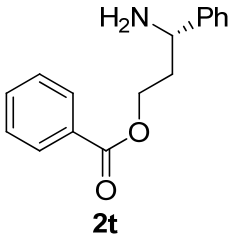




(*S*)-3-((*R*)-1,1-dimethylethylsulfinamido)-3-phenylpropyl benzoate
$C_{20}H_{25}NO_3S$ Mol. Wt.: 359.48

1t

1t: Yellow powder, mp 43-45 °C. $[\alpha]_D^{20}$ = -128.7 (*c* 0.25, $CHCl_3$). IR ν_{max} (cm^{-1}): 3213, 2955, 1716, 1458, 1274, 1113, 1061, 708, 599. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.97-7.95 (2H, m), 7.58-7.53 (1H, m), 7.45-7.39 (2H, m), 7.38-7.27 (5H, m), 4.63-4.58 (1H, m), 4.38-4.32 (1H, m), 4.25-4.19 (1H, m), 3.57 (1H, s), 2.54-2.48 (1H, m), 2.26-2.21 (1H, m), 1.24 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 166.55, 141.58, 133.13, 129.69, 129.09, 128.48, 128.32, 127.22, 61.75, 56.76, 56.09, 35.77, 22.74. HRMS (EI+) *m/z* found: 359.1543, Calcd for $C_{20}H_{25}NO_3S$ (M^+): 359.1555.

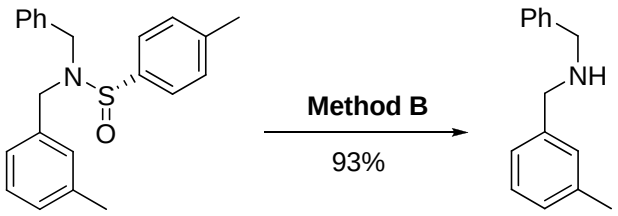


(*S*)-3-amino-3-phenylpropyl benzoate
$C_{16}H_{17}NO_2$ Mol. Wt.: 255.31

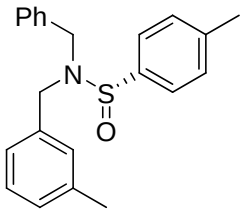
2t

2t: **1t** was deprotected by **Method B** to obtain **2t** in 95% yield as yellow oil. $[\alpha]_D^{20}$ = -19.3 (*c* 0.26, $CHCl_3$). IR ν_{max} (cm^{-1}): 3332, 2946, 1714, 1634, 1531, 1275, 1114, 707. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.91 (2H, d, J = 7.2 Hz), 7.53-7.44 (1H, m), 7.41-7.34 (4H, m), 7.32-7.24 (2H, m), 7.20 (1H, t, J = 7.2 Hz), 4.58 (2H, s), 4.33-4.22 (2H, m), 4.19-4.12 (1H, m), 2.40-2.31 (1H, m), 2.27-2.20 (1H, m). ^{13}C NMR (100 MHz,

$CDCl_3$): δ 166.59, 141.66, 133.07, 130.06, 129.66, 128.97, 128.42, 128.10, 127.01, 62.18, 53.58, 36.21. HRMS (EI+) *m/z* found: 255.1255, Calcd for $C_{16}H_{17}NO_2$ (M^+): 255.1259.



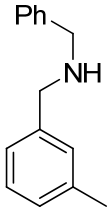
1u **2u**



1u

(*S*)-*N*-benzyl-4-methyl-*N*-(3-methylbenzyl)benzenesulfinamide
$C_{22}H_{23}NOS$ Mol. Wt.: 349.49

1u: Yellow oil. $[\alpha]_D^{20}$ = -57.4 (*c* 0.97, $CHCl_3$). IR ν_{max} (cm^{-1}): 2997, 2883, 2806, 1600, 1489, 1445, 1363, 1079, 928, 884, 803, 750, 700. ^1H NMR (400 MHz, $CDCl_3$): δ 7.65 (2H, d, *J* = 8.4 Hz), 7.35-7.28 (5H, m), 7.23-7.19 (3H, m), 7.08 (1H, d, *J* = 7.6 Hz), 7.01 (1H, d, *J* = 7.2 Hz), 6.97 (1H, s), 4.13-4.04 (4H, m), 2.43 (3H, s), 2.33 (3H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 141.48, 141.26, 138.16, 136.75, 136.55, 129.96, 129.74, 129.16, 128.55, 128.45, 128.40, 127.65, 126.35, 126.18, 51.38, 51.26, 21.50. HRMS (EI+) *m/z* found: 349.1506, Calcd for $C_{22}H_{23}NOS$ (M^+): 349.1500.



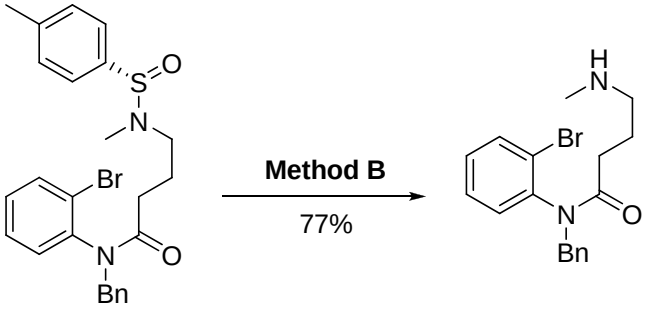
2u

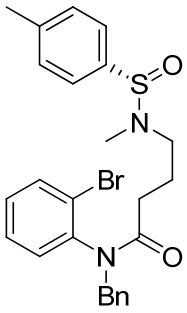
***N*-benzyl-1-*m*-tolylmethanamine**
$C_{15}H_{17}N$ Mol. Wt.: 211.30

2u: **1u** was deprotected by **Method B** to afford **2u** in 93% yield as colorless oil[11]. ^1H NMR (400 MHz, $CDCl_3$): δ 7.36-7.31 (3H, m), 7.28-7.24 (2H, m), 7.21 (1H, d, *J* = 7.6 Hz), 7.17-7.12 (2H, m), 7.07 (1H, d, *J* = 7.2 Hz), 3.82 (2H, s), 3.78 (2H, s), 2.35

(3H, s), 1.68 (1H, br s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 140.45, 140.34, 138.18, 129.08, 128.55, 128.44, 128.32, 127.84, 127.09, 125.34, 53.35, 53.29, 21.55.

Ref. 11: (a) X. Cui, Y. Zhang, F. Shi, Y. Deng, *Chem. Eur. J.* **2011**, *17*, 2587-2591. (b) M. Kim, B. W. Knettle, A. Dahlén, G. Hilmerssonb, R. A. Flowers II, *Tetrahedron* **2003**, *59*, 10397-10402.

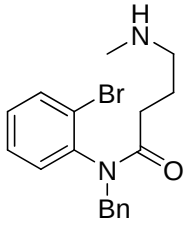




(*S*)-*N*-benzyl-*N*-(2-bromophenyl)-4-(*N*,4-dimethylphenylsulfinamido)butanamide
$C_{25}H_{27}BrN_2O_2S$ Mol. Wt.: 499.46

1v

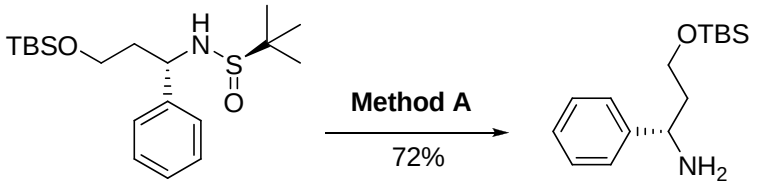
1v: A rotational isomer with a 1:1 rate. Yellow oil. $[\alpha]_D^{20}$= +9.4 (*c* 0.37, $CHCl_3$). IR ν_{max} (cm^{-1}): 2925, 1663, 1469, 1397, 1278, 1077, 935, 732. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.71-7.68 (1H, m), 7.38 (1H, dd, J_1 = 2.0 Hz, J_2 = 8.0 Hz), 7.31-7.17 (9H, m), 6.77 (1H, dd, J_1 = 2.0 Hz, J_2 = 8.8 Hz), 5.62 (1H, dd, J_1 = 2.0 Hz, J_2 = 14.4 Hz), 4.00 (1H, d, J = 14.4 Hz), 3.17-3.07 (1H, m), 3.01-2.95 (1H, m), 2.44 (1.5H, s) (2.43 (1.5H, s)), 2.39 (1.5H, s) (2.38 (1.5H, s)), 2.00-1.90 (4H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 171.95, 141.12, 140.74, 137.08, 134.04, 133.99, 131.58, 129.99, 129.58, 129.42, 128.52, 127.68, 126.13, 124.00, 52.02, 51.70, 51.61, 32.41 (32.13), 31.52, 23.60, 21.47. HRMS (EI+) *m/z* found: 498.0974, Calcd for $C_{25}H_{27}BrN_2O_2S$ (M^+): 498.0977.



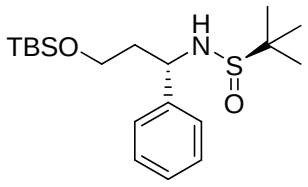
2v

***N*-benzyl-*N*-(2-bromophenyl)-4-(methylamino)butanamide**
$C_{18}H_{21}BrN_2O$ Mol. Wt.: 361.28

2v: **1v** was deprotected by **Method B** and chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02) to afford **2v** in 77% yield as yellow oil. IR ν_{max} (cm^{-1}): 2928, 2788, 1662, 1470, 1438, 1394, 1276, 1203, 1022, 765, 732. ^1H NMR (400 MHz, $CDCl_3$): δ 7.67 (1H, dd, J_1 = 2.8 Hz, J_2 = 6.4 Hz), 7.24-7.15 (7H, m), 6.75 (1H, dd, J_1 = 3.2 Hz, J_2 = 6.4 Hz), 5.63 (1H, d, J = 14.4 Hz), 3.98 (1H, d, J = 14.4 Hz), 2.56-2.49 (2H, m), 2.37 (3H, s), 2.03-2.00 (3H, m), 1.84-1.77 (2H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 172.60, 140.78, 137.17, 133.97, 131.57, 129.89, 129.39, 128.46, 127.59, 123.94, 51.55, 51.44, 36.21, 32.16, 25.12. HRMS (EI+) *m/z* found: 360.0836, Calcd for $C_{18}H_{21}BrN_2O$ (M^+): 360.0837.



1w **2w**

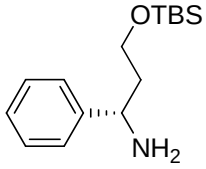


1w

(*R*)-*N*-((*S*)-3-(*tert*-butyldimethylsilyloxy)-1-phenylpropyl)-2-methylpropane-2-sulfinamide
$C_{19}H_{35}NO_2SSi$ Mol. Wt.: 369.64

1w: White powder, mp 35-37 °C. $[\alpha]_D^{20}$= -34.9 (*c* 0.50, $CHCl_3$). IR ν_{max} (cm^{-1}): 2948, 2862, 1462, 1254, 1092, 838, 775, 703. ^1H NMR (400 MHz, $CDCl_3$): δ 7.34-7.30 (4H, m), 7.29-7.26 (1H, m), 4.60-4.55 (1H, m), 3.81 (1H, d, J = 4.8 Hz), 3.62-3.57 (1H, m), 3.54-3.49 (1H, m), 2.22-2.14 (1H, m), 2.07-1.92 (1H, m), 1.21 (9H, s), 0.88 (9H, s), 0.05 (6H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 142.35, 128.70, 127.78, 127.32,

59.86, 56.72, 55.99, 39.84, 26.03, 22.74, 18.35, -5.28, -5.30. HRMS (EI+) *m/z* found: 369.2131, Calcd for $C_{19}H_{35}NO_2SSi$ (M^+): 369.2158.



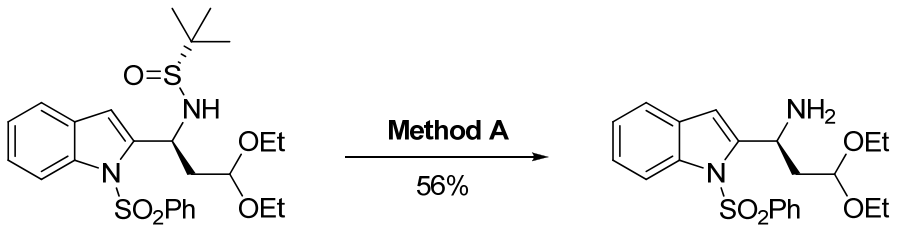
(*S*)-3-(*tert*-butyldimethylsilyloxy)-1-phenylpropan-1-amine

$C_{15}H_{27}NOSi$ Mol. Wt.: 265.47

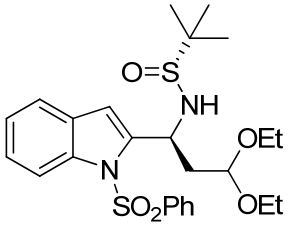
2w

2w: **1w** was deprotected by **Method A** to obtain **2w** in 72% yield as colorless oil. $[\alpha]_D^{20}$ = +6.7 (*c* 0.22, $CHCl_3$); lit[12] $[\alpha]_D^{20}$= +0.8 (*c* 1.0, $CHCl_3$) for > 99% *ee*. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.33-7.28 (4H, m), 7.22-7.18 (1H, m), 4.07 (1H, t, *J* = 6.8 Hz), 3.67-3.62 (1H, m), 3.59-3.53 (1H, m), 1.91 (2H, br s), 1.86-1.80 (2H, m), 0.86 (9H, s), 0.00 (6H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 146.50, 128.58, 127.04, 126.49, 60.90, 53.61, 42.18, 26.07, 18.39, -5.24. HRMS (EI+) *m/z* found: 265.1863, Calcd for $C_{15}H_{27}NOSi$ (M^+): 265.1862.

Ref. 12: (a) R.-M. María, G.-U. Eduardo, G.-F. Vicente, G. Vicente, *Adv. Synth. Catal.* **2010**, *352*, 395-406; (b) T. Oliver, G.-F. Vicente, G. Vicente, *Tetrahedron: Asymmetry* **2006**, *17*, 860–866.



1x **2x**

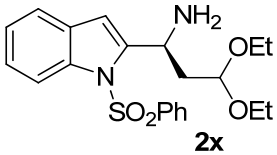


(*R*)-*N*-((*S*)-3,3-diethoxy-1-(1-(phenylsulfonyl)-1*H*-indol-2-yl)propyl)-2-methylpropane-2-sulfinamide

$C_{25}H_{34}N_2O_5S_2$ Mol. Wt.: 506.68

1x

1x: Yellow oil. $[\alpha]_D^{20}$ = +69.2 (*c* 0.95, $CHCl_3$). IR ν_{max} (cm^{-1}): 2973, 1617, 1445, 1371, 1064, 750, 583. ^1H NMR (400 MHz, $CDCl_3$): δ 8.19 (1H, d, *J* = 7.6 Hz), 7.87 (2H, d, *J* = 7.6 Hz), 7.54-7.50 (1H, m), 7.46-7.42 (3H, m), 7.31-7.27 (1H, m), 7.22 (1H, t, *J* = 7.6 Hz), 6.66 (1H, s), 5.43 (1H, d, *J* = 8.8 Hz), 5.05 (1H, s), 4.76-4.74 (1H, m), 3.81-3.77 (1H, m), 3.70-3.64 (1H, m), 3.61-3.56 (1H, m), 2.50 (1H, d, *J* = 14.4 Hz), 2.11-2.03 (1H, m), 1.29-1.21 (15H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 143.04, 138.16, 137.49, 134.04, 129.51, 126.68, 124.79, 124.01, 120.94, 115.20, 111.07, 102.41, 63.00, 62.16, 55.78, 49.67, 41.53, 22.89, 15.54, 15.44. HRMS (ESI+) *m/z* found: 529.1801, Calcd for $C_{25}H_{34}N_2NaO_5S_2$ $(M + Na)^+$: 529.1807.



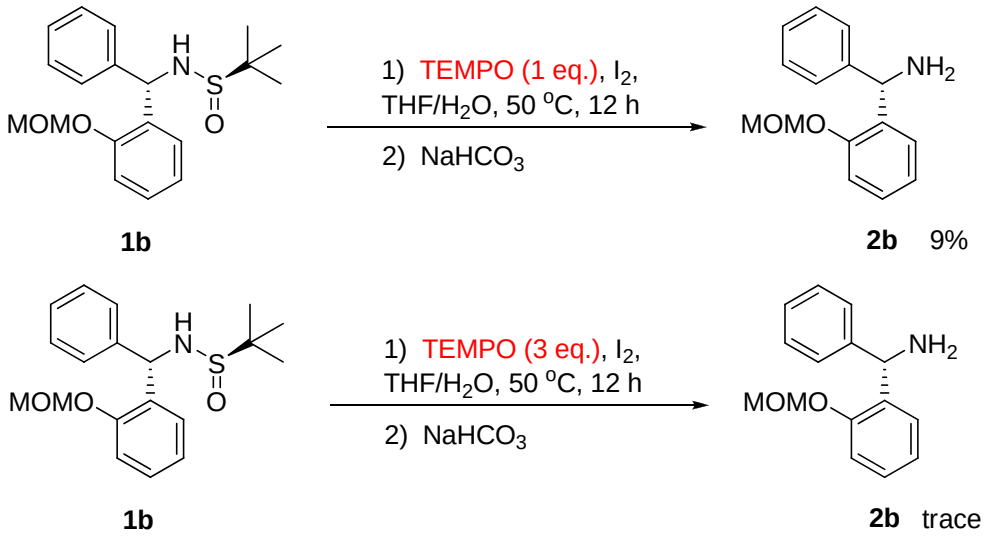
2x

(*S*)-3,3-diethoxy-1-(1-(phenylsulfonyl)-1*H*-indol-2-yl)propan-1-amine
$C_{21}H_{26}N_2O_4S$ Mol Wt.: 402.51

2x: **1x** was deprotected by **Method A** to obtain **2x** in 56% yield as yellow oil oil. $[\alpha]_D^{20}$ = -72.0 (*c* 1.50, $CHCl_3$). IR ν_{max} (cm^{-1}): 2974, 1601, 1444, 1368, 1175, 1132, 1055, 742, 584. ^1H NMR (400 MHz, $CDCl_3$): δ 8.18 (1H, d, *J* = 7.6 Hz), 7.74 (2H, d, *J* = 7.6 Hz), 7.50 (1H, t, *J* = 7.6 Hz), 7.43 (1H, d, *J* = 7.6 Hz), 7.38 (1H, t, *J* = 7.6 Hz), 7.31-7.26 (1H, m), 7.22 (1H, t, *J* = 7.6 Hz), 6.60 (1H, s), 4.79 (1H, t, *J* = 5.6 Hz), 4.70-4.67 (1H, m), 3.73-3.65 (2H, m), 3.62-3.48 (2H, m), 2.25-2.19 (1H, m), 2.08-2.01 (1H, m), 1.82 (2H, br s), 1.27-1.21 (6H, m). ^{13}C NMR (100 MHz, $CDCl_3$): δ 147.18, 138.80, 137.58, 133.87, 129.73, 129.53, 126.38, 124.78, 124.03, 120.92, 115.29, 108.36, 101.73, 62.02, 61.94, 46.10, 41.15, 15.63, 15.53. HRMS (ESI+) *m/z* found: 403.1682, Calcd for $C_{21}H_{26}N_2O_4S$ $(M + Na)^+$: 403.1686.

2.2 Experiments to elaborate the proposed pathway

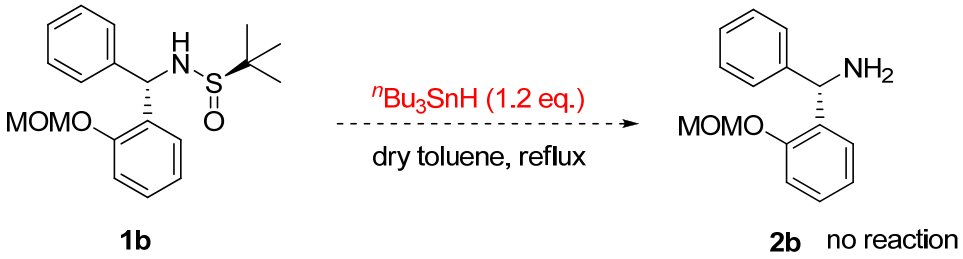
2.2.1 Inhibition experiments



To a solution of sulfinyl amine **1b** (174 mg, 0.5 mmol) in THF/H_2O (5:1, 10 mL) was added TEMPO (78 mg, 0.5 mmol, 1 eq. or 235 mg, 1.5 mmol, 3 eq.) and I_2 (26 mg, 0.1 mmol, 0.2 eq.). The reaction mixture was then stirred at 50 ^oC under air for 12 h. The mixture was diluted with water (15 mL). After removal of THF under reduced pressure, aqueous solution of sodium thiosulphate (0.2N, 0.2 mL) was added. The resulting mixture was washed with Et_2O (3 × 5 mL), and the residue was treated with saturated aqueous solution of $NaHCO_3$ (5 ml). The aqueous mixture was then extracted with CH_2Cl_2 (3 × 5 mL). The combined organic phases were washed with brine and dried over Na_2SO_4. After removal of the solvents, the residue was chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02) to afford the product.

Experiments conducting with TEMPO suggested that the deprotection of *N-tert*-butanesulfinyl group might be a SET (single electron transfer) process. This iodine mediated process was significantly inhibited by addition of TEMPO.

2.2.2 Radical experiments

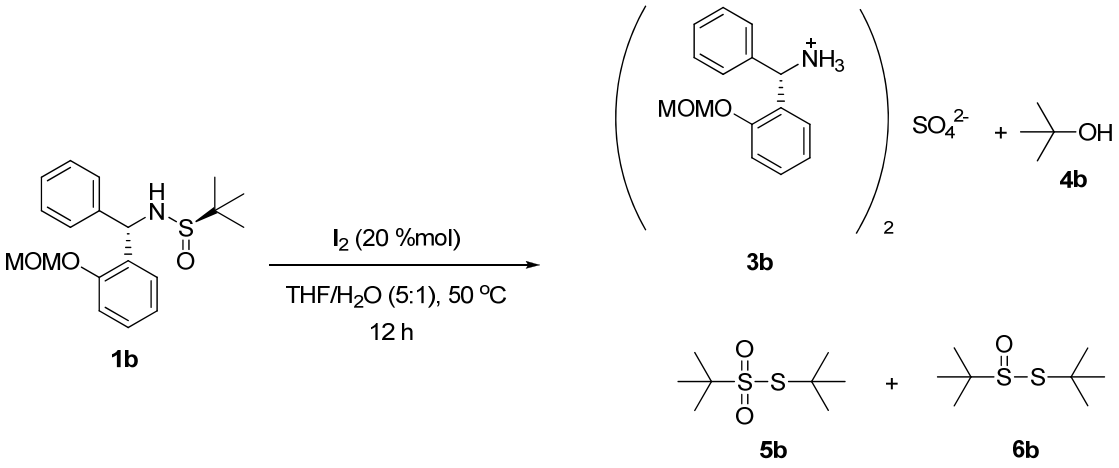


To a solution of sulfinyl amine **1b** (174 mg, 0.5 mmol) in dry toluene (5 mL) was added ^{n}Bu$_3$SnH (1.2 eq. 162 μL, 0.6 mmol). The reaction mixture was then stirred at 115 ^{o}C under argon atmosphere for 24 h. After removal of the solvents, the residue was chromatographed on silica gel (200–300 mesh) to afford compound **1b** (recovery of starting material).

Experiment with *n*-Bu$_3$SnH indicates that the deprotection of *N-tert*-butanesulfinyl group does not occur in the presence of a reductive radical initiator.

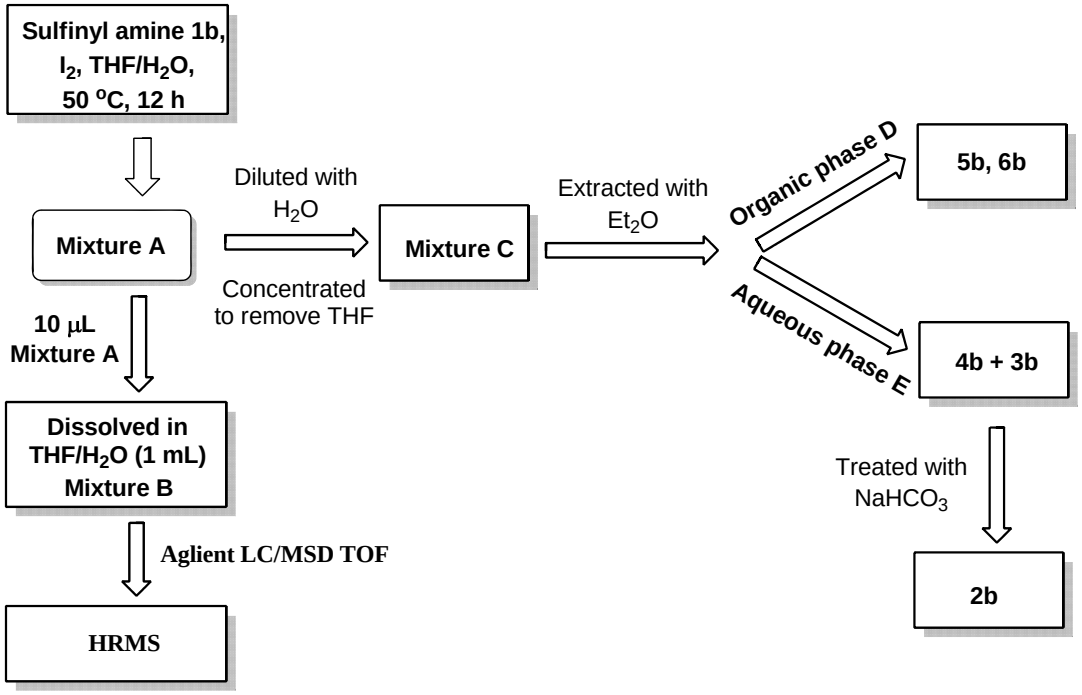
2.2.3 Deprotections of *N-tert*-butanesulfinyl amines by catalytic iodine

2.2.3.1 Deprotections in THF/H$_2$O



In order to identify all products of this iodine mediated process, we conducted the

following experiments and the procedure was illustrated in **Scheme S1**.



Scheme S1

To a stirred solution of sulfinyl amine **1b** (749 mg, 2 mmol) in THF/H_2O (5 : 1, 40 mL) was added I_2 (20%mol, 102 mg, 0.4 mmol). The reaction mixture was stirred at 50 °C under air or nitrogen until starting material **1b** was disappeared (ca. 12 h, monitored by TLC) to afford **Mixture A**.

The **mixture A** (10 μL) was taken and dissolved in THF/H_2O (5 : 1, 1 mL) to afford the sample (**Mixture B**) for High Resolution Mass spectra on Aglient LC/MSD TOF mass spectrometer. The results were listed in **Table S1**.

Table S1 The results of HRMS

Entry	Experimental data	Formula	Calculated data	Origin
1	244.1337	$(C_{15}H_{18}NO_2)^+$	244.1338	**3b (Figure S1)**
2	96.9589	$(SO_4^{2-} + H)^-$	96.9596	**3b (Figure S2)**
3	233.0654	$(C_8H_{18}O_2S_2 + Na)^+$	233.0646	**5b (Figure S3)**
4	217.0697	$(C_8H_{18}OS_2 + Na)^+$	217.0697	**6b (Figure S4)**

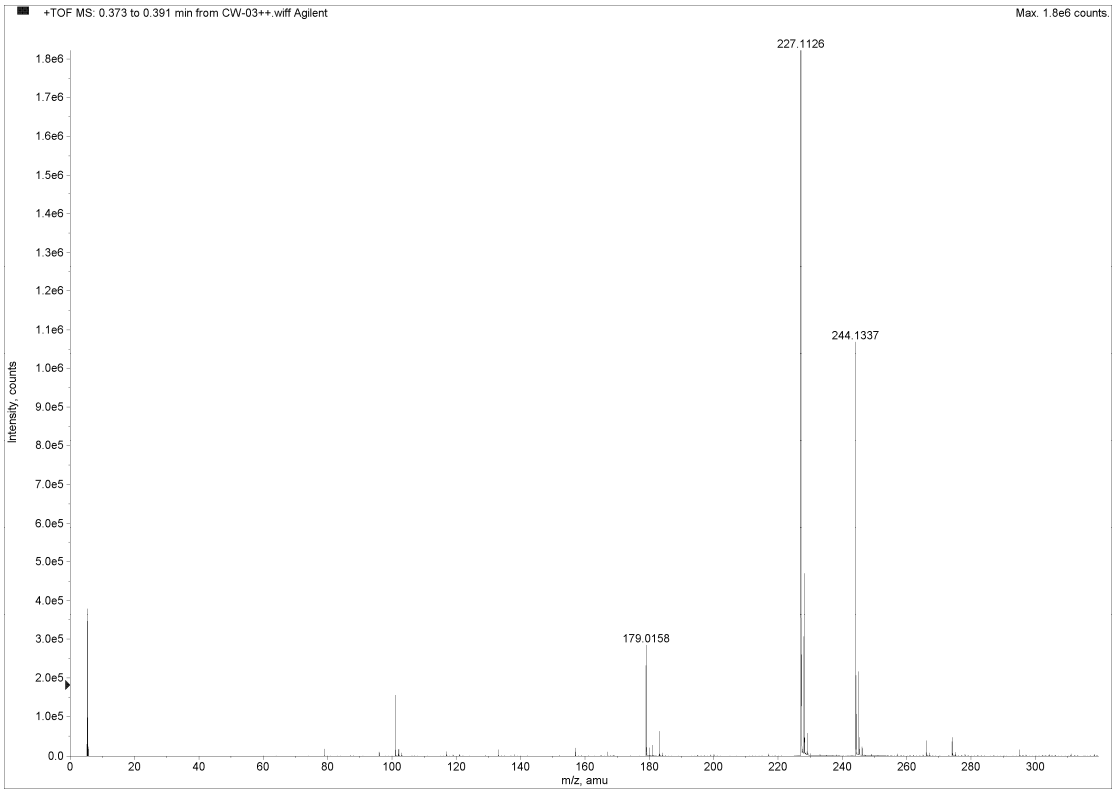


Figure S1

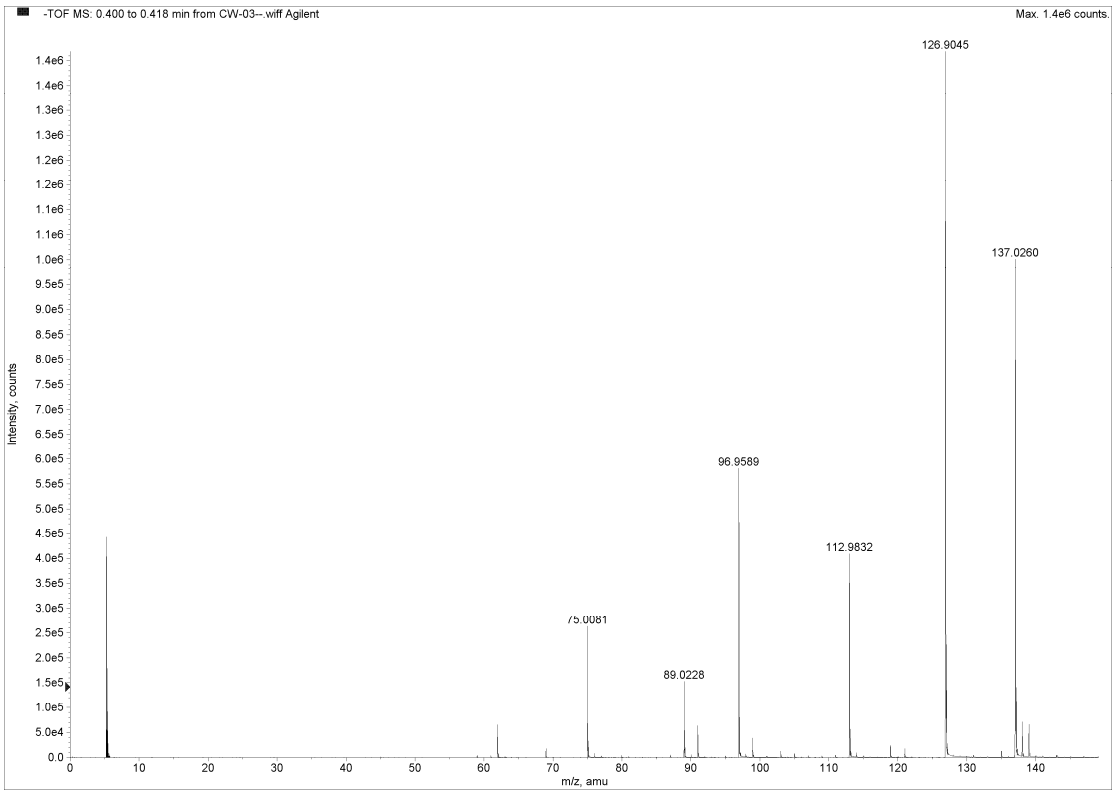


Figure S2

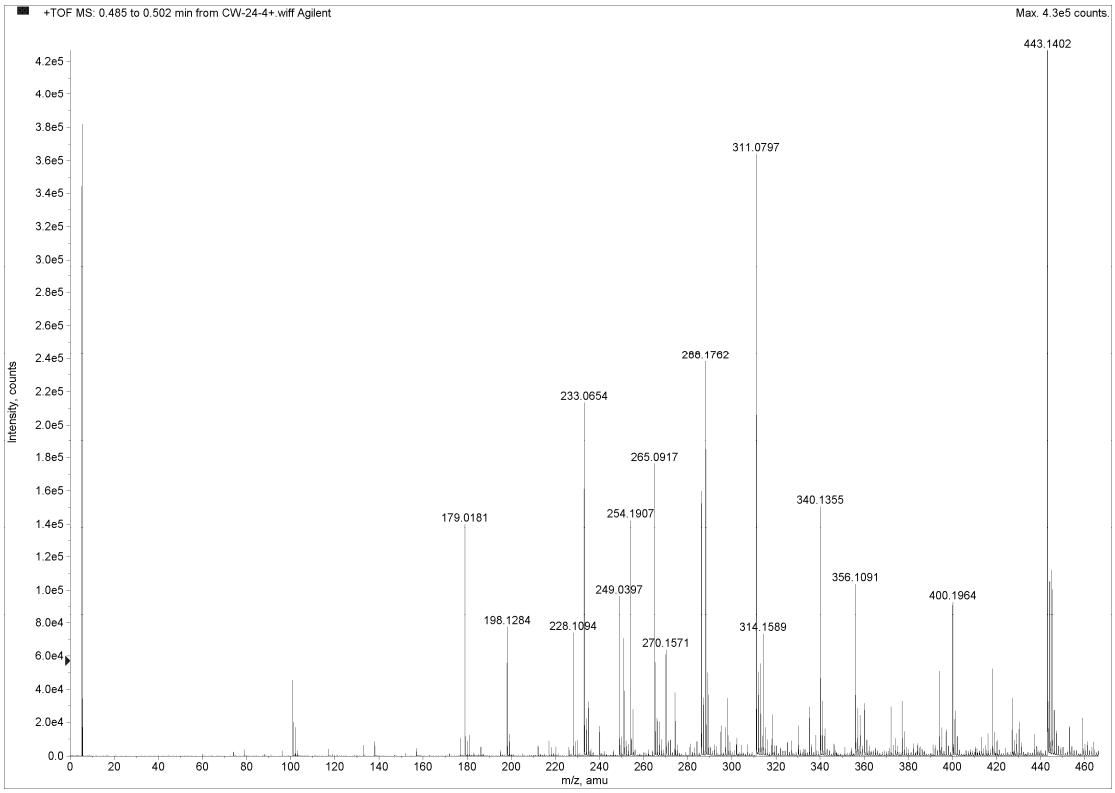


Figure S3

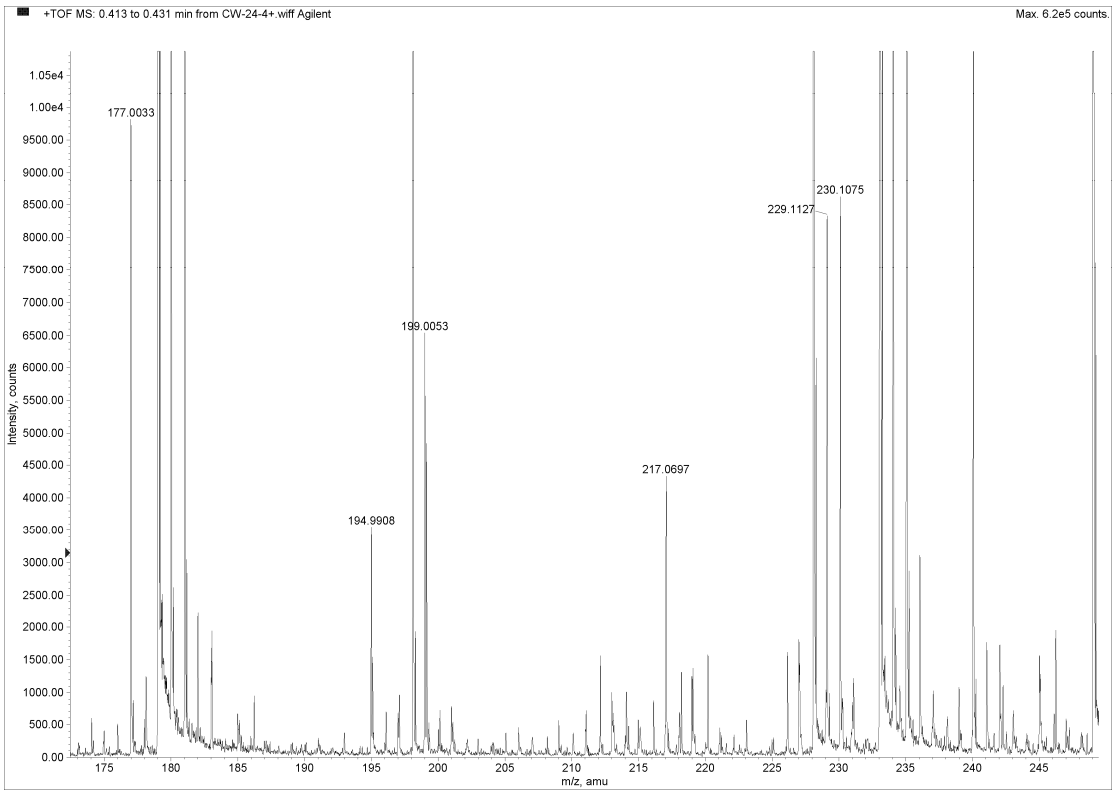
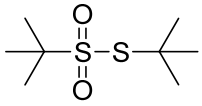


Figure S4

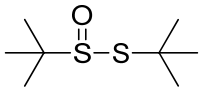
Mixture A was diluted with water (30 mL). Most of the THF was removed under reduced pressure to obtain **Mixture C**. **Mixture C** was extracted with Et_2O (3 × 20 mL) to yield the organic phase **D**. The organic phase **D** was washed with brine, dried (Na_2SO_4), concentrated, and chromatographed on silica gel (petroleum ether 60-90 °C : ethyl acetate = 15 : 1) to afford a mixture of *tert*-butyl 2-methylpropane-2-sulfonothioate (**5b**) and *tert*-butyl 2-methylpropane-2-sulfino -thioate (**6b**).



5b

***tert*-butyl 2-methylpropane-2-sulfonothioate**
$C_8H_{18}O_2S_2$ Mol. Wt.: 210.36

***tert*-butyl 2-methylpropane-2-sulfonothioate**[12] (**5b**): ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.61 (9H, s), 1.46 (9H, s). ^{13}C NMR (100 MHz, $CDCl_3$): δ 68.25, 56.53, 31.68, 23.89. HRMS (ESI+) *m/z* found: 233.0646, Calcd for $C_8H_{18}Na\ O_2S_2$ $(M + Na)^+$: 233.0646 (**Figure S3**).



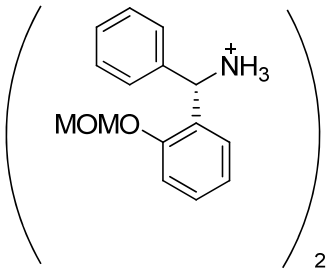
6b

***tert*-butyl 2-methylpropane-2-sulfinothioate**
$C_8H_{18}OS_2$ Mol. Wt.: 194.36

***tert*-butyl 2-methylpropane-2-sulfinothioate**[12] (**6b**): ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.50 (9H, s), 1.22 (9H, s). HRMS (ESI+) *m/z* found: 217.0697, Calcd for $C_8H_{18}NaOS_2$ $(M + Na)^+$: 217.0697 (**Figure S4**).

Ref. 12: G. Derbesy, D. N. Harpp, *J. Org. Chem.* **1996**, *60*, 1044-1052.

The aqueous phase **E** was concentrated to afford **3b** (549 mg, 94% yiled).



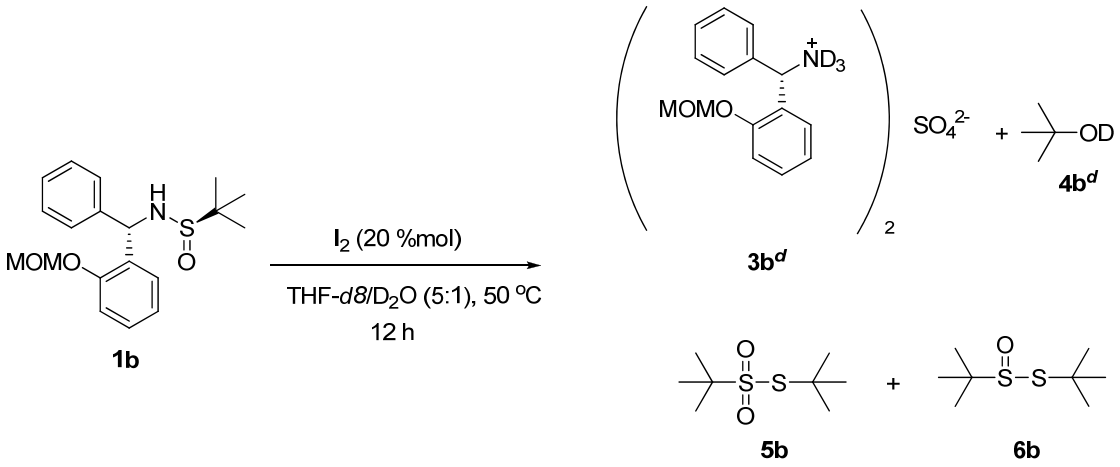
3b

(*S*)-(2-(methoxymethoxy) phenyl)(phenyl)methanaminium sulfate
$C_{30}H_{36}N_2O_8S$ Mol. Wt.: 584.68

(*S*)-(2-(methoxymethoxy)phenyl)(phenyl)methanaminium sulfate 3b: ^{1}H NMR (400 MHz, D_2O): δ 7.40-7.35 (7H, m), 7.12 (2H, d, *J* = 8.0 Hz), 5.81 (1H, s), 5.19 (2H, s), 3.13 (3H, s). ^{13}C NMR (100 MHz, D_2O): δ 153.32, 136.03, 130.61, 129.04, 128.82, 128.27, 126.93, 125.12, 122.28, 114.16, 93.28, 55.80, 54.41. HRMS (ESI+) *m/z* found: 244.1337, Calcd for $C_{15}H_{18}NO_2$ $(M - SO_4)^+/2$: 244.1338 (**Figure S1**); HRMS (ESI-) *m/z* found: 96.9589, Calcd for HSO_4 $(SO_4 + H)^-$: 96.9596 (**Figure S2**).

To a solution of **3b** (549 mg) in H_2O (10 mL) was added saturated aqueous solution of $NaHCO_3$ (10 mL). The reaction mixture was stirred for 5 min at 20 °C. The reaction mixture was then extracted with CH_2Cl_2 (3 × 10 mL). The combined organic phases were washed with brine, dried (Na_2SO_4), and concentrated to give the amine **2b** (448 mg, yiled 98% from **3b**).

2.2.3.2 Deprotections in deuterated solvents (THF-*d*8/D_2O)



Iodine (5mg, 0.02 mmol, 0.2 eq.) and sulfinyl amine **1b** (35 mg, 0.1 mmol) were disolved in THF-*d8*/D_2O (5:1, 2 mL) in a sealed tube equipped with a stir bar. This solution was then stirred at 50 °C for 12 h, the reaction progress might be monitored by TLC. After completely consumption of starting material, the resulting mixture (0.5 mL) was transfered to a NMR tube to conduct ^{1}H-NMR (**Figure S5b**) and ^{13}C-NMR (**Figure S6b**) experiments on a Bruker Avance 400 spectrometer.

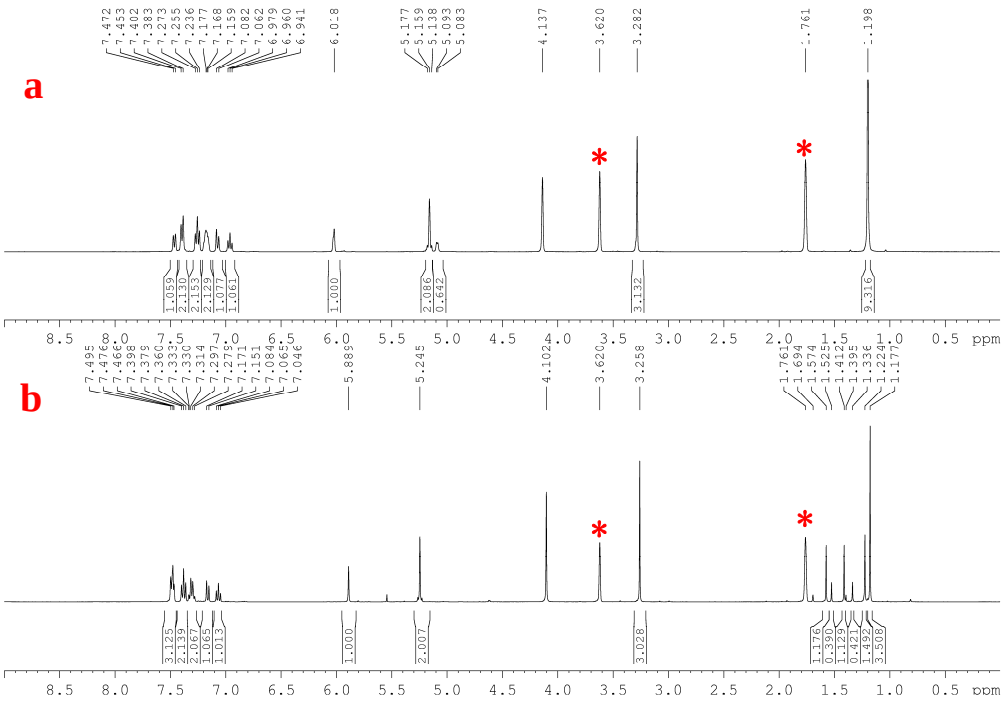


Figure S5. (a) ^{1}H-NMR spectra of sulfinyl amine **1b** (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1); (b) ^{1}H-NMR spectra of the resulting mixture (asterisks indicate the THF$^{d\text{-}8}$ peak) in THF-*d8*/D_2O (5:1).

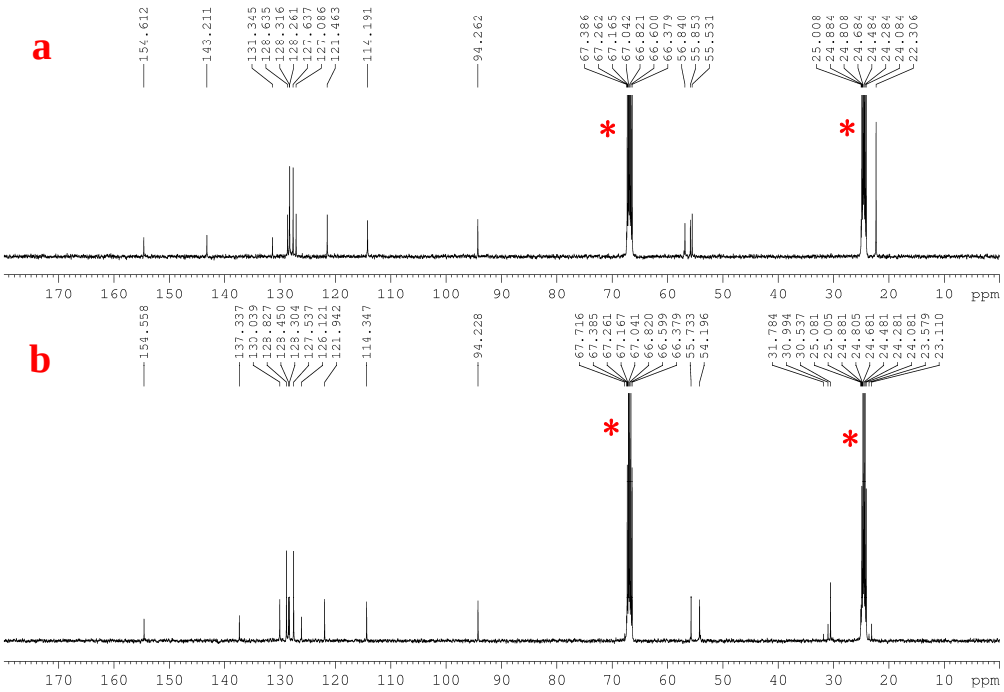


Figure S6. (a) ^{13}C-NMR spectra of sulfinyl amine **1b** (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1); (b) ^{13}C-NMR spectra of the reaction mixture (asterisks

indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1).

^{t}BuOD (4b^d): In order to determine the volatile ^{t}BuOD (**4b^d**), we carried out the following control experiment. To the deuterated reaction mixture (0.5 mL) was added ^{t}BuOH (3 mg). The resulting mixture was transfered to a NMR tube to obtain ^{1}H-NMR (**Figure S7b**) and ^{13}C-NMR (**Figure S8b**) on a Bruker Avance 400 spectrometer. As indicated in Figure **S7**, the integrations for protons (chemical shifts at δ 1.18 ppm) and carbons (chemical shifts at δ 67.69 and 30.55 ppm) are significantly increased after addition of ^{t}BuOH.

Conclusion from this control experiment: ^{t}BuOH was produced as a by-product in this deprotection reaction.

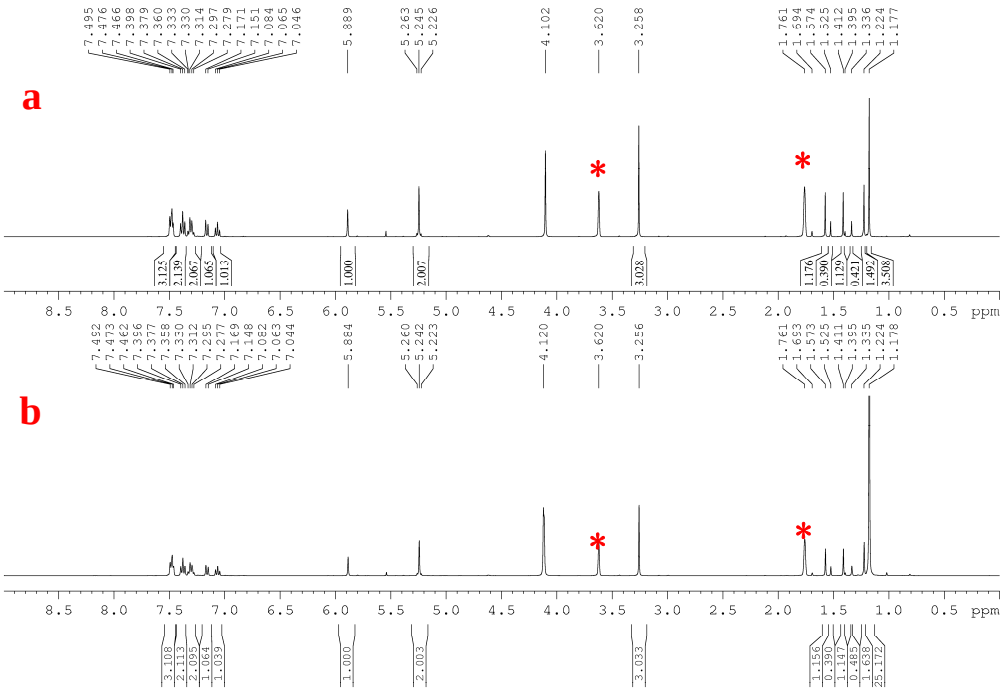


Figure S7. (a) ^{1}H-NMR spectra of the deuterated reaction mixture (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1); (b) ^{1}H-NMR spectra of the deuterated reaction mixture after addition of ^{t}BuOH (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1).

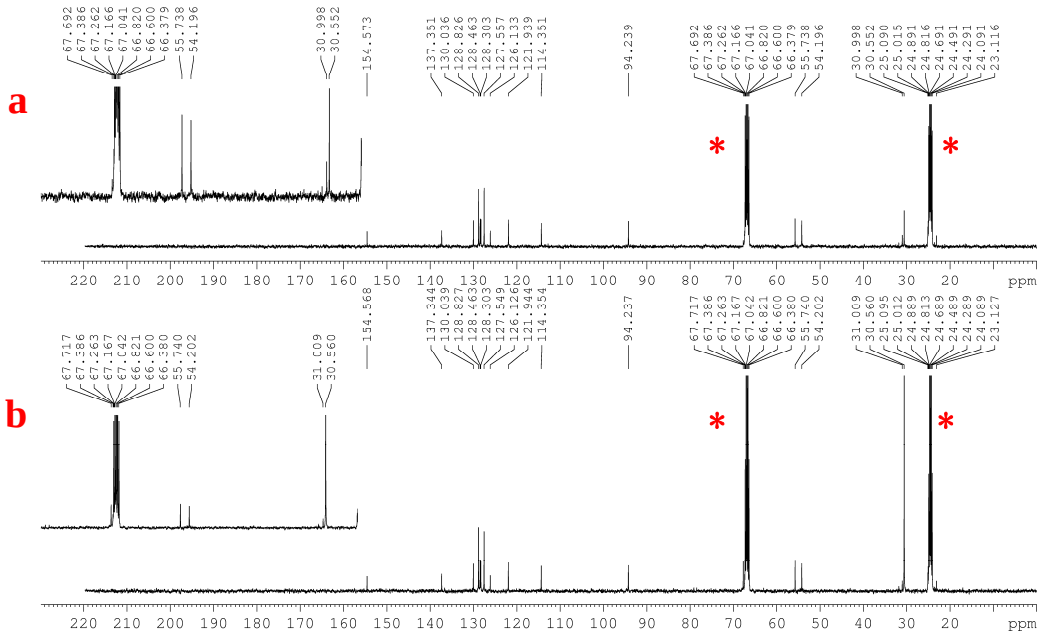


Figure S8. (a) ^{13}C-NMR spectra of the deuterated reaction mixture (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1); (b) ^{13}C-NMR spectra of the deuterated reaction mixture after addition of ^{t}BuOH (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1).

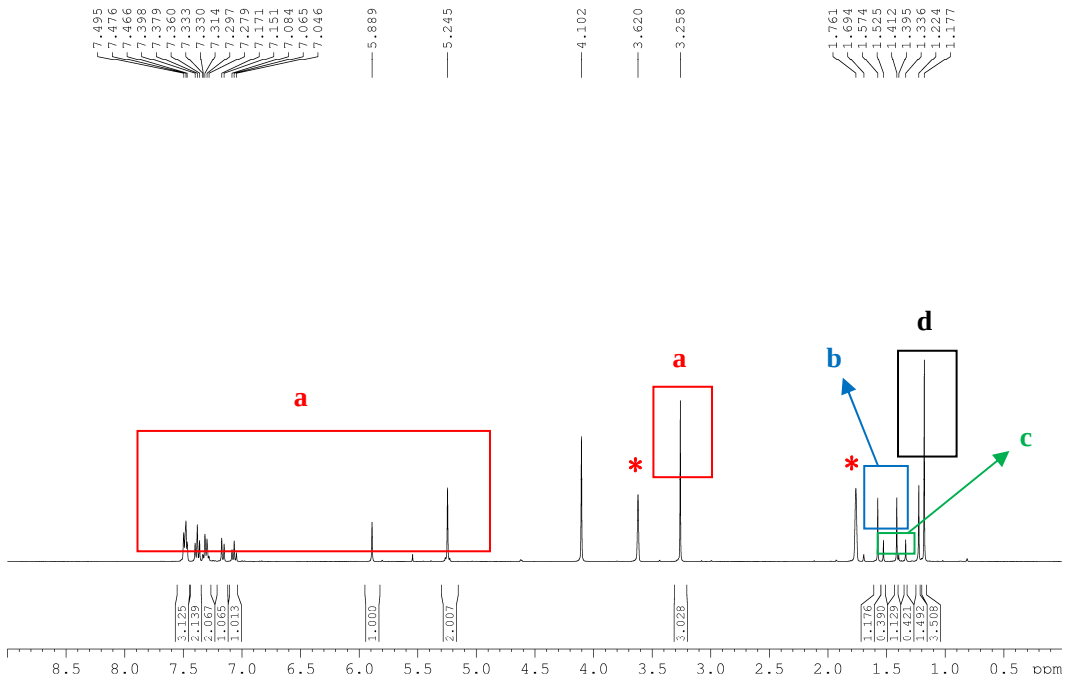


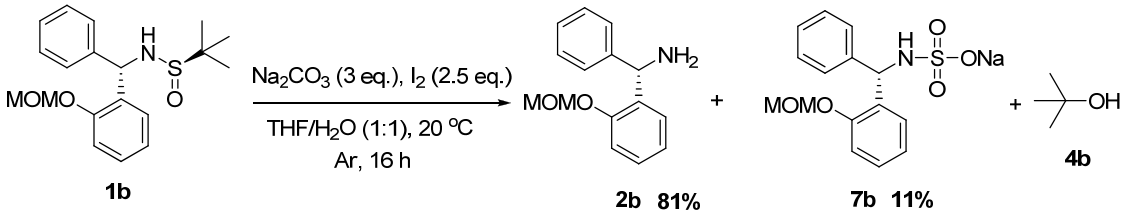
Figure S9. ^{1}H-NMR spectra of the deuterated reaction mixture (asterisks indicate the

THF-*d8* peak) in THF-*d8*/D_2O (5:1). (a) Protons of **3b**^{d}; (b) Protons of **5b**; (c) Protons of **6b**; (d) Protons of **4b**^{d}.

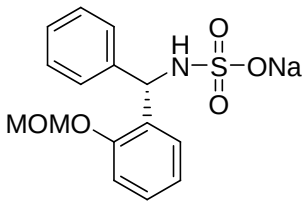
Conclusion for reactions conducted with catalytic amount of iodine: These experiments suggest that oxidation of the *tert*-butanesulfinyl groups by iodine might lead to the formation of **3b**^{d}, **4b**^{d}, **5b and 6b** as shown in **Figure S9**.

2.2.4 Deprotections of *N-tert*-butanesulfinyl amines in the presence of base

2.2.4.1 Deprotections in THF/H_2O



To a solution of sulfinyl amine **1b** (749 mg 2 mmol) in THF/H_2O (1:1, 40 mL) was added Na_2CO_3 (636 mg, 6 mmol, 3.0 eq.). The reaction mixture was stirred for 5 min at 20 ^{o}C under argon. I_2 (1.27 g, 5 mmol) was then added. The reaction mixture was stirred at 20 ^{o}C for 24 h under argon. After consumption of amine **1b**, the reaction mixture was diluted with water (30 mL). The resulting mixture was extracted with CH_2Cl_2 (3 × 5 mL). The combined organic phases were washed with NaS_2O_3 (0.2 N), dried (Na_2SO_4), concentrated, and chromatographed on basic aluminium oxide (petroleum ether 60-90 °C : ethyl acetate : Et_3N= 3 : 1 : 0.02) to afford the product **2b** (394 mg, yield 81%). The aqueous phase was concentrated under reduced pressure, and the resulting residue was chromatographed on silica gel (CH_2Cl_2 : MeOH = 3 : 1) to afford **7b** (78mg, yield 11%).



sodium (*S*)-(2-(methoxymethoxy) phenyl)(phenyl)methylsulfamate
$C_{15}H_{16}NNaO_5S$ Mol. Wt.: 345.35

7b

Sodium (*S*)-(2-(methoxymethoxy)phenyl)(phenyl)methylsulfamate 7b: ^{1}H NMR (400 MHz, D_2O): δ 7.64 (1H, d, *J* = 7.2 Hz), 7.43-7.42 (2H, m), 7.37-7.26 (4H, m), 7.15 (1H, t, *J* = 7.2 Hz), 7.05 (1H, d, *J* = 8.0 Hz), 5.86 (1H, s), 5.18 (2H, s), 3.25 (3H, s). ^{13}C NMR (100 MHz, D_2O): δ 152.92, 142.12, 131.65, 128.84, 128.63, 128.52, 127.37, 127.27, 122.39, 114.52, 93.77, 56.82, 56.05. HRMS (ESI+) *m/z* found: 368.0575, Calcd for $C_{15}H_{16}NNa_2O_5S$ $(M + Na)^+$: 368.0545 (**Figure S10**); HRMS (ESI-) *m/z* found: 322.0758, Calcd for $C_{15}H_{16}NO_5S$ $(M - Na)^-$: 322.0755 (**Figure S11**).

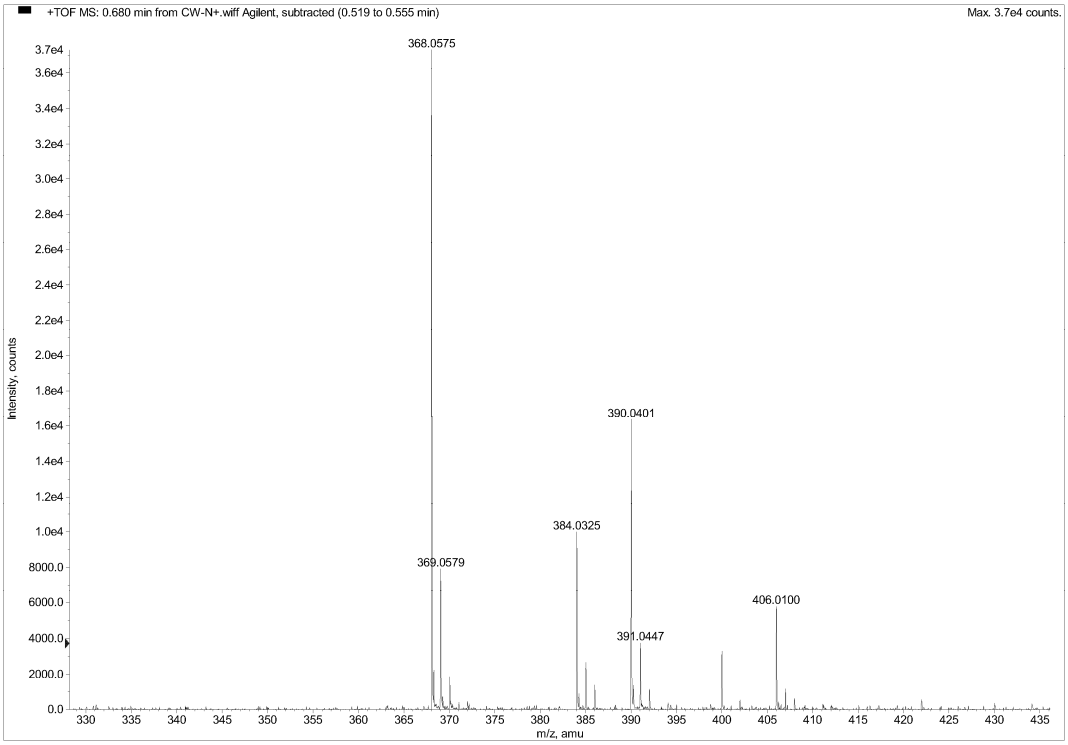


Figure S10

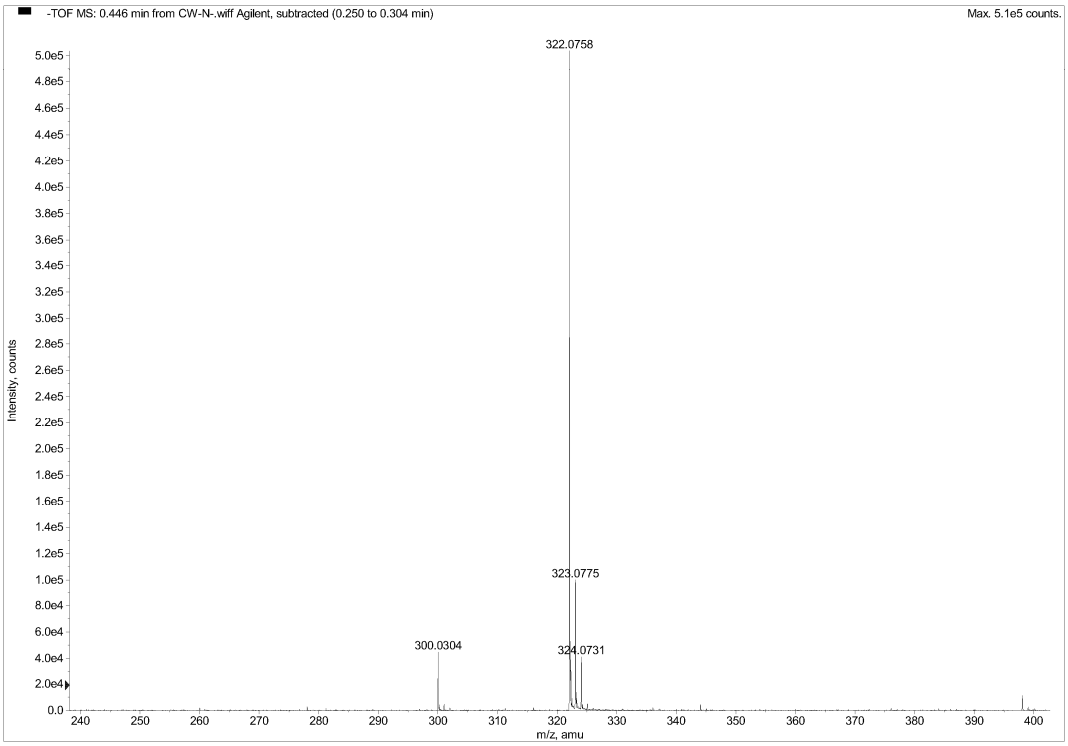
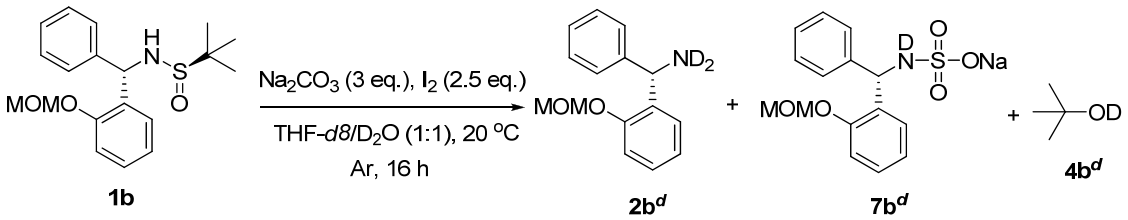


Figure S11

2.2.4.2 Deprotections in deuterated solvents (THF-*d8*/D_2O)



To a solution of sulfinyl amine **1b** (35 mg, 0.1 mmol) in THF-*d8*/D_2O (1:1, 2 mL) was added Na_2CO_3 (32 mg, 0.3 mmol, 3.0 eq.). The reaction mixture was stirred for 5 min at 20 ^oC under argon. I_2 (64 mg, 0.25 mmol) was then added. The resulting mixture was stirred at 20 ^oC for 24 h under an argon atmosphere. After consumption of starting material, the resulting mixture (0.5 mL) was transfered to a NMR tube to conducted ^1H-NMR (**Figure S12b**) and ^{13}C-NMR (**Figure S13b**) on a Bruker Avance 400 spectrometer.

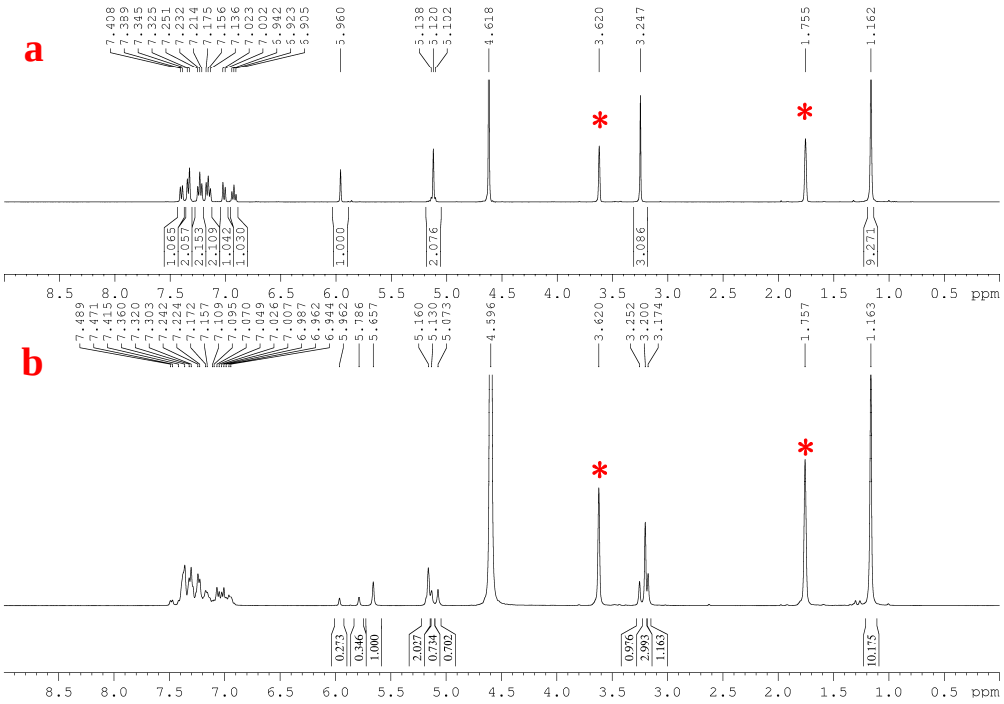


Figure S12 (a) ^{1}H-NMR of sulfinyl amine **1b** (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1); (b) ^{1}H-NMR of the resulting mixture (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1).

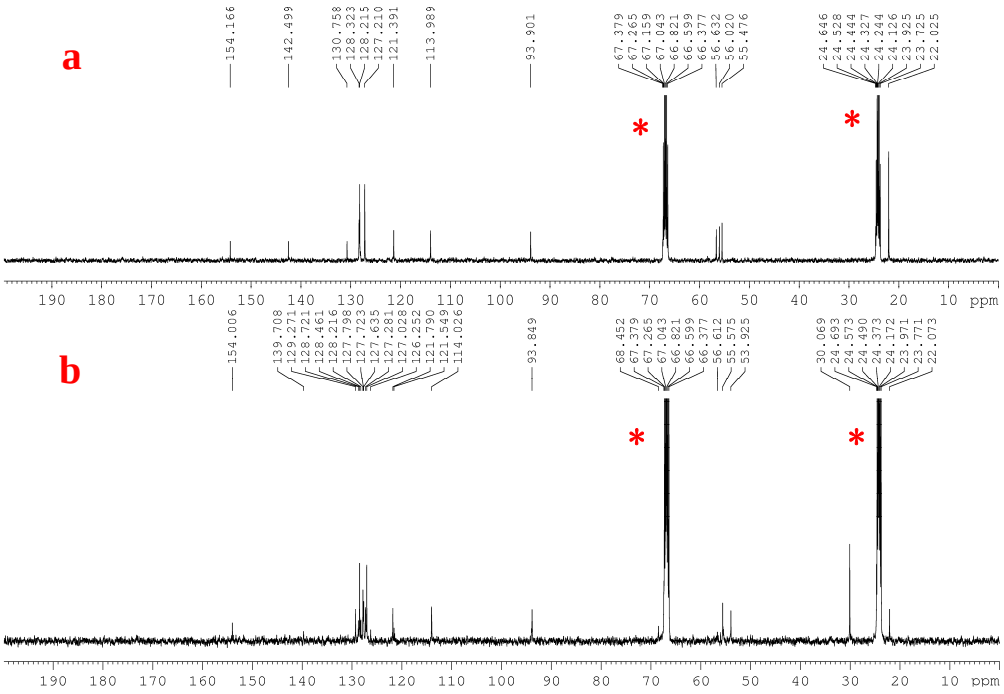


Figure S13 (a) ^{13}C-NMR of sulfinyl amine **1b** (asterisks indicate the THF-*d8* peak) in

THF-*d8*/D_2O (1:1); (b) ^{13}C--NMR of the resulting mixture (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (1:1).

^{t}BuOD (4b^d): Similar procedure, by addition of *t*-BuOH to the reaction mixture, was used to identify the formation of ^{t}BuOH (**4b**^{d}) in this deprotection process.

Conclusion remark for iodine mediated deprotection in the presence of base: These experiments suggest that the deprotection of *tert*-butanesulfinyl group in the presence of base might go an alternative pathway and yield **2b**, **4b**, **7b** as indicated in **Figure S14**.

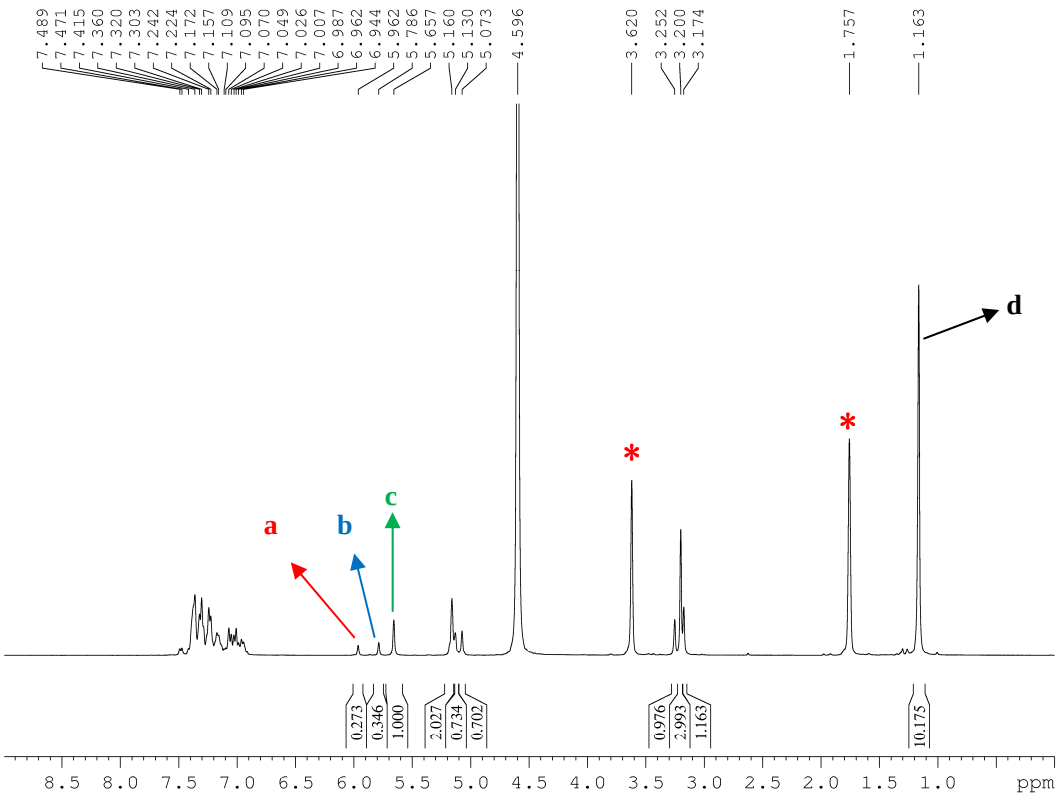
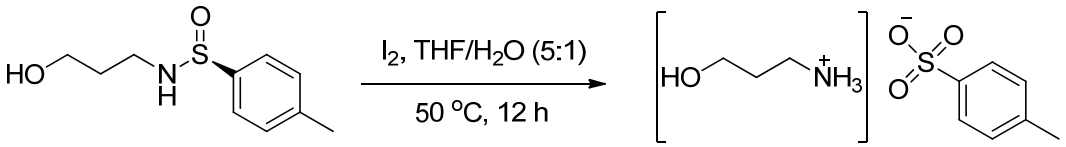


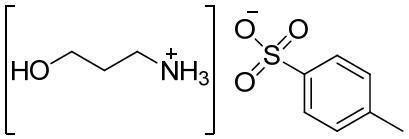
Figure S14. ^1H-NMR of the deuterated reaction mixture (asterisks indicate the THF-*d8* peak) in THF-*d8*/D_2O (5:1). (a) The benzylic proton of **1b**^{d}; (b) The benzylic proton of **7b**^{d}; (c) The benzylic proton of **2b**^{d}; (d) Protons of **4b**^{d}.

2.2.5 Deprotections of *p*-toluenesulfinyl amines by catalytic iodine



1y **3c** 94%

To a solution of sulfinyl amine **1y** (26 mg, 0.12 mmol) in THF/H_2O (5 : 1, 3 mL) was added I_2 (6.2 mg, 0.024 mmol, 0.2 eq.). The reaction mixture was then stirred at 50 °C under air, The reaction progress was monitored by TLC. After completely consumption of sulfinyl amine **1y**, the reaction mixture was cooled to room temperature and diluted with water (10 mL). Most of the organic solvents (THF) was removed under reduced pressure. The resulting mixture was then washed with Et_2O (3 × 5 mL). The aqueous phase was concentrated to afford **3c** (28mg, yield 94%) as colorless powder.



3c

3-hydroxypropan-1-aminium 4-methylbenzenesulfonate
$C_{10}H_{17}NO_4S$ Mol. Wt.: 247.31

3-Hydroxypropan-1-aminium 4-methylbenzenesulfonate (3c): ^{1}H NMR (400 MHz, D_2O): δ 7.70 (2H, d, *J* = 8.4 Hz), 7.37 (2H, d, *J* = 8.0 Hz), 3.71 (2H, t, *J* = 6.0 Hz), 3.10 (2H, t, *J* = 7.2 Hz), 2.40 (3H, s), 1.93-1.87 (2H, m). ^{13}C NMR (100 MHz, D_2O): δ 142.49, 139.45, 129.45, 125.36, 58.95, 37.35, 28.97, 20.48. HRMS (ESI+) *m/z* found: 76.0758, Calcd for $C_3H_{10}NO$ $(M - OTS)^+$: 76.0762 (**Figure S15**); HRMS (ESI-) *m/z* found: 171.0126, Calcd for $C_7H_7O_3S$ $(OTS)^-$: 171.0116 (**Figure S16**).

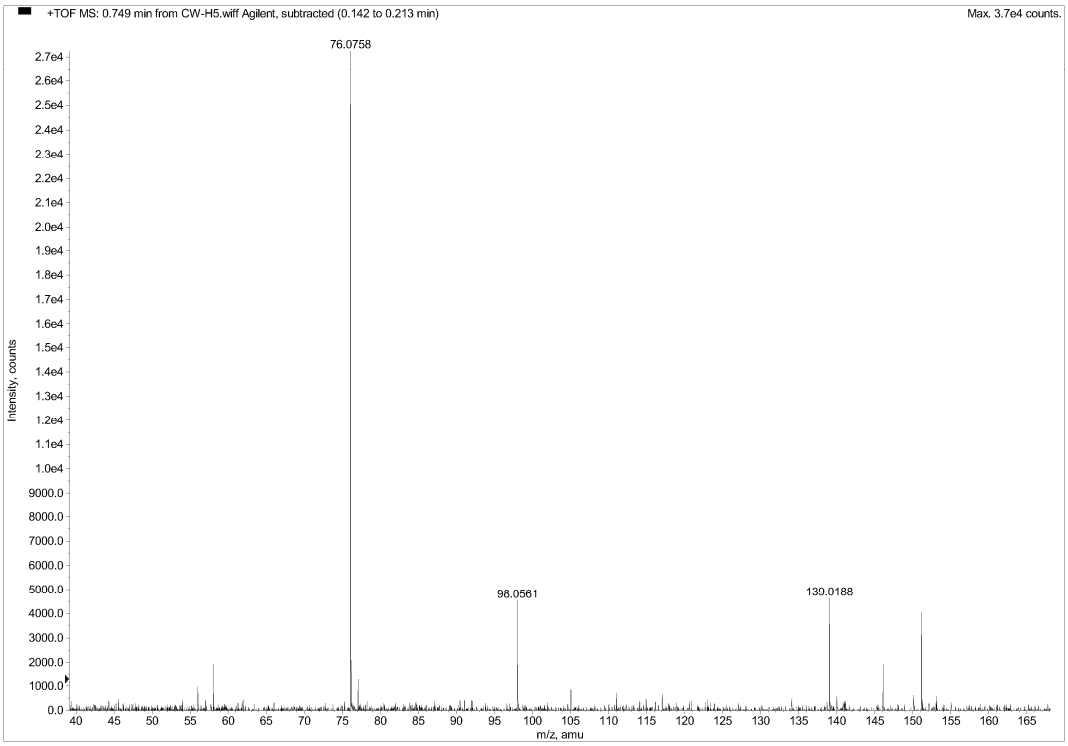


Figure S15

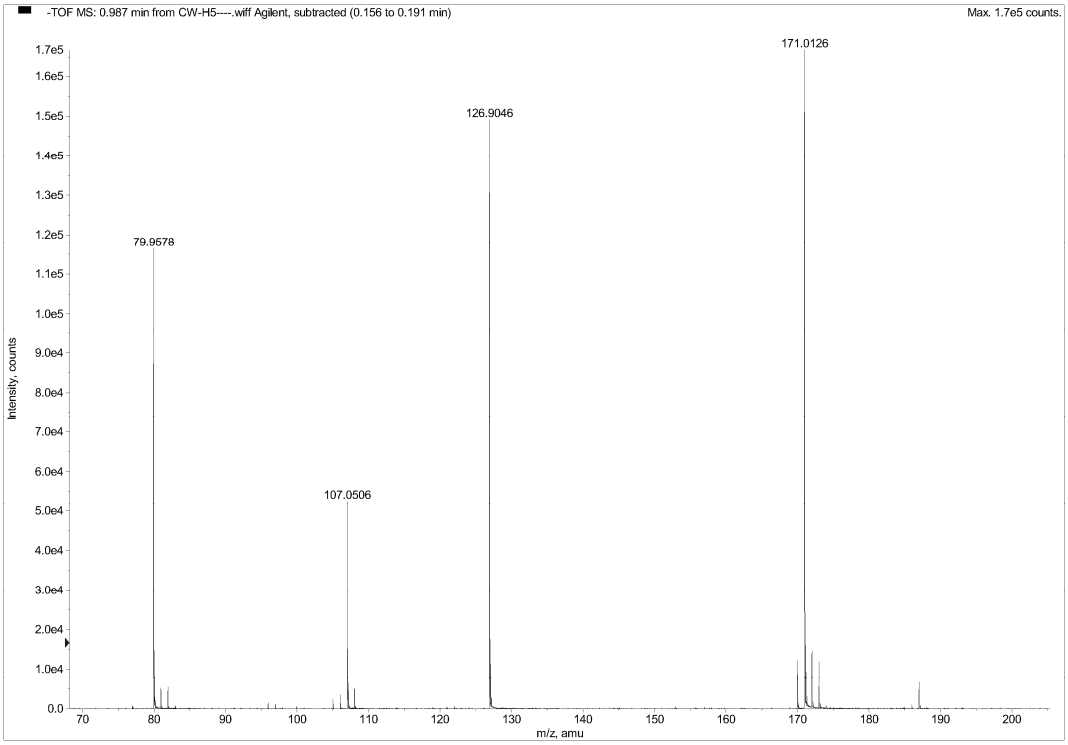
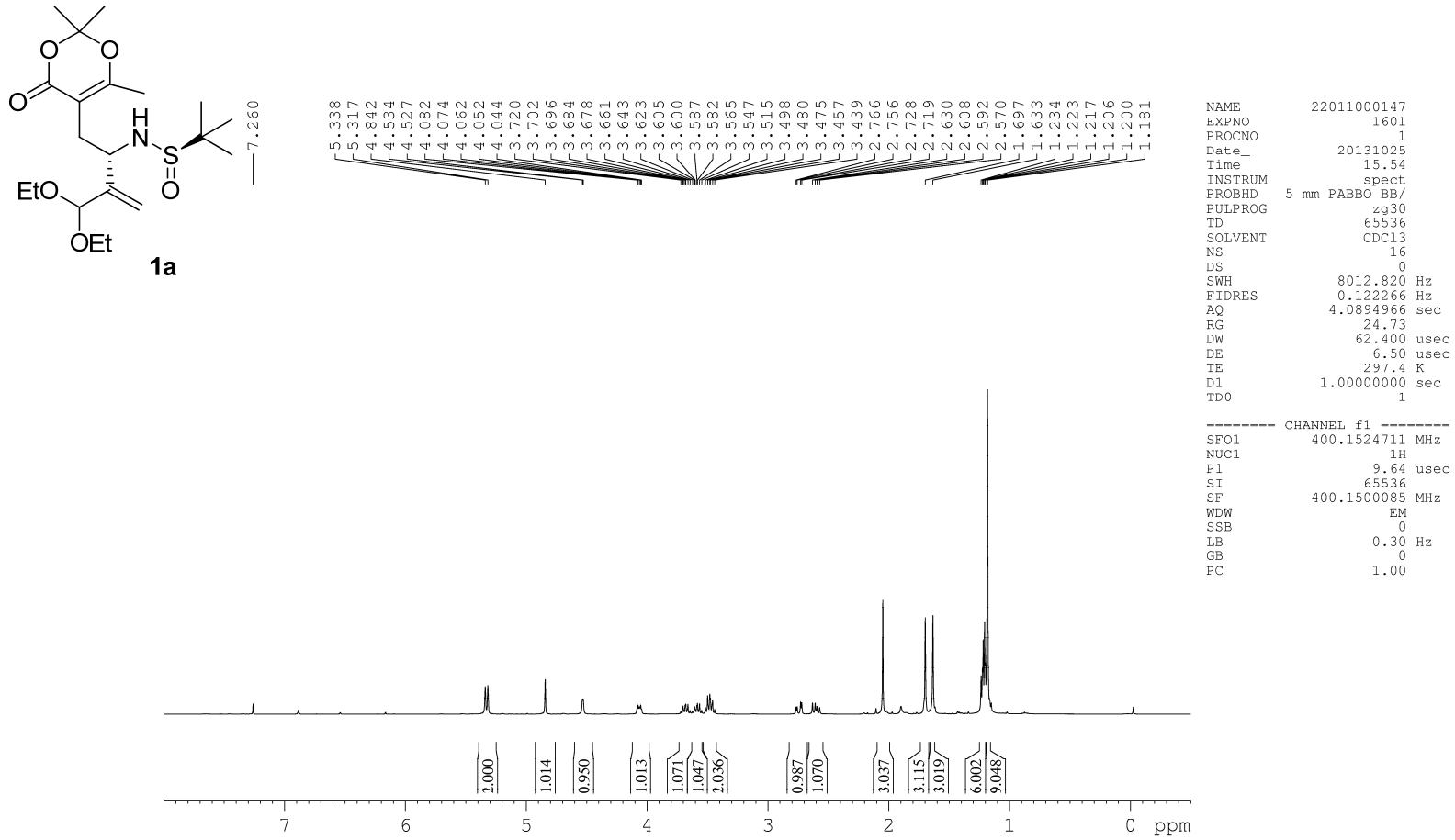
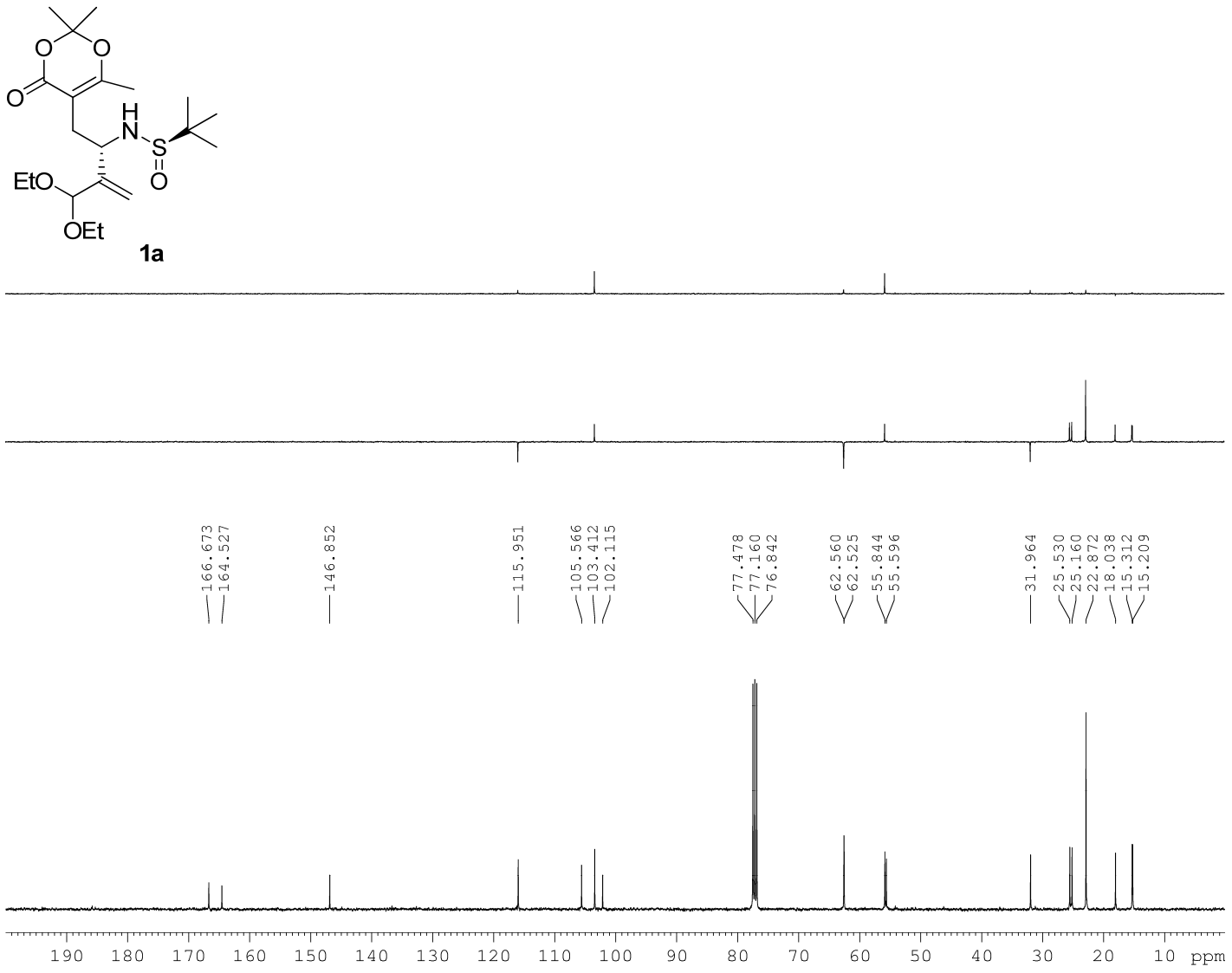


Figure S16

3. NMR spectra of substrades and products

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103.412
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76.842
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55.844
55.596
31.964
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25.160
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18.038
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15.209
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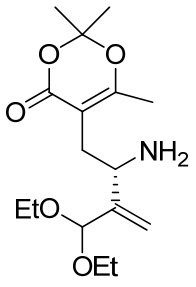
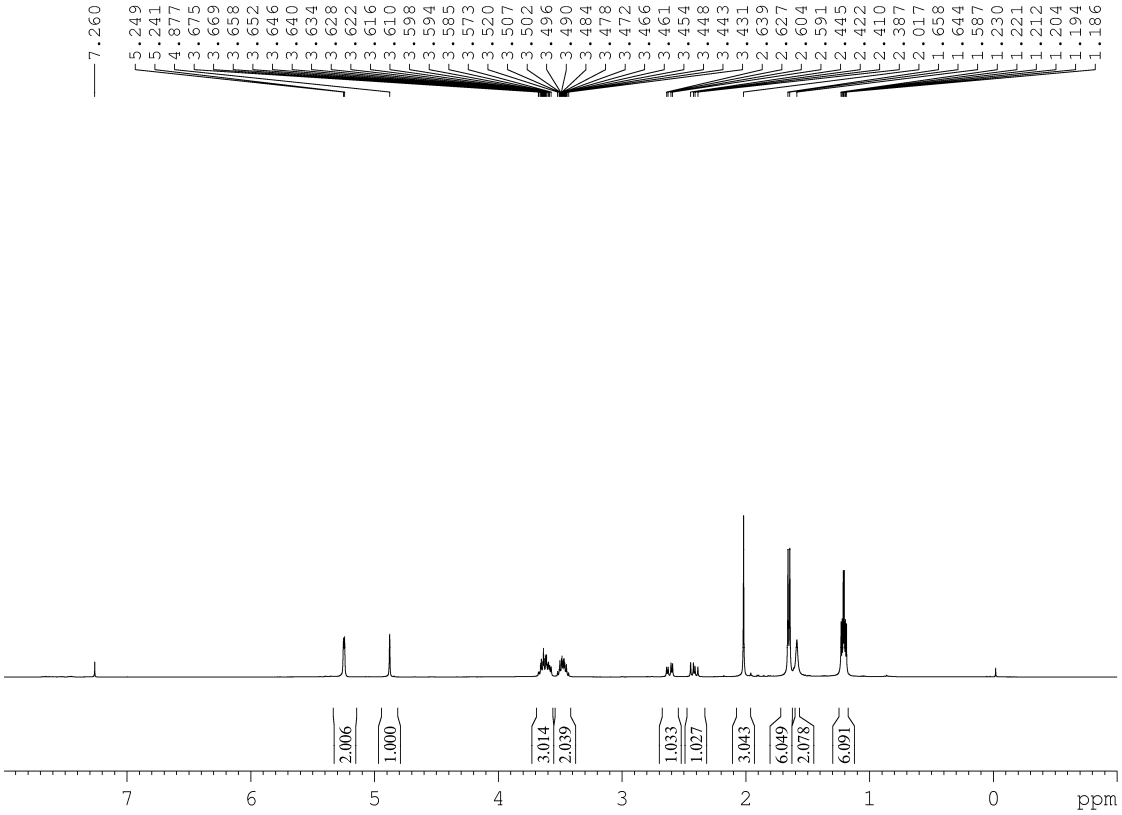


2a

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TE                 297.6 K
D1              1.00000000 sec
TD0                     1

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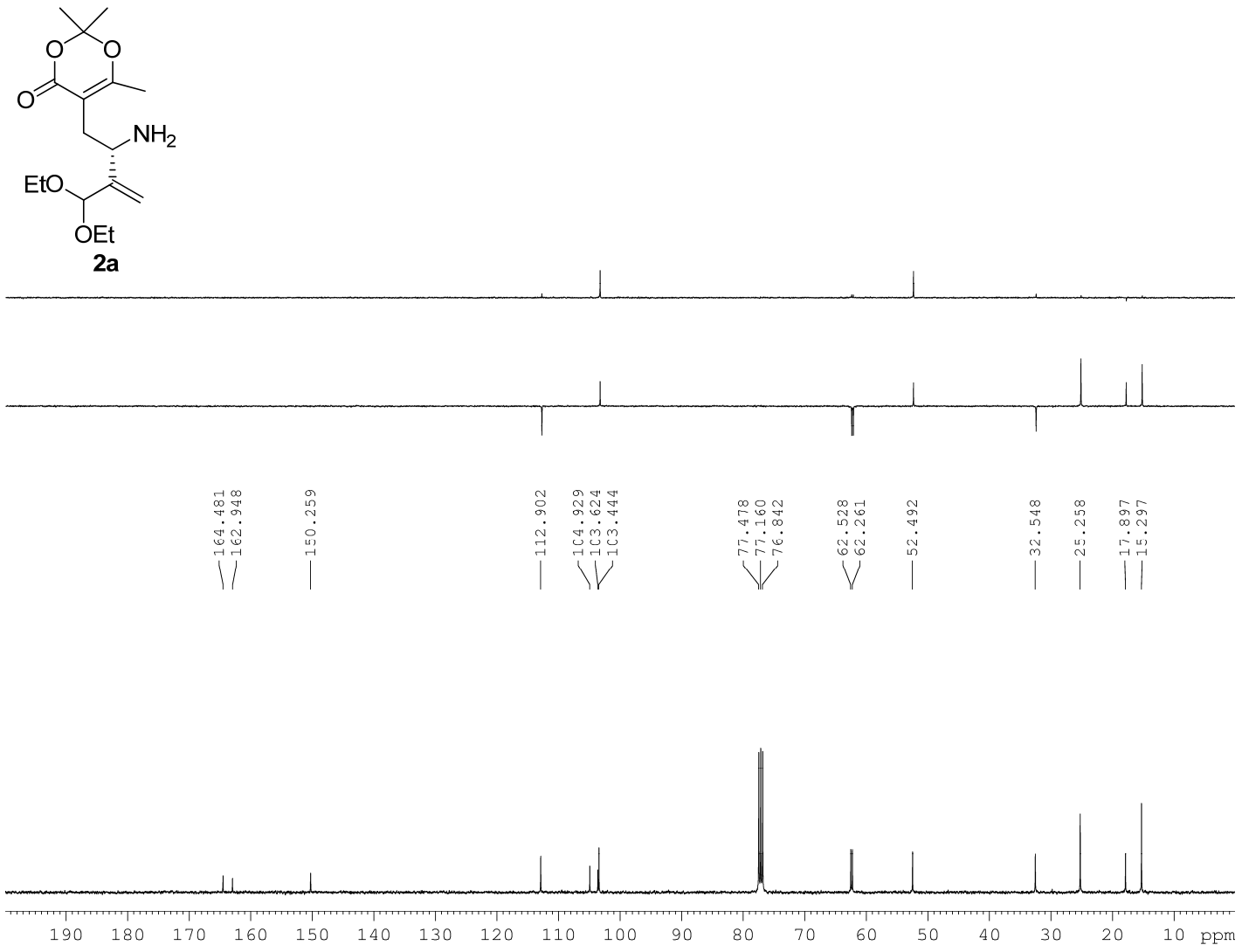
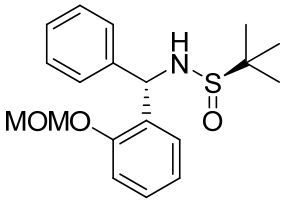
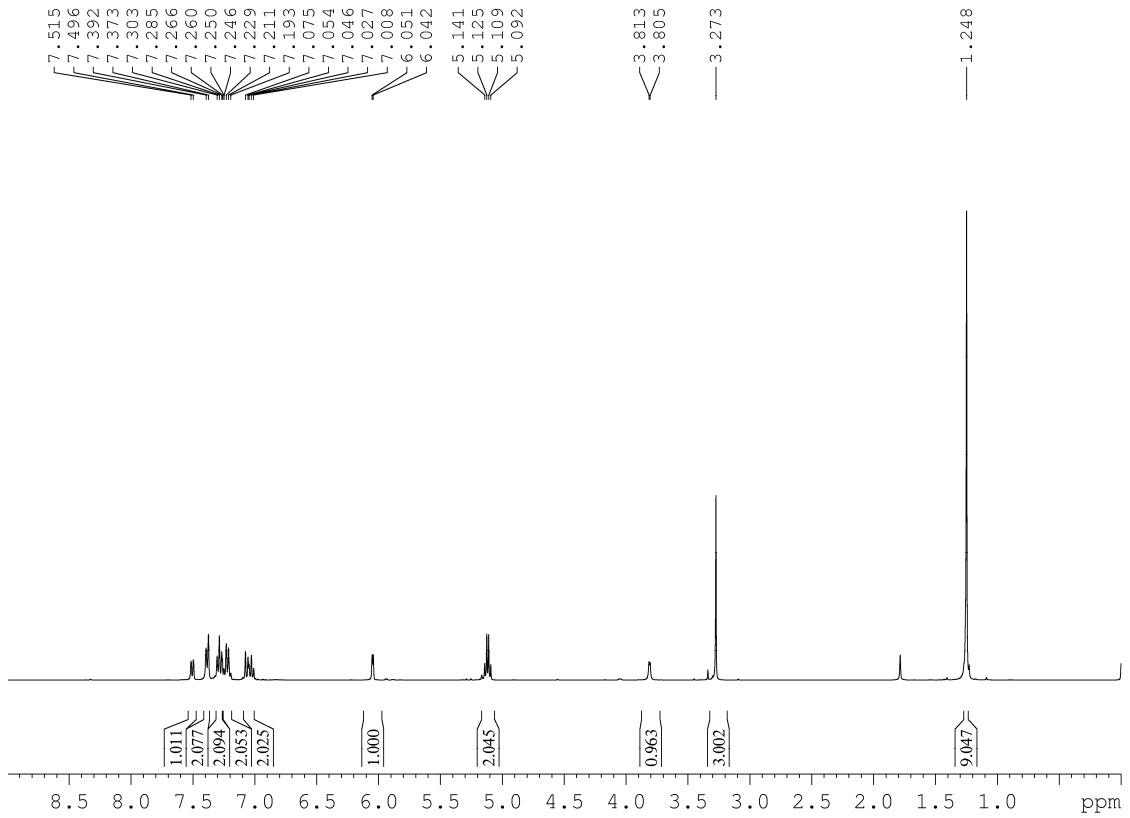
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


O
O
O
NH2
EtO
OEt
2a
164.481
162.948
150.259
112.902
104.929
103.624
103.444
77.478
77.160
76.842
62.528
62.261
52.492
32.548
25.258
17.897
15.297
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

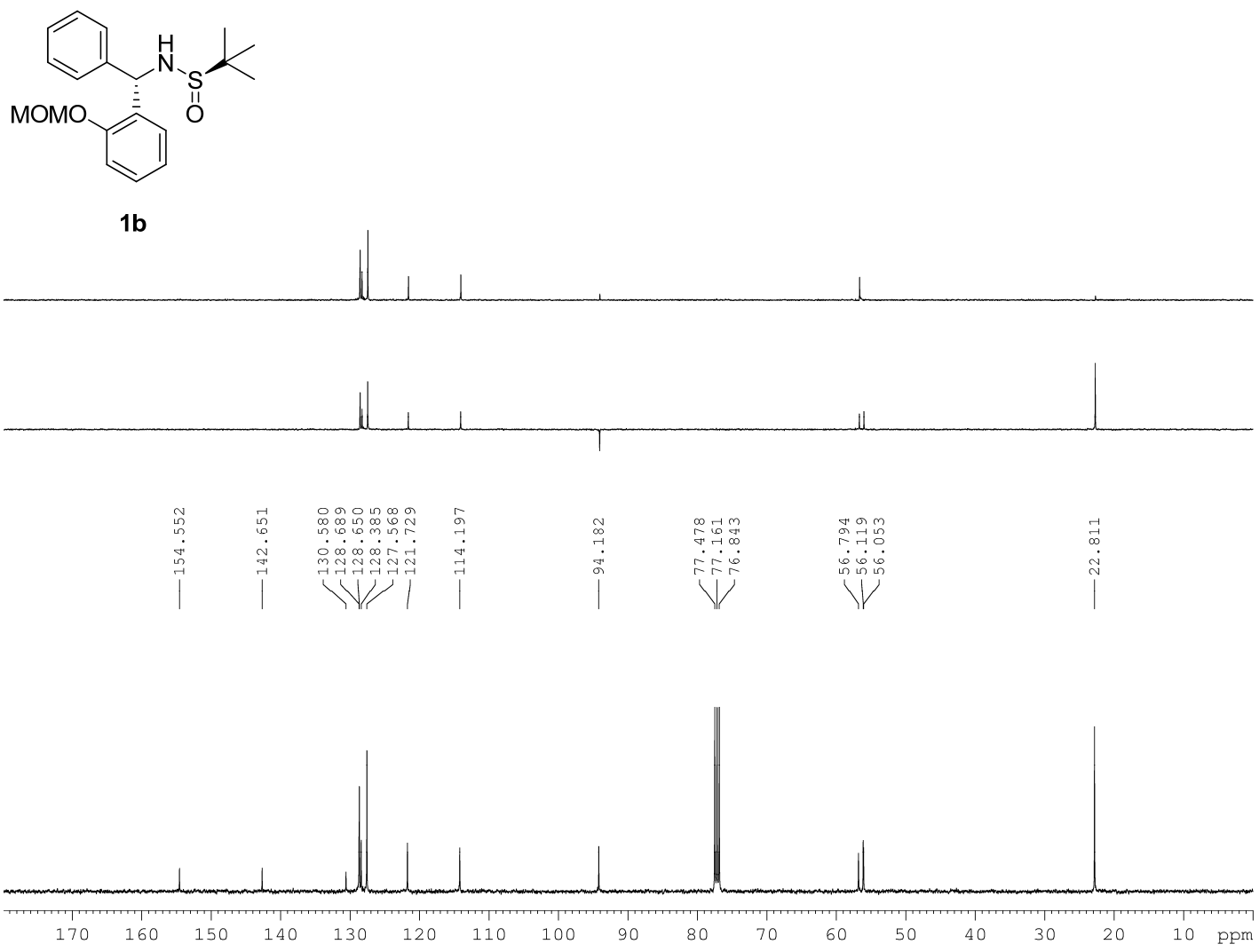


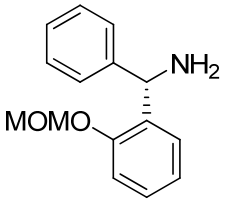
1b



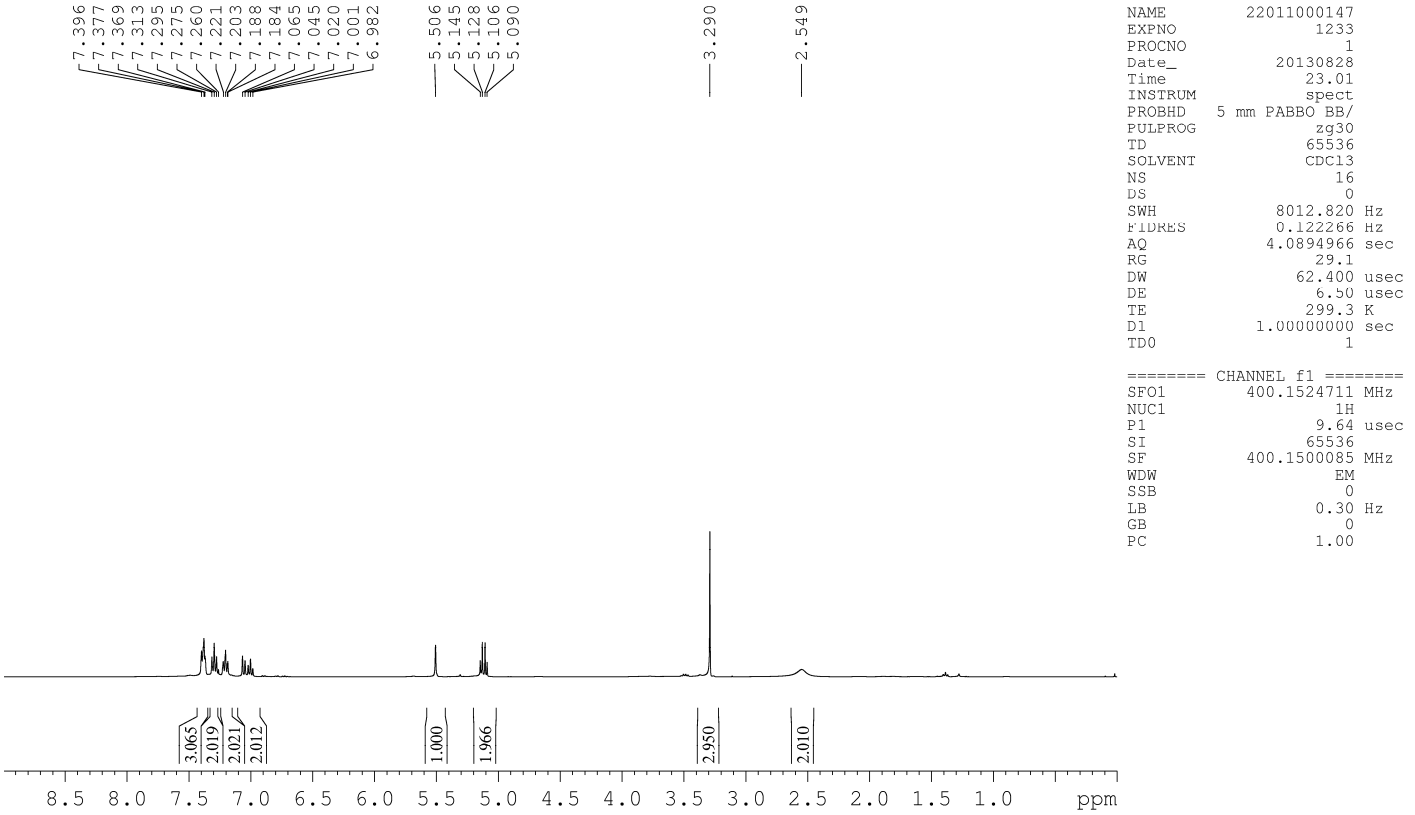

```
NAME          22011000147
EXPNO                1805
PROCNO                  1
Date_            20131121
Time                 4.07
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   55.34
DW                 62.400 usec
DE                   6.50 usec
TE                  295.6 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500083 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

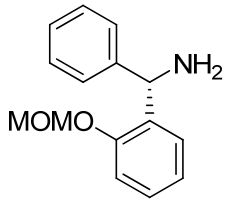

MOMO
H
N
S
O
1b
154.552
142.651
130.580
128.689
128.650
128.385
127.568
121.729
114.197
94.182
77.478
77.161
76.843
56.794
56.119
56.053
22.811
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm



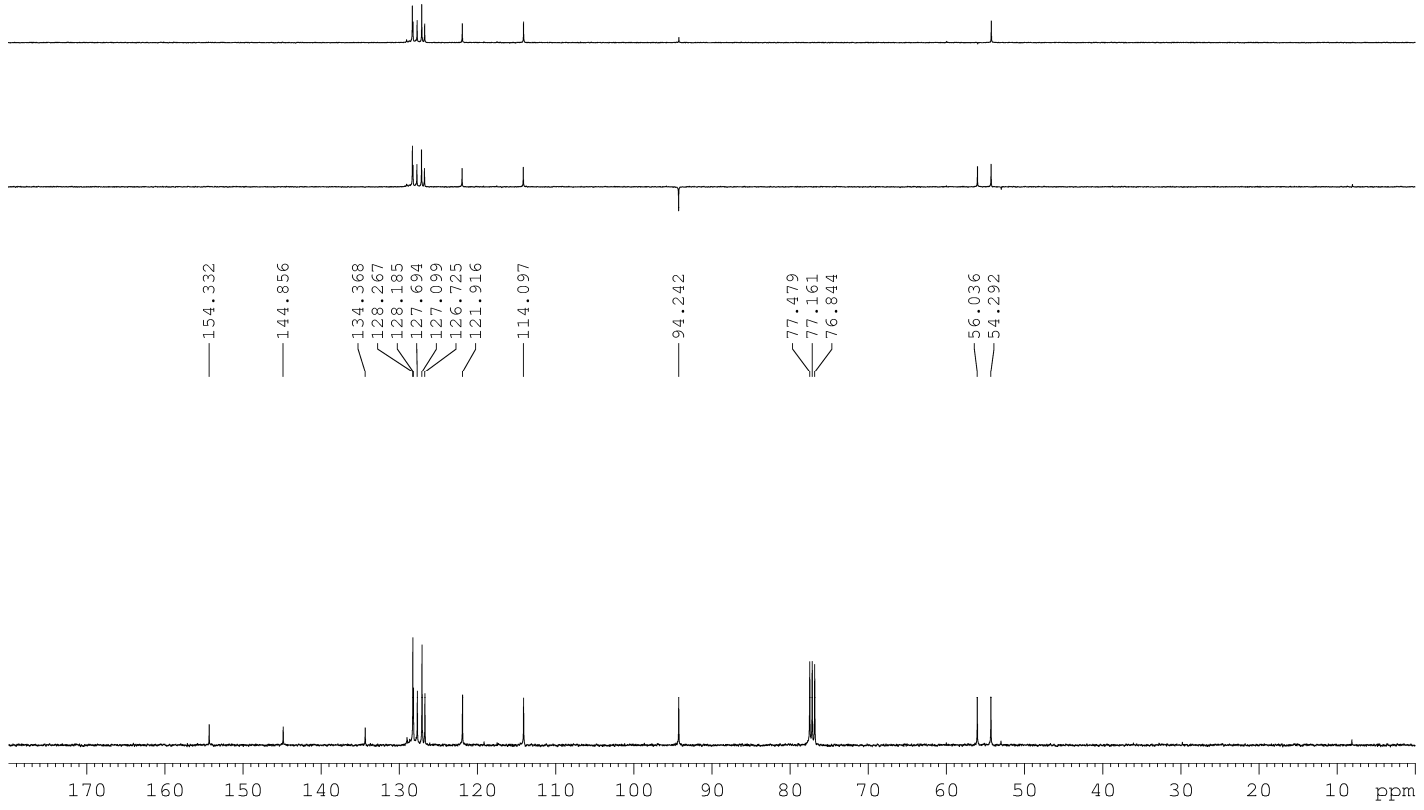
2b

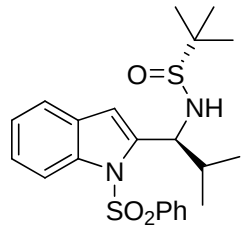


NAME	22011000147
EXPNO	1233
PROCNO	1
Date_	20130828
Time	23.01
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	29.1
DW	62.400 usec
DE	6.50 usec
TE	299.3 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500085 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

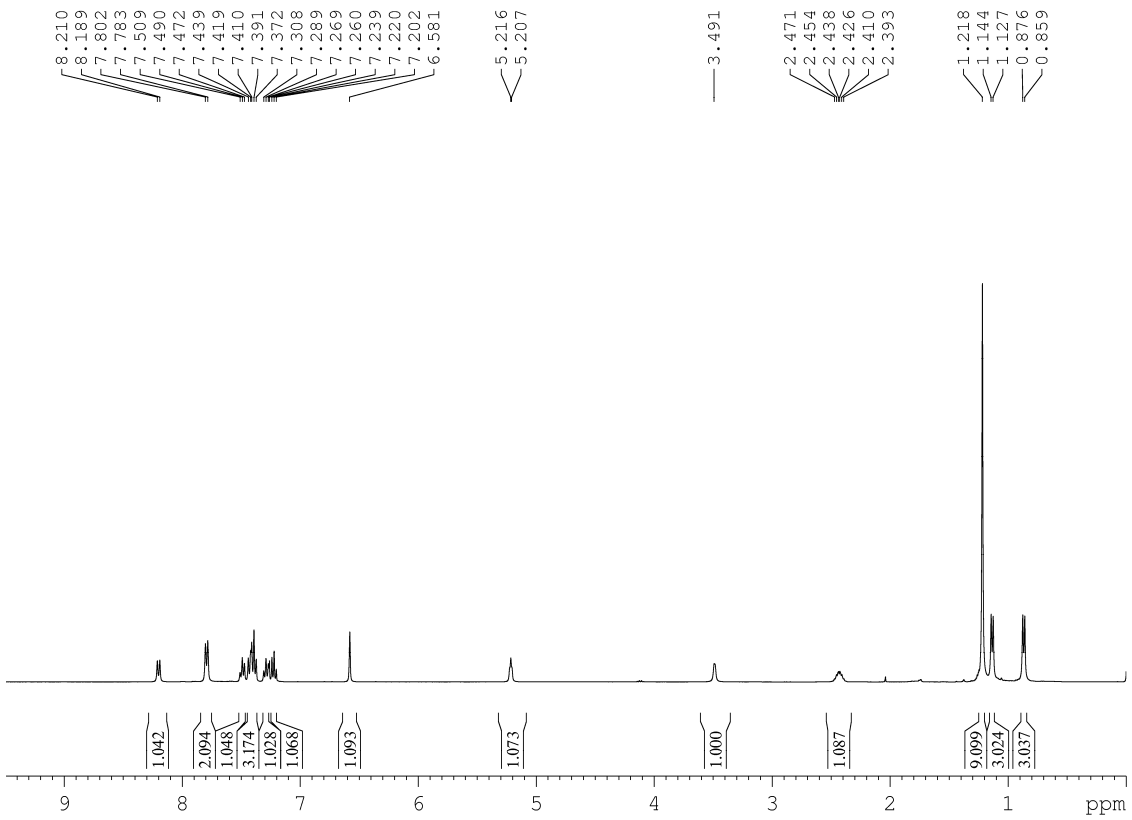

NH2
MOMO

2b


154.332
144.856
134.368
128.267
128.185
127.694
127.099
126.725
121.916
114.097
94.242
77.479
77.161
76.844
56.036
54.292
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

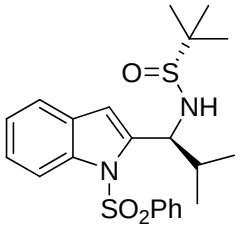


1c

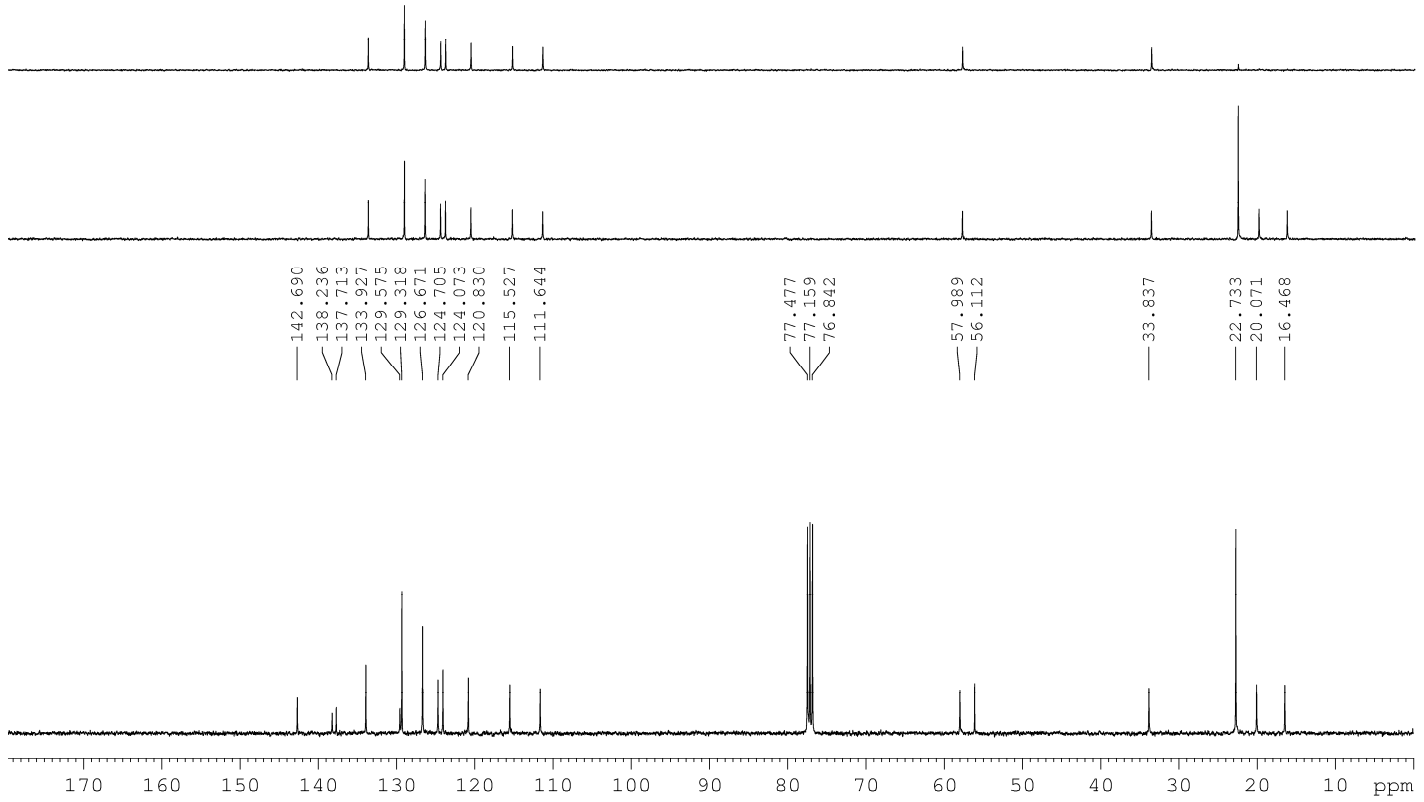


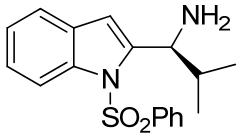

```
NAME          22011000147
EXPNO                1702
PROCNO                  1
Date_            20131109
Time                 6.23
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                  45.66
DW                62.400 usec
DE                 6.50 usec
TE                295.8 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                    1H
P1                   9.64 usec
SI                  65536
SF           400.1500084 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

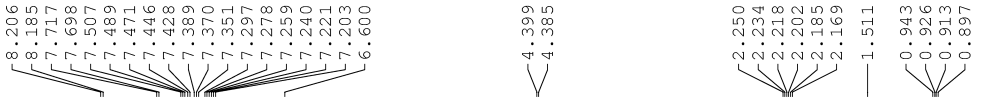

O=S
NH
N
SO2Ph

1c


142.690
138.236
137.713
133.927
129.575
129.318
126.671
124.705
124.073
120.830
115.527
111.644
77.477
77.159
76.842
57.989
56.112
33.837
22.733
20.071
16.468
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

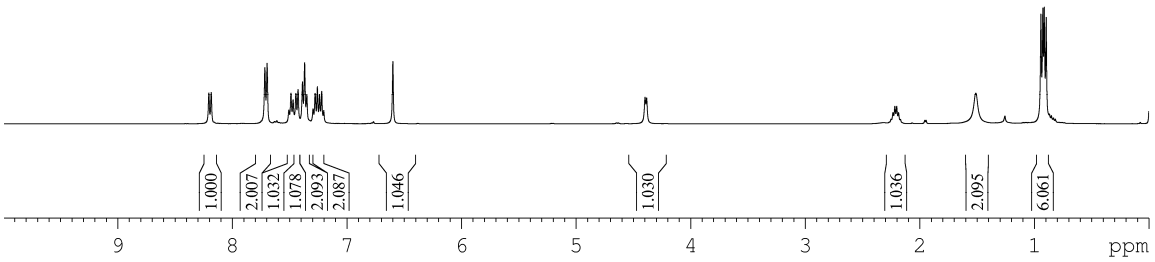


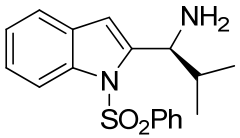
2c



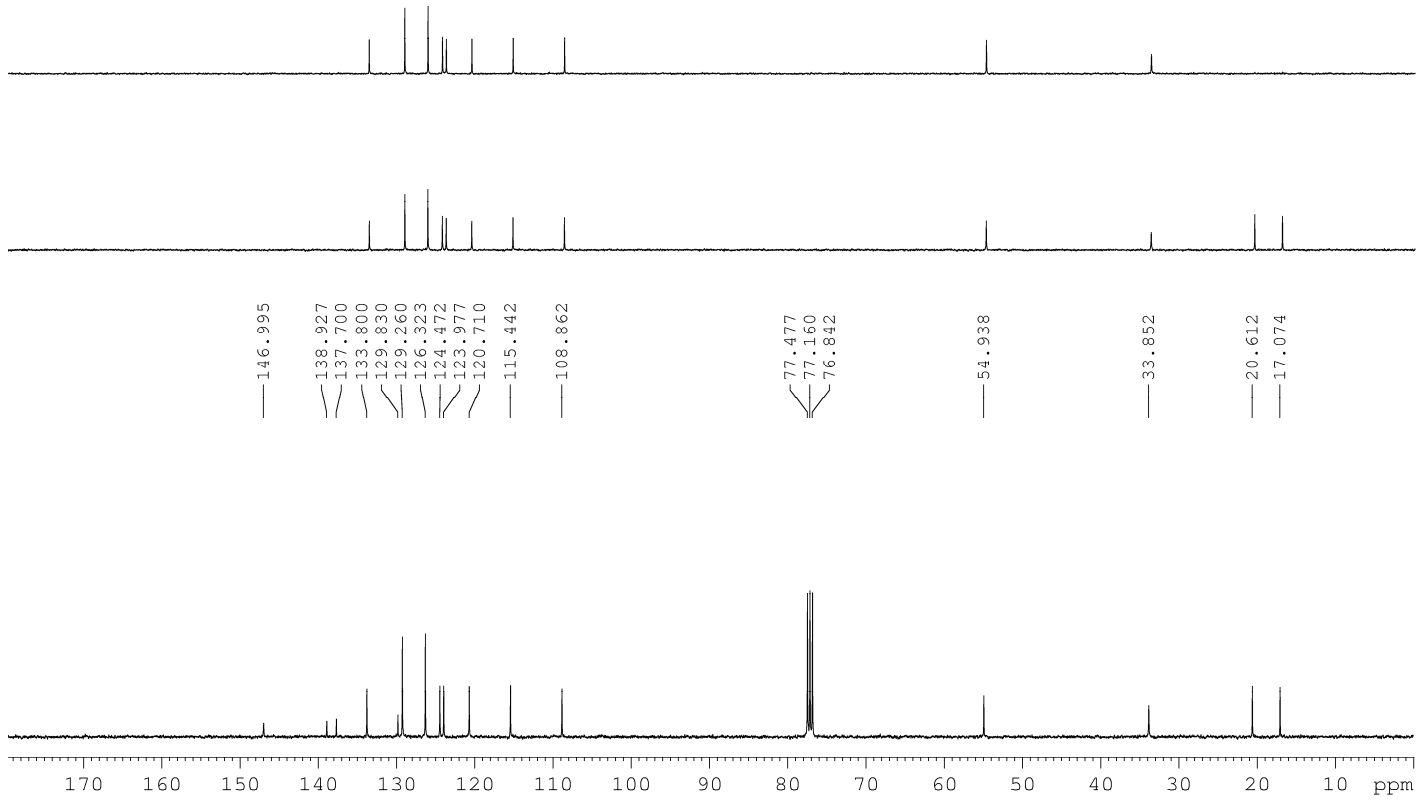

```
NAME          22011000147
EXPNO                1748
PROCNO                  1
Date_            20131114
Time                17.02
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  52.37
DW                  62.400 usec
DE                   6.50 usec
TE                  295.5 K
D1               1.00000000 sec
TD0                     1

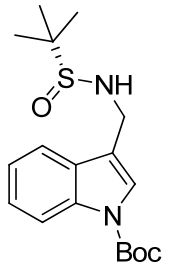
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500086 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



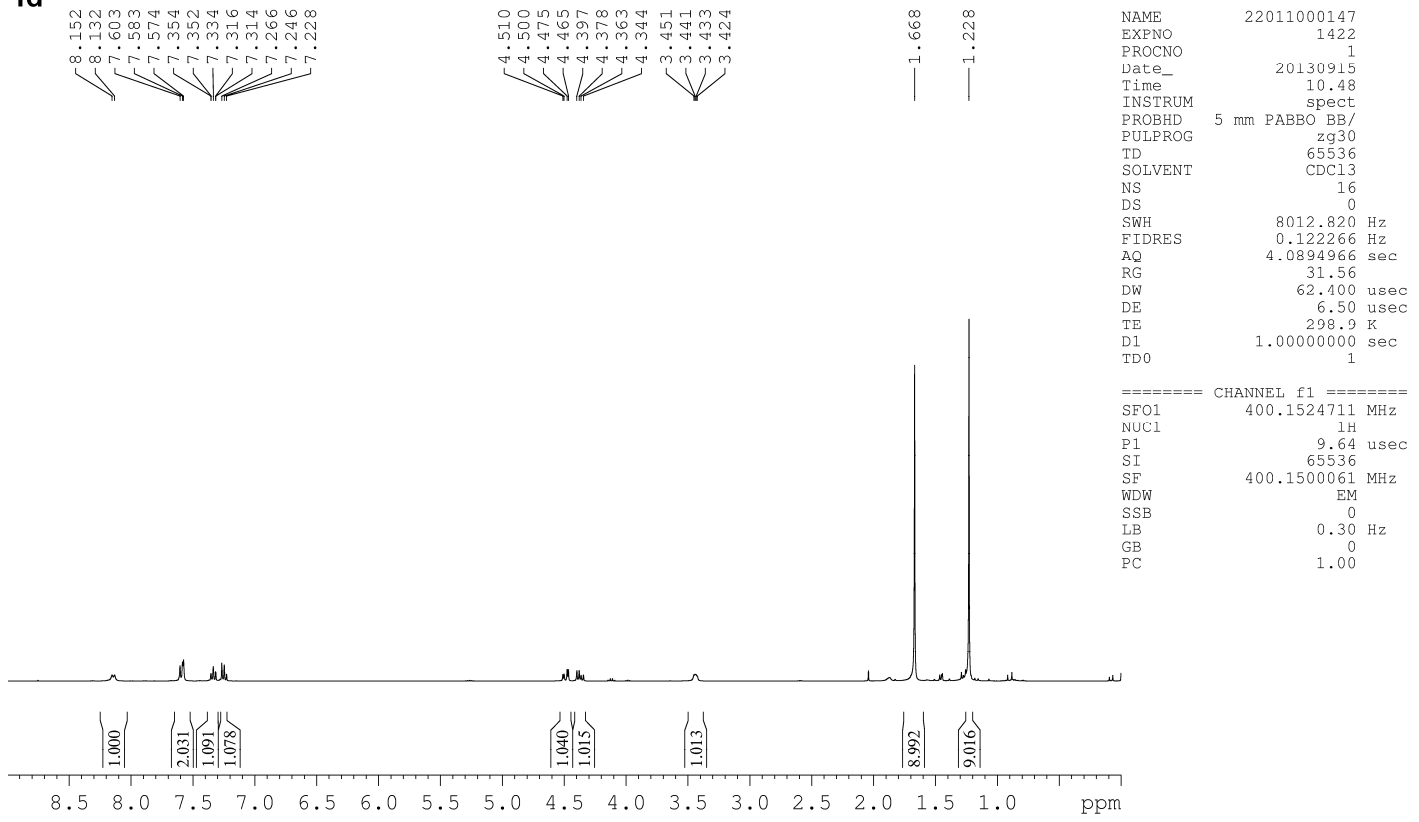

NH2
N
SO2Ph

2c

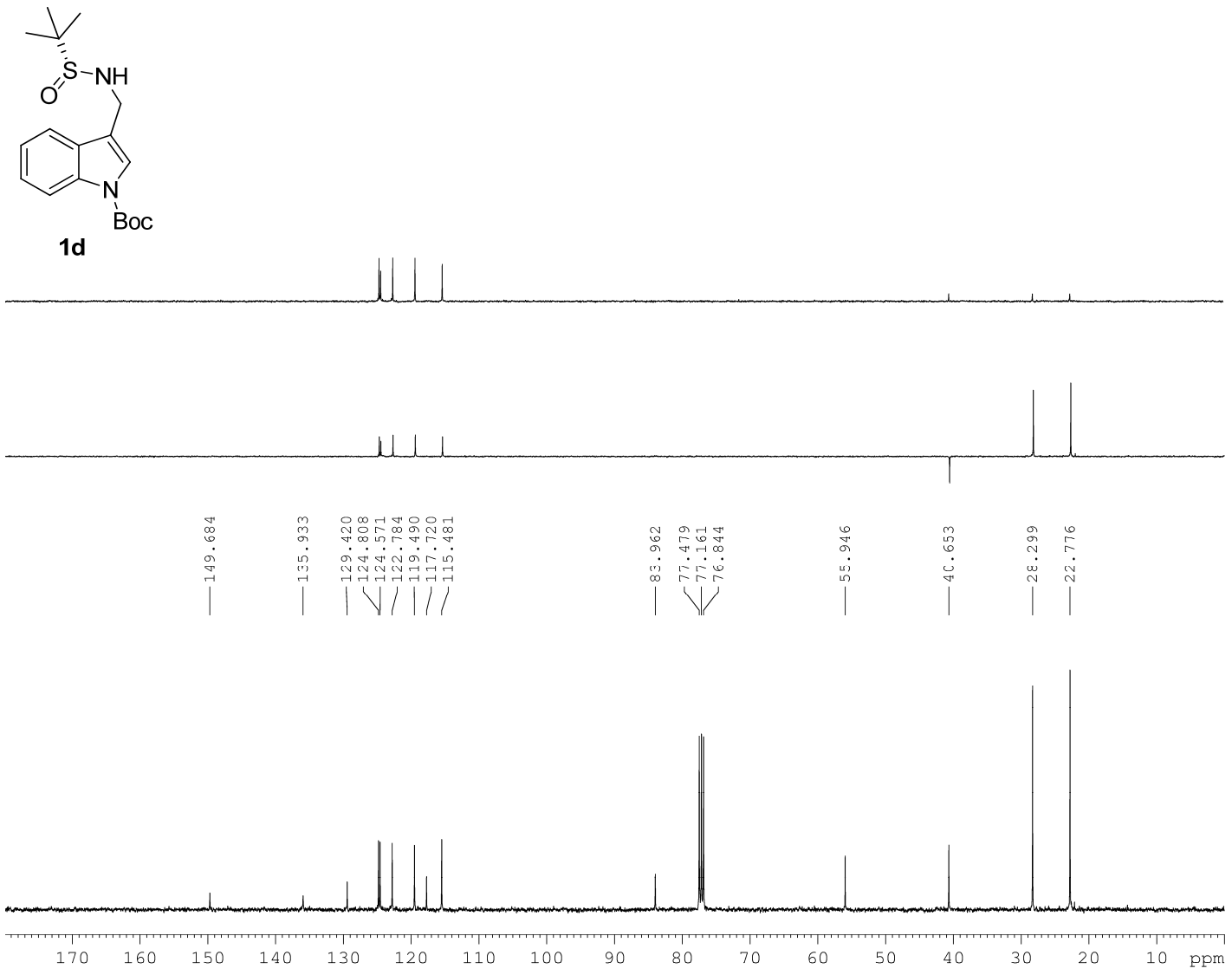

146.995
138.927
137.700
133.800
129.830
129.260
126.323
124.472
123.977
120.710
115.442
108.862
77.477
77.160
76.842
54.938
33.852
20.612
17.074
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

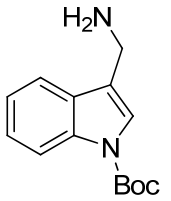


1d

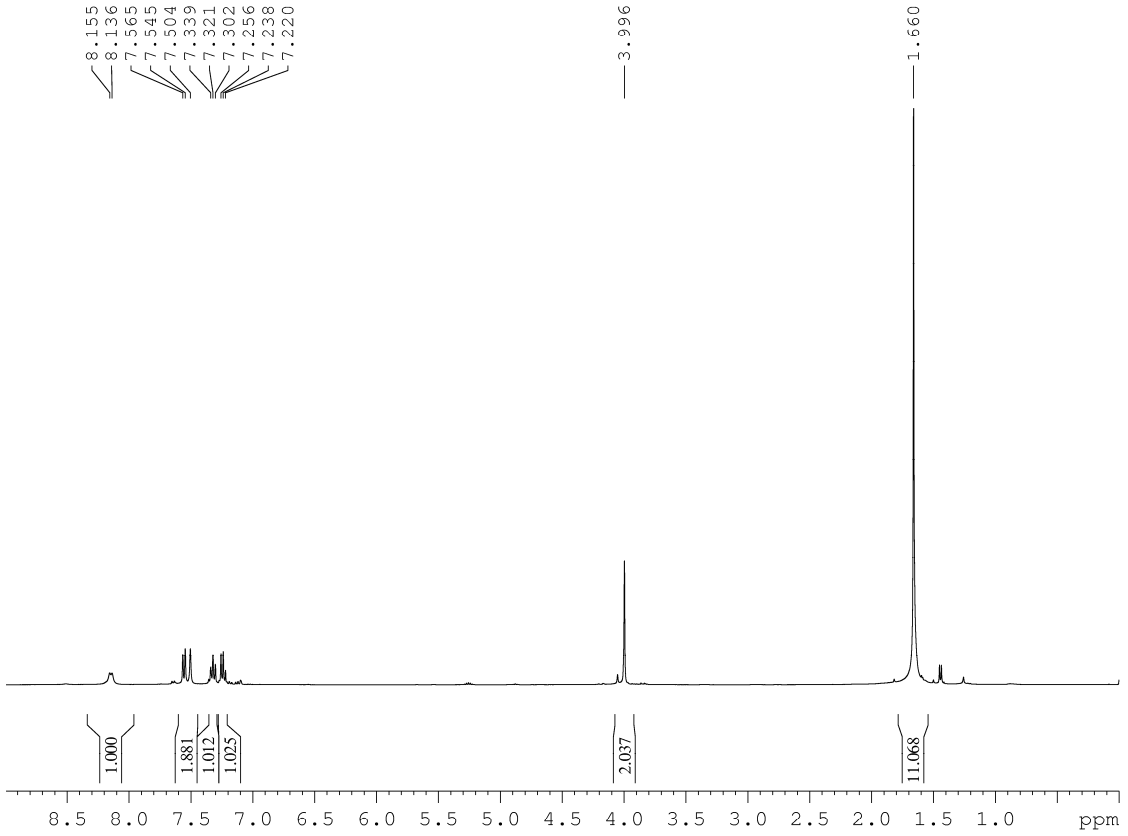


NAME	22011000147
EXPNO	1422
PROCNO	1
Date_	20130915
Time	10.48
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	31.56
DW	62.400 usec
DE	6.50 usec
TE	298.9 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500061 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00


S
NH
O
N
Boc
1d
149.684
135.933
129.420
124.808
124.571
122.784
119.490
117.720
115.481
83.962
77.479
77.161
76.844
55.946
40.653
28.299
22.776
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

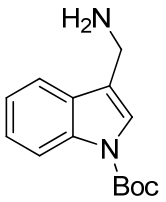


2d

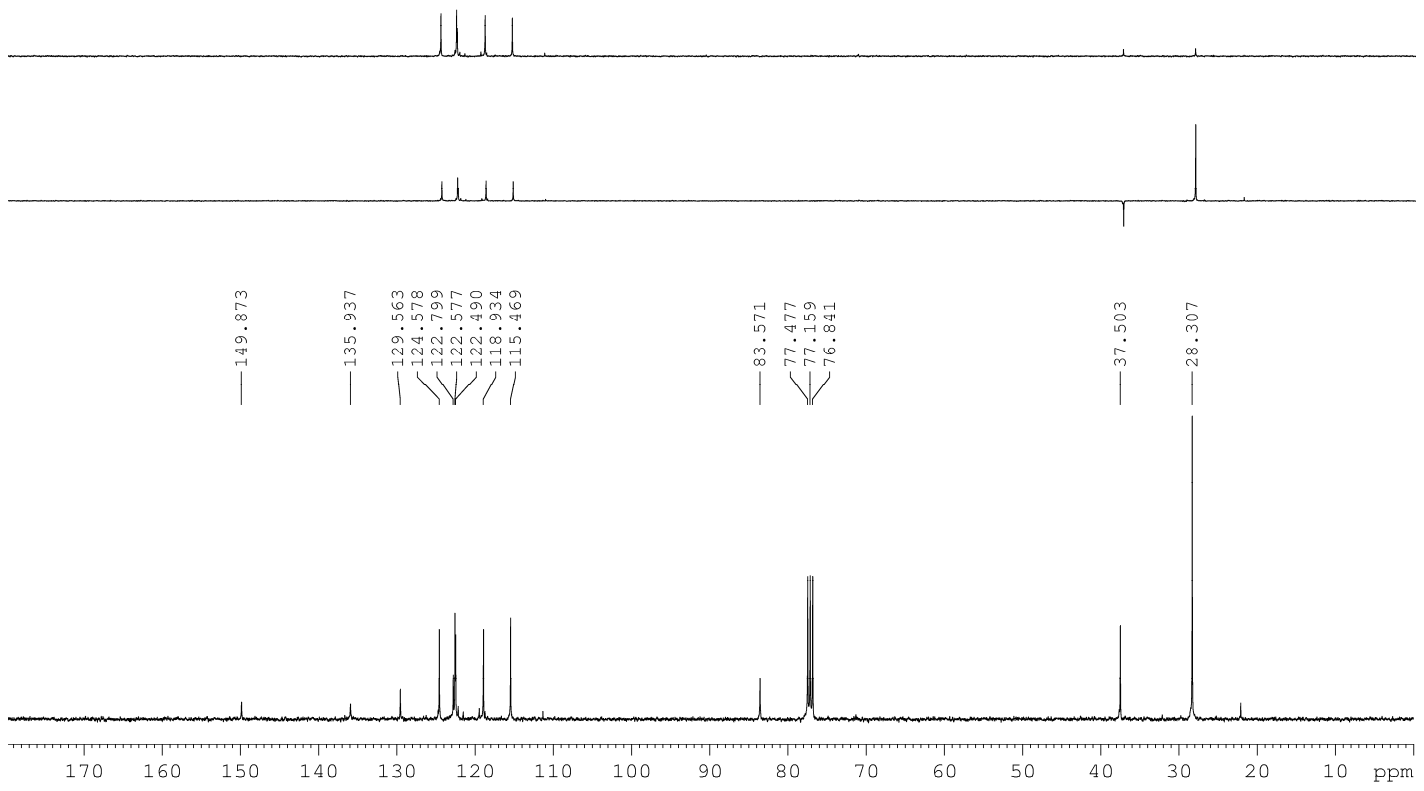


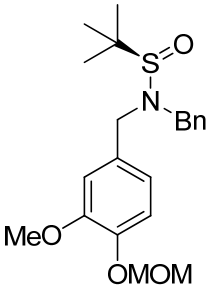

```
NAME          22011000147
EXPNO                1451
PROCNO                  1
Date_            20130921
Time                20.35
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  24.73
DW                  62.400 usec
DE                   6.50 usec
TE                  299.2 K
D1               1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500104 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

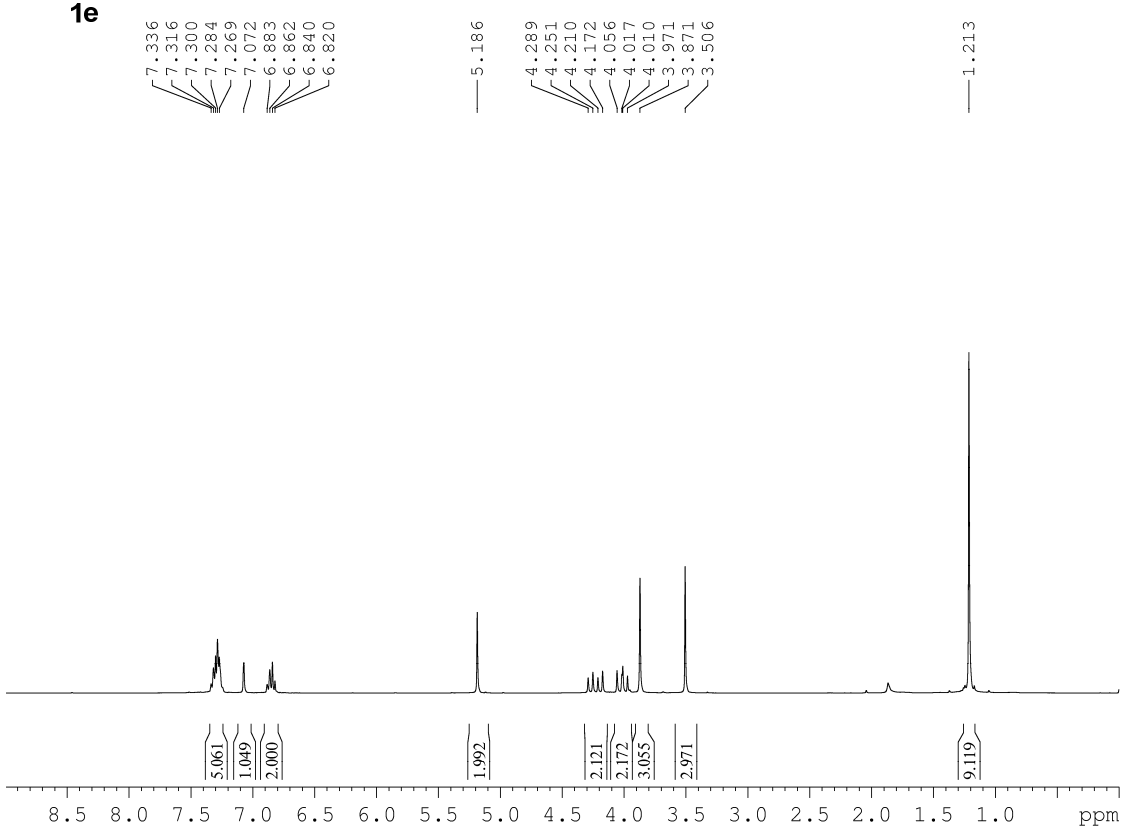

H2N
N
Boc

2d


149.873
135.937
129.563
124.578
122.799
122.577
122.490
118.934
115.469
83.571
77.477
77.159
76.841
37.503
28.307
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

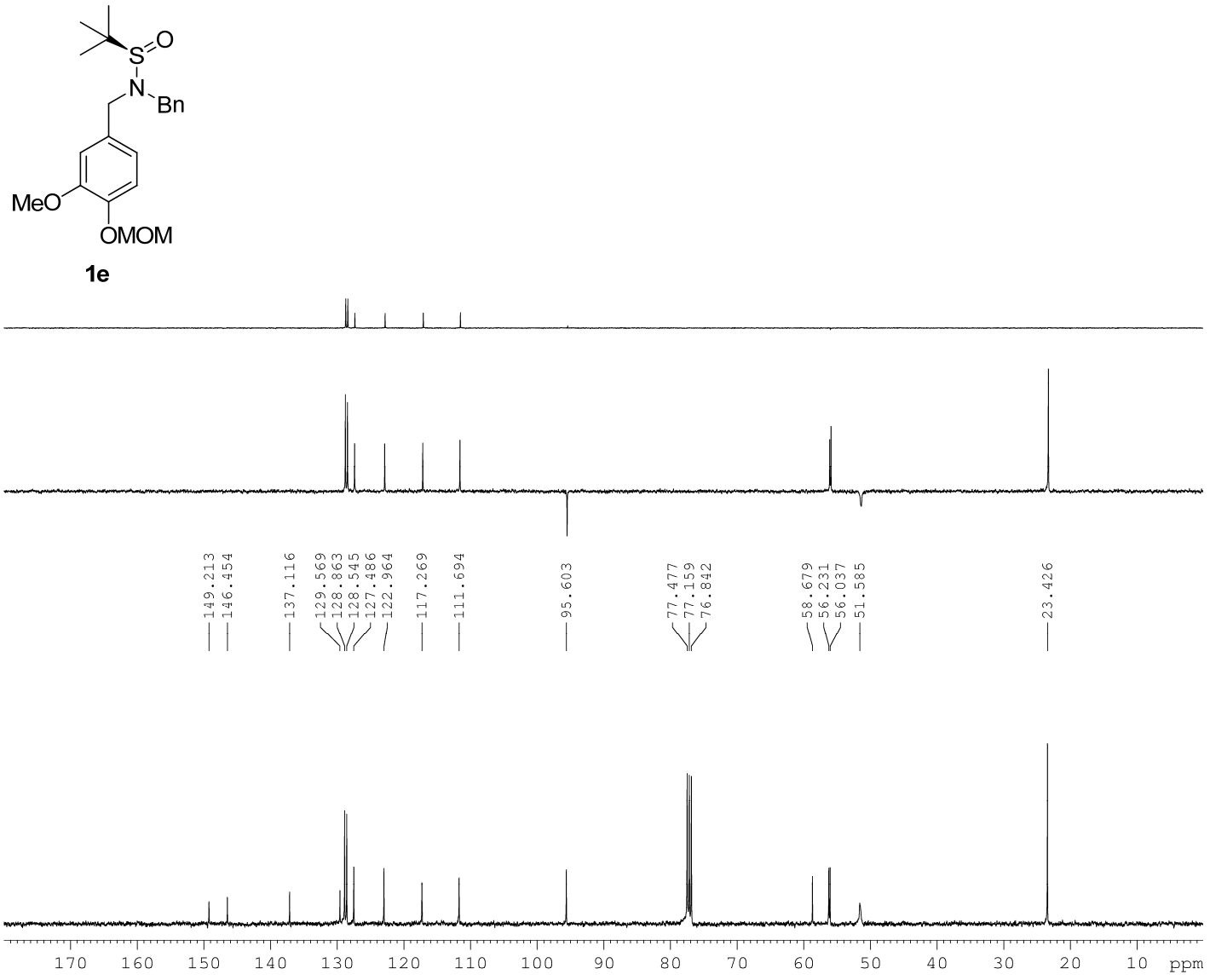


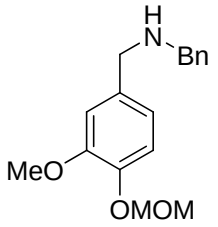
1e




```
NAME          22011000147
EXPNO                 915
PROCNO                  1
Date_          20130714
Time              22.40
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     0
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                  29.1
DW                62.400 usec
DE                 6.50 usec
TE                297.6 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                  9.64 usec
SI                 65536
SF            400.1500057 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

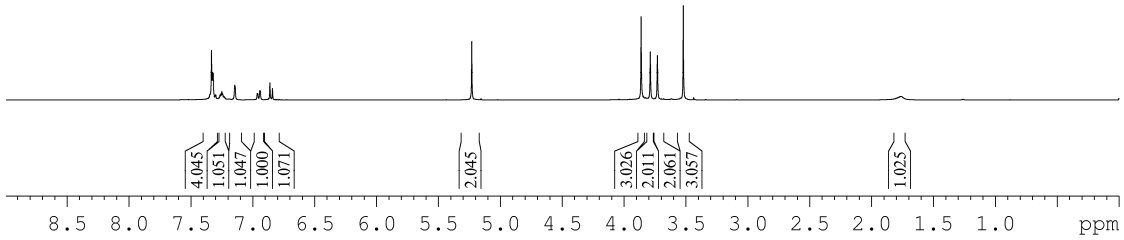

MeO
OMOM
Bn
1e
149.213
146.454
137.116
129.569
128.863
128.545
127.486
122.964
117.269
111.694
95.603
77.477
77.159
76.842
58.679
56.231
56.037
51.585
23.426
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

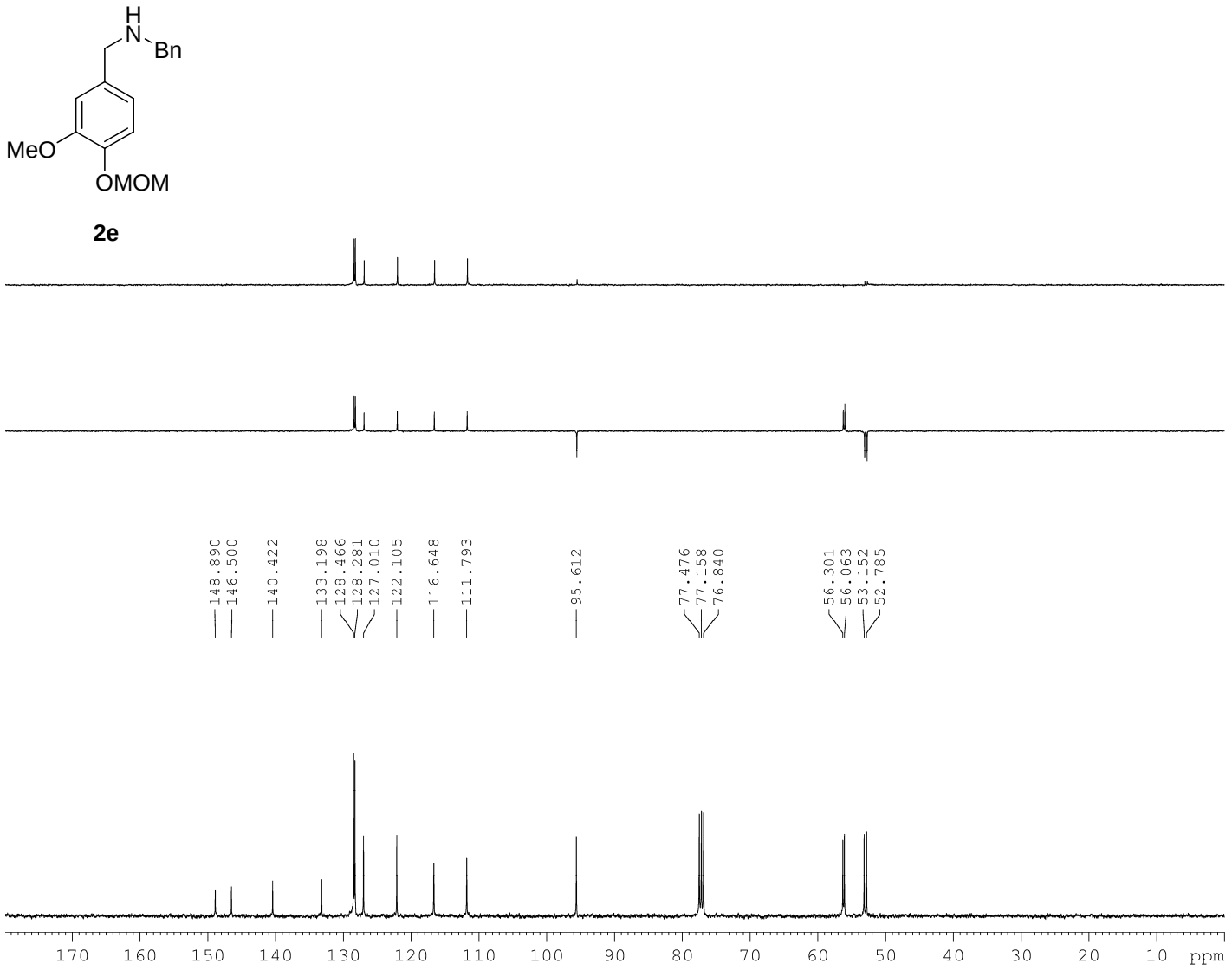


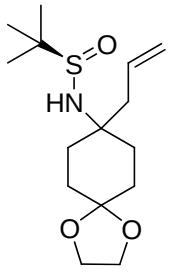
2e


```
NAME          22011000147
EXPNO                1360
PROCNO                  1
Date_            20130907
Time                15.59
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     13
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  24.73
DW                 62.400 usec
DE                  6.50 usec
TE                 298.8 K
D1              1.00000000 sec
TD0                     1

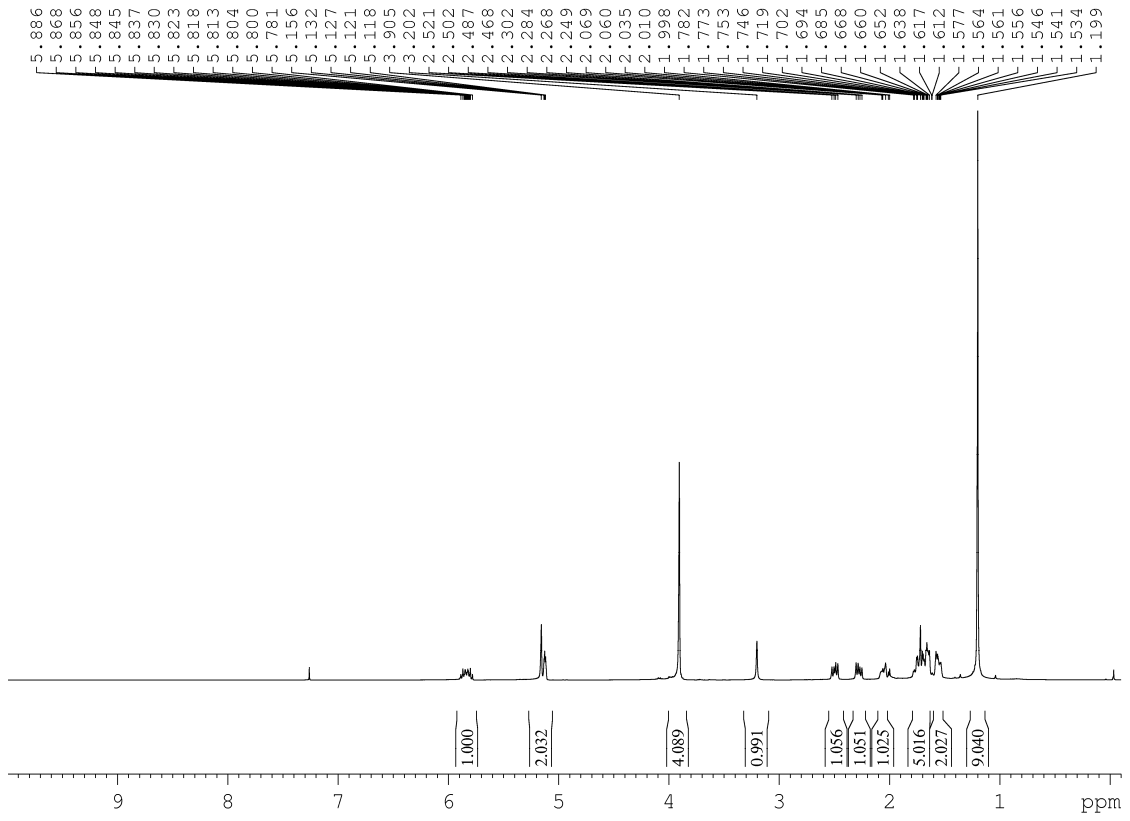
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500128 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




H
N
Bn
MeO
OMOM
2e
148.890
146.500
140.422
133.198
128.466
128.281
127.010
122.105
116.648
111.793
95.612
77.476
77.158
76.840
56.301
56.063
53.152
52.785
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

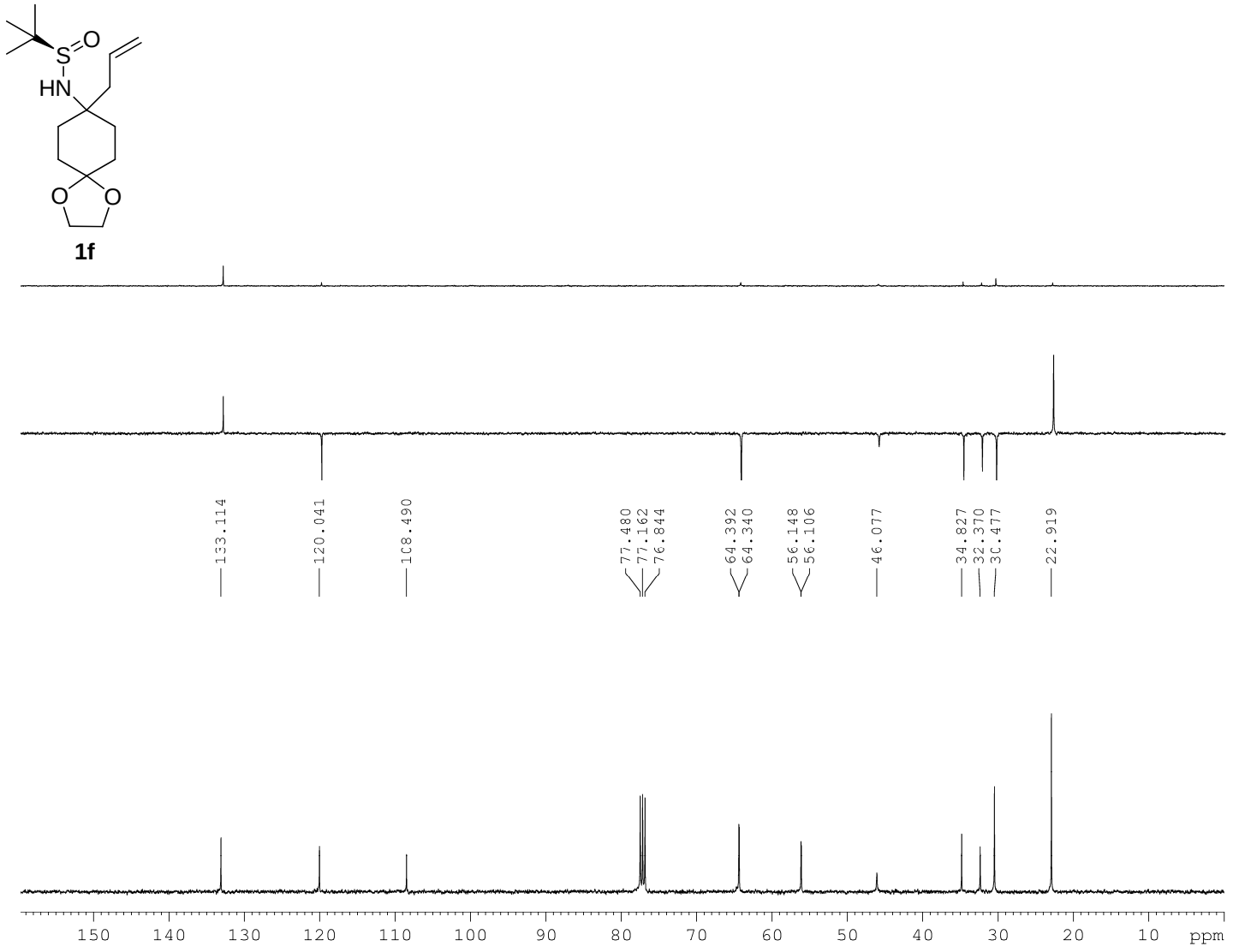


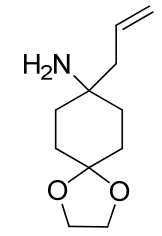
1f



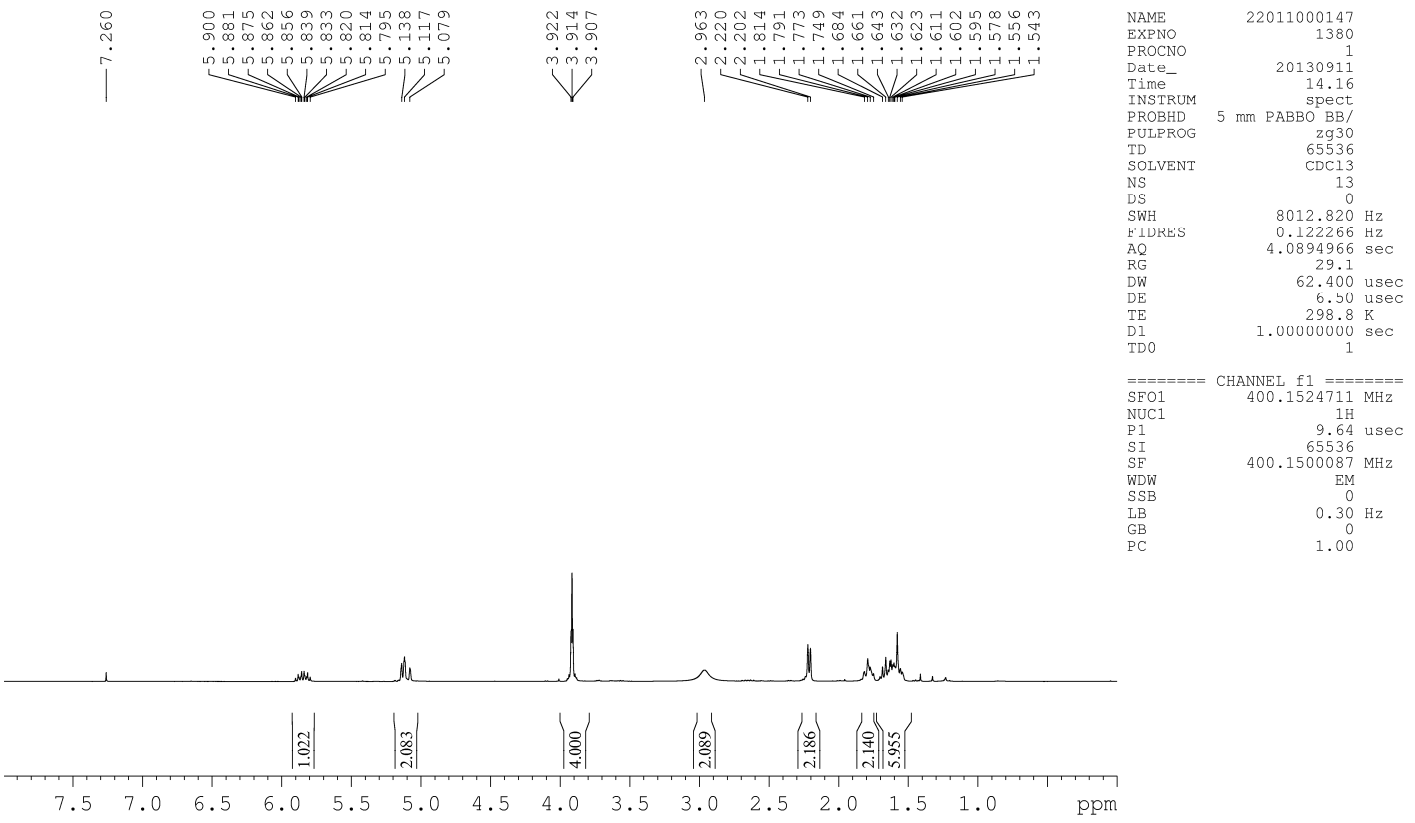

```
NAME          22011000147
EXPNO                1392
PROCNO                  1
Date_            20130911
Time                22.17
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  24.73
DW                62.400 usec
DE                 6.50 usec
TE                298.9 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                  9.64 usec
SI                  65536
SF            400.1500087 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

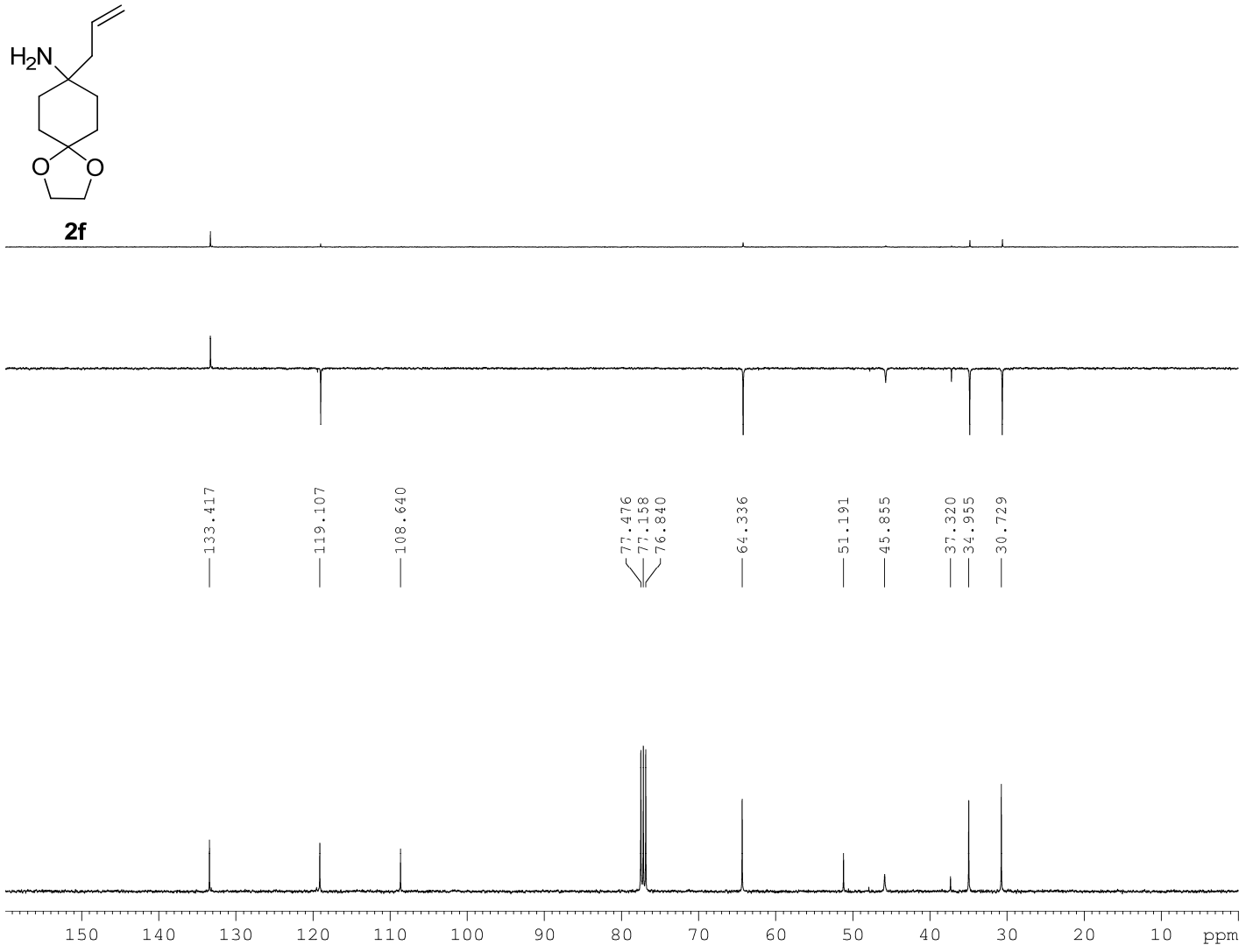

S
O
HN
O
O
1f
133.114
120.041
108.490
77.480
77.162
76.844
64.392
64.340
56.148
56.106
46.077
34.827
32.370
30.477
22.919
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

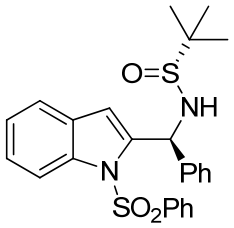


2f

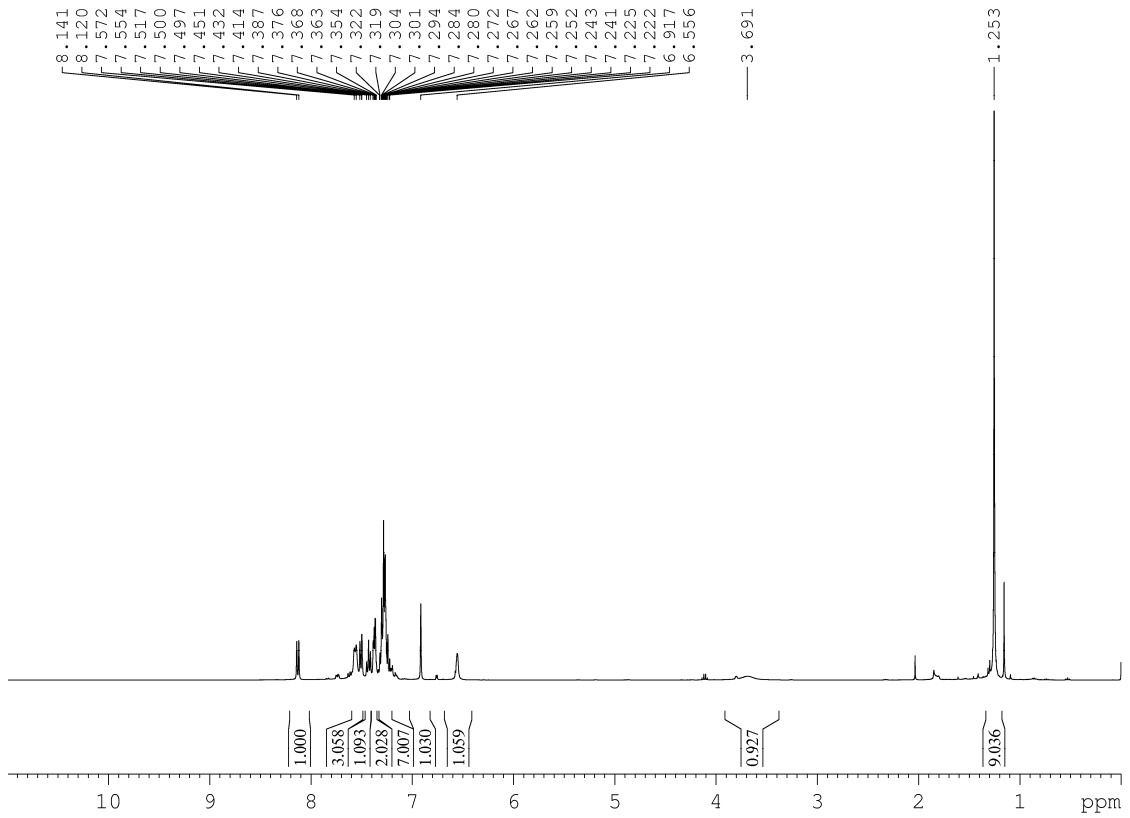


NAME	22011000147
EXPNO	1380
PROCNO	1
Date_	20130911
Time	14.16
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	13
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	29.1
DW	62.400 usec
DE	6.50 usec
TE	298.8 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500087 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00


H2N
O
O
2f
133.417
119.107
108.640
77.476
77.158
76.840
64.336
51.191
45.855
37.320
34.955
30.729
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

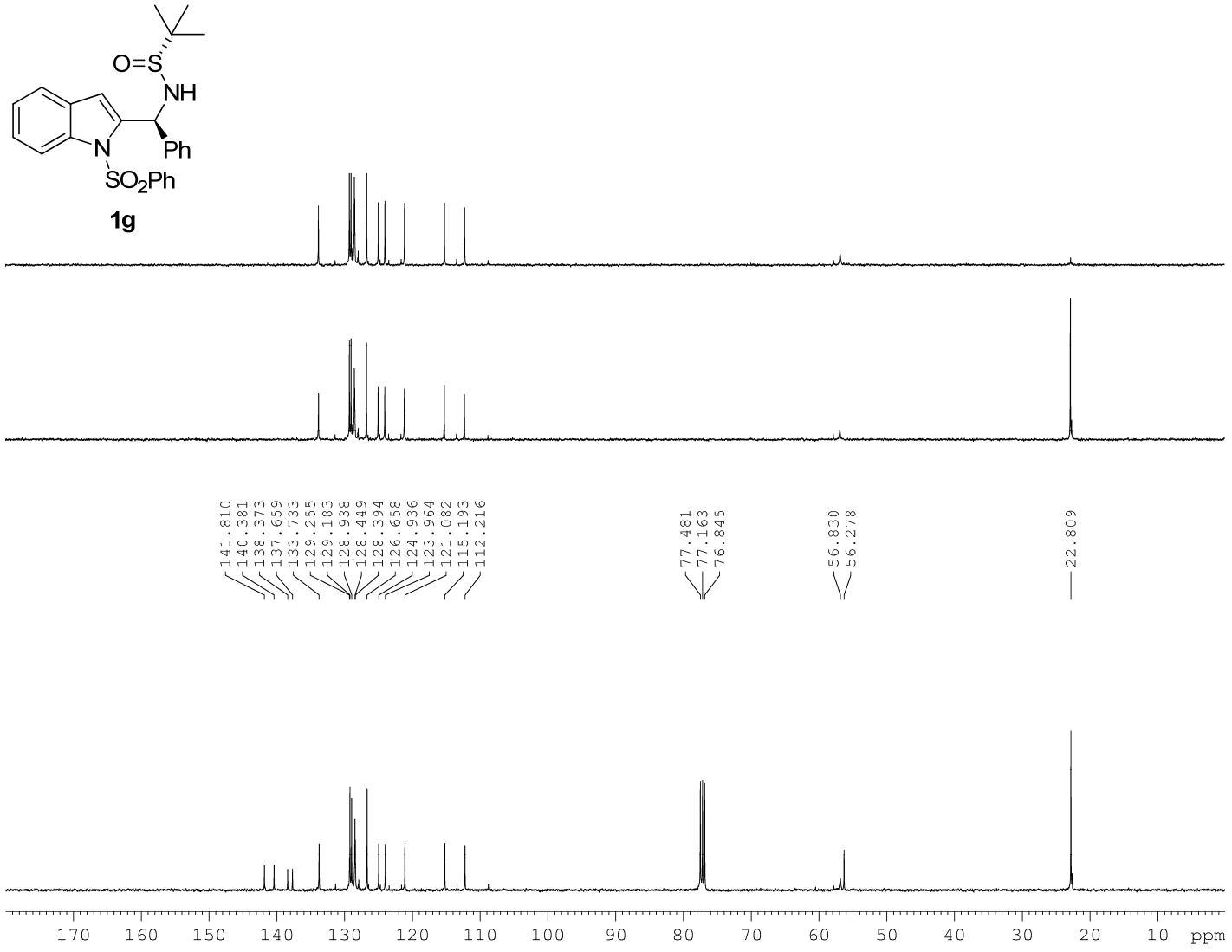


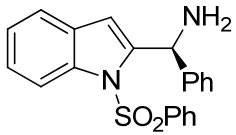
1g



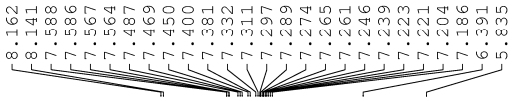

```
NAME          22011000147
EXPNO                1597
PROCNO                  1
Date_            20131025
Time                2.56
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ               4.0894966 sec
RG                   24.73
DW                  62.400 usec
DE                    6.50 usec
TE                   297.8 K
D1               1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                    9.64 usec
SI                   65536
SF            400.1500116 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


O=S
NH
N
Ph
SO2Ph
1g
14..810
140.381
138.373
137.659
133.733
129.255
129.183
128.938
128.449
128.394
126.658
124.936
123.964
12..082
115.193
112.216
77.481
77.163
76.845
56.830
56.278
22.809
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

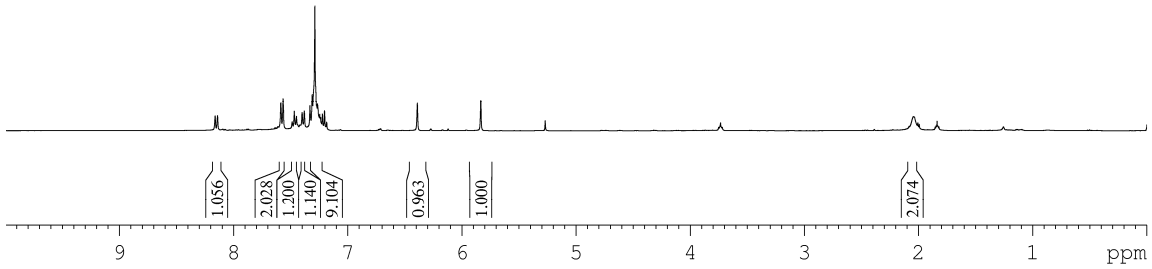


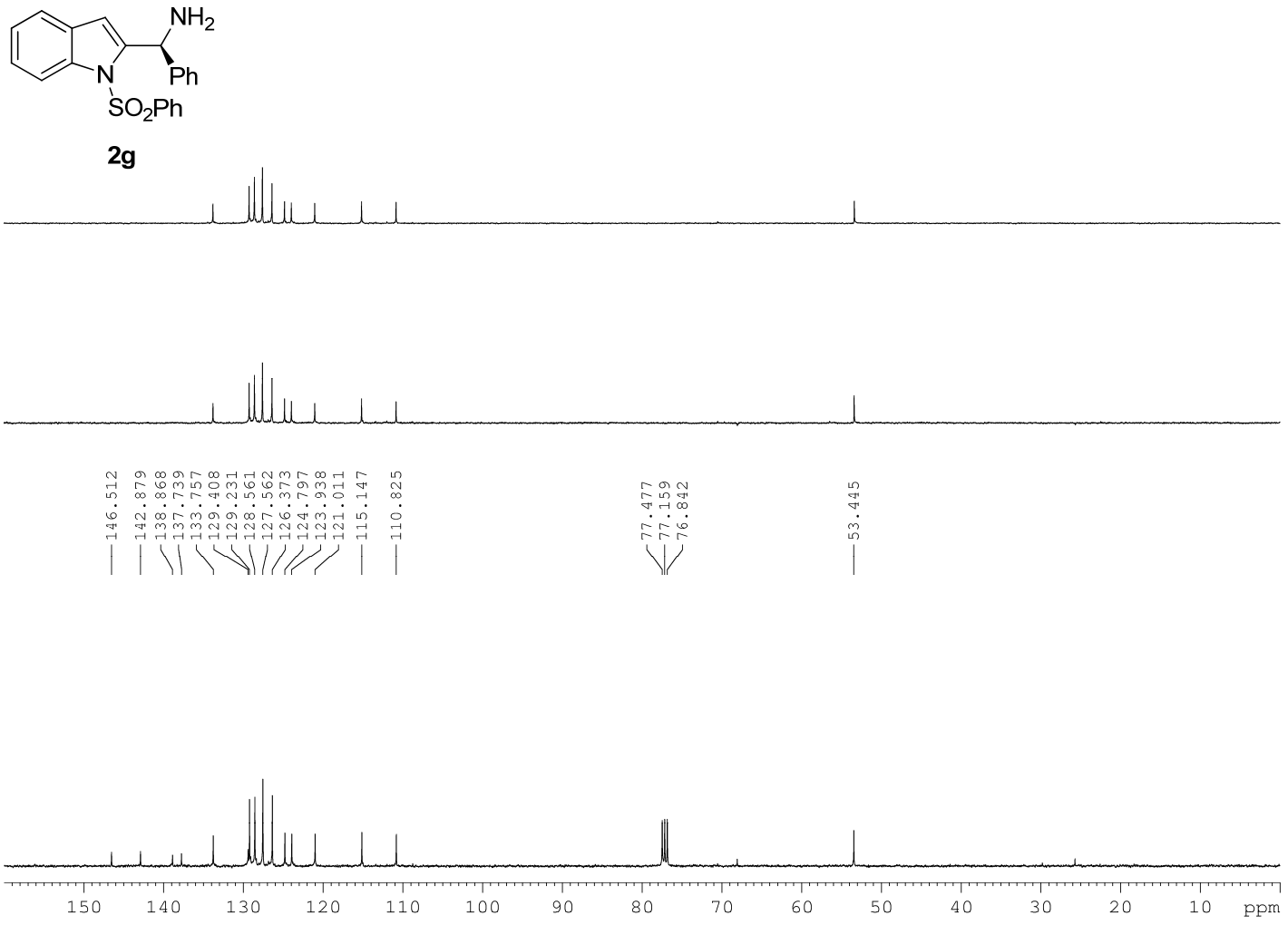
2g

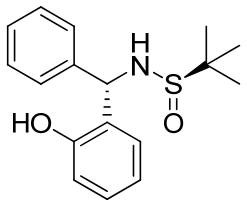



```
NAME          22011000147
EXPNO                1601
PROCNO                  1
Date_            20131107
Time                 7.51
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   45.66
DW                  62.400 usec
DE                   6.50 usec
TE                  295.9 K
D1              1.00000000 sec
TD0                     1

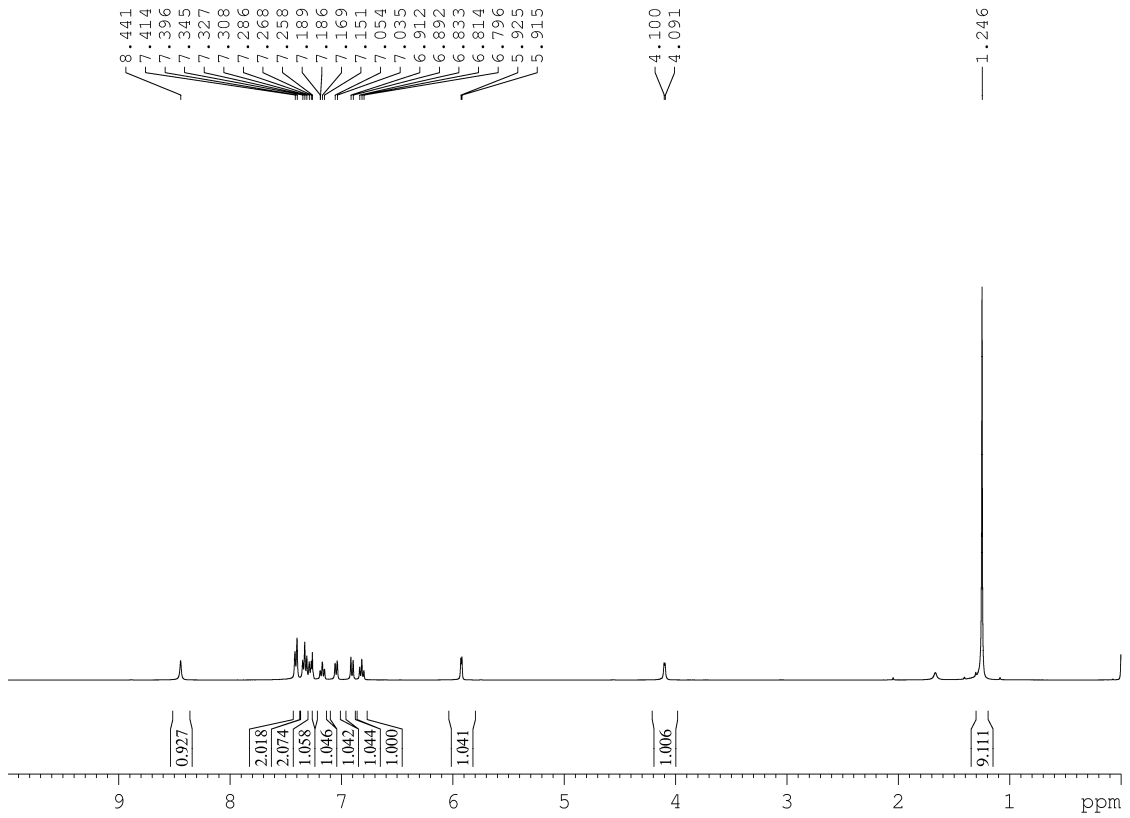
======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF           400.1500143 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




NH2
Ph
N
SO2Ph
2g
146.512
142.879
138.868
137.739
133.757
129.408
129.231
128.561
127.562
126.373
124.797
123.938
121.011
115.147
110.825
77.477
77.159
76.842
53.445
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

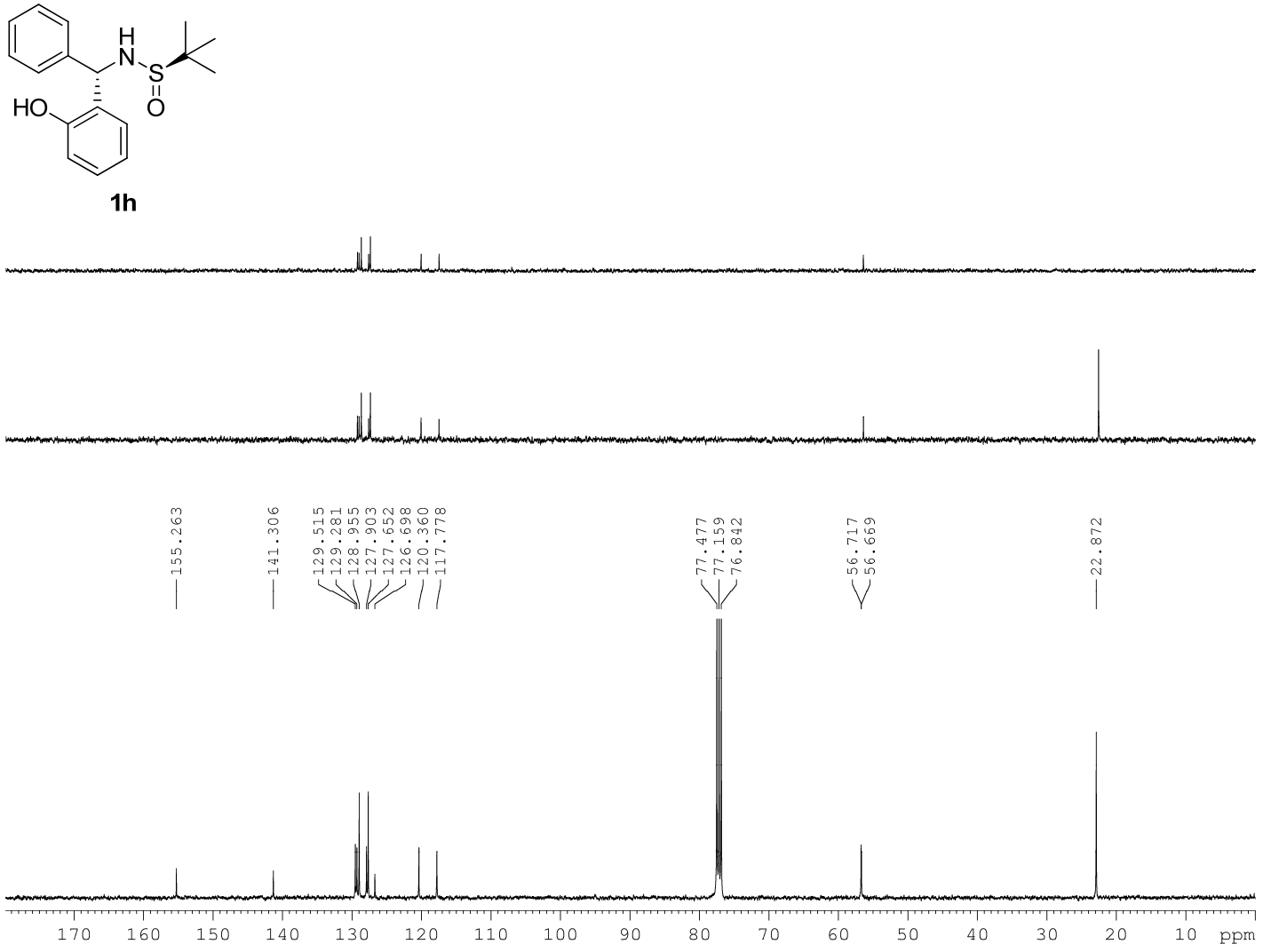


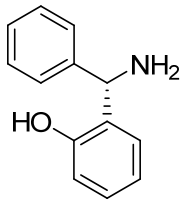
1h



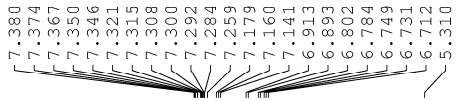

```
NAME          22011000147
EXPNO                1765
PROCNO                  1
Date_            20131116
Time                14.16
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   87.16
DW                 62.400 usec
DE                  6.50 usec
TE                 295.7 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                   9.64 usec
SI                   65536
SF            400.1500085 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```


HO
H
N
S
O
1h
155.263
141.306
129.515
129.281
128.955
127.903
127.652
126.698
120.360
117.778
77.477
77.159
76.842
56.717
56.669
22.872
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

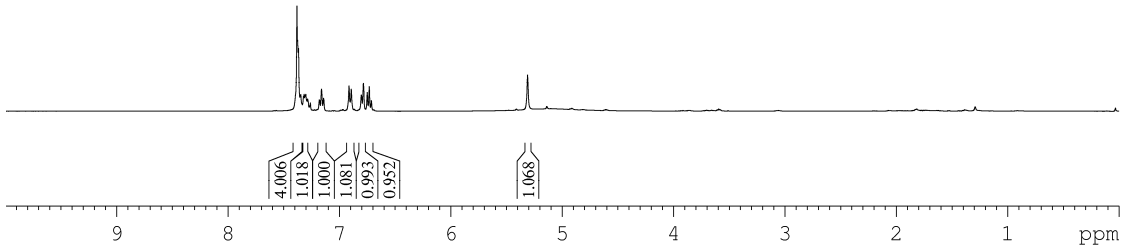


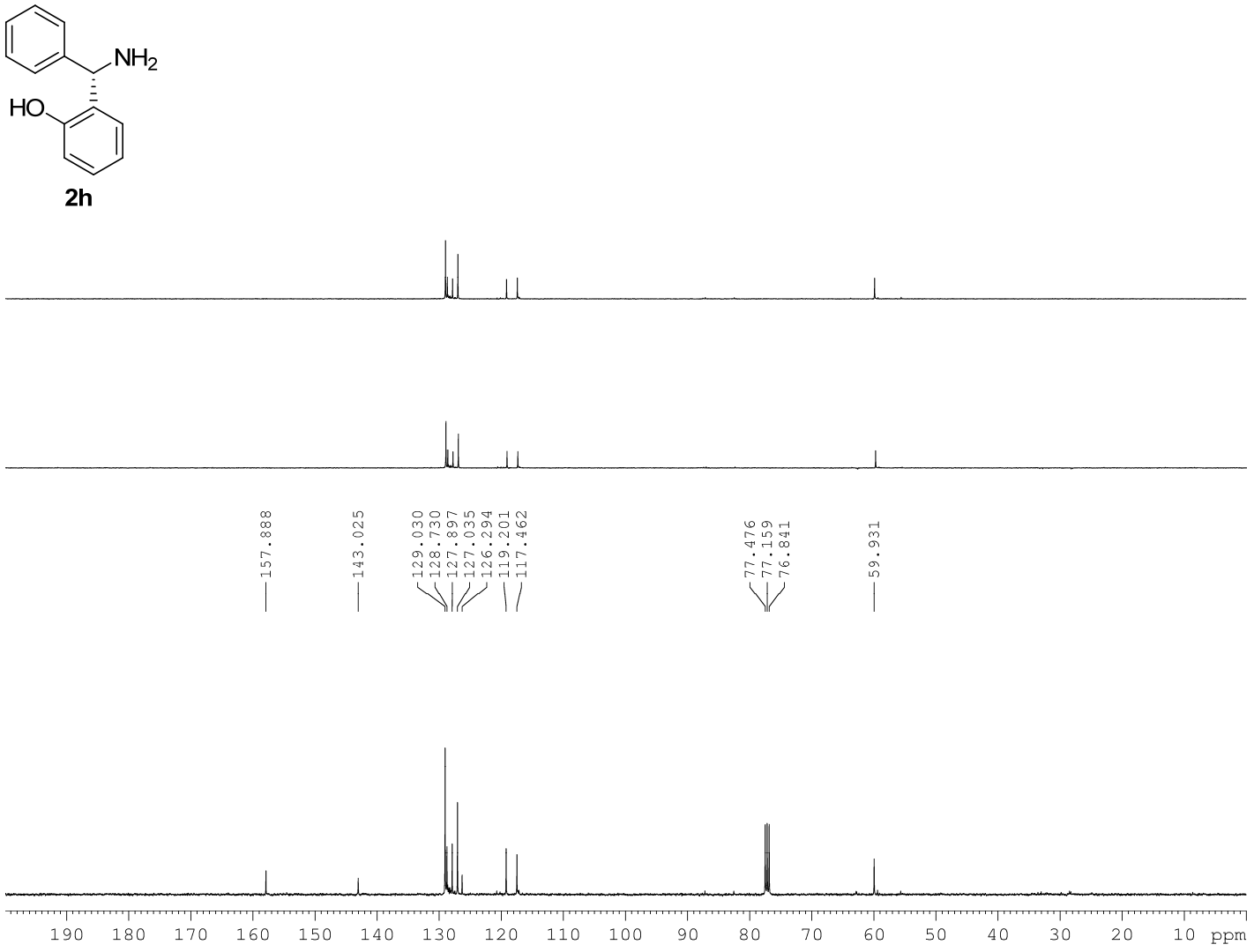
2h

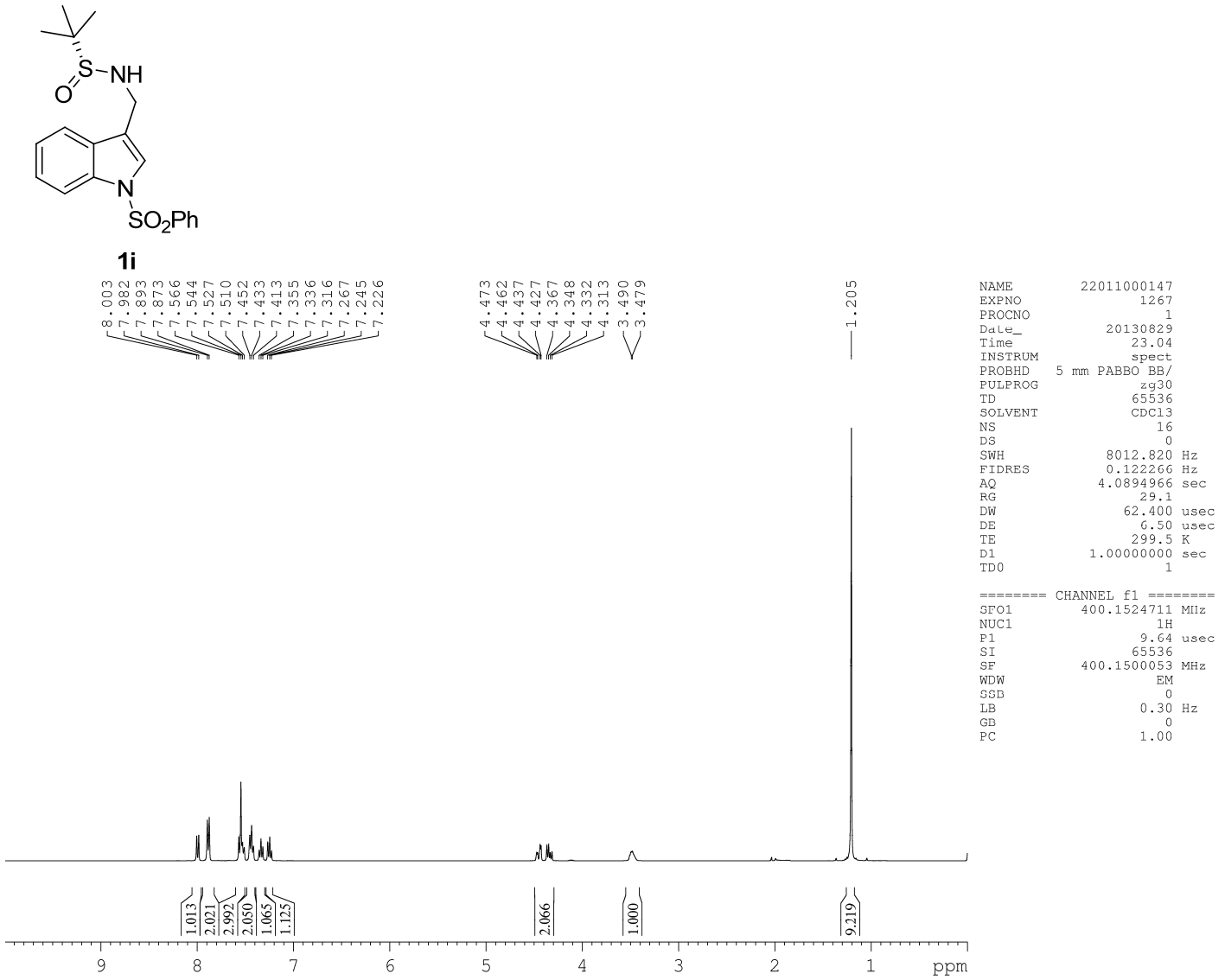


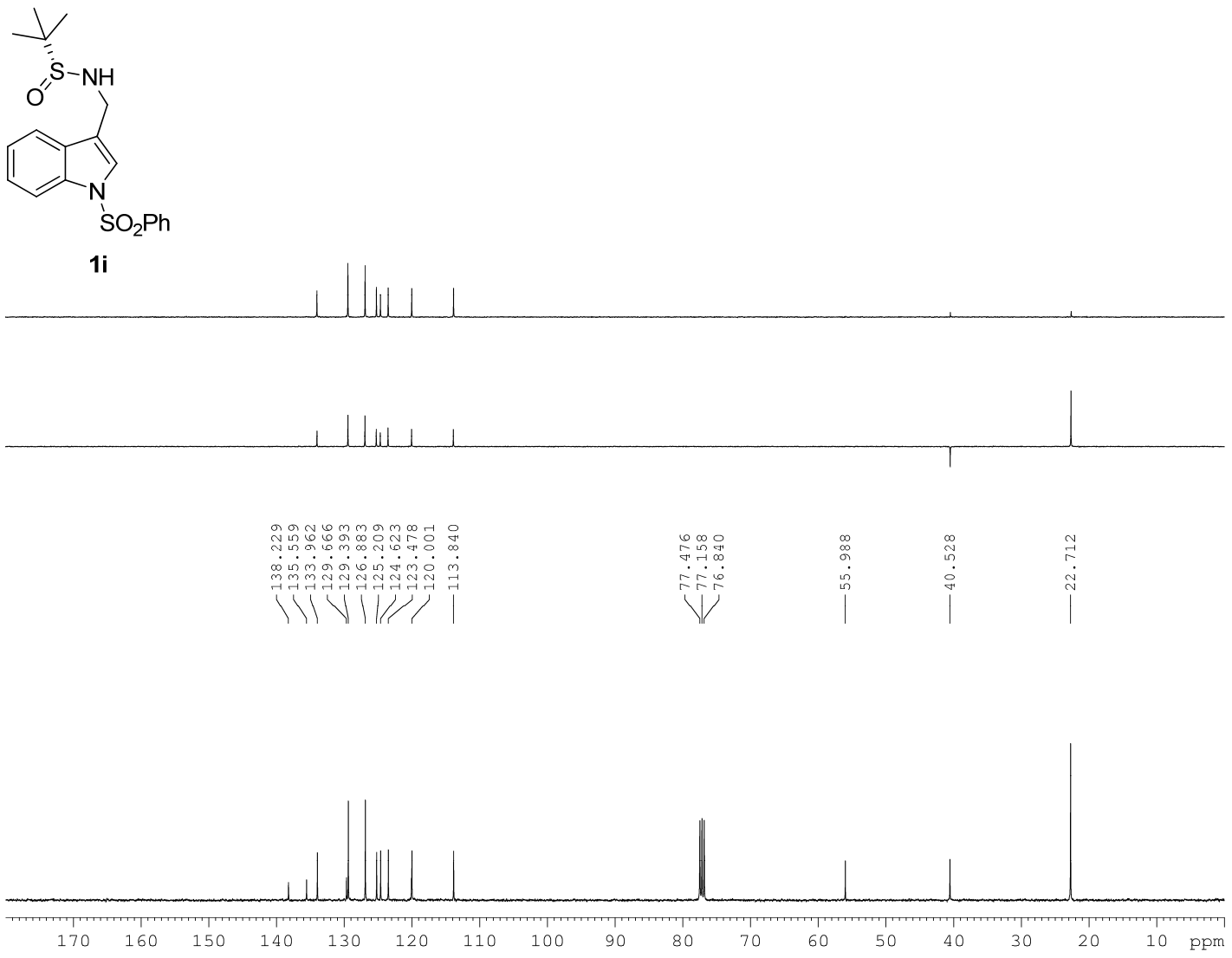

```
NAME          22011000147
EXPNO                1310
PROCNO                  1
Date_            20130903
Time                10.36
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  24.73
DW                62.400 usec
DE                 6.50 usec
TE                299.1 K
D1             1.00000000 sec
TD0                     1

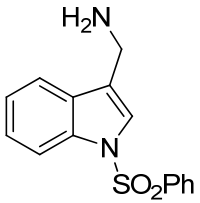
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500088 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



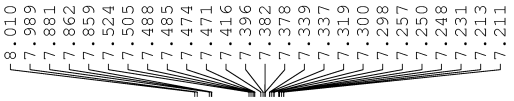

NH2
HO
2h
157.888
143.025
129.030
128.730
127.897
127.035
126.294
119.201
117.462
77.476
77.159
76.841
59.931
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


1i
8.003
7.982
7.893
7.873
7.566
7.544
7.527
7.510
7.452
7.433
7.413
7.355
7.336
7.316
7.267
7.245
7.226
4.473
4.462
4.437
4.427
4.367
4.348
4.332
4.313
3.490
3.479
1.205
NAME 22011000147
EXPNO 1267
PROCNO 1
Date_ 20130829
Time 23.04
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 29.1
DW 62.400 usec
DE 6.50 usec
TE 299.5 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500053 MHz
WDW EM
SSD 0
LB 0.30 Hz
GB 0
PC 1.00
1.013
2.021
2.992
2.050
1.065
1.125
2.066
1.000
9.219
9
8
7
6
5
4
3
2
1
ppm


S
NH
O
N
SO2Ph
1i
138.229
135.559
133.962
129.666
129.393
126.883
125.209
124.623
123.478
120.001
113.840
77.476
77.158
76.840
55.988
40.528
22.712
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

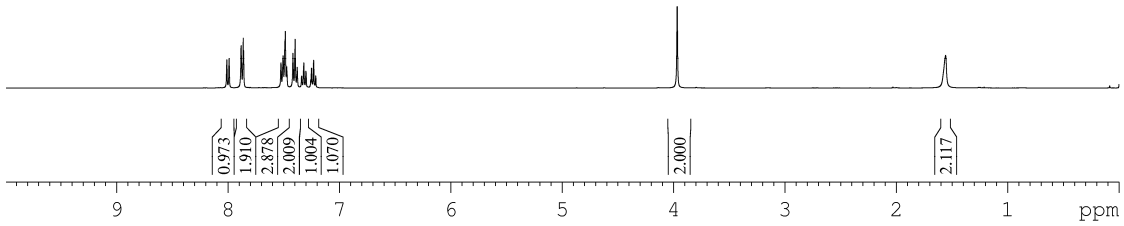


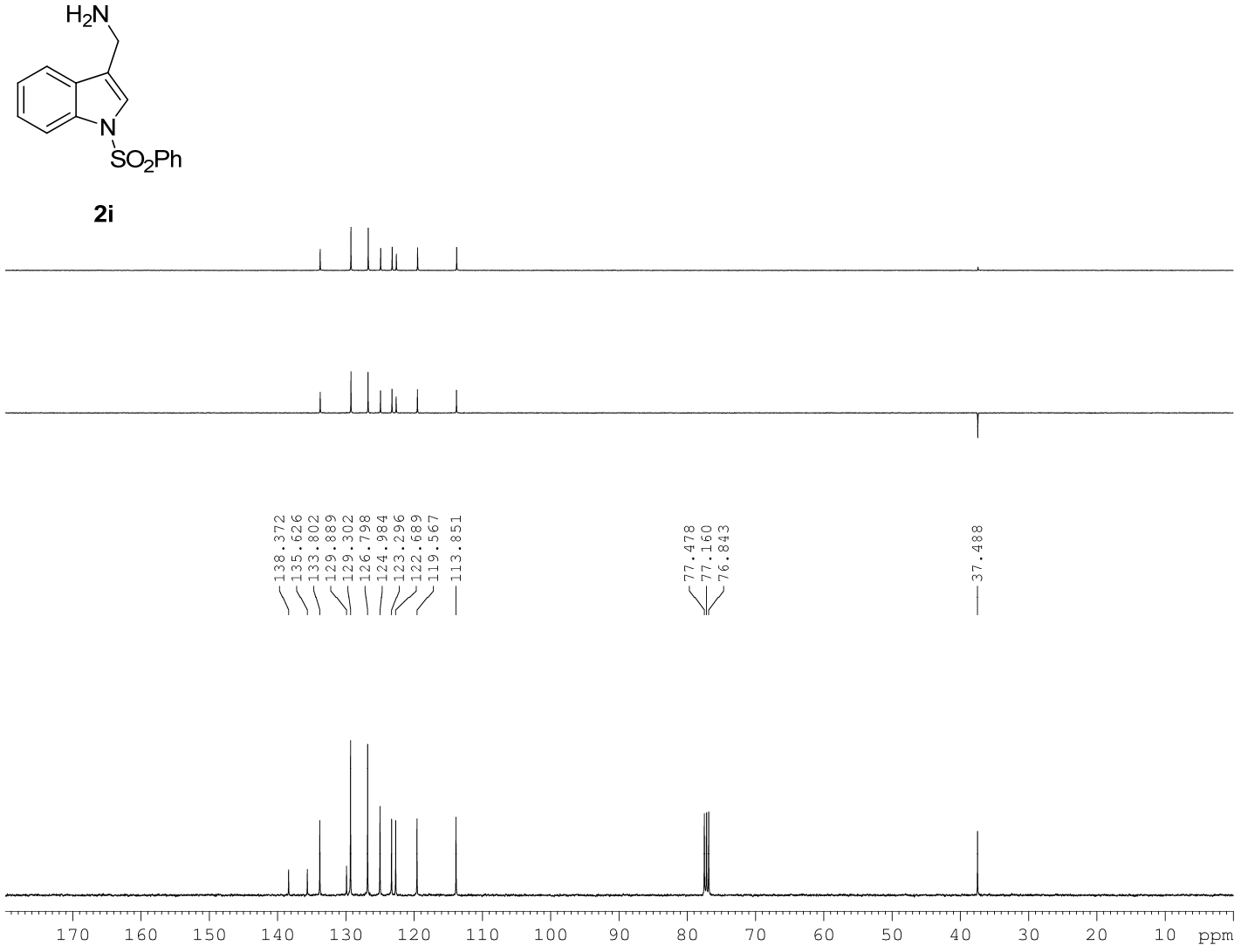
2i

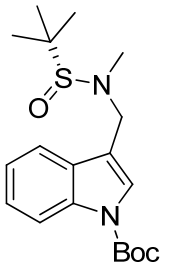



```
NAME          22011000147
EXPNO                1519
PROCNO                  1
Date_            20131007
Time                 9.12
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                    29.1
DW                  62.400 usec
DE                   6.50 usec
TE                  299.5 K
D1              1.00000000 sec
TD0                     1

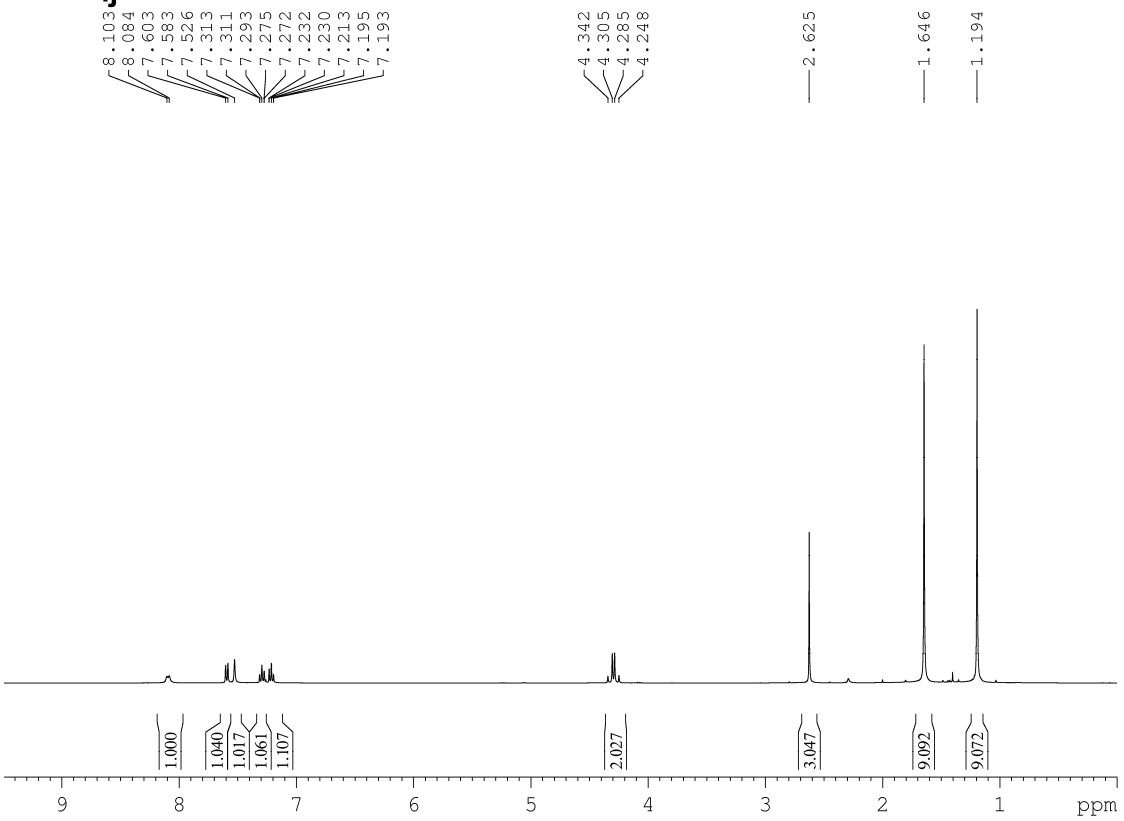
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                   9.64 usec
SI                  65536
SF            400.1500096 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




H2N
N
SO2Ph
2i
138.372
135.626
133.802
129.889
129.302
126.798
124.984
123.296
122.689
119.567
113.851
77.478
77.160
76.843
37.488
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

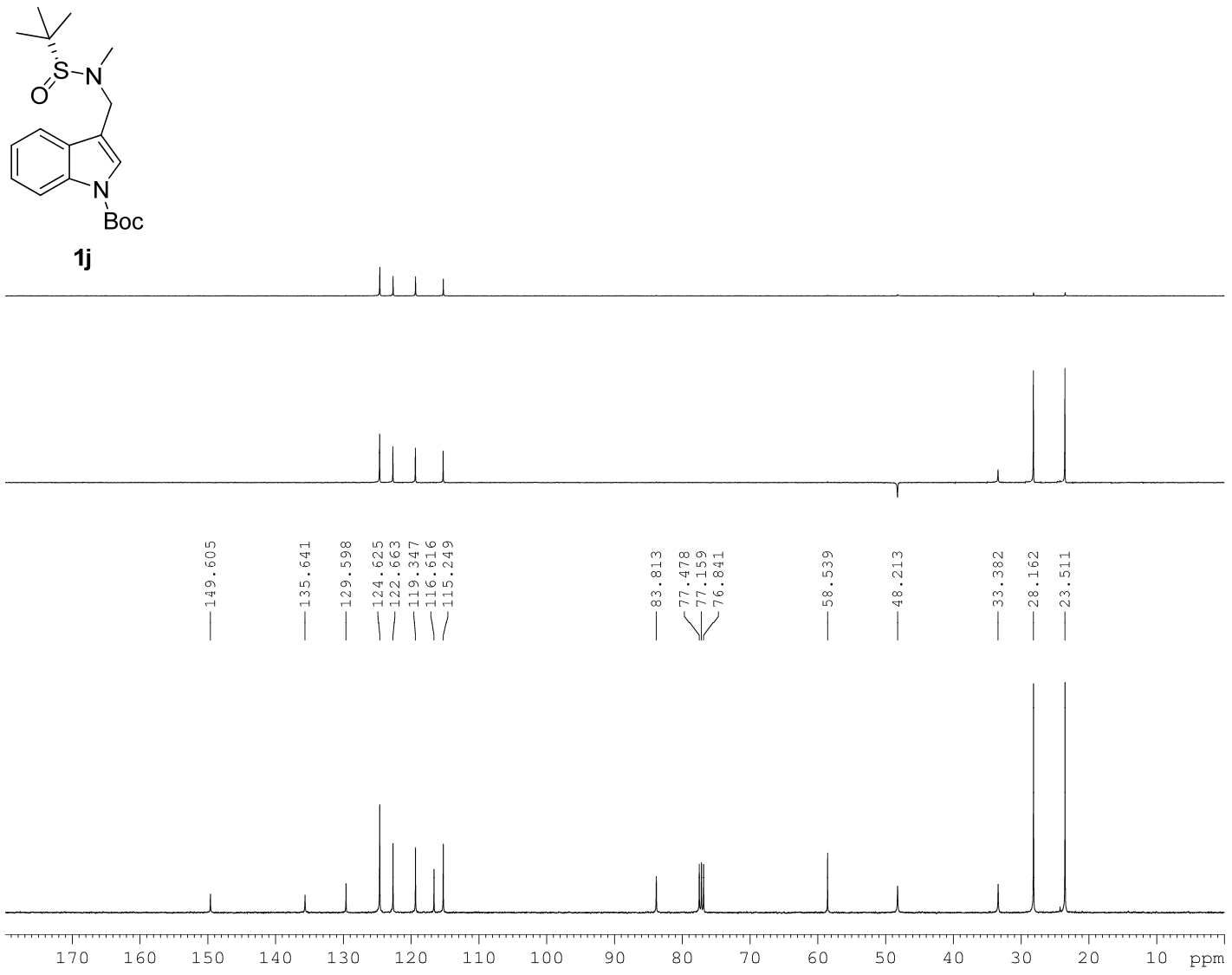


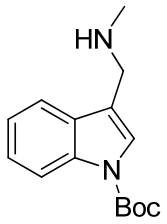
1j



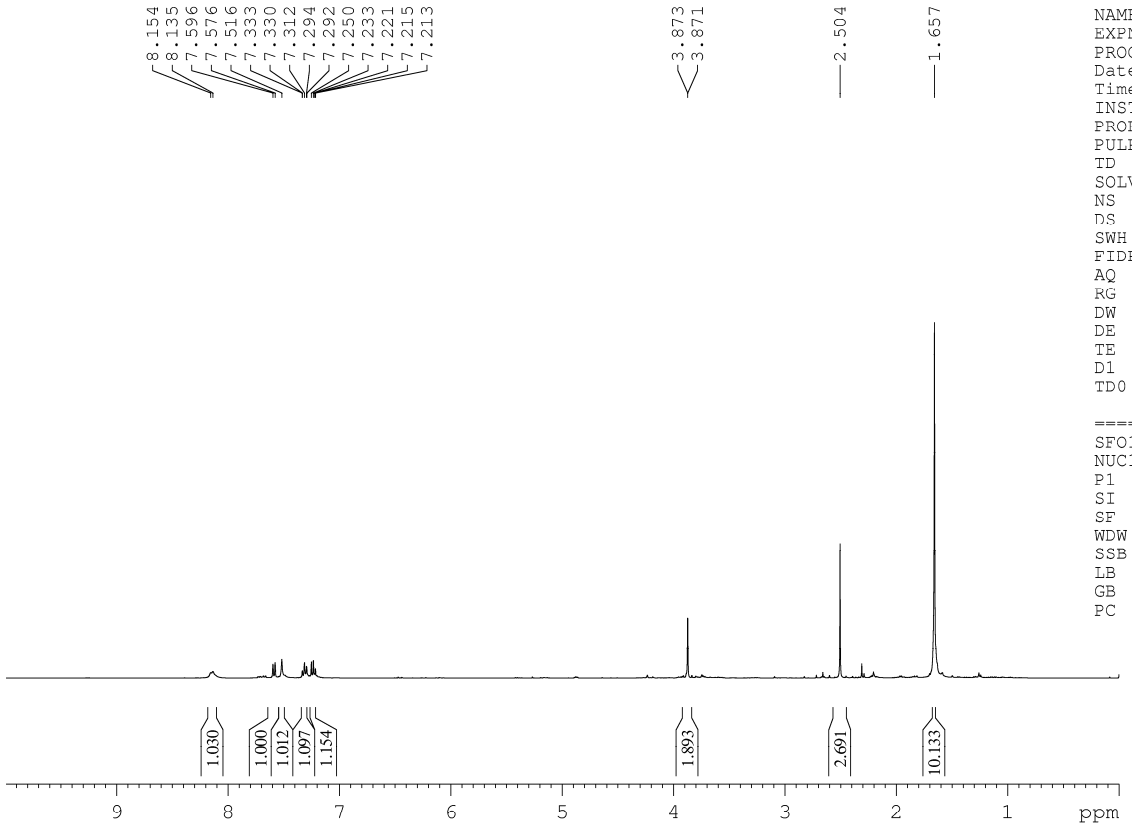

```
NAME          22011000147
EXPNO                1491
PROCNO                  1
Date_            20130926
Time                18.53
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     15
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  12.41
DW                 62.400 usec
DE                  6.50 usec
TE                 298.5 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                  9.64 usec
SI                  65536
SF           400.1500083 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


Boc
1j
149.605
135.641
129.598
124.625
122.663
119.347
116.616
115.249
83.813
77.478
77.159
76.841
58.539
48.213
33.382
28.162
23.511
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

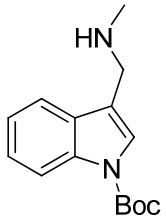


2j

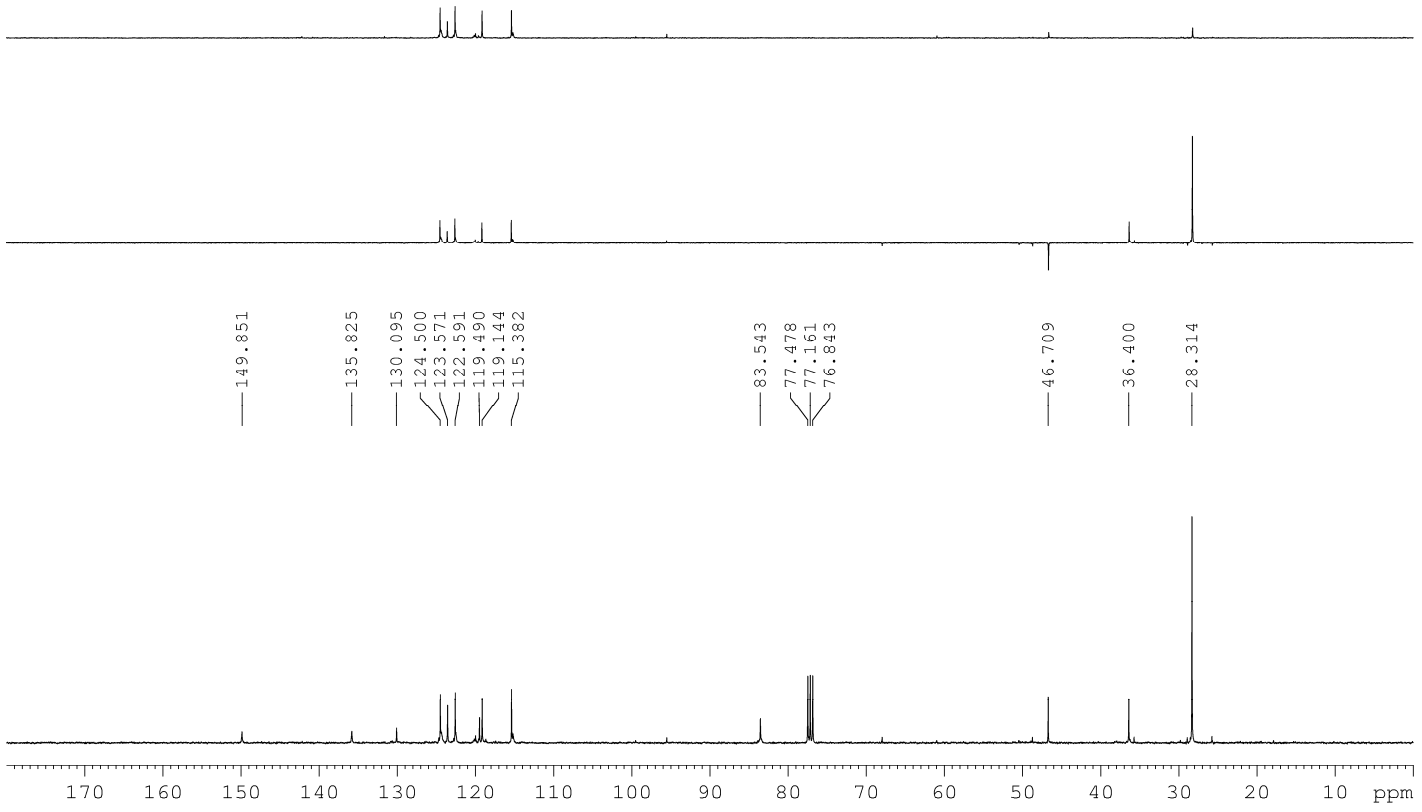


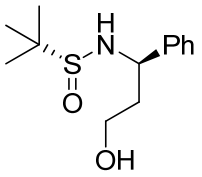

```
NAME          22011000147
EXPNO                1527
PROCNO                  1
Date_            20131008
Time                 3.15
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                    23.2
DW                  62.400 usec
DE                   6.50 usec
TE                  299.0 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF           400.1500124 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

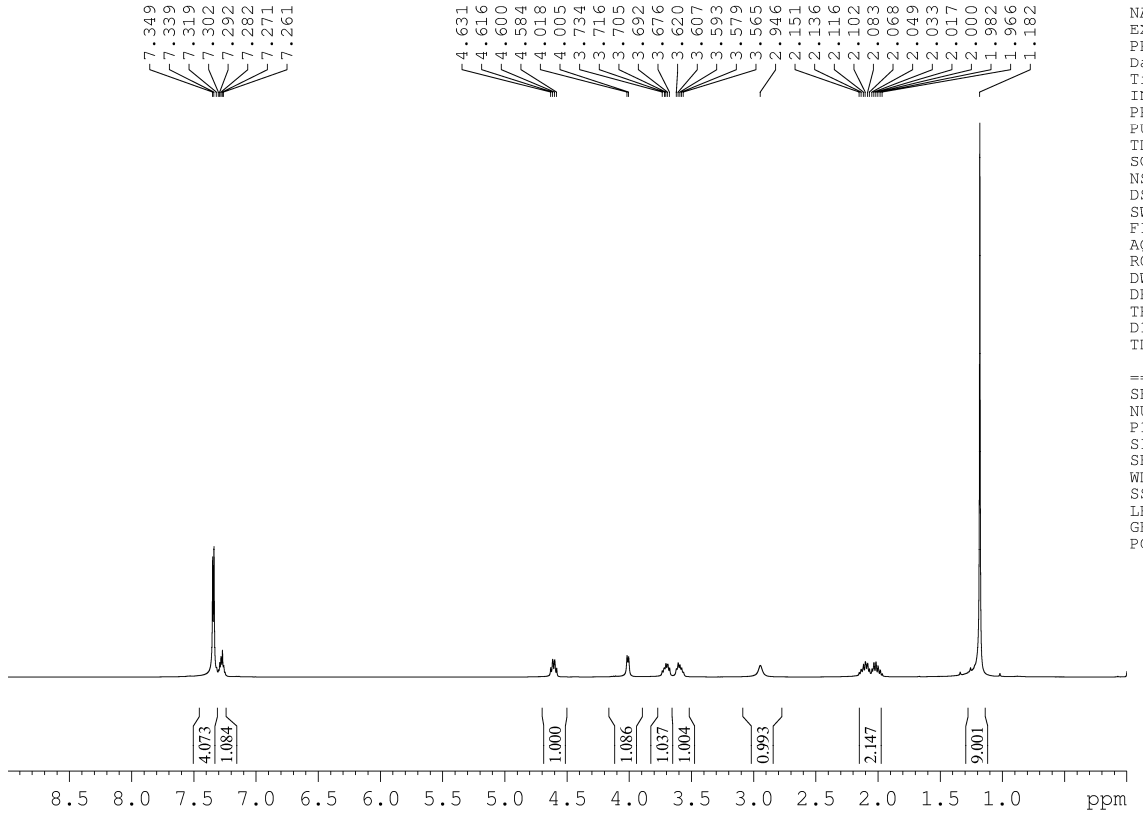

HN
N
Boc

2j


149.851
135.825
130.095
124.500
123.571
122.591
119.490
119.144
115.382
83.543
77.478
77.161
76.843
46.709
36.400
28.314
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

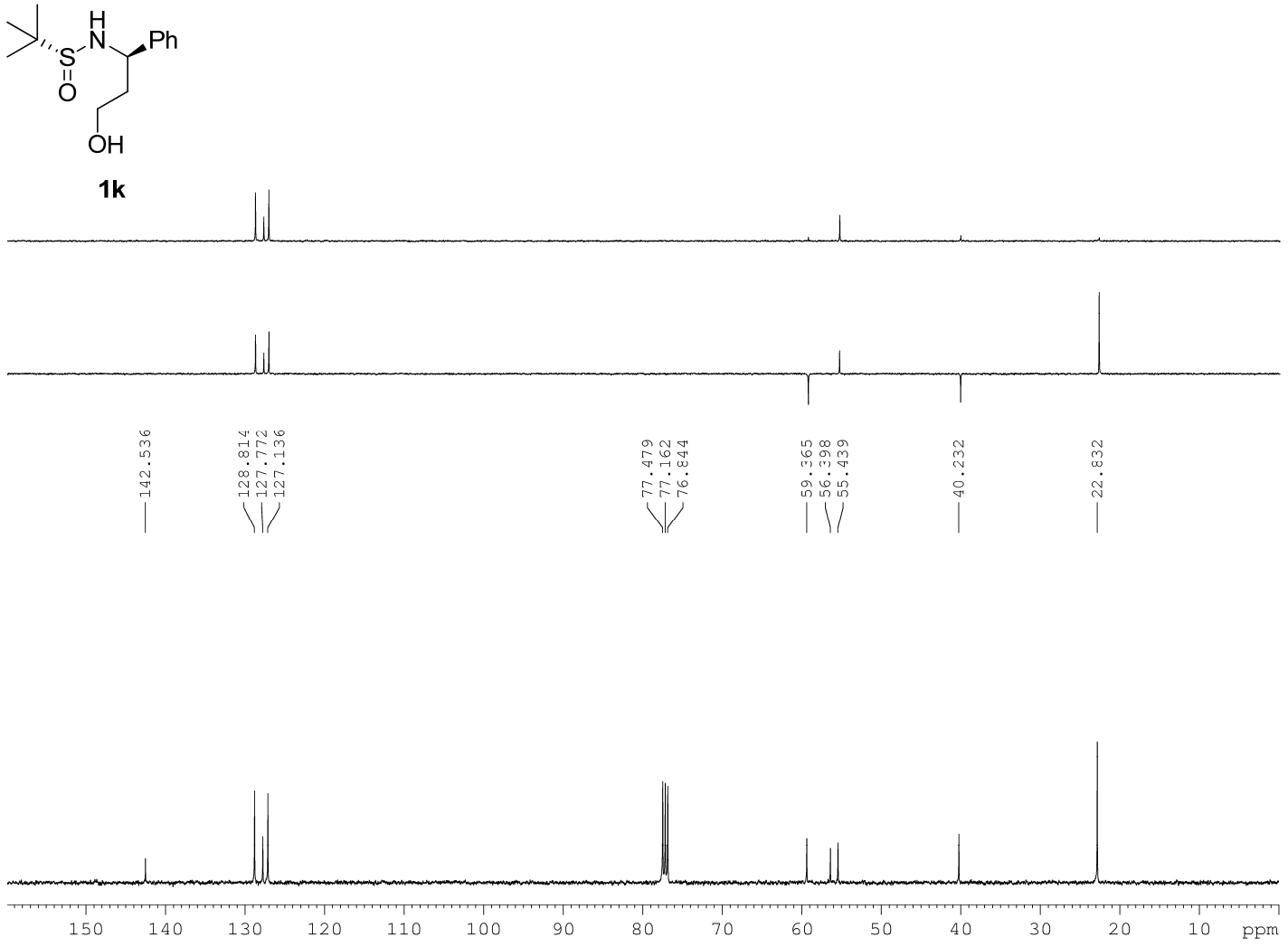


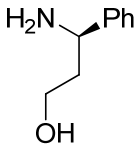
1k



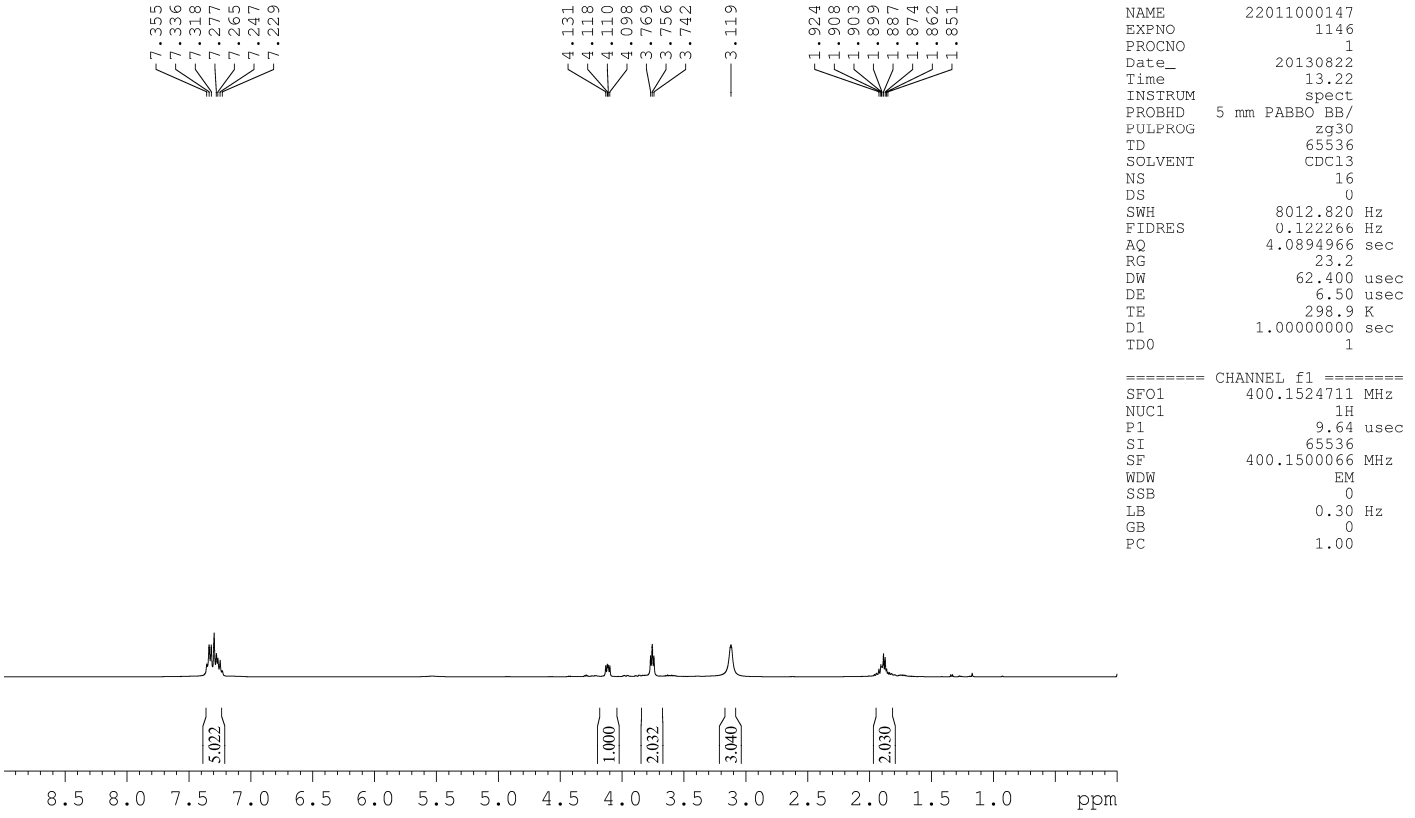

```
NAME          22011000147
EXPNO                1499
PROCNO                  1
Date_            20130929
Time                20.31
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   29.1
DW                  62.400 usec
DE                    6.50 usec
TE                  299.0 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                    9.64 usec
SI                  65536
SF            400.1500045 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


H
N
Ph
S
O
OH
1k
142.536
128.814
127.772
127.136
77.479
77.162
76.844
59.365
56.398
55.439
40.232
22.832
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

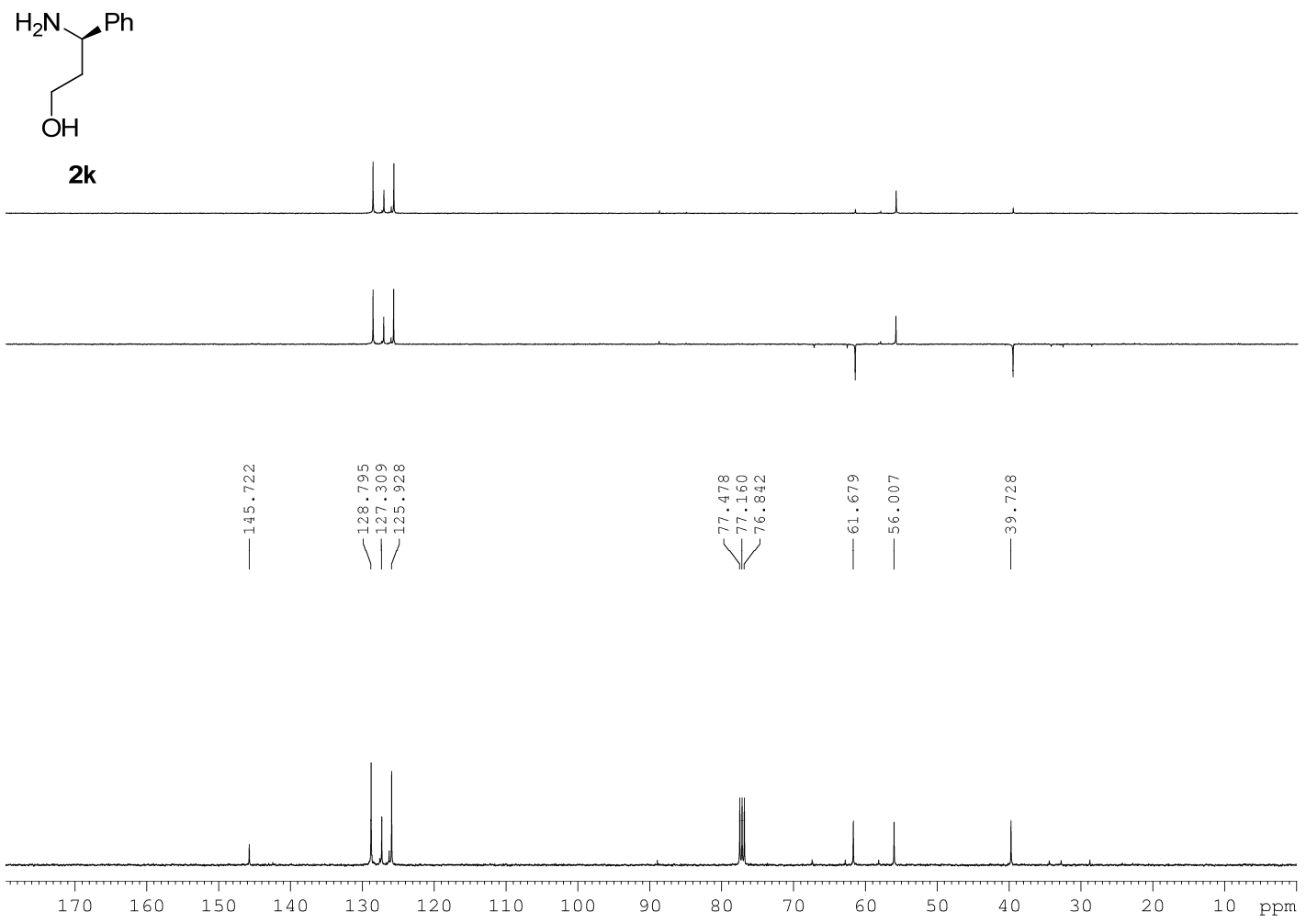


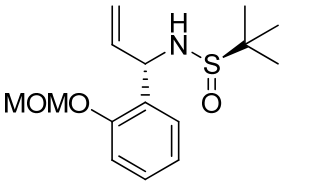
2k



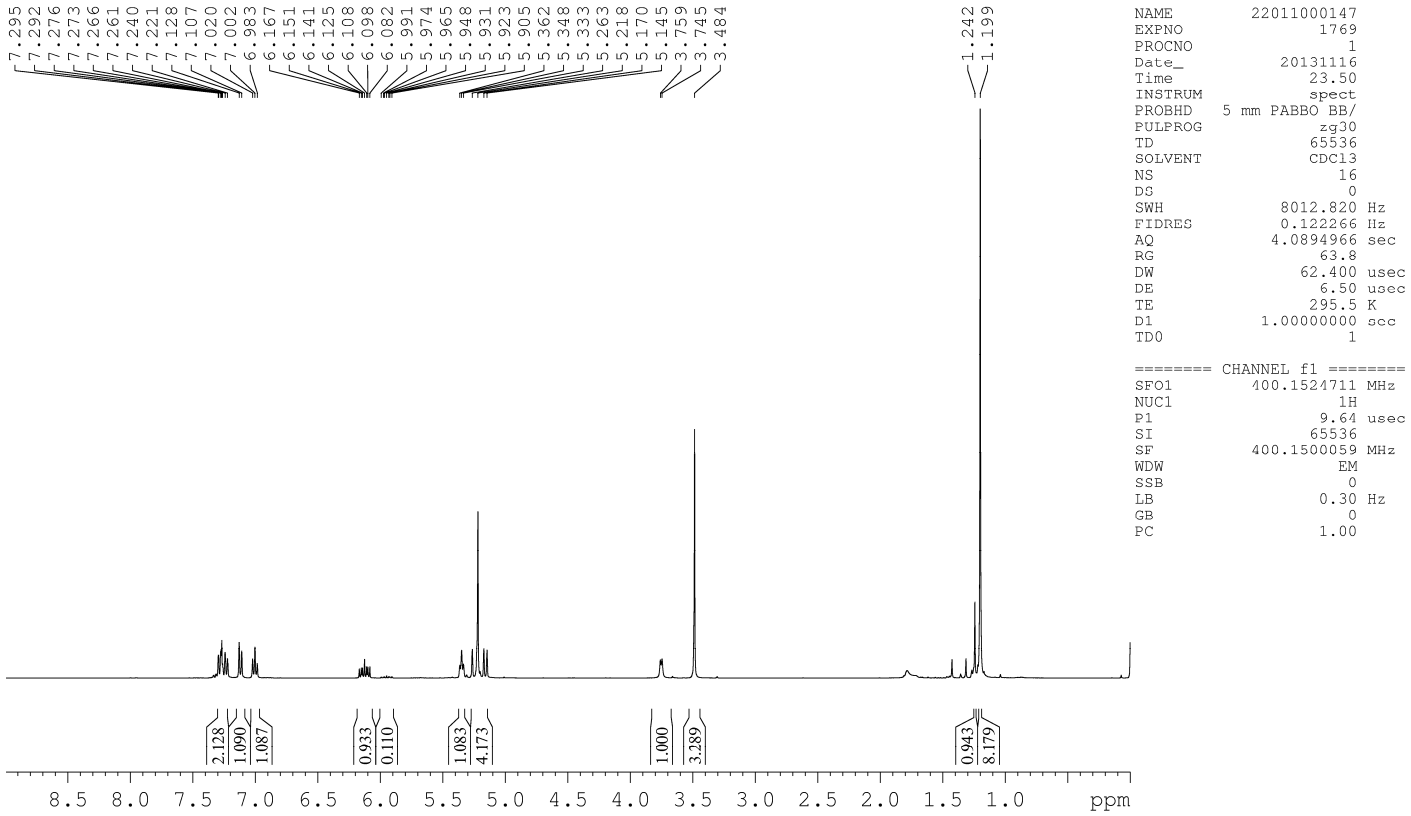
NAME	22011000147
EXPNO	1146
PROCNO	1
Date_	20130822
Time	13.22
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	23.2
DW	62.400 usec
DE	6.50 usec
TE	298.9 K
D1	1.00000000 sec
TD0	1

======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500066 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00


H2N
Ph
OH
2k
145.722
128.795
127.309
125.928
77.478
77.160
76.842
61.679
56.007
39.728
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

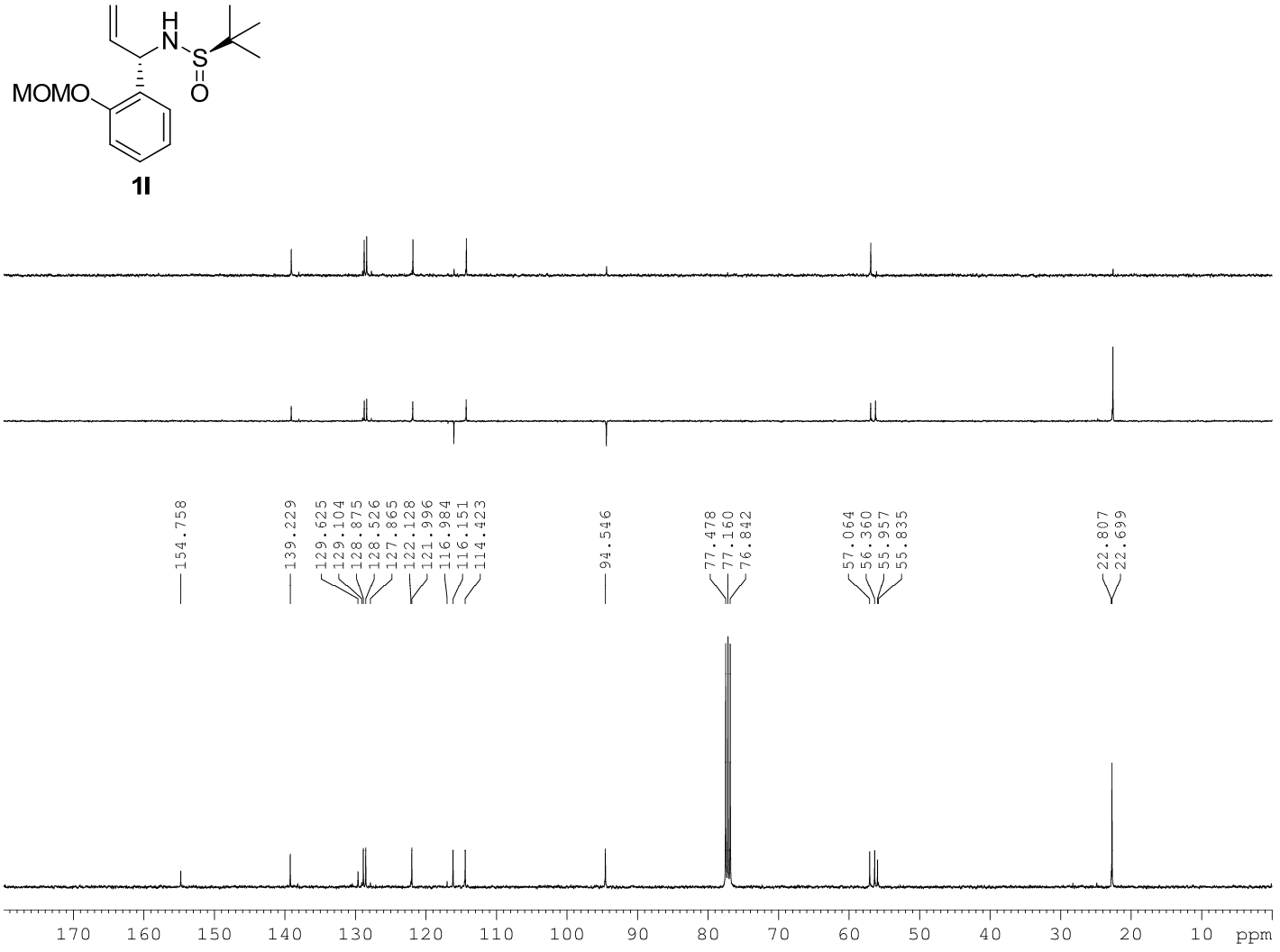


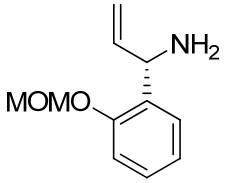
1l



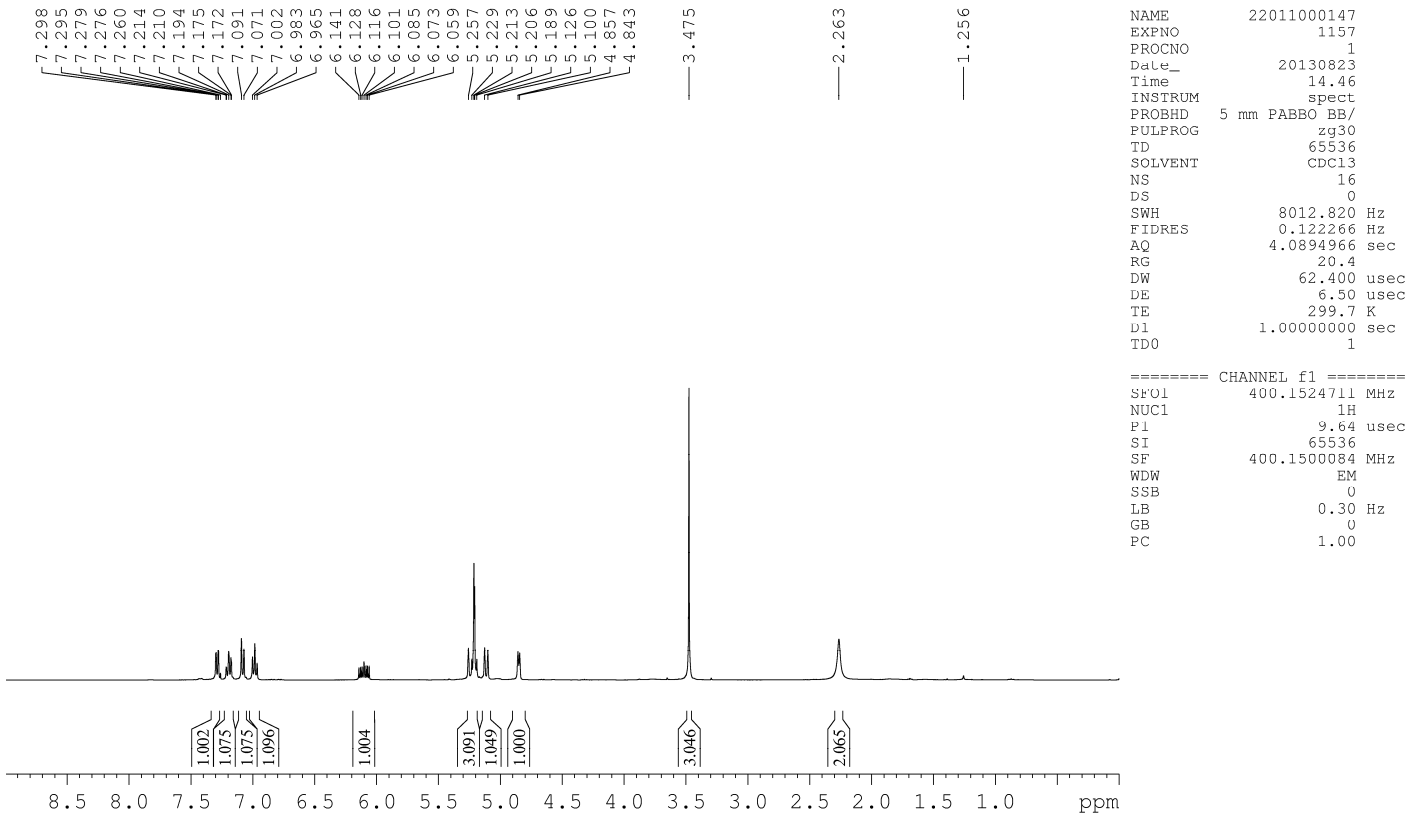

```
NAME          22011000147
EXPNO                1769
PROCNO                  1
Date_            20131116
Time                23.50
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   63.8
DW                 62.400 usec
DE                   6.50 usec
TE                  295.5 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF           400.1500059 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

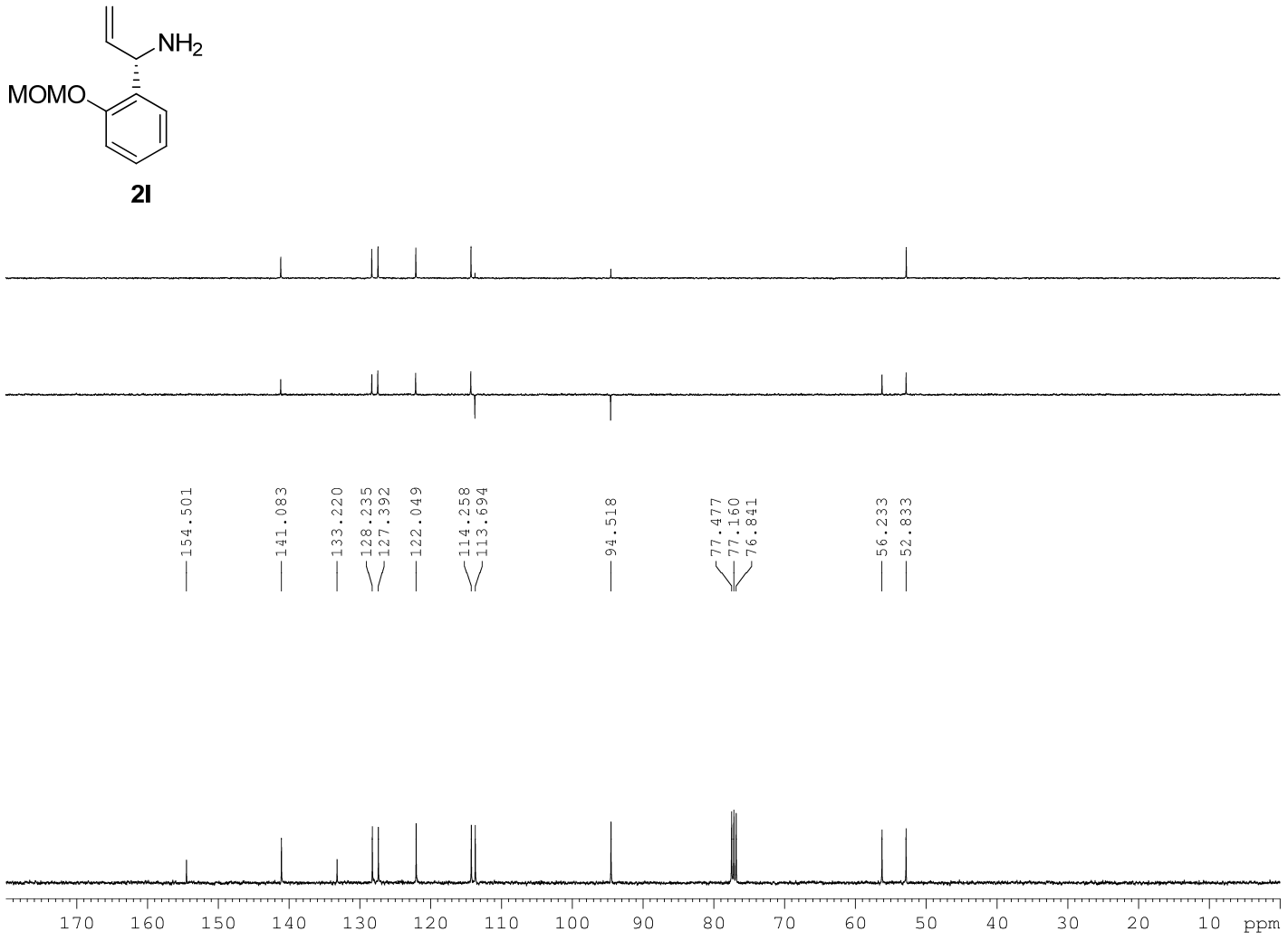

MOMO
H
N
S
O
1l
154.758
139.229
129.625
129.104
128.875
128.526
127.865
122.128
121.996
116.984
116.151
114.423
94.546
77.478
77.160
76.842
57.064
56.360
55.957
55.835
22.807
22.699
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm



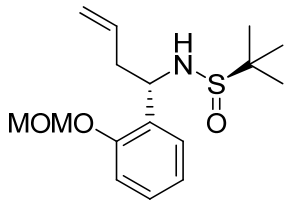
2l



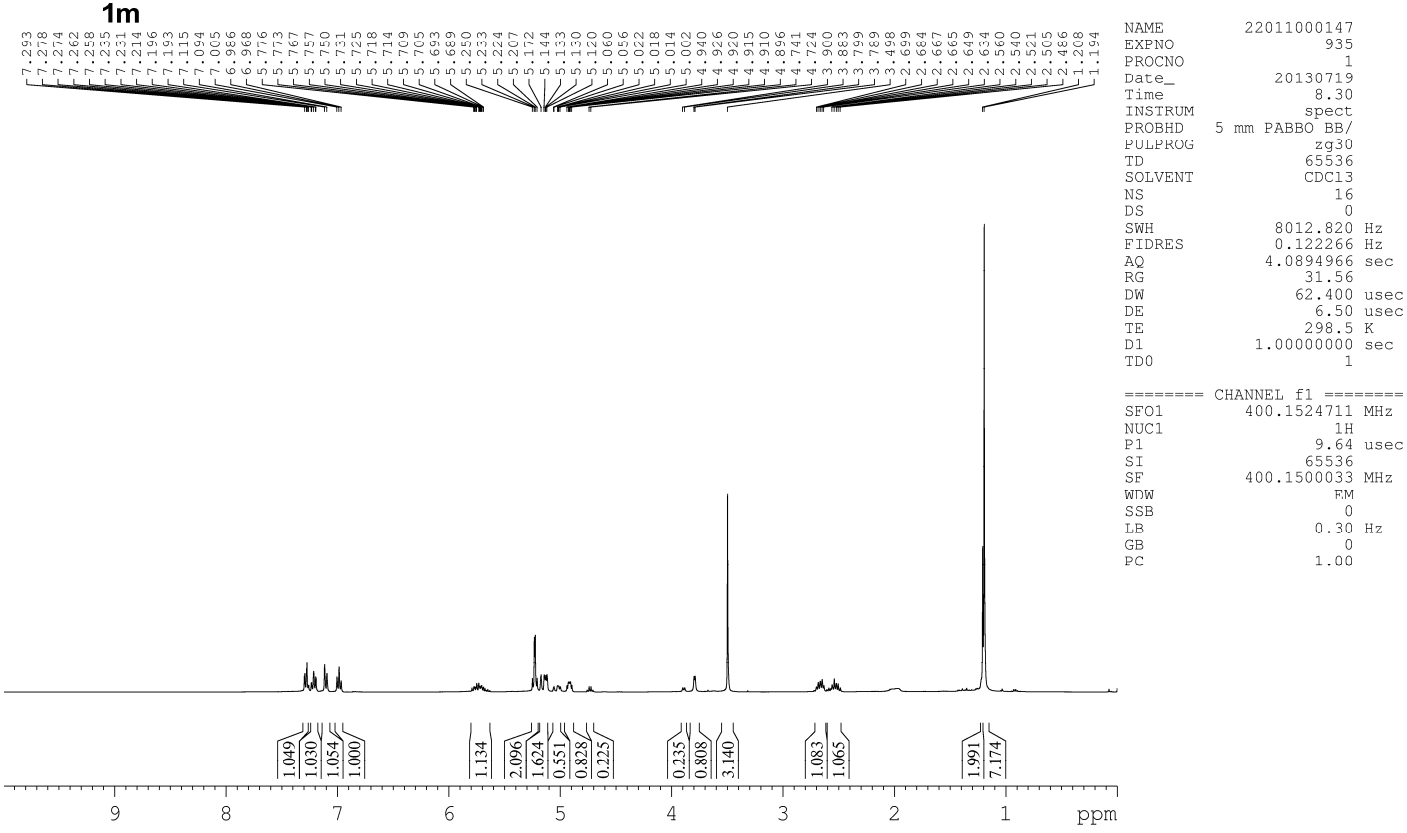
NAME	22011000147
EXPNO	1157
PROCNO	1
Date_	20130823
Time	14.46
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	20.4
DW	62.400 usec
DE	6.50 usec
TE	299.7 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500084 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00


NH2
MOMO
154.501
141.083
133.220
128.235
127.392
122.049
114.258
113.694
94.518
77.477
77.160
76.841
56.233
52.833
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

2l

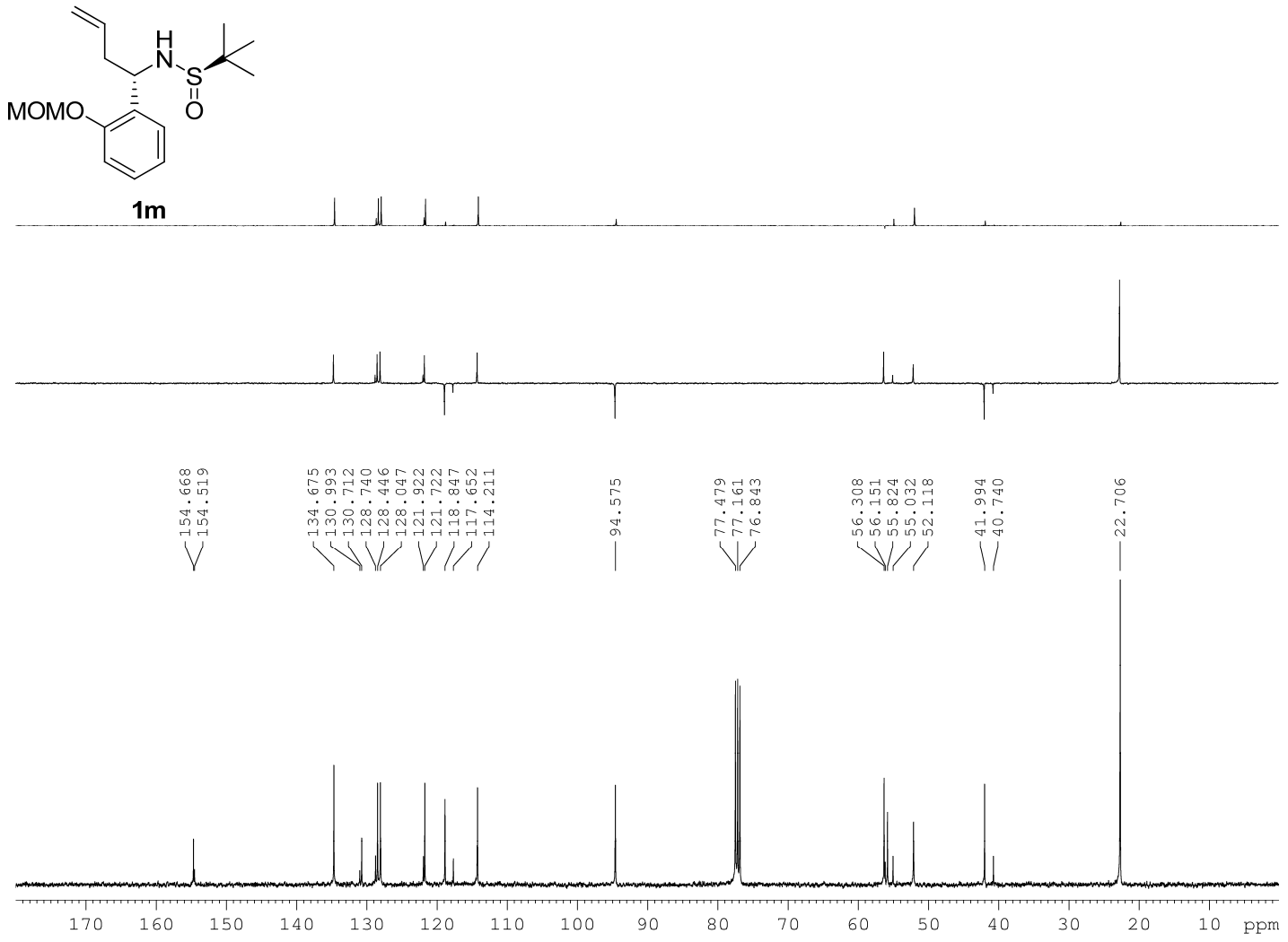


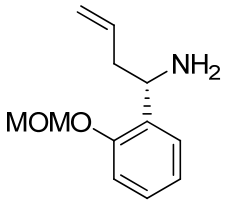
1m




```
NAME          22011000147
EXPNO                 935
PROCNO                  1
Date_          20130719
Time                8.30
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  31.56
DW                62.400 usec
DE                 6.50 usec
TE                298.5 K
D1           1.00000000 sec
TD0                     1

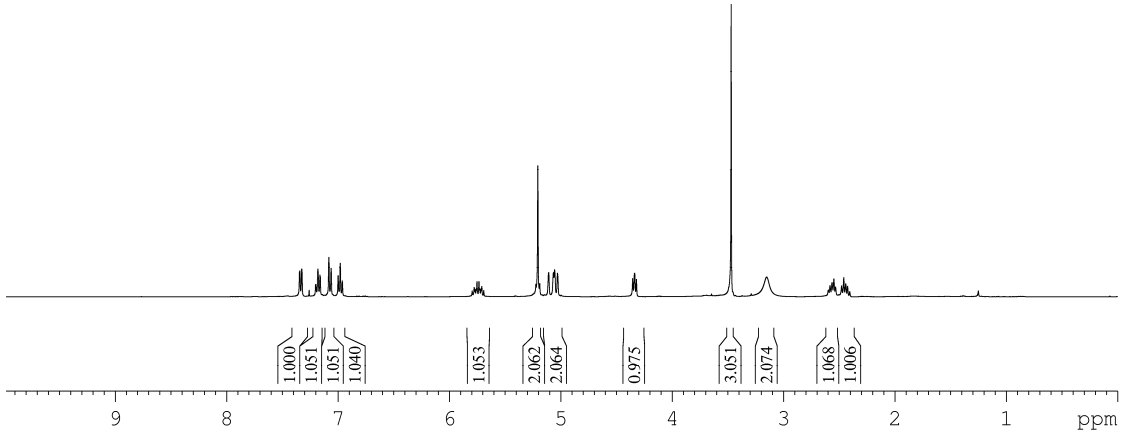
======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                  9.64 usec
SI                  65536
SF           400.1500033 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


MOMO
H
N
S
O
1m
154.668
154.519
134.675
130.993
130.712
128.740
128.446
128.047
121.922
121.722
118.847
117.652
114.211
94.575
77.479
77.161
76.843
56.308
56.151
55.824
55.032
52.118
41.994
40.740
22.706
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm



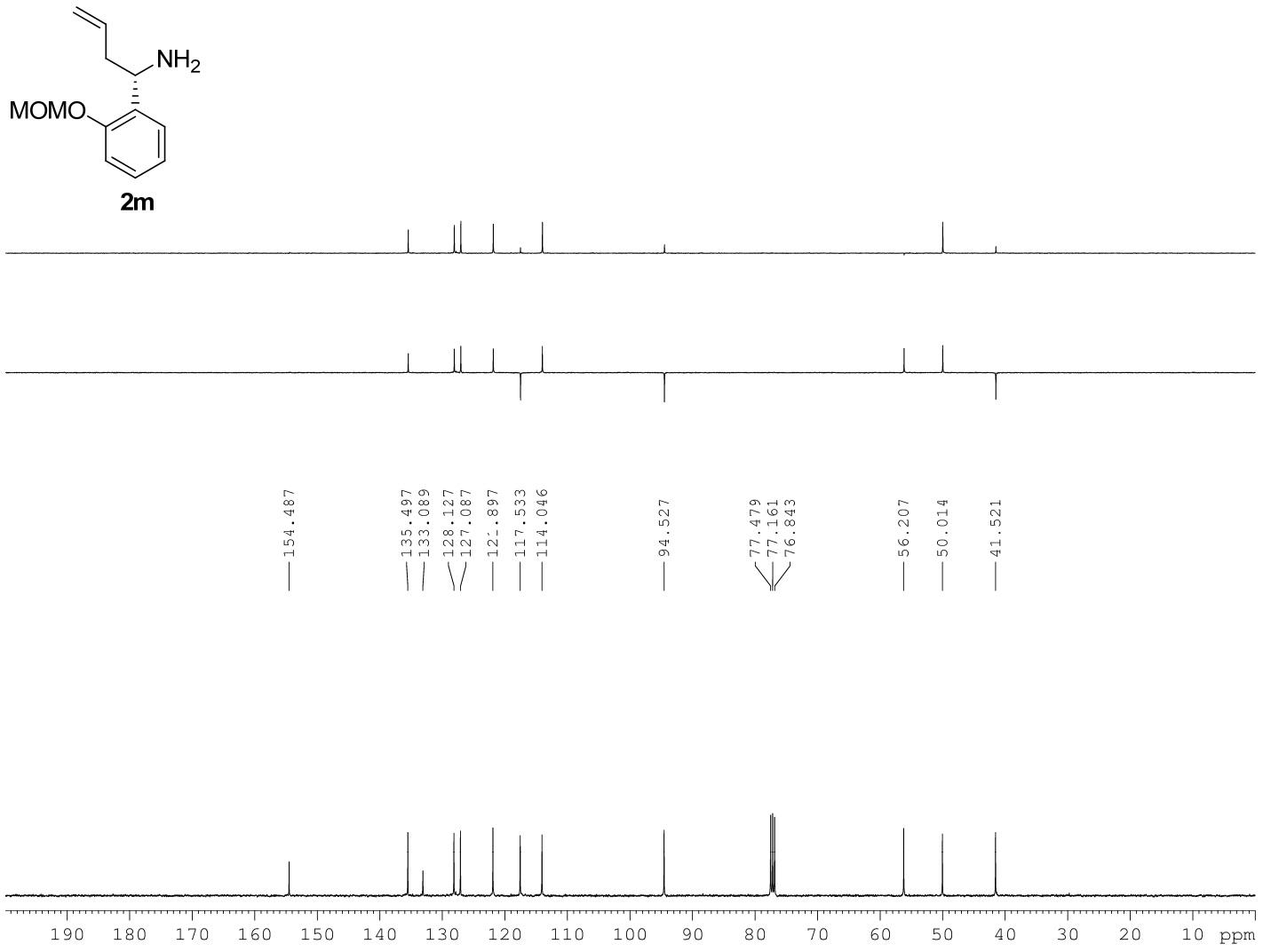
2m

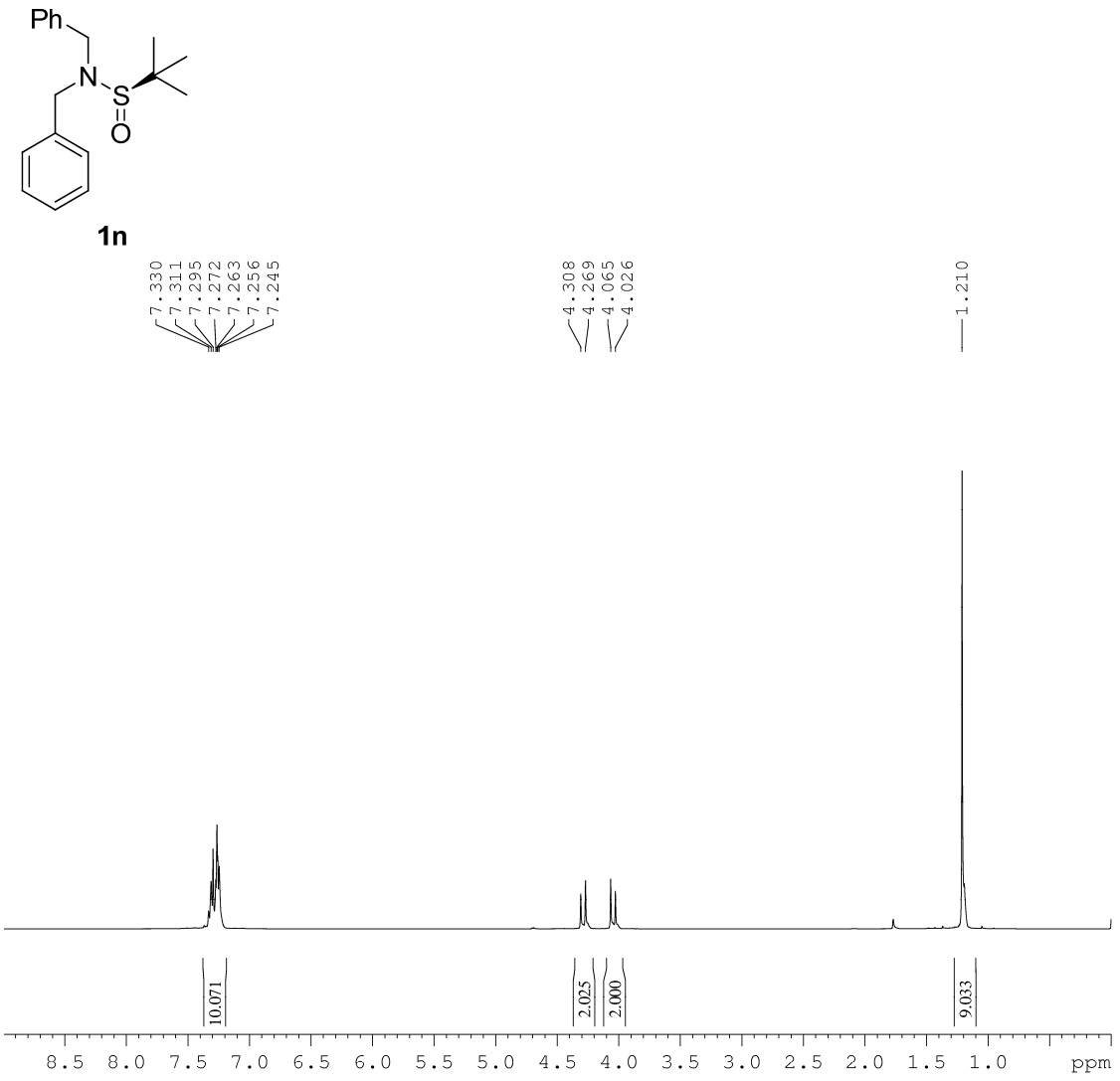
7.346 7.343 7.327 7.324 7.260 7.202 7.198 7.181 7.163 7.160 7.082 7.063 7.000 6.981 6.963 5.796 5.778 5.770 5.760 5.753 5.735 5.728 5.717 5.710 5.692 5.224 5.207 5.189 5.111 5.108 5.065 5.056 5.030 4.355 4.339 4.336 4.321 3.455 3.152 2.598 2.583 2.564 2.548 2.533 2.479 2.459 2.441 2.425 2.406




```
NAME          22011000147
EXPNO                1161
PROCNO                  1
Date_            20130824
Time                 9.57
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                   20.4
DW                 62.400 usec
DE                  6.50 usec
TE                 298.8 K
D1              1.00000000 sec
TD0                     1

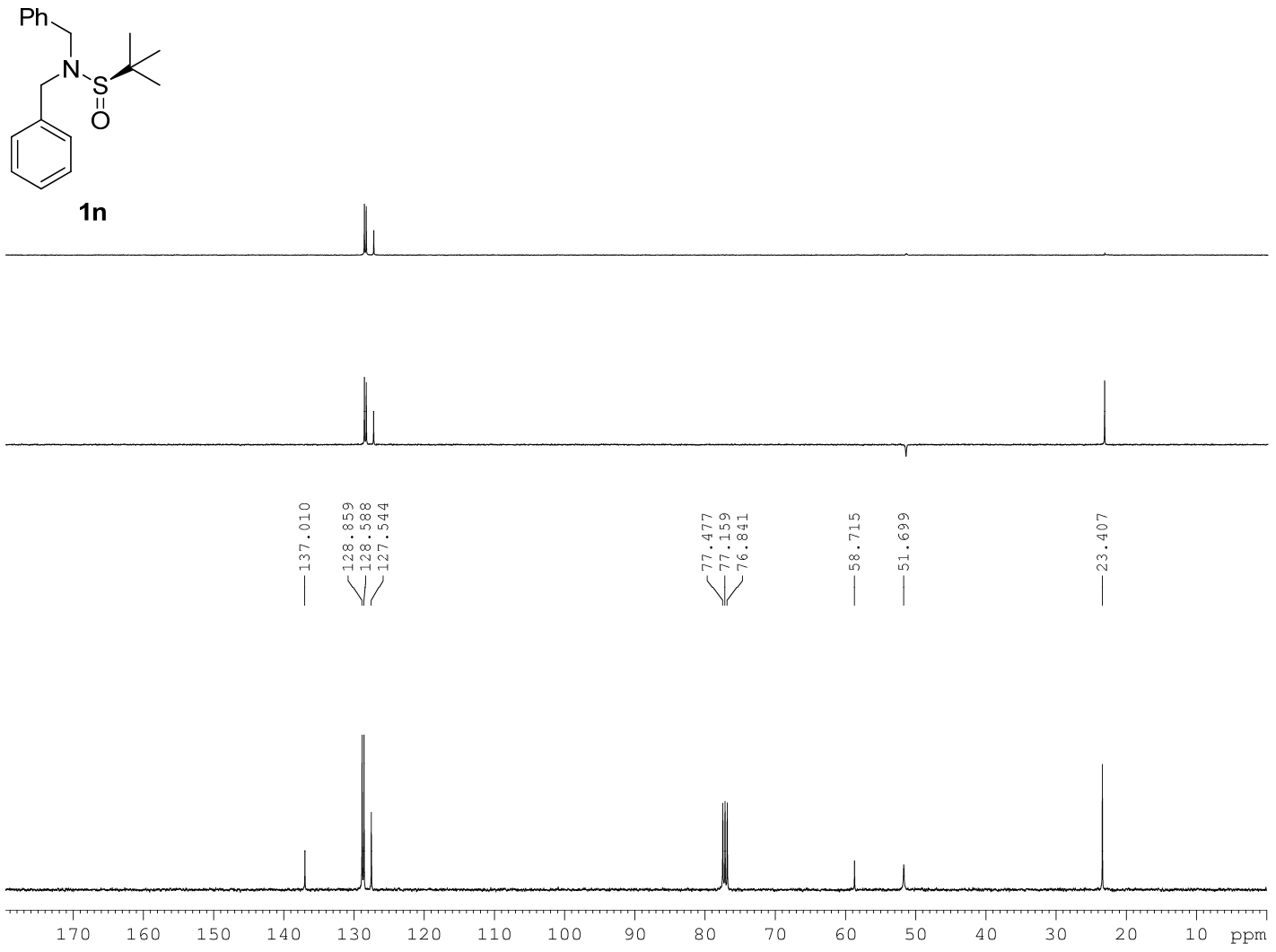
======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                  9.64 usec
SI                 65536
SF           400.1500085 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

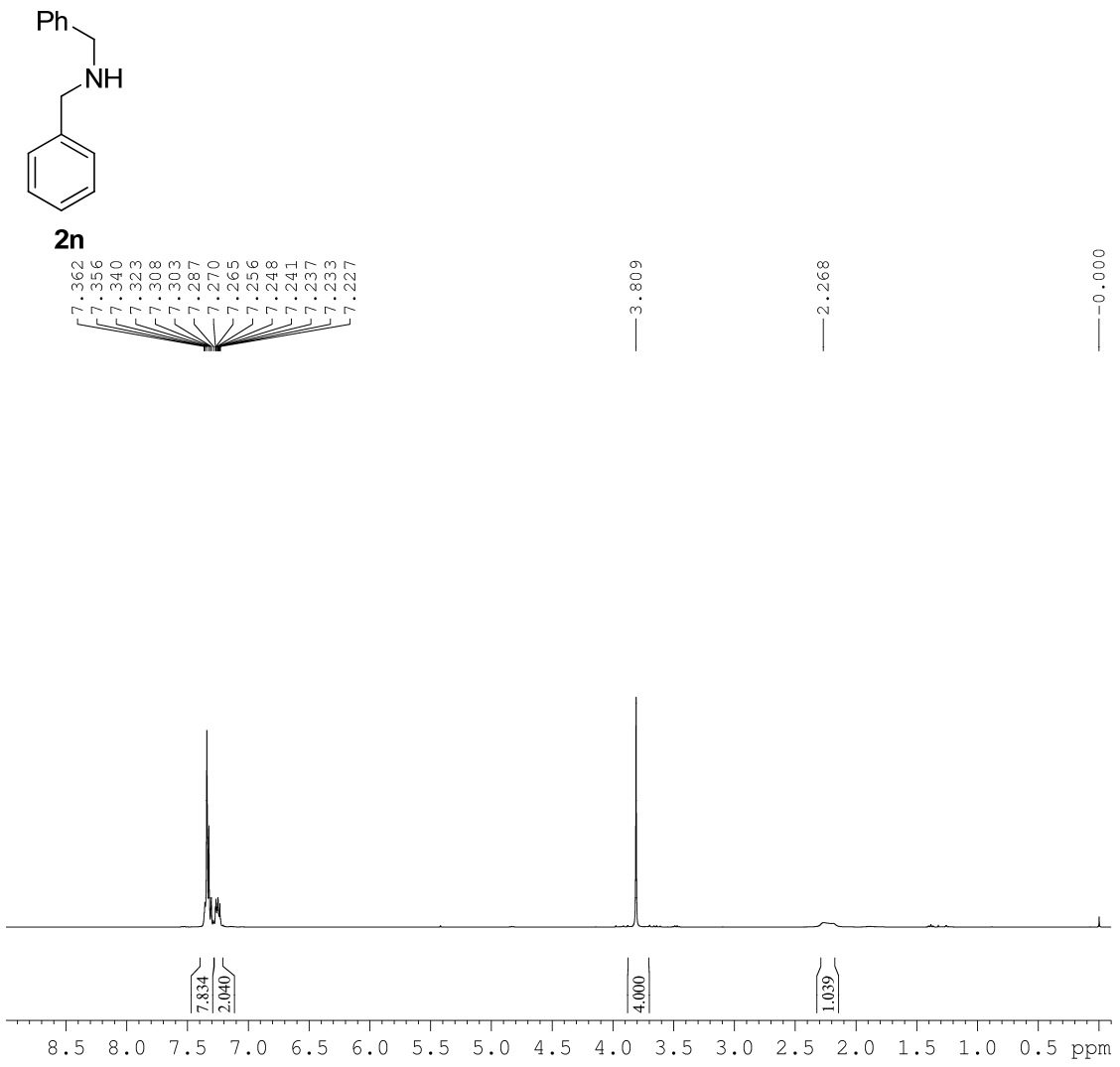

NH2
MOMO
2m
154.487
135.497
133.089
128.127
127.087
12[illegible].897
117.533
114.046
94.527
77.479
77.161
76.843
56.207
50.014
41.521
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

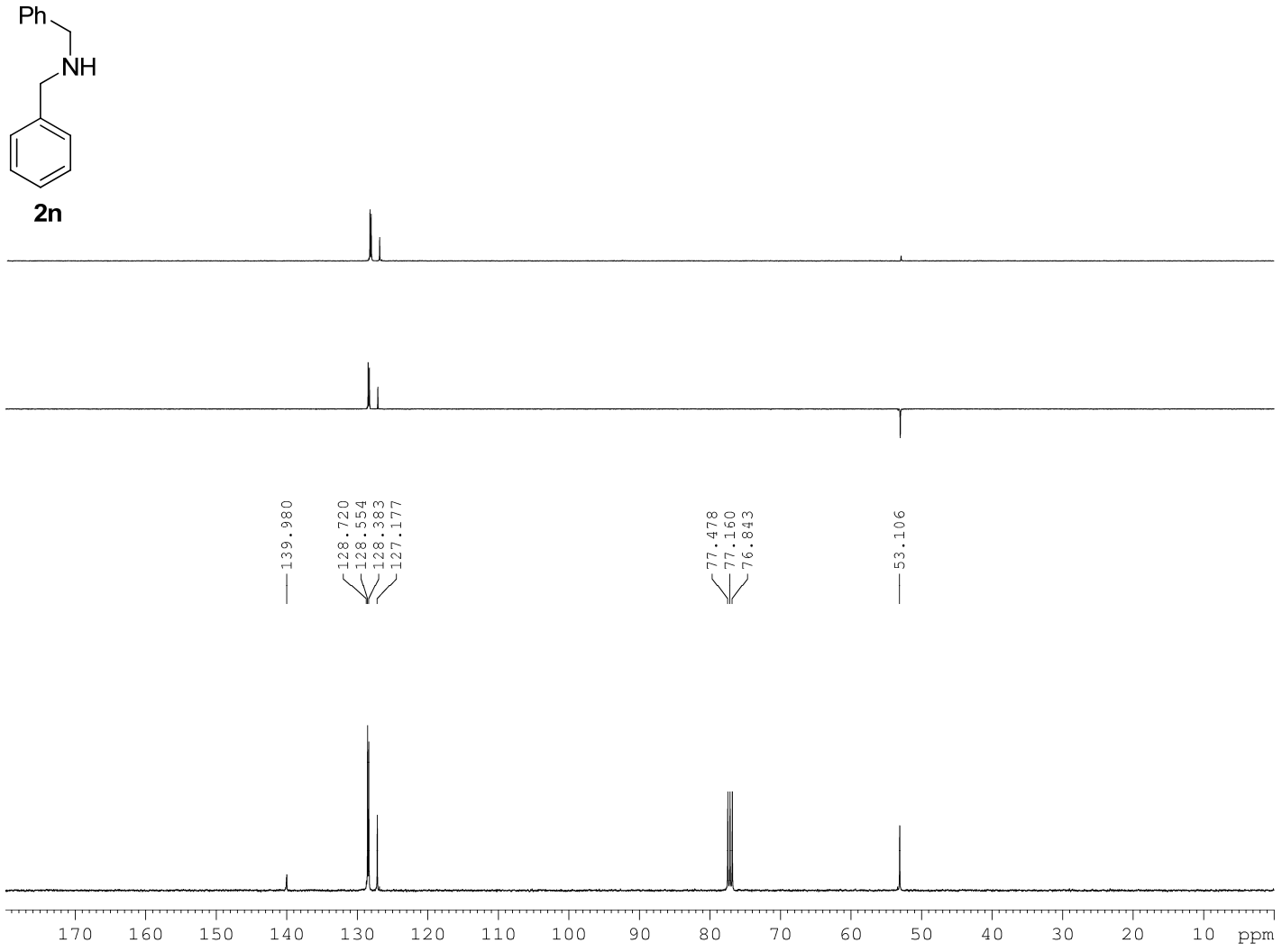


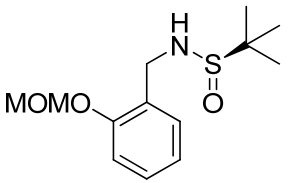

```
NAME          22011000147
EXPNO                1263
PROCNO                  1
Date_            20130829
Time                22.40
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      9
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   31.56
DW                 62.400 usec
DE                  6.50 usec
TE                 299.8 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF           400.1500105 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

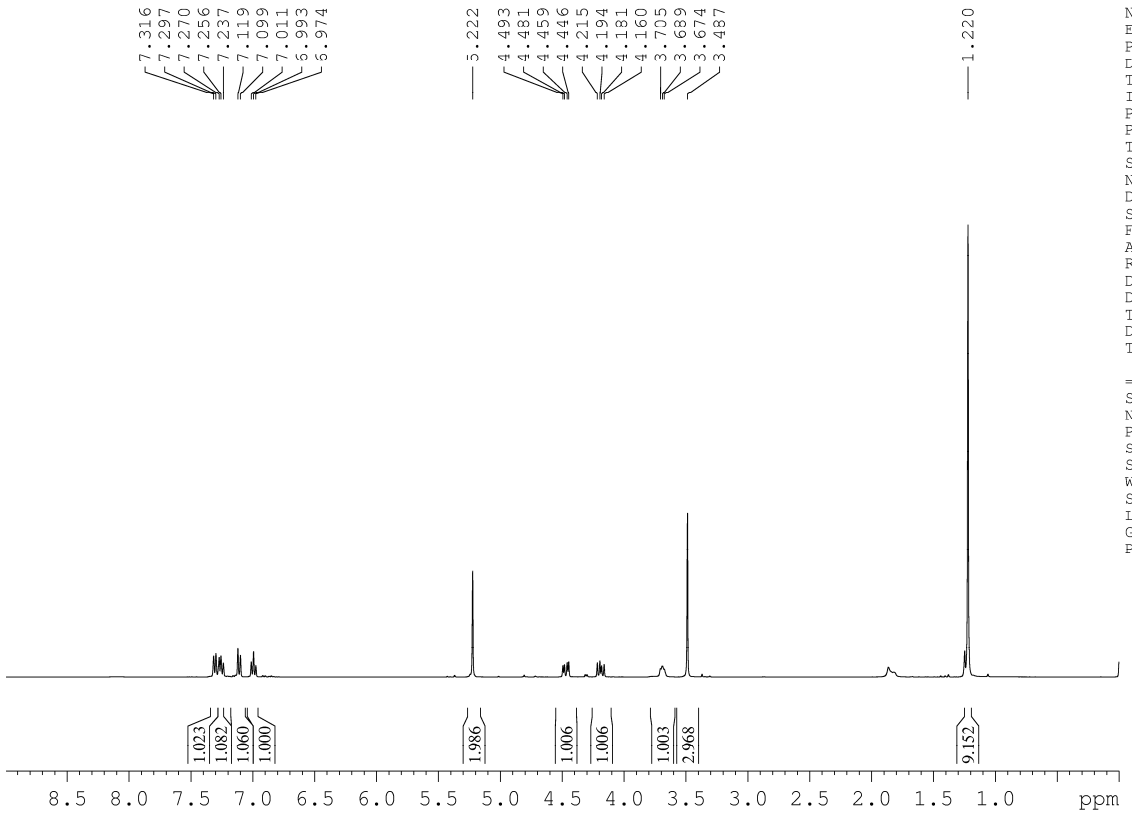

Ph
N
S
O
1n
137.010
128.859
128.588
127.544
77.477
77.159
76.841
58.715
51.699
23.407
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm


Ph
NH
2n
7.362
7.356
7.340
7.323
7.308
7.303
7.287
7.270
7.265
7.256
7.248
7.241
7.237
7.233
7.227
3.809
2.268
0.000
NAME 22011000147
EXPNO 1324
PROCNO 1
Date_ 20130904
Time 11.00
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 52.37
DW 62.400 usec
DE 6.50 usec
TE 298.7 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500192 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.834
2.040
4.000
1.039
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 ppm

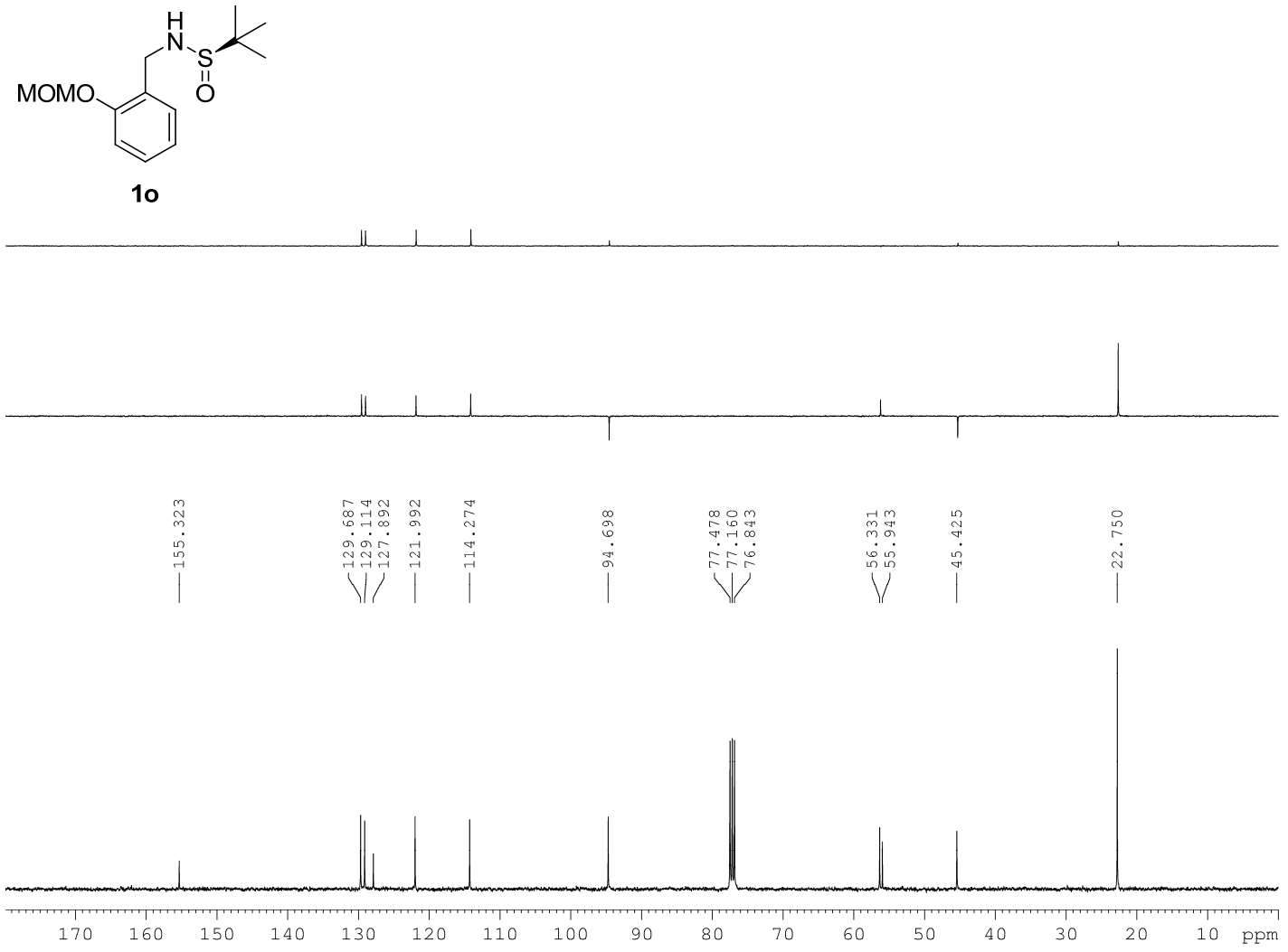

Ph
NH
2n
139.980
128.720
128.554
128.383
127.177
77.478
77.160
76.843
53.106
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

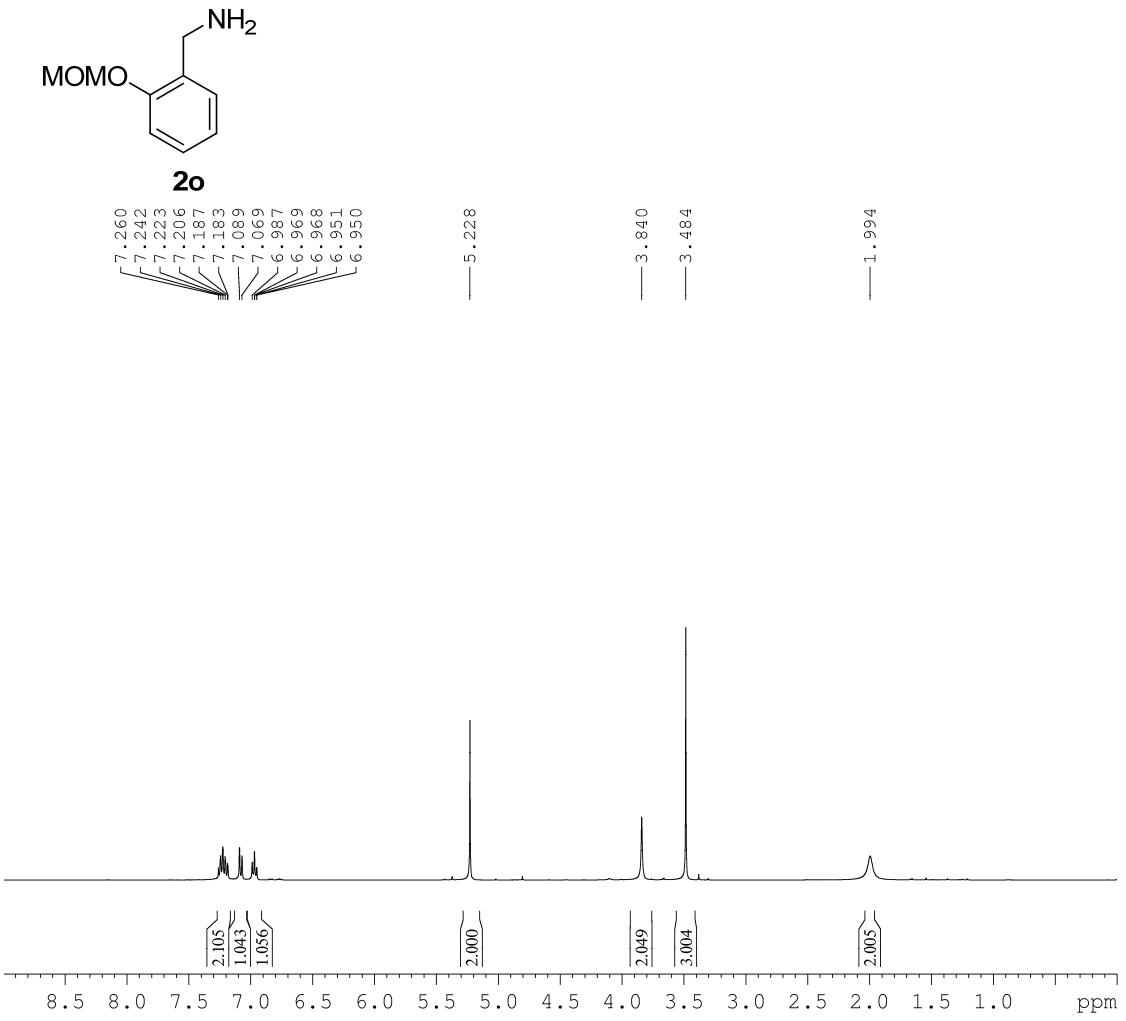


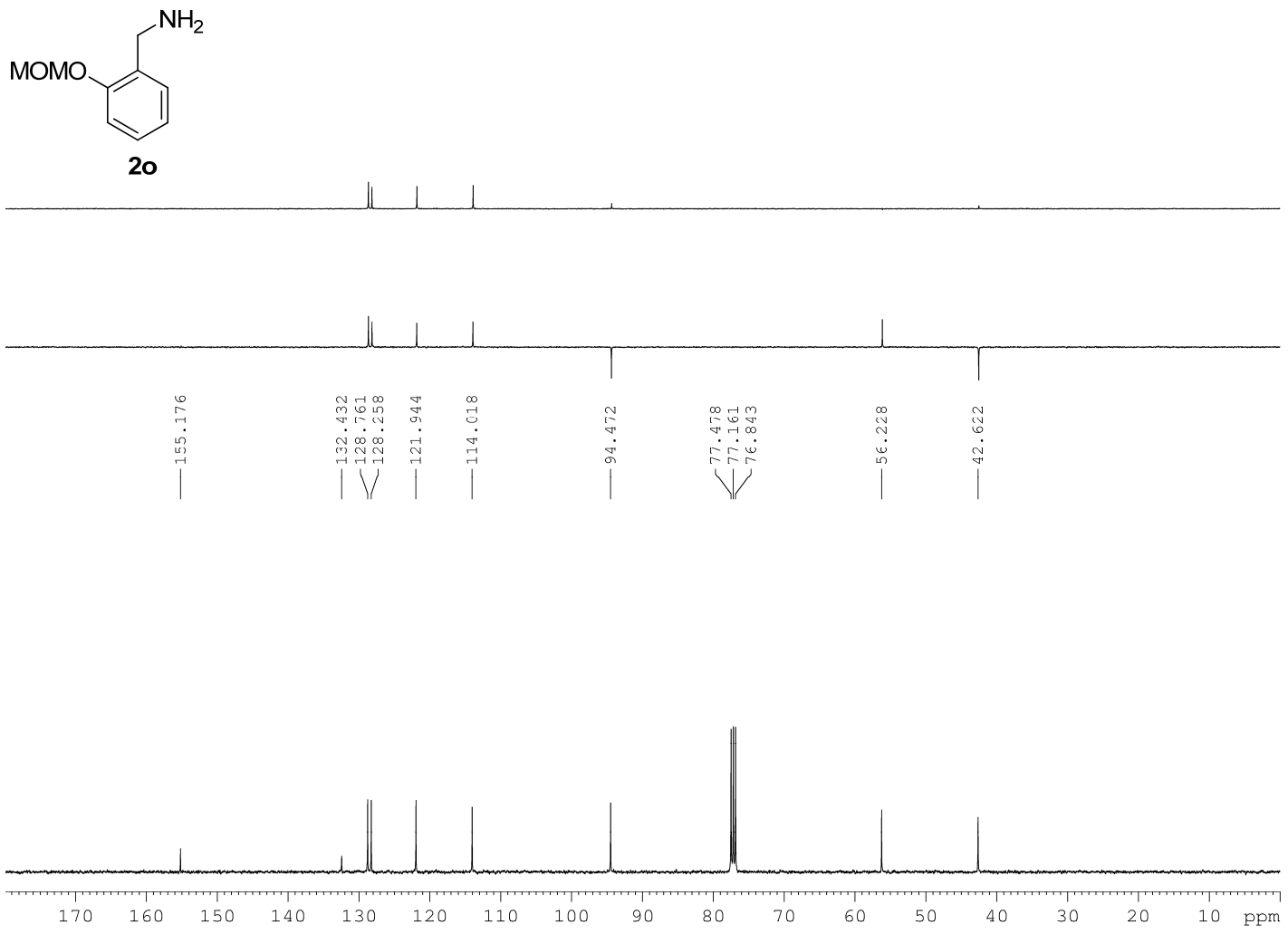
1o

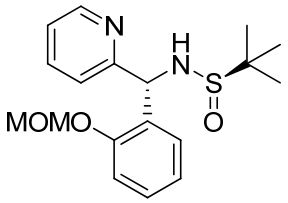


NAME	22011000147
EXPNO	2090
PROCNO	1
Date_	20140104
Time	20.52
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	8
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	55.34
DW	62.400 usec
DE	6.50 usec
TE	293.3 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500044 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

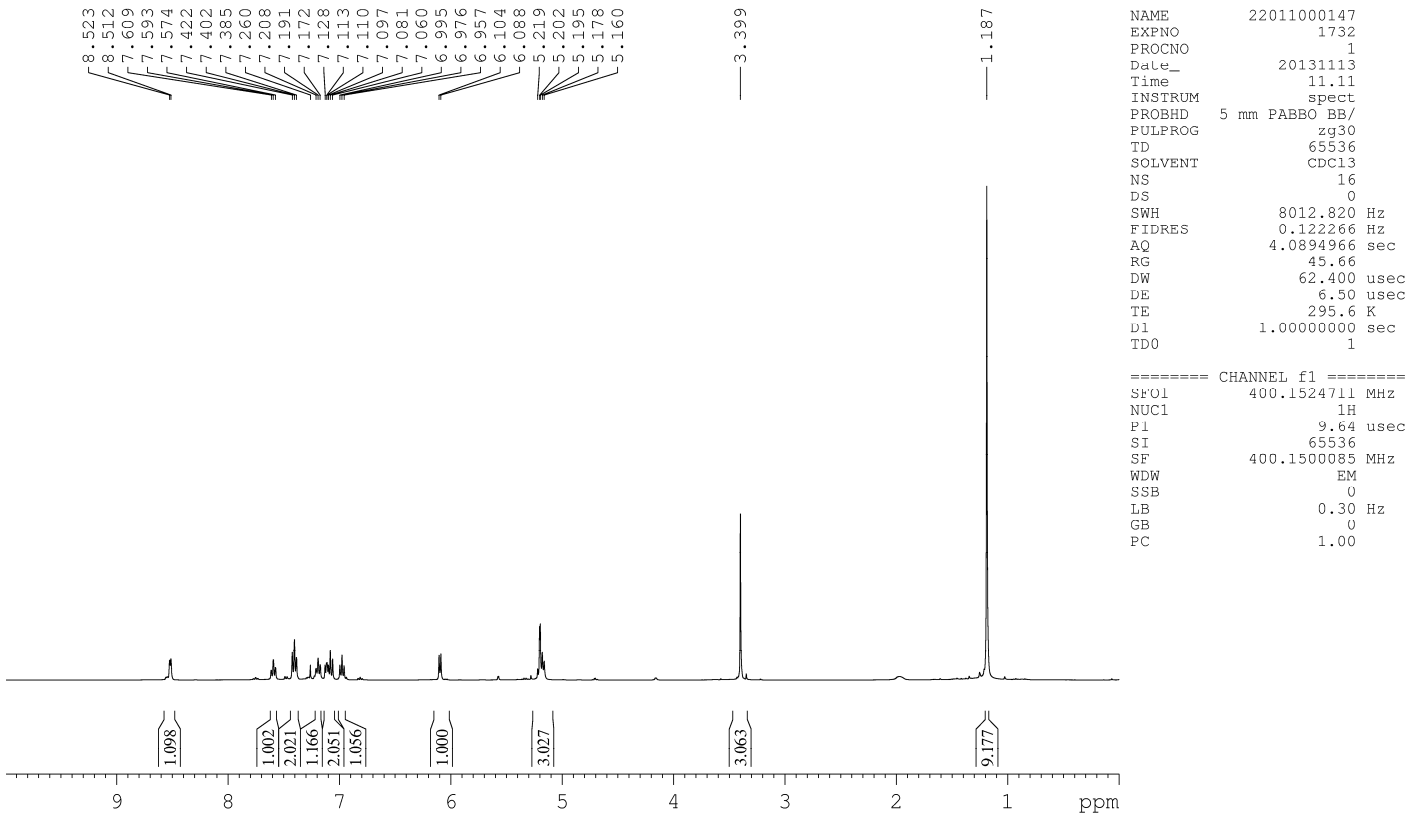

MOMO
H
N
S
O
1o
155.323
129.687
129.114
127.892
121.992
114.274
94.698
77.478
77.160
76.843
56.331
55.943
45.425
22.750
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


NH2
MOMO
2o
7.260
7.242
7.223
7.206
7.187
7.183
7.089
7.069
6.987
6.969
6.968
6.951
6.950
5.228
3.840
3.484
1.994
NAME 22011000147
EXPNO 1561
PROCNO 1
Date_ 20131012
Time 20.41
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 31.56
DW 62.400 usec
DE 6.50 usec
TE 297.7 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500087 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
2.105
1.043
1.056
2.000
2.049
3.004
2.005
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 ppm


NH2
MOMO
2o
155.176
132.432
128.761
128.258
121.944
114.018
94.472
77.478
77.161
76.843
56.228
42.622
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

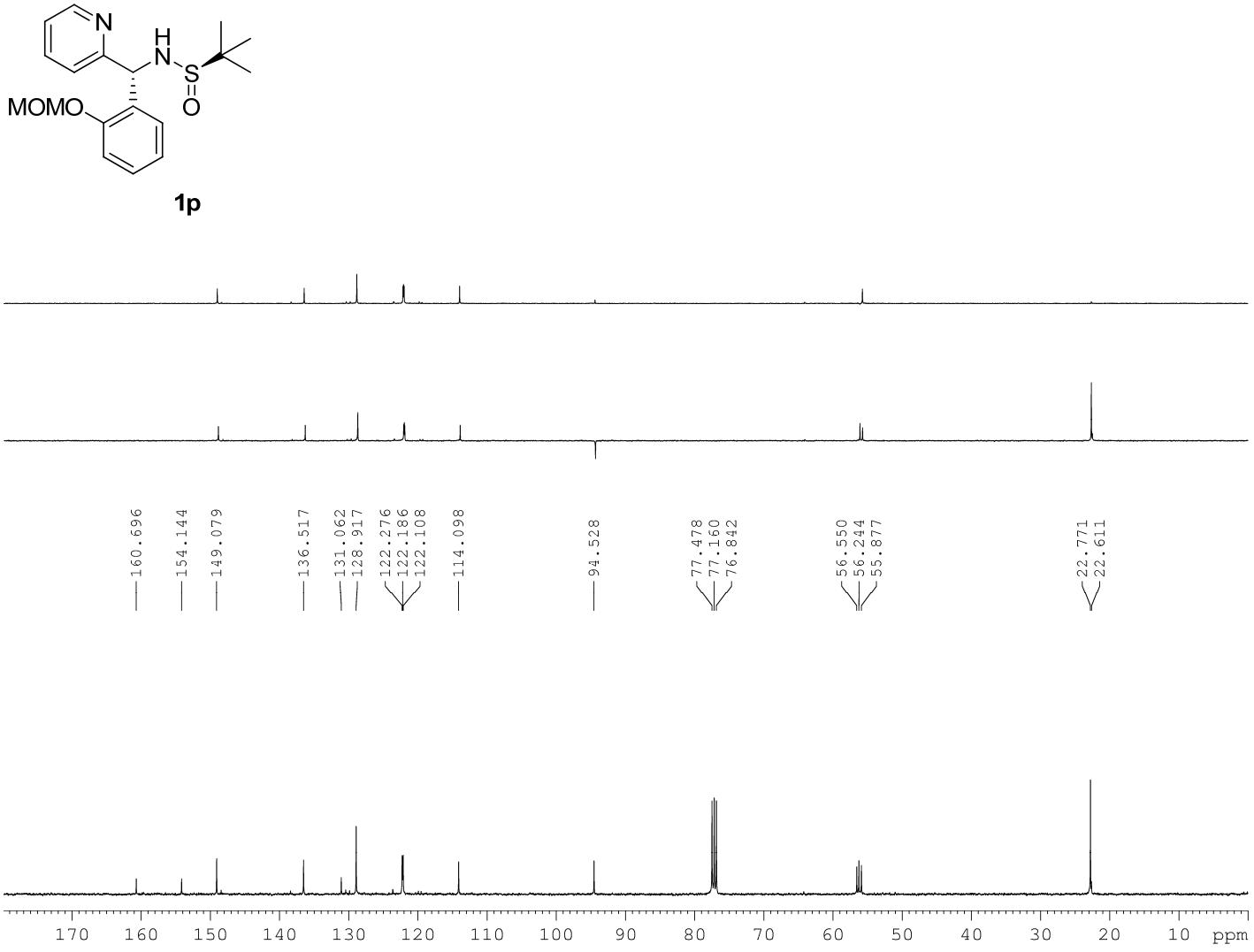


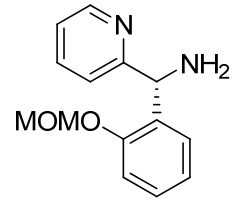
1p



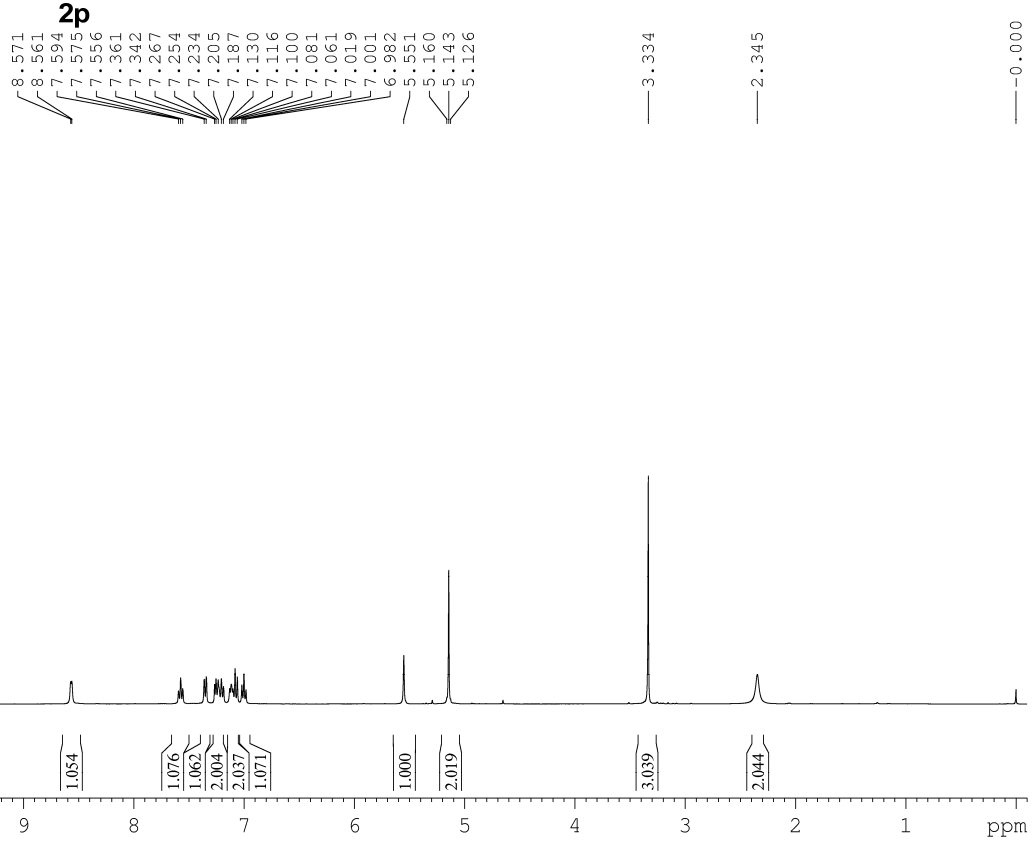

```
NAME          22011000147
EXPNO                1732
PROCNO                  1
Date_            20131113
Time                11.11
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  45.66
DW                62.400 usec
DE                 6.50 usec
TE                295.6 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF           400.1500085 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

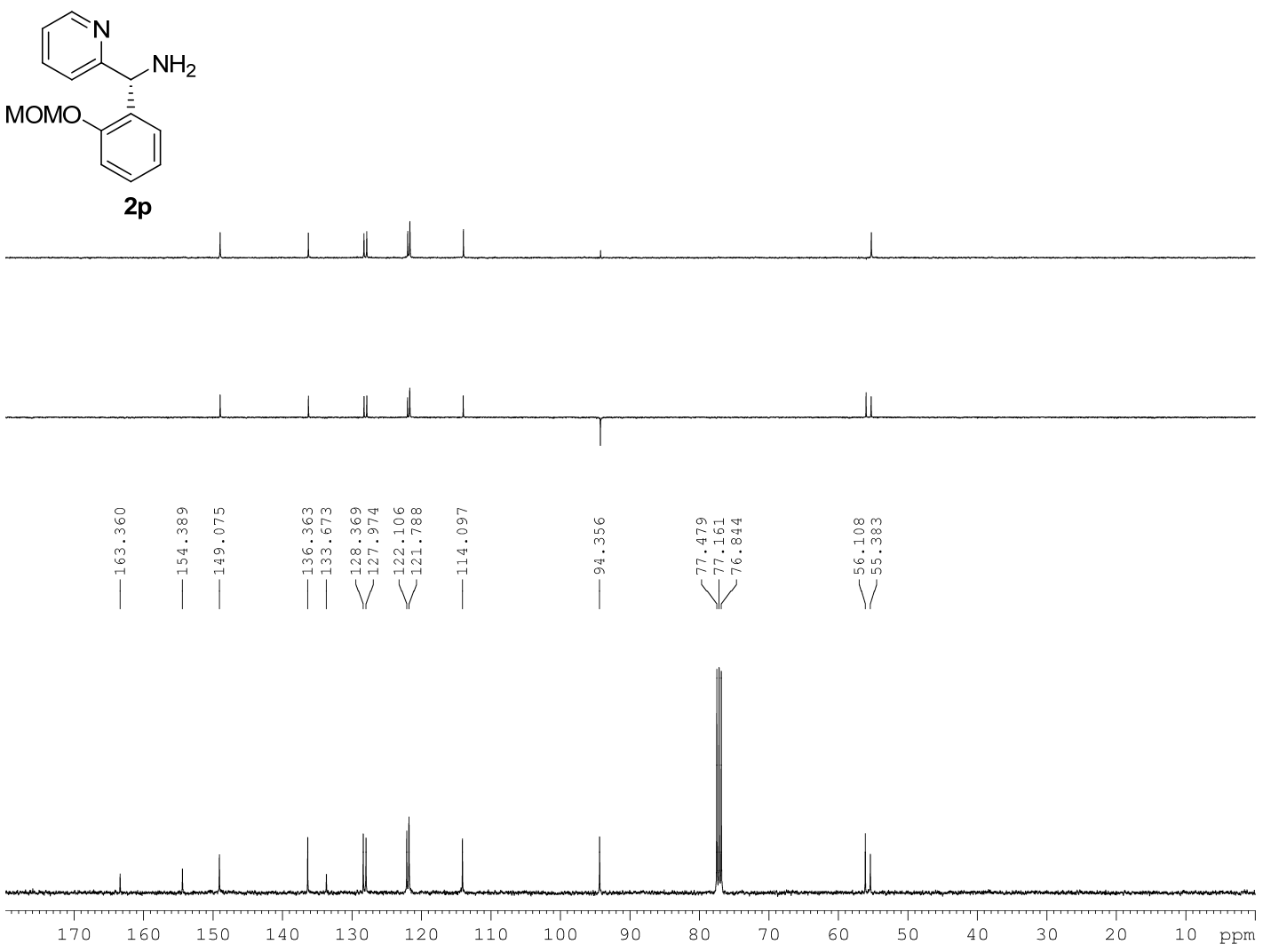

N
H
N
S
O
MOMO
1p
160.696
154.144
149.079
136.517
131.062
128.917
122.276
122.186
122.108
114.098
94.528
77.478
77.160
76.842
56.550
56.244
55.877
22.771
22.611
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

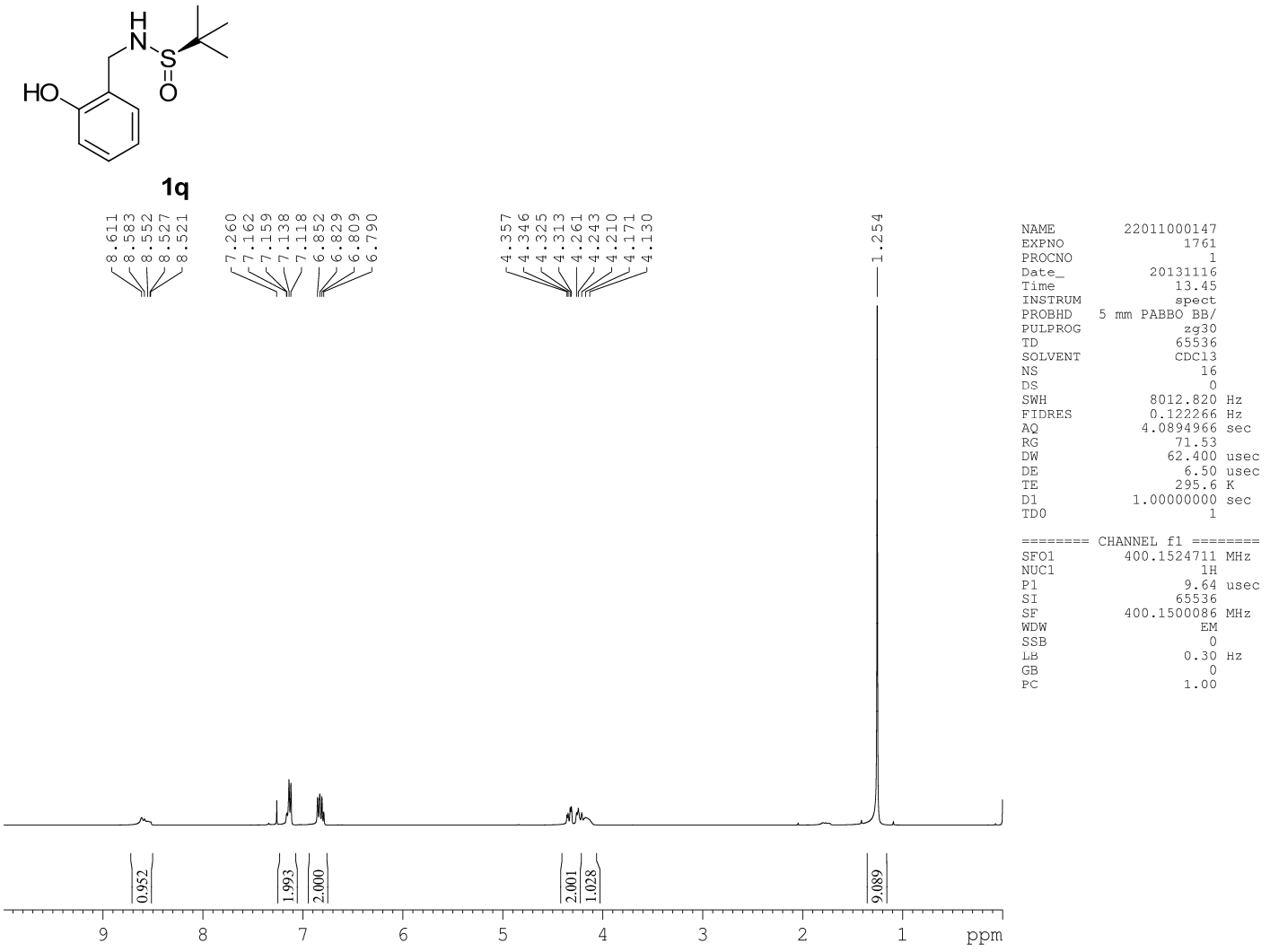


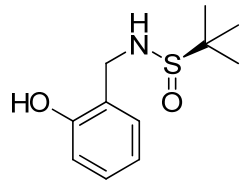
2p



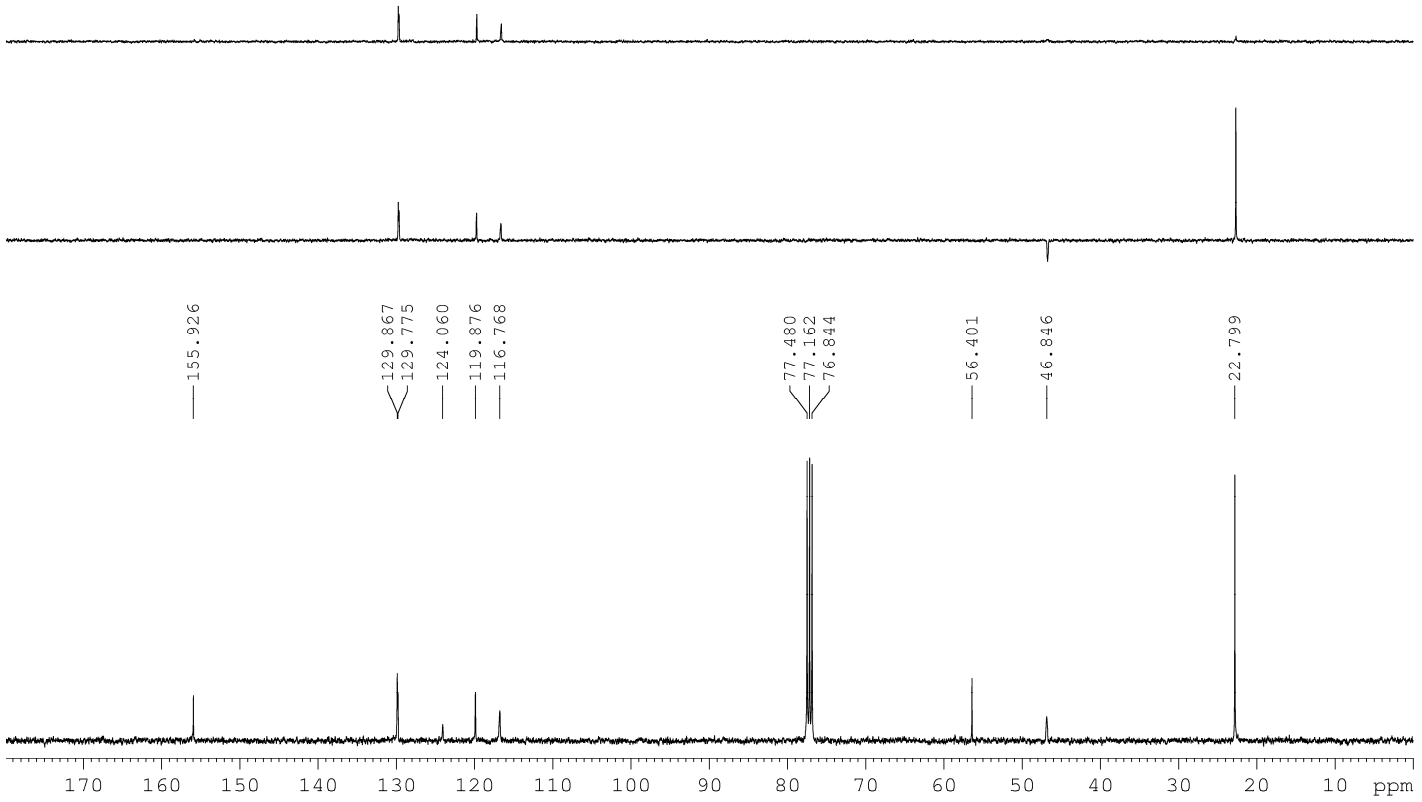
NAME	22011000147
EXPNO	1757
PROCNO	1
Date_	20131115
Time	13.13
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	11
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	55.34
DW	62.400 usec
DE	6.50 usec
TE	295.4 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500056 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

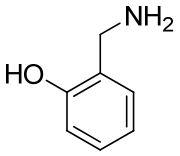

N
NH2
MOMO
2p
163.360
154.389
149.075
136.363
133.673
128.369
127.974
122.106
121.788
114.097
94.356
77.479
77.161
76.844
56.108
55.383
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm


1q
8.611
8.583
8.552
8.527
8.521
7.260
7.162
7.159
7.138
7.118
6.852
6.829
6.809
6.790
4.357
4.346
4.325
4.313
4.261
4.243
4.210
4.171
4.130
1.254
NAME 22011000147
EXPNO 1761
PROCNO 1
Date_ 20131116
Time 13.45
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 71.53
DW 62.400 usec
DE 6.50 usec
TE 295.6 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500086 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
0.952
1.993
2.000
2.001
1.028
9.089
9
8
7
6
5
4
3
2
1
ppm

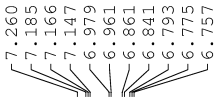

H
N
S
O
HO

1q


155.926
129.867
129.775
124.060
119.876
116.768
77.480
77.162
76.844
56.401
46.846
22.799
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

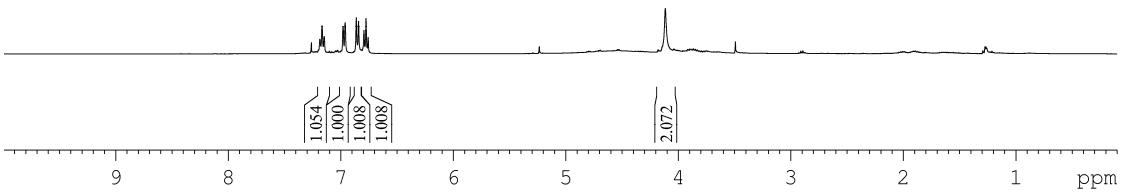


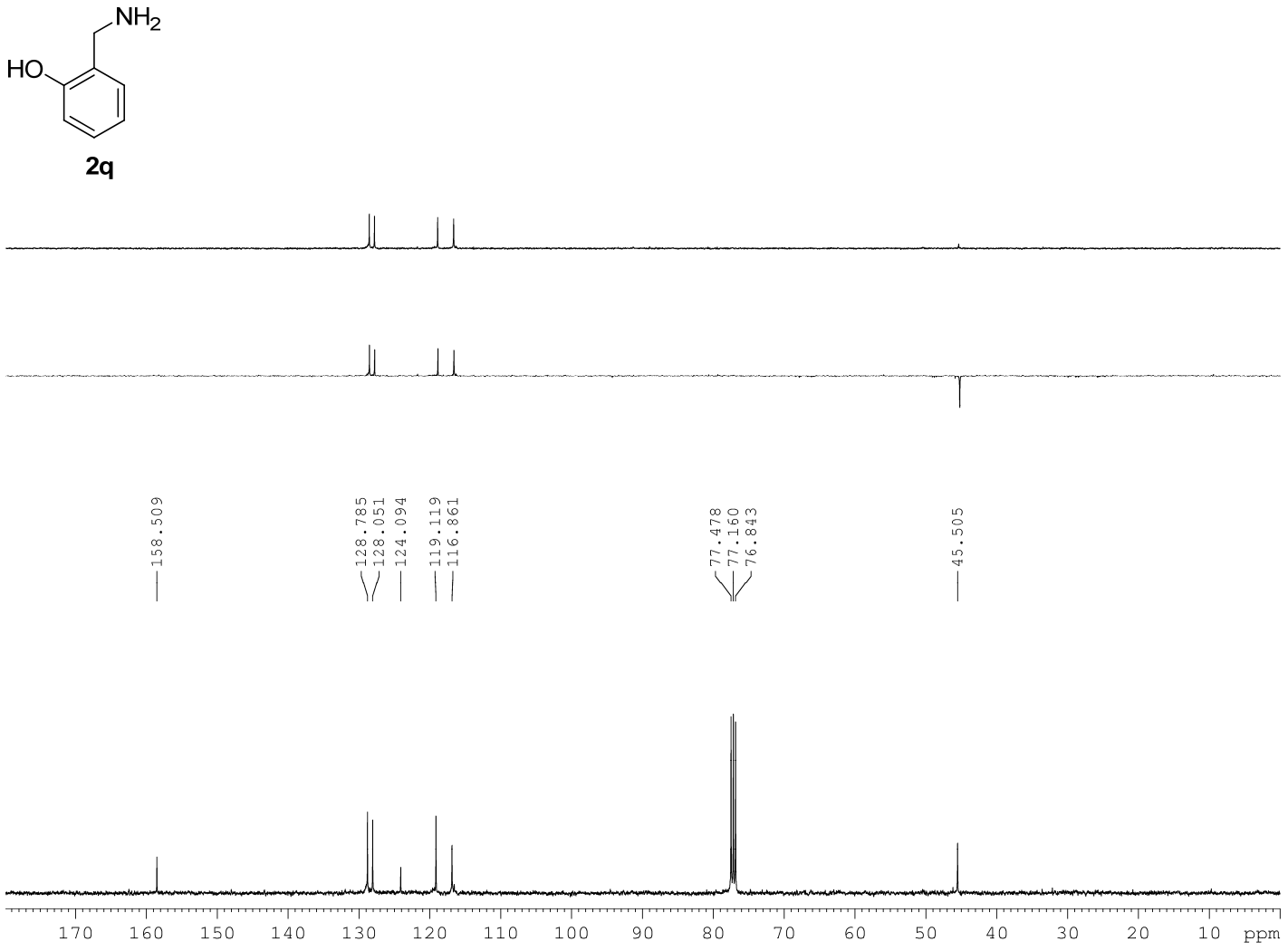
2q

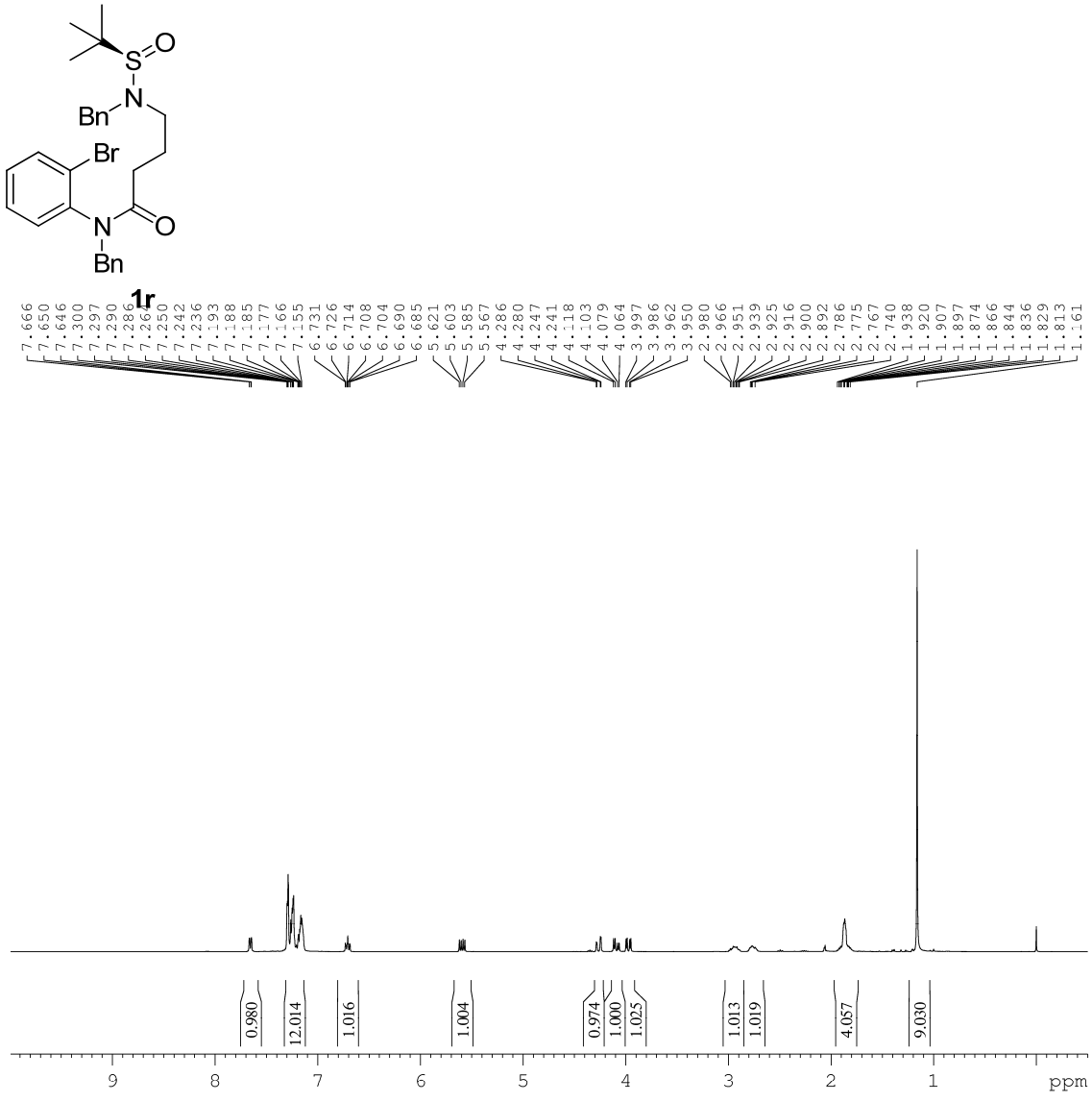



```
NAME          22011000147
EXPNO                1275
PROCNO                  1
Date_            20130829
Time                22.00
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   36.33
DW                  62.400 usec
DE                    6.50 usec
TE                   299.4 K
D1            1.00000000 sec
TD0                     1

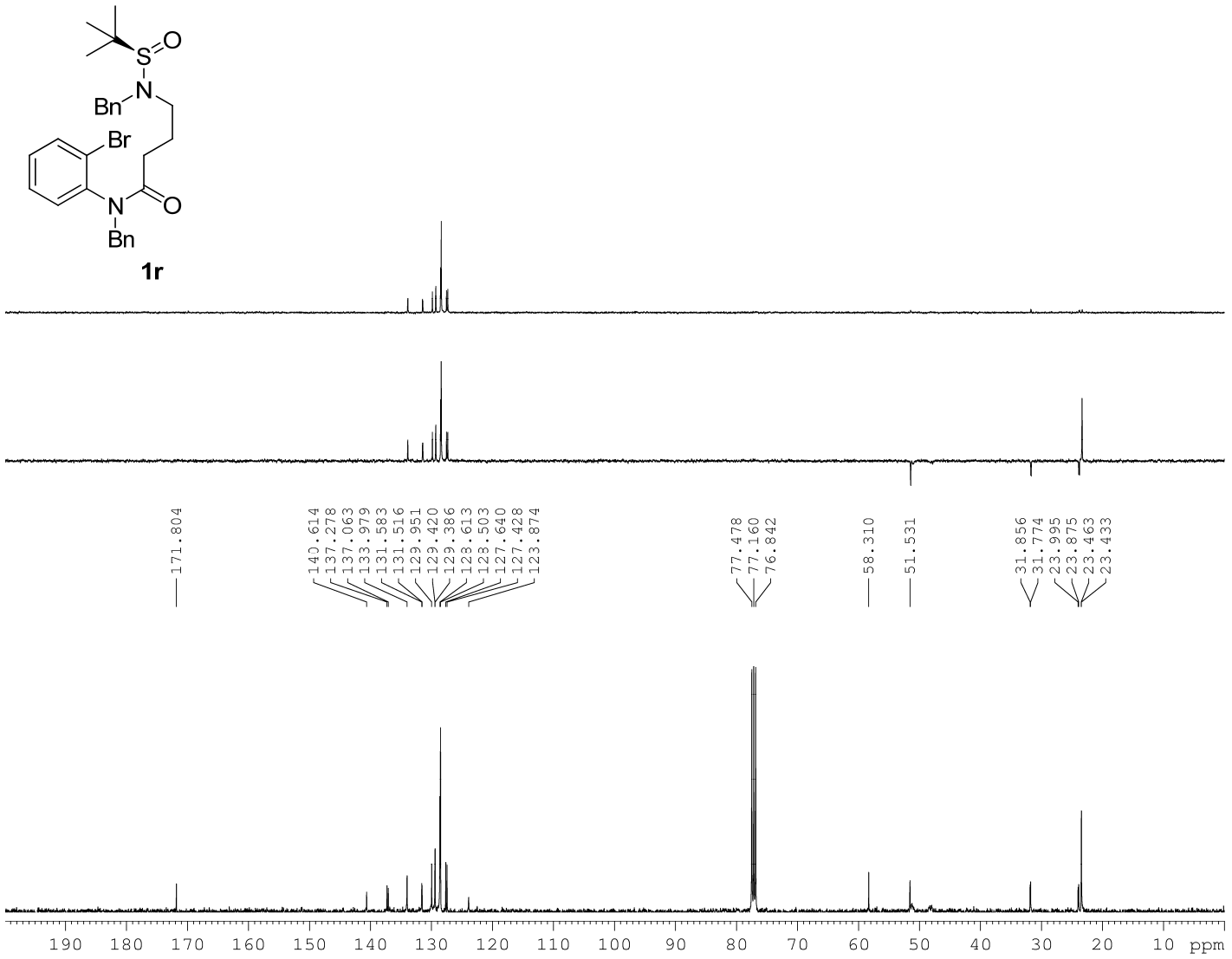
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500081 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

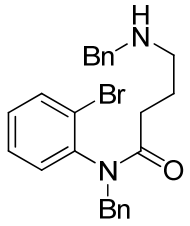



NH2
HO
2q
158.509
128.785
128.051
124.094
119.119
116.861
77.478
77.160
76.843
45.505
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm



NAME	22011000147
EXPNO	1605
PROCNO	1
Date_	20131107
Time	8.22
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	55.34
DW	62.400 usec
DE	6.50 usec
TE	296.1 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500067 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00


1r
171.804
140.614
137.278
137.063
133.979
131.583
131.516
129.951
129.420
129.386
128.613
128.503
127.640
127.428
123.874
77.478
77.160
76.842
58.310
51.531
31.856
31.774
23.995
23.875
23.463
23.433
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

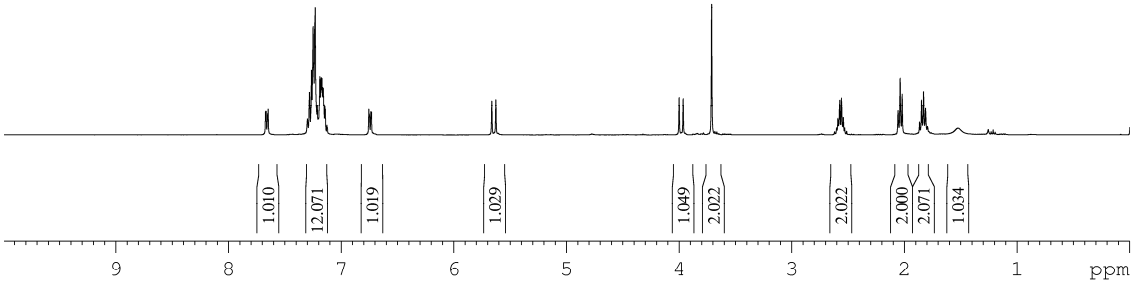


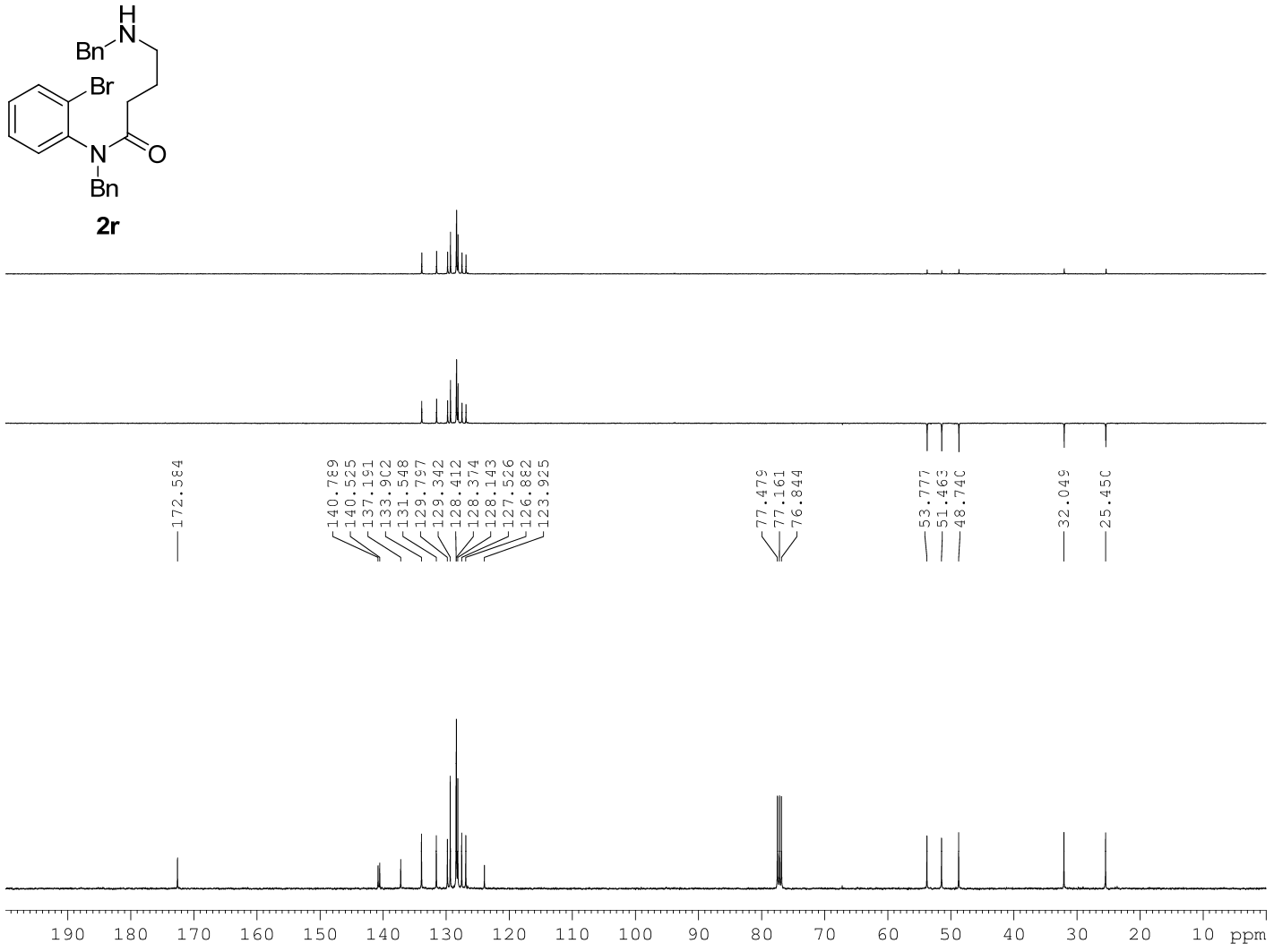
2r

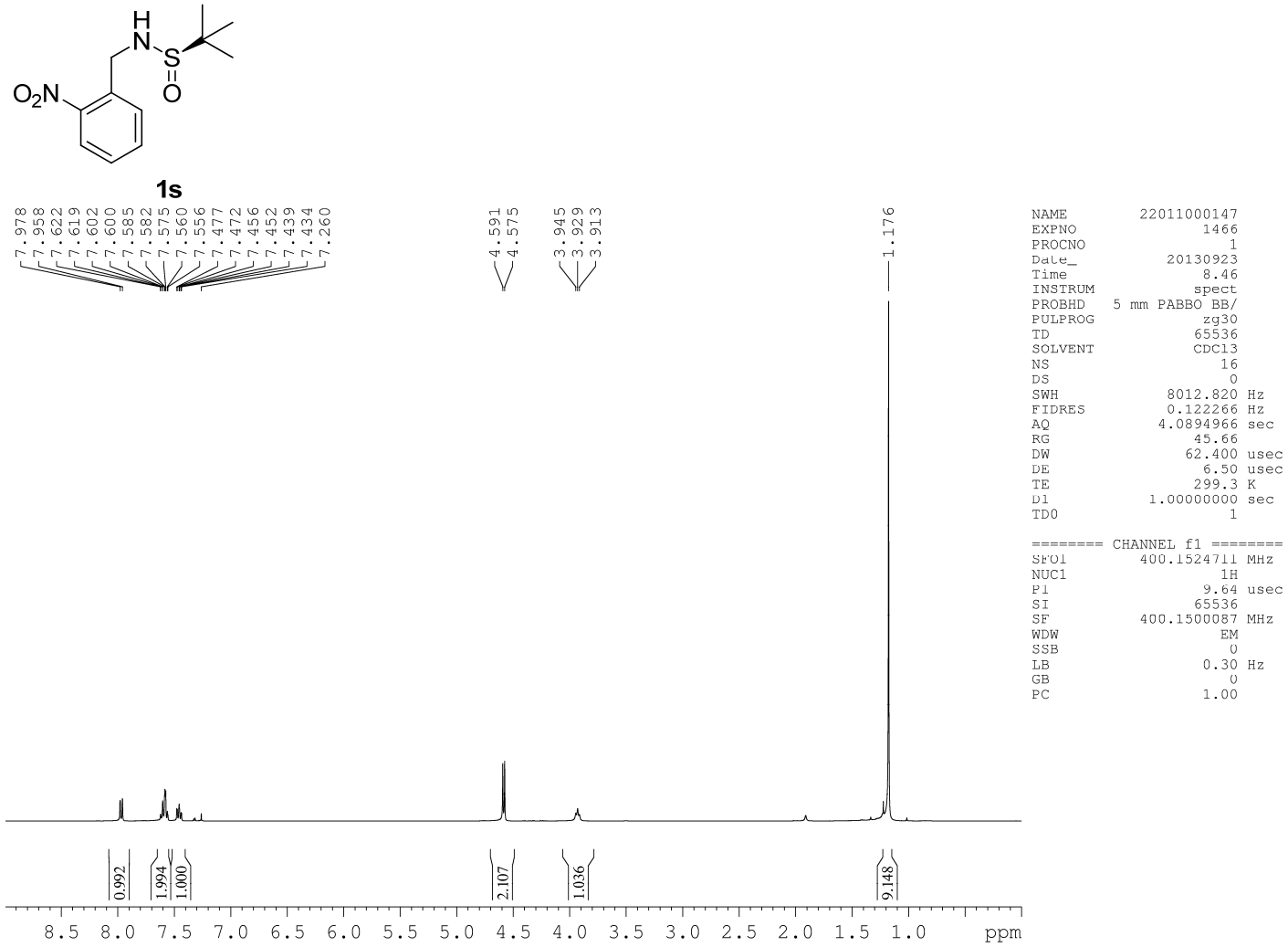
7.672 7.667 7.653 7.649 7.300 7.282 7.264 7.250 7.231 7.213 7.205 7.190 7.178 7.172 7.165 7.160 7.154 7.146 7.142 7.127 7.123 6.755 6.751 6.738 6.732 5.664 5.628

4.000 3.965 3.712 2.620 2.602 2.591 2.574 2.559 2.549 2.542 2.531 2.513 2.057 2.038 2.020 1.866 1.848 1.831 1.813 1.796 1.781 1.525

NAME	22011000147
EXPNO	1677
PROCNO	1
Date_	20131106
Time	17.29
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	20.4
DW	62.400 usec
DE	6.50 usec
TE	295.6 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500123 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

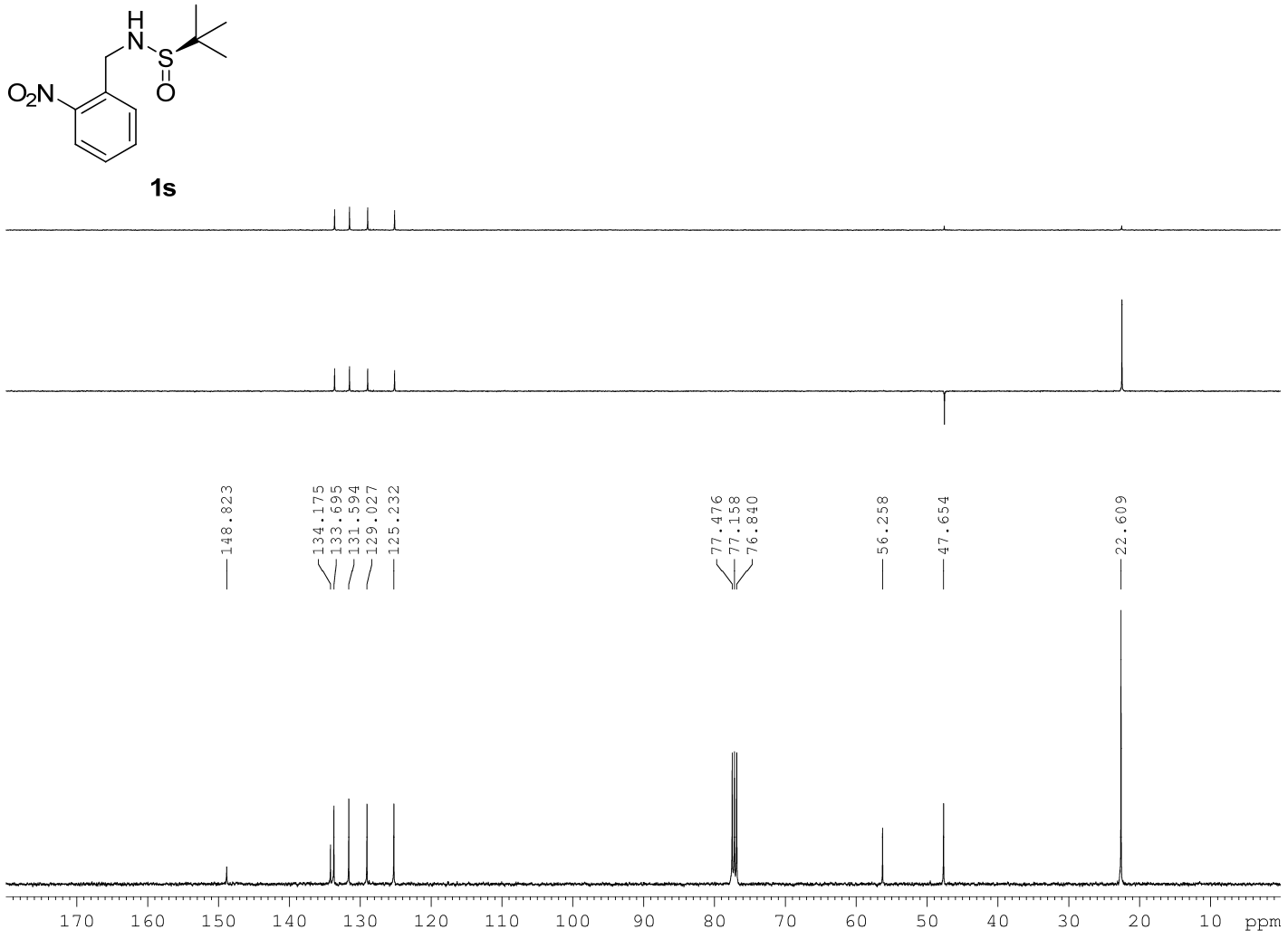


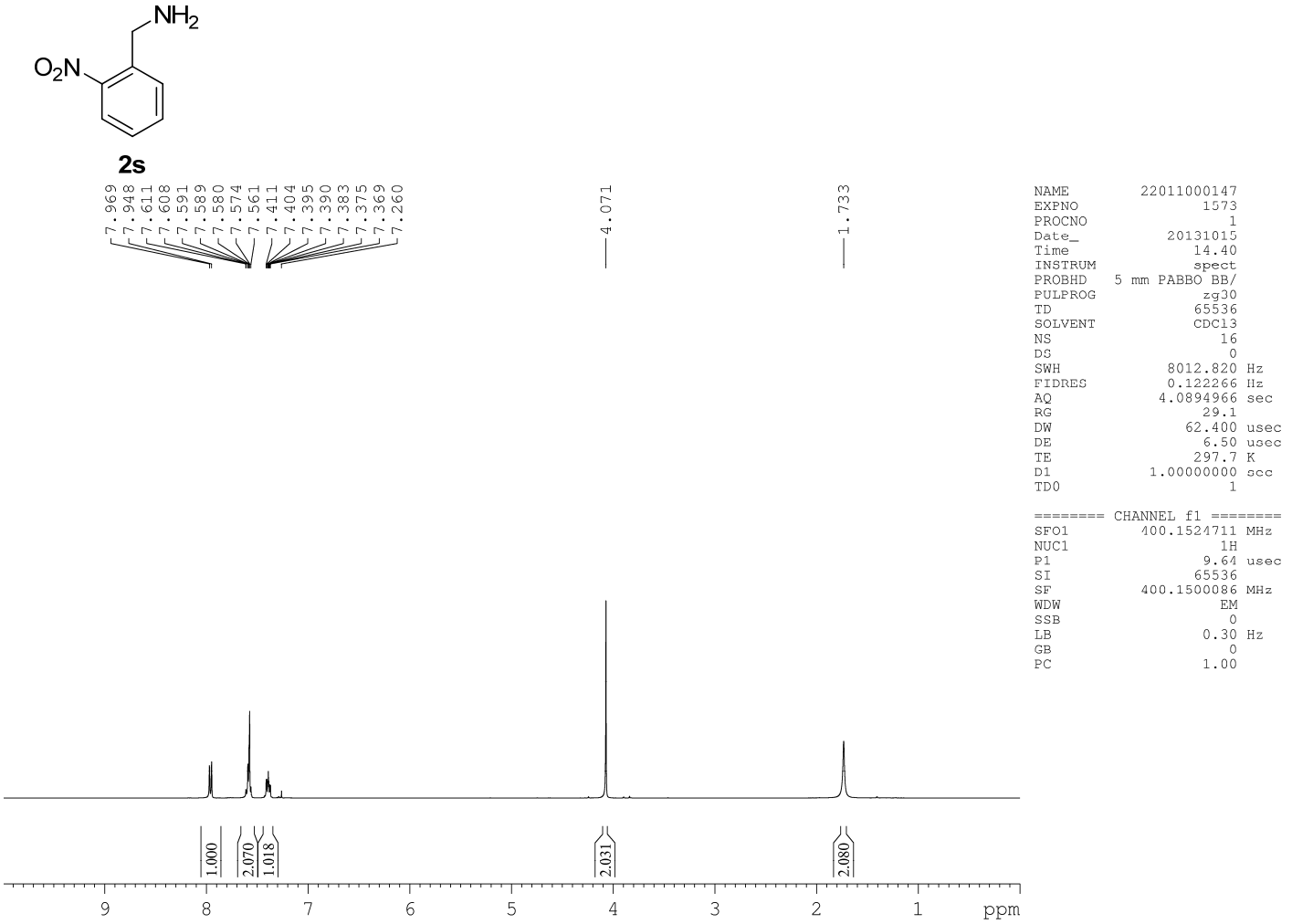

H
N
Bn
Br
N
O
Bn
2r
172.584
140.769
140.525
137.191
133.962
131.548
129.757
129.342
128.412
128.374
128.143
127.526
126.882
123.925
77.479
77.161
76.844
53.777
51.463
48.740
32.049
25.450
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

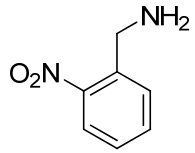



```
NAME          22011000147
EXPNO                1466
PROCNO                  1
Date_            20130923
Time                 8.46
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  45.66
DW                62.400 usec
DE                 6.50 usec
TE                299.3 K
D1             1.00000000 sec
TD0                     1

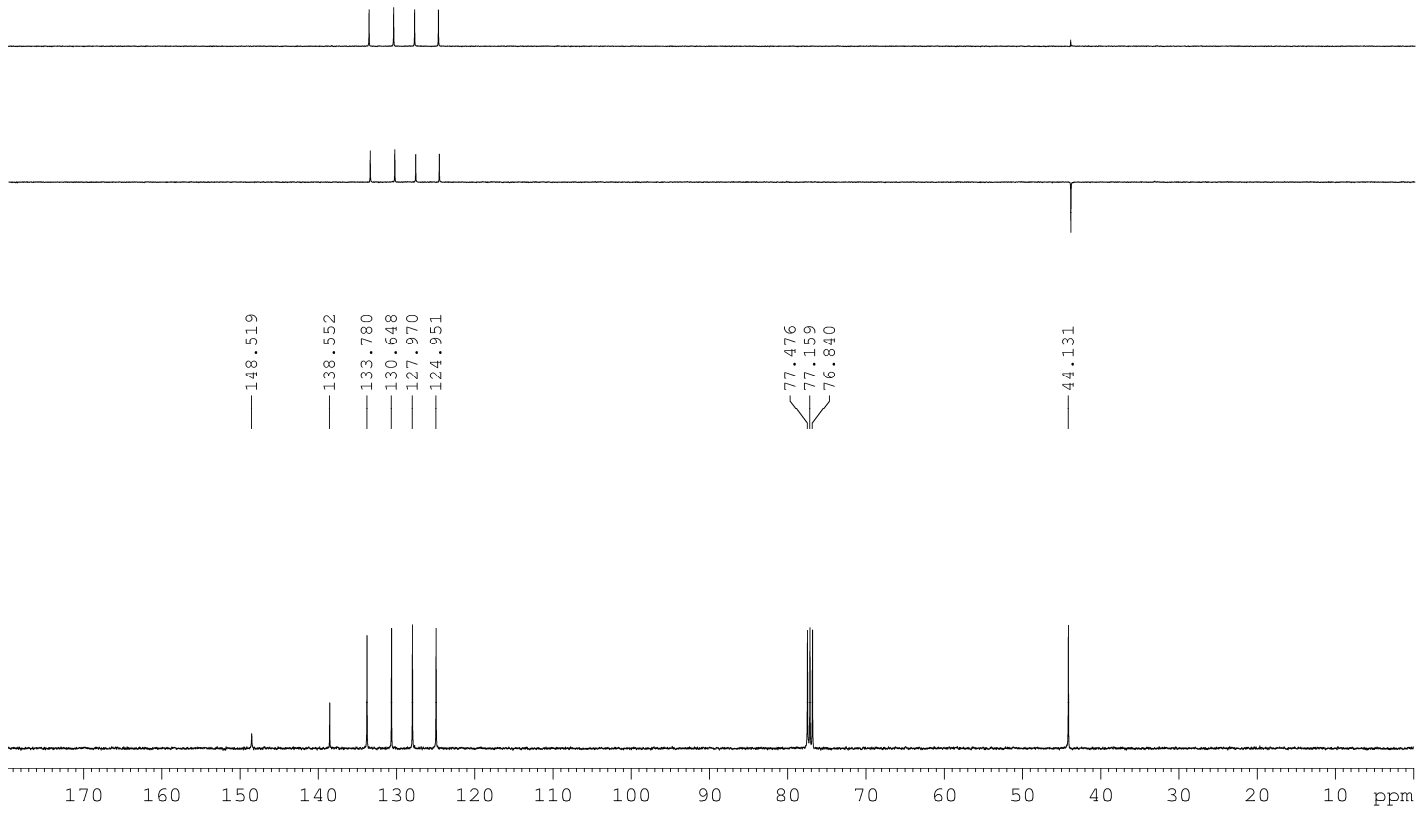
======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF           400.1500087 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

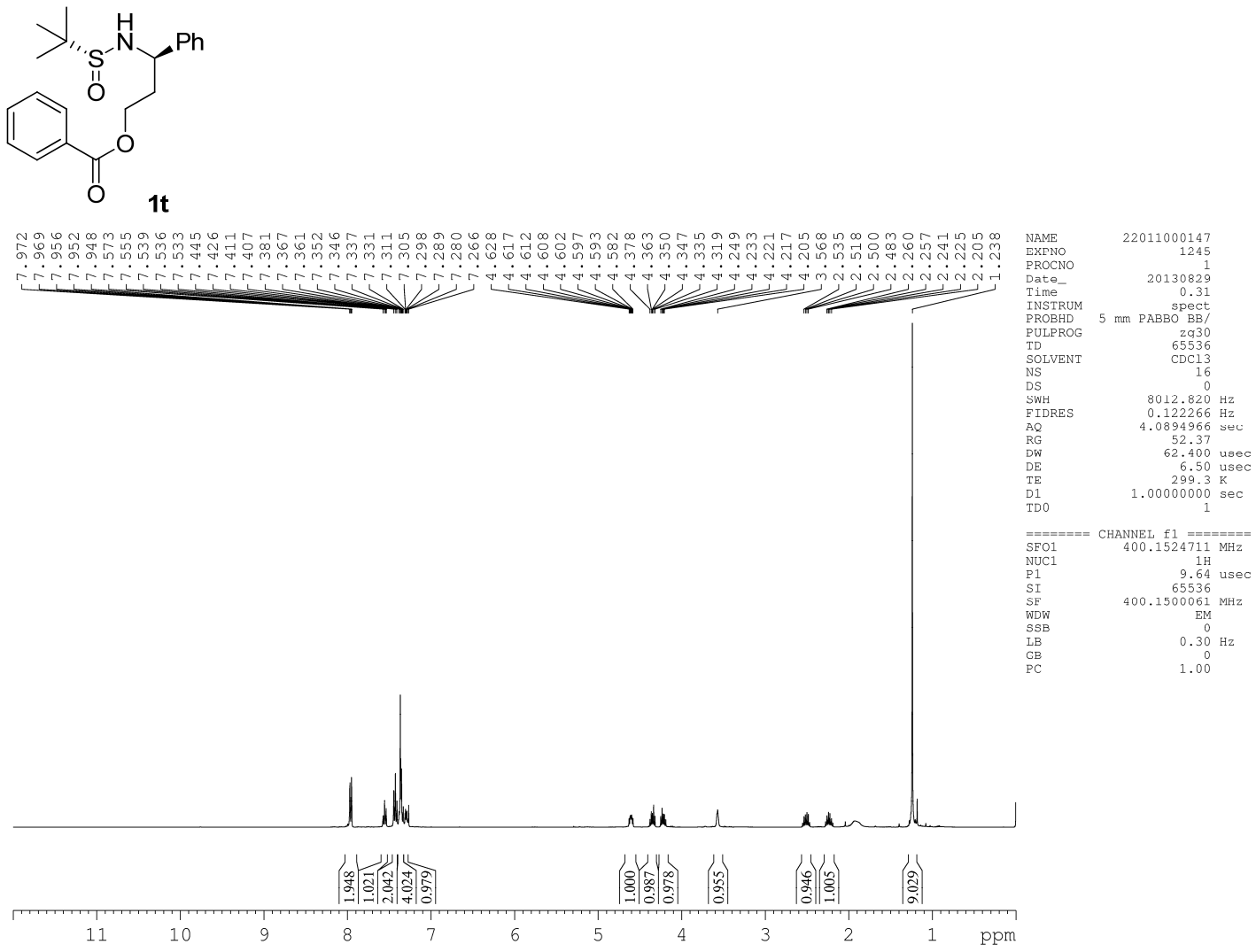

1s
148.823
134.175
133.695
131.594
129.027
125.232
77.476
77.158
76.840
56.258
47.654
22.609
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

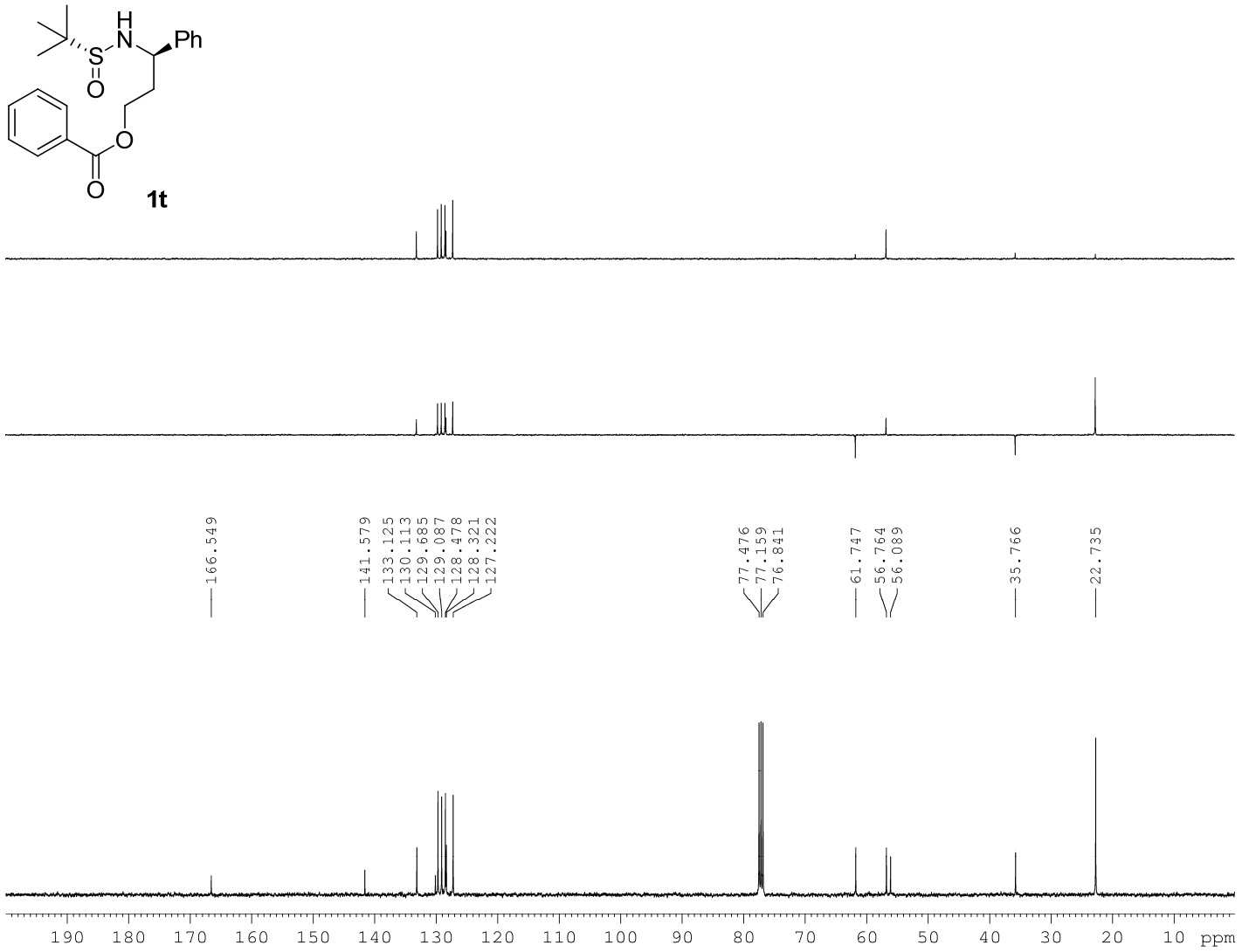

NH2
O2N
2s
7.969
7.948
7.611
7.608
7.591
7.589
7.580
7.574
7.561
7.411
7.404
7.395
7.390
7.383
7.375
7.369
7.260
4.071
1.733
NAME 22011000147
EXPNO 1573
PROCNO 1
Date_ 20131015
Time 14.40
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 29.1
DW 62.400 usec
DE 6.50 usec
TE 297.7 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500086 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1.000
2.070
1.018
2.031
2.080
9
8
7
6
5
4
3
2
1
ppm

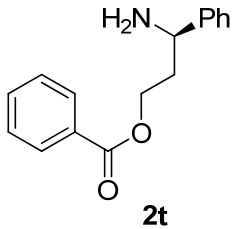

NH2
O2N

2s

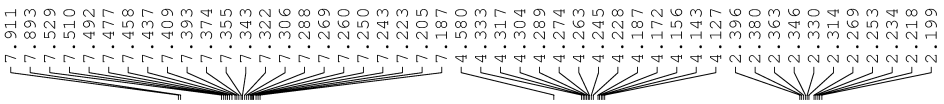

148.519
138.552
133.780
130.648
127.970
124.951
77.476
77.159
76.840
44.131
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


1t
7.972 7.969 7.956 7.952 7.948 7.573 7.555 7.539 7.536 7.533 7.445 7.426 7.411 7.407 7.381 7.367 7.361 7.352 7.346 7.337 7.331 7.311 7.305 7.298 7.289 7.280 7.266
4.628 4.617 4.612 4.608 4.602 4.597 4.593 4.582 4.378 4.363 4.350 4.347 4.335 4.319 4.249 4.233 4.221 4.217 4.205
3.568 2.535 2.518 2.500 2.483 2.260 2.257 2.241 2.225 2.205 1.238
NAME 22011000147
EXPNO 1245
PROCNO 1
Date_ 20130829
Time 0.31
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 52.37
DW 62.400 usec
DE 6.50 usec
TE 299.3 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500061 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1.948 1.021 2.042 4.024 0.979 1.000 0.987 0.978 0.955 0.946 1.005 9.029
11 10 9 8 7 6 5 4 3 2 1 ppm


1t
166.549
141.579
133.125
130.113
129.685
129.087
128.478
128.321
127.222
77.476
77.159
76.841
61.747
56.764
56.089
35.766
22.735
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

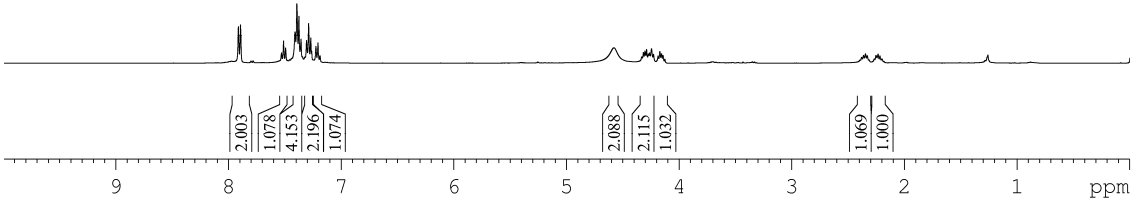


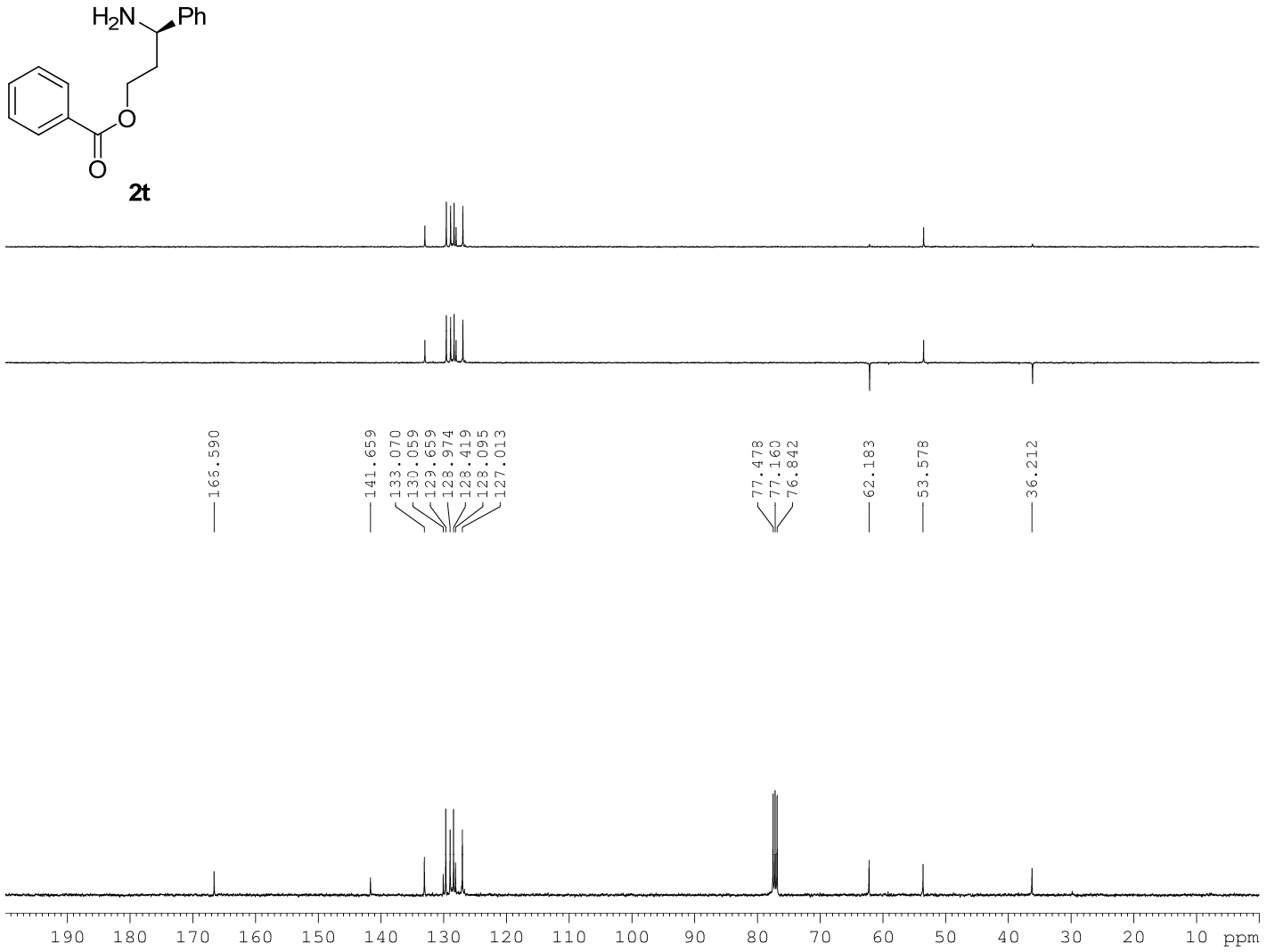
2t

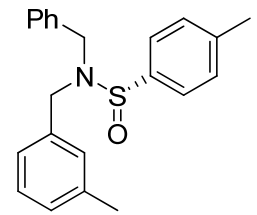



```
NAME         22011000147
EXPNO               1364
PROCNO                 1
Date_           20130907
Time               16.16
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     0
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                 24.73
DW                62.400 usec
DE                 6.50 usec
TE                298.9 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         400.1524711 MHz
NUC1                   1H
P1                  9.64 usec
SI                 65536
SF           400.1500084 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




H2N
Ph
O
O
2t
166.590
141.659
133.070
130.059
129.659
128.974
128.419
128.095
127.013
77.478
77.160
76.842
62.183
53.578
36.212
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm



1u

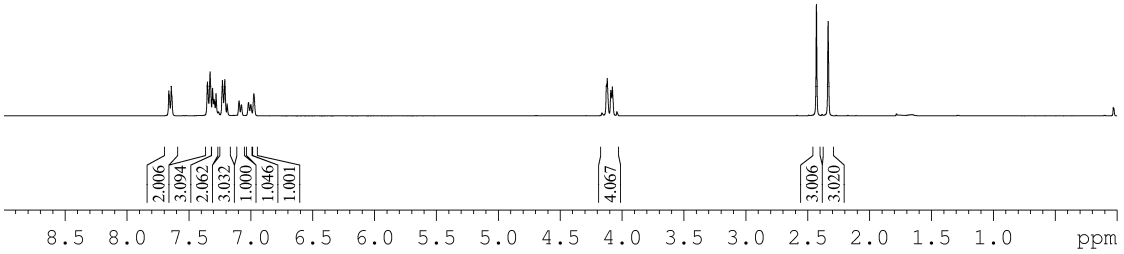
7.662
7.641
7.349
7.328
7.308
7.295
7.292
7.280
7.228
7.209
7.190
7.094
7.075
7.017
6.999
6.974

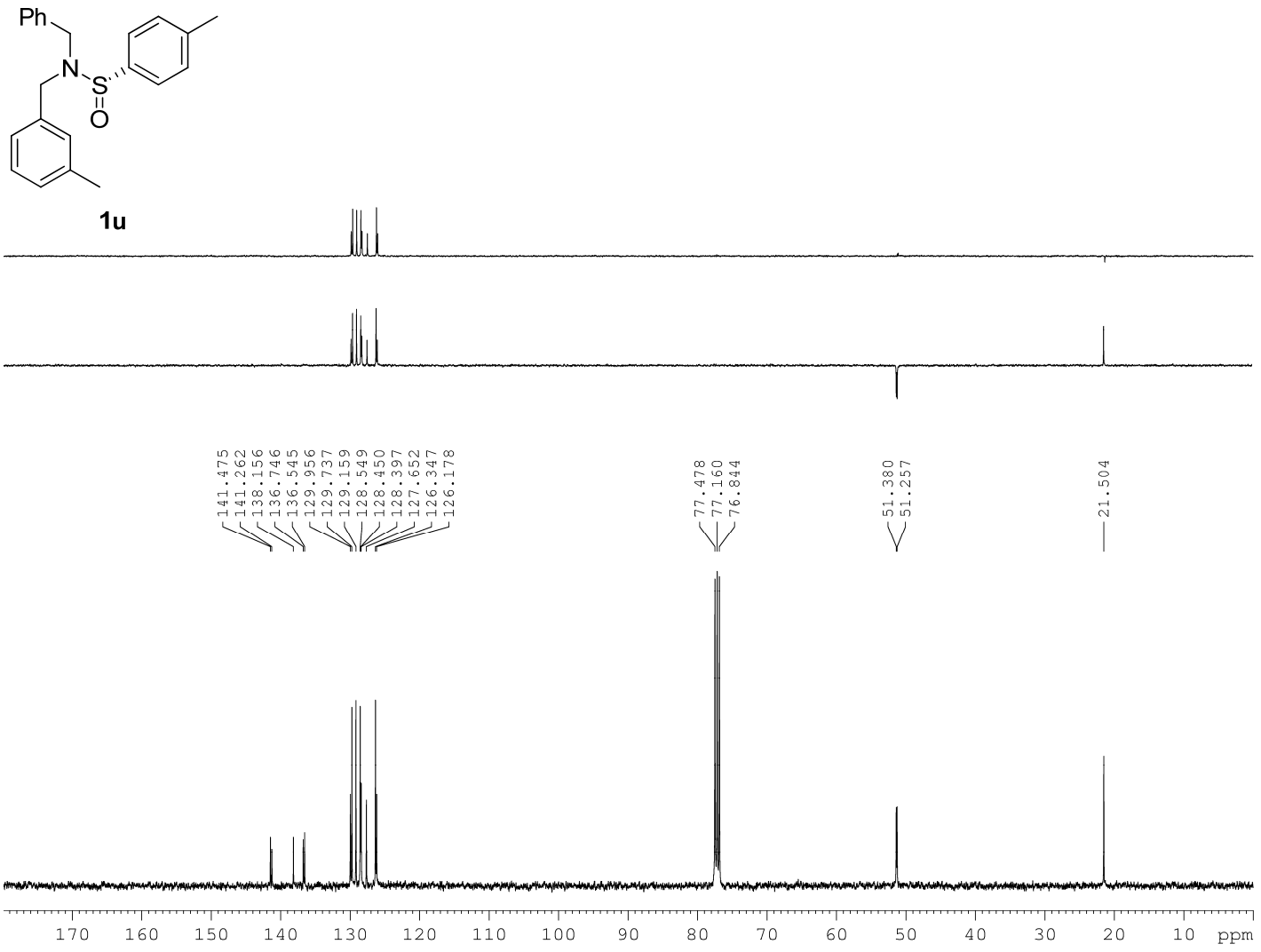
4.125
4.119
4.090
4.077
4.041

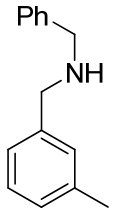
2.429
2.334

```
NAME          22011000147
EXPNO                1785
PROCNO                  1
Date_            20131118
Time                18.23
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   63.8
DW                 62.400 usec
DE                   6.50 usec
TE                  296.0 K
D1              1.00000000 sec
TD0                     1

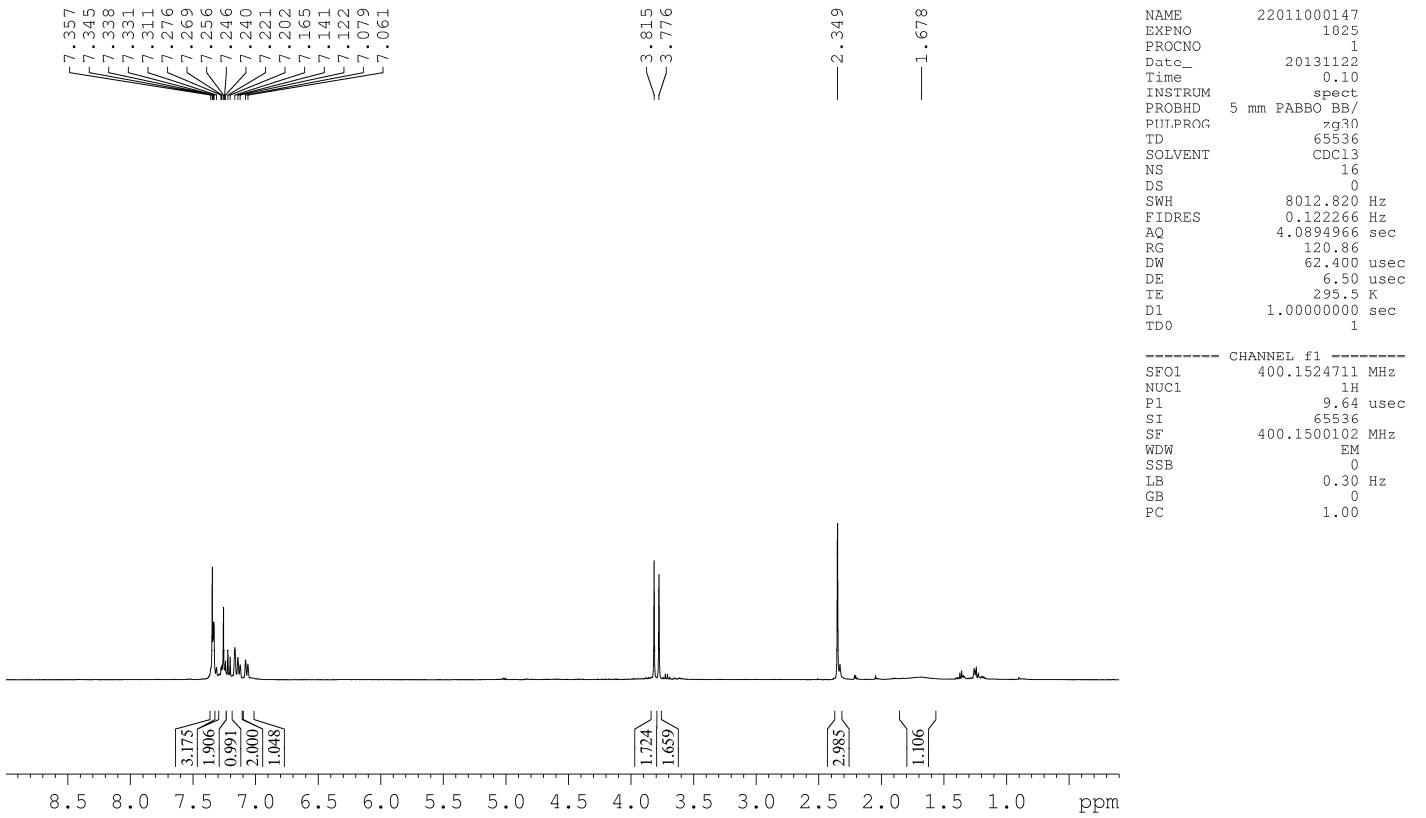
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500003 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



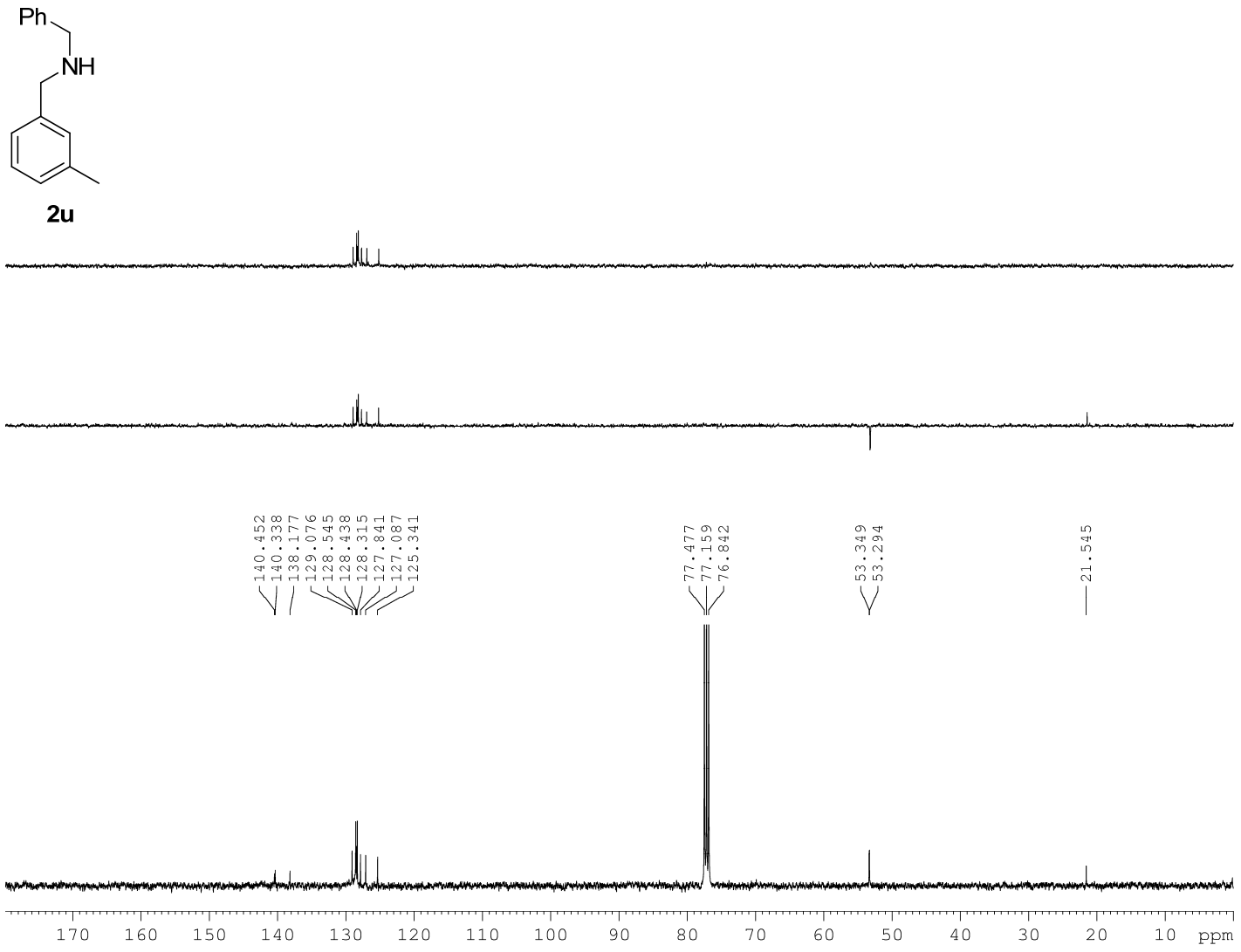

Ph
N
S
O
1u
141.475
141.262
138.156
136.746
136.545
129.956
129.737
129.159
128.549
128.450
128.397
127.652
126.347
126.178
77.478
77.160
76.844
51.380
51.257
21.504
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

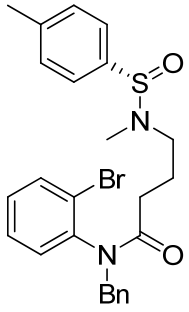


2u



NAME	22011000147
EXPNO	1025
PROCNO	1
Date_	20131122
Time	0.10
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	120.86
DW	62.400 usec
DE	6.50 usec
TE	295.5 K
D1	1.00000000 sec
TD0	1
-------- CHANNEL f1 --------	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500102 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00


Ph
NH
2u
140.452
140.338
138.177
129.076
128.545
128.438
128.315
127.841
127.087
125.341
77.477
77.159
76.842
53.349
53.294
21.545
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

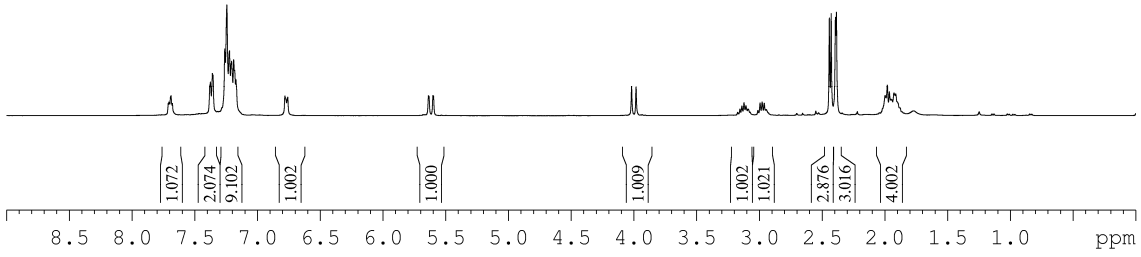


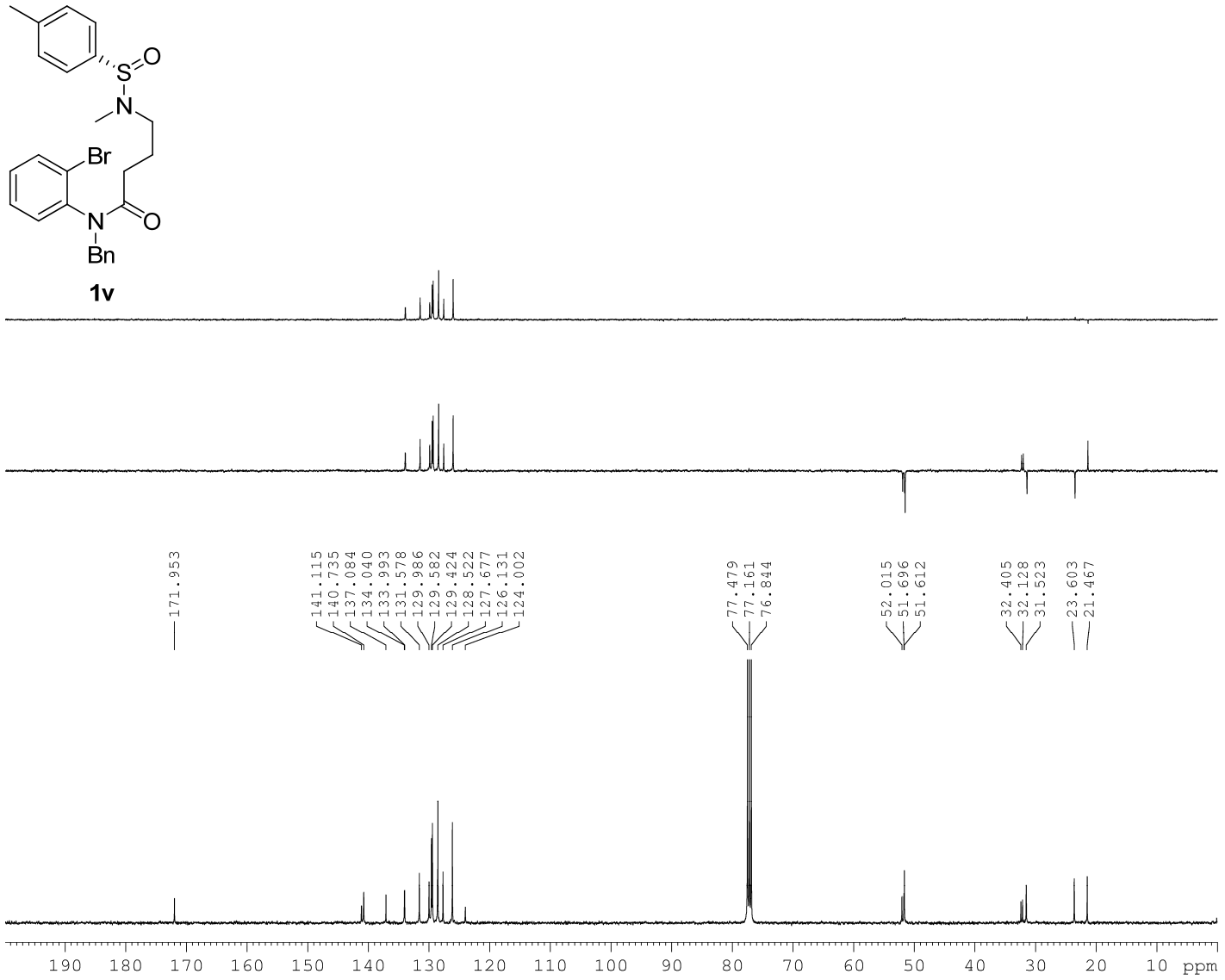
1v

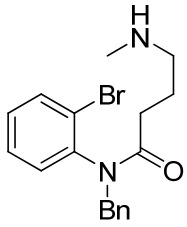
7.705 7.700 7.690 7.687 7.676 7.378 7.373 7.358 7.353 7.318 7.304 7.260 7.243 7.222 7.205 7.189 7.181 7.170 6.780 6.775 6.758 5.638 5.633 5.602 5.598

4.019 3.983 3.173 3.155 3.139 3.123 3.107 3.090 3.074 3.012 2.994 2.978 2.961 2.946 2.442 2.428 2.394 2.386 1.998 1.980 1.964 1.950 1.943 1.927 1.913 1.902 1.895

NAME	22011000147
EXPNO	1773
PROCNO	1
Date_	20131117
Time	19.40
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	55.34
DW	62.400 usec
DE	6.50 usec
TE	295.5 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1524711 MHz
NUC1	1H
P1	9.64 usec
SI	65536
SF	400.1500083 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00




Br
S
O
N
N
O
Bn
1v
171.953
141.115
140.735
137.084
134.040
133.993
131.578
129.986
129.582
129.424
128.522
127.677
126.131
124.002
77.479
77.161
76.844
52.015
51.696
51.612
32.405
32.128
31.523
23.603
21.467
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm



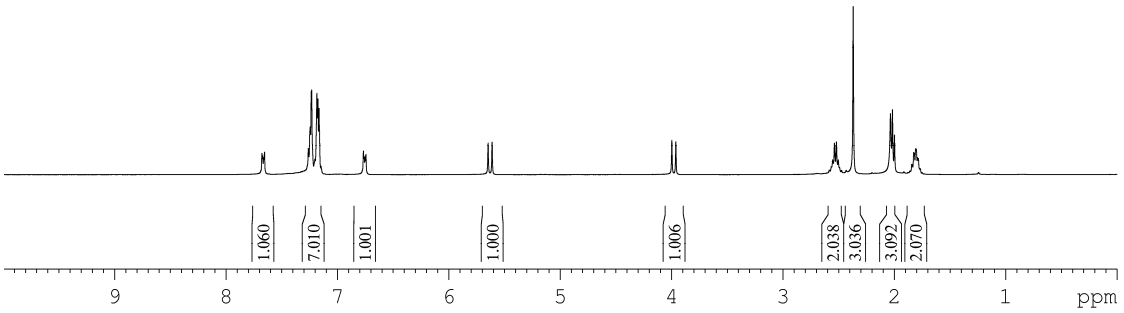
2v

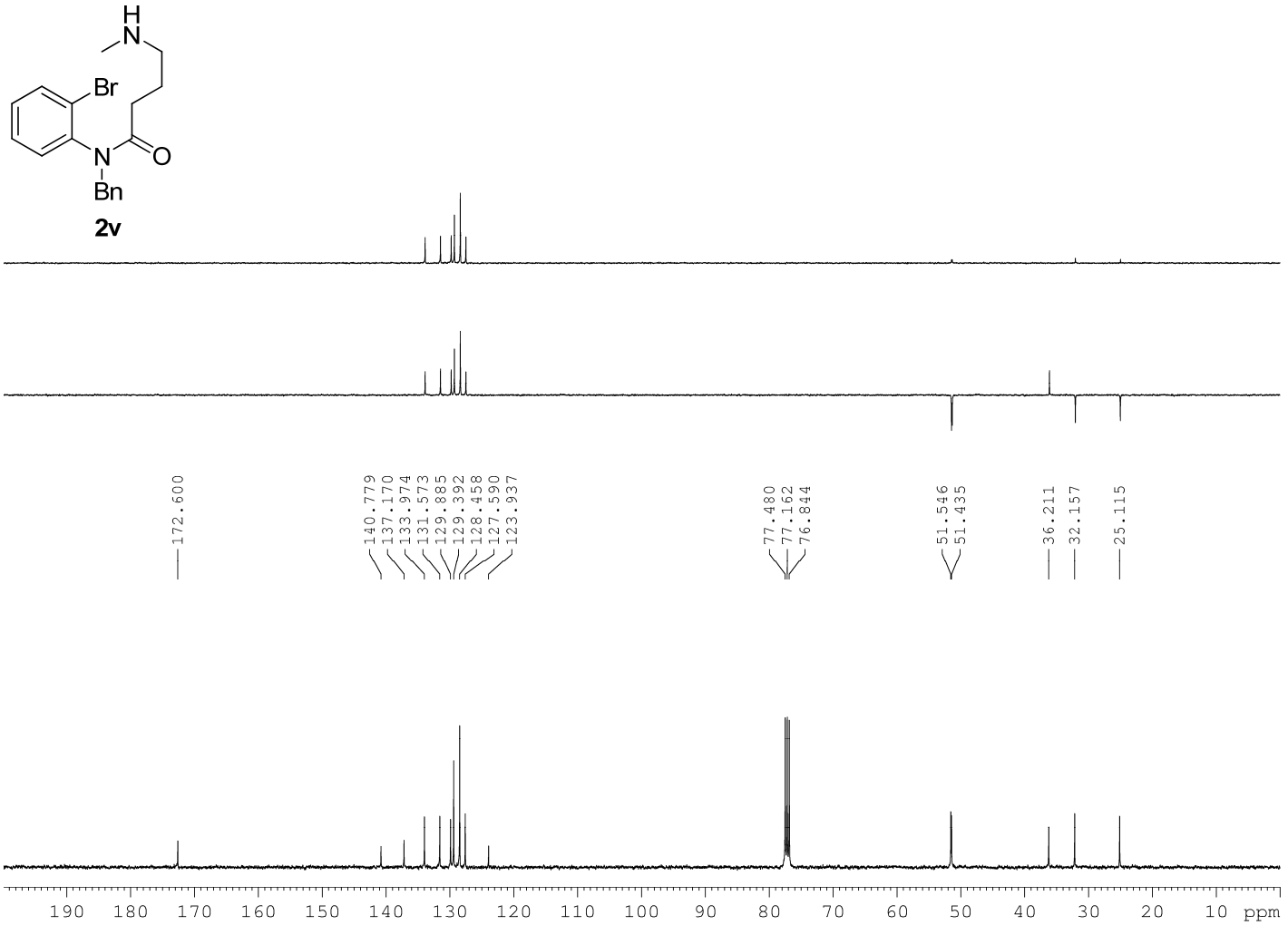
7.677
7.670
7.661
7.658
7.653
7.260
7.243
7.234
7.230
7.201
7.183
7.174
7.165
7.146
6.766
6.761
6.758
6.750
6.742
5.646
5.610

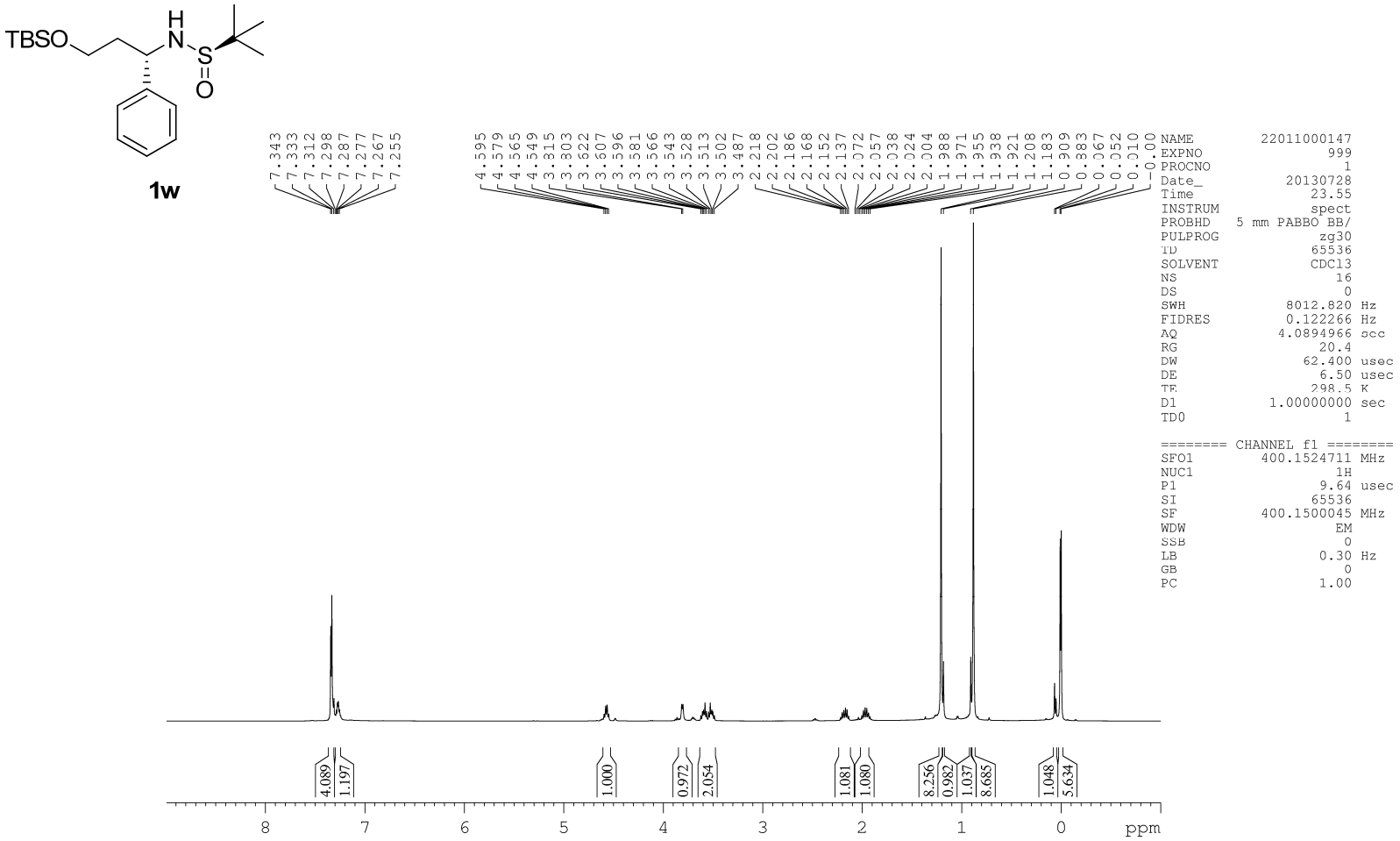
3.997
3.961
2.564
2.553
2.536
2.519
2.502
2.491
2.369
2.034
2.016
1.998
1.843
1.839
1.825
1.820
1.808
1.801
1.791
1.783
1.774
1.765

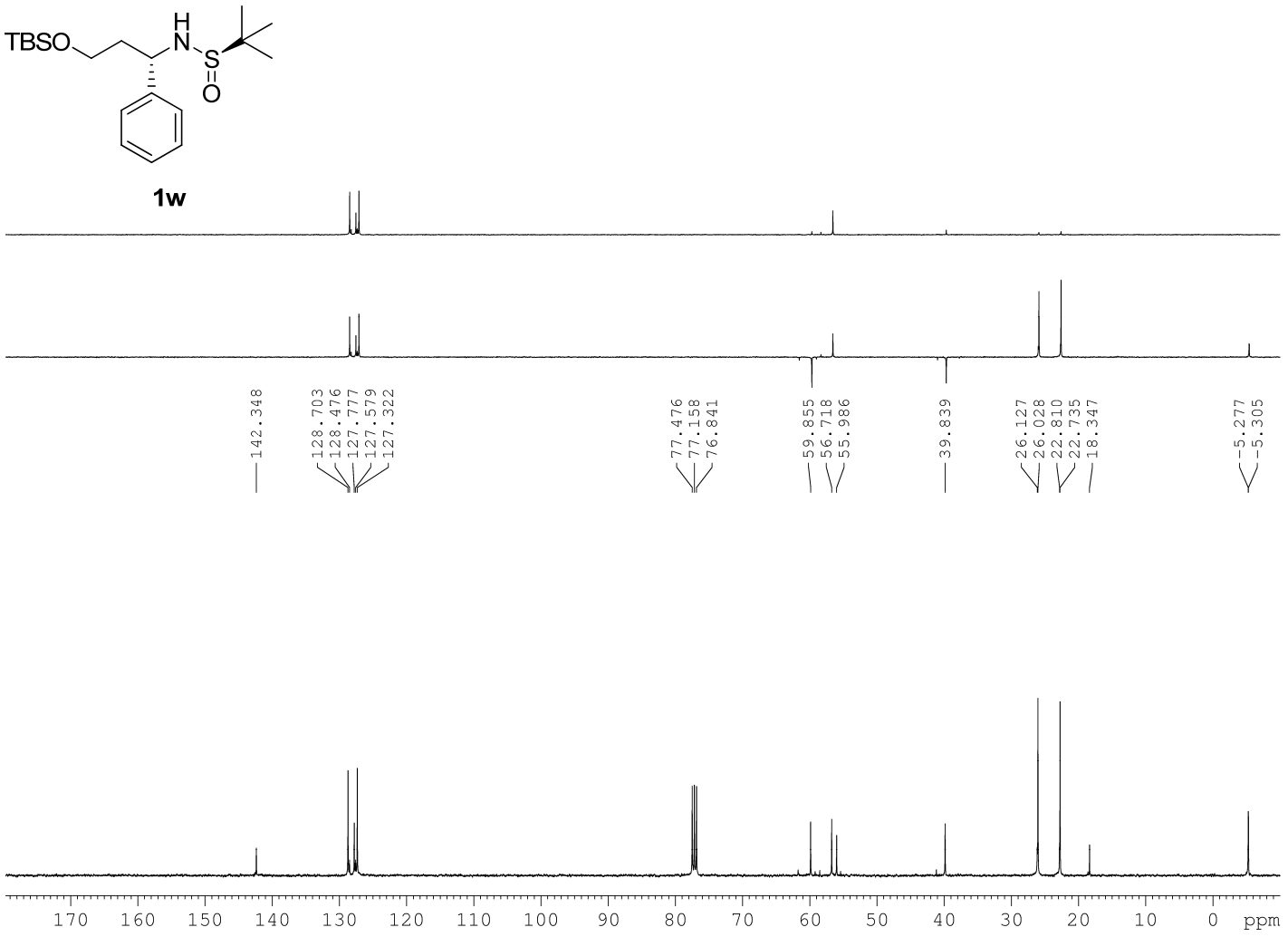
```
NAME          22011000147
EXPNO                1740
PROCNO                  1
Date_            20131114
Time                13.14
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   52.37
DW                 62.400 usec
DE                   6.50 usec
TE                  295.9 K
D1              1.00000000 sec
TD0                     1

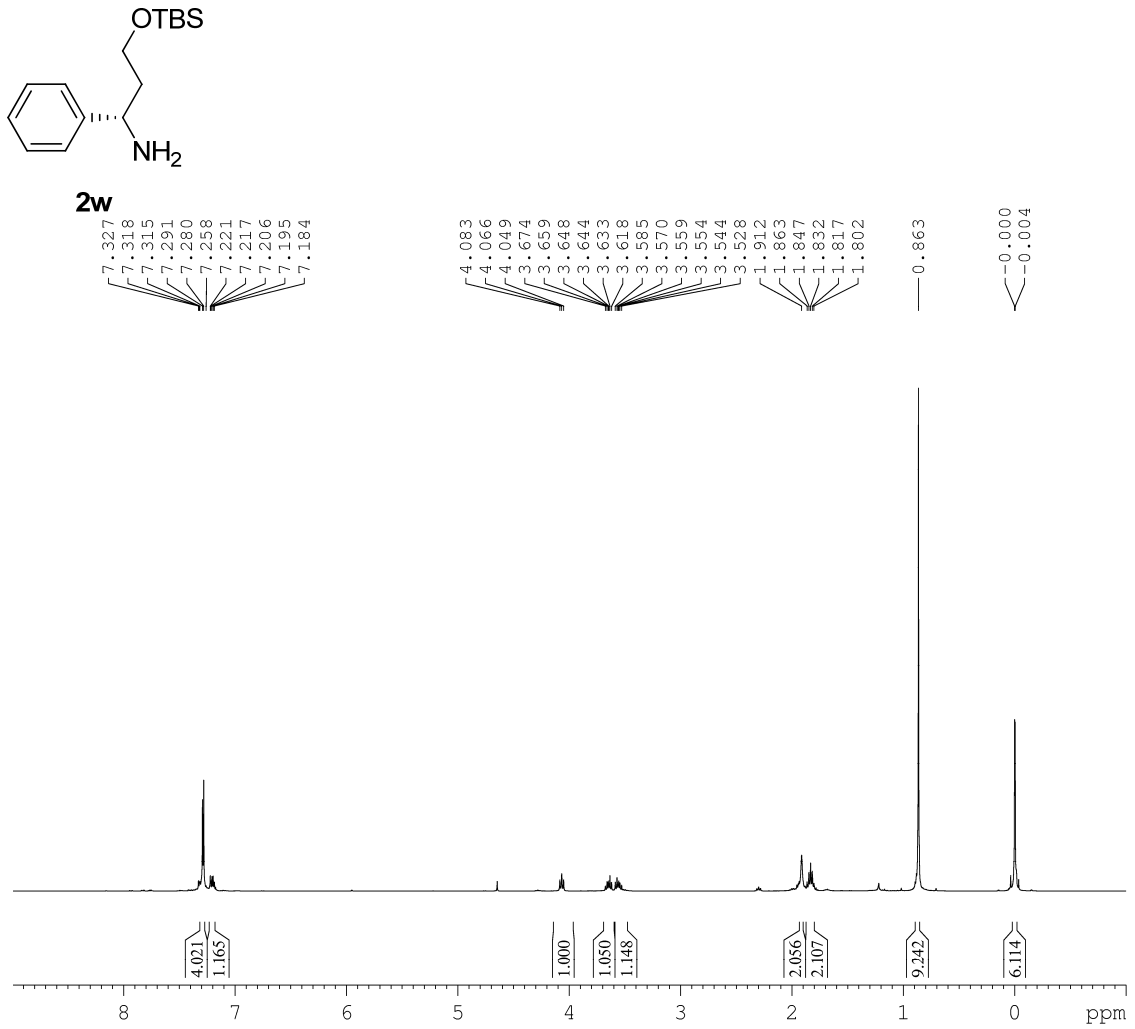
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                   9.64 usec
SI                  65536
SF            400.1500083 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




H
N
Br
N
O
Bn
2v
172.600
140.779
137.170
133.974
131.573
129.885
129.392
128.458
127.590
123.937
77.480
77.162
76.844
51.546
51.435
36.211
32.157
25.115
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

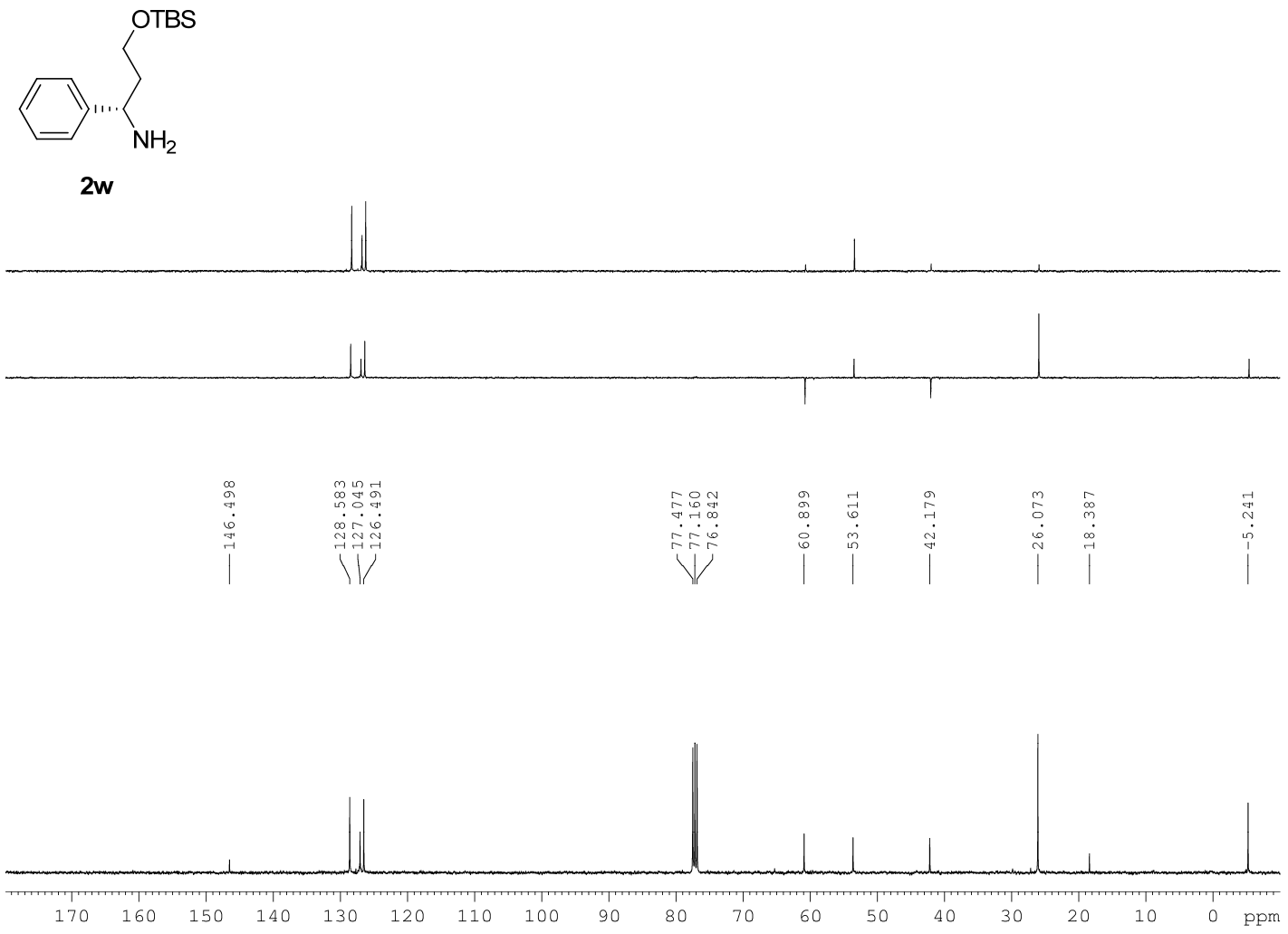

TBSO
H
N
S
O
1w
7.343
7.333
7.312
7.298
7.287
7.277
7.267
7.255
4.595
4.579
4.565
4.549
3.815
3.803
3.622
3.607
3.596
3.581
3.566
3.543
3.528
3.513
3.502
3.487
2.218
2.202
2.186
2.168
2.152
2.137
2.072
2.057
2.038
2.024
2.004
1.988
1.971
1.955
1.938
1.921
1.208
1.183
0.909
0.383
0.067
0.052
0.010
0.00
NAME 22011000147
EXPNO 999
PROCNO 1
Date_ 20130728
Time 23.55
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 20.4
DW 62.400 usec
DE 6.50 usec
TE 298.5 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500045 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
4.089
1.197
1.000
0.972
2.054
1.081
1.080
8.256
0.982
1.037
8.685
1.048
5.634
8
7
6
5
4
3
2
1
0
ppm

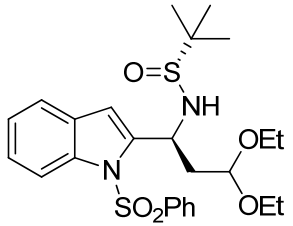

TBSO
H
N
S
O
1w
142.348
128.703
128.476
127.777
127.579
127.322
77.476
77.158
76.841
59.855
56.718
55.986
39.839
26.127
26.028
22.810
22.735
18.347
5.277
-5.305
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



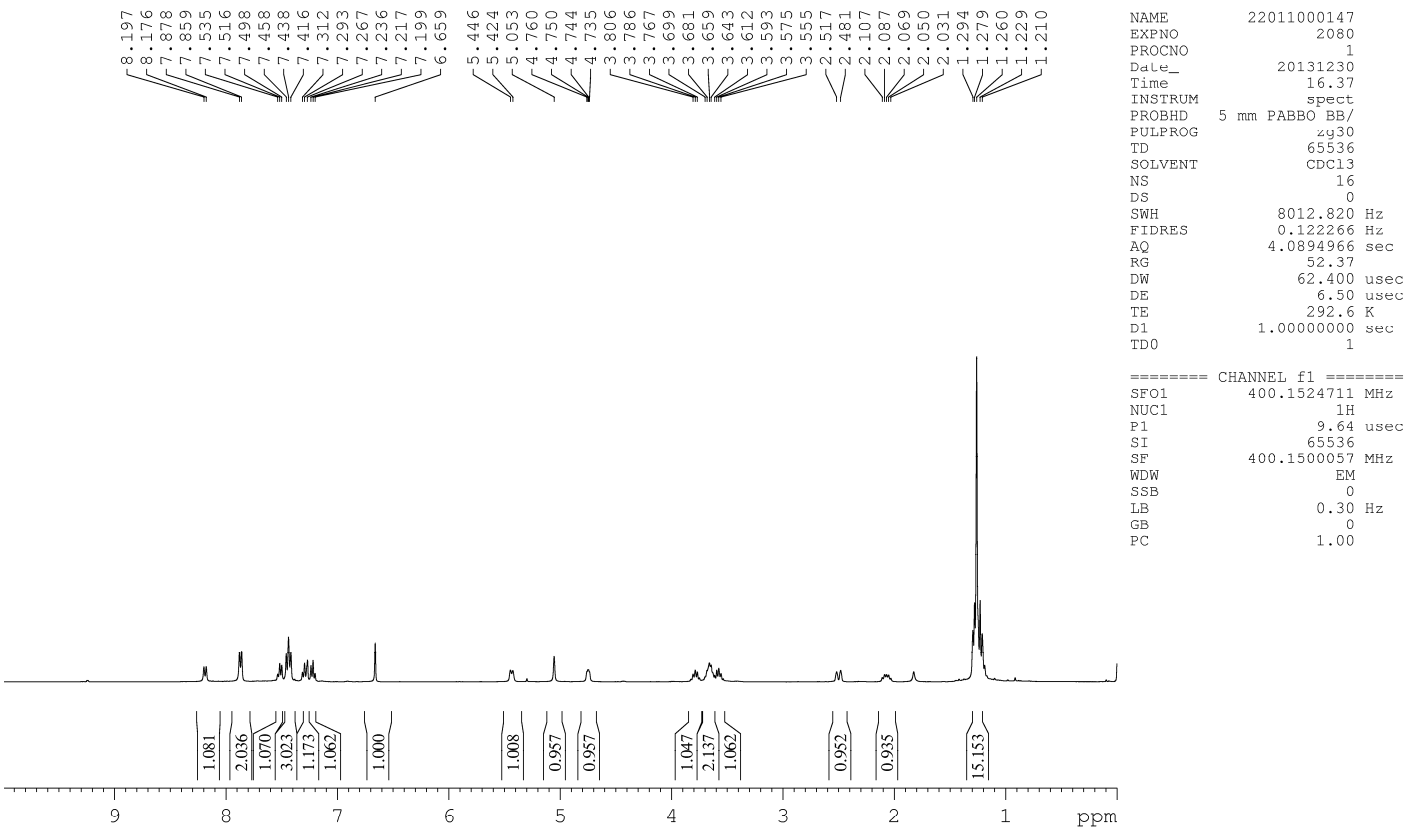

```
NAME          22011000147
EXPNO                1404
PROCNO                  1
Date_            20130912
Time                18.16
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                     31.56
DW                  62.400 usec
DE                    6.50 usec
TE                   299.2 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500240 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


OTBS
NH2
2w
146.498
128.583
127.045
126.491
77.477
77.160
76.842
60.899
53.611
42.179
26.073
18.387
-5.241
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

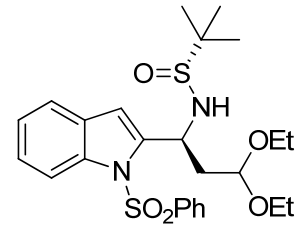


1x

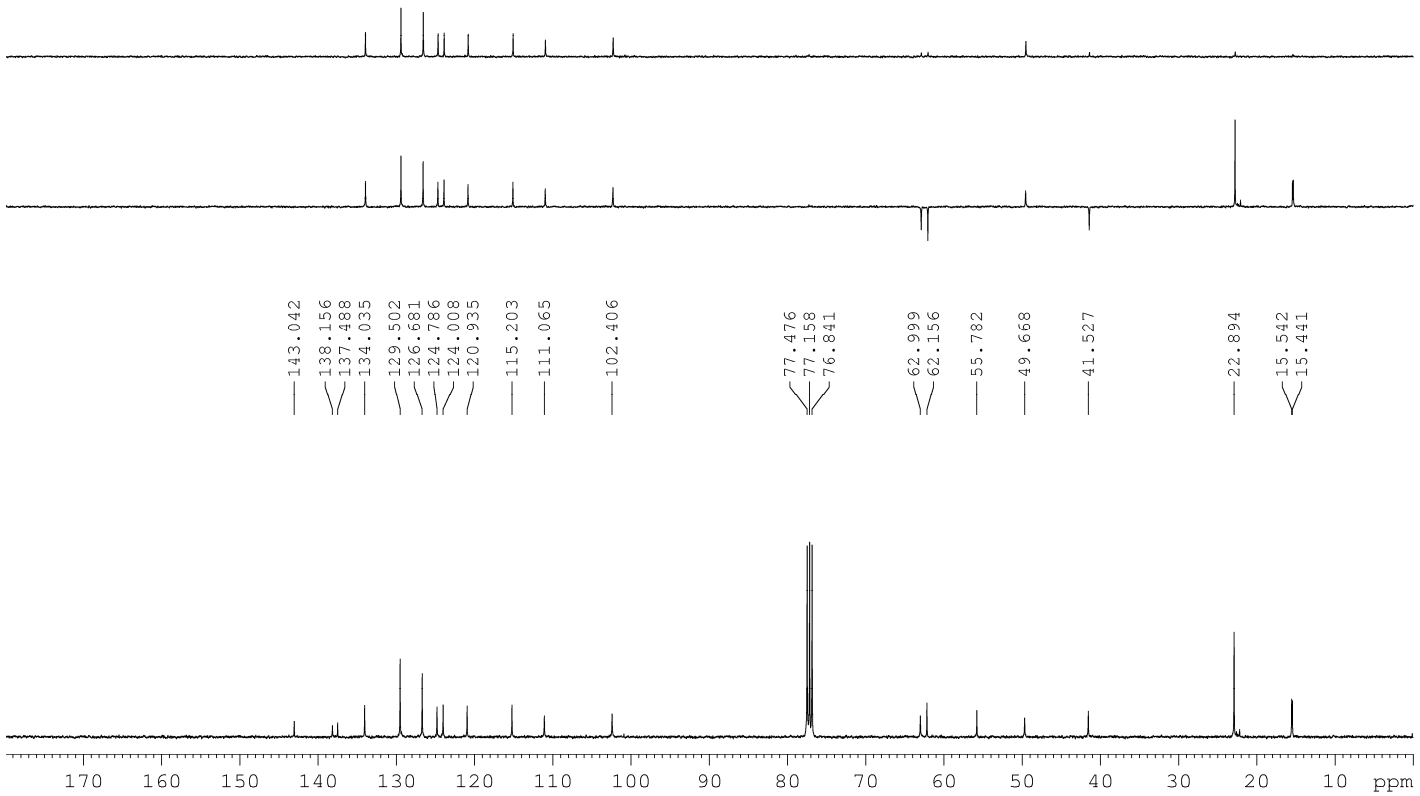


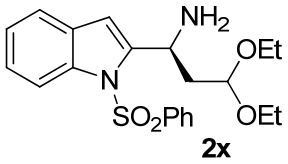

```
NAME          22011000147
EXPNO                2080
PROCNO                  1
Date_            20131230
Time                16.37
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  52.37
DW                 62.400 usec
DE                  6.50 usec
TE                 292.6 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                   1H
P1                   9.64 usec
SI                  65536
SF            400.1500057 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

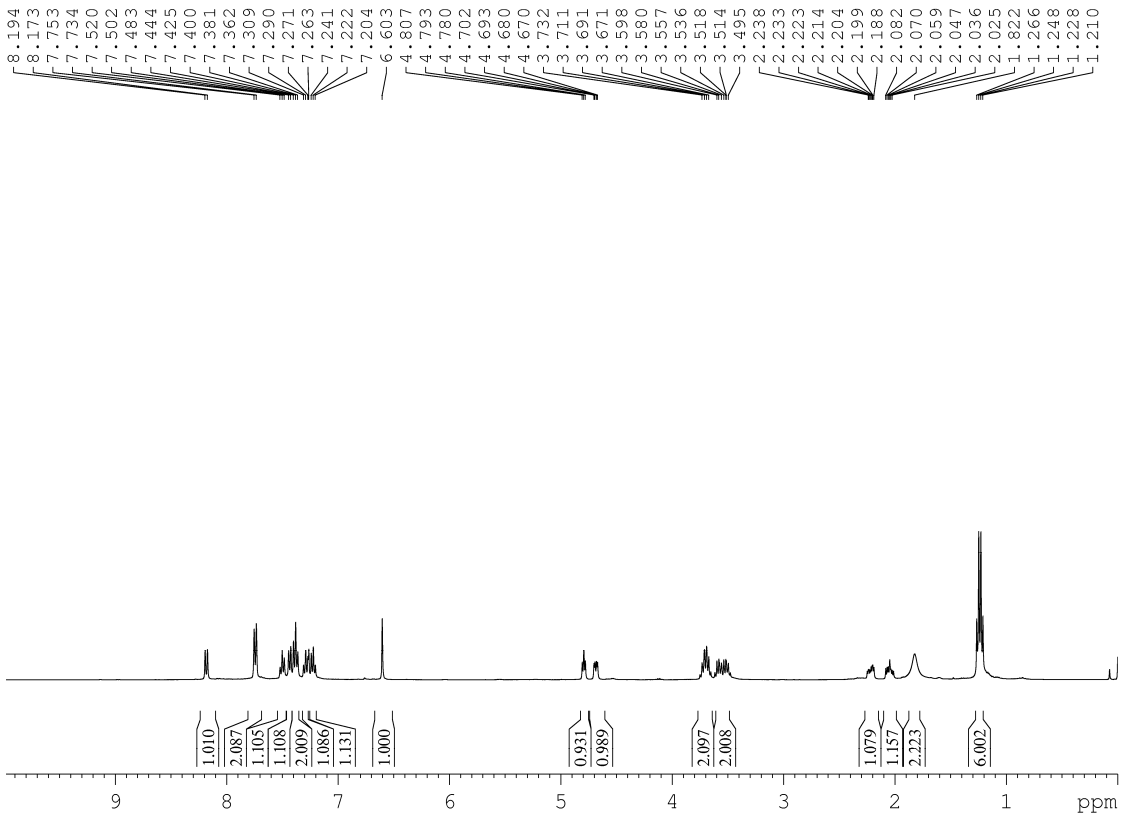

O=S
NH
OEt
N
SO2Ph
OEt

1x


143.042
138.156
137.488
134.035
129.502
126.681
124.786
124.008
120.935
115.203
111.065
102.406
77.476
77.158
76.841
62.999
62.156
55.782
49.668
41.527
22.894
15.542
15.441
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

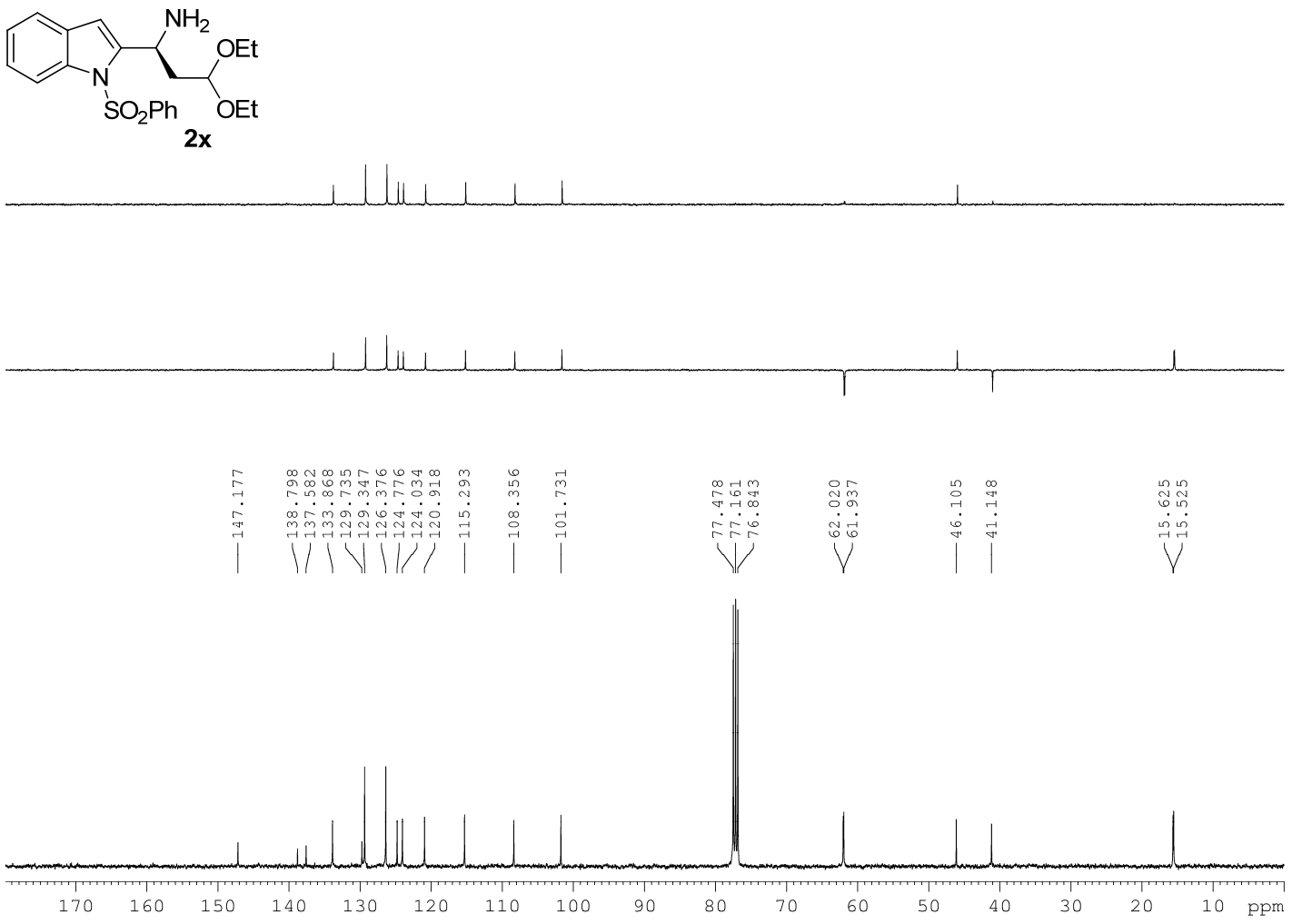


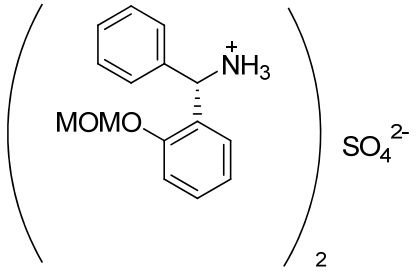
2x



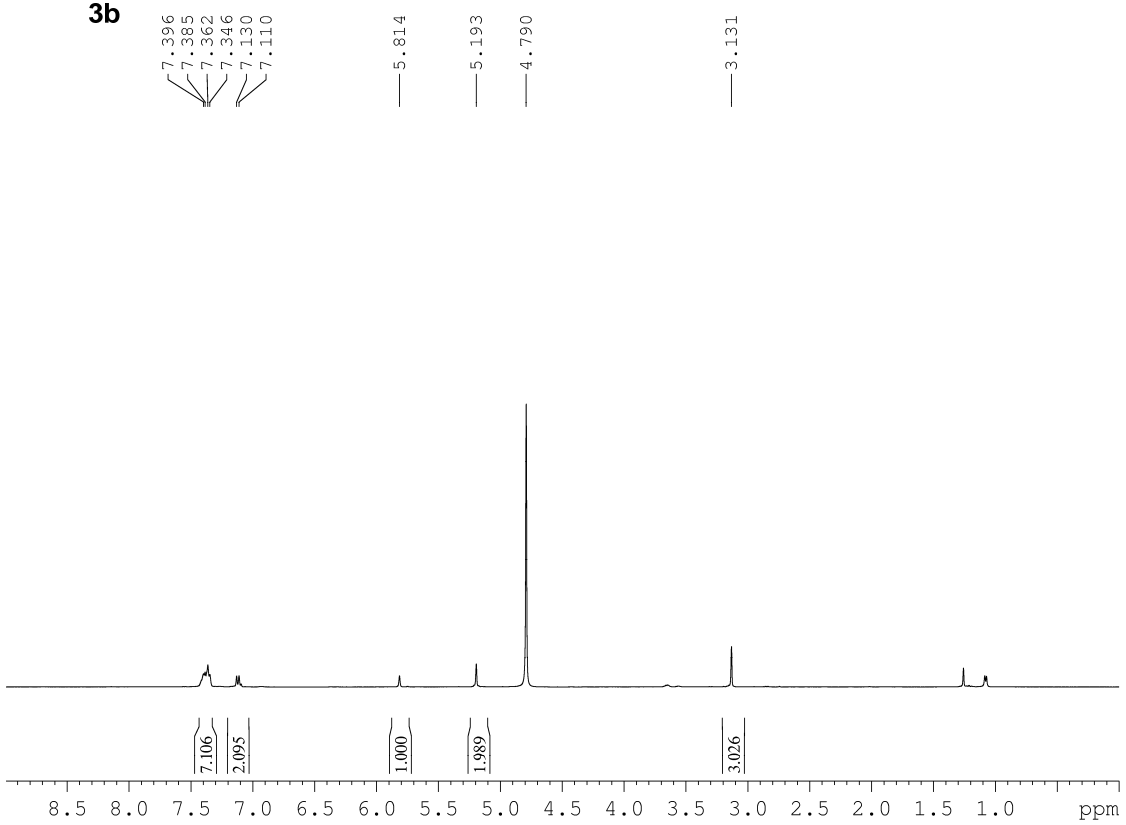

```
NAME          22011000147
EXPNO                823
PROCNO                 1
Date_           20130630
Time               14.39
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     0
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                  63.8
DW                62.400 usec
DE                 6.50 usec
TE                298.2 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                  1H
P1                  9.64 usec
SI                 65536
SF            400.1500085 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```


NH2
OEt
N
SO2Ph
OEt
2x
147.177
138.798
137.582
133.868
129.735
129.347
126.376
124.776
124.034
120.918
115.293
108.356
101.731
77.478
77.161
76.843
62.020
61.937
46.105
41.148
15.625
15.525
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

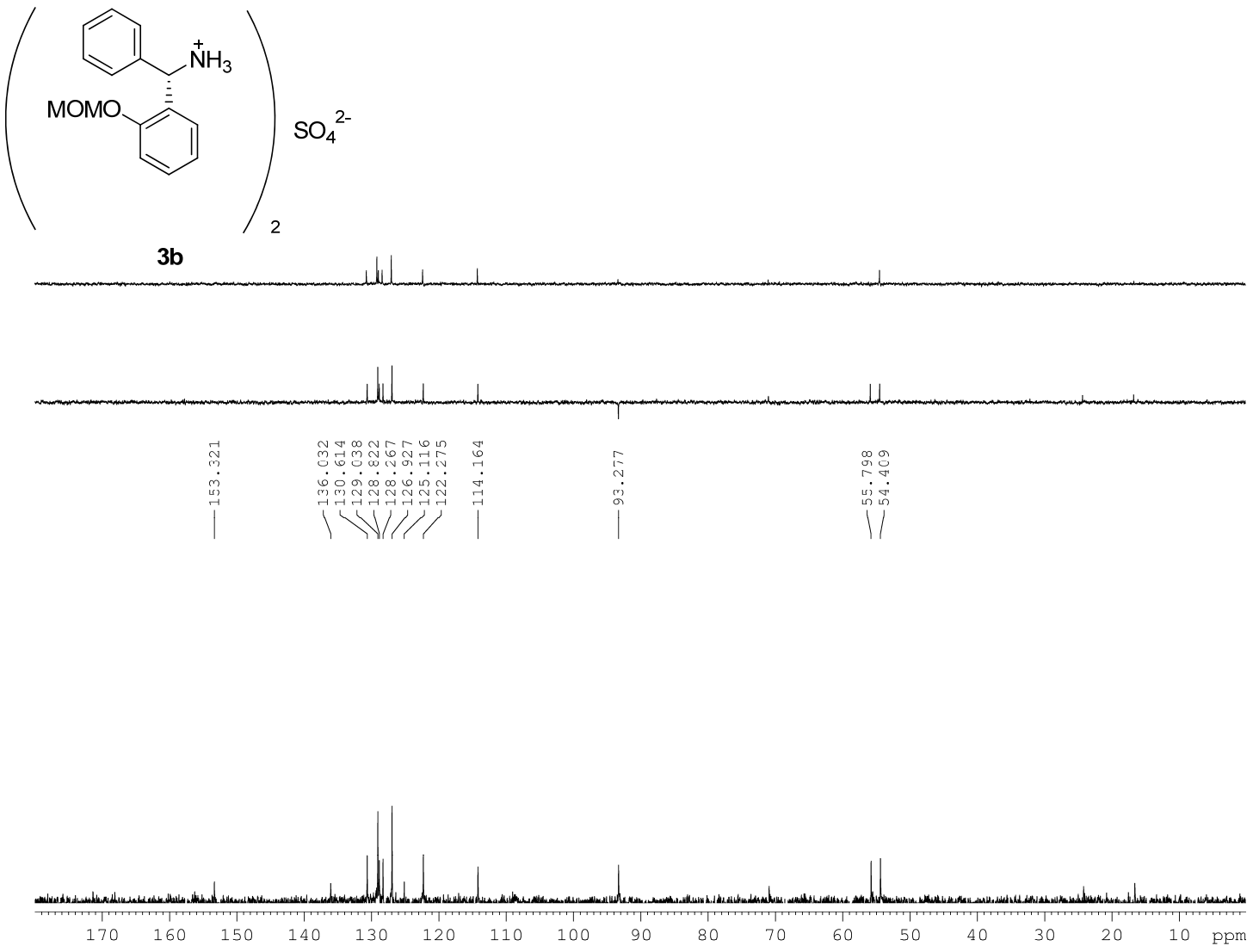


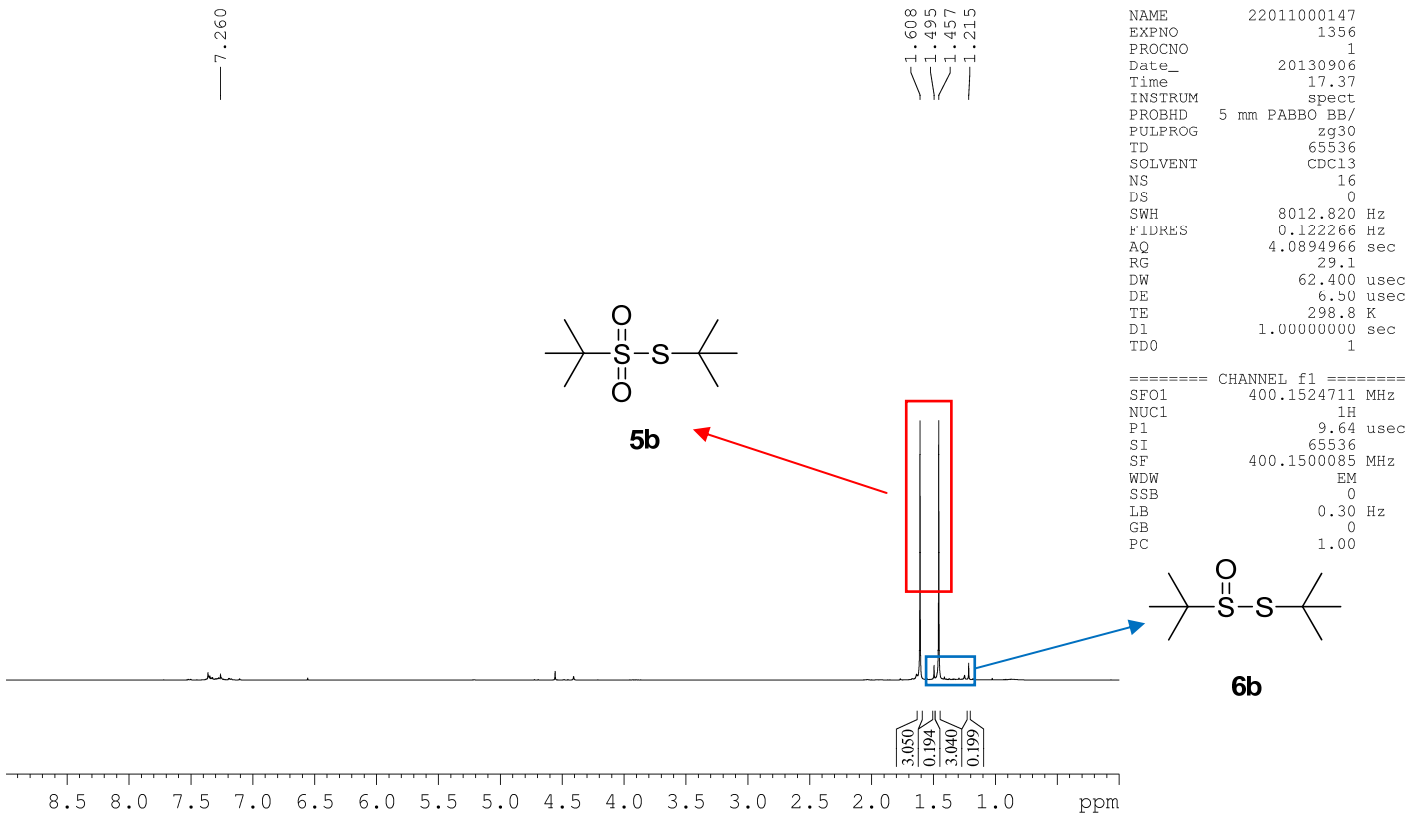
3b

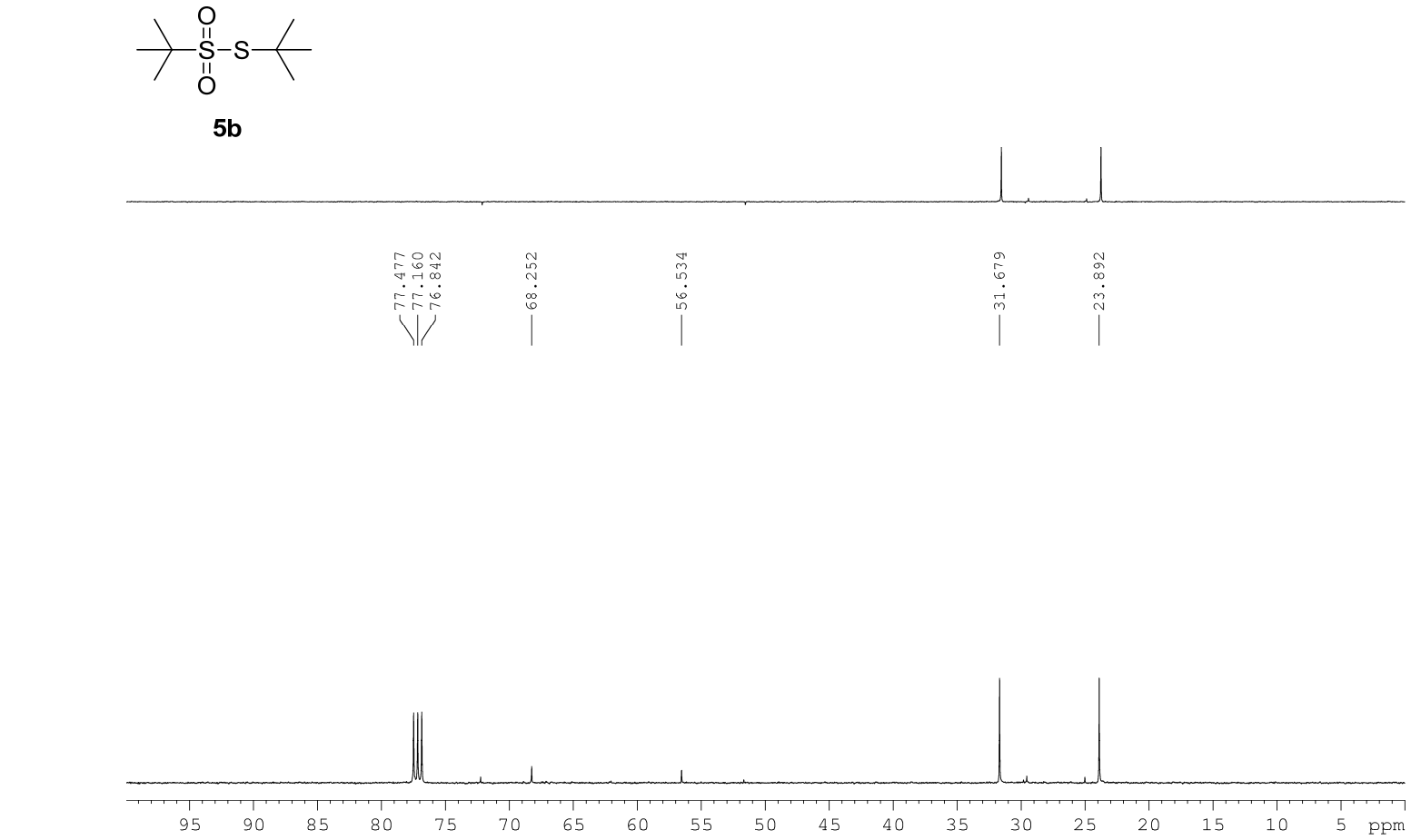


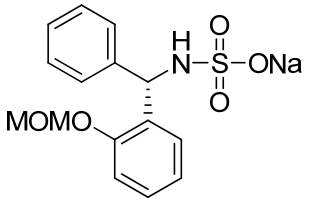

```
NAME          22011000147
EXPNO                1971
PROCNO                  1
Date_            20131213
Time                17.00
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT               D2O
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  120.86
DW                  62.400 usec
DE                    6.50 usec
TE                   292.9 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                    9.64 usec
SI                   65536
SF            400.1499615 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

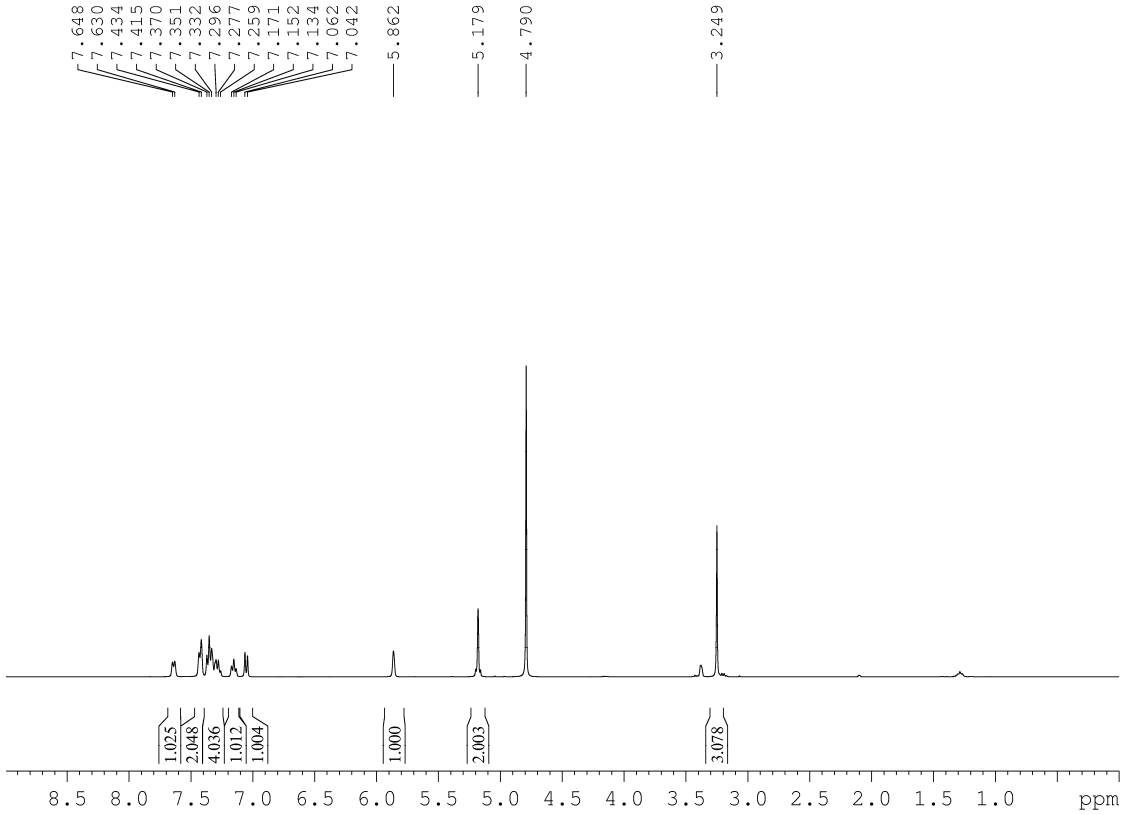

MOMO
NH3
SO4 2-
2
3b
153.321
136.032
130.614
129.038
128.822
128.267
126.927
125.116
122.275
114.164
93.277
55.798
54.409
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


7.260
1.608
1.495
1.457
1.215
NAME 22011000147
EXPNO 1356
PROCNO 1
Date_ 20130906
Time 17.37
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 29.1
DW 62.400 usec
DE 6.50 usec
TE 298.8 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500085 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
5b
6b
3.050
0.194
3.040
0.199
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
ppm


5b
77.477
77.160
76.842
68.252
56.534
31.679
23.892
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 ppm

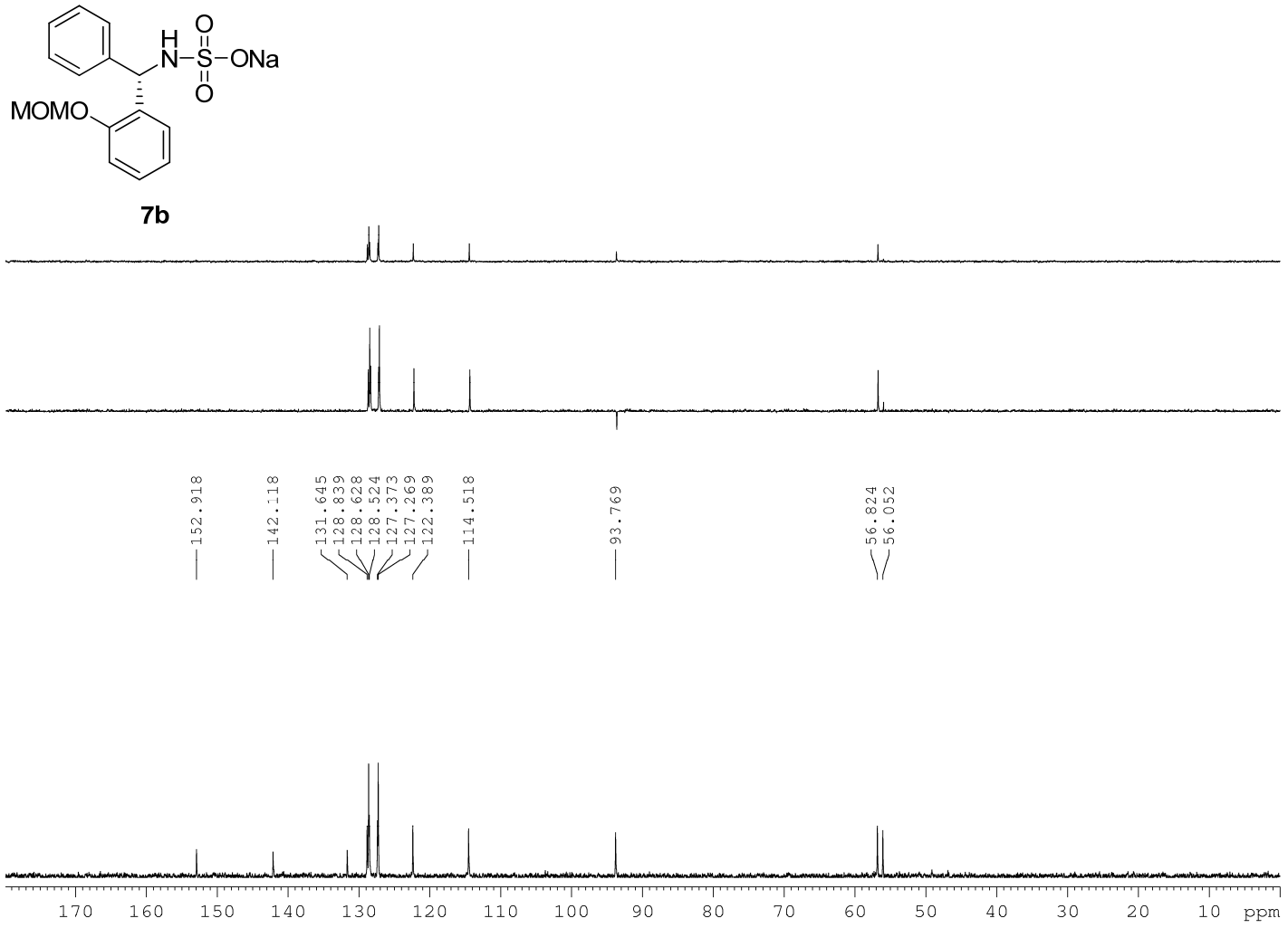


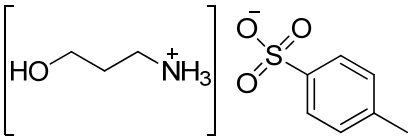
7b



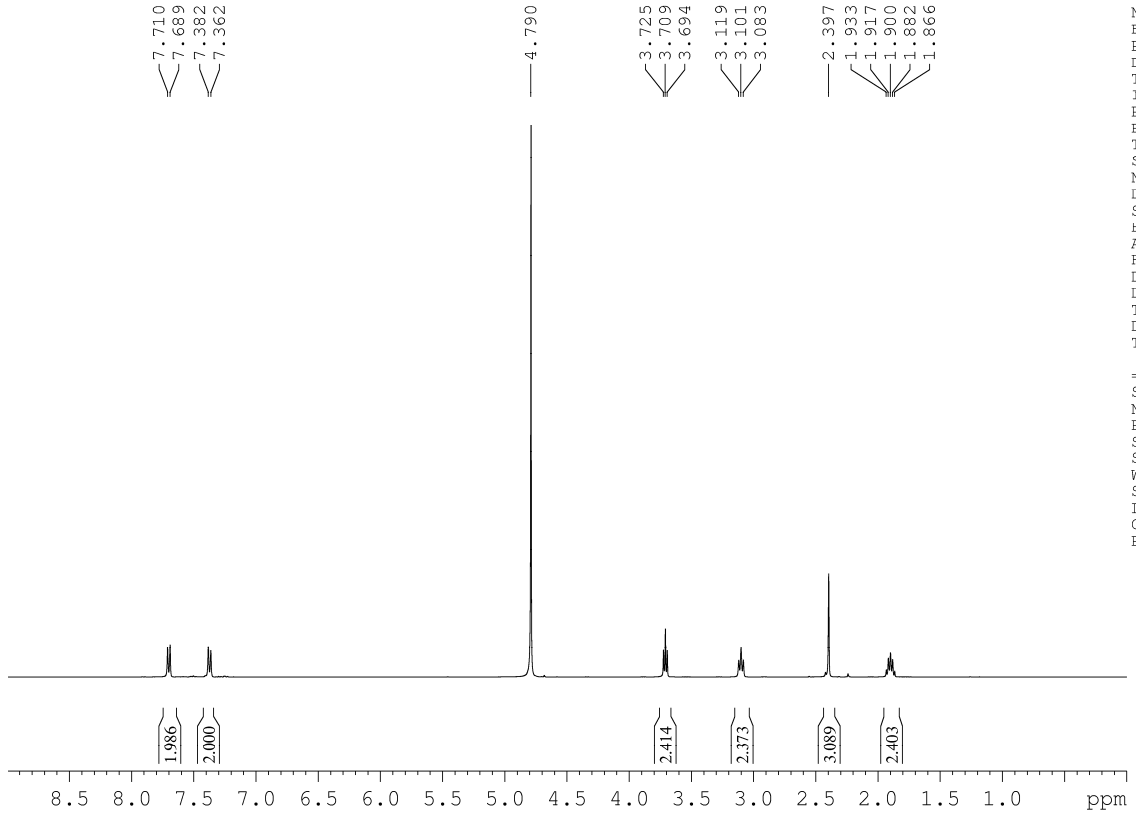

```
NAME          22011000147
EXPNO                2086
PROCNO                  1
Date_            20131231
Time                18.30
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT               D2O
NS                      8
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  120.86
DW                  62.400 usec
DE                   6.50 usec
TE                  292.9 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                   9.64 usec
SI                  65536
SF            400.1499608 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


MOMO
H
N
S
O
O
ONa
7b
152.918
142.118
131.645
128.839
128.628
128.524
127.373
127.269
122.389
114.518
93.769
56.824
56.052
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

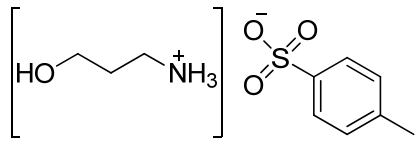


3c

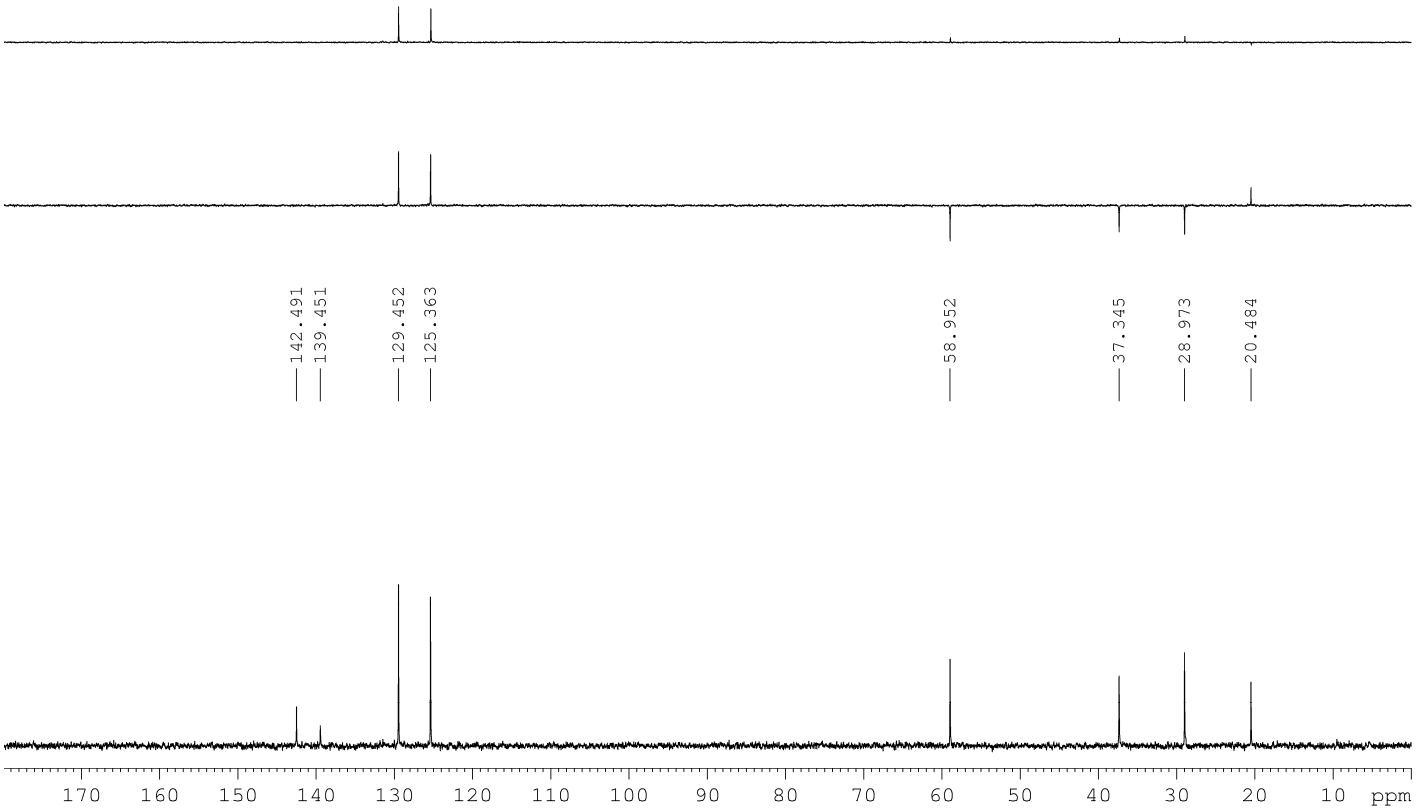


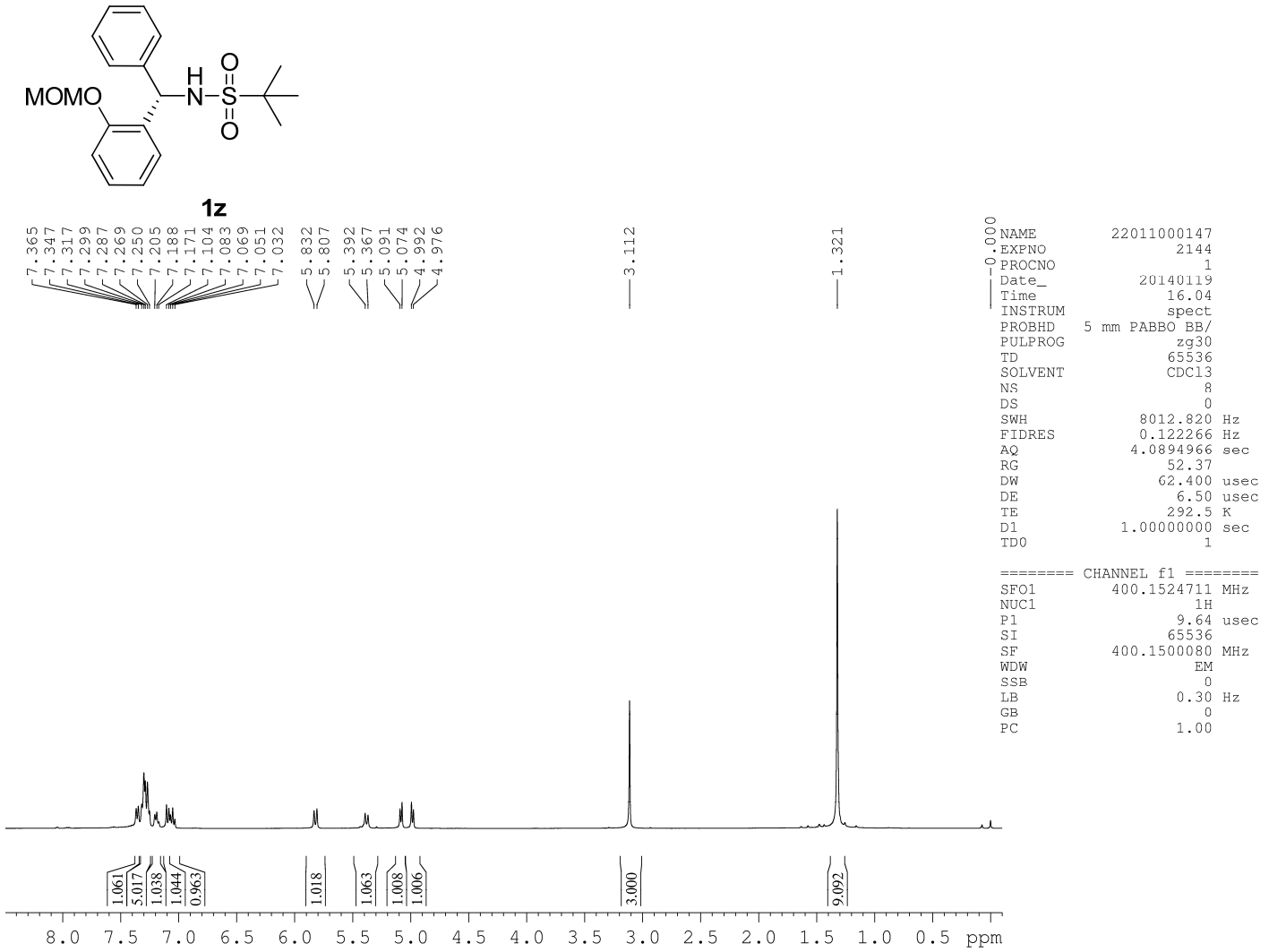

```
NAME          22011000147
EXPNO                1279
PROCNO                  1
Date_            20130830
Time                11.43
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT               D2O
NS                     16
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                   55.34
DW                  62.400 usec
DE                    6.50 usec
TE                   298.9 K
D1             1.00000000 sec
TD0                     1

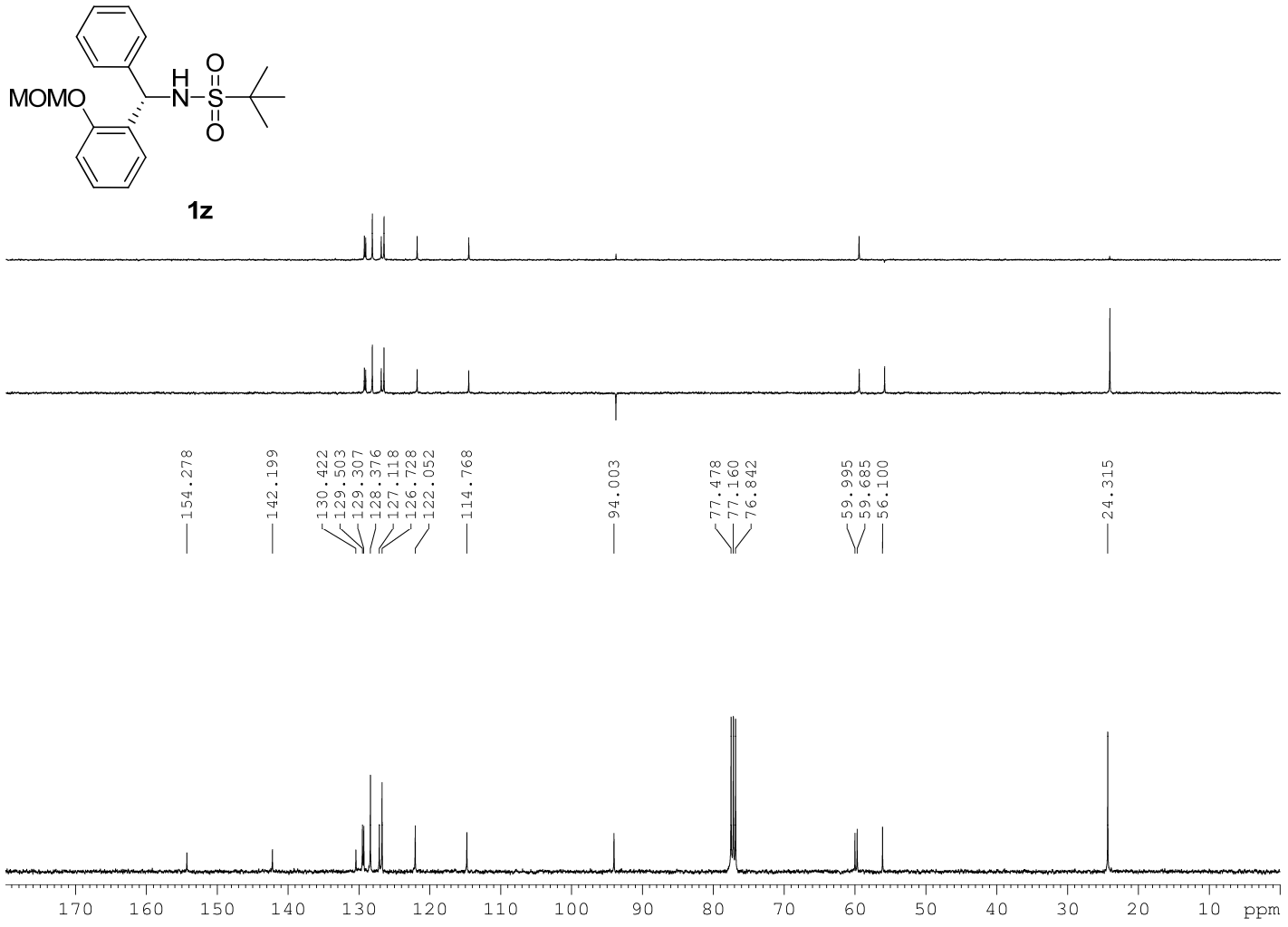
======== CHANNEL f1 ========
SFO1          400.1524711 MHz
NUC1                    1H
P1                    9.64 usec
SI                   65536
SF            400.1499627 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```


HO
NH3
O
S
O
O

3c


142.491
139.451
129.452
125.363
58.952
37.345
28.973
20.484
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm


MOMO
H
N
O
S
O
O
1z
7.365
7.347
7.317
7.299
7.287
7.269
7.250
7.205
7.188
7.171
7.104
7.083
7.069
7.051
7.032
5.832
5.807
5.392
5.367
5.091
5.074
4.992
4.976
3.112
1.321
-0.000
NAME 22011000147
EXPNO 2144
PROCNO 1
Date_ 20140119
Time 16.04
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 52.37
DW 62.400 usec
DE 6.50 usec
TE 292.5 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1524711 MHz
NUC1 1H
P1 9.64 usec
SI 65536
SF 400.1500080 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1.061
5.017
1.038
1.044
0.963
1.018
1.063
1.008
1.006
3.000
9.092
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 ppm


MOMO
H
N
O
S
O
O
1z
154.278
142.199
130.422
129.503
129.307
128.376
127.118
126.728
122.052
114.768
94.003
77.478
77.160
76.842
59.995
59.685
56.100
24.315
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm