Asymmetric Hydrogenation of TIPS-Protected Oximes with Chiral Boranes

Kuai Yu,[a,c] Xiangqing Feng*[a,b] and Haifeng Du*[a,b]

[a] Beijing National Laboratory for Molecular Sciences, CAS Key Laboratory of Molecular Recognition and Function, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China.

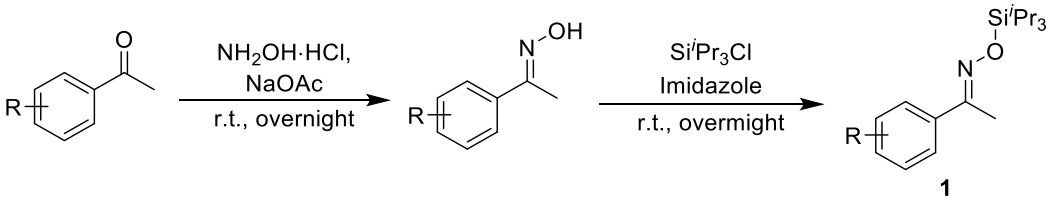
[b] University of Chinese Academy of Sciences, Beijing 100049, China.

[c] College of Chemistry and Material Sciences, Hebei Normal University, Shijiazhuang, Hebei 050024, P. R. of China.

Supporting Information

General consideration: All air-sensitive compounds were handled under an atmosphere of argon or in a nitrogen-filled glovebox. ^{1}H NMR, ^{13}C NMR and ^{19}F NMR spectra were recorded on Bruker AV 300, 400 or 500 at ambient temperature with $CDCl_3$ as solvent and TMS as internal standard. Chemical shifts (δ) were given in ppm, referenced to the residual proton resonance of TMS (0), to the carbon resonance of the $CDCl_3$ (77.23). Coupling constants (*J*) were given in Hertz (Hz). IR spectrums were recorded on Perkin-Elmer-983 spectrometer. Column chromatography was performed on silica gel (200-300 mesh). All solvents were purified by conventional methods, distilled before use. Commercially available reagents were used without further purification.

Representative procedure for the synthesis of TIPs-protected oxime 1f



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A glass vial was charged with acetophenone (0.60 g, 5.0 mmol), hydroxylamine hydrochloride (0.35 g, 5.0 mmol, 1.0 equiv.), sodium acetate (0.41 g, 5.0 mmol, 1.0 equiv.), and methanol (10 mL) without exclusion of oxygen or moisture. After stirring at room temperature overnight, the reaction mixture was diluted with water. The aqueous phase was extracted with CH_2Cl_2 (3 × 10 mL) and the combined organic phases were dried over Na_2SO_4 and filtered. Evaporation of the solvent under reduced pressure yielded the crude oximes which were used without further purification.

A flame-dried Schlenk flask was charged with the above obtained oxime (0.61 g, 4.5 mmol), triisopropylsilyl chloride (1.2 mL, 5.4 mmol, 1.2 equiv.), and CH_2Cl_2 (5 mL). Imidazole (0.62 g, 9 mmol, 2.0 equiv.) in CH_2Cl_2 (10 mL) was added dropwise, and the reaction mixture was stirred at room temperature overnight. After evaporation of the solvent, the residue was purified by flash

column chromatography on silica gel using petroleum ether/EA = 20/1 as eluent to give the desired product **1f** (1.19 g, 90% yield).

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Representative procedure for the preparation of racemic products (rac-2f): To a stainless-steel autoclave were added $B(C_6F_5)_3$ (15.3 mg, 0.03 mmol), (*E*)-1-phenylethan-1-one *O*-triisopropylsilyl oxime (**1f**) (87.5 mg, 0.30 mmol), and dry toluene (1.5 mL) in a nitrogen atmosphere glovebox. After being sealed, the autoclave was purged three times with H_2 and the final pressure of hydrogen was adjusted to 4 MPa. The resulting mixture was stirred at 60 ºC in an oil bath for 18 h. The solvent was evaporated under reduced pressure and the crude residue was purified by column chromatography (petroleum ether/EA = 20/1) on silica gel to give *N*-(1-phenylethyl)-*O*-(triisopropylsilyl)hydroxylamine (**rac-2f**) as a colorless oil.

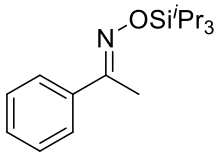
Representative procedure for asymmetric hydrogenation of *O*-triisopropylsilyl oxime 1f (Scheme 3): To a stainless-steel autoclave, were added $HB(C_6F_5)_2$ (**4**) (10.4 mg, 0.03 mmol), chiral diene **3f** (16.6 mg, 0.015 mmol), and dry toluene (1.5 mL) in a nitrogen atmosphere glovebox. The resulting mixture was stirred for 10 min at room temperature followed by addition of TIPS-protected oxime **1f** (87.5 mg, 0.30 mmol). After being sealed, the autoclave was purged three times with H_2 and the final pressure of hydrogen was adjusted to 40 bar. The resulting mixture was stirred at 60 °C in an oil bath for 18 h. After cooling to room temperature, the solvent was evaporated under reduced pressure and the crude residue was purified by column chromatography (petroleum ether/EA = 20/1) on silica gel to give product **2f** as a colorless oil (86.7 mg, 97% yield, 65% ee).

General procedure for the removal of TIPS-protecting group of 2r (Scheme 4): In a test tube, 2-Pic-BH_3 (95 mg, 0.90 mmol) and 10% hydrochloric acid in ethanol (1.0 mL) were added to a solution of **2r** (96.5 mg, 0.30 mmol) in ethanol (1.0 mL) at 0 °C. The reaction mixture was stirred for 4 h at room temperature. The reaction mixture was diluted with saturated Na_2CO_3 solution (3 mL). The aqueous phase was extracted with ethyl acetate (3 × 10 mL) and the combined organic phases were dried over $MgSO_4$. The solvent was evaporated under reduced pressure and the crude residue was purified by column chromatography (petroleum ether/EA = 4/1) on silica to give product **5** as a colorless oil (44.1 mg, 86% yield).

General procedure for the synthesis of *N*-benzoyl amines for chiral HPLC analysis: In a test tube, triethylamine (20.0 mg, 0.2 mmol) and benzoyl chloride (27.3 mg, 0.12 mmol.) were added to a solution of TIPS-protected hydroxylamine **2** (0.1 mmol) in DCM (1.0 mL) at room temperature. The reaction mixture was stirred at room temperature for 16 h and was then diluted with water. The aqueous phase was extracted with CH_2Cl_2 (3 × 10 mL) and the combined organic phases were dried over Na_2SO_4. The solvent was evaporated under reduced pressure and the crude residue was purified by column chromatography (petroleum ether/EA = 10/1) on silica to give the product for the determination of ee.

J. Mas-Rosello, T. Smejkal and N. Cramer, *Science,* 2020, **368**, 1098.

Characterization of substrates



(*E*)-1-phenylethan-1-one *O*-triisopropylsilyl oxime (1f): colorless oil. ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.73-7.64 (m, 2H), 7.38-7.32 (m, 3H), 2.27 (s, 3H), 1.34-1.21 (m, 3H), 1.15-1.07 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 158.5, 137.3, 129.1, 128.5, 126.2, 18.2, 12.2, 12.1

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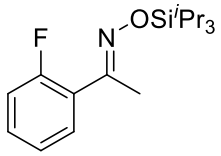
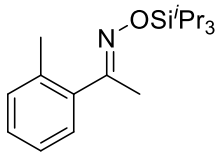
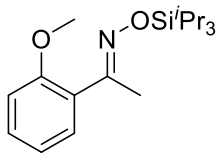


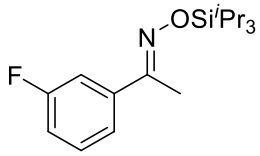
(*E*)-1-(2-fluorophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1h): colorless oil. IR (film): 2945, 2867, 1452, 932 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.51-7.54 (m, 1H), 7.35-7.27 (m, 1H), 7.16-7.01 (m, 2H), 2.28 (d, J = 3.0 Hz, 3H), 1.33-1.20 (m, 3H), 1.15-1.07 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 161.9, 158.2 (d, J = 224.0 Hz), 130.2 (d, J = 8.0 Hz), 129.6 (d, J = 4.0 Hz), 125.8 (d, J = 12.0 Hz), 123.9 (d, J = 3.0 Hz), 116.1 (d, J = 22.0 Hz), 17.9, 14.9 (d, J = 5.0 Hz), 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -114.3; HRMS (ESI) calcd. for $C_{17}H_{29}FNOSi$ $(M+H)^+$: 310.1997, Found: 310.1990.



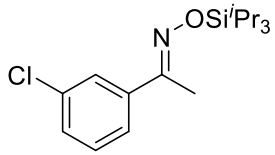
1-(*o*-tolyl)ethan-1-one *O*-triisopropylsilyl oxime (1i): colorless oil, a mixture of *Z* and *E* isomers (*Z*:*E* = 1:5). IR (film): 2944, 2866, 1463, 920 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.24-7.16 (m, 4H), 2.35 (s, 2.5H), 2.25 (s, 0.5H), 2.21 (s, 2.5H), 2.12 (s, 0.5H), 1.31-1.19 (m, 3H), 1.15-1.06 (m, 15H), 0.98-0.94 (m, 3H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 161.2, 138.2, 136.0, 130.8, 128.5, 128.4, 125.9, 20.7, 18.2, (18.1 for Z isomer), 16.3, 12.2, (12.0 for Z isomer); HRMS (ESI) calcd. for $C_{18}H_{32}NOSi$ $(M+H)^+$: 306.2250, Found: 306.2249.



1-(2-methoxyphenyl)ethan-1-one *O*-triisopropylsilyl oxime (1j): colorless oil, a mixture of *Z* and *E* isomers (*Z*:*E* = 1:3). IR (film): 2944, 2866, 1463, 920 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.30-7.14 (m, 2H), 6.90-6.77 (m, 2H), 3.74 (s, 2H), 2.14 (s, 2.4H), 2.01 (s, 0.8H), 1.25-1.13 (m, 3H), 1.05-1.03 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 160.6, 157.8, 130.0, 129.8, (128.0 for Z isomer), 120.7, 111.4, 55.6, 22.8, 18.3, (18.0 for Z isomer), 15.9, 12.2, (12.1 for Z isomer); HRMS (ESI) calcd. for $C_{18}H_{32}NO_2Si$ $(M+H)^+$: 322.2197, Found: 322.2194.

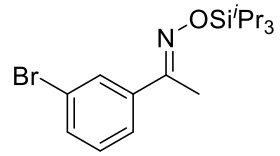


(*E*)-1-(3-fluorophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1k): colorless oil. IR (film): 2945, 2867, 1463, 878 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.49-7.27 (m, 3H), 7.08-7.00 (m, 1H), 2.26 (s, 3H), 1.34-1.22 (m, 3H), 1.18-1.08 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 163.1 (d, *J* = 243.5 Hz), 157.5 (d, *J* = 2.6 Hz), 139.5 (d, *J* = 7.8 Hz), 129.9 (d, *J* = 8.3 Hz), 121.9 (d, *J* = 2.7 Hz), 115.9 (d, *J* = 21.3 Hz), 113.0 (d, *J* = 23.0 Hz), 18.2, 12.2, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -113.2; HRMS (ESI) calcd. for $C_{17}H_{29}FNOSi$ $(M+H)^+$: 310.1997, Found: 310.1990.

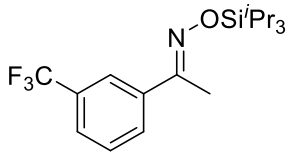


(*E*)-1-(3-chlorophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1l): colorless oil. IR (film): 2944, 2866, 1461, 990 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.69-7.49 (m, *2*H), 7.35-7.21 (m, 2H), 2.25 (s, 3H), 1.36-1.22 (m, 3H), 1.20-1.01 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 157.4, 139.0, 134.5, 129.7, 129.0, 126.3, 124.3, 18.2, 12.1, 12.0; HRMS (ESI) calcd. for $C_{17}H_{29}ClNOSi$

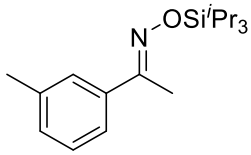
$(M+H)^+$: 326.1702, Found: 326.1693.



(*E*)-1-(3-bromophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1m): colorless oil. IR (film): 2944, 2866, 1464, 996 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.80-7.78 (m, 1H), 7.63-7.59 (m, 1H), 7.49-7.43 (m, 1H), 7.26-7.19 (m, 1H), 2.24 (s, 3H), 1.34-1.22 (m, 3H), 1.21-1.07 (m, 18H).^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 157.1, 139.1, 131.7, 129.8, 129.0, 124.5, 122.5, 18.0, 11.9, 11.8; HRMS (ESI) calcd. for $C_{17}H_{29}BrNOSi$ $(M+H)^+$: 370.1196, Found: 370.1187.

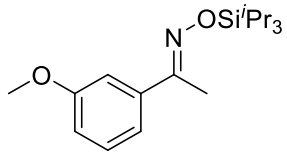


(*E*)-1-(3-(trifluoromethyl)phenyl)ethan-1-one *O*-triisopropylsilyl oxime (1n): colorless oil. IR (film): 2923, 2867, 1650, 1131 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.91-7.86 (m, 2H), 7.61-7.56 (m, 1H), 7.53-7.43 (m, 1H), 2.29 (s, 3H), 1.35-1.22 (m, 3H), 1.21-1.06 (m, 18H); ^{13}C NMR (125 MHz, $CDCl_3$, ppm) δ 157.3, 138.0, 131.0 (q, J = 31.3 Hz), 129.3, 129.0, 125.7 (q, J = 3.8 Hz), 124.3 (q, J = 271.3 Hz), 123.0 (q, J = 3.8 Hz), 18.2, 12.2, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -62.8; HRMS (ESI) calcd. for $C_{18}H_{29}F_3NOSi$ $(M+H)^+$: 360.1965, Found: 360.1956.

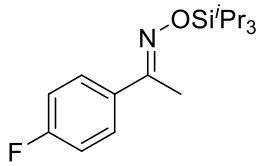


(*E*)-1-(*m*-tolyl)ethan-1-one *O*-triisopropylsilyl oxime (1o): colorless oil. IR (film): 2944, 2866, 1463, 939 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.50-7.44 (m, 2H), 7.27-7.11 (m, 2H), 2.37 (s, 3H), 2.26 (s, 3H), 1.34-1.21 (m, 3H), 1.21-1.06 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ

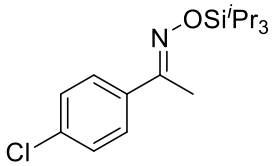
158.6, 138.0, 137.3, 129.8, 128.4, 126.9, 123.4, 21.8, 18.2, 12.2; HRMS (ESI) calcd. for $C_{18}H_{32}NOSi$ $(M+H)^+$: 306.2250, Found: 306.2248.



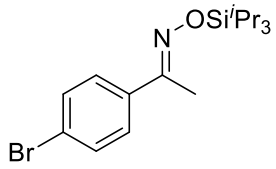
(*E*)-1-(3-methoxyphenyl)ethan-1-one *O*-triisopropylsilyl oxime (1p): colorless oil. IR (film): 2944, 2866, 1464, 942 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.33-7.23 (m, 3H), 6.93-6.87 (m, 1H), 3.82 (s, 3H), 2.26 (s, 3H), 1.34-1.20 (m, 3H), 1.20-1.06 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 159.7, 158.3, 138.7, 129.4, 118.8, 114.8, 111.6, 55.4, 18.2, 12.2, 12.1; HRMS (ESI) calcd. for $C_{18}H_{32}NO_2Si$ $(M+H)^+$: 322.2197, Found: 322.2197.



(*E*)-1-(4-fluorophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1q): colorless oil. IR (film): 2945, 2867, 1511, 930 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.69-7.62 (m, 2H), 7.08-7.00 (m, 2H), 2.25 (s, 3H), 1.33-1.21 (m, 3H), 1.16-1.07 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 164.7, 162.2, 157.5, 133.4, 128.0 (d, J = 8.0 Hz), 115.4 (d, J = 21.0Hz), 18.2, 12.2, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -112.9; HRMS (ESI) calcd. for $C_{17}H_{29}FNOSi$ $(M+H)^+$: 310.1997, Found: 310.1991.



(*E*)-1-(4-chlorophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1r): colorless oil. IR (film): 2944, 2866, 1461, 990 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.61 (d, *J* = 8.6 Hz, 2H), 7.32 (d, *J* = 8.6 Hz, 2H), 2.25 (s, 3H), 1.33-1.21 (m, 3H), 1.16-1.06 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 157.5, 135.7, 135.1, 128.7, 127.4, 18.2, 12.2, 12.0; HRMS (ESI) calcd. for $C_{17}H_{29}ClNOSi$ $(M+H)^+$: 326.1702, Found: 326.1693.



(*E*)-1-(4-bromophenyl)ethan-1-one *O*-triisopropylsilyl oxime (1s): colorless oil; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.55 (d, *J* = 9.0 Hz, 2H), 7.48 (d, *J* = 9.0 Hz, 2H), 2.24 (s, 3H), 1.33-1.21 (m, 3H), 1.16-1.06 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 157.6, 136.2, 131.6, 127.7, 123.3, 18.2, 12.1, 11.9.

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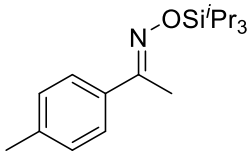
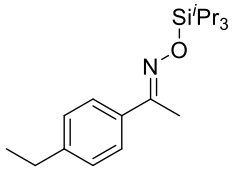
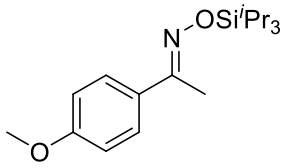


(*E*)-1-(*p*-tolyl)ethan-1-one *O*-triisopropylsilyl oxime (1t): colorless oil. IR (film): 2944, 2866, 1463, 926 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.58 (d, *J* = 8.1 Hz, 2H), 7.16 (d, *J* = 8.1 Hz, 2H), 2.35 (s, 3H), 2.25 (s, 3H), 1.33-1.21 (m, 3H), 1.16-1.06 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 158.4, 139.0, 134.5, 129.2, 126.1, 21.5, 18.2, 12.2, 12.0; HRMS (ESI) calcd. for $C_{18}H_{32}NOSi$ $(M+H)^+$: 306.2250, Found: 306.2247.

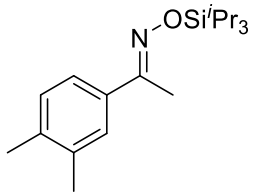


(*E*)-1-(4-ethylphenyl)ethan-1-one O-triisopropylsilyl oxime (1u): colorless oil. IR (film): 2943, 2866, 1462, 925 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.62 (d, *J* = 8.4 Hz, 2H), 7.19 (d, *J* = 8.4 Hz, 2H), 2.65 (q, *J* = 7.7 Hz, 2H), 2.25 (s, 3H), 1.33-1.21 (m, 3H), 1.24 (t, *J* = 7.5 Hz, 3H), 1.14-1.08 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 161.9, 136.6, 128.9, 128.5, 126.4, 28.0, 20.3, 18.2, 14.6, 12.2; HRMS (ESI) calcd. for $C_{19}H_{34}NOSi$ $(M+H)^+$: 320.2404, Found: 320.2403.



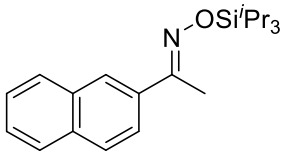
(*E*)-1-(4-methoxyphenyl)ethan-1-one *O*-triisopropylsilyl oxime (1v): colorless oil. ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.62 (d, *J* = 8.8 Hz, 2H), 6.87 (d, *J* = 8.7 Hz, 2H), 3.79 (s, 3H), 2.24 (s, 3H), 1.33-1.21 (m, 3H), 1.16-1.05 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 160.5, 157.9, 129.9, 127.5, 113.9, 55.4, 18.2, 12.2, 11.9.

J. Mohr and M. Oestreich, *Angew. Chem. Int. Ed.,* 2014, **53**, 13278-13281.

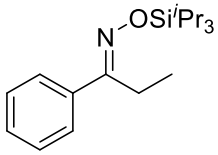


(*E*)-1-(3,4-dimethylphenyl)ethan-1-one *O*-triisopropylsilyl oxime (1w): colorless oil. IR (film): 2943, 2866, 1463, 880 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.46-7.38 (m, 2H), 7.11 (d, *J* = 7.8 Hz, 1H), 2.28 (s, 3H), 2.26 (s, 3H), 2.24 (s, 3H), 1.33-1.21 (m, 3H), 1.17-1.06 (m, 18H); ^{13}C NMR

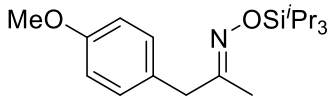
(100 MHz, $CDCl_3$, ppm) δ 158.3, 137.5, 136.5, 134.7, 129.5, 127.4, 123.5, 20.1, 19.7, 18.1, 12.1, 12.0; HRMS (ESI) calcd. for $C_{19}H_{34}NOSi$ $(M+H)^+$: 320.2404, Found: 320.2405.



(*E*)-1-(naphthalen-2-yl)ethan-1-one *O*-triisopropylsilyl oxime (1x): colorless oil. IR (film): 2944, 2866, 1463, 925 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 8.02-7.93 (m, 2H), 7.89-7.77 (m, 3H), 7.51-7.43 (m, 2H), 2.39 (s, 3H), 1.39-1.25 (m, 3H), 1.18-1.08 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 158.4, 134.7, 133.8, 133.3, 128.6, 128.0, 127.8, 126.6, 126.4, 125.9, 123.7, 18.2, 12.2, 11.9; HRMS (ESI) calcd. for $C_{21}H_{32}NOSi$ $(M+H)^+$: 342.2248, Found: 342.2249.



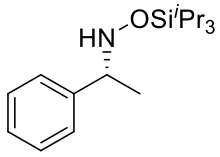
(*E*)-1-phenylpropan-1-one *O*-triisopropylsilyl oxime (1y): colorless oil. IR (film): 2943, 2866, 1463, 934 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm,) δ 7.70-7.62 (m, 2H), 7.40-7.31 (m, 3H), 2.81 (q, J = 7.6 Hz, 2H), 1.34-1.23 (m, 3H), 1.22-1.11 (m, 21H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 163.0, 136.3, 129.0, 128.6, 126.4, 19.6, 18.2, 12.2, 11.2; HRMS (ESI) calcd. for $C_{18}H_{32}NOSi$ $(M+H)^+$: 306.2248, Found: 306.2243.



(*E*)-1-(4-methoxyphenyl)propan-2-one *O*-triisopropylsilyl oxime (1z): colorless oil. IR (film): 2942, 2864, 1463, 927 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm,) δ 7.54 (d, J = 5.6 Hz, 2H), 6.79 (d, J = 5.6 Hz, 2H), 3.71 (s, 3H), 3.22 (s, 2H), 2.16 (s, 3H), 1.27-1.11 (m, 3H), 1.06-0.95 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 160.2, 157.6, 129.6, 127.2, 113.5, 55.1, 45.8, 17.9, 11.9, 11.6;

HRMS (ESI) calcd. for $C_{19}H_{34}NO_2Si$ $(M+H)^+$: 336.2359, Found: 336.2353.

Characterization of products:



(*R*)-*N*-(1-phenylethyl)-*O*-(triisopropylsilyl)hydroxylamine (2f): colorless oil, 86.7 mg, 97% yield, 65% ee, $[\alpha]_D^{24}$ = +22.6 (*c* 0.50, $CHCl_3$). ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.37-7.22 (m, 5H), 4.15 (q, *J* = 6.7 Hz, 1H), 1.47 (d, *J* = 6.7 Hz, 3H), 1.18-1.08 (m, 3H), 1.08-0.96 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 141.9, 128.6, 127.9, 127.6, 62.6, 19.0, 18.3, 12.0.

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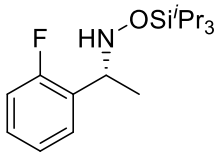
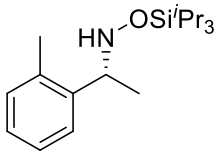
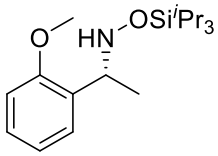


(*R*)-*N*-(1-(2-fluorophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2h): colorless oil, 90.1 mg, 96% yield, 45% ee, $[\alpha]_D^{24}$ = +14.2 (*c* 0.50, $CHCl_3$). IR (film): 2945, 2868, 1492, 1231 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.28 (m, 1H), 7.27-7.17 (m, 1H), 7.14-7.06 (m, 1H), 7.06-7.69 (m, 1H), 4.40 (q, *J* = 6.7 Hz, 1H), 1.41 (d, *J* = 6.8 Hz, 3H), 1.19-1.07 (m, 3H), 1.07-0.99 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 161.2 (d, *J* = 244.0 Hz), 130.2 (d, *J* = 13.4 Hz), 128.7 (d, *J* = 12.0 Hz), 128.7, 124.2 (d, *J* = 3.4 Hz), 115.6 (d, *J* = 22.4 Hz), 56.5, 18.7, 18.4, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -113.6; HRMS (ESI) calcd. for $C_{17}H_{31}FNOSi$ $(M+H)^+$: 312.2153, Found: 312.2154.

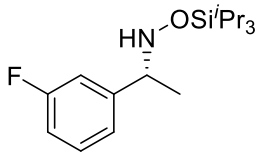


(*R*)-*N*-(1-(*o*-tolyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2i): colorless oil, 85.2 mg, 92%

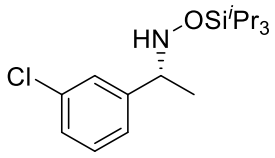
yield, 52% ee, $[\alpha]_D^{24}$ = +15.1 (*c* 1.00, $CHCl_3$). IR (film): 2943, 2866, 1465, 1090 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.34-7.30 (m, 1H), 7.21-7.11 (m, 3H), 5.00 (s, 1H), 4.38 (q, *J* = 6.6 Hz, 1H), 2.39 (s, 3H), 1.39 (d, *J* = 6.6 Hz, 3H), 1.19-1.12 (m, 3H), 1.12-1.02 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 141.3, 136.1, 130.5, 127.2, 126.3, 126.0, 58.1, 19.6, 18.4, 18.0, 12.1; HRMS (ESI) calcd. for $C_{18}H_{34}NOSi$ $(M+H)^+$: 308.2404, Found: 308.2406.



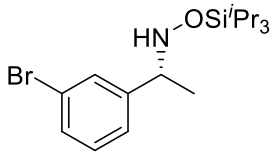
(*R*)-*N*-(1-(1-methoxyphenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2j): colorless oil, 81.2 mg, 88% yield, 48% ee, $[\alpha]_D^{24}$ = +17.7 (*c* 0.50, $CHCl_3$). IR (film): 2906, 2361, 1634, 1461, 1245 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.26-7.21 (m, 1H), 6.95-6.77 (m, 3H), 5.19 (br s, 1H), 4.10 (q, *J* = 6.6 Hz, 1H), 3.80 (s, 3H), 1.45 (d, *J* = 6.6 Hz, 3H), 1.18-1.09 (m, 3H), 1.09-1.01 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 159.9, 129.6, 119.9, 113.4, 113.2, 62.6, 55.4, 18.9, 18.3, 12.0; HRMS (ESI) calcd. for $C_{18}H_{34}NO_2Si$ $(M+H)^+$: 324.2353, Found: 324.2353.



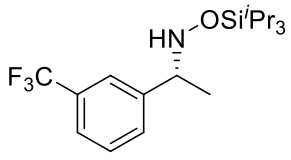
(*R*)-*N*-(1-(3-fluorophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2k): colorless oil, 86.9 mg, 93% yield, 61% ee, $[\alpha]_D^{24}$ = +18.2 (*c* 0.51, $CHCl_3$). IR (film): 2946, 2869, 1592, 1317 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.33-7.22 (m, 1H), 7.14-6.89 (m, 3H), 4.10 (q, *J* = 6.5 Hz, 1H), 1.40 (d, *J* = 6.7 Hz, 3H), 1.20-1.09 (m, 3H), 1.09-0.99 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 163.1 (d, *J* = 243.8 Hz), 145.8 (d, *J* = 6.8 Hz), 129.8 (d, *J* = 8.2 Hz), 123.2 (d, *J* = 2.5 Hz), 114.5 (d, *J* = 5.8 Hz), 114.3 (d, *J* = 5.6 Hz), 62.0, 19.6, 18.4, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -112.3; HRMS (ESI) calcd. for $C_{17}H_{31}FNOSi$ $(M+H)^+$: 312.2153, Found: 312.2153.



(*R*)-*N*-(1-(3-chlorophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2l): colorless oil, 86.1 mg, 86% yield, 60% ee, $[\alpha]_D^{24}$ = +20.6 (*c* 0.50, $CHCl_3$). IR (film): 2943, 2866, 1465 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.31 (s, 1H), 7.25-7.19 (m, 3H), 4.06 (q, *J* = 6.8 Hz, 1H), 1.38 (d, *J* = 6.7 Hz, 3H), 1.19-1.08 (m, 3H), 1.08-0.99 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 145.2, 134.3, 129.7, 127.8, 127.6, 125.8, 62.0, 19.5, 18.4, 12.0; HRMS (ESI) calcd. for $C_{17}H_{31}ClNOSi$ $(M+H)^+$: 328.1858, Found: 328.1857.

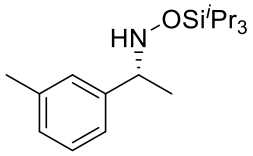


(*R*)-*N*-(1-(3-bromophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2m): colorless oil, 100.3 mg, 89% yield, 62% ee, $[\alpha]_D^{24}$ = +22.1 (*c* 0.51, $CHCl_3$). IR (film): 2943, 2866, 1461 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.50 (s, 2H), 7.28-7.17 (m, 2H), 4.07 (q, *J* = 6.8 Hz, 1H), 1.40 (d, *J* = 6.7 Hz, 3H), 1.21-1.10 (m, 3H), 1.10-1.00 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 145.5, 130.7, 130.6, 130.0, 126.3, 122.5, 62.0, 19.5, 18.4, 18.3, 12.0; HRMS (ESI) calcd. for $C_{17}H_{31}BrNOSi$ $(M+H)^+$: 372.1353, Found: 372.1353.

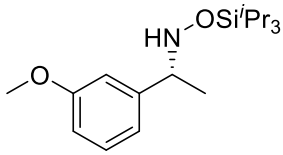


(*R*)-*N*-(1-(3-(trifluoromethyl)phenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2n): colorless oil, 99.3 mg, 90% yield, 68% ee, $[\alpha]_D^{24}$ = +23.3 (*c* 0.50, $CHCl_3$). IR (film): 2881, 2362, 1328, 1129 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.63-7.37 (m, 4H), 4.15 (q, *J* = 6.9 Hz, 1H), 1.42 (d, *J* = 6.6 Hz, 3H), 1.17-1.08 (m, 3H), 1.08-0.96 (m, 18H); ^{13}C NMR (125 MHz, $CDCl_3$, ppm) δ 144.2,

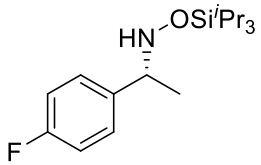
131.0, 130.9 (q, J = 31.8 Hz), 128.8, 124.5 (q, J = 270.3 Hz), 124.5 (q, J = 3.7 Hz), 124.3 (q, J = 3.6 Hz), 62.0, 19.4, 18.3, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -62.4; HRMS (ESI) calcd. for $C_{18}H_{31}F_3NOSi$ $(M+H)^+$: 362.2122, Found: 362.2120.



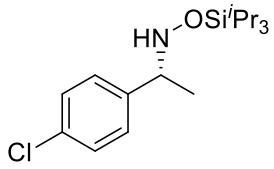
(*R*)-*N*-(1-(*m*-tolyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2o): colorless oil, 98.5 mg, 99% yield, 60% ee, $[\alpha]_D^{24}$ = +19.7 (*c* 0.50, $CHCl_3$). IR (film): 2943, 2866, 1464 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.24-7.03 (m, 4H), 4.06 (q, J = 6.6 Hz, 1H), 2.34 (s, 3H), 1.41 (d, J = 6.6 Hz, 3H), 1.20-1.10 (m, 3H), 1.10-1.00 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 142.7, 138.7, 128.2, 128.1, 124.4, 62.2, 21.5, 19.4, 18.2, 11.9; HRMS (ESI) calcd. for $C_{18}H_{34}NOSi$ $(M+H)^+$: 308.2404, Found: 308.2406.



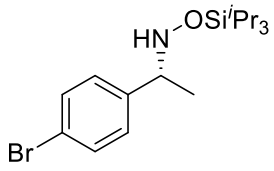
(*R*)-*N*-(1-(3-methoxyphenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2p): colorless oil, 86.6 mg, 84% yield, 57% ee, $[\alpha]_D^{24}$ = +18.6 (*c* 0.51, $CHCl_3$). IR (film): 2904, 2361, 1604, 1041 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.25-7.19 (m, 1H), 6.92-6.77 (m, 3H), 4.08 (q, J = 6.6 Hz, 1H), 3.80 (s, 3H), 1.42 (d, J = 6.8 Hz, 3H), 1.19-1.11 (m, 3H), 1.11-1.01 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 159.6, 143.7, 129.3, 119.7, 113.2, 112.9, 62.3, 55.2, 19.0, 18.1, 11.8; HRMS (ESI) calcd. for $C_{18}H_{34}NO_2Si$ $(M+H)^+$: 324.2353, Found: 324.2358.



(*R*)-*N*-(1-(4-fluorophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2q): colorless oil, 85.2 mg, 91% yield, 55% ee, $[\alpha]_D^{24}$ = +16.3 (*c* 0.50, $CHCl_3$). IR (film): 2973, 2872, 1605, 1228 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.34-7.22 (m, 2H), 7.05-6.94 (m, 2H), 4.89 (s, 1H), 4.07 (q, *J* = 5.6 Hz, 1H), 1.39 (d, *J* = 6.6 Hz, 3H), 1.17-1.07 (m, 3H), 1.09-0.97 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 162.3 (d, *J* = 243.4 Hz), 138.7 (d, *J* =3.0 Hz), 129.1 (d, *J* = 7.9 Hz), 115.2 (d, *J* = 21.0 Hz), 61.7, 19.6, 18.4, 12.0; ^{19}F NMR (376 MHz, $CDCl_3$, ppm) δ -111.9; HRMS (ESI) calcd. for $C_{17}H_{31}FNOSi$ $(M+H)^+$: 312.2153, Found: 312.2155.



(*R*)-*N*-(1-(4-chlorophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2r): colorless oil, 92.1 mg, 92% yield, 56% ee, $[\alpha]_D^{24}$ = +21.8 (*c* 0.46, $CHCl_3$). IR (film): 2944, 2867, 1464, 1087 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.34-7.21 (m, 4H), 4.07 (q, *J* = 6.5 Hz, 1H),1.38 (d, *J* = 6.7 Hz, 3H), 1.20-1.08 (m, 3H), 1.08-0.98 (m, 18H); ^{13}C NMR (125 MHz, $CDCl_3$, ppm) δ 141.5, 133.1, 128.9, 128.5, 61.7, 19.5, 18.3, 12.0; HRMS (ESI) calcd. for $C_{17}H_{31}ClNOSi$ $(M+H)^+$: 328.1858, Found: 328.1856.



(*R*)-*N*-(1-(4-bromophenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2s): colorless oil, 106.1 mg, 89% yield, 59% ee, $[\alpha]_D^{24}$ = +21.8 (*c* 0.52, $CHCl_3$). ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.44 (d, *J* = 8.3 Hz, 2H), 7.20 (d, *J* = 8.3 Hz, 3H), 4.05 (q, *J* = 6.8 Hz, 1H), 1.38 (d, *J* = 6.7 Hz, 3H), 1.19-1.08 (m, 3H), 1.08-0.99 (m, 18H); ^{13}C NMR (125 MHz, $CDCl_3$, ppm) δ 142.1, 131.5, 129.3,

121.3, 61.8, 19.5, 18.4, 18.4, 12.0.

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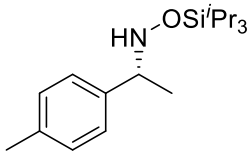
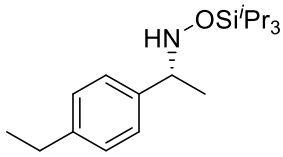
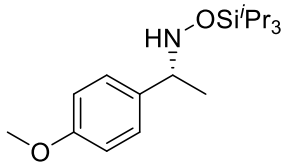


(*R*)-*N*-(1-(*p*-tolyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2t): colorless oil, 84.2 mg, 89% yield, 54% ee, $[\alpha]_D^{24}$ = +18.7 (*c* 0.53, $CHCl_3$). IR (film): 2943, 2866, 1465, 1090 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.29-7.08 (m, 4H), 4.06 (q, *J* = 6.3 Hz, 1H), 2.33 (s, 3H), 1.41 (d, *J* = 6.5 Hz, 3H), 1.19-1.11 (m, 3H), 1.11-1.00 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 139.9, 137.2, 129.2, 127.5, 62.1, 21.3, 19.6, 18.4, 12.1; HRMS (ESI) calcd. for $C_{18}H_{34}NOSi$ $(M+H)^+$: 308.2404, Found: 308.2406.



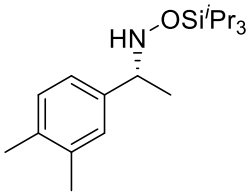
(*R*)-*N*-(1-(4-ethylphenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2u): colorless oil, 91.1 mg, 92% yield, 54% ee, $[\alpha]_D^{24}$ = +18.9 (*c* 0.58, $CHCl_3$). IR (film): 2943, 2866, 1462, 992 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.28-7.21 (m, 2H), 7.15 (d, *J* = 7.9 Hz, 2H), 4.08 (q, *J* = 6.4 Hz, 1H), 2.63 (q, *J* = 7.5 Hz, 2H), 1.43 (d, *J* = 6.5 Hz, 3H), 1.23 (t, *J* = 7.6 Hz, 3H), 1.20-1.09 (m, 3H), 1.09-1.00 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 158.4, 145.4, 134.8, 128.0, 126.2, 28.9, 18.2, 15.7, 12.2, 12.0; HRMS (ESI) calcd. for $C_{19}H_{36}NOSi$ $(M+H)^+$: 322.2561, Found: 322.2562.



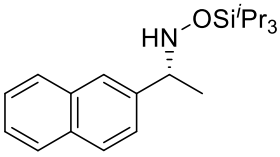
(*R*)-*N*-(1-(4-methoxyphenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2v): colorless oil, 84.4

mg, 89% yield, 51% ee, $[\alpha]_D^{24}$ = +17.0 (*c* 0.50, $CHCl_3$). ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.25 (d, *J* = 8.6 Hz, 2H), 6.85 (d, *J* = 8.7 Hz, 3H), 4.87 (s, 1H), 4.05 (q, *J* = 6.6 Hz, 1H), 3.79 (s, 3H), 1.40 (d, *J* = 6.6 Hz, 3H), 1.18-1.11 (m, 3H), 1.10-1.00 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 159.1, 134.9, 128.7, 113.8, 61.7, 55.4, 19.5, 18.4, 12.1.

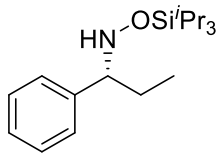
J. Mohr and M. Oestreich, *Angew. Chem. Int. Ed.,* 2014, **53**, 13278-13281.



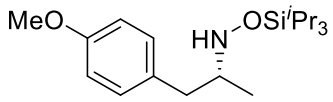
(*R*)-*N*-(1-(3,4-dimethylphenyl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2w): colorless oil, 91.7 mg, 94% yield, 58% ee, $[\alpha]_D^{24}$ = +19.2 (*c* 0.50, $CHCl_3$). IR (film): 2925, 2865, 1635, 1462, 1085 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.13-7.01 (m, 3H), 4.88 (s, 1H), 4.04 (q, *J* = 6.4 Hz, 1H), 2.25 (s, 3H), 2.24 (s, 3H), 1.40 (d, *J* = 6.5 Hz, 3H), 1.22-1.12 (m, 3H), 1.11-1.00 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 140.3, 136.6, 135.8, 129.7, 128.9, 124.9, 62.1, 20.0, 19.6, 18.4, 12.0; HRMS (ESI) calcd. for $C_{19}H_{36}NOSi$ $(M+H)^+$: 322.2561, Found: 322.2566.



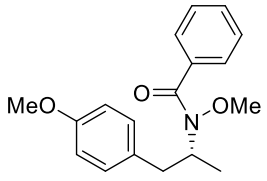
(*R*)-*N*-(1-(naphthalen-2-yl)ethyl)-*O*-(triisopropylsilyl)hydroxylamine (2x): colorless oil, 92.9 mg, 92% yield, 64% ee, $[\alpha]_D^{24}$ = +21.8 (*c* 0.55, $CHCl_3$). IR (film): 2943, 2865, 1463, 996 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.84-7.72 (m, 4H), 7.50-7.42 (m, 3H), 4.27 (q, *J* = 6.6 Hz, 1H), 1.51 (d, *J* = 6.6 Hz, 3H), 1.20-1.10 (m, 3H), 1.11-1.01 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 140.4, 133.5, 133.1, 128.0, 128.0, 127.8, 126.2, 126.1, 125.9, 125.8, 62.5, 19.6, 18.4, 12.0; HRMS (ESI) calcd. for $C_{21}H_{34}NOSi$ $(M+H)^+$: 344.2407, Found: 344.2409.



(*R*)-*N*-(1-phenylpropyl)-*O*-(triisopropylsilyl)hydroxylamine (2y): colorless oil, 86.3 mg, 90% yield, 60% ee, $[\alpha]_D^{24}$ = +19.9. (*c* 0.53, $CHCl_3$). IR (film): 2943, 2866, 1463 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.34-7.23 (m, 5H), 3.95-3.87 (m, 1H), 1.97-1.82 (m, 1H), 1.70-1.51 (m, 1H), 1.31-1.10 (m, 3H), 1.09-0.97 (m, 18H), 0.88 (t, *J* = 7.3 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 141.8, 128.4, 128.1, 127.5, 69.4, 26.4, 18.4, 12.0, 10.9; HRMS (ESI) calcd. for $C_{18}H_{34}NOSi$ $(M+H)^+$: 308.2404, Found: 308.2404.



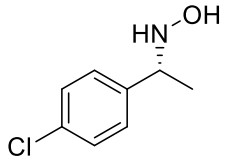
(*R*)-*N*-(1-(4-methoxyphenyl)propan-2-yl)-*O*-(triisopropylsilyl)hydroxylamine (2z): colorless oil, 88.3 mg, 87% yield, 33% ee, $[\alpha]_D^{24}$ = -11.9. (*c* 0.54, $CHCl_3$). IR (film): 2943, 2865, 1463 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.07-7.01 (m, 2H), 6.64 (d, *J* = 6.6 Hz, 2H), 4.66 (s, 1H), 3.84 (m, 1H), 3.58 (s, 3H), 2.96 (dd, *J* = 13.8, 9.0 Hz, 1H), 2.57 (dd, *J* = 13.8, 5.7 Hz, 1H), 1.19 (d, *J* = 6.3 Hz, 3H), 0.97-0.94 (m, 3H), 0.94-0.80 (m, 18H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 158.4, 134.4, 128.1, 113.3, 64.0, 55.3, 19.0, 17.9, 11.5; HRMS (ESI) calcd. for $C_{19}H_{36}NO_2Si$ $(M+H)^+$: 338.2515, Found: 338.2509.



(*R*)-*N*-methoxy-*N*-(1-(4-methoxyphenyl)propan-2-yl)benzamide: According to the general procedure, (*R*)-**2z** was converted to the *N*-benzoyl derivative for chiral HPLC analysis. ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.40-7.21 (m, 7H), 7.02 (d, J = 8.4 Hz, 2H), 6.82-6.76 (m, 2H), 4.34 (s,

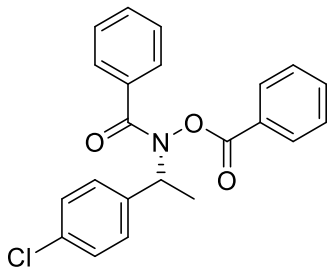
1H), 3.77 (s, 3H), 3.70 (s, 3H), 3.03 (dd, J = 13.8, 9.0 Hz, 1H), 2.64 (dd, J = 13.8, 5.7 Hz, 1H), 1.36 (d, J = 6.3 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 170.4, 158.4, 135.2, 130.5, 130.3, 130.2, 128.0, 127.4, 113.8, 64.0, 55.3, 39.2, 18.3.

J. Mas-Rosello, T. Smejkal and N. Cramer, *Science,* 2020, **368**, 1098.

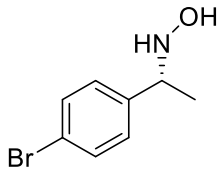


(*R*)-*N*-(1-(4-chlorophenyl)ethyl)hydroxylamine (5): white solid, 44.1 mg, 86% yield, 55% ee, $[\alpha]_D^{25}$ = +8.7. (*c* 0.52, $CHCl_2$) ($[\alpha]_D^{22}$ = -47.0 (*c* 2.0, $CHCl_2$) for *S*-isomer)[lit]; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.36-7.27 (m, 4H), 4.12 (q, *J* = 6.7 Hz, 1H), 1.33 (d, *J* = 6.7 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 141.4, 133.4, 128.9, 128.7, 61.4, 19.8.

D. A. Tickell, M. F. Mahon, S. D. Bull and T. D. James, *Org. Lett.,* 2013, **15**, 860-863.

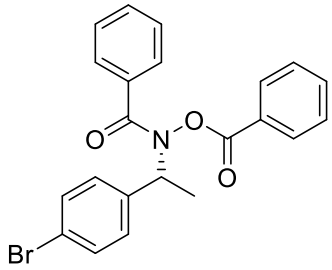


(*R*)-*N*-(benzoyloxy)-*N*-(1-(4-chlorophenyl)ethyl)benzamide: According to the general procedure, **5** was converted to the *N*-benzoyl derivative for chiral HPLC analysis. colorless oil, 26.3 mg, 69% yield, 55% ee. IR (film): 2987, 2874, 1724, 1137 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$, ppm) δ 7.83-7.73 (m, 2H), 7.58-7.46 (m, 3H), 7.39-7.21 (m, 9H), 5.70 (q, *J* = 6.9 Hz, 1H), 1.60 (d, *J* = 6.9 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 170.4, 168.0, 134.0, 133.9, 133.8, 130.9, 129.7, 128.7, 128.7, 128.3, 127.5, 126.8, 120.5, 57.8, 29.7, 17.3; HRMS (ESI) calcd. for $C_{22}H_{18}O_3NClNa$ $(M+Na)^+$: 402.0867, Found: 402.0871.



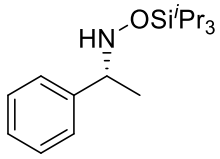
(*R*)-*N*-(1-(4-bromophenyl)ethyl)hydroxylamine (6): white solid, 56.7 mg, 88% yield, 61% ee, $[\alpha]_D^{25}$ = +9.6. (*c* 0.60, $CHCl_2$). ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.47 (d, *J* = 8.4 Hz, 2H), 7.22 (d, *J* = 8.3 Hz, 2H), 4.10 (q, *J* = 6.7 Hz, 1H), 1.34 (d, *J* = 6.7 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 141.8, 131.8, 129.1, 121.5, 61.4, 19.7.

G. Zeng, H. Li, Y. Wei, W. Xuan, R. Zhang, L. E. Breden, W. Wang and F.-S. Liang, *ACS Synth. Biol*., 2017, **6**, 921–927.



***N*-(benzoyloxy)-*N*-(1-(4-bromophenyl)ethyl)benzamide**: According to the general procedure, **6** was converted to the *N*-benzoyl derivative for chiral HPLC analysis. colorless oil; 24.3 mg, 57% yield, 61% ee. IR (film): 2987, 2874, 1725, 1139 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$, ppm) δ 7.92-7.80 (m, 2H), 7.67-7.59 (m, 3H), 7.53-7.27 (m, 9H), 5.75 (q, *J* = 6.7 Hz, 1H), 1.67 (d, *J* = 6.9 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$, ppm) δ 173.6, 171.2, 134.0, 133.9, 131.7, 131.0, 129.7, 128.9, 128.7, 128.4, 128.3, 127.5, 126.8, 121.9, 57.9, 17.3; HRMS (ESI) calcd. for $C_{22}H_{18}O_3NBrNa$ $(M+Na)^+$: 446.0362, Found: 446.0366.

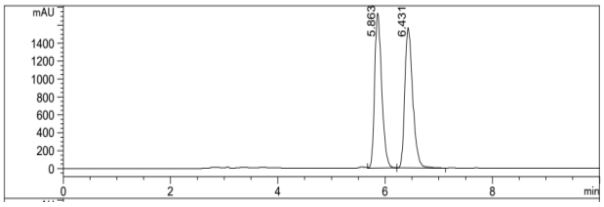
The chromatography for the determination of enantiomeric excess



2f

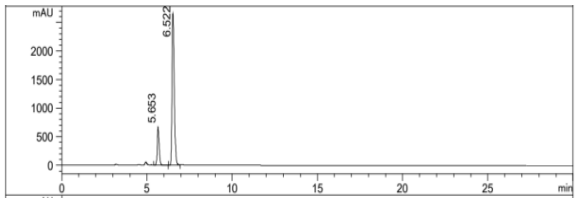
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

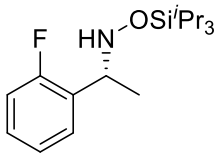


Peak #	RT [min]	Area	Area %
1	5.863	1.581e4	49.565
2	6.431	1.609e4	50.435

Chiral



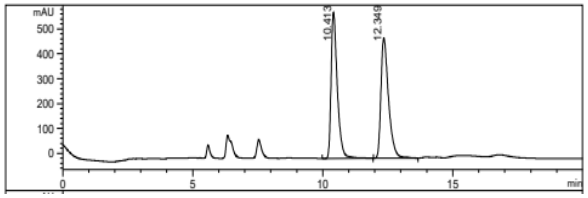
Peak #	RT [min]	Area	Area %
1	5.653	5.190e3	17.396
2	6.522	2.465e4	82.604



2h

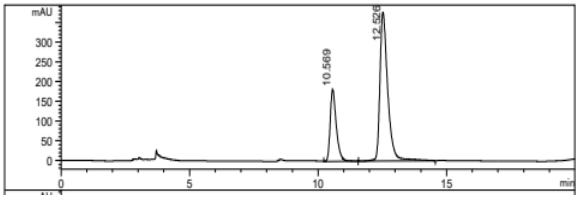
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

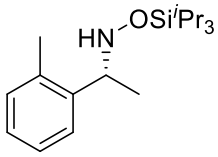


Peak #	RT [min]	Area	Area %
1	10.413	9.760e3	49.904
2	12.349	9.798e3	50.096

Chiral



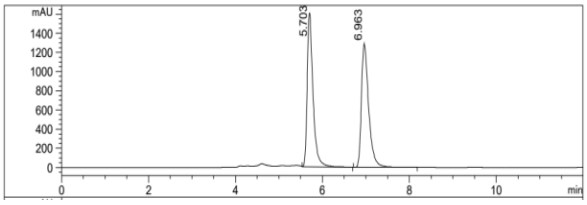
Peak #	RT [min]	Area	Area %
1	10.569	3.002e3	27.288
2	12.526	8.000e3	72.712



2i

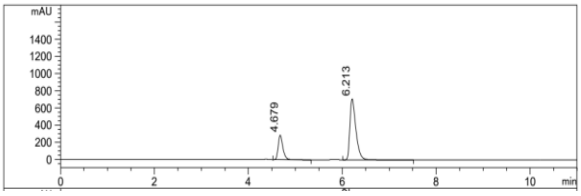
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (95/5); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

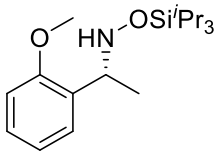


Peak #	RT [min]	Area	Area %
1	5.703	1.493e4	50.062
2	6.963	1.490e4	49.938

Chiral



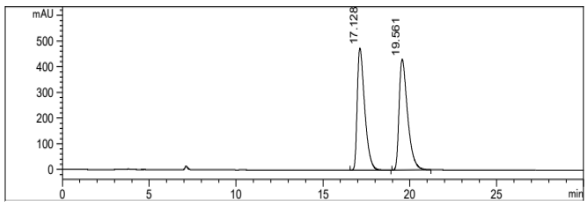
Peak #	RT [min]	Area	Area %
1	4.679	1.999e3	24.113
2	6.213	6.290e3	75.887



2j

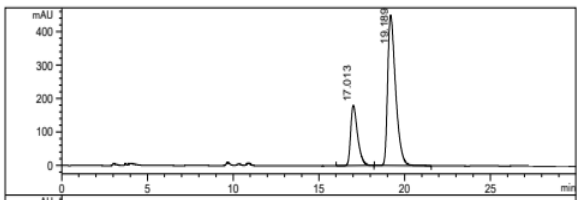
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (92/8); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

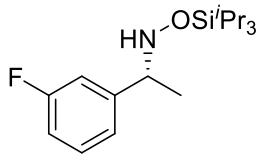


Peak #	RT [min]	Area	Area %
1	17.128	1.420e4	49.231
2	19.561	1.464e4	50.769

Chiral



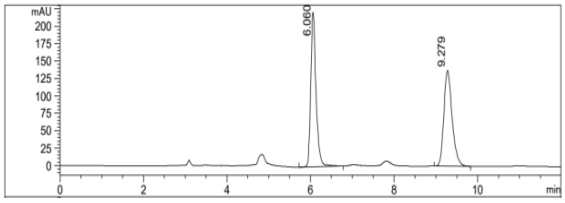
Peak #	RT [min]	Area	Area %
1	17.013	5.076e3	25.884
2	19.189	1.453e4	74.116



2k

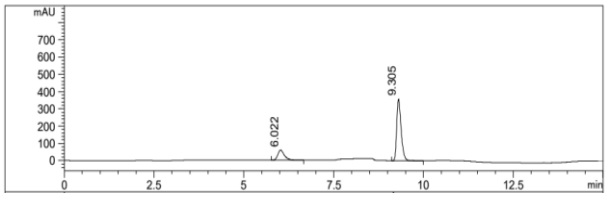
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (96/4); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

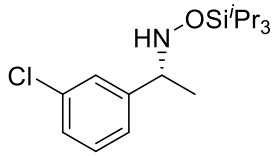


Peak #	RT [min]	Area	Area %
1	6.060	1.947e3	50.782
2	9.279	1.887e3	49.218

Chiral



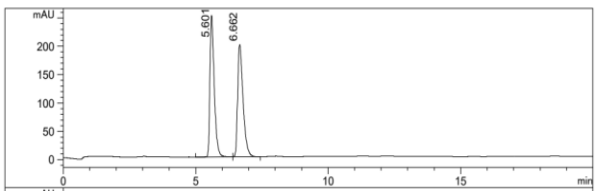
Peak #	RT [min]	Area	Area %
1	6.022	737.954	19.523
2	9.305	3.042e3	80.477



2l

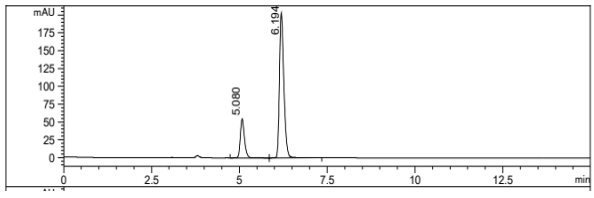
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

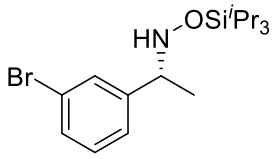


Peak #	RT [min]	Area	Area %
1	5.601	2.841e3	50.323
2	6.662	2.805e3	49.677

Chiral



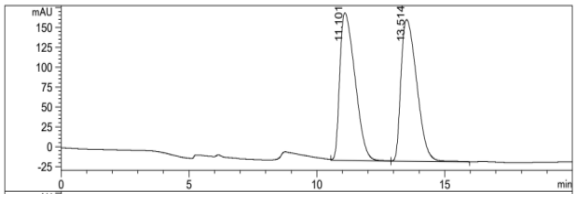
Peak #	RT [min]	Area	Area %
1	5.080	445.616	20.061
2	6.194	1.776e3	79.939



2m

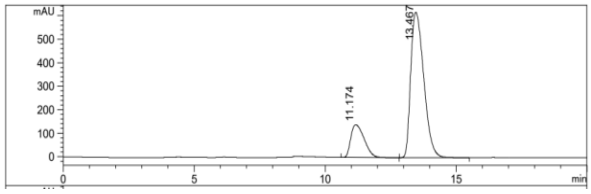
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

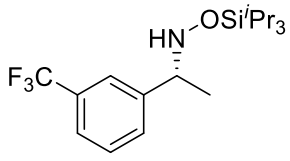


Peak #	RT [min]	Area	Area %
1	11.101	7.674e3	50.245
2	13.514	7.600e3	49.755

Chiral



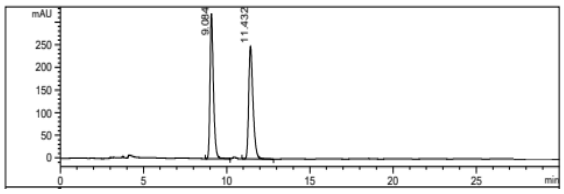
Peak #	RT [min]	Area	Area %
1	11.174	4.954e3	18.785
2	13.467	2.142e4	81.215



2n

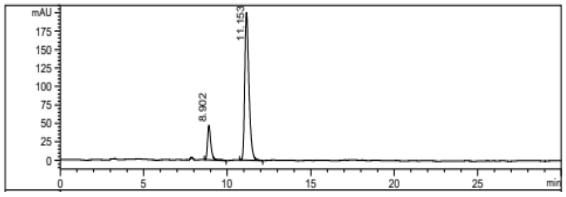
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

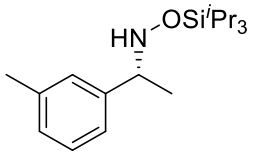


Peak #	RT [min]	Area	Area %
1	9.084	4.563e3	50.263
2	11.432	4.515e3	49.737

Chiral



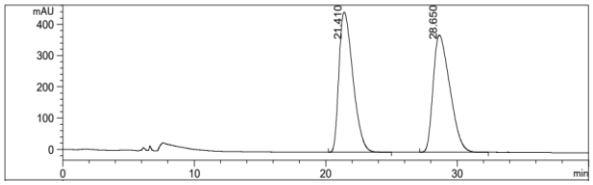
Peak #	RT [min]	Area	Area %
1	8.902	658.330	15.843
2	11.153	3.497e3	84.157



2o

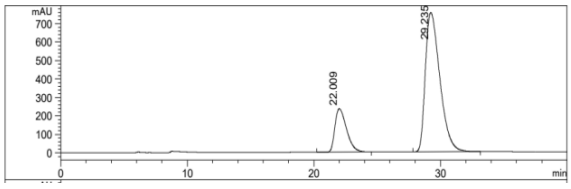
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

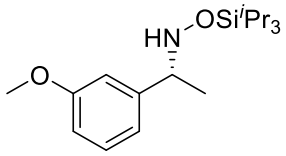


Peak #	RT [min]	Area	Area %
1	21.410	3.306e4	50.014
2	28.650	3.304e4	49.986

Chiral



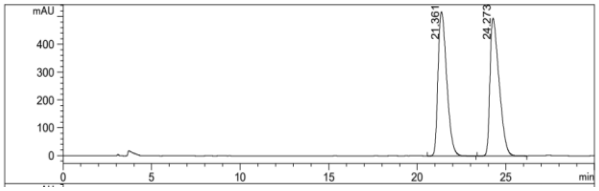
Peak #	RT [min]	Area	Area %
1	22.009	1.495e4	19.928
2	29.235	6.006e4	80.072



2p

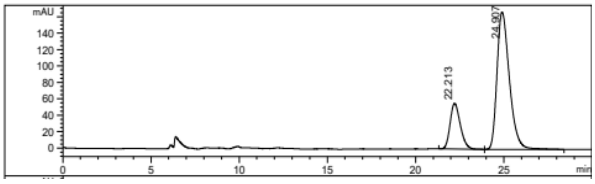
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (92/8); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

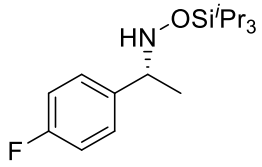


Peak #	RT [min]	Area	Area %
1	21.361	1.768e4	50.014
2	24.273	1.767e4	49.986

Chiral



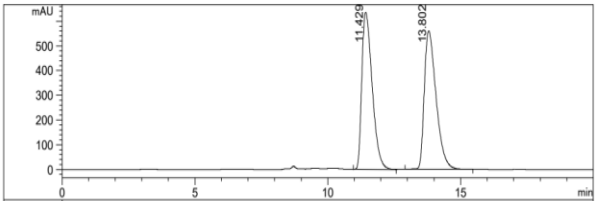
Peak #	RT [min]	Area	Area %
1	22.213	2.253e3	21.579
2	24.907	8.187e3	78.421



2q

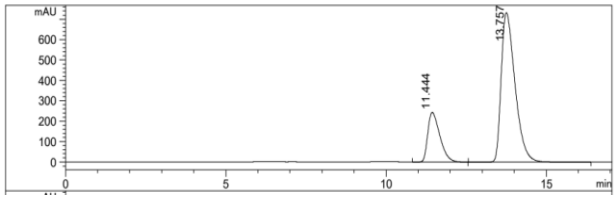
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

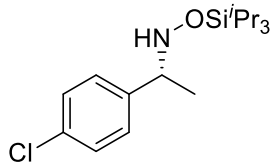


Peak #	RT [min]	Area	Area %
1	11.429	1.724e4	49.934
2	13.802	1.729e4	50.066

Chiral



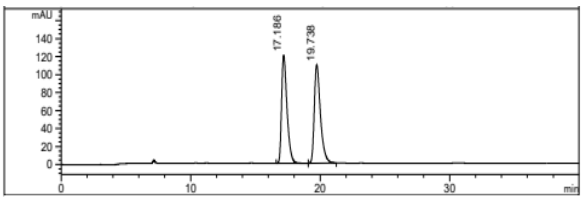
Peak #	RT [min]	Area	Area %
1	11.444	6.382e3	22.453
2	13.757	2.204e4	77.547



2r

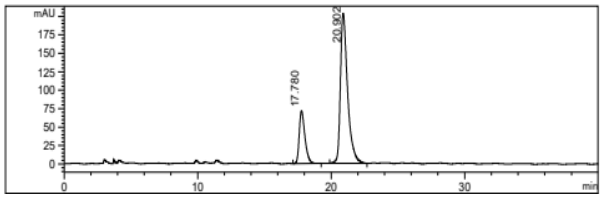
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (98/2); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

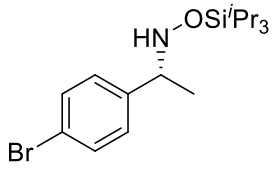


Peak #	RT [min]	Area	Area %
1	17.186	3.493e3	49.205
2	19.738	3.606e3	50.795

Chiral



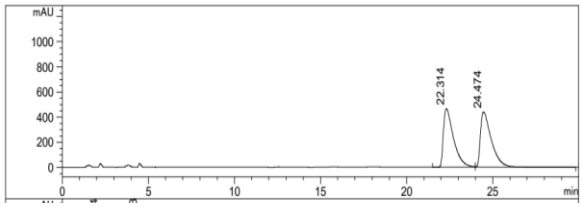
Peak #	RT [min]	Area	Area %
1	17.780	2.113e3	21.799
2	20.902	7.579e3	78.201



2s

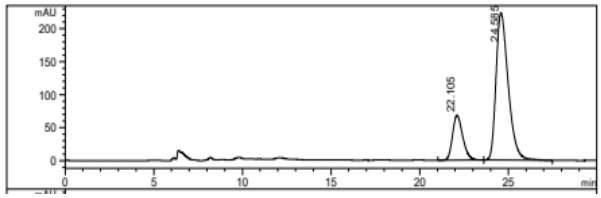
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (98/2); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

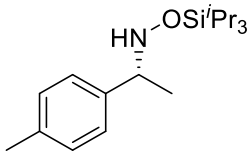


Peak #	RT [min]	Area	Area %
1	22.314	1.907e4	49.499
2	24.474	1.946e4	50.501

Chiral



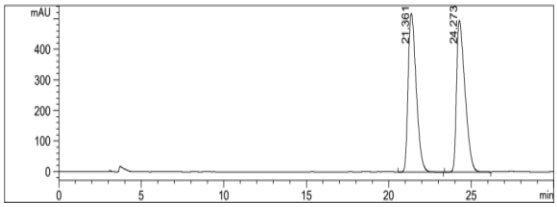
Peak #	RT [min]	Area	Area %
1	22.105	2.721e3	20.334
2	24.585	1.066e4	79.666



2t

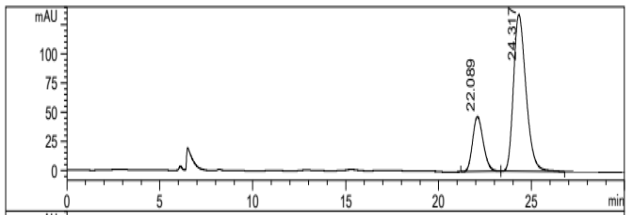
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

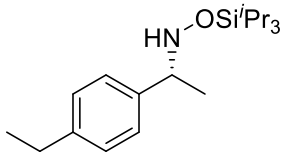


Peak #	RT [min]	Area	Area %
1	21.361	1.768e4	50.014
2	24.273	1.767e4	49.986

Chiral



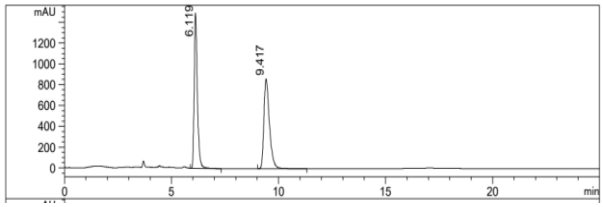
Peak #	RT [min]	Area	Area %
1	22.090	1.027e3	22.999
2	24.317	3.437e3	77.001



2u

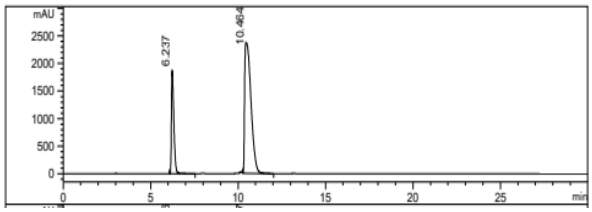
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (95/5); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

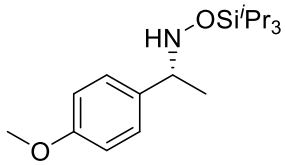


Peak #	RT [min]	Area	Area %
1	6.119	1.540e4	49.858
2	9.417	1.549e4	50.142

Chiral



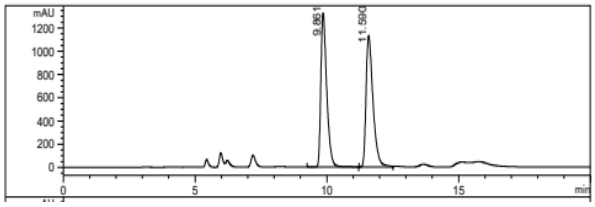
Peak #	RT [min]	Area	Area %
1	6.237	1.810e4	23.177
2	10.464	5.999e4	76.823



2v

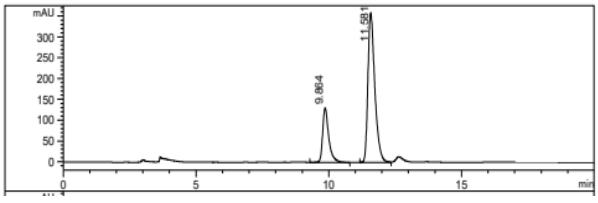
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (92/8); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

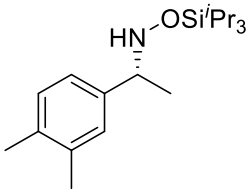


Peak #	RT [min]	Area	Area %
1	9.861	2.053e4	49.708
2	11.590	2.077e4	50.292

Chiral



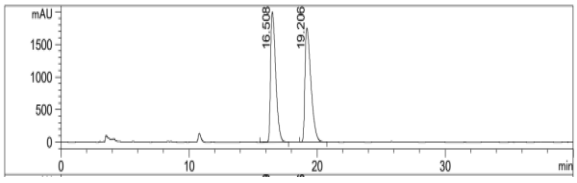
Peak #	RT [min]	Area	Area %
1	9.864	2.074e3	24.273
2	11.581	6.471e3	75.727



2w

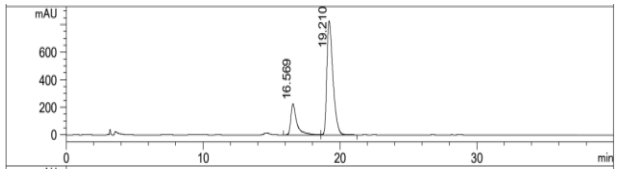
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (95/5); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

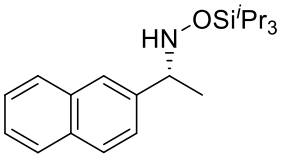


Peak #	RT [min]	Area	Area %
1	16.508	5.587e4	49.551
2	19.206	5.689e4	50.449

Chiral



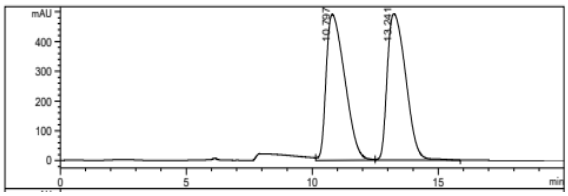
Peak #	RT [min]	Area	Area %
1	16.569	6.834e3	21.064
2	19.210	2.561e4	78.936



2x

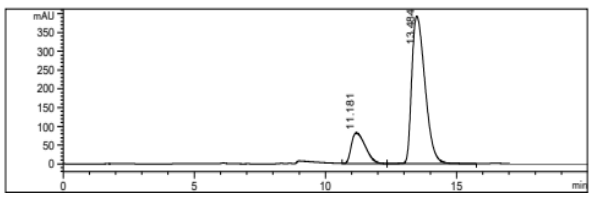
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

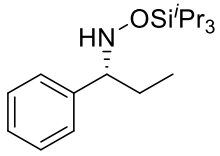


Peak #	RT [min]	Area	Area %
1	10.797	2.519e4	50.076
2	13.241	2.511e4	49.924

Chiral



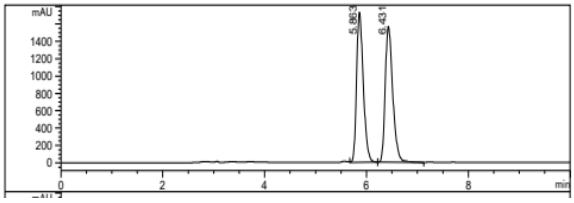
Peak #	RT [min]	Area	Area %
1	11.181	3.035e3	18.000
2	13.484	1.382e4	82.000



2y

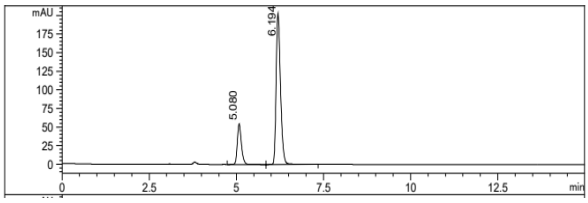
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (97/3); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

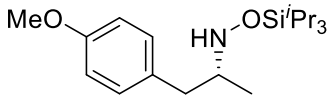


Peak #	RT [min]	Area	Area %
1	5.863	1.581e4	49.565
2	6.431	1.609e4	50.435

Chiral



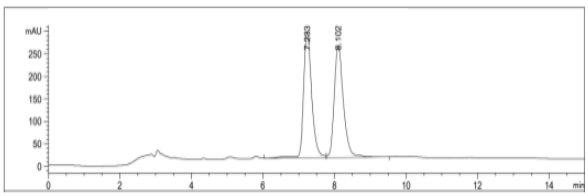
Peak #	RT [min]	Area	Area %
1	5.080	445.616	20.061
2	6.194	1.776e3	79.939



2z

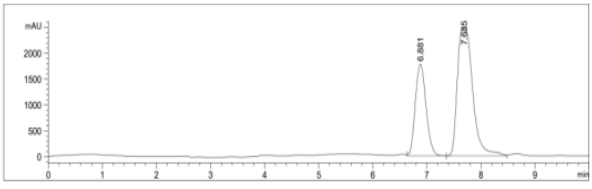
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (80/20); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

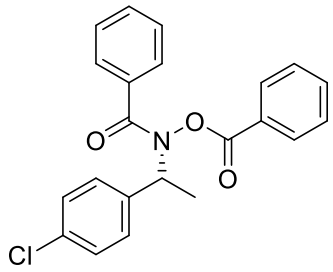


Peak #	RT [min]	Area	Area %
1	7.233	1.947e4	50.147
2	8.102	1.887e4	49.852

Chiral



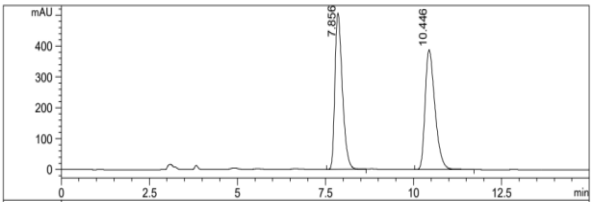
Peak #	RT [min]	Area	Area %
1	6.881	2.443e4	33.316
2	7.685	4.890e4	66.684



7

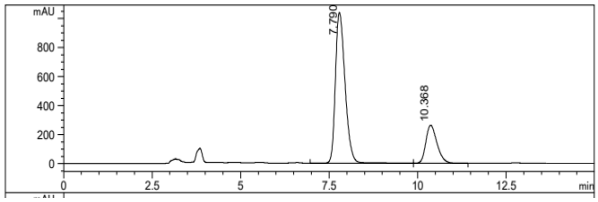
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (90/10); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

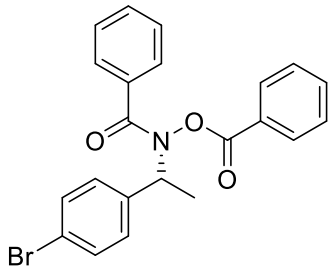


Peak #	RT [min]	Area	Area %
1	7.856	7.431e3	49.560
2	10.446	7.563e3	50.440

Chiral



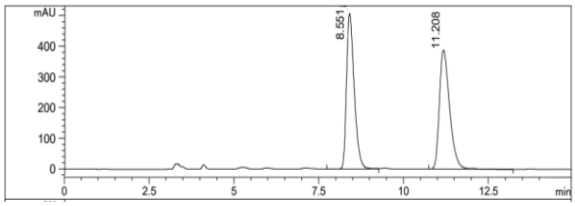
Peak #	RT [min]	Area	Area %
1	7.790	1.977e4	77.425
2	10.368	5.766e3	22.575



8

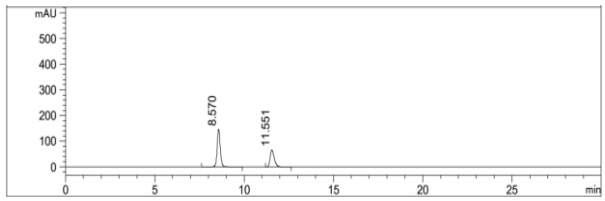
HPLC Conditions: Column: Chiralcel OD-H, Daicel Chemical Industries, Ltd., **Eluent**: Hexanes/IPA (90/10); flow rate: 1.0 mL/min; detection: UV 210 nm

Racemic

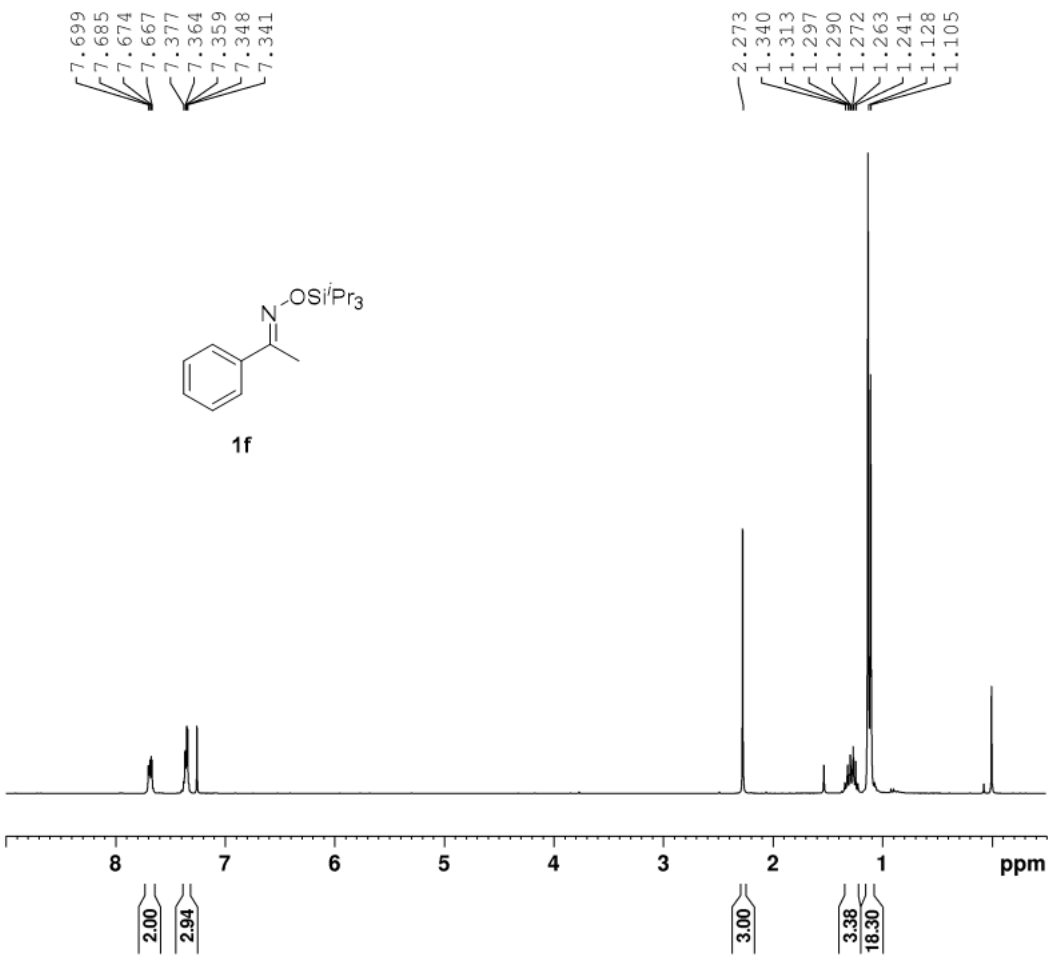


Peak #	RT [min]	Area	Area %
1	8.551	1.600e3	49.741
2	11.208	1.617e3	50.259

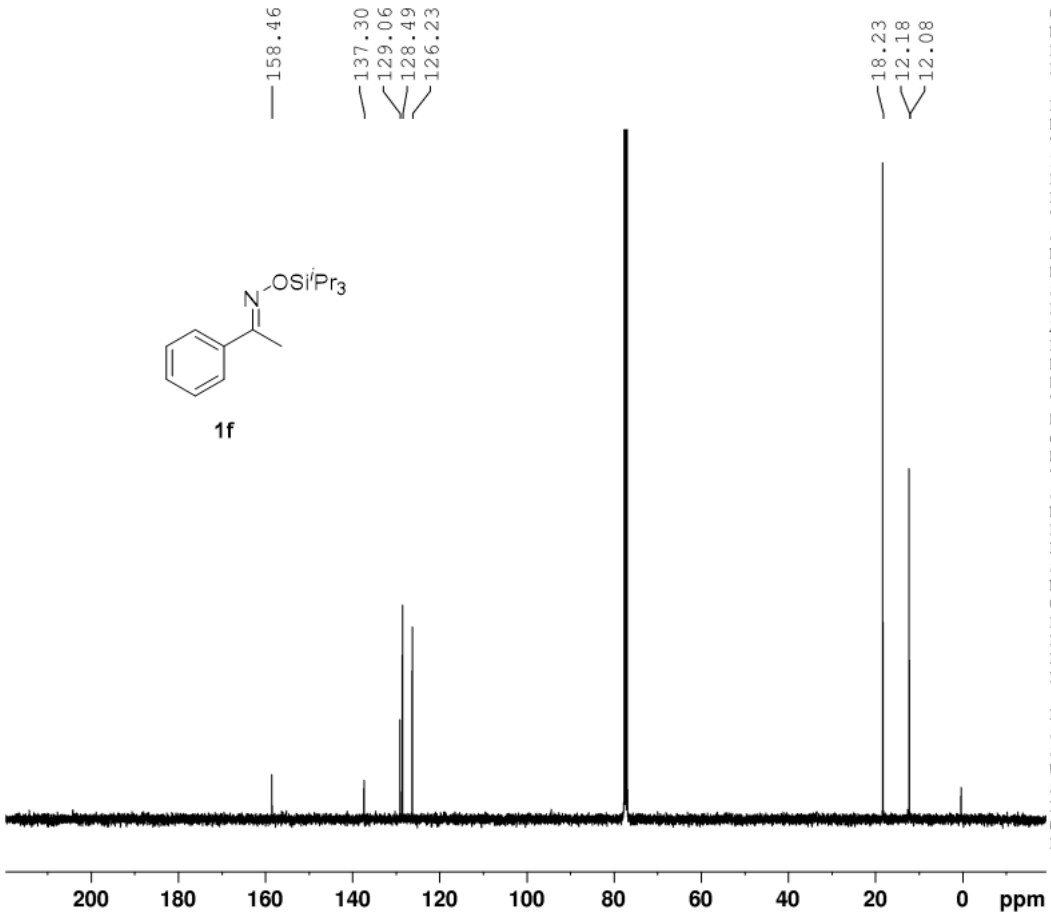
Chiral



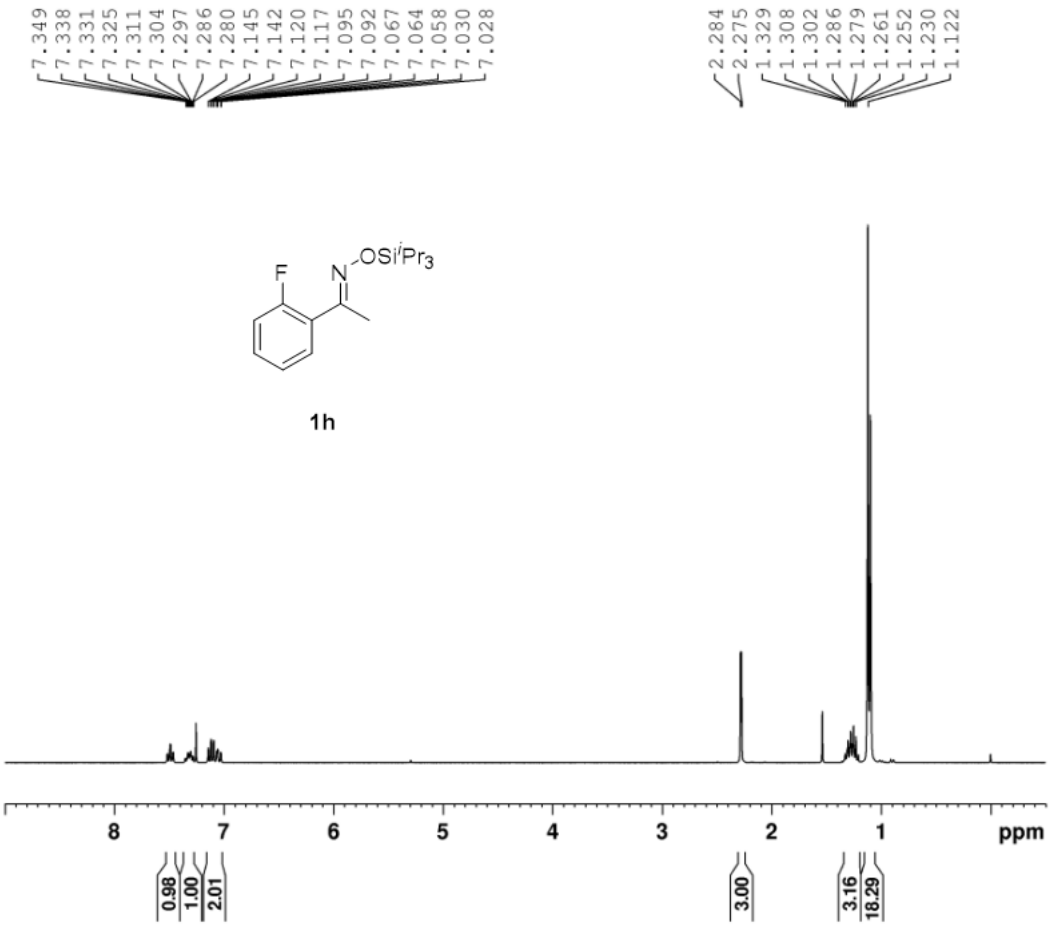
Peak #	RT [min]	Area	Area %
1	8.570	3.800e3	80.382
2	11.551	927.444	19.618



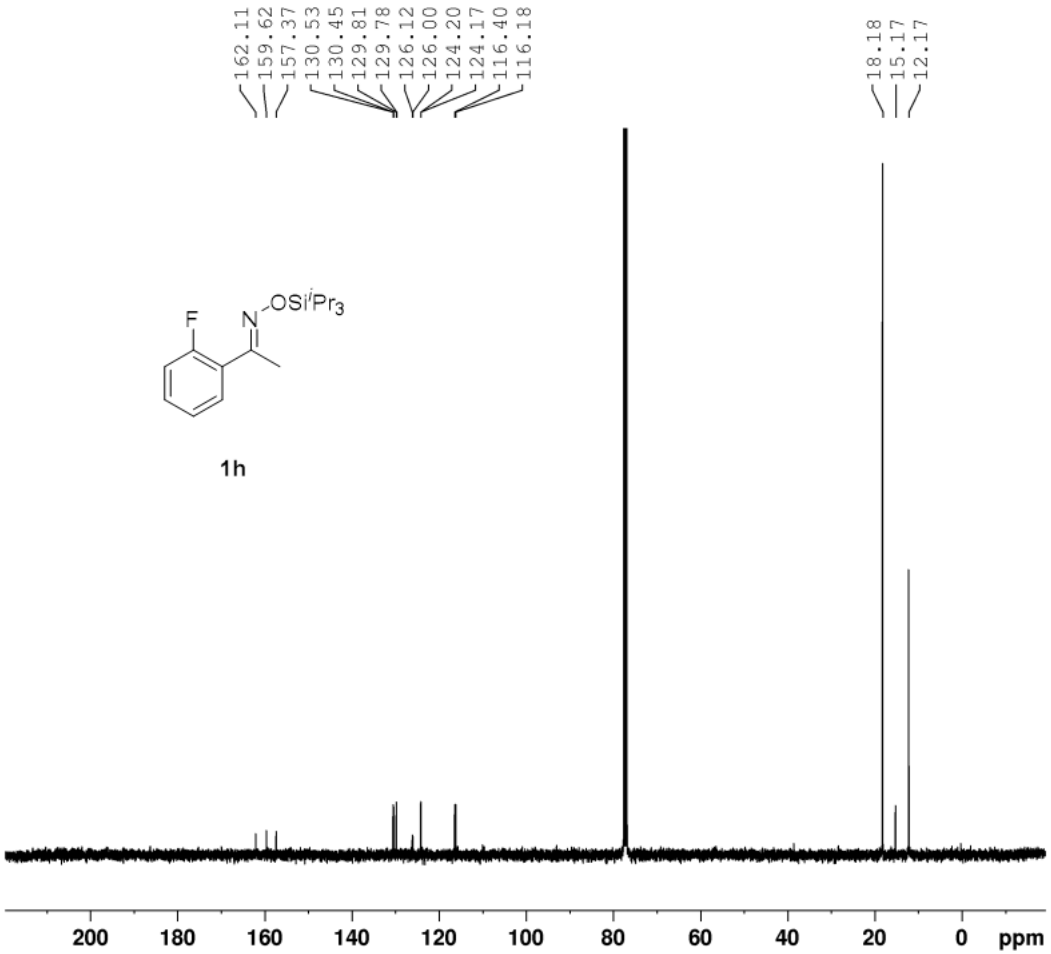

```
Current Data Parameters
NAME                      yh
EXPNO                    215
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210525
Time                 21.48 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      11
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                  83.200 usec
DE                   6.50 usec
TE                   299.3 K
D1              1.00000000 sec
TD0                      1
SFO1           300.1318534 MHz
NUC1                    1H
P1                   8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                   65536
SF             300.1300087 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



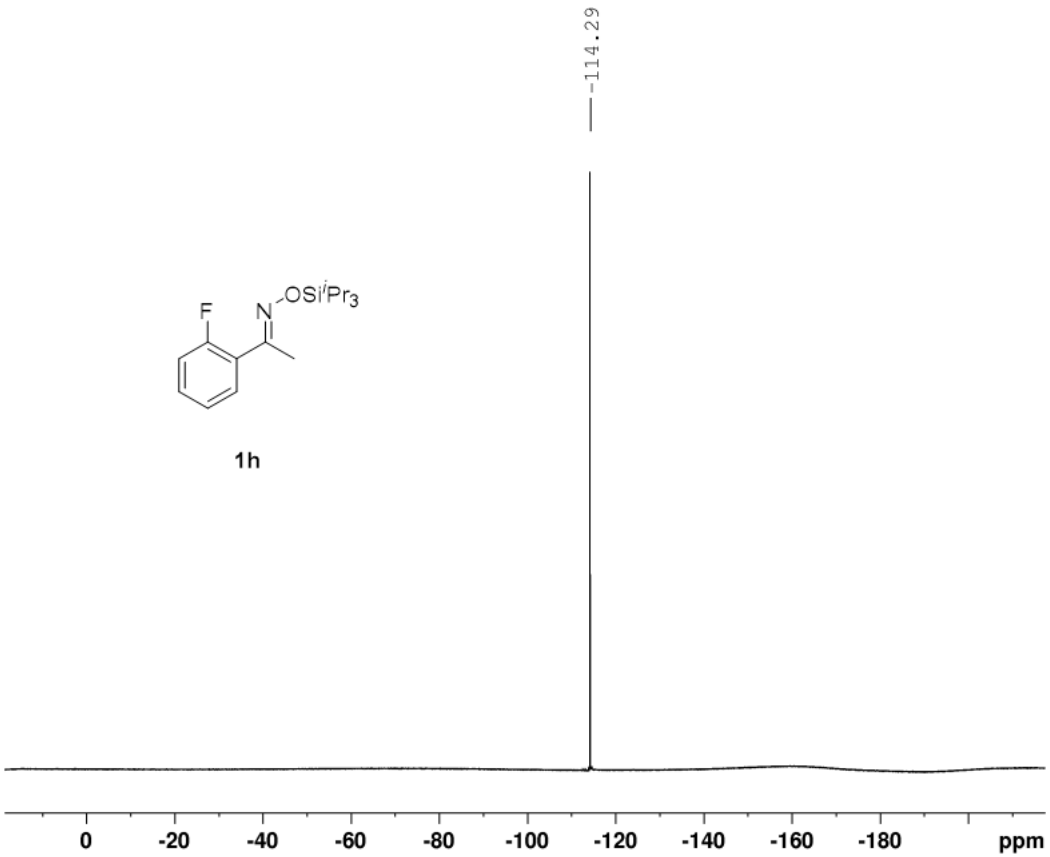

```
Current Data Parameters
NAME                   yc
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210525
Time                23.44 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.4 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404061 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



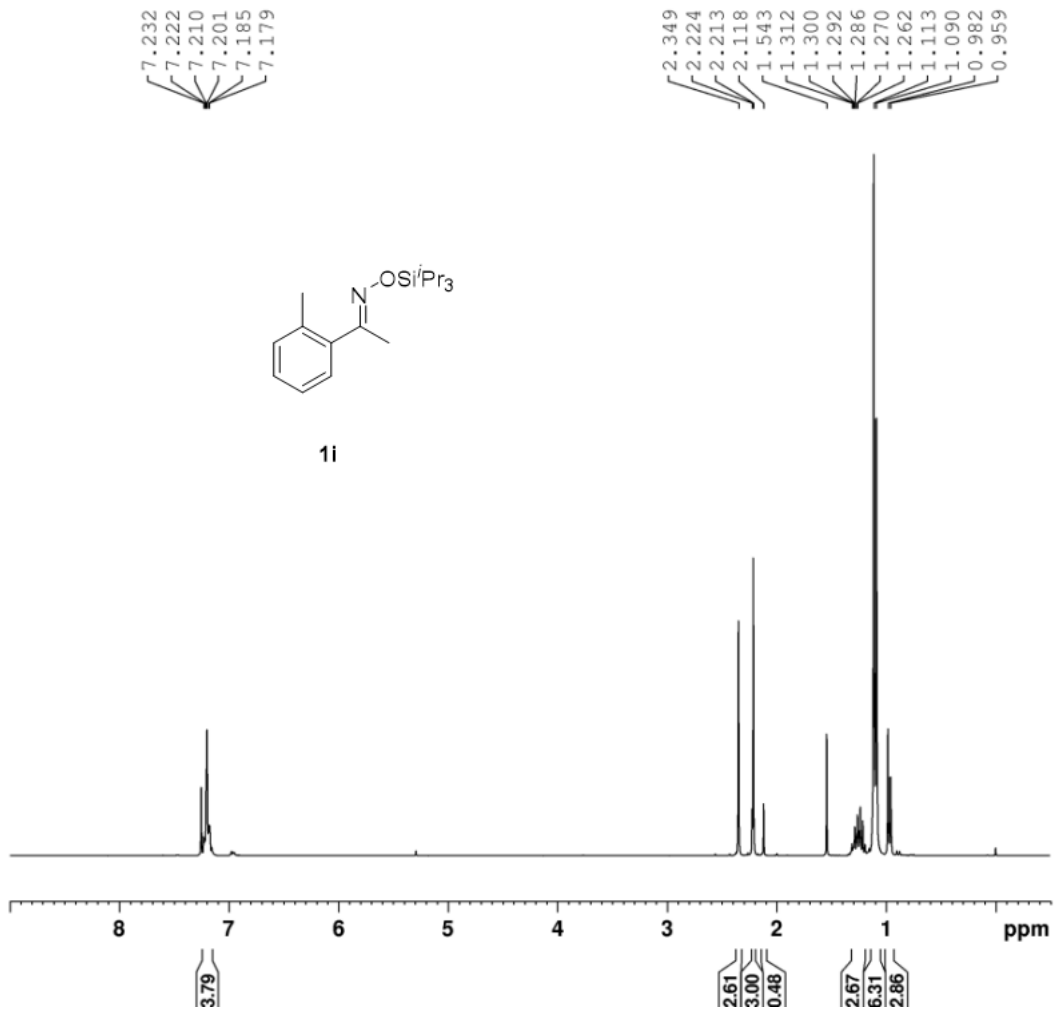

```
Current Data Parameters
NAME                      yh
EXPNO                    186
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210513
Time                  16.38 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDC13
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    299.5 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                   1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300084 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```




```
Current Data Parameters
NAME                  yc
EXPNO                 18
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210528
Time                2.29 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404061 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME                   F
EXPNO                 93
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210602
Time              11.32 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD              131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          1.362392 Hz
AQ              0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                299.9 K
D1             1.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec
TD0                    1
rde1           0.00000650 sec
SFO1         376.5642094 MHz
NUC1                  19F
P1                14.50 usec
PLW1         17.98900032 W
SFO2         400.2416010 MHz
NUC2                  1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W

F2 - Processing parameters
SI                 65536
SF           376.6018696 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                 1.00
```



Current Data Parameters

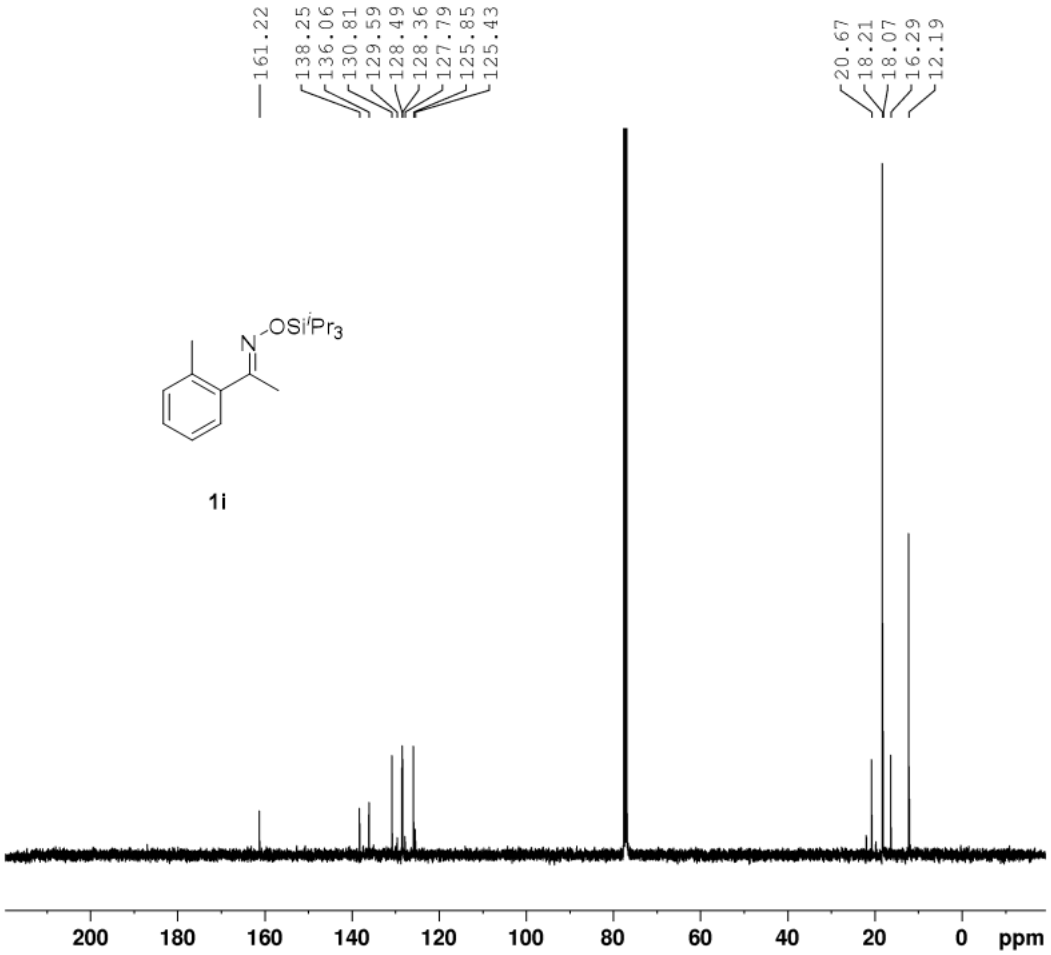
NAME	yh
EXPNO	202
PROCNO	1

F2 - Acquisition Parameters

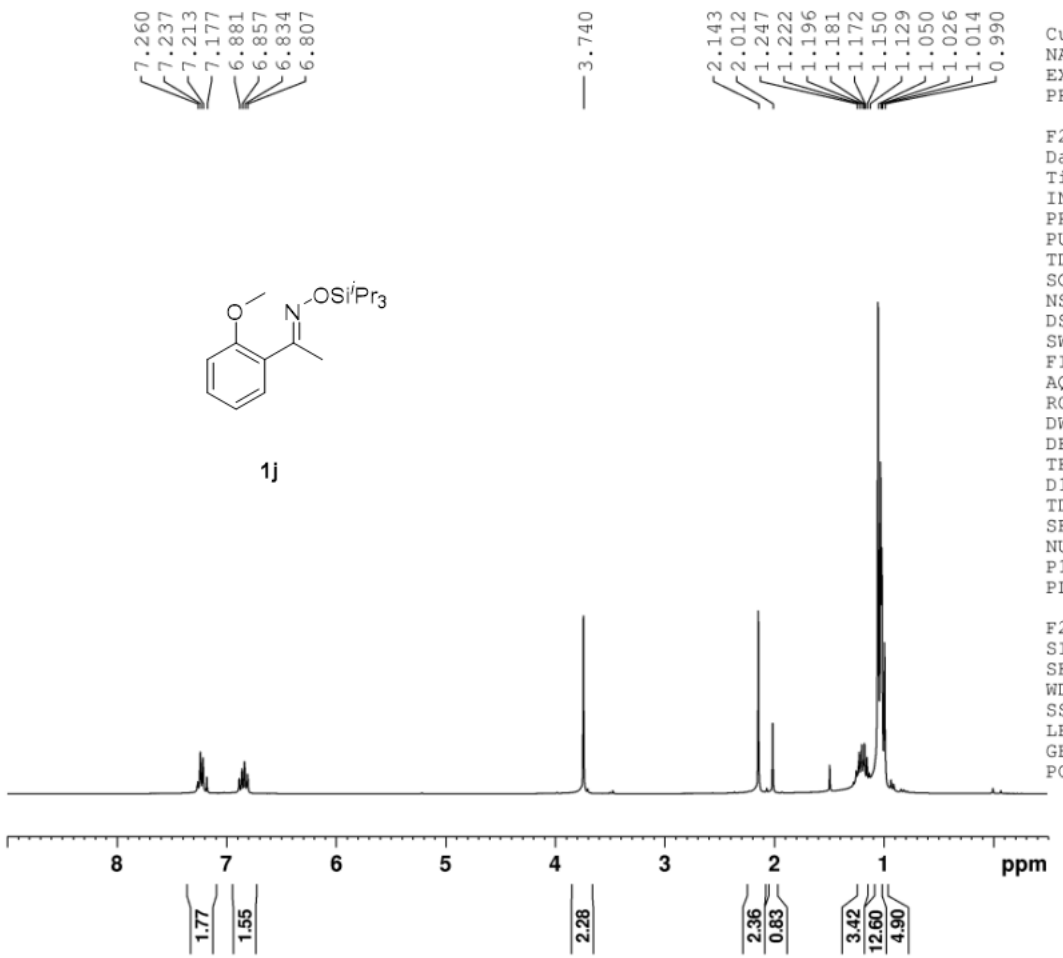
Date_	20210521
Time	10.55 h
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	2
SWH	6009.615 Hz
FIDRES	0.183399 Hz
AQ	5.4525952 sec
RG	209.09
DW	83.200 usec
DE	6.50 usec
TE	298.8 K
D1	1.00000000 sec
TD0	1
SFO1	300.1318534 MHz
NUC1	1H
P1	8.00 usec
PLW1	18.00000000 W

F2 - Processing parameters

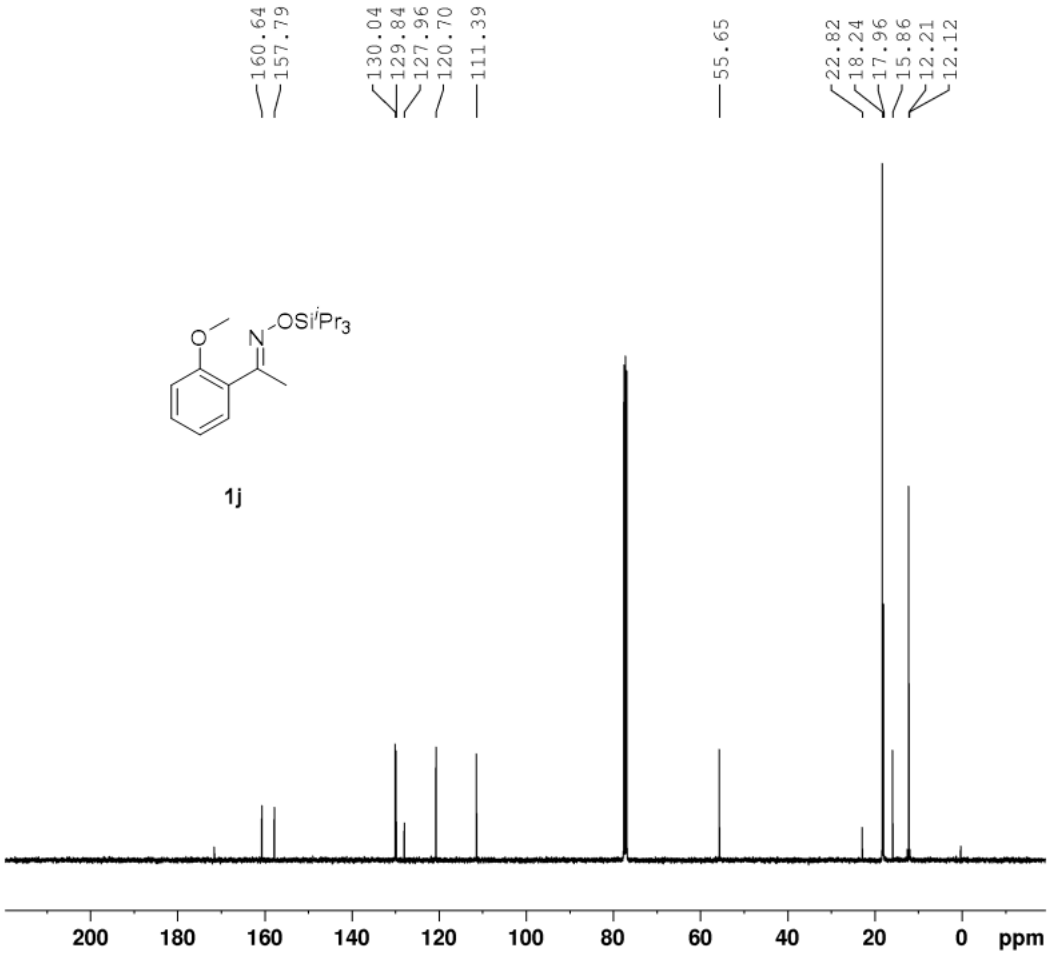
SI	65536
SF	300.1300088 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



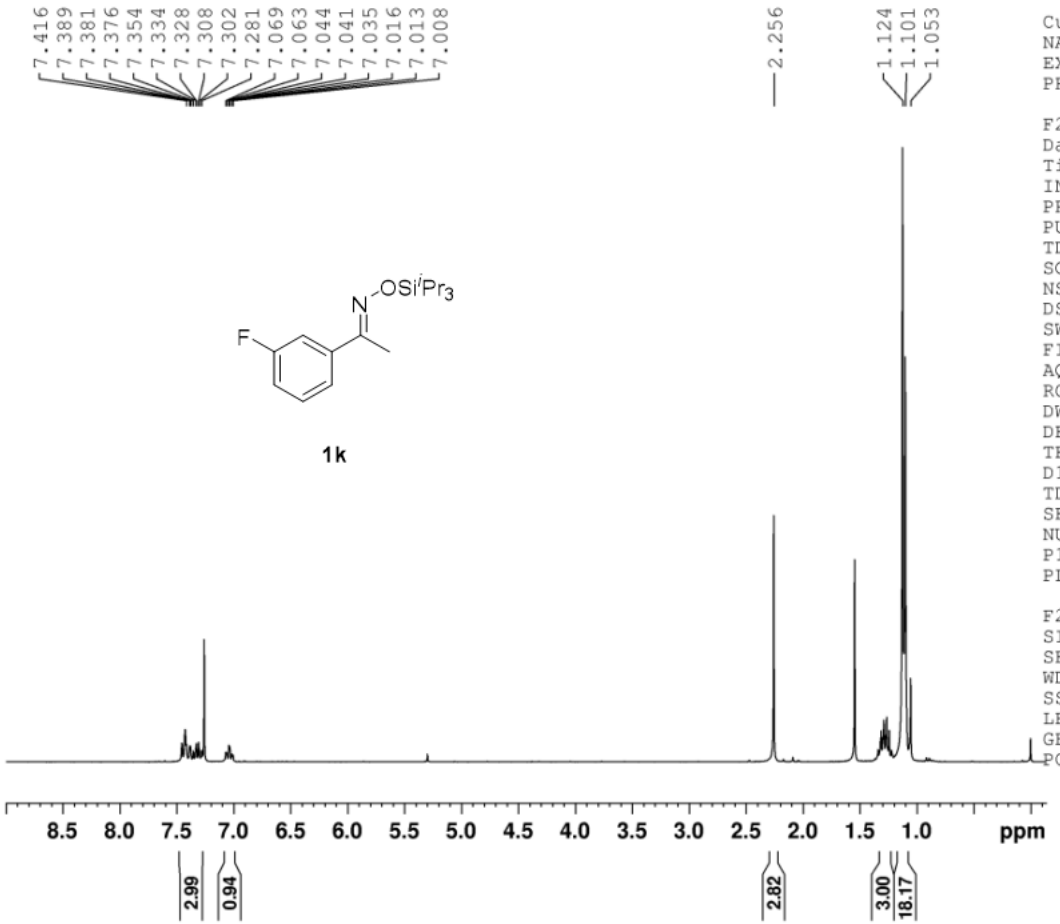

```
Current Data Parameters
NAME                   yc
EXPNO                  20
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210528
Time                10.41 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   1024
DS                      4
SWH             24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404067 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



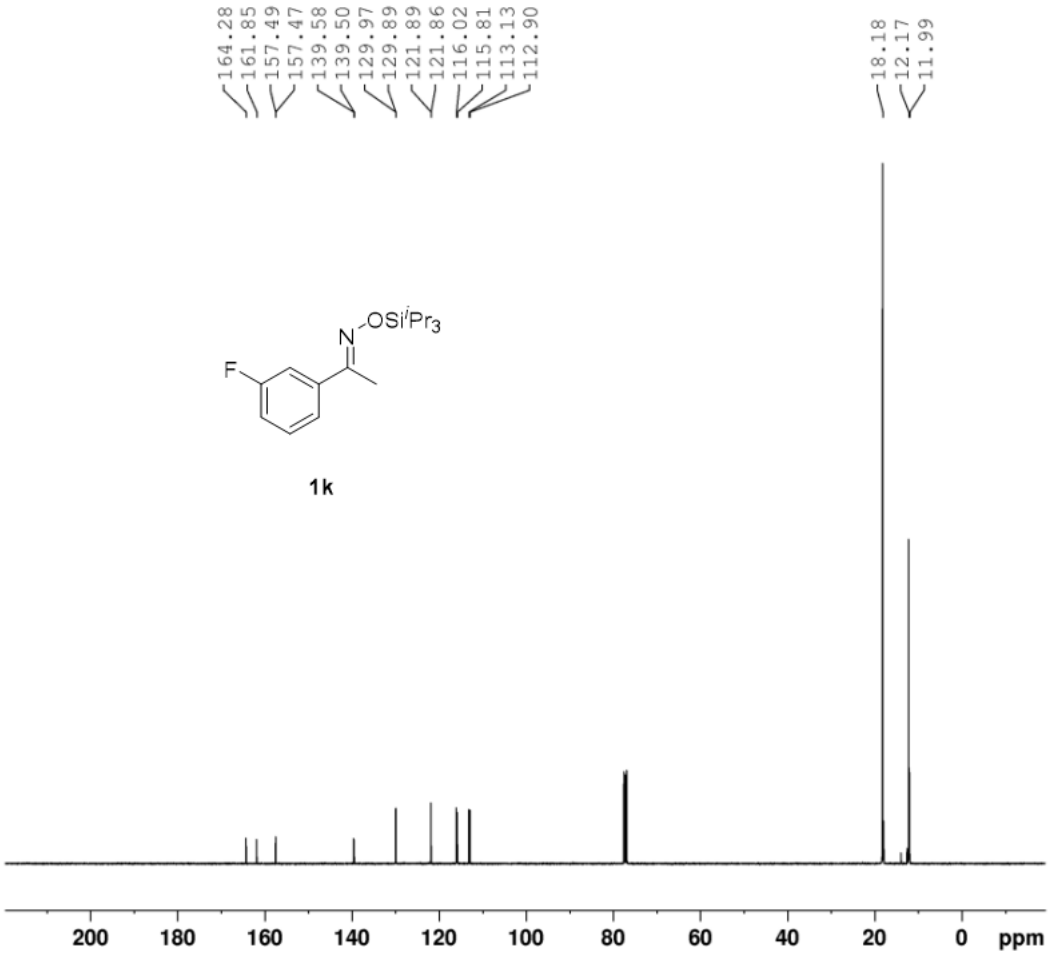

```
Current Data Parameters
NAME                  yh
EXPNO                190
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210515
Time               15.10 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                117.72
DW                83.200 usec
DE                 6.50 usec
TE                299.0 K
D1             1.00000000 sec
TD0                    1
SFO1         300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF           300.1300324 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                  1.00
```



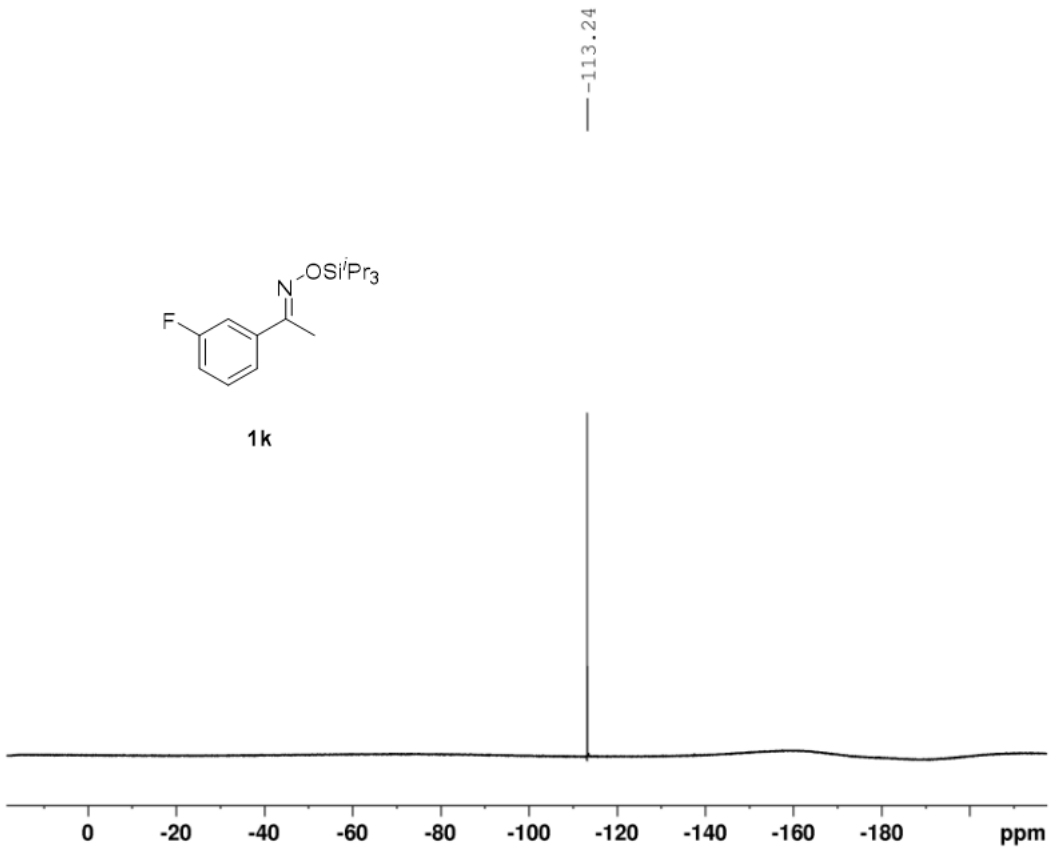

```
Current Data Parameters
NAME                  yc
EXPNO                 14
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210527
Time              13.27 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.5 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1
SFO1        100.6504916 MHz
NUC1               13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                32768
SF          100.6404071 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



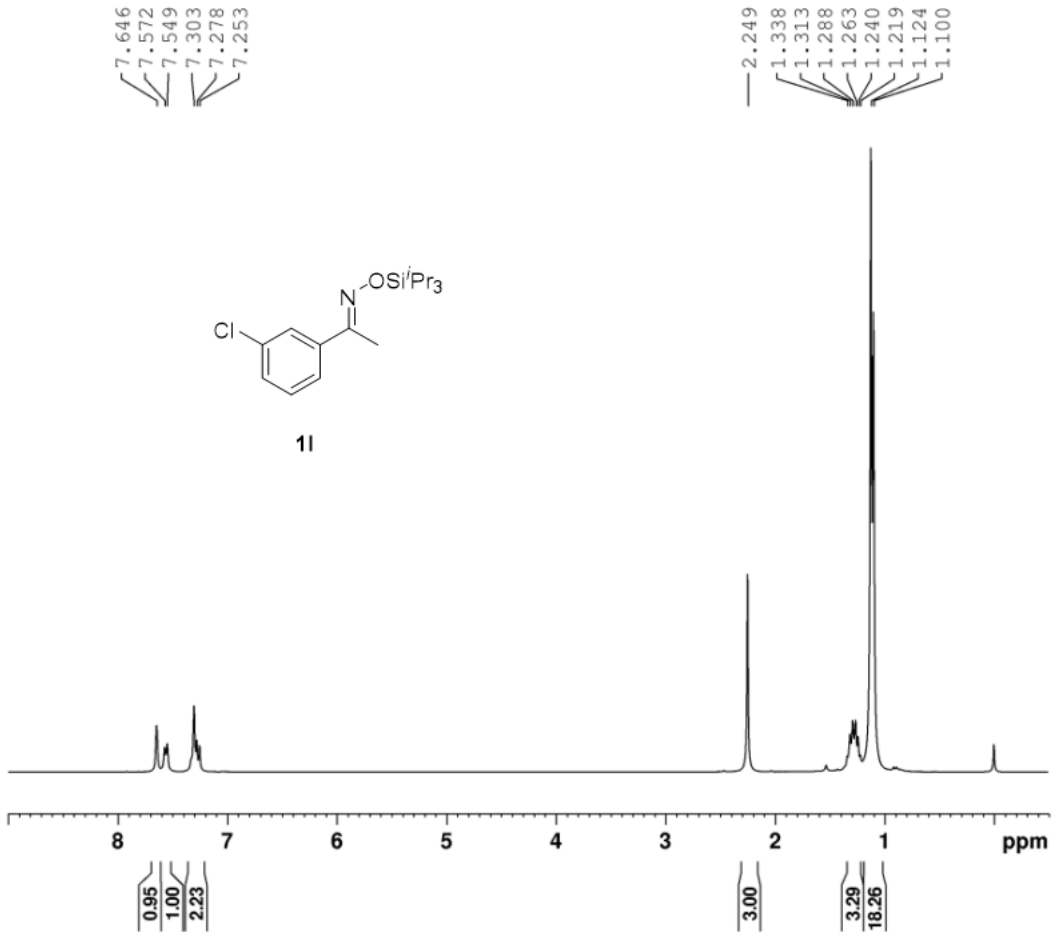

```
Current Data Parameters
NAME                  yh
EXPNO                188
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210514
Time               14.28 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                209.09
DW                 83.200 usec
DE                  6.50 usec
TE                 299.3 K
D1             1.00000000 sec
TD0                    1
SFO1         300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF           300.1300076 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



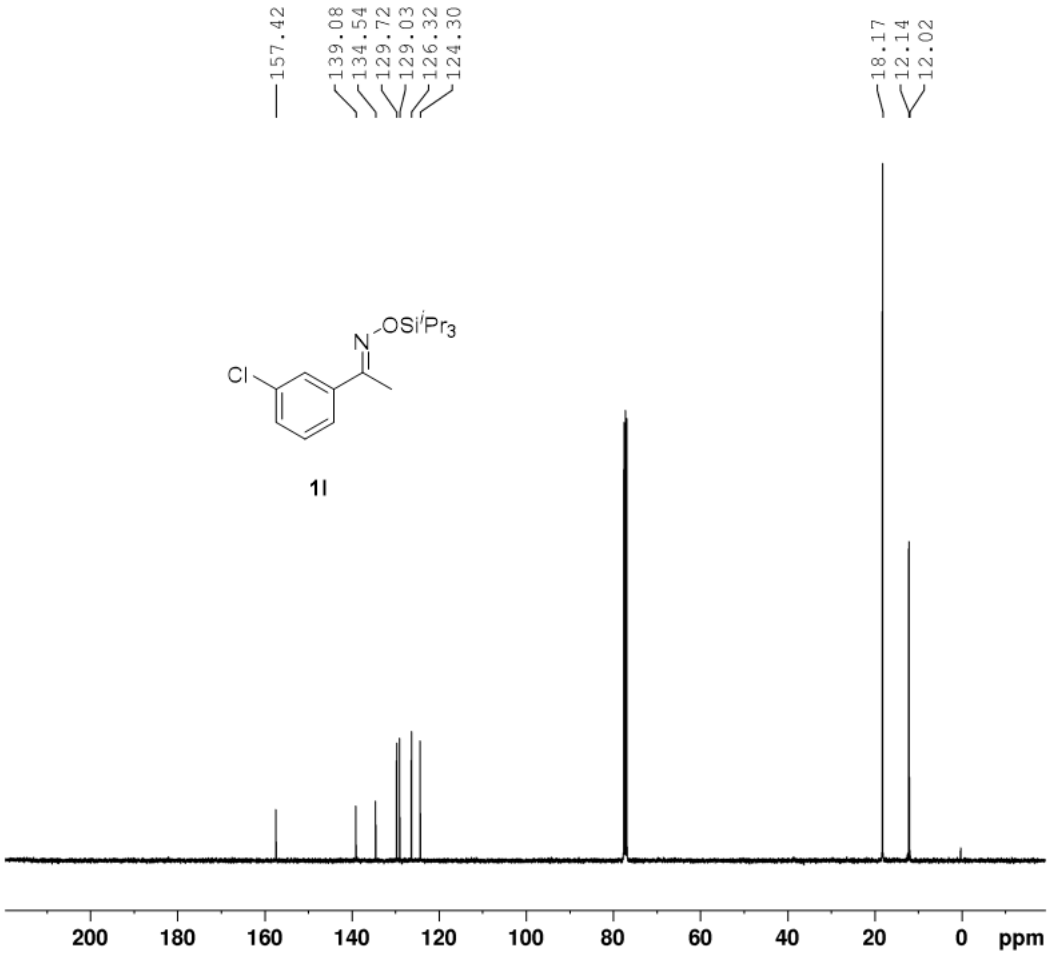

```
Current Data Parameters
NAME                  yc
EXPNO                 31
PROCNO                1

F2 - Acquisition Parameters
Date_           20220107
Time              14.17 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                299.6 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                 13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404067 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME                   F
EXPNO                 92
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210602
Time              11.27 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          1.362392 Hz
AQ              0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                299.9 K
D1             1.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec
TD0                    1
rde1           0.00000650 sec
SFO1         376.5642094 MHz
NUC1                  19F
P1                14.50 usec
PLW1         17.98900032 W
SFO2         400.2416010 MHz
NUC2                  1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W

F2 - Processing parameters
SI                 65536
SF           376.6018696 MHz
WDW                   EM
SSB                    0
LB                0.30 Hz
GB                     0
PC                1.00
```

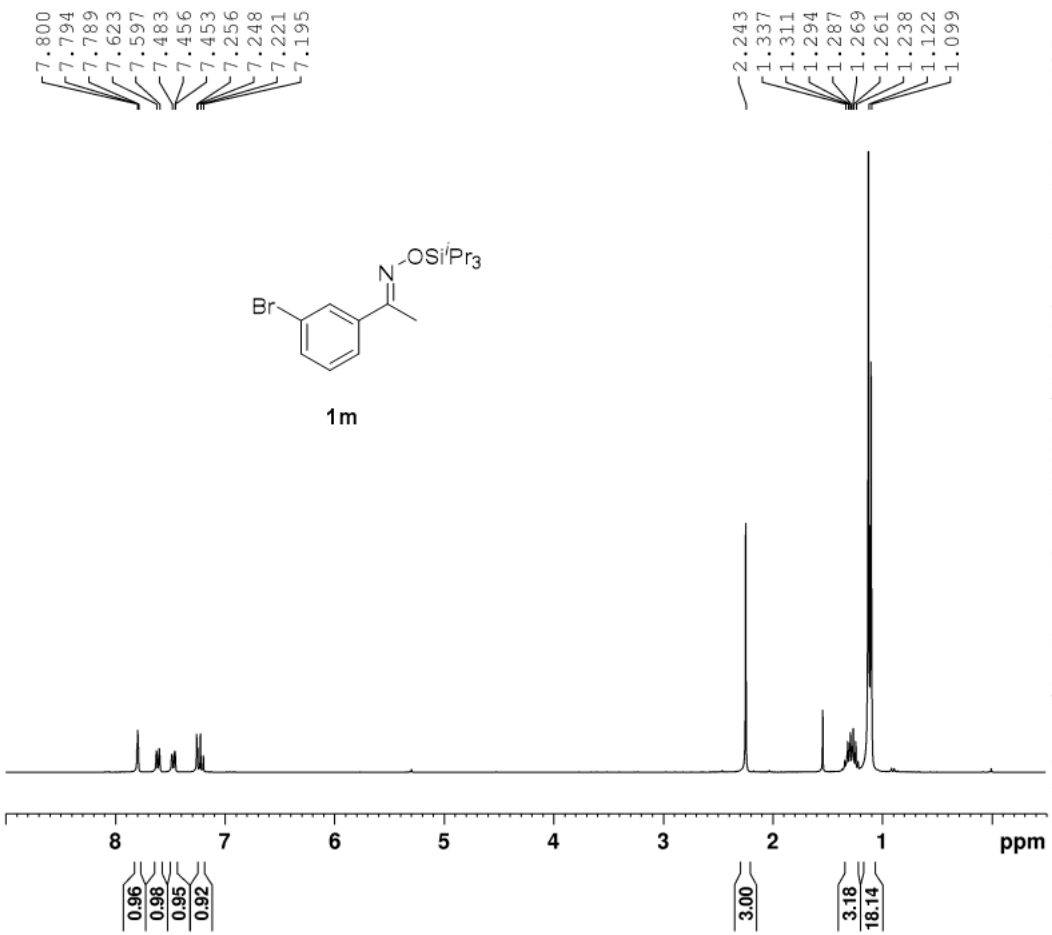



```
Current Data Parameters
NAME                      yh
EXPNO                    212
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210525
Time                 10.02 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    142.81
DW                    83.200 usec
DE                     6.50 usec
TE                    298.6 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                   1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300094 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```

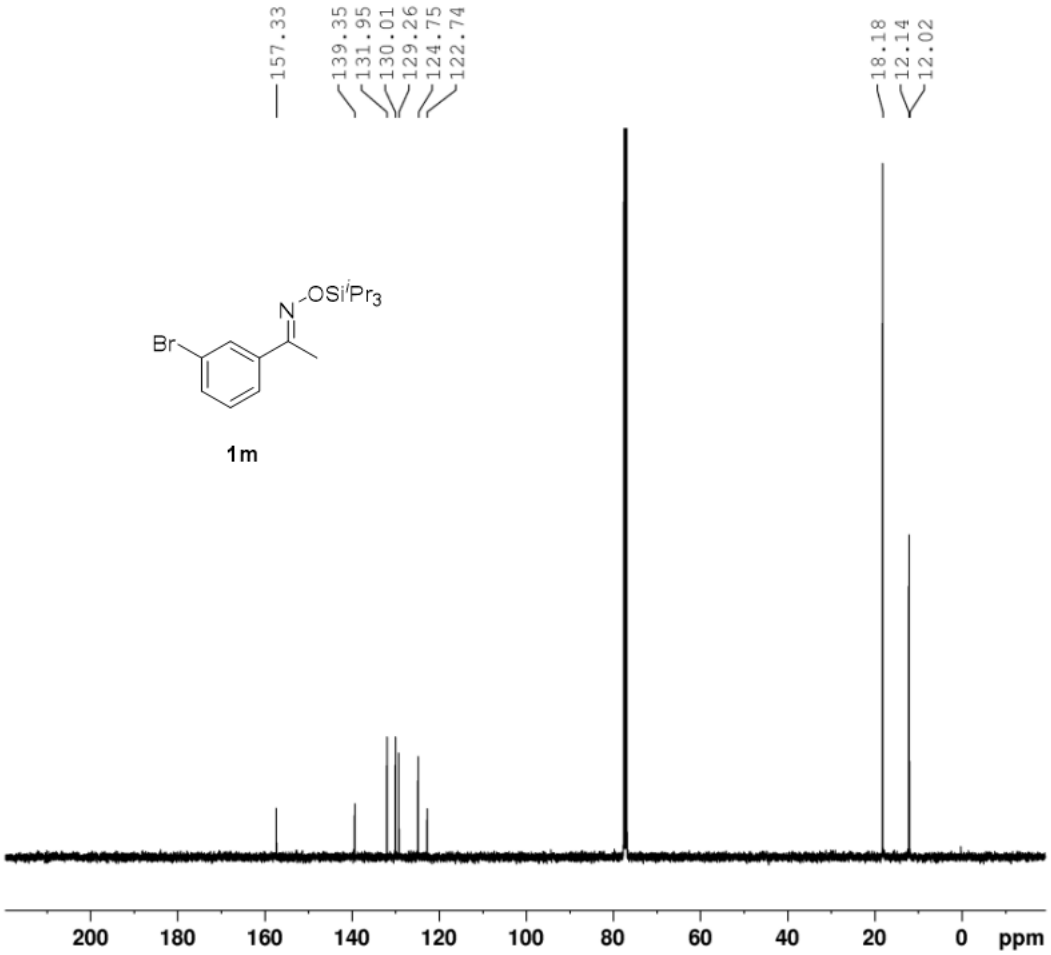


1l

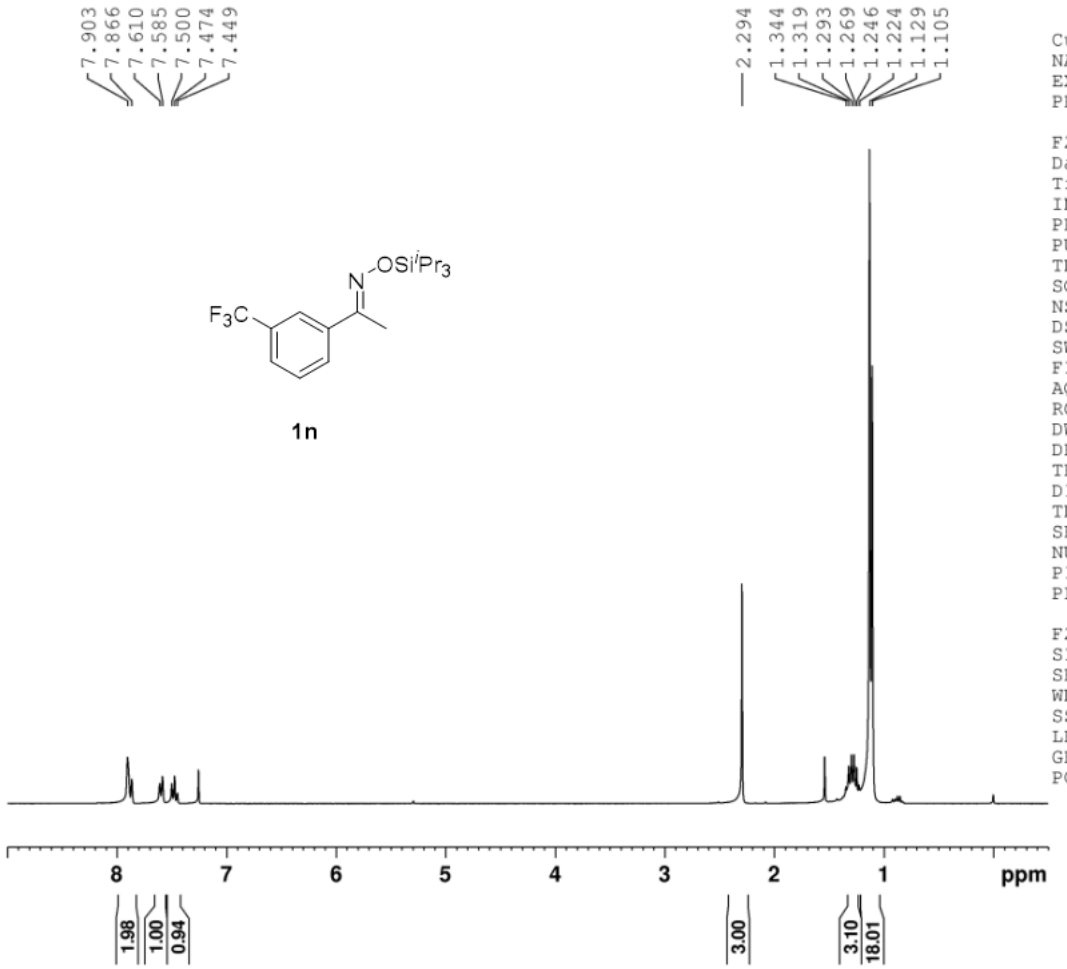
```
Current Data Parameters
NAME                   yc
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210526
Time                16.39 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   1024
DS                      4
SWH             24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404074 MHz
WDW                    EM
SSB                     0
LB                  1.00 Hz
GB                      0
PC                   1.40
```



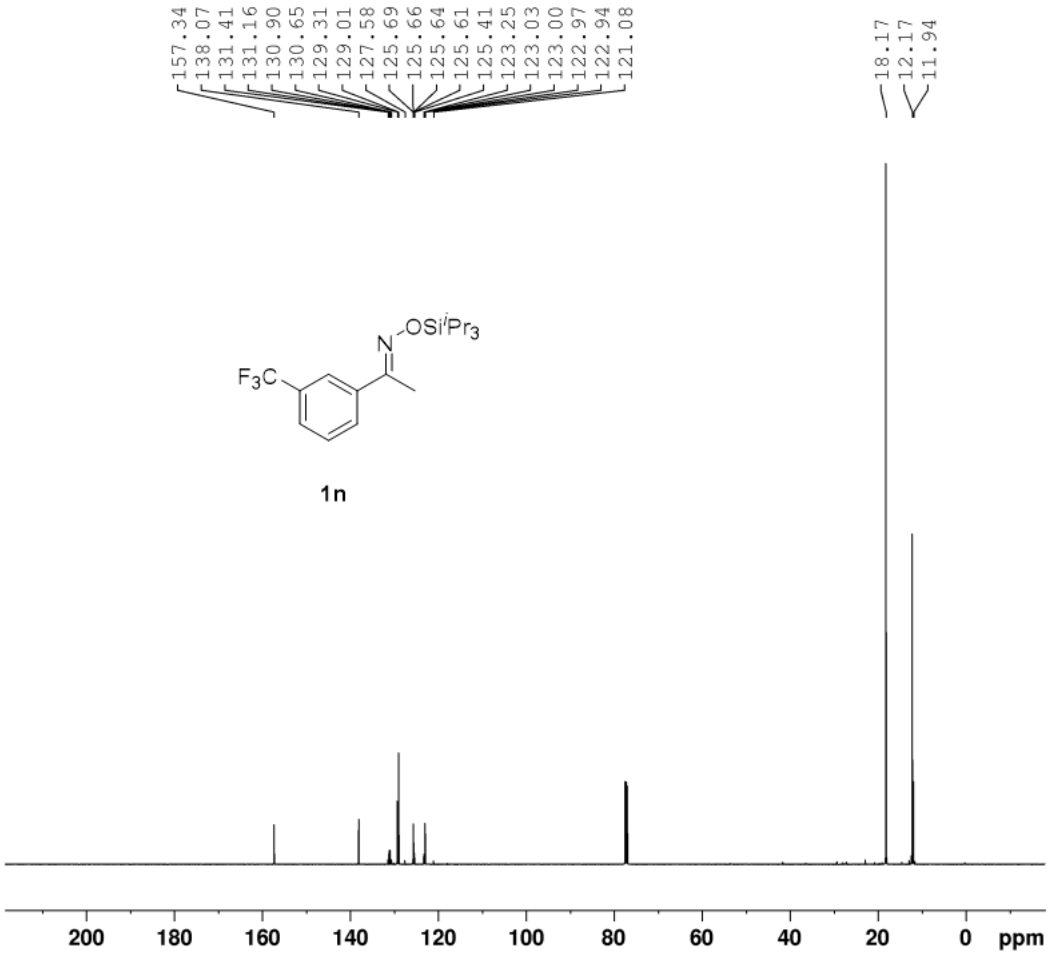

```
Current Data Parameters
NAME                  yh
EXPNO                204
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210521
Time               19.44 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                209.09
DW                 83.200 usec
DE                  6.50 usec
TE                 300.4 K
D1              1.00000000 sec
TD0                    1
SFO1          300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF            300.1300086 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME                   yc
EXPNO                  25
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210529
Time                2.09 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   800
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.3 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404068 MHz
WDW                   EM
SSB                    0
LB                 1.00 Hz
GB                     0
PC                 1.40
```

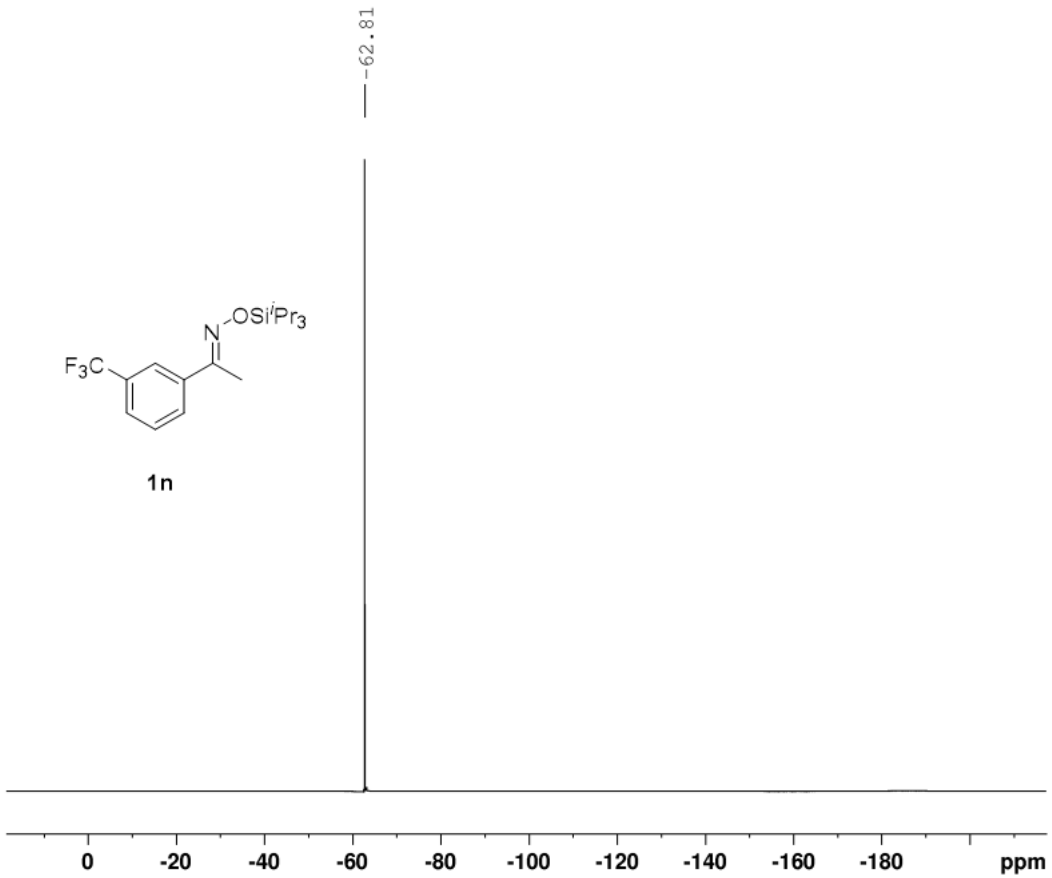



```
Current Data Parameters
NAME                      yh
EXPNO                    183
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210511
Time                  11.18 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       12
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    299.0 K
D1                 1.00000000 sec
TD0                       1
SFO1             300.1318534 MHz
NUC1                     1H
P1                     8.00 usec
PLW1            18.00000000 W

F2 - Processing parameters
SI                    65536
SF               300.1300089 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```

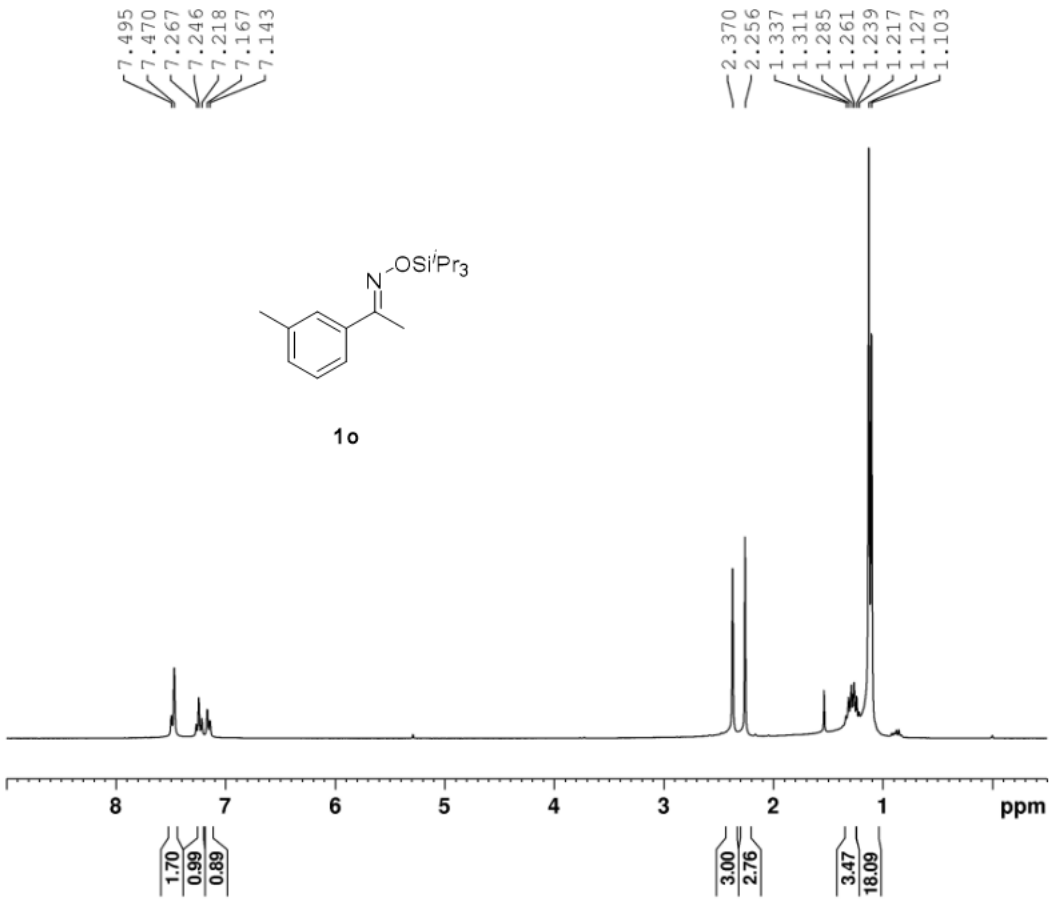


1n

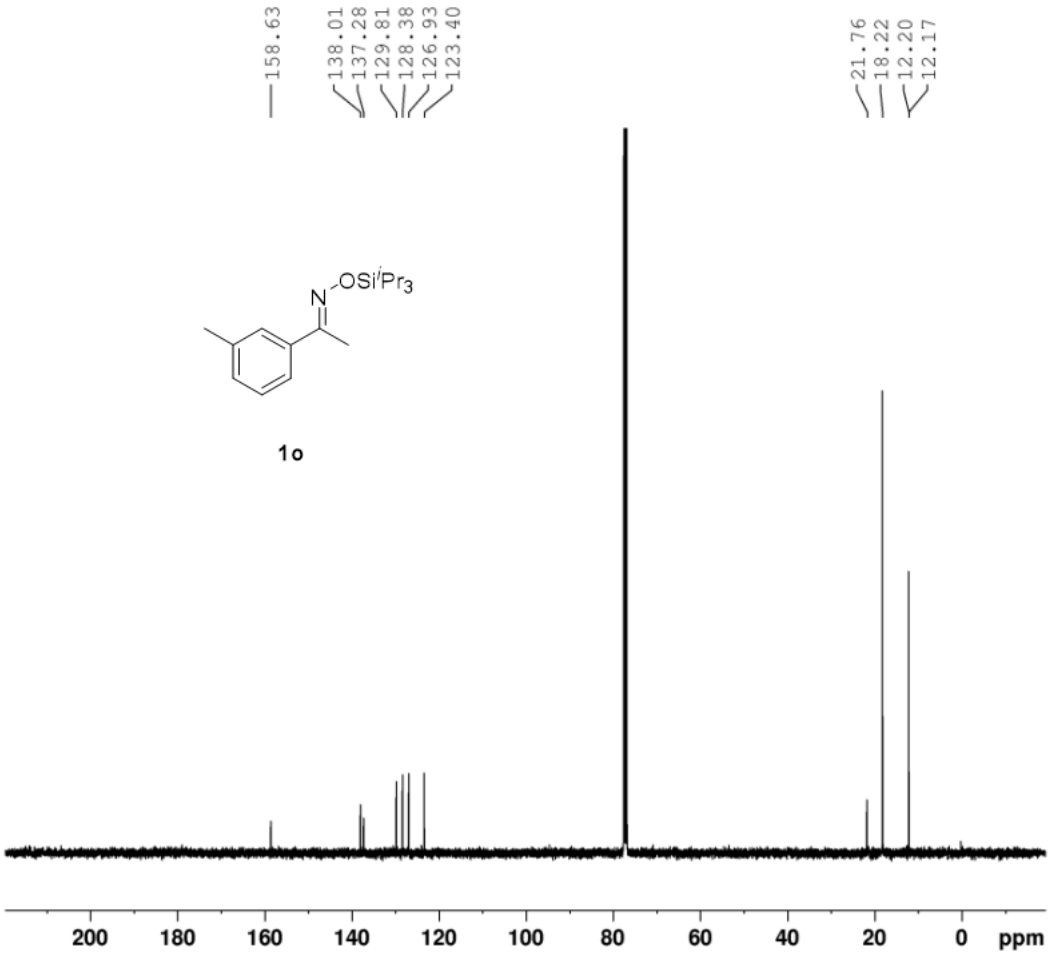
```
Current Data Parameters
NAME                  yh
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211218
Time               12.30 h
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   800
DS                     4
SWH            29761.904 Hz
FIDRES          0.908261 Hz
AQ              1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE                298.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1          57.00000000 W
SFO2          500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2          20.00000000 W
PLW12          0.39550999 W
PLW13          0.25312999 W

F2 - Processing parameters
SI                 32768
SF           125.7577608 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



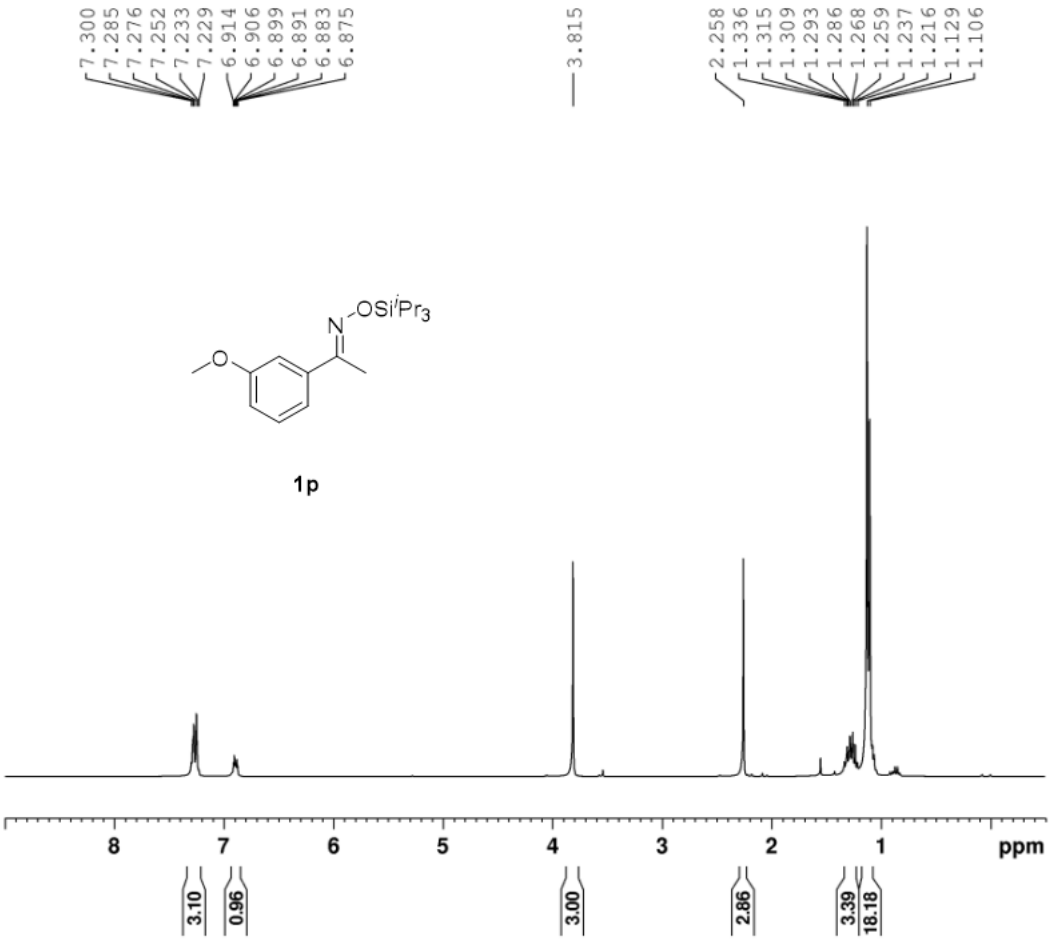

```
Current Data Parameters
NAME                   F
EXPNO                 91
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210602
Time               11.19 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD                131072
SOLVENT             CDCl3
NS                     16
DS                      4
SWH             89285.711 Hz
FIDRES          1.362392 Hz
AQ              0.7340032 sec
RG                 206.33
DW                  5.600 usec
DE                  6.50 usec
TE                 300.0 K
D1            1.00000000 sec
d11           0.03000000 sec
d12           0.00002000 sec
TD0                    1
rde1          0.00000650 sec
SFO1         376.5642094 MHz
NUC1                19F
P1                 14.50 usec
PLW1         17.98900032 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W

F2 - Processing parameters
SI                 65536
SF           376.6018696 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



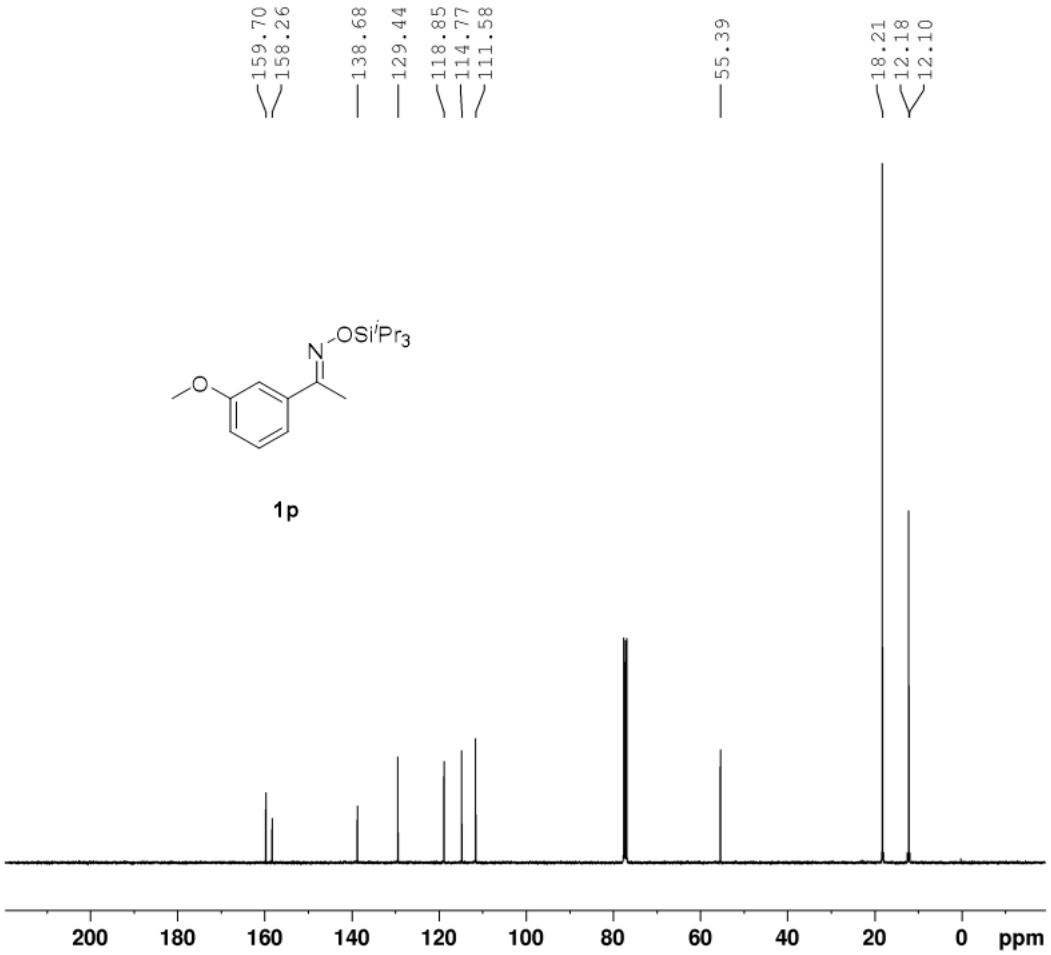

```
Current Data Parameters
NAME                   yh
EXPNO                 201
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210520
Time               20.36 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    12
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                186.23
DW                83.200 usec
DE                 6.50 usec
TE                300.0 K
D1             1.00000000 sec
TD0                    1
SFO1          300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF            300.1300112 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



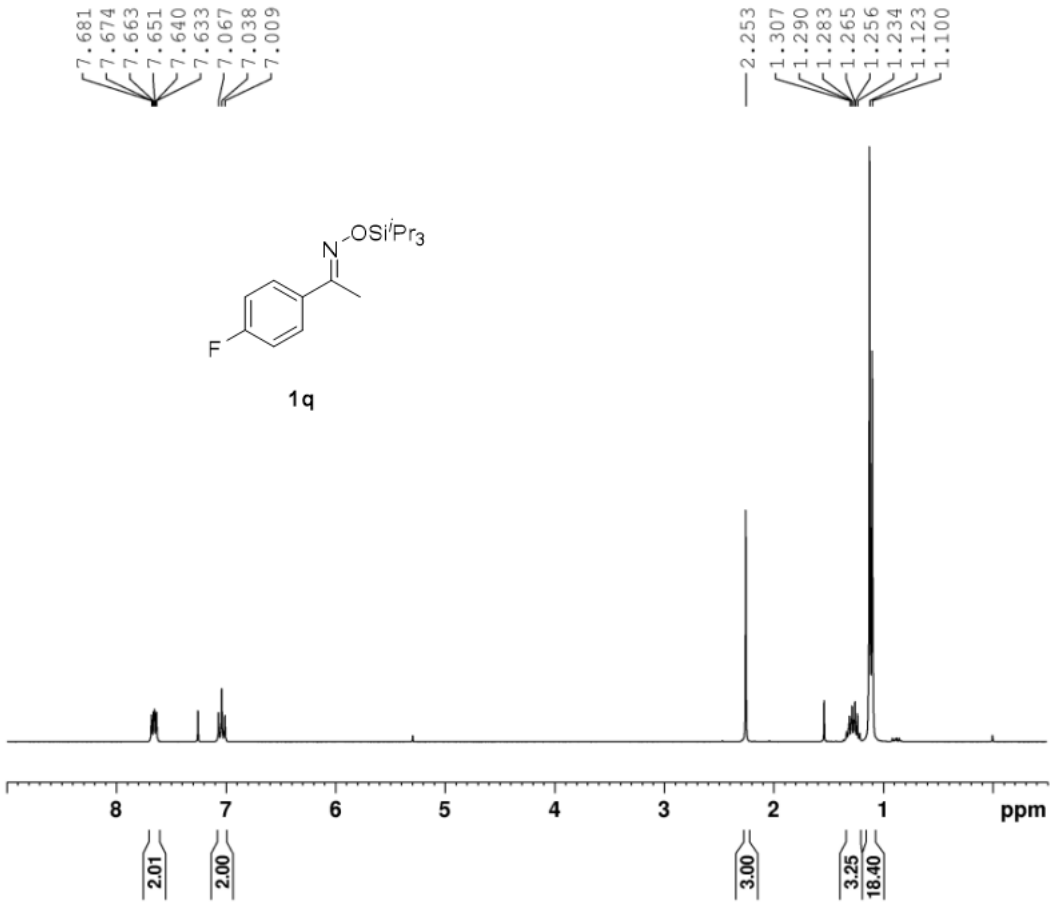

```
Current Data Parameters
NAME                  yc
EXPNO                 21
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210528
Time              11.13 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.2 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1
SFO1        100.6504916 MHz
NUC1               13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2        400.2416010 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                32768
SF          100.6404072 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



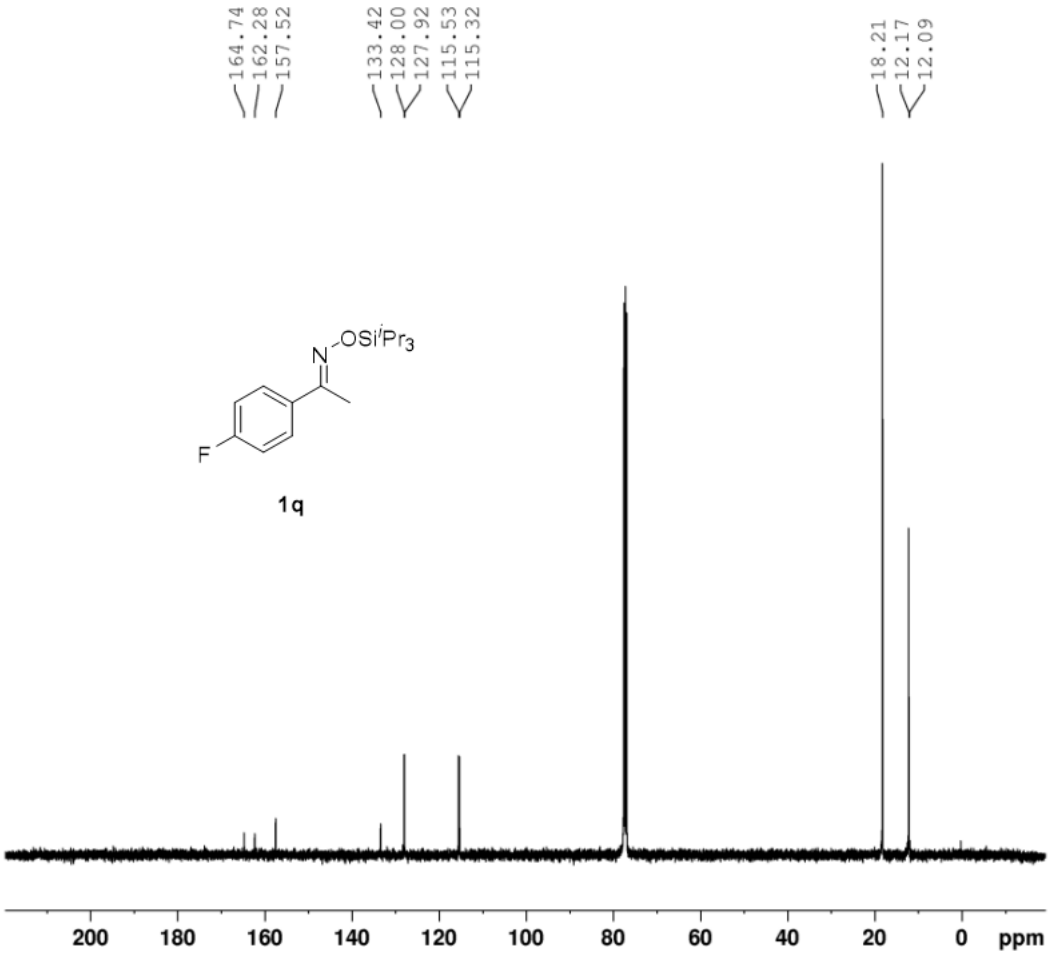

```
Current Data Parameters
NAME                      yh
EXPNO                    189
PROCNO                     1

F2 - Acquisition Parameters
Date_               20210515
Time                   15.06 h
INSTRUM                spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDC13
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                    82.09
DW                   83.200 usec
DE                    6.50 usec
TE                   298.9 K
D1                1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                     1H
P1                    8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300127 MHz
WDW                      EM
SSB                       0
LB                    0.30 Hz
GB                        0
PC                    1.00
```



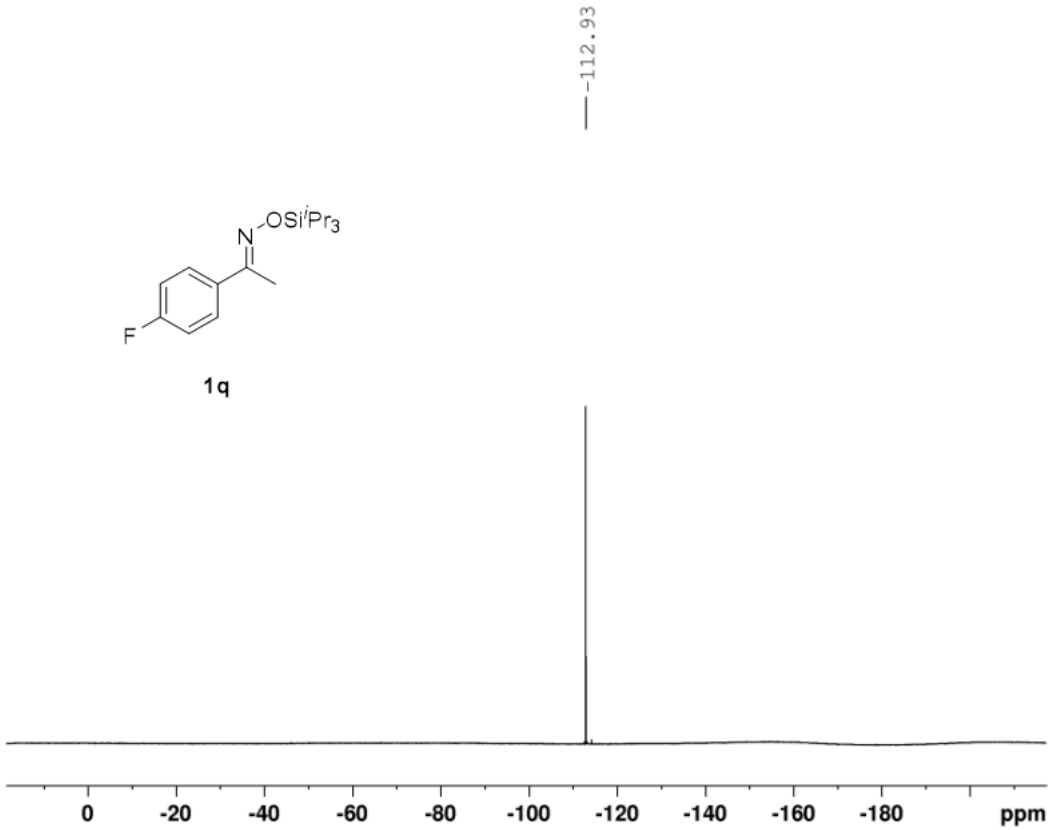

```
Current Data Parameters
NAME                   yc
EXPNO                  13
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210527
Time                12.26 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   1024
DS                      4
SWH             24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.3 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404082 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



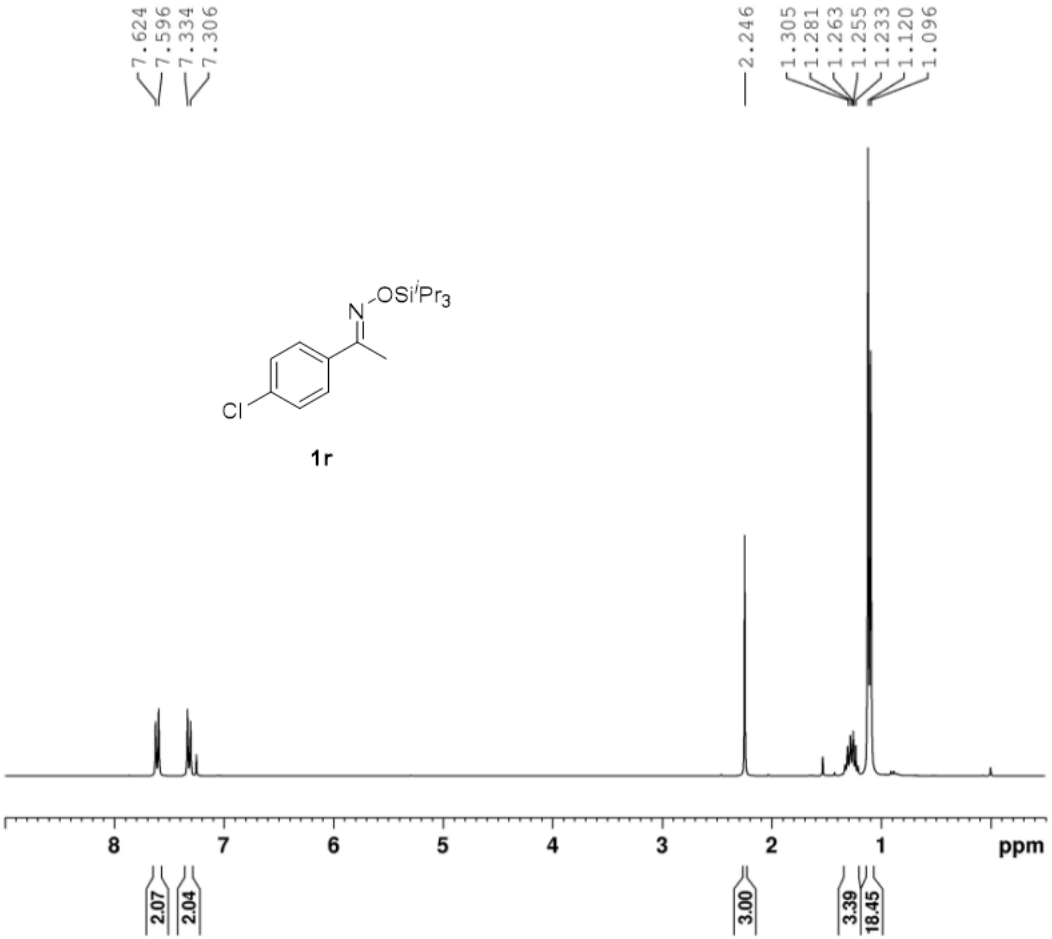

```
Current Data Parameters
NAME                      yh
EXPNO                    187
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210513
Time                  17.20 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    299.6 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300087 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```



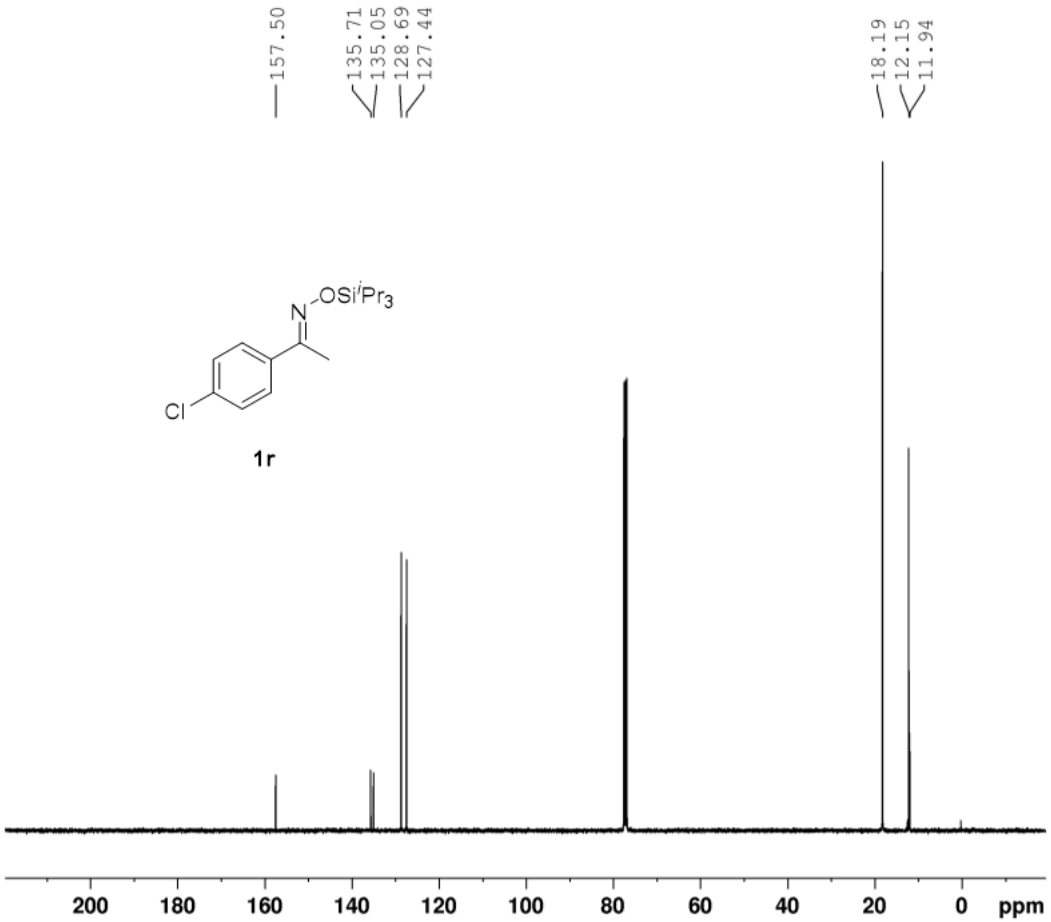

```
Current Data Parameters
NAME                  yc
EXPNO                 16
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210527
Time              23.52 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.4 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                32768
SF          100.6404059 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



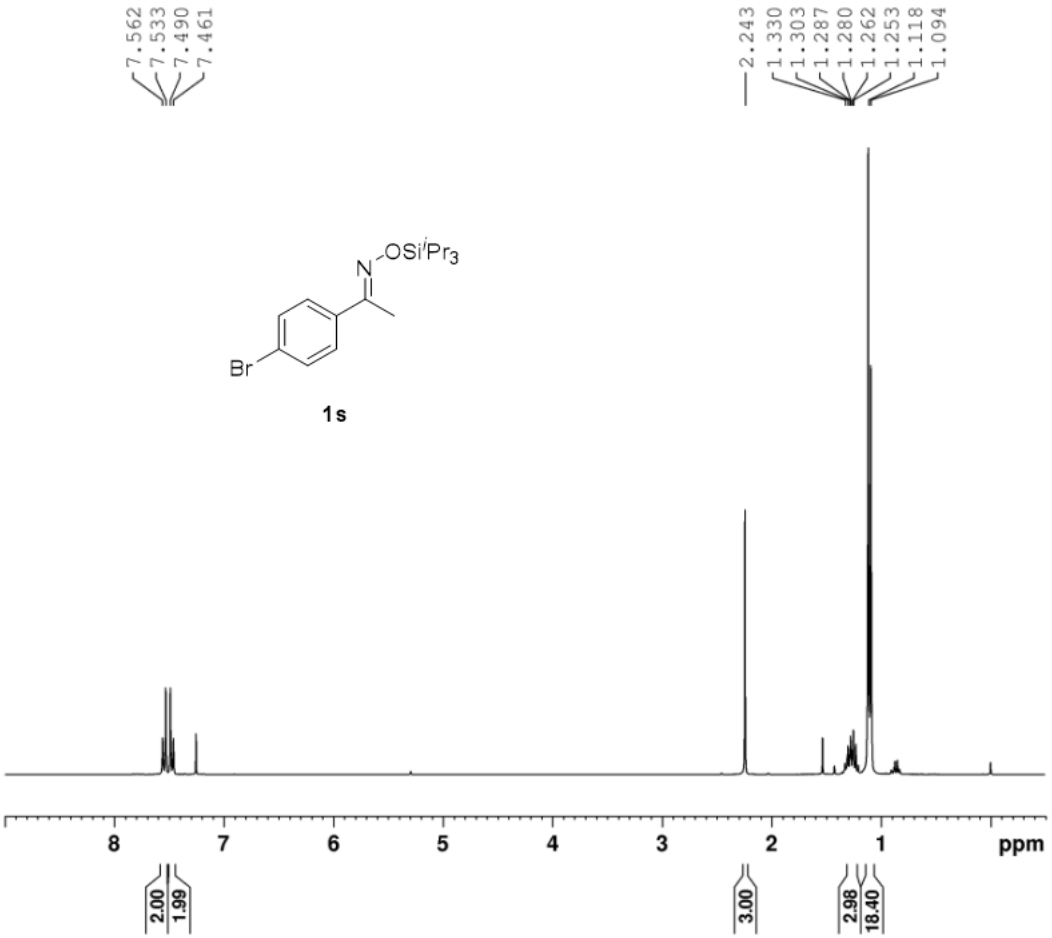

```
Current Data Parameters
NAME                      F
EXPNO                    90
PROCNO                    1

F2 - Acquisition Parameters
Date_              20210602
Time                 11.11 h
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG        zgfhigqn.2
TD                  131072
SOLVENT              CDCl3
NS                      16
DS                       4
SWH              89285.711 Hz
FIDRES            1.362392 Hz
AQ                0.7340032 sec
RG                   206.33
DW                    5.600 usec
DE                    6.50 usec
TE                   299.8 K
D1                1.00000000 sec
d11               0.03000000 sec
d12               0.00002000 sec
TD0                      1
rde1              0.00000650 sec
SFO1            376.5642094 MHz
NUC1                    19F
P1                   14.50 usec
PLW1             17.98900032 W
SFO2             400.2416010 MHz
NUC2                    1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2             12.00000000 W
PLW12             0.30294999 W

F2 - Processing parameters
SI                    65536
SF              376.6018696 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



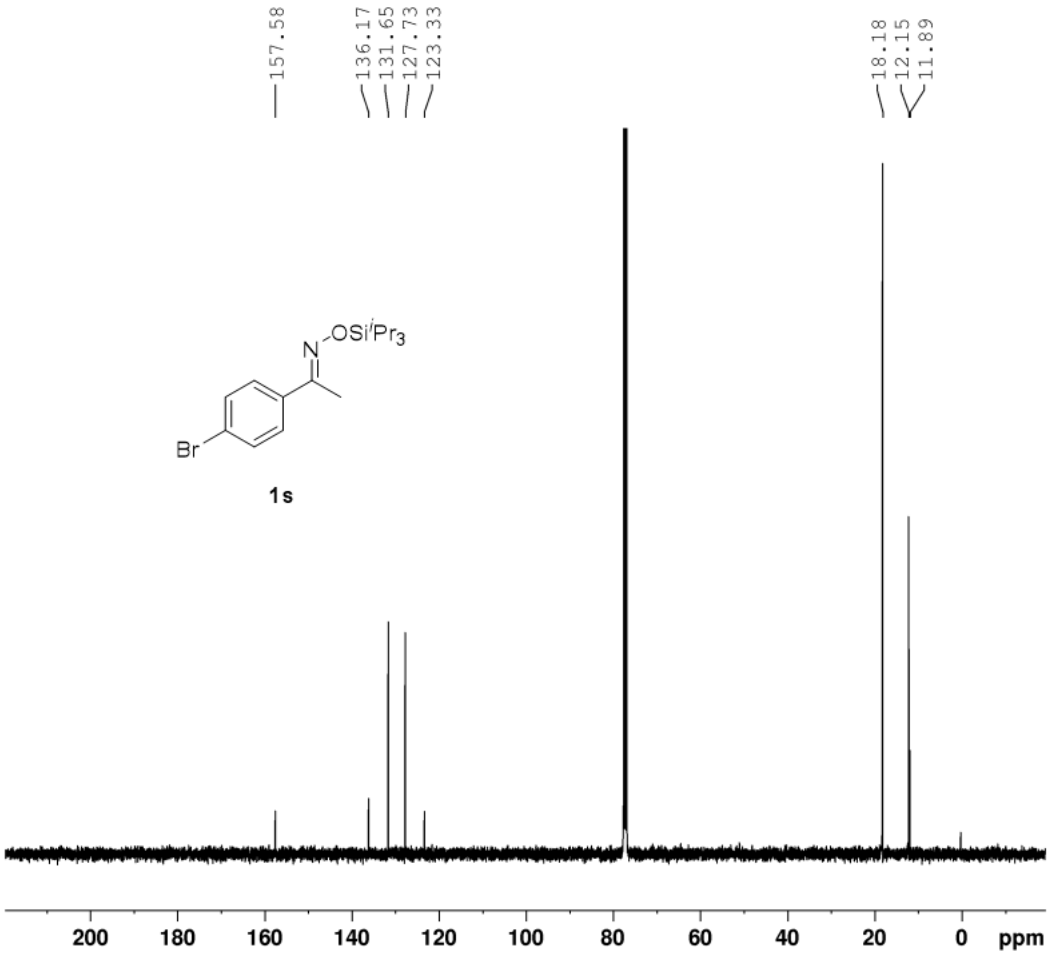

```
Current Data Parameters
NAME                      yh
EXPNO                    178
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210510
Time                 10.59 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG              zg30
TD                   65536
SOLVENT              CDCl3
NS                      13
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   142.81
DW                   83.200 usec
DE                    6.50 usec
TE                   298.8 K
D1             1.00000000 sec
TD0                      1
SFO1          300.1318534 MHz
NUC1                   1H
P1                    8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                   65536
SF            300.1300094 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



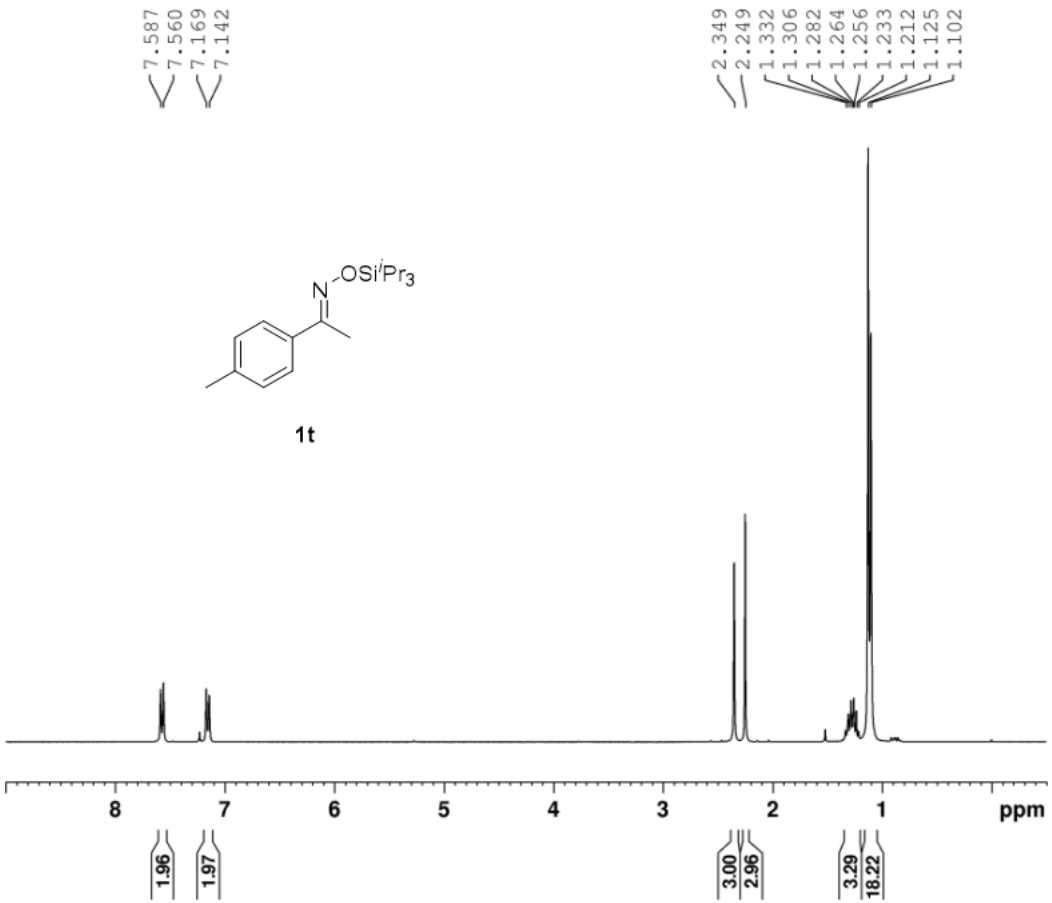

```
Current Data Parameters
NAME                   yc
EXPNO                   9
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210526
Time                15.38 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.0 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404068 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



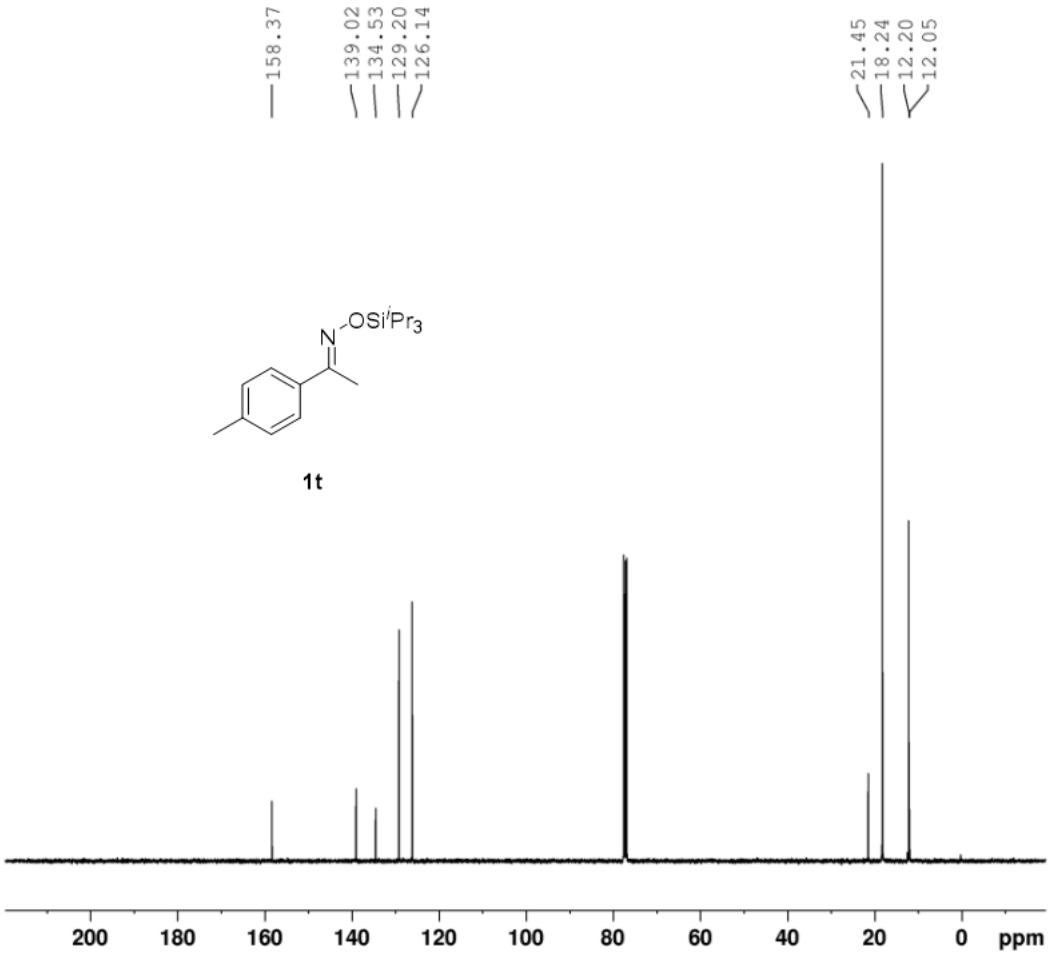

```
Current Data Parameters
NAME                      yh
EXPNO                    180
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210510
Time                  15.43 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDC13
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    298.9 K
D1              1.00000000 sec
TD0                        1
SFO1           300.1318534 MHz
NUC1                    1H
P1                     8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300085 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```



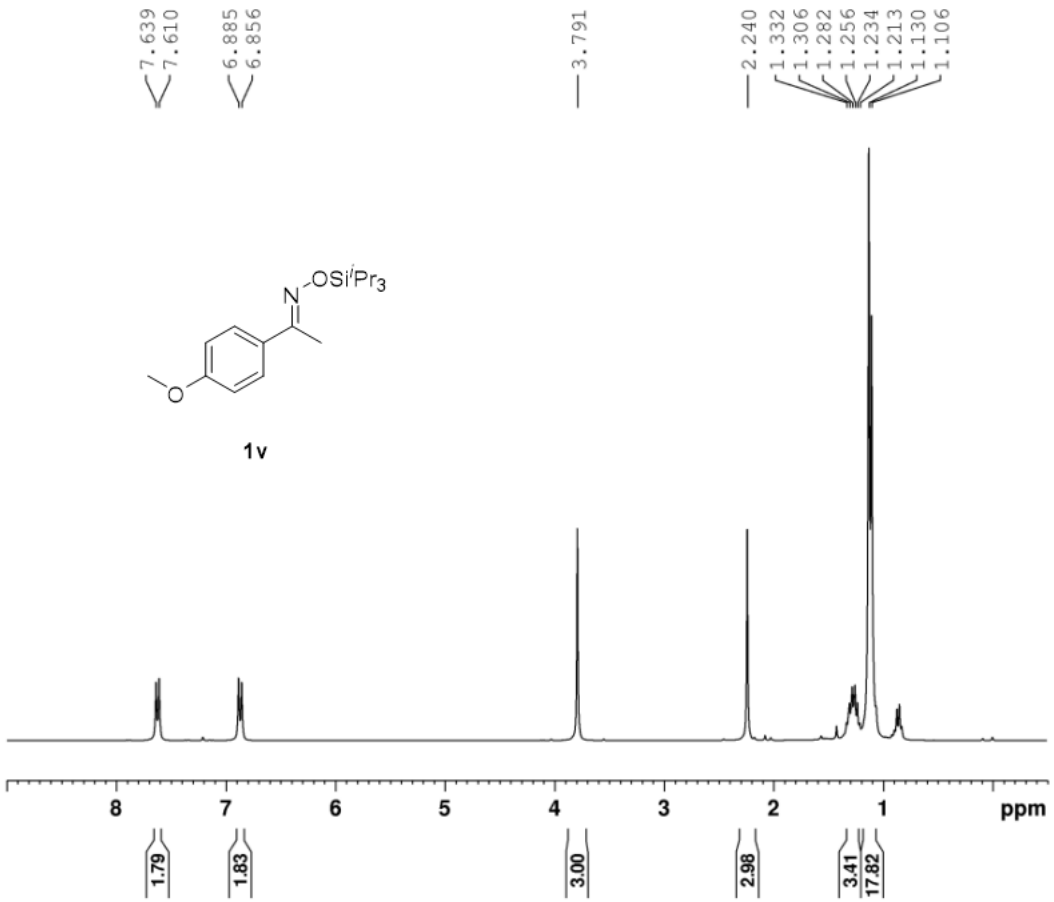

```
Current Data Parameters
NAME                  yc
EXPNO                 22
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210528
Time              23.49 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.3 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1
SFO1        100.6504916 MHz
NUC1               13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                32768
SF          100.6404069 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



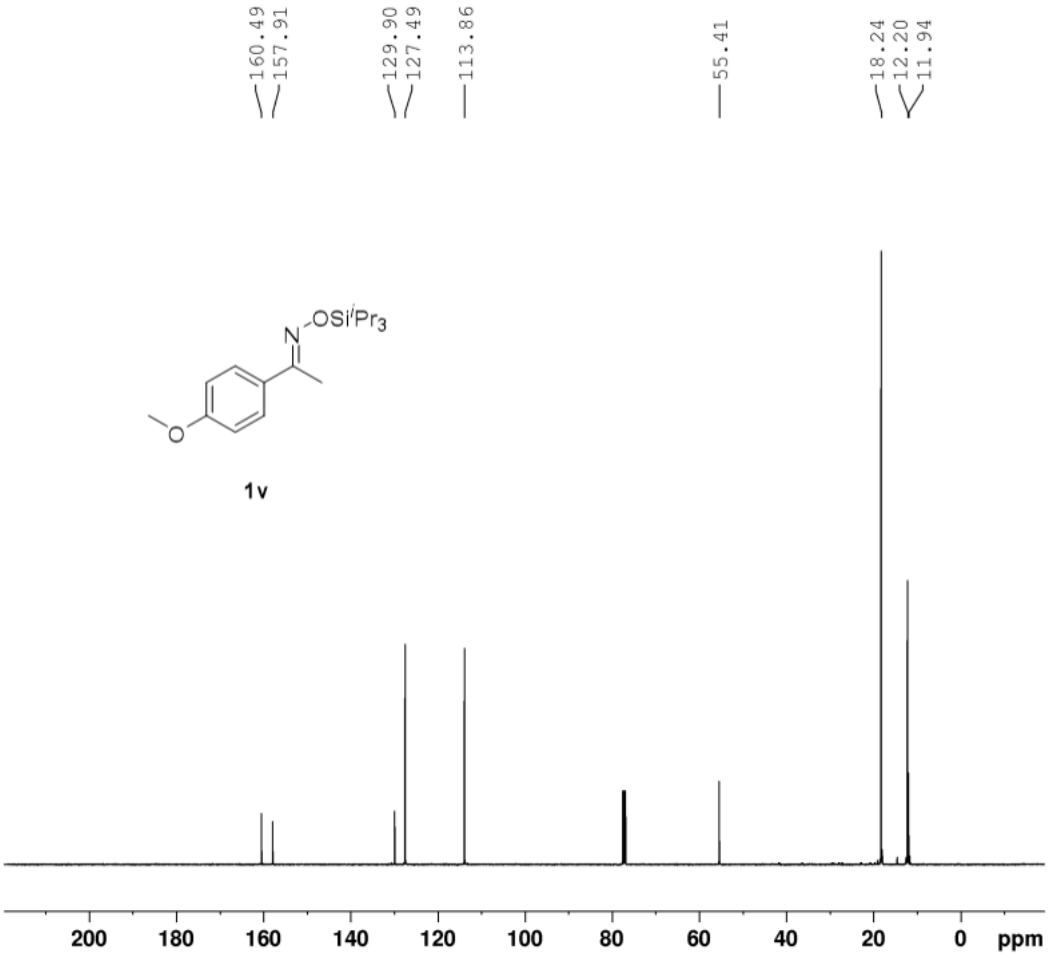

```
Current Data Parameters
NAME                      yh
EXPNO                    184
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210511
Time                  15.54 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       12
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                     74.53
DW                    83.200 usec
DE                     6.50 usec
TE                    299.5 K
D1              1.00000000 sec
TD0                        1
SFO1           300.1318534 MHz
NUC1                    1H
P1                     8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300162 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```



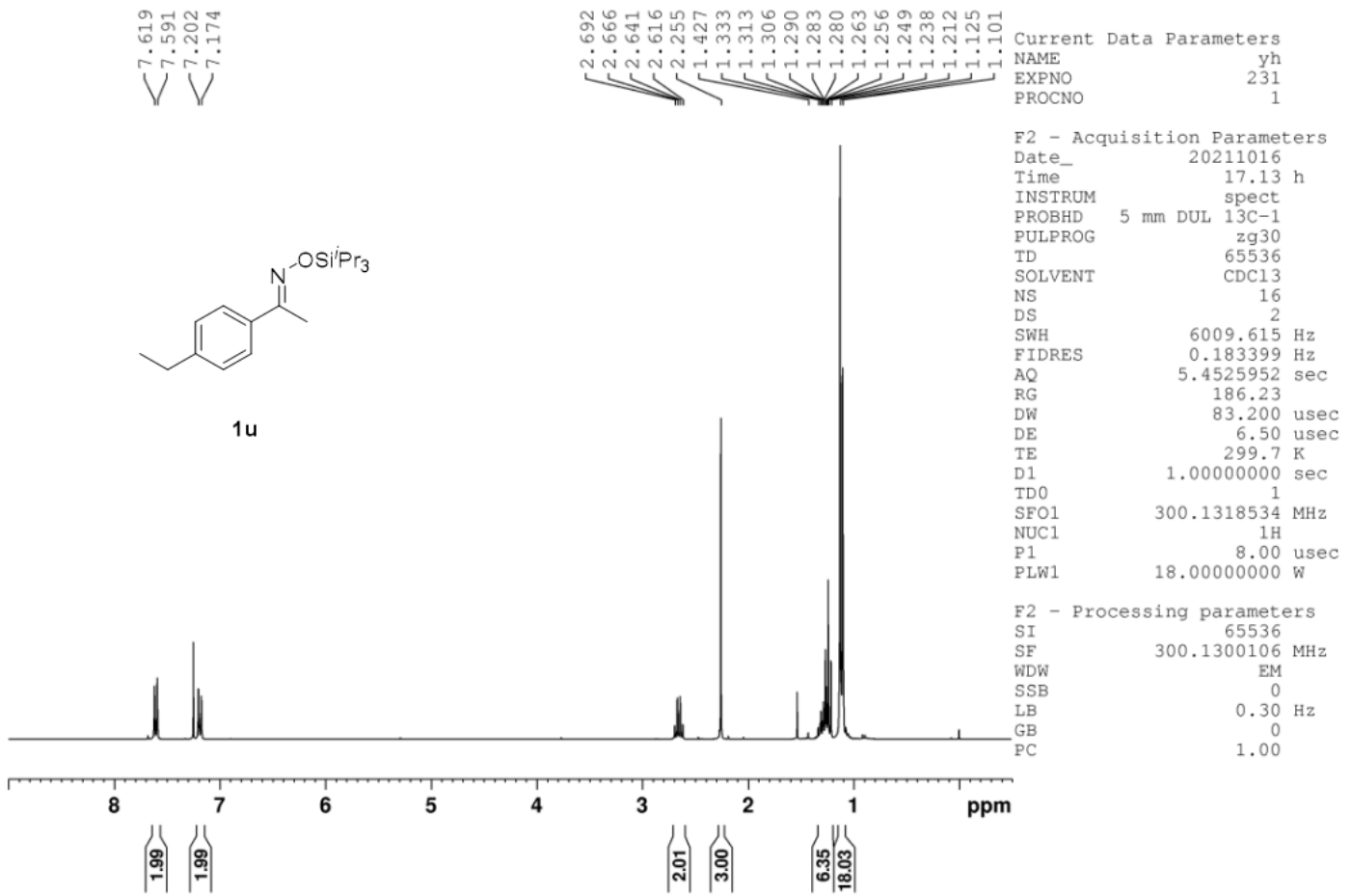

```
Current Data Parameters
NAME                  yc
EXPNO                 19
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210528
Time                9.40 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.1 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404074 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



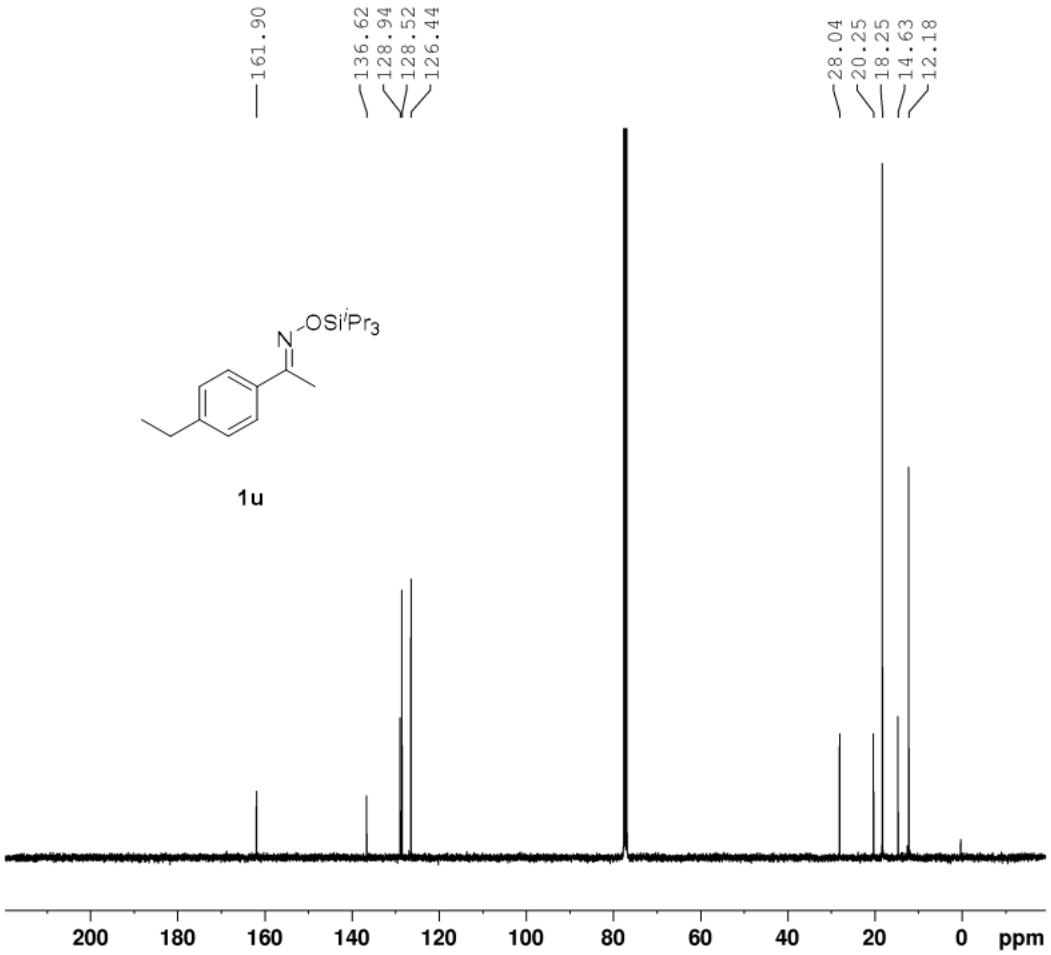

```
Current Data Parameters
NAME                      yh
EXPNO                    213
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210525
Time                 10.07 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDC13
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                    32.14
DW                   83.200 usec
DE                    6.50 usec
TE                   298.7 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                     1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300224 MHz
WDW                      EM
SSB                       0
LB                    0.30 Hz
GB                        0
PC                    1.00
```



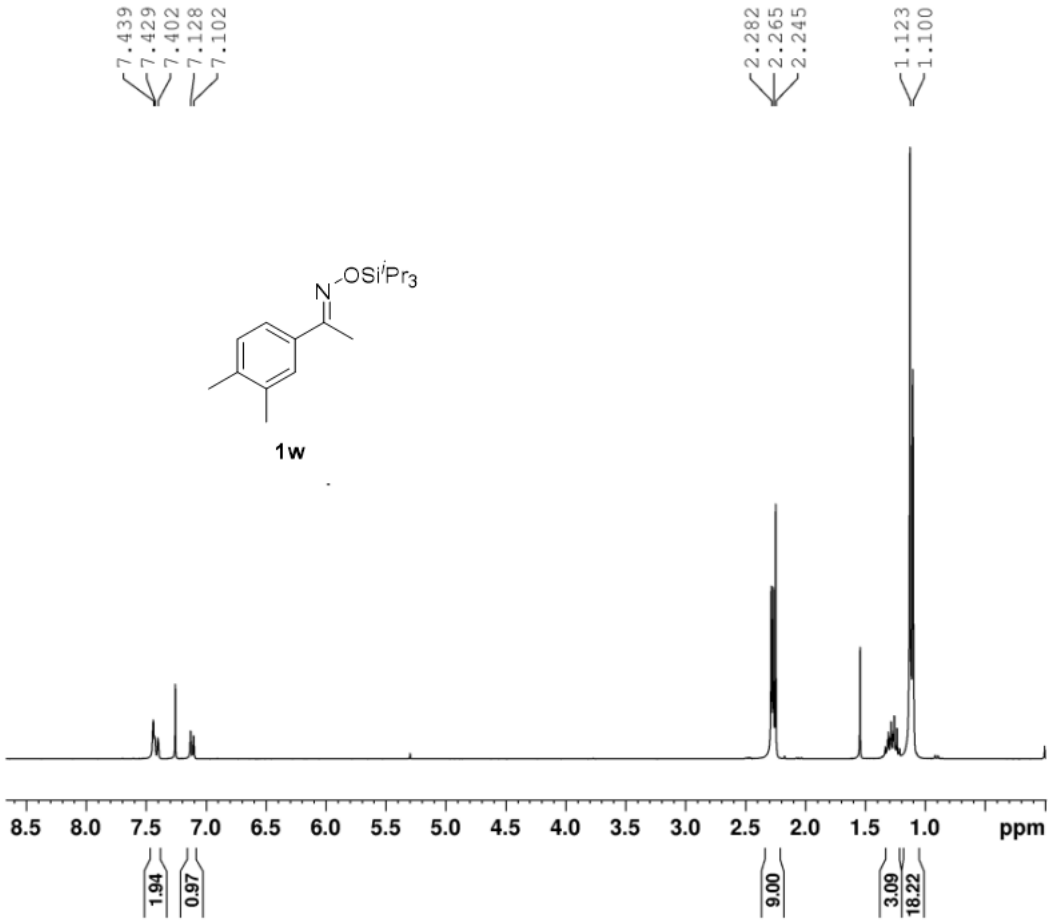

```
Current Data Parameters
NAME                  yc
EXPNO                 12
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210527
Time               11.24 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  500
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                   1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1          54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                32768
SF           100.6404107 MHz
WDW                 EM
SSB                  0
LB                1.00 Hz
GB                   0
PC                1.40
```



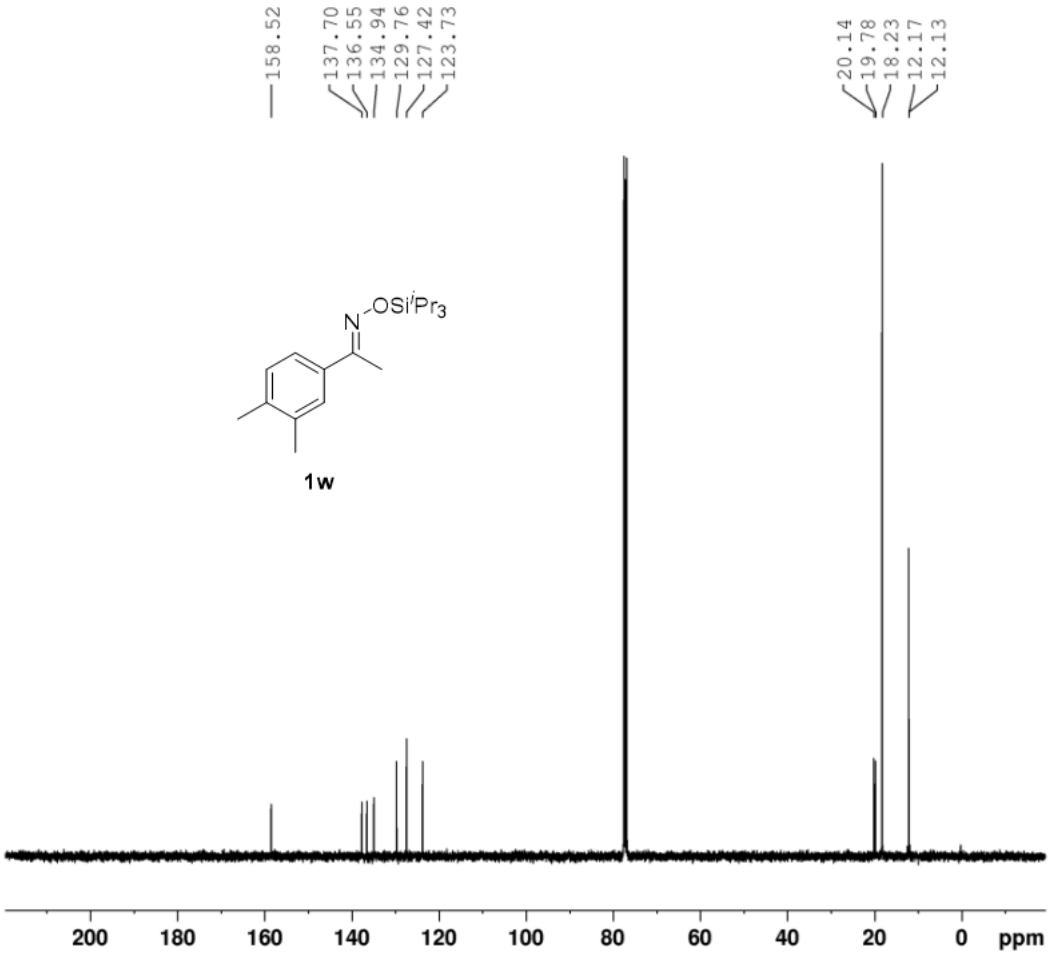

```
Current Data Parameters
NAME                  yh
EXPNO                231
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211016
Time               17.13 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDC13
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                186.23
DW                83.200 usec
DE                 6.50 usec
TE                299.7 K
D1             1.00000000 sec
TD0                    1
SFO1         300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF           300.1300106 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                  1.00
```



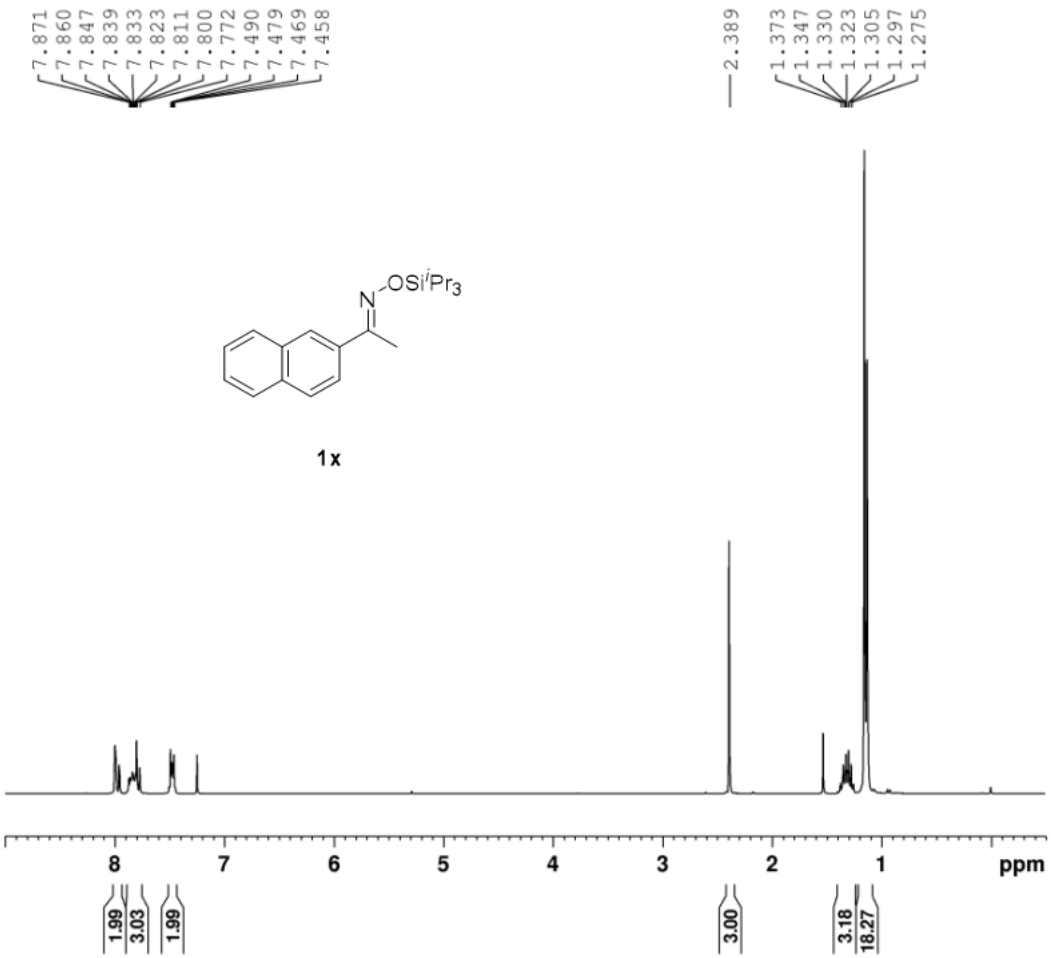

```
Current Data Parameters
NAME                   yc
EXPNO                   4
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210526
Time                2.47 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.4 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404062 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



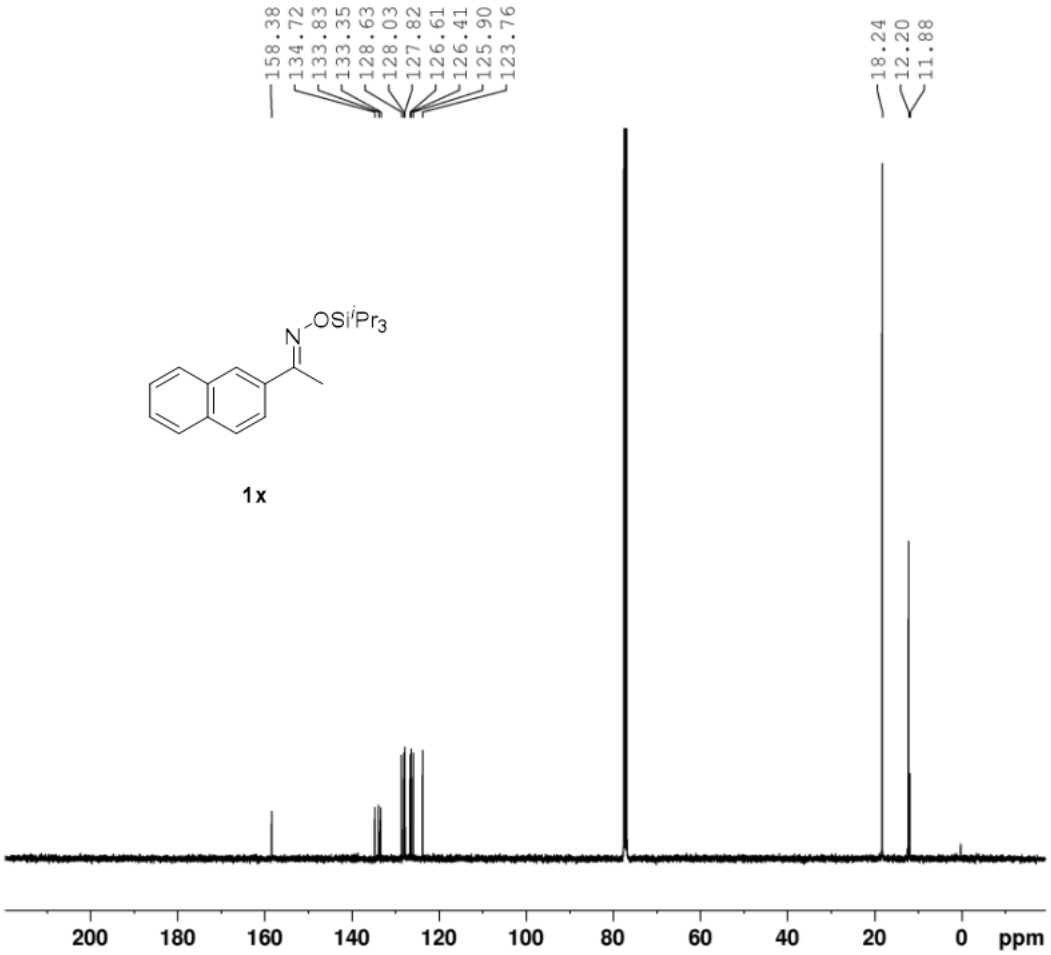

```
Current Data Parameters
NAME                   yh
EXPNO                 192
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210517
Time               22.03 h
INSTRUM             spect
PROBHD   5 mm DUL 13C-1
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH              6009.615 Hz
FIDRES           0.183399 Hz
AQ             5.4525952 sec
RG                 209.09
DW                 83.200 usec
DE                   6.50 usec
TE                  298.8 K
D1             1.00000000 sec
TD0                     1
SFO1         300.1318534 MHz
NUC1                   1H
P1                  8.00 usec
PLW1        18.00000000 W

F2 - Processing parameters
SI                  65536
SF           300.1300087 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



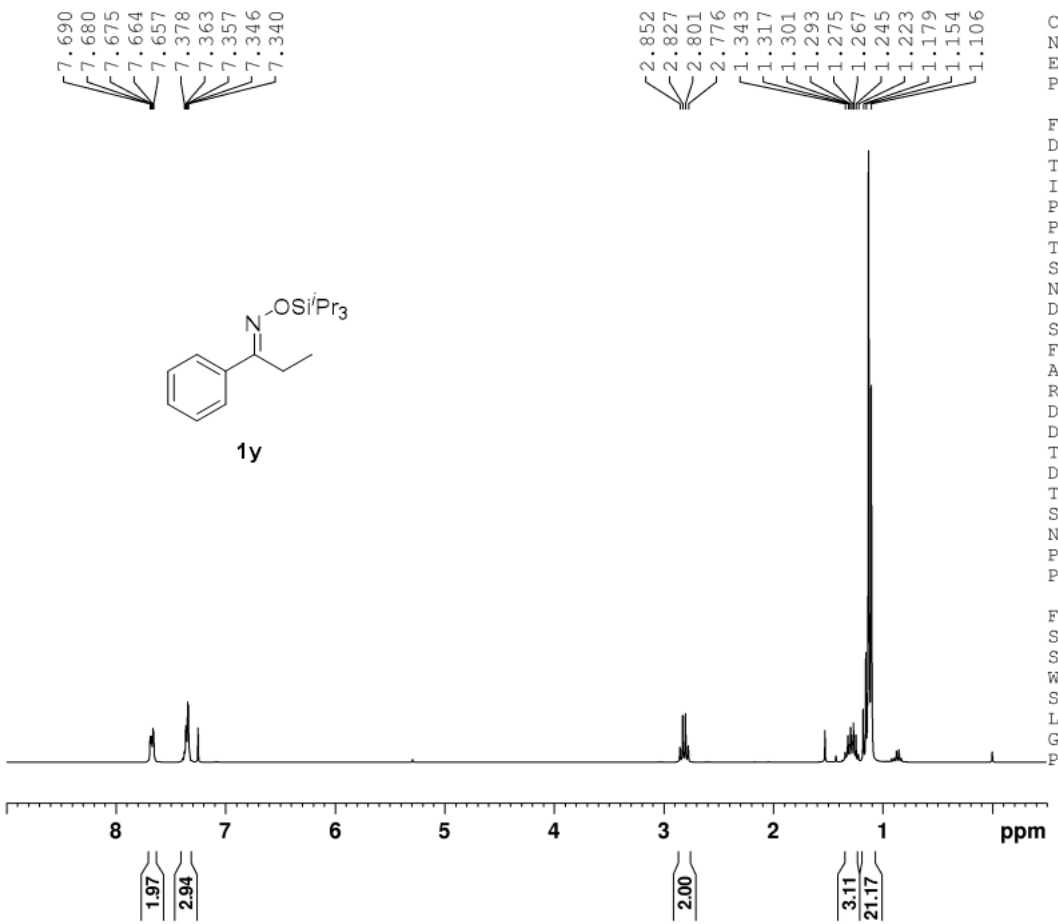

```
Current Data Parameters
NAME                  yc
EXPNO                 23
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210529
Time                0.20 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   500
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.2 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                    1
SFO1        100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1         54.00000000 W
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF          100.6404084 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



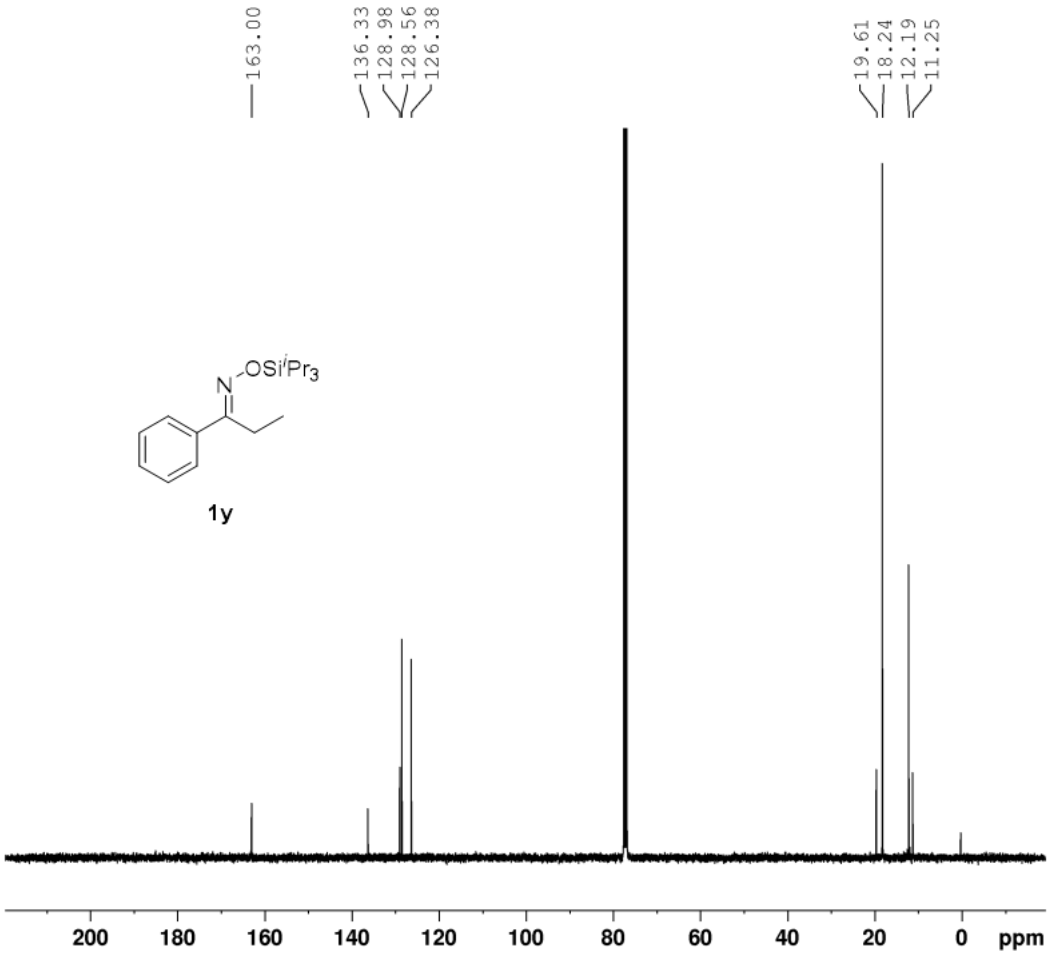

```
Current Data Parameters
NAME                      yh
EXPNO                    197
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210519
Time                  21.04 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDC13
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    299.5 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                   1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300107 MHz
WDW                      EM
SSB                       0
LB                    0.30 Hz
GB                        0
PC                    1.00
```



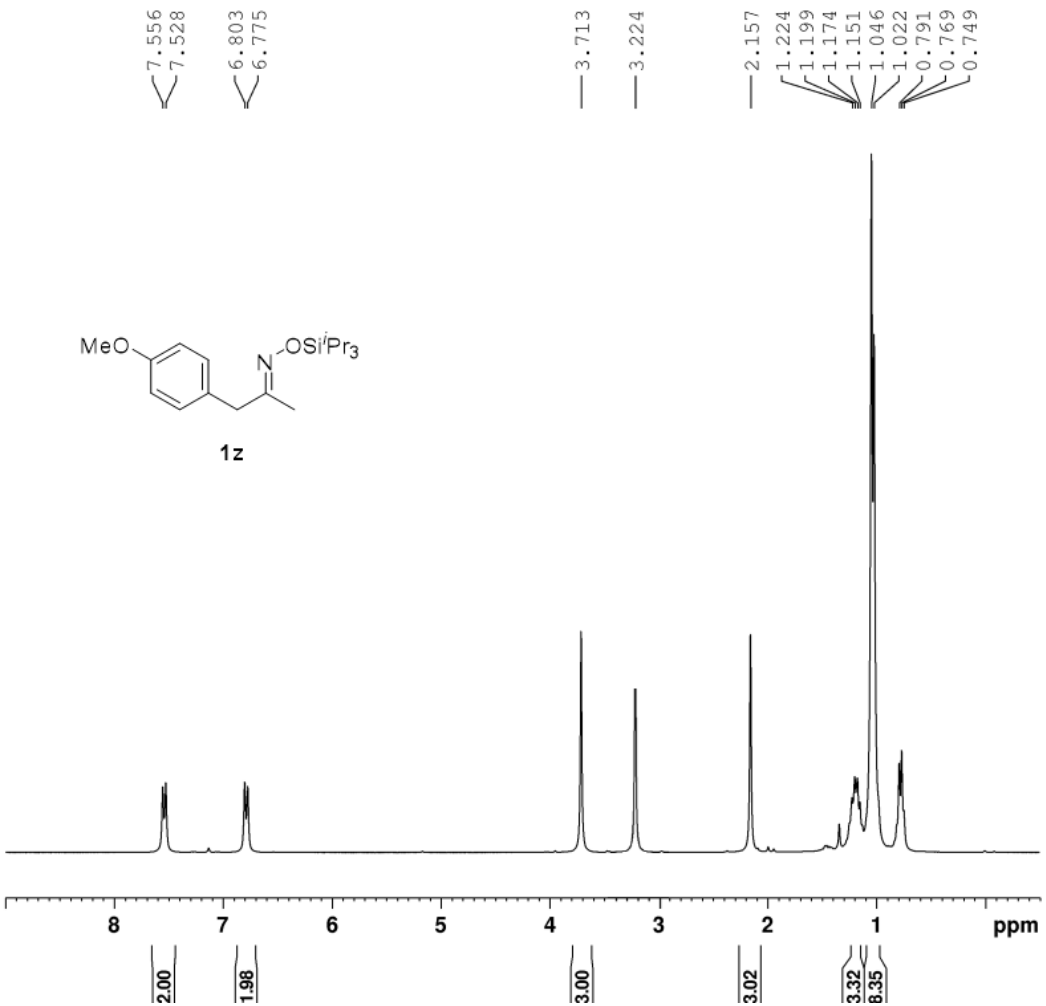

```
Current Data Parameters
NAME                   yc
EXPNO                   5
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210526
Time               10.19 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404080 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



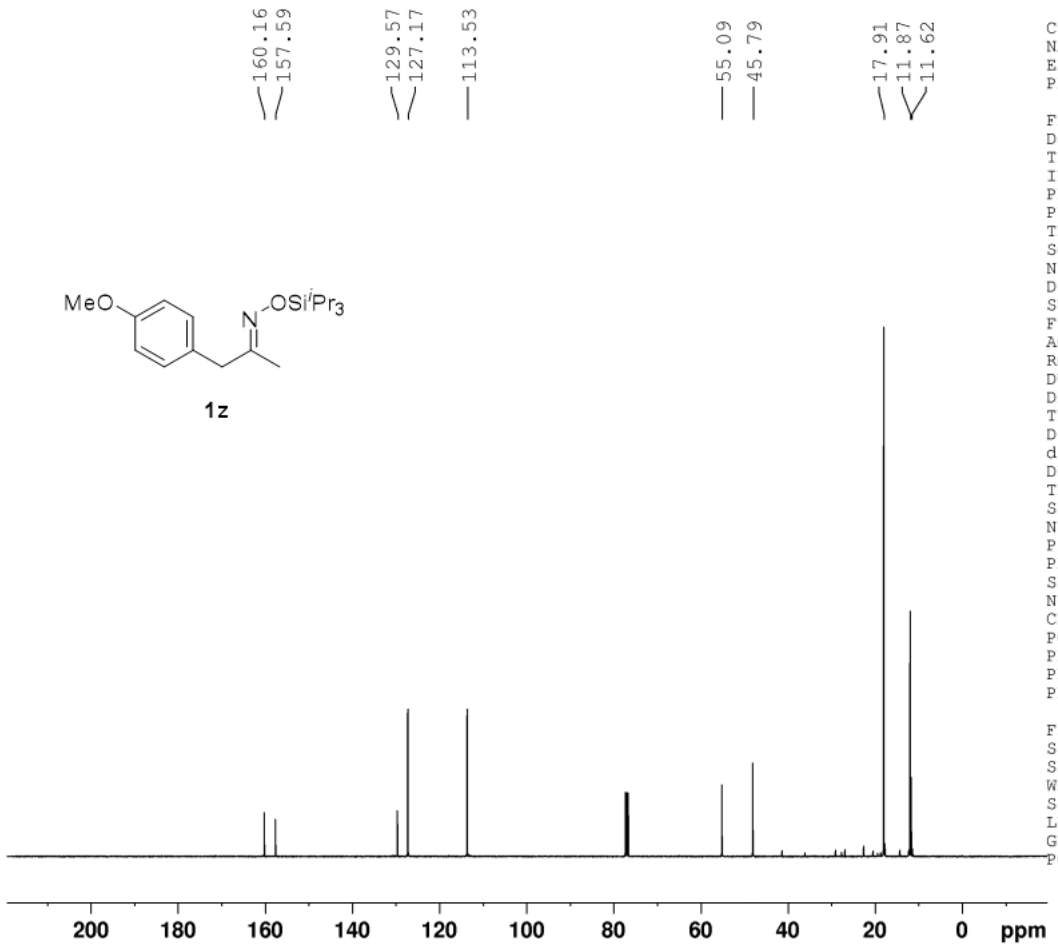

```
Current Data Parameters
NAME                      yh
EXPNO                    182
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210510
Time                  20.39 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    299.3 K
D1                 1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                     1H
P1                     8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300096 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```



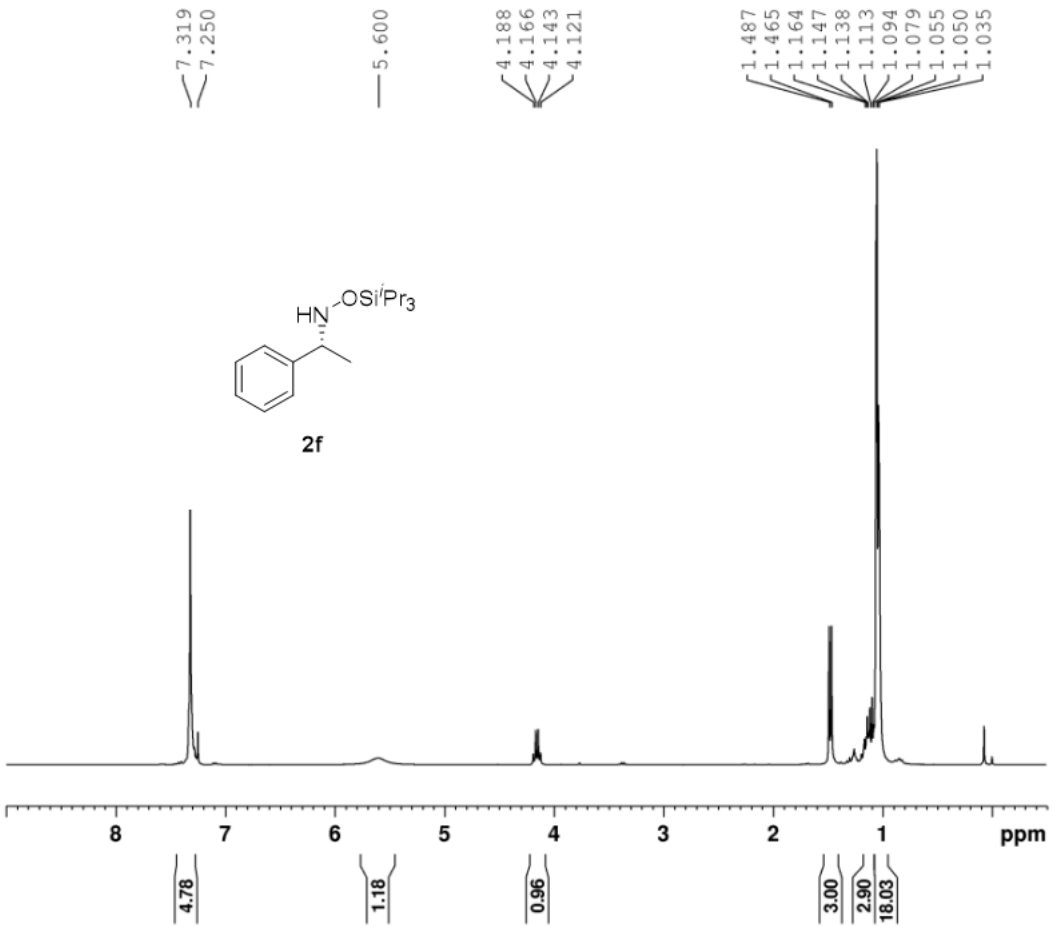

```
Current Data Parameters
NAME                   yc
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210526
Time                0.45 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.6 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404062 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



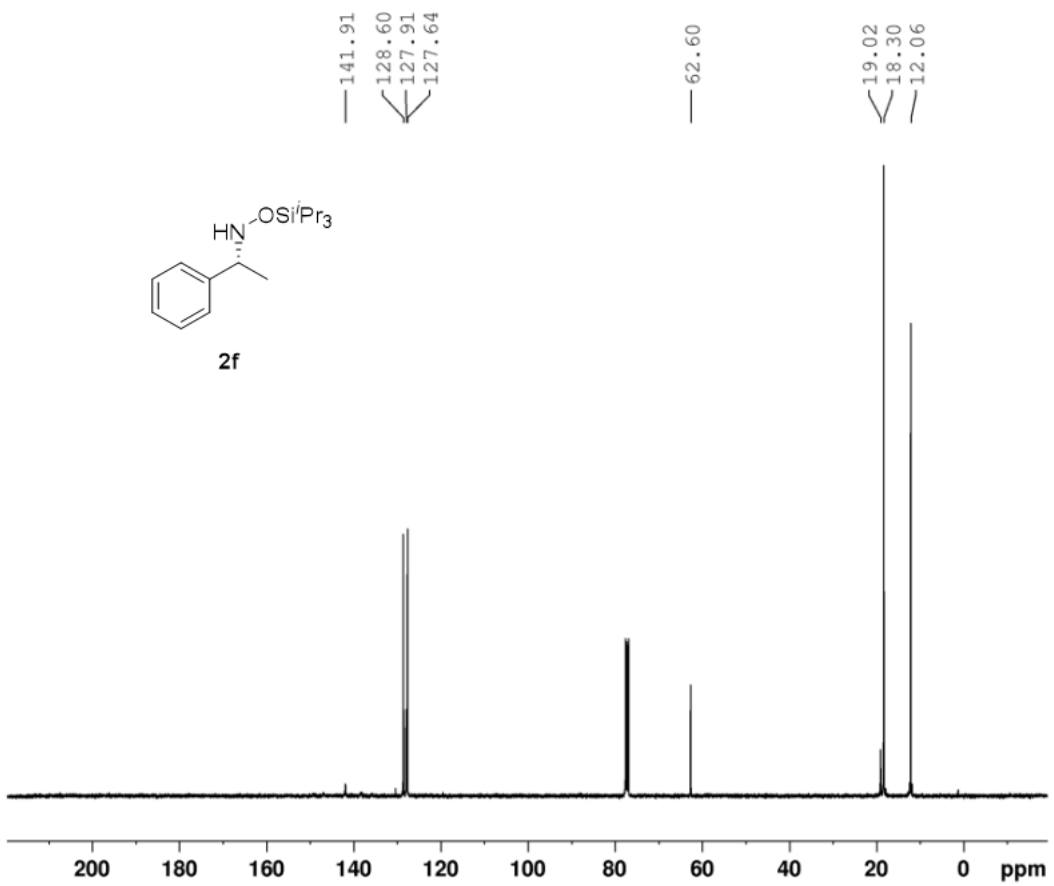

```
Current Data Parameters
NAME                  yh
EXPNO                177
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210507
Time               16.56 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    14
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                 32.14
DW                83.200 usec
DE                 6.50 usec
TE                299.1 K
D1           1.00000000 sec
TD0                    1
SFO1        300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1        18.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300450 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



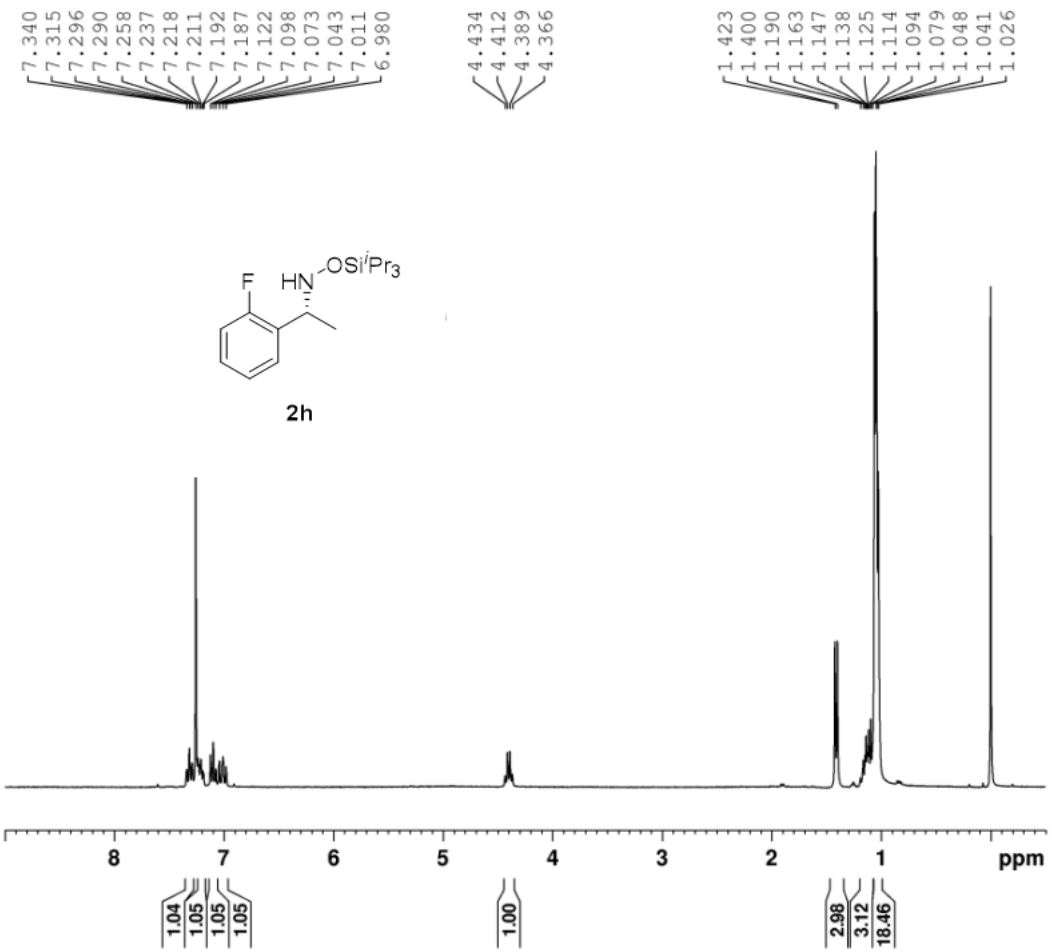

```
Current Data Parameters
NAME                   yc
EXPNO                  12
PROCNO                  1

F2 - Acquisition Parameters
Date_           20210527
Time               11.24 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   500
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404434 MHz
WDW                   EM
SSB                    0
LB                 1.00 Hz
GB                     0
PC                 1.40
```



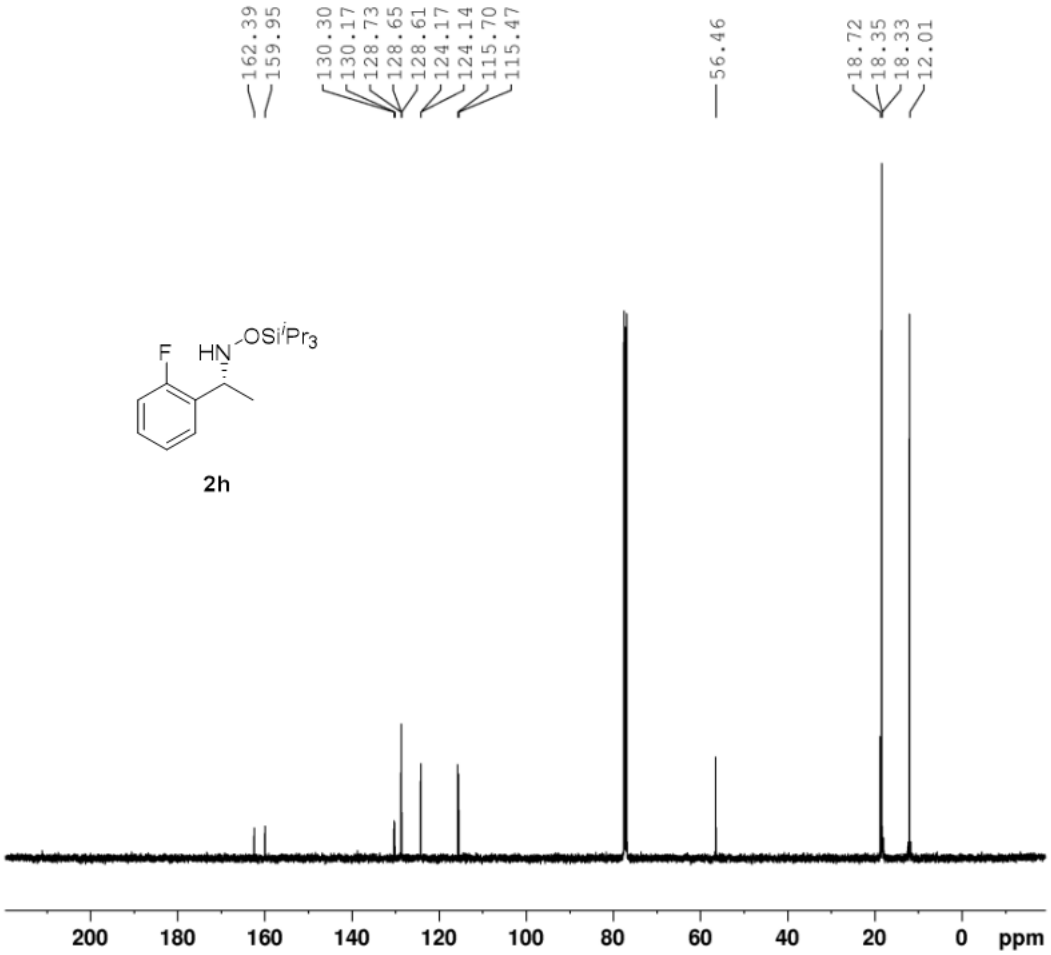

```
Current Data Parameters
NAME                      ch
EXPNO                      3
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210227
Time                 19.33 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG              zg30
TD                   65536
SOLVENT              CDC13
NS                      16
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   142.81
DW                   83.200 usec
DE                    6.50 usec
TE                   298.2 K
D1             1.00000000 sec
TD0                      1
SFO1          300.1318534 MHz
NUC1                   1H
P1                    8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                   65536
SF            300.1300101 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



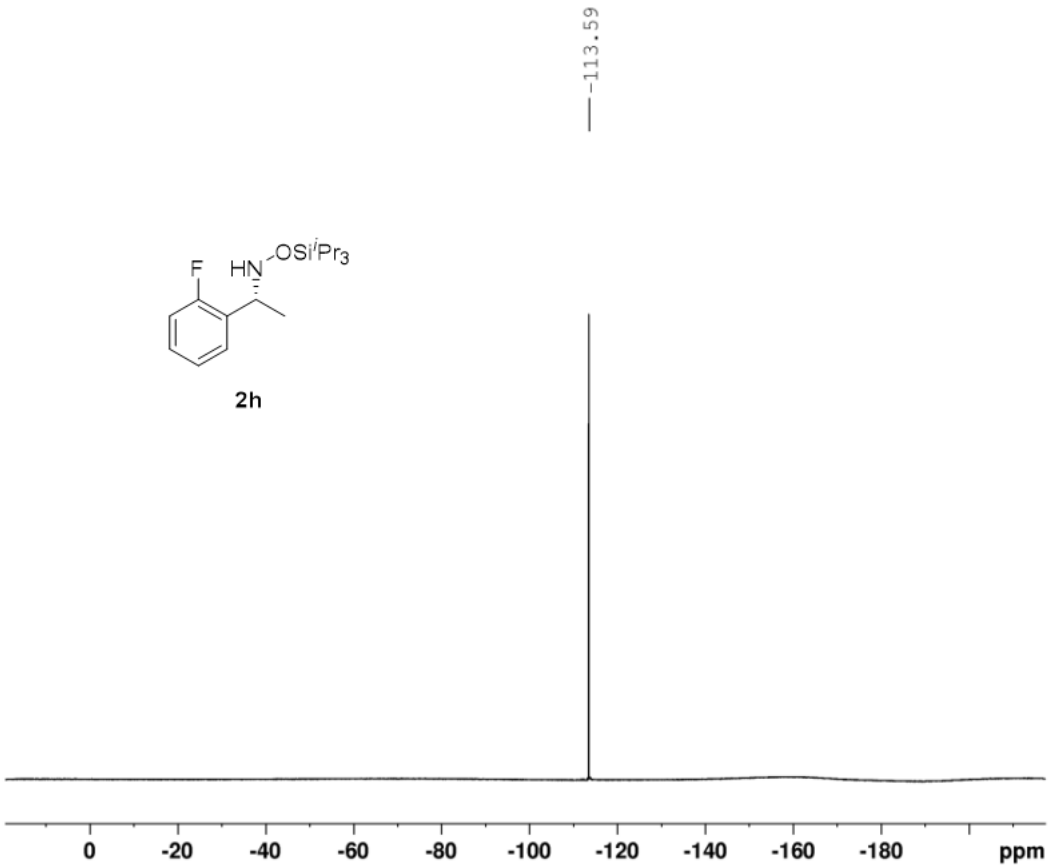

```
Current Data Parameters
NAME                  cc
EXPNO                 24
PROCNO                1

F2 - Acquisition Parameters
Date_           20211219
Time              22.07 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                20.800 usec
DE                 6.50 usec
TE                300.3 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404097 MHz
WDW                   EM
SSB                    0
LB                 1.00 Hz
GB                     0
PC                 1.40
```



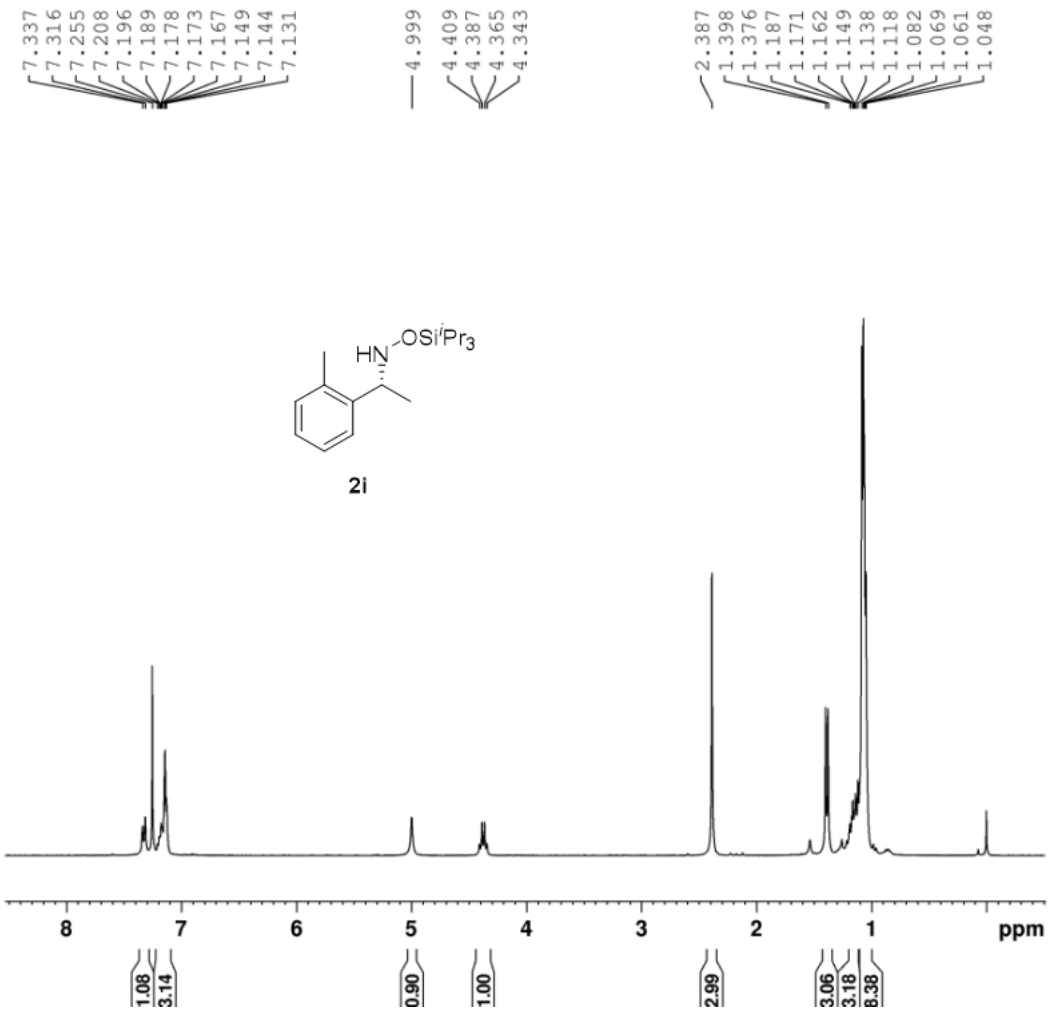

```
Current Data Parameters
NAME                  ch
EXPNO                 50
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210629
Time              10.52 h
INSTRUM           spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6009.615 Hz
FIDRES         0.183399 Hz
AQ             5.4525952 sec
RG                209.09
DW                83.200 usec
DE                 6.50 usec
TE                300.3 K
D1             1.00000000 sec
TD0                   1
SFO1         300.1318534 MHz
NUC1                 1H
P1                8.00 usec
PLW1         18.00000000 W

F2 - Processing parameters
SI                65536
SF           300.1300079 MHz
WDW                  EM
SSB                   0
LB                0.30 Hz
GB                    0
PC                1.00
```



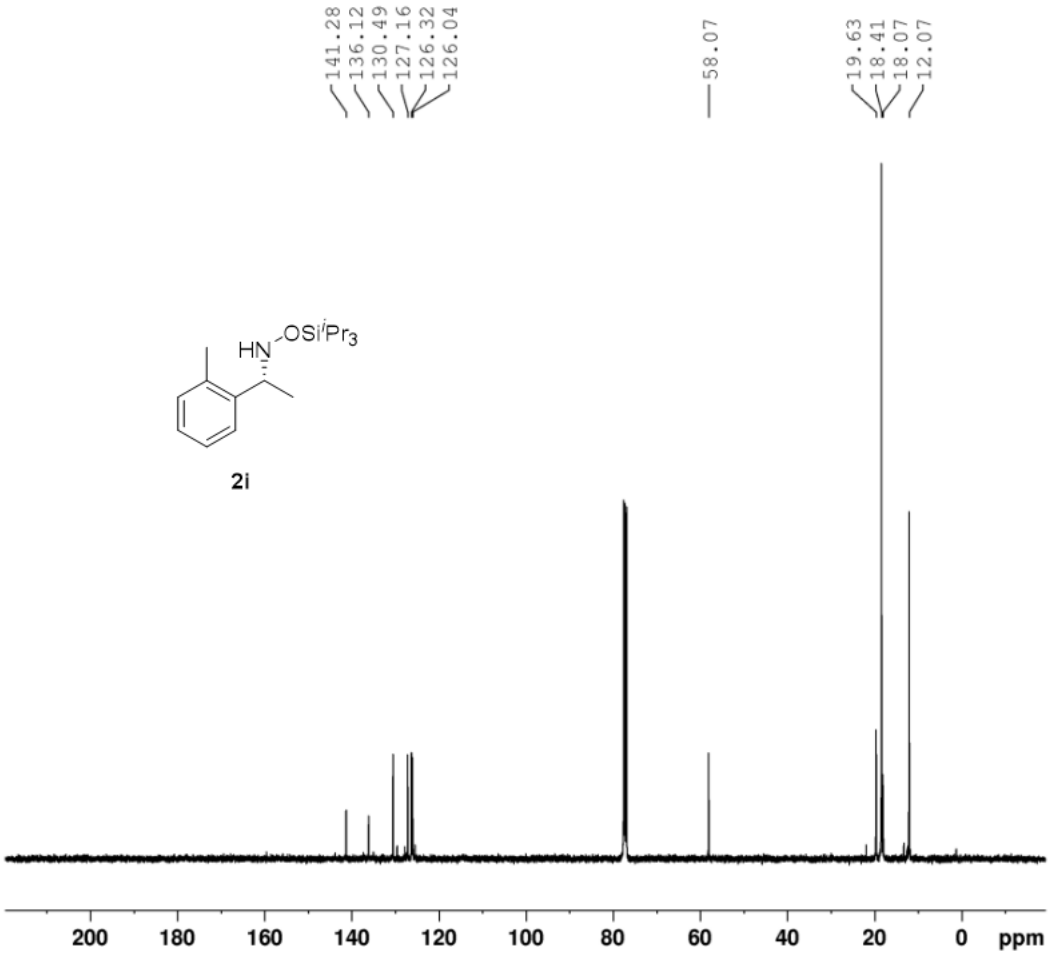

```
Current Data Parameters
NAME                   cc
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211216
Time                1.50 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH             24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 299.0 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                     1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF           100.6404079 MHz
WDW                    EM
SSB                     0
LB                  1.00 Hz
GB                      0
PC                   1.40
```




```
Current Data Parameters
NAME                   F
EXPNO                 13
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210602
Time              11.32 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD              131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          1.362392 Hz
AQ              0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                299.9 K
D1             1.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec
TD0                    1
rde1           0.00000650 sec
SFO1         376.5642094 MHz
NUC1                  19F
P1                14.50 usec
PLW1         17.98900032 W
SFO2         400.2416010 MHz
NUC2                  1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W

F2 - Processing parameters
SI                 65536
SF           376.6016060 MHz
WDW                   EM
SSB                    0
LB                0.30 Hz
GB                     0
PC                1.00
```

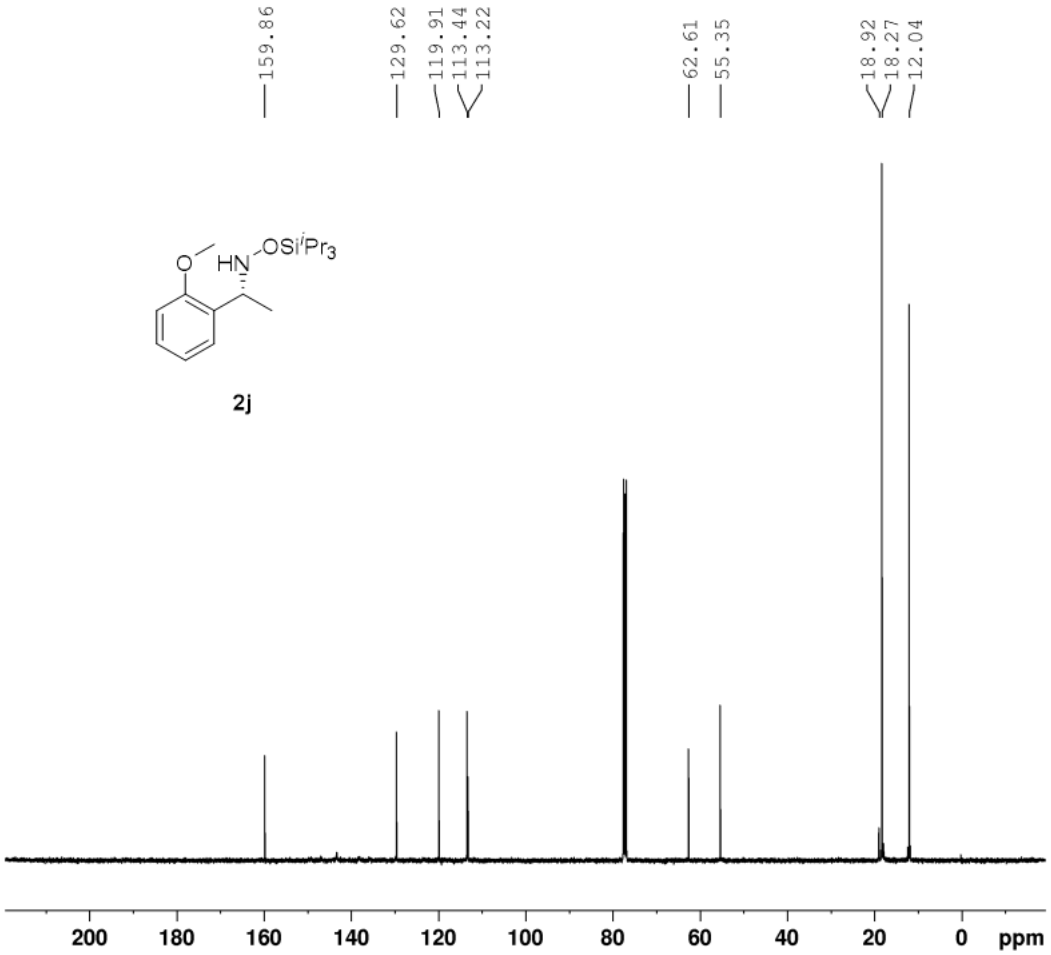



```
Current Data Parameters
NAME                  ch
EXPNO                374
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211229
Time               18.16 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                209.09
DW                83.200 usec
DE                 6.50 usec
TE                298.3 K
D1             1.00000000 sec
TD0                    1
SFO1         300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF           300.1300089 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                  1.00
```

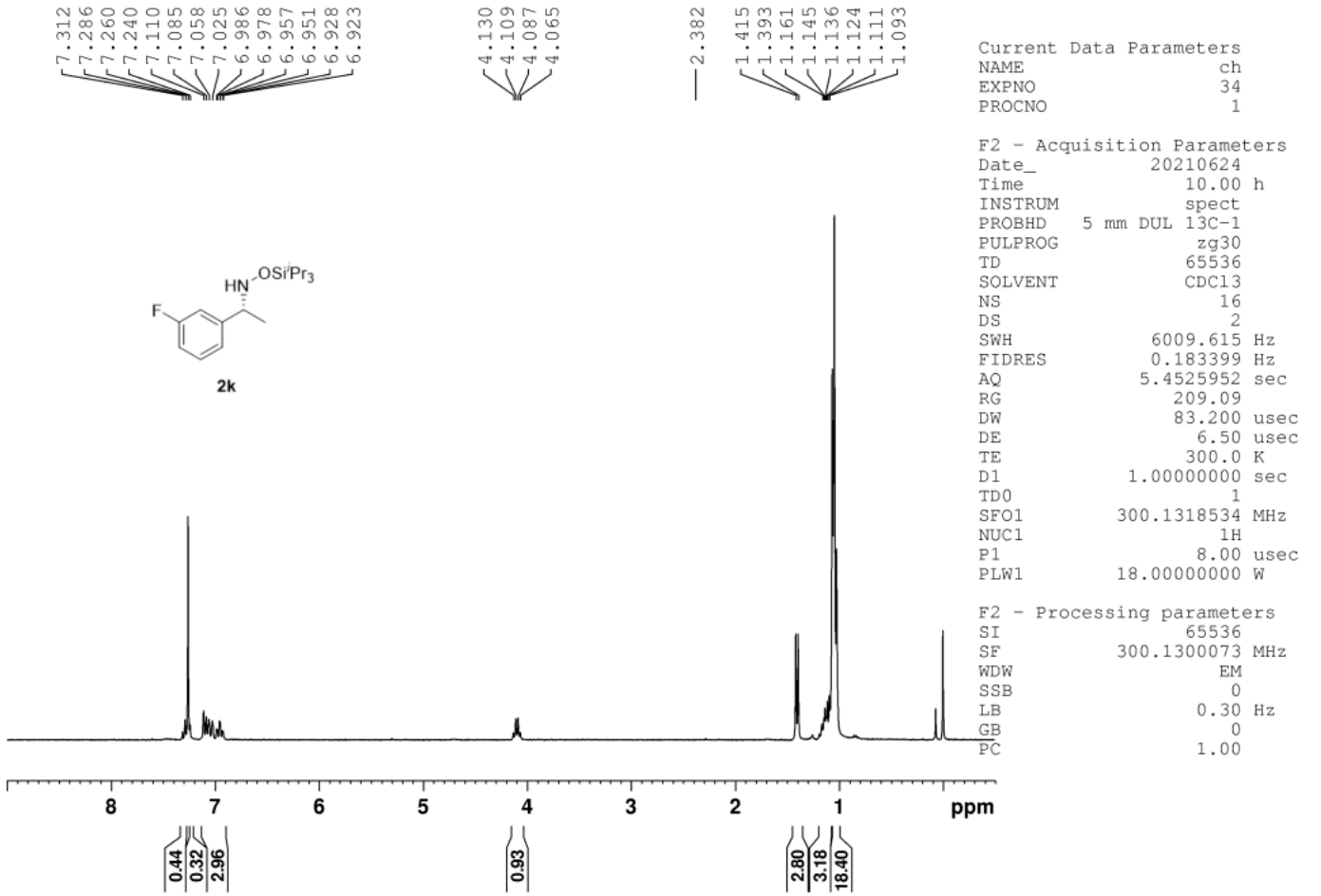



```
Current Data Parameters
NAME                   cc
EXPNO                  14
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211218
Time                12.34 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    800
DS                      4
SWH             24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 299.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                     1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404097 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```

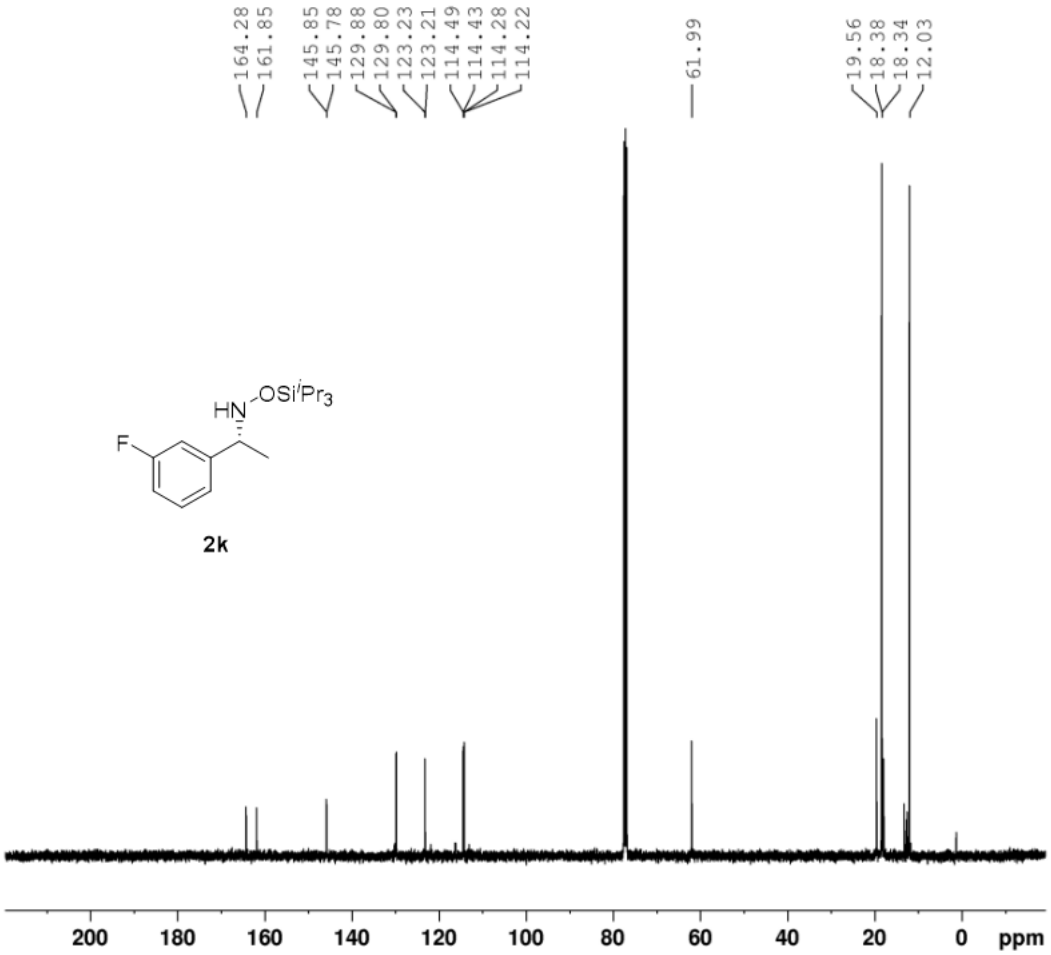
7.266
7.255
7.240
7.214
6.917
6.888
6.879
6.839
6.838
6.831
6.812
6.810
6.804
6.802
5.194
4.136
4.114
4.092
4.070
3.798
1.458
1.436
1.181
1.174
1.159
1.149
1.137
1.129
1.125
1.106
1.090
1.087
1.070
1.061
1.049
Current Data Parameters
NAME ch
EXPNO 352
PROCNO 1
F2 - Acquisition Parameters
Date_ 20211218
Time_ 19.42 h
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 6009.615 Hz
FIDRES 0.183399 Hz
AQ 5.4525952 sec
RG 186.23
DW 83.200 usec
DE 6.50 usec
TE 298.3 K
D1 1.00000000 sec
TD0 1
SFO1 300.1318534 MHz
NUC1 1H
P1 8.00 usec
PLW1 18.00000000 W
F2 - Processing parameters
SI 65536
SF 300.1300087 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
2j
O
HN
OSi/Pr3
1.98
3.07
1.32
1.00
3.09
3.00
3.32
18.11
8
7
6
5
4
3
2
1
ppm



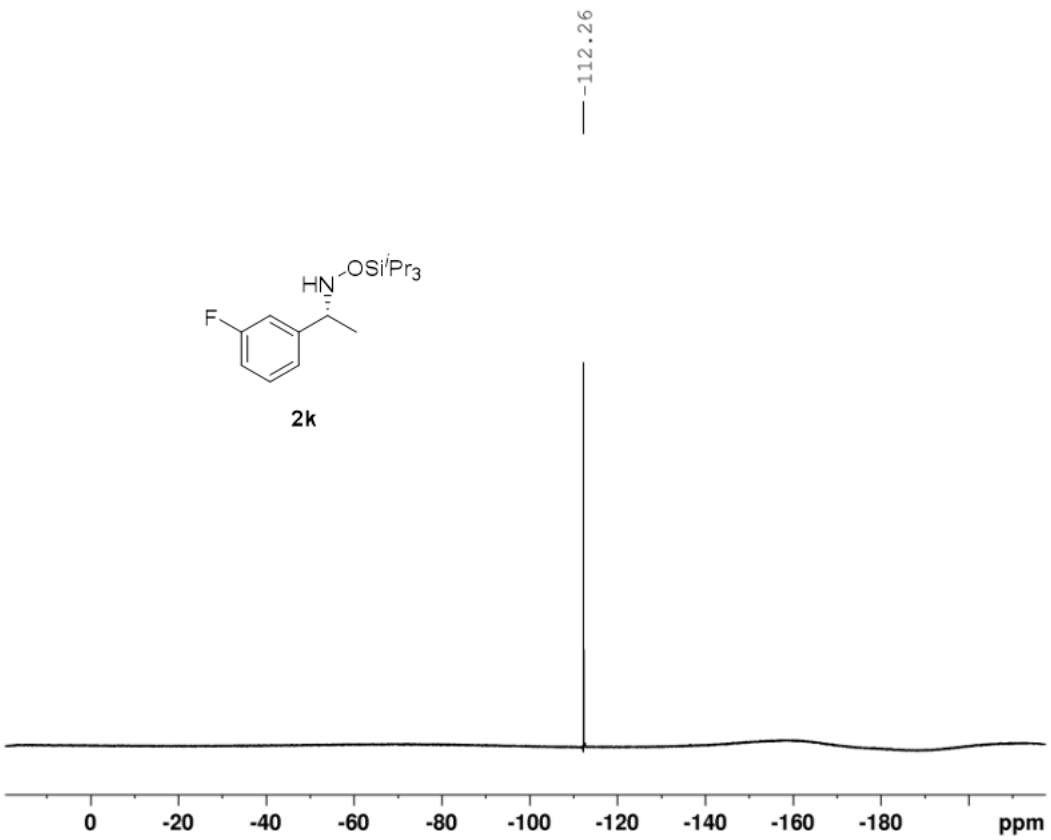

```
Current Data Parameters
NAME                  cc
EXPNO                 18
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211218
Time              22.52 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    800
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                  20.800 usec
DE                   6.50 usec
TE                  299.3 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                  10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2               90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404086 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



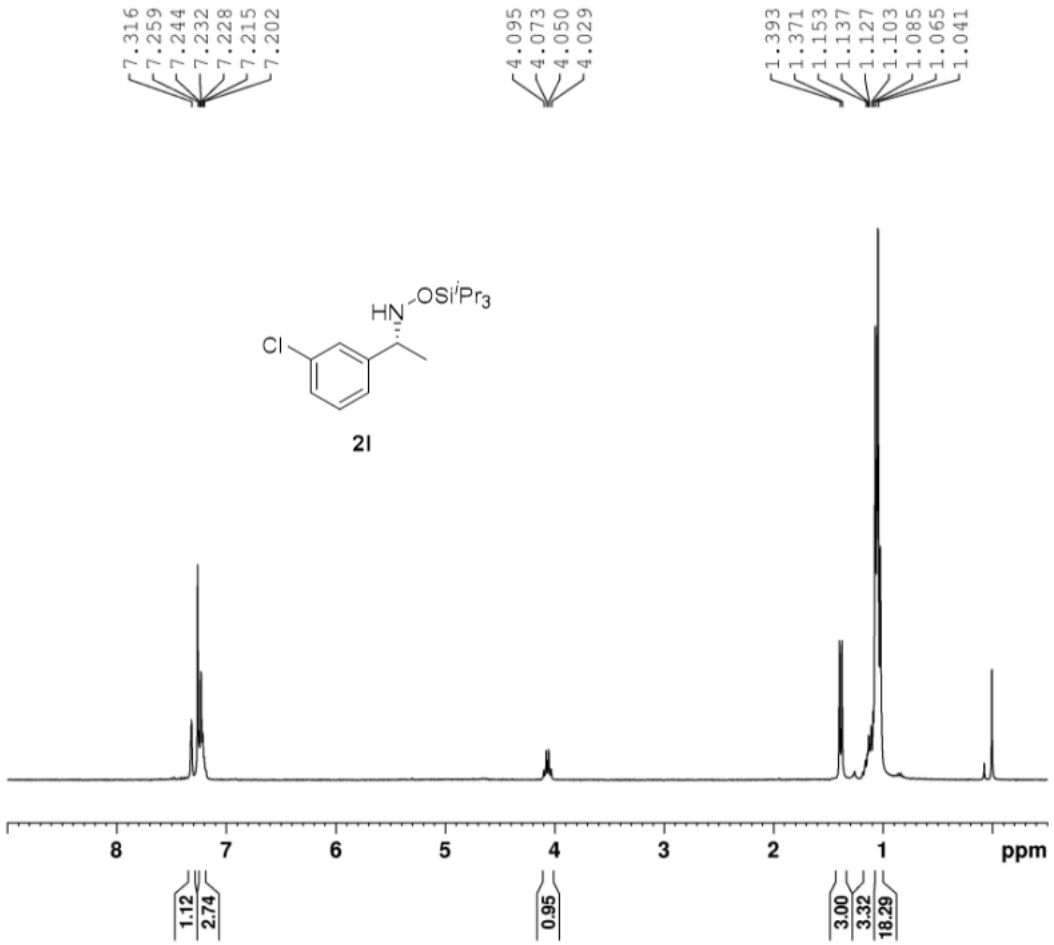

```
Current Data Parameters
NAME                      ch
EXPNO                     34
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210624
Time                 10.00 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG              zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ               5.4525952 sec
RG                  209.09
DW                  83.200 usec
DE                    6.50 usec
TE                   300.0 K
D1              1.00000000 sec
TD0                      1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                   65536
SF             300.1300073 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



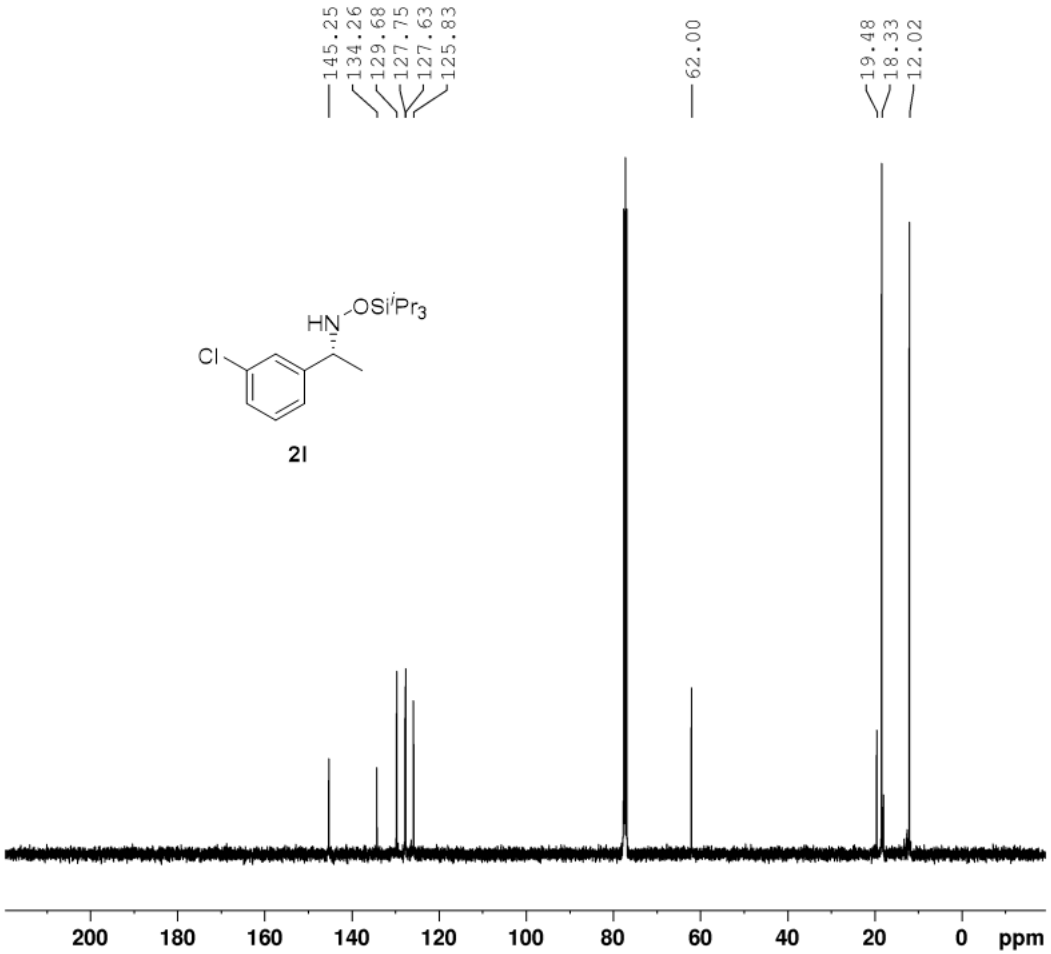

```
Current Data Parameters
NAME                   cc
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20211216
Time                1.19 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   500
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                298.8 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404066 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME                   F
EXPNO                 12
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210602
Time              11.27 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          1.362392 Hz
AQ              0.7340032 sec
RG                206.33
DW                  5.600 usec
DE                  6.50 usec
TE                 299.9 K
D1            1.00000000 sec
d11           0.03000000 sec
d12           0.00002000 sec
TD0                    1
rde1          0.00000650 sec
SFO1        376.5642094 MHz
NUC1                19F
P1                 14.50 usec
PLW1         17.98900032 W
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W

F2 - Processing parameters
SI                 65536
SF          376.6015028 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

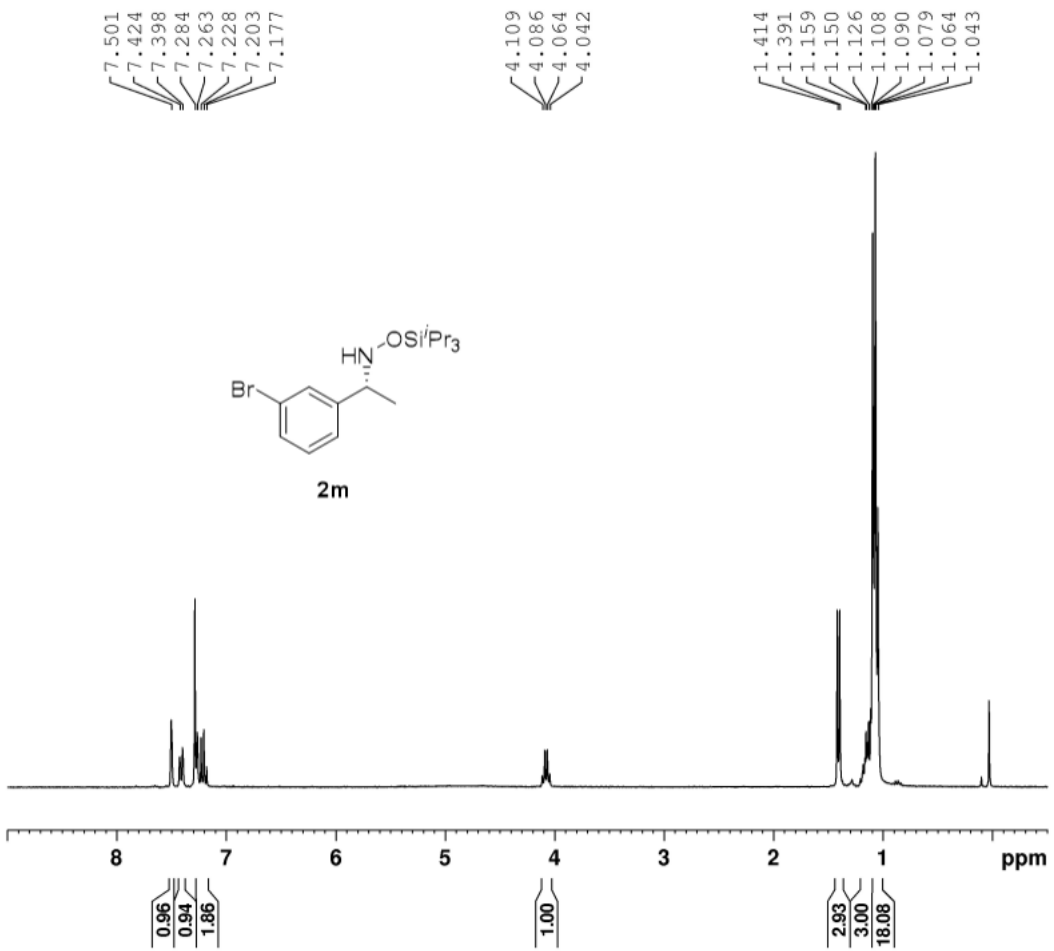



```
Current Data Parameters
NAME                      ch
EXPNO                     35
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210624
Time                 10.04 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                   83.200 usec
DE                    6.50 usec
TE                   300.1 K
D1              1.00000000 sec
TD0                      1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                   65536
SF             300.1300074 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

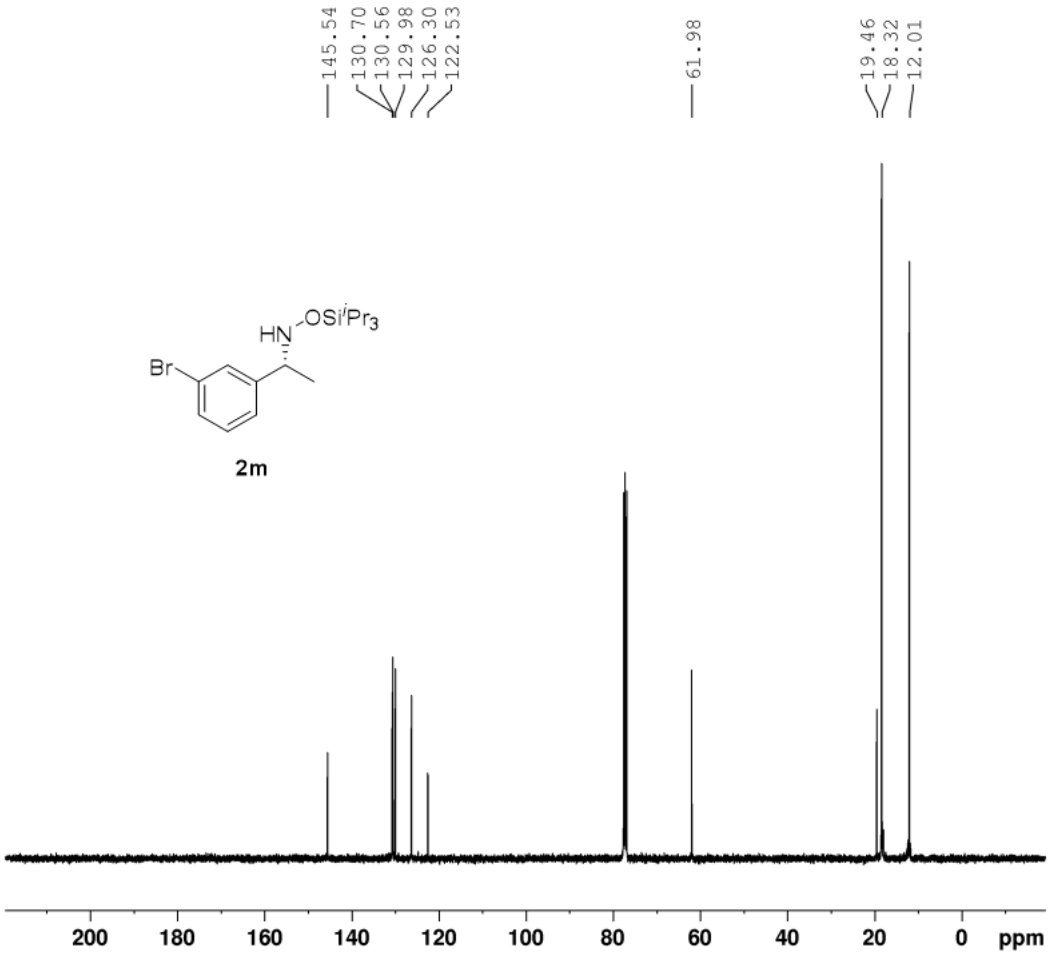


2l

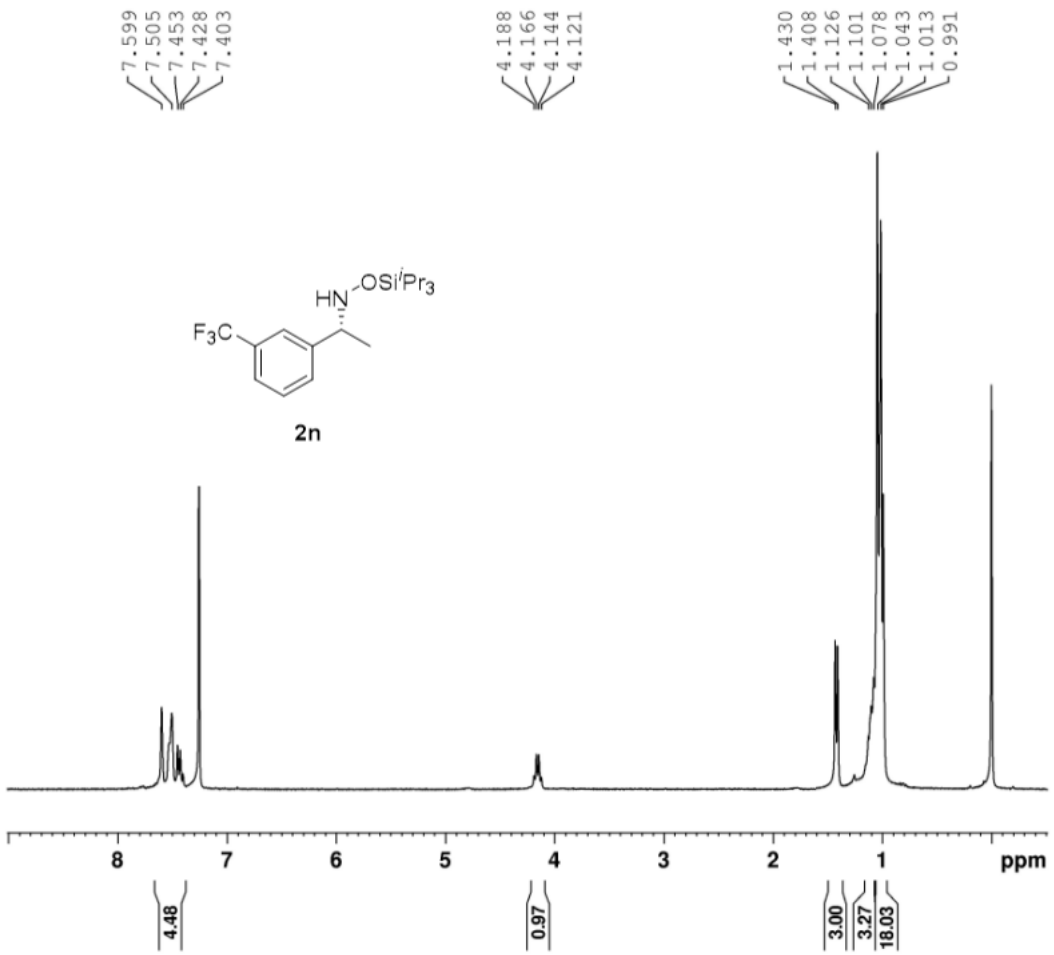
```
Current Data Parameters
NAME                   cc
EXPNO                   4
PROCNO                  1

F2 - Acquisition Parameters
Date_           20211216
Time                2.21 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   500
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 298.9 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404076 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



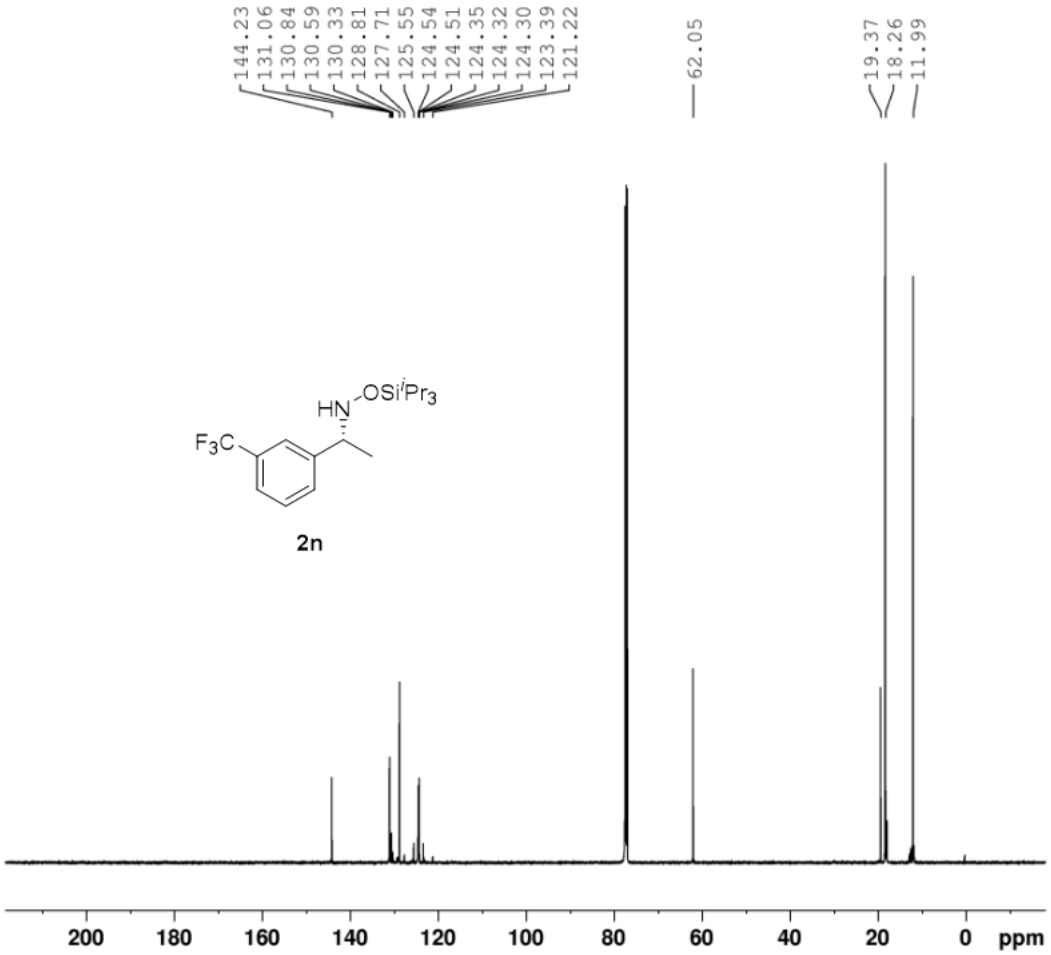

```
Current Data Parameters
NAME                      ch
EXPNO                     36
PROCNO                     1

F2 - Acquisition Parameters
Date_               20210624
Time                  10.07 h
INSTRUM                spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        8
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                   83.200 usec
DE                    6.50 usec
TE                   300.1 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



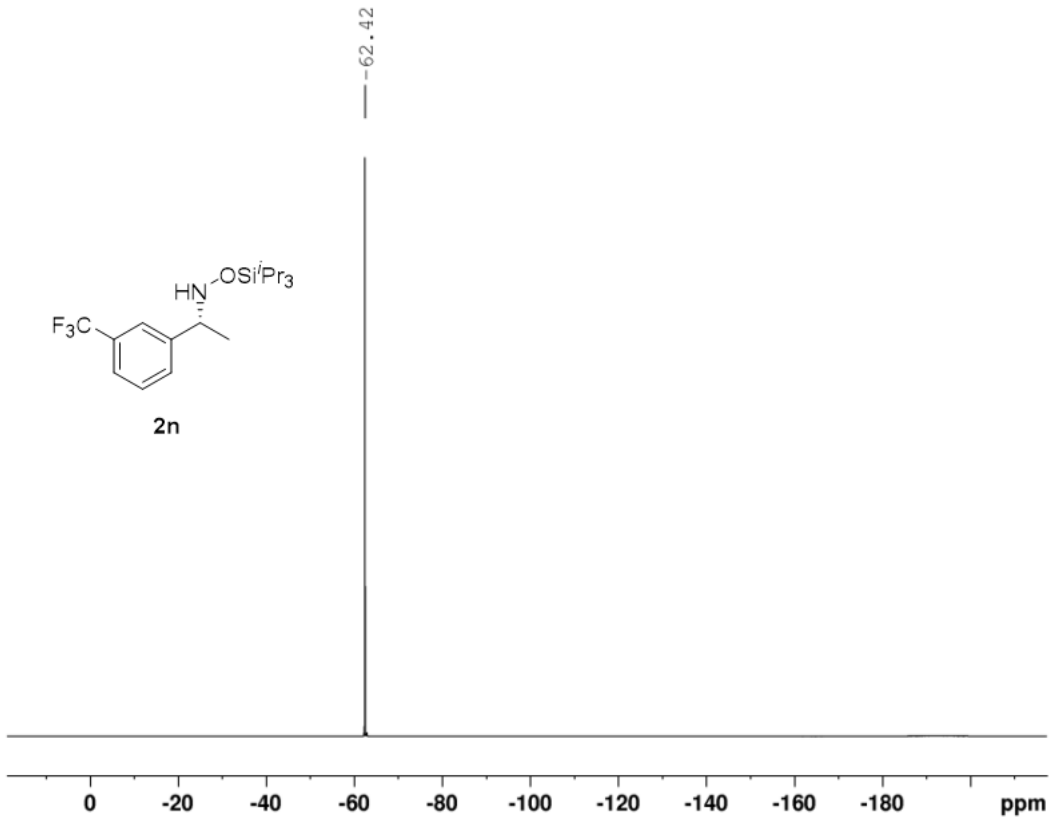

```
Current Data Parameters
NAME                   cc
EXPNO                   5
PROCNO                  1

F2 - Acquisition Parameters
Date_           20211216
Time                2.52 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   500
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 298.9 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                    1
SFO1        100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF          100.6404091 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



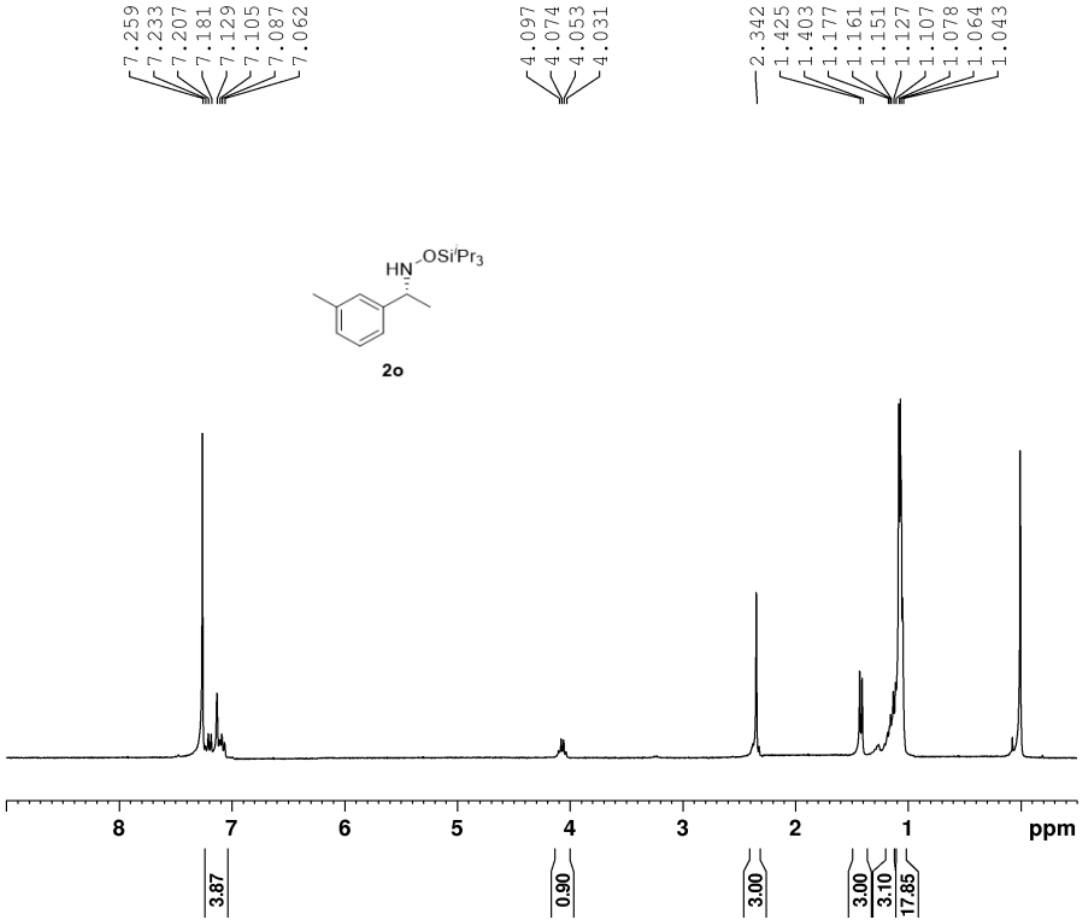

```
Current Data Parameters
NAME                      ch
EXPNO                     52
PROCNO                     1

F2 - Acquisition Parameters
Date_               20210629
Time                   11.00 h
INSTRUM                spect
PROBHD    5 mm DUL 13C-1
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 6009.615 Hz
FIDRES              0.183399 Hz
AQ                  5.4525952 sec
RG                     209.09
DW                     83.200 usec
DE                      6.50 usec
TE                     300.2 K
D1                  1.00000000 sec
TD0                        1
SFO1              300.1318534 MHz
NUC1                       1H
P1                      8.00 usec
PLW1             18.00000000 W

F2 - Processing parameters
SI                     65536
SF                300.1300085 MHz
WDW                       EM
SSB                        0
LB                      0.30 Hz
GB                         0
PC                      1.00
```



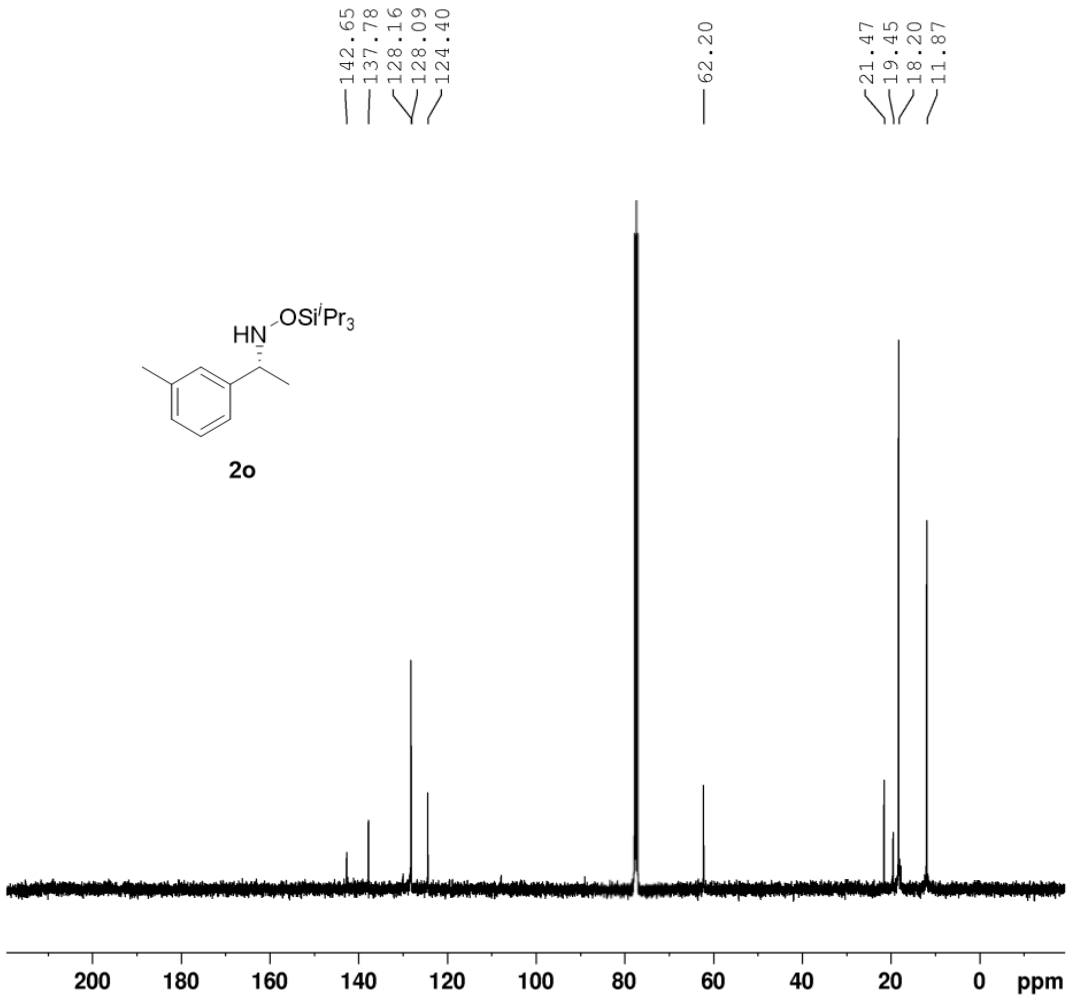

```
Current Data Parameters
NAME                   cc
EXPNO                   6
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211216
Time                12.32 h
INSTRUM             spect
PROBHD   5 mm CPPBBO BB
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    800
DS                      4
SWH             29761.904 Hz
FIDRES          0.908261 Hz
AQ              1.1010048 sec
RG                 192.89
DW                 16.800 usec
DE                 18.00 usec
TE                 298.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1         125.7703637 MHz
NUC1                13C
P1                 10.50 usec
PLW1         57.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              80.00 usec
PLW2         20.00000000 W
PLW12         0.39550999 W
PLW13         0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577621 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



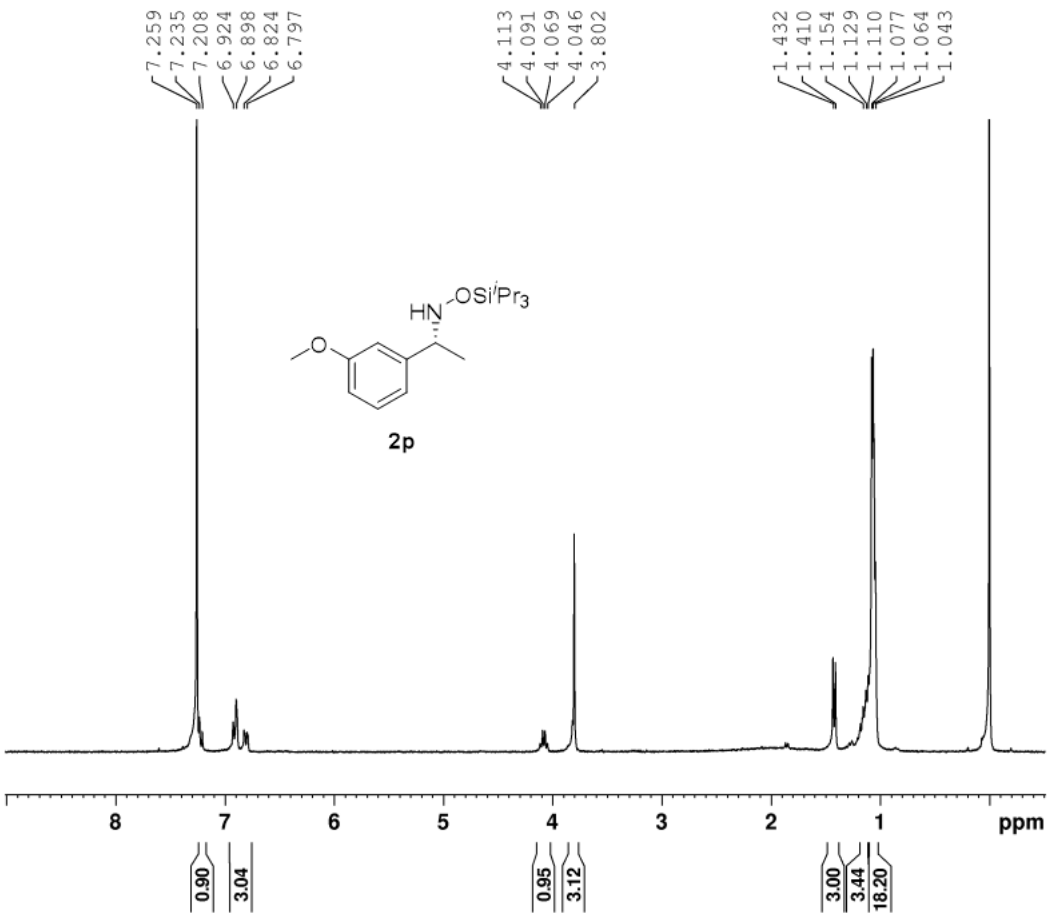

```
Current Data Parameters
NAME                   F
EXPNO                 11
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210602
Time              11.19 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD               131072
SOLVENT             CDCl3
NS                     16
DS                      4
SWH            89285.711 Hz
FIDRES          1.362392 Hz
AQ              0.7340032 sec
RG                206.33
DW                  5.600 usec
DE                  6.50 usec
TE                300.0 K
D1             1.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec
TD0                    1
rde1           0.00000650 sec
SFO1         376.5642094 MHz
NUC1                  19F
P1                 14.50 usec
PLW1          17.98900032 W
SFO2         400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W

F2 - Processing parameters
SI                 65536
SF           376.6017207 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



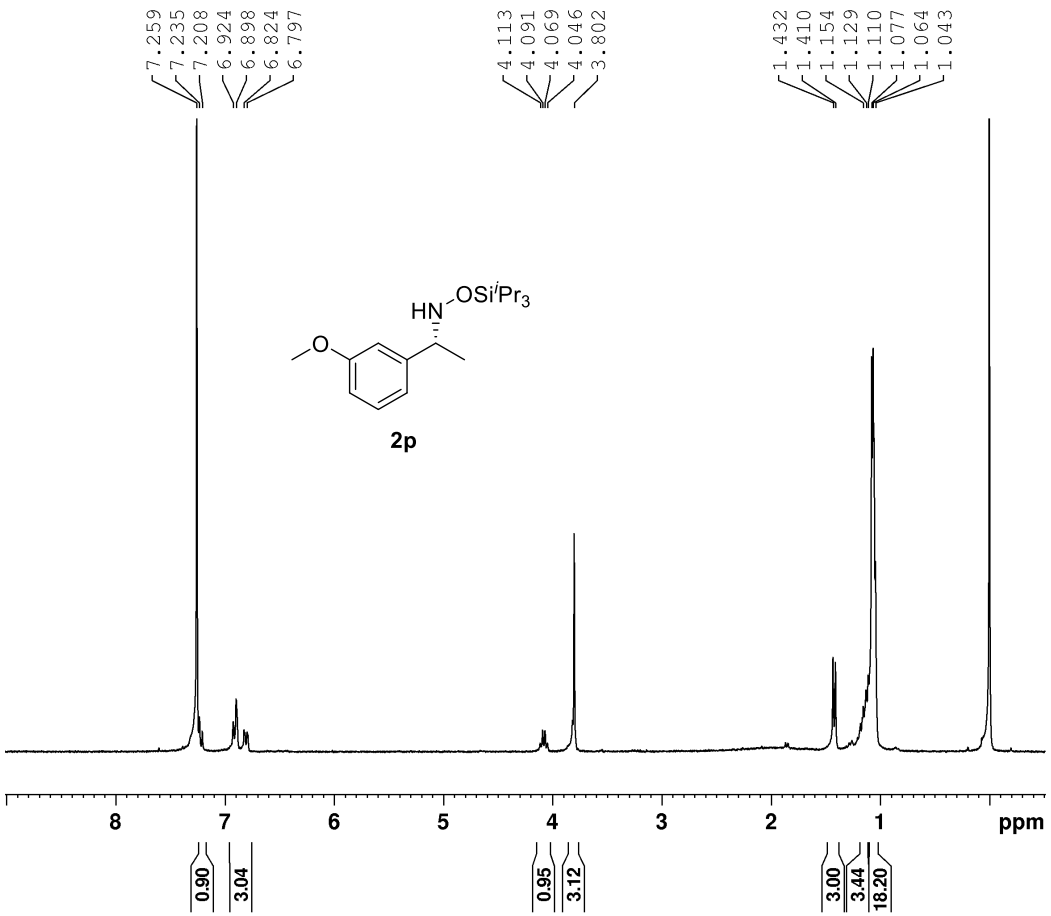

```
Current Data Parameters
NAME                      ch
EXPNO                     61
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210630
Time                  15.44 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    300.0 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                     8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300078 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



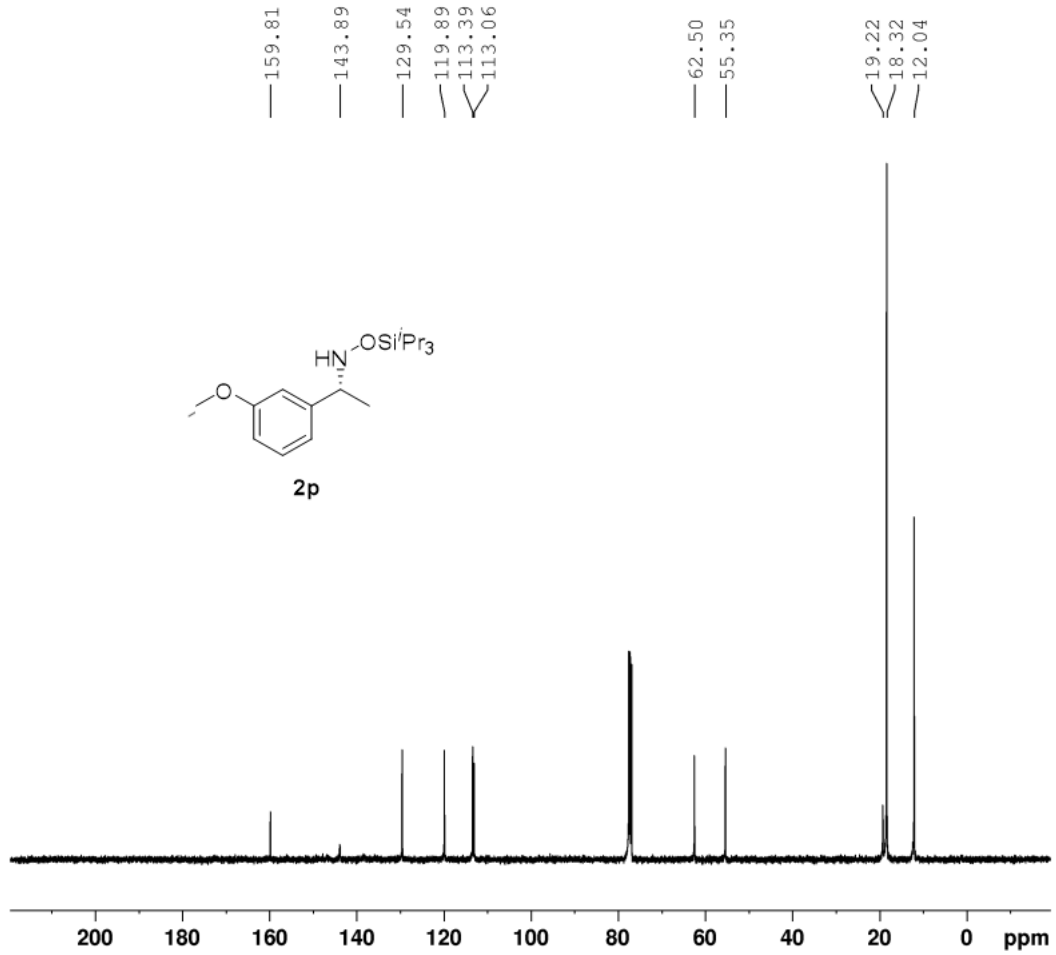

```
Current Data Parameters
NAME                  cc
EXPNO                 15
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211218
Time               13.36 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                299.1 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404280 MHz
WDW                   EM
SSB                    0
LB                 1.00 Hz
GB                     0
PC                 1.40
```



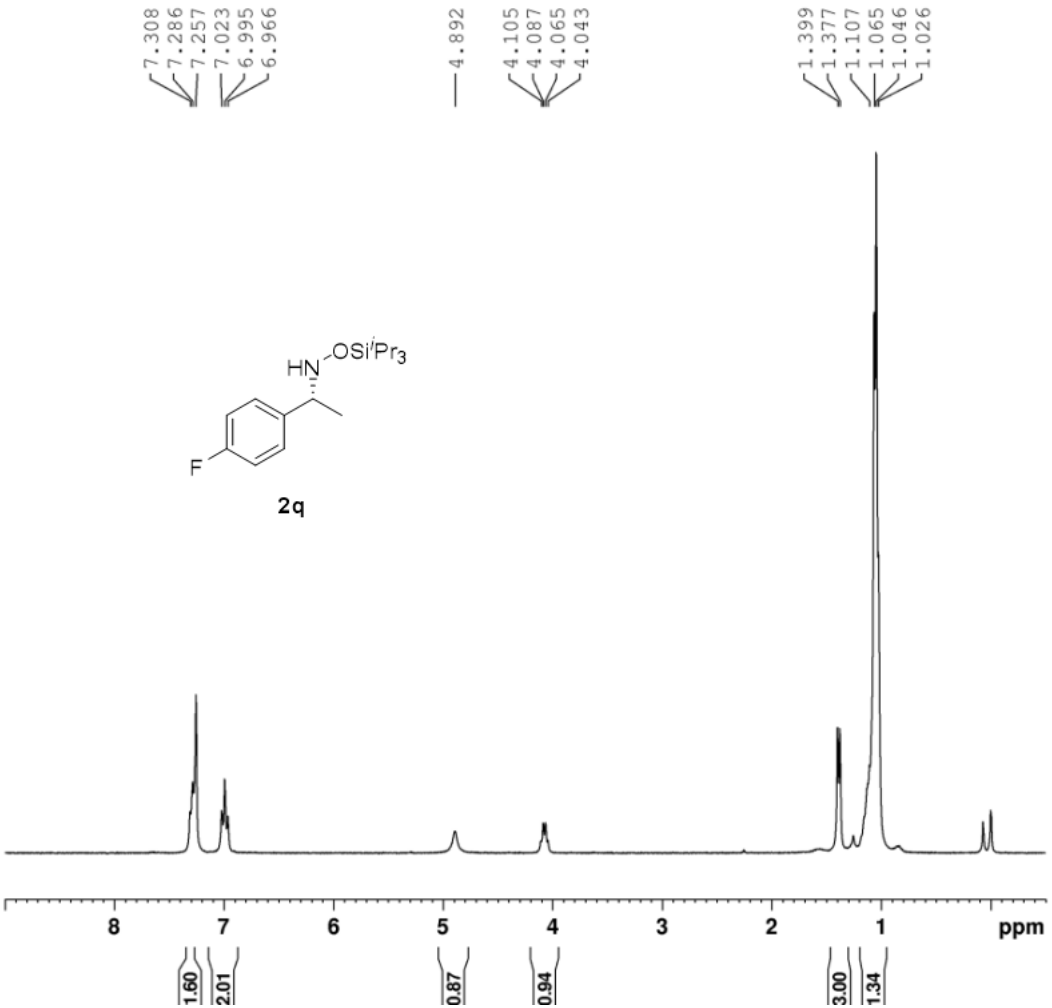

```
Current Data Parameters
NAME                      ch
EXPNO                     55
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210629
Time                 20.03 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      13
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                  83.200 usec
DE                    6.50 usec
TE                   300.5 K
D1              1.00000000 sec
TD0                      1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                   65536
SF             300.1300081 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



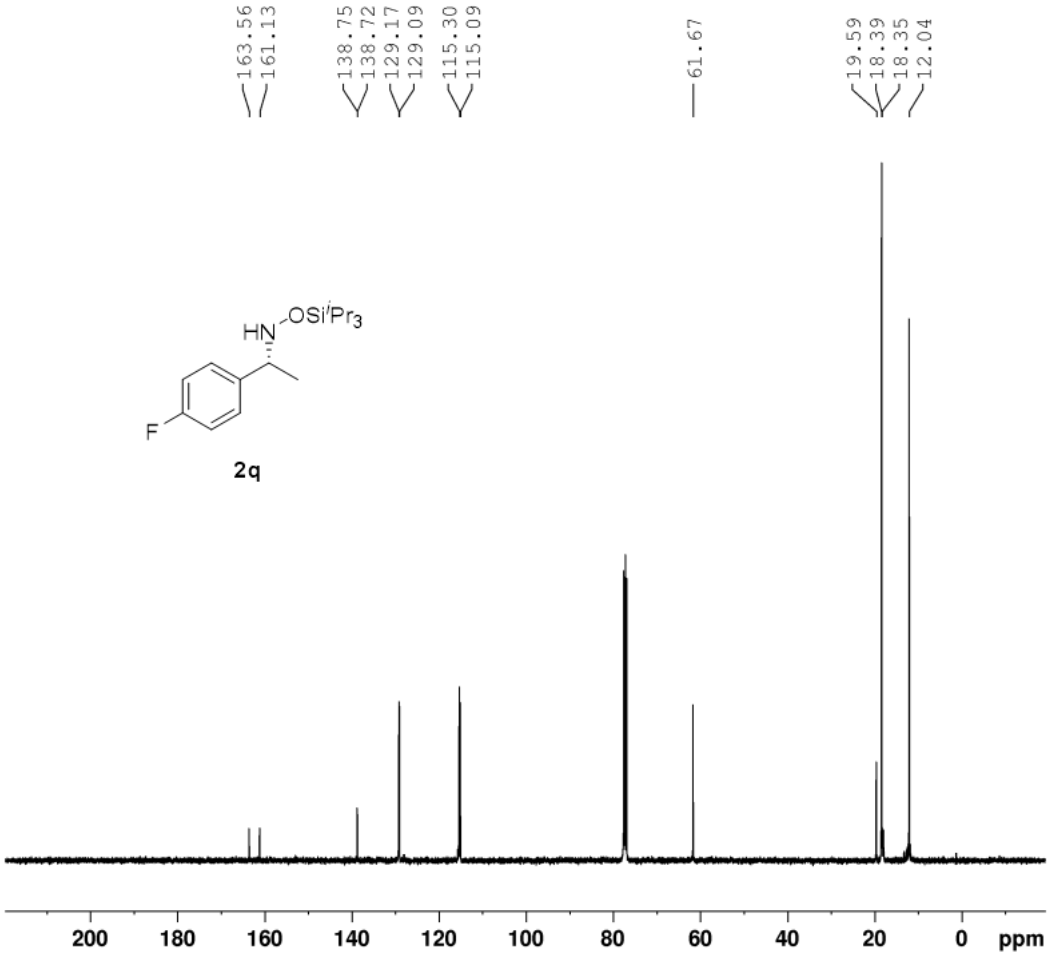

```
Current Data Parameters
NAME                  ch
EXPNO                 55
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210629
Time              20.03 h
INSTRUM             spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    13
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ             5.4525952 sec
RG                209.09
DW                83.200 usec
DE                 6.50 usec
TE                300.5 K
D1            1.00000000 sec
TD0                    1
SFO1        300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1         18.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300081 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                 1.00
```



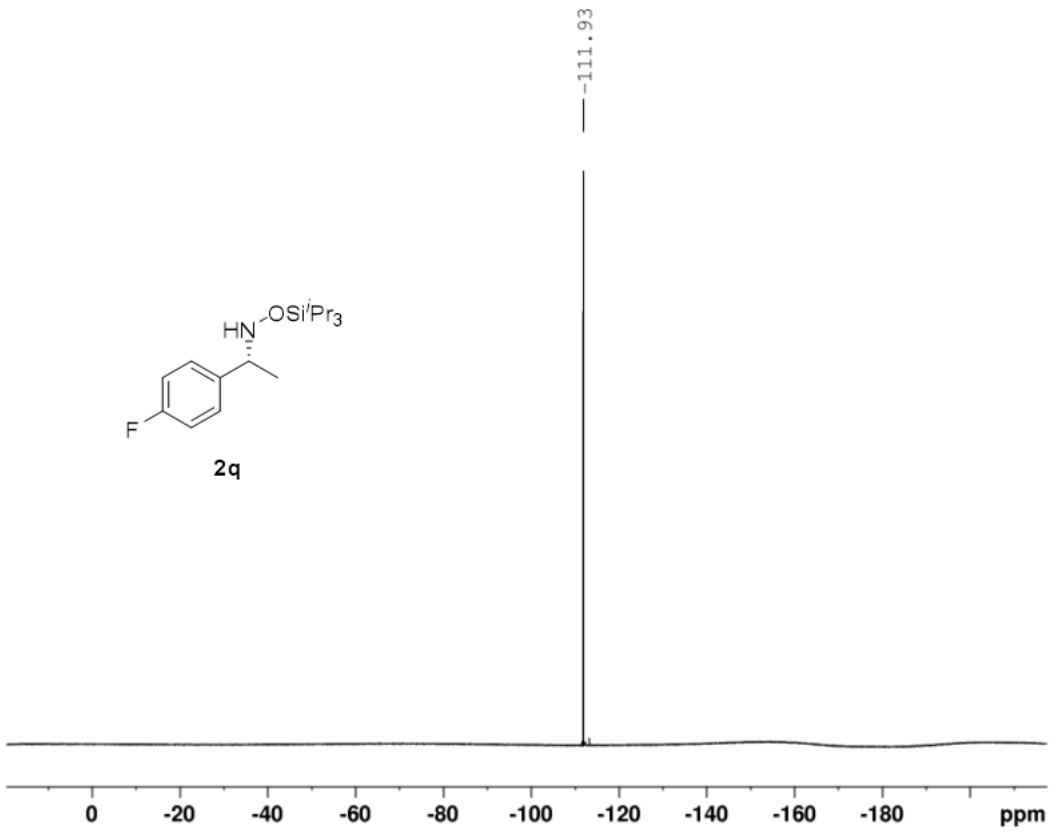

```
Current Data Parameters
NAME                   cc
EXPNO                 113
PROCNO                  1

F2 - Acquisition Parameters
Date_           20211205
Time                22.02 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                299.0 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404095 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



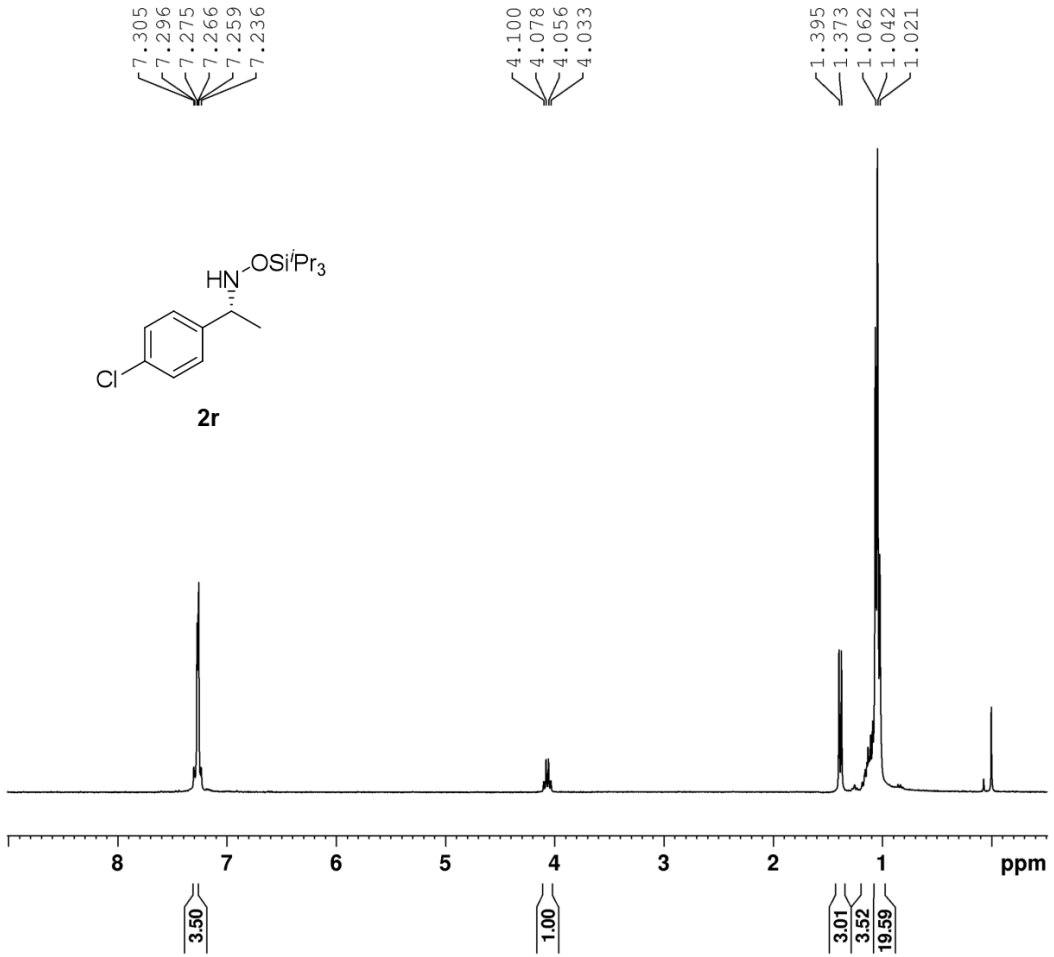

```
Current Data Parameters
NAME                      ch
EXPNO                    382
PROCNO                     1

F2 - Acquisition Parameters
Date_              20220106
Time                 16.23 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG              zg30
TD                   65536
SOLVENT              CDCl3
NS                       5
DS                       2
SWH               6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                   83.200 usec
DE                    6.50 usec
TE                   298.2 K
D1              1.00000000 sec
TD0                      1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                   65536
SF             300.1300087 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



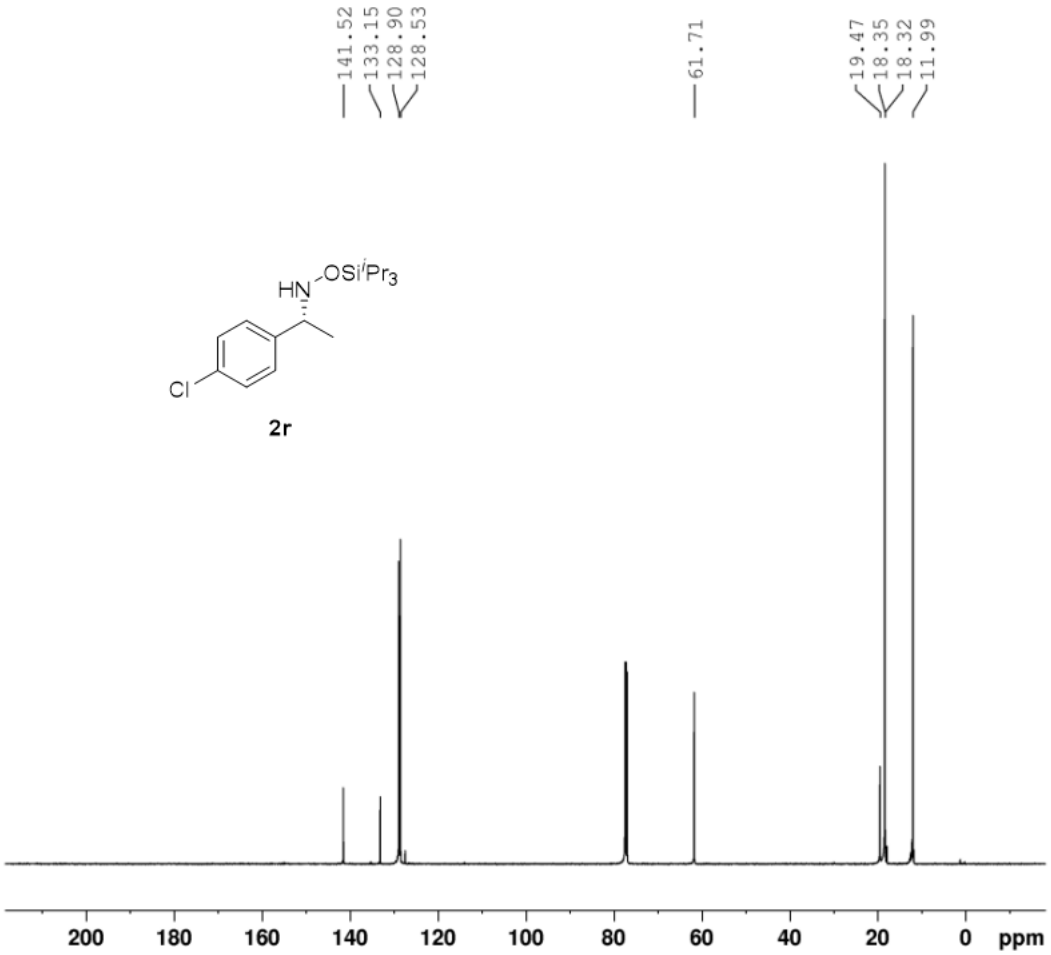

```
Current Data Parameters
NAME                  cc
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211216
Time                0.48 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   500
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 298.9 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404075 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



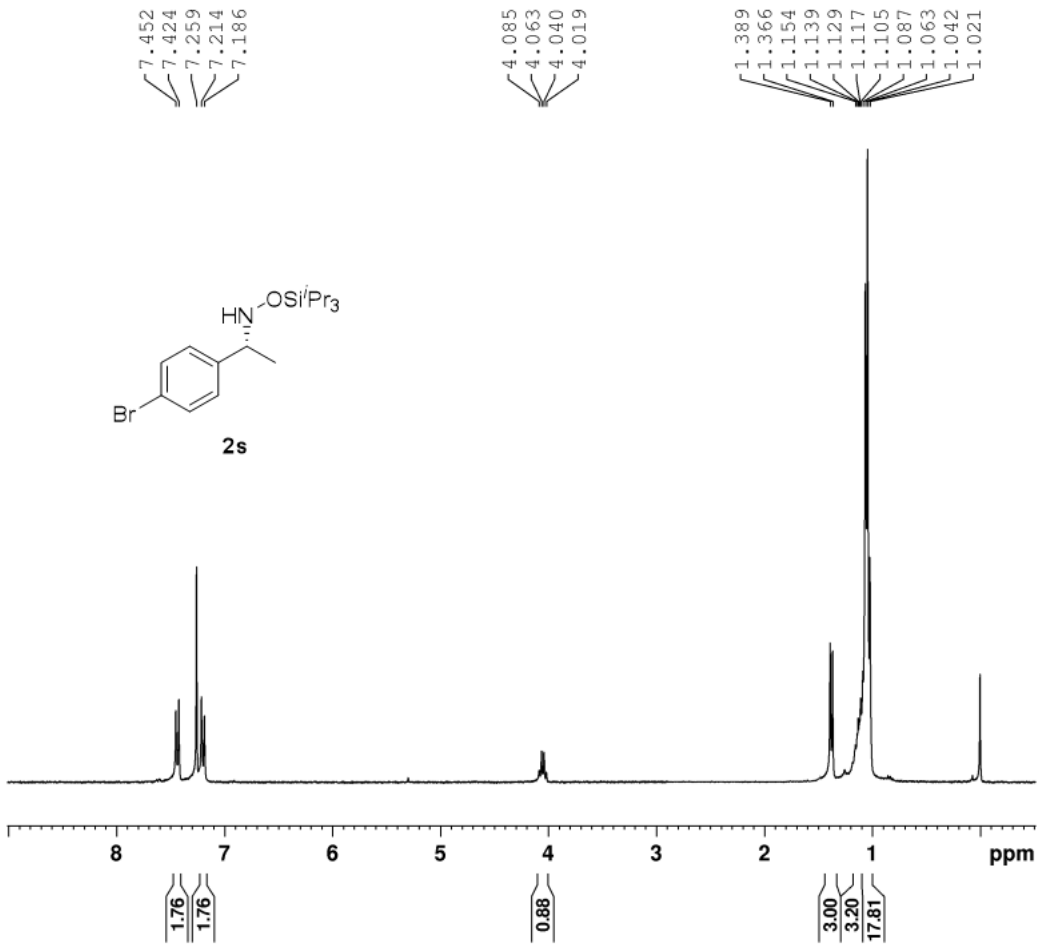

```
Current Data Parameters
NAME                      F
EXPNO                    10
PROCNO                    1

F2 - Acquisition Parameters
Date_              20210602
Time                 11.11 h
INSTRUM                spect
PROBHD   5 mm PABBO BB/
PULPROG          zgfhigqn.2
TD                  131072
SOLVENT               CDCl3
NS                       16
DS                        4
SWH               89285.711 Hz
FIDRES             1.362392 Hz
AQ                 0.7340032 sec
RG                    206.33
DW                     5.600 usec
DE                      6.50 usec
TE                     299.8 K
D1                1.00000000 sec
d11               0.03000000 sec
d12               0.00002000 sec
TD0                       1
rde1              0.00000650 sec
SFO1            376.5642094 MHz
NUC1                    19F
P1                     14.50 usec
PLW1             17.98900032 W
SFO2            400.2416010 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                  90.00 usec
PLW2             12.00000000 W
PLW12             0.30294999 W

F2 - Processing parameters
SI                     65536
SF              376.6014933 MHz
WDW                       EM
SSB                        0
LB                      0.30 Hz
GB                         0
PC                      1.00
```



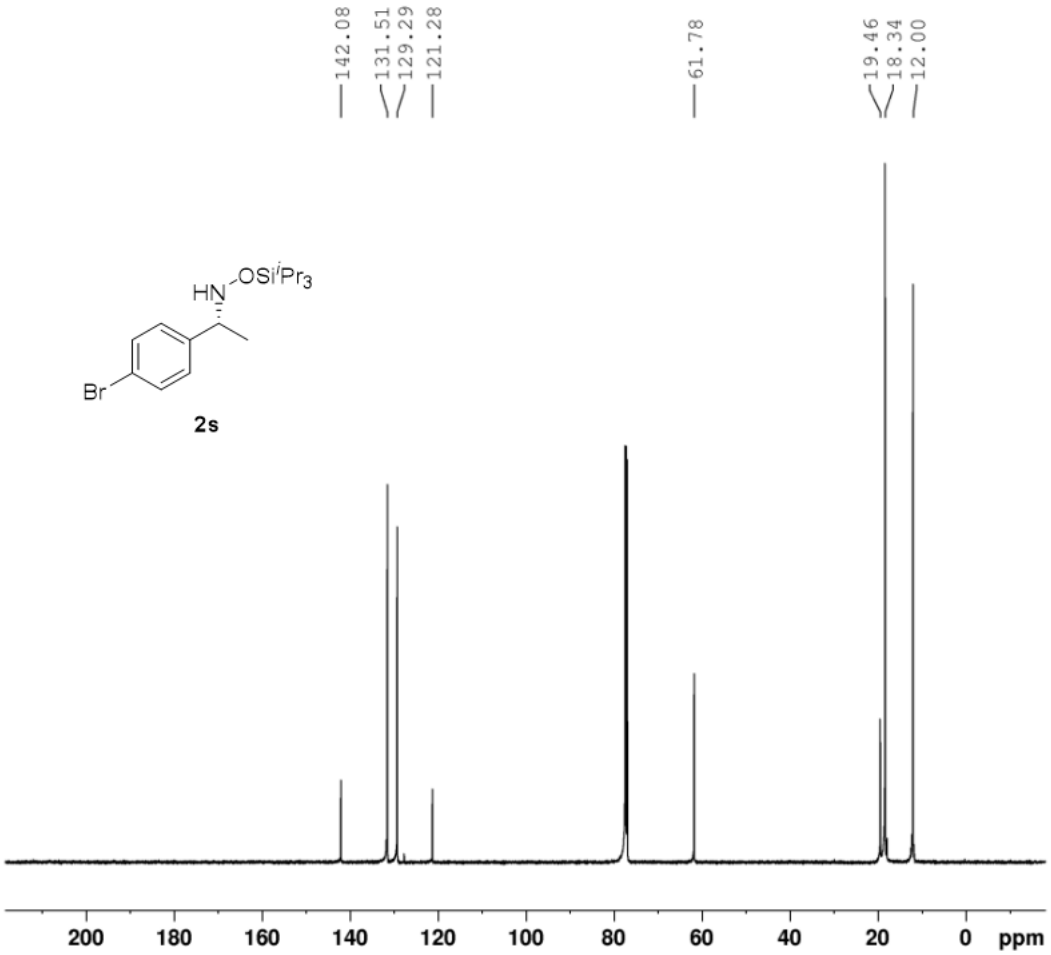

```
Current Data Parameters
NAME                  ch
EXPNO                 40
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210624
Time               15.18 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    11
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                209.09
DW                 83.200 usec
DE                  6.50 usec
TE                 300.3 K
D1            1.00000000 sec
TD0                    1
SFO1         300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1         18.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300076 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



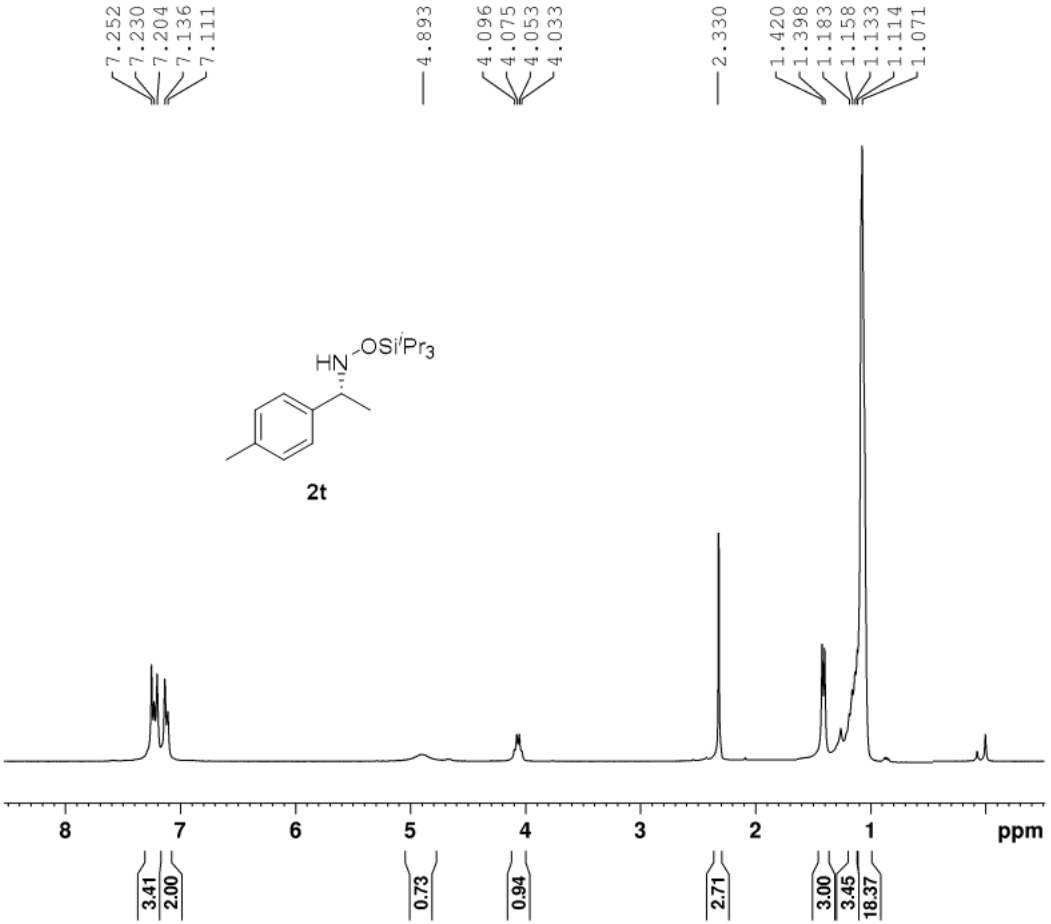

```
Current Data Parameters
NAME                   cc
EXPNO                   7
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211216
Time                13.17 h
INSTRUM             spect
PROBHD   5 mm CPPBBO BB
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    800
DS                      4
SWH             29761.904 Hz
FIDRES          0.908261 Hz
AQ              1.1010048 sec
RG                 192.89
DW                 16.800 usec
DE                 18.00 usec
TE                 298.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1         125.7703637 MHz
NUC1                13C
P1                 10.50 usec
PLW1         57.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              80.00 usec
PLW2         20.00000000 W
PLW12         0.39550999 W
PLW13         0.25312999 W

F2 - Processing parameters
SI                 32768
SF           125.7577691 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



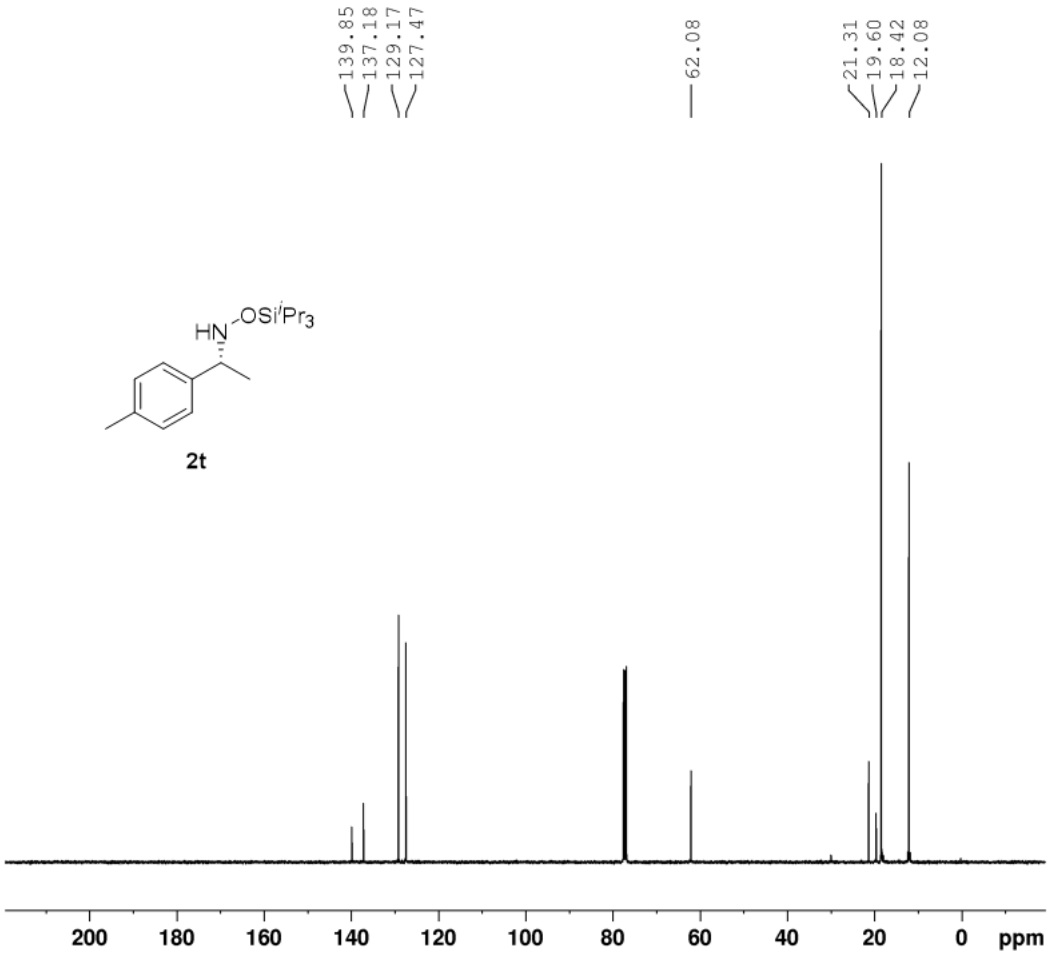

```
Current Data Parameters
NAME                  ch
EXPNO                 41
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210624
Time               15.21 h
INSTRUM             spect
PROBHD   5 mm DUL 13C-1
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      7
DS                      2
SWH              6009.615 Hz
FIDRES           0.183399 Hz
AQ               5.4525952 sec
RG                  209.09
DW                  83.200 usec
DE                   6.50 usec
TE                  300.3 K
D1            1.00000000 sec
TD0                     1
SFO1          300.1318534 MHz
NUC1                   1H
P1                   8.00 usec
PLW1         18.00000000 W

F2 - Processing parameters
SI                  65536
SF            300.1300074 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



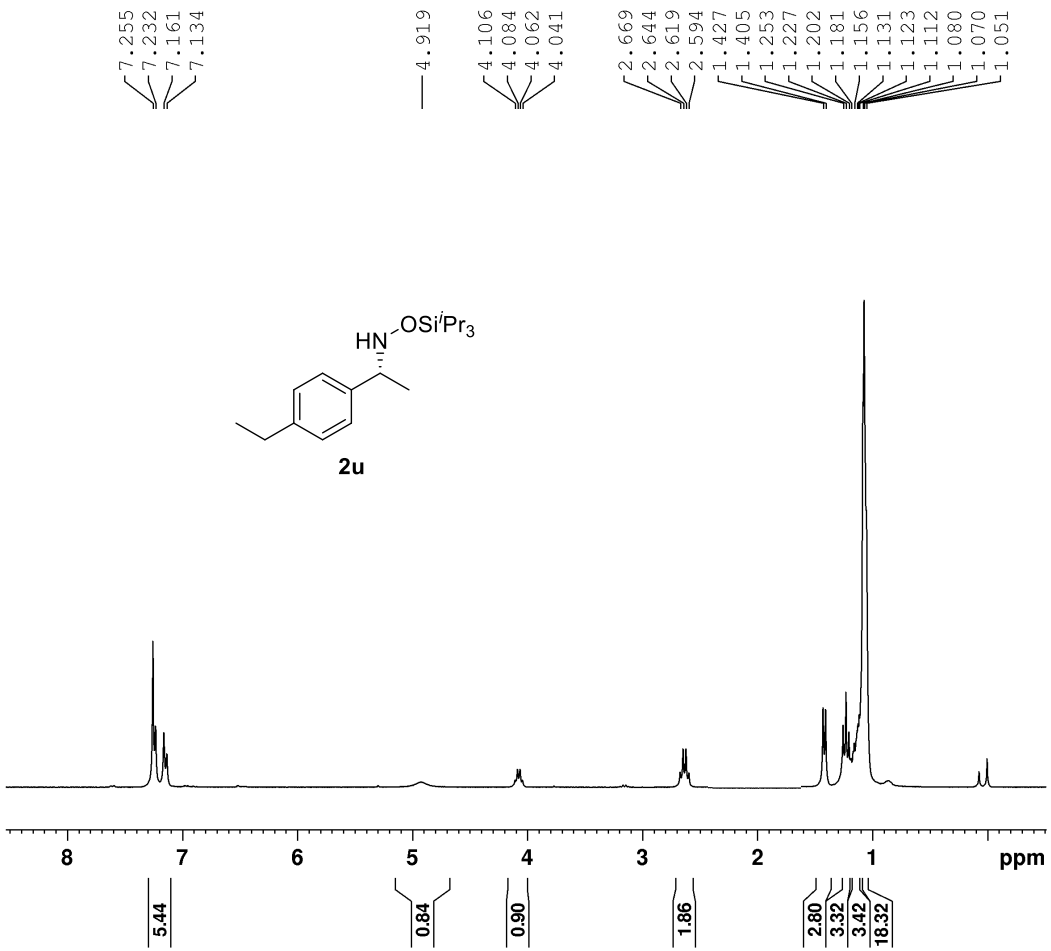

```
Current Data Parameters
NAME                   cc
EXPNO                   8
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211216
Time                14.03 h
INSTRUM             spect
PROBHD   5 mm CPPBBO BB
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    800
DS                      4
SWH             29761.904 Hz
FIDRES          0.908261 Hz
AQ              1.1010048 sec
RG                 192.89
DW                 16.800 usec
DE                 18.00 usec
TE                 298.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1         125.7703637 MHz
NUC1                13C
P1                 10.50 usec
PLW1         57.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              80.00 usec
PLW2         20.00000000 W
PLW12         0.39550999 W
PLW13         0.25312999 W

F2 - Processing parameters
SI                 32768
SF           125.7577672 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



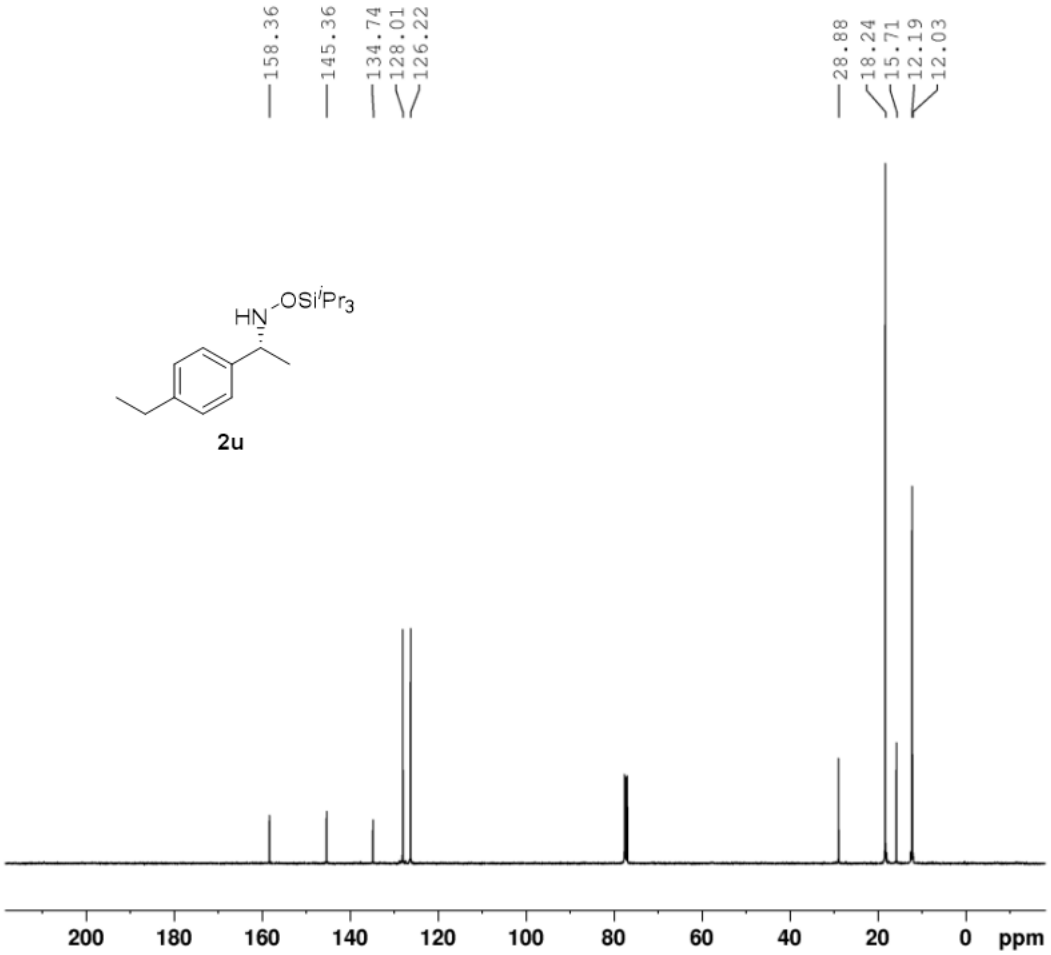

```
Current Data Parameters
NAME                   ch
EXPNO                 385
PROCNO                  1

F2 - Acquisition Parameters
Date_           20220106
Time               20.10 h
INSTRUM             spect
PROBHD   5 mm DUL 13C-1
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH              6009.615 Hz
FIDRES           0.183399 Hz
AQ               5.4525952 sec
RG                  209.09
DW                  83.200 usec
DE                    6.50 usec
TE                  298.2 K
D1              1.00000000 sec
TD0                     1
SFO1          300.1318534 MHz
NUC1                   1H
P1                    8.00 usec
PLW1         18.00000000 W

F2 - Processing parameters
SI                  65536
SF            300.1300097 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



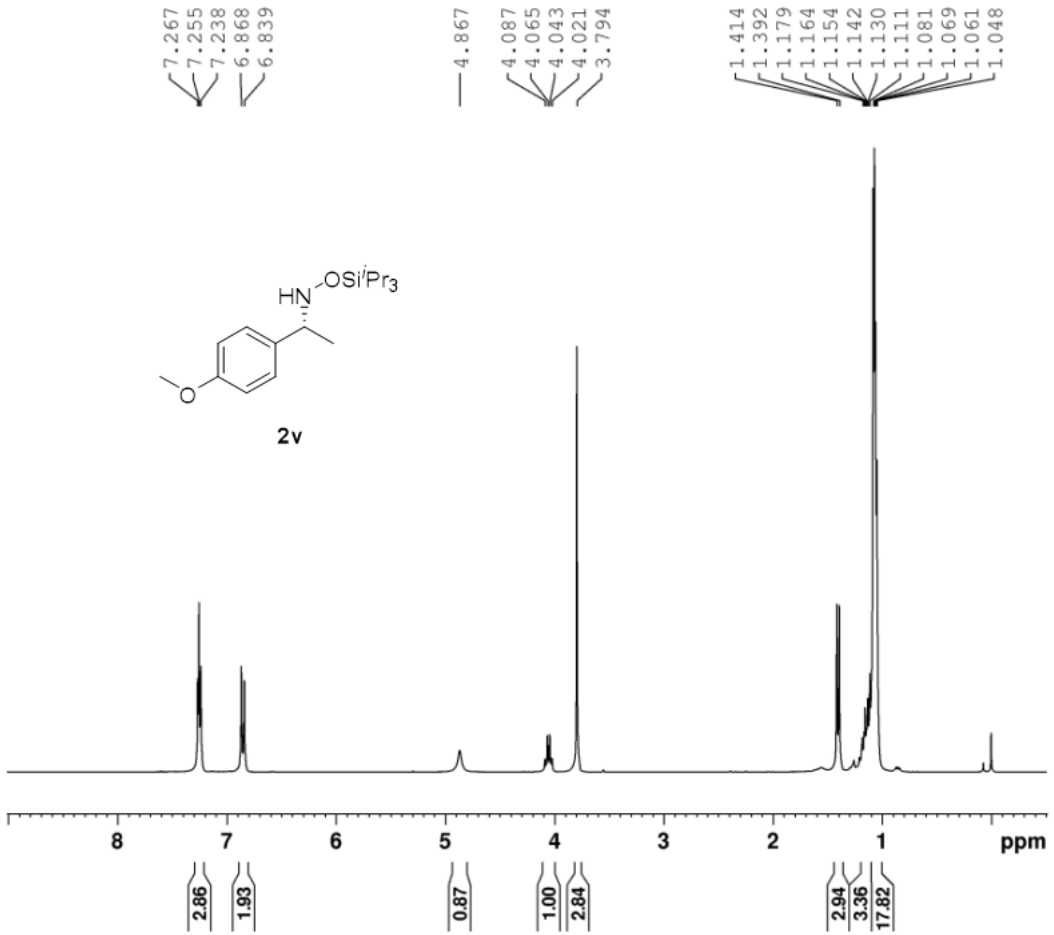

```
Current Data Parameters
NAME                   cc
EXPNO                  25
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211220
Time                23.12 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 300.4 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1           54.00000000 W
SFO2           400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2           12.00000000 W
PLW12           0.30294999 W
PLW13           0.24539000 W

F2 - Processing parameters
SI                 32768
SF            100.6404082 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



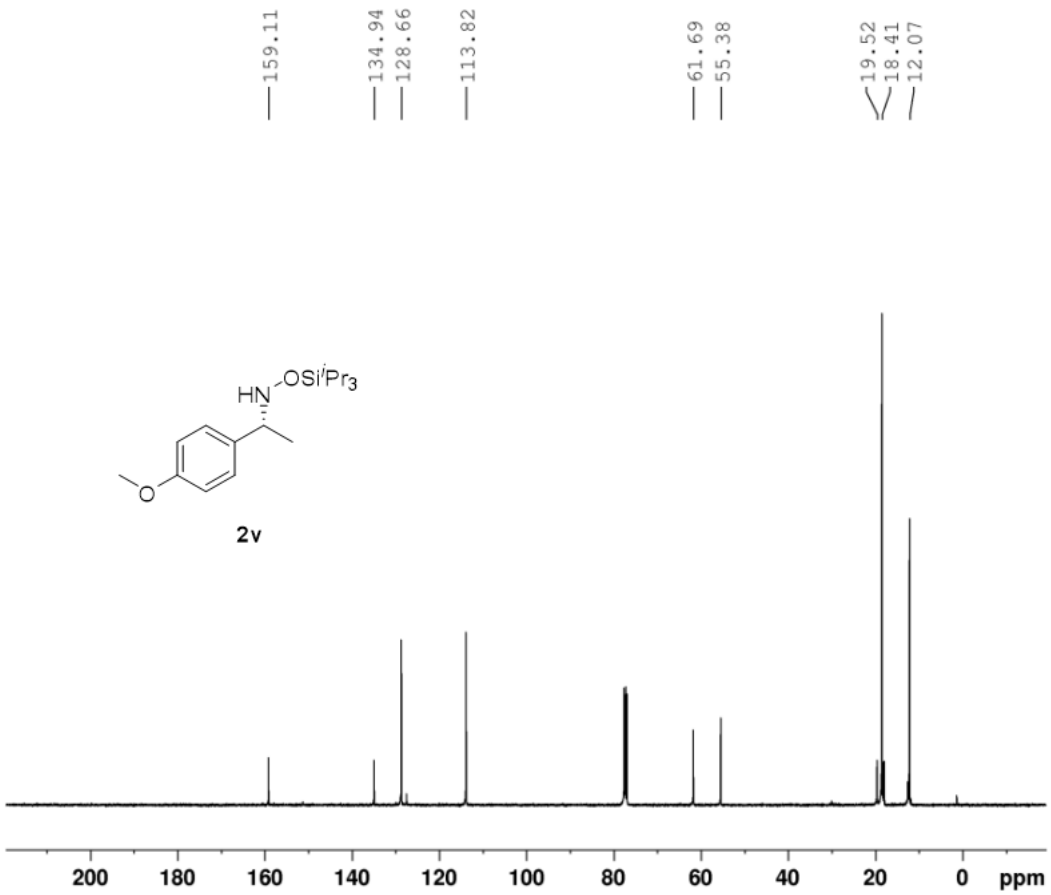

```
Current Data Parameters
NAME                      ch
EXPNO                    377
PROCNO                     1

F2 - Acquisition Parameters
Date_              20220106
Time                  11.00 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    298.2 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                     1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300087 MHz
WDW                      EM
SSB                       0
LB                    0.30 Hz
GB                        0
PC                     1.00
```



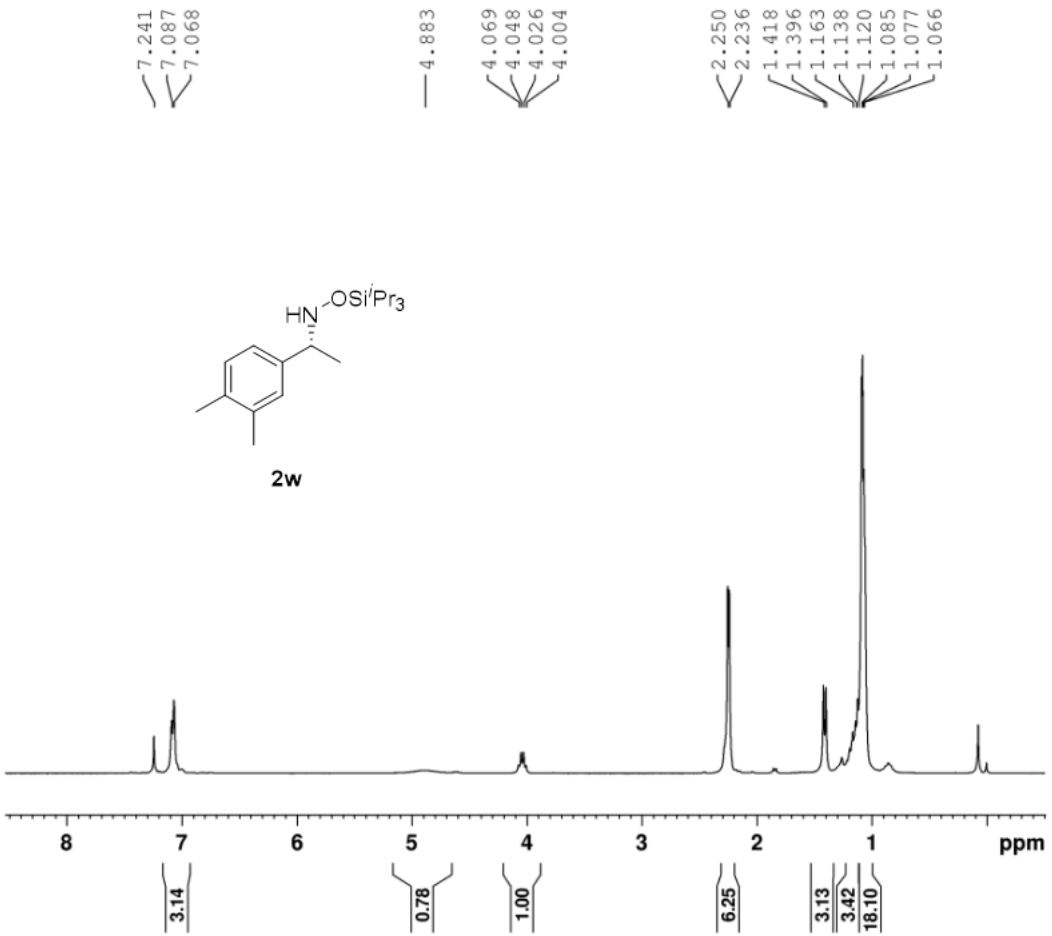

```
Current Data Parameters
NAME                   cc
EXPNO                  13
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211216
Time                23.55 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 298.0 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1           54.00000000 W
SFO2          400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2           12.00000000 W
PLW12           0.30294999 W
PLW13           0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404109 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



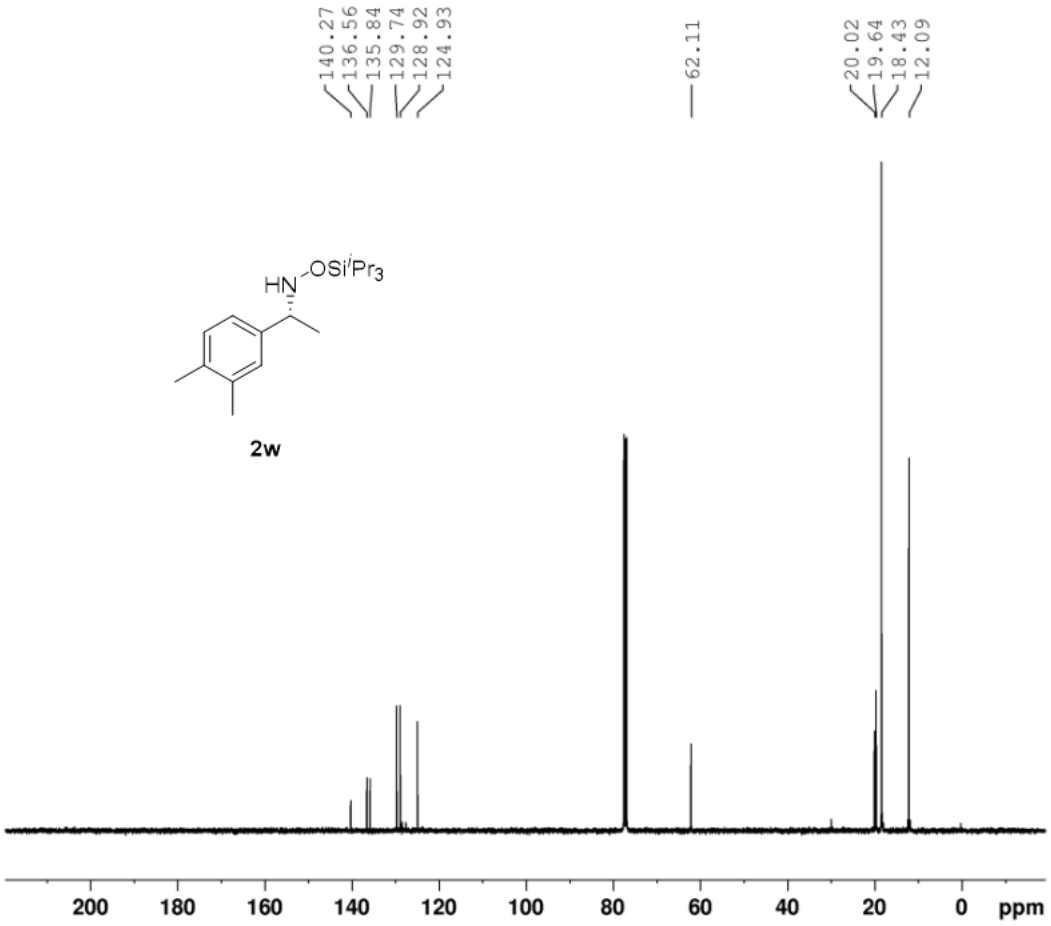

```
Current Data Parameters
NAME                  ch
EXPNO                373
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211229
Time               18.12 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                186.23
DW                83.200 usec
DE                 6.50 usec
TE                298.3 K
D1             1.00000000 sec
TD0                    1
SFO1         300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF           300.1300088 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



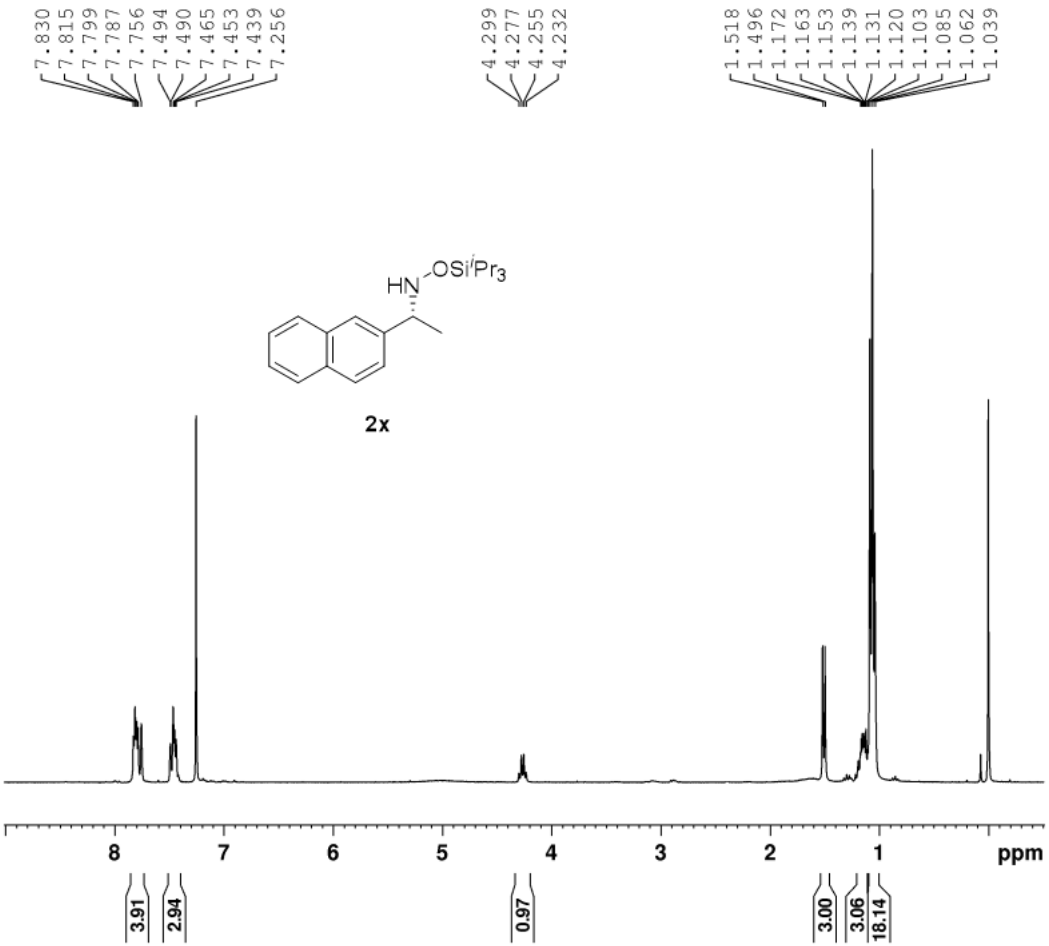

```
Current Data Parameters
NAME                  cc
EXPNO                 19
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211218
Time              23.40 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                299.4 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1
SFO1        100.6504916 MHz
NUC1               13C
P1                10.00 usec
PLW1         54.00000000 W
SFO2        400.2416010 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

F2 - Processing parameters
SI                32768
SF          100.6404113 MHz
WDW                EM
SSB                 0
LB                1.00 Hz
GB                  0
PC                1.40
```



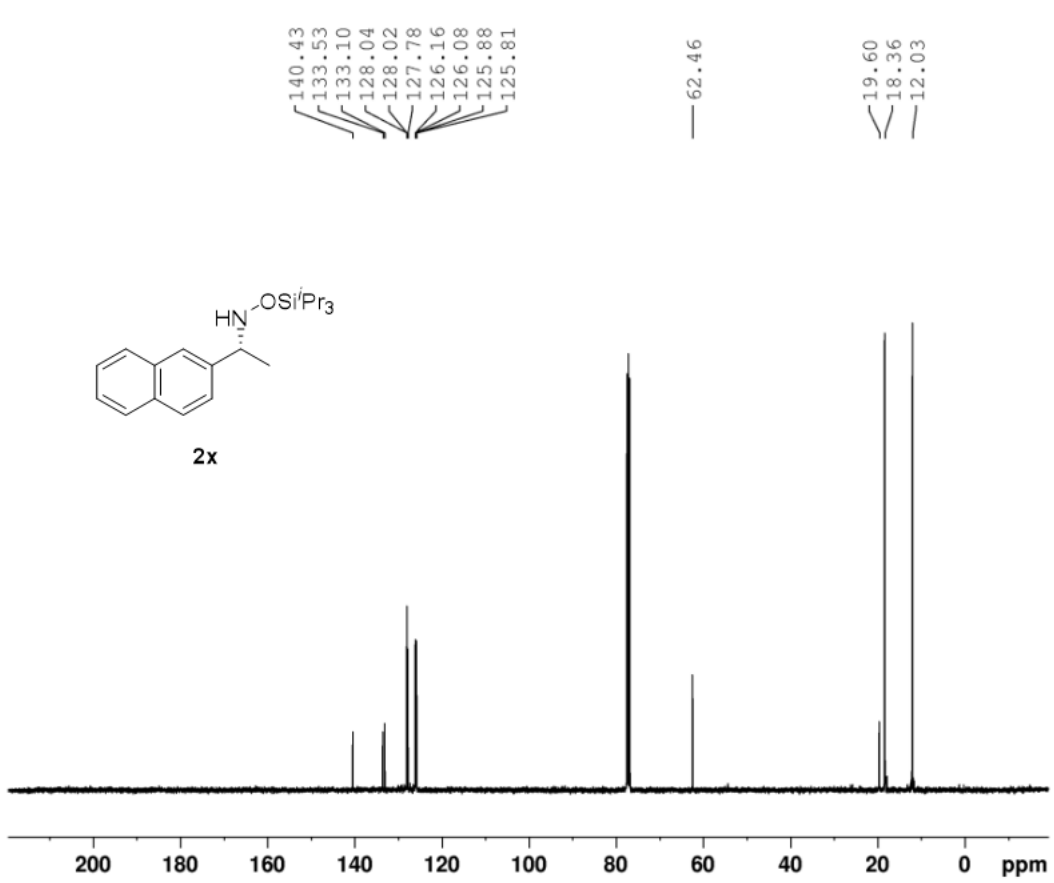

```
Current Data Parameters
NAME                      ch
EXPNO                    378
PROCNO                     1

F2 - Acquisition Parameters
Date_              20220106
Time                  11.04 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDC13
NS                        8
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   117.72
DW                   83.200 usec
DE                    6.50 usec
TE                   298.2 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300130 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



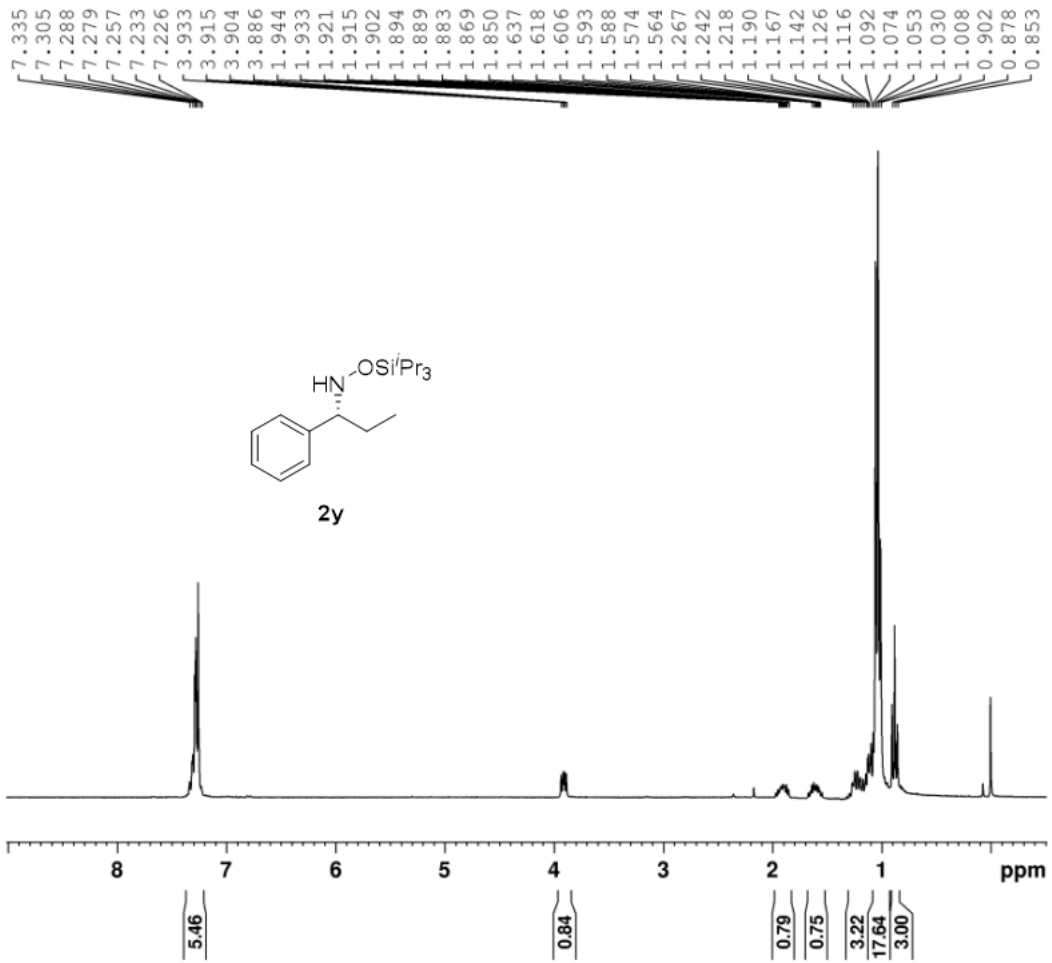

```
Current Data Parameters
NAME                   cc
EXPNO                  26
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211220
Time                23.44 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                  20.800 usec
DE                   6.50 usec
TE                  300.6 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                     1
SFO1         100.6504916 MHz
NUC1                 13C
P1                  10.00 usec
PLW1          54.00000000 W
SFO2         400.2416010 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2               90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF           100.6404071 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



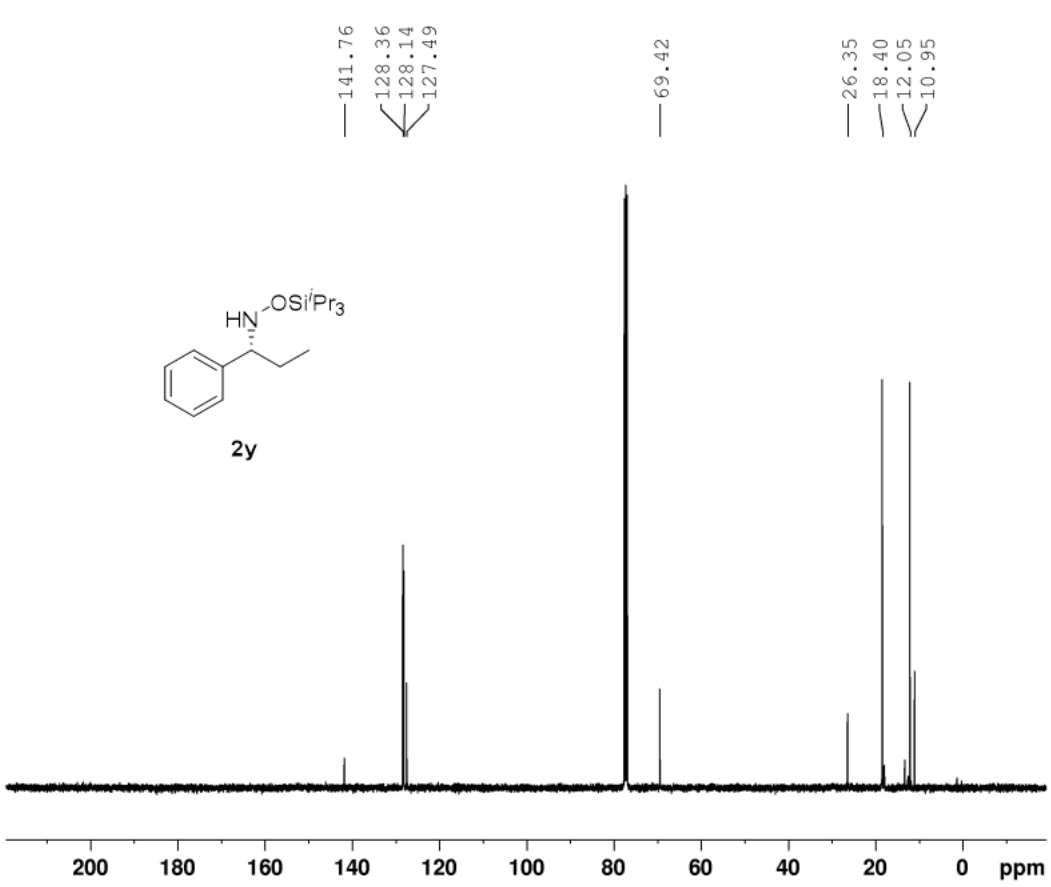

```
Current Data Parameters
NAME                      ch
EXPNO                     67
PROCNO                     1

F2 - Acquisition Parameters
Date_              20210701
Time                  11.00 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    209.09
DW                    83.200 usec
DE                     6.50 usec
TE                    299.9 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                   1H
P1                     8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300085 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```



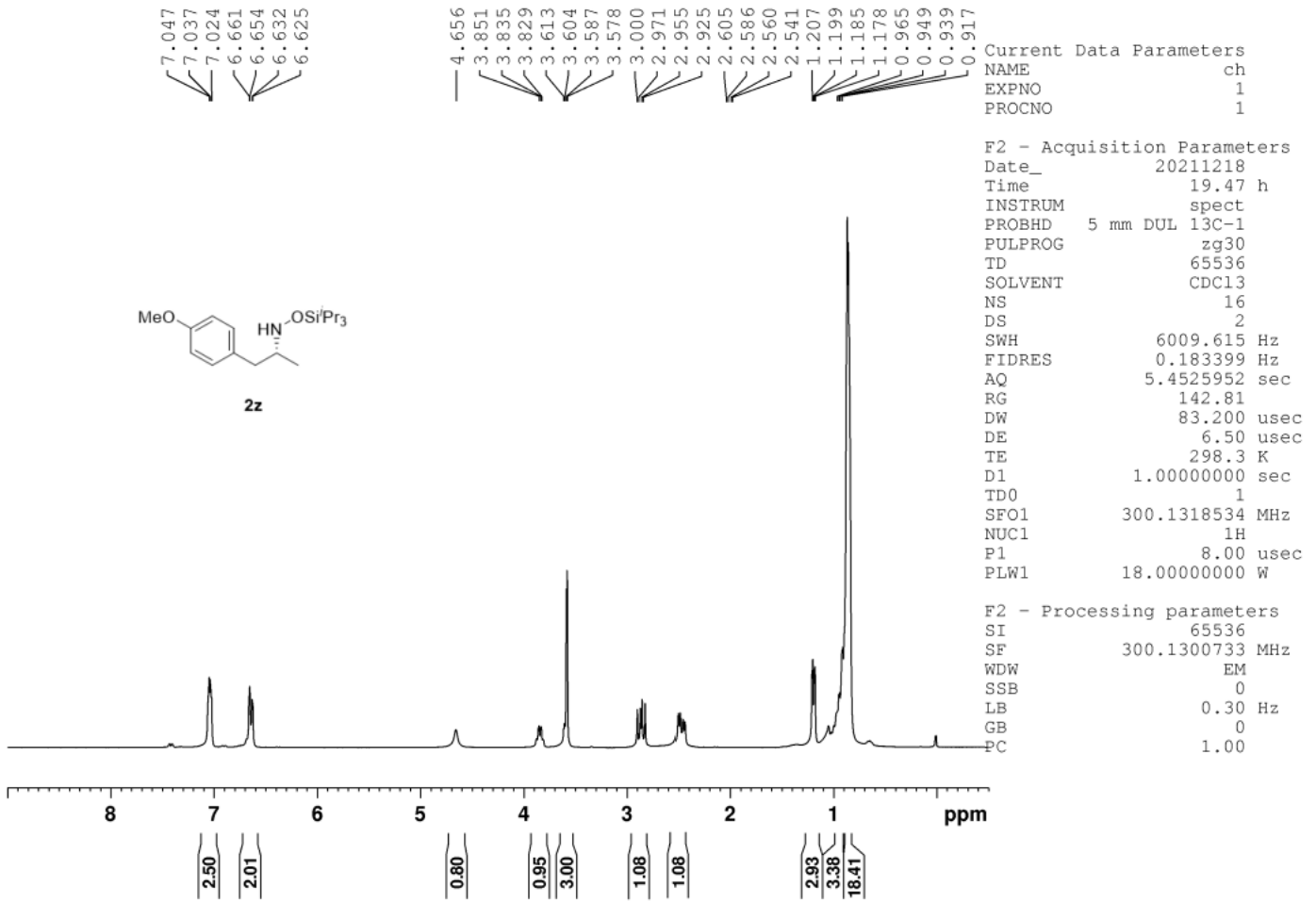

```
Current Data Parameters
NAME                   cc
EXPNO                 111
PROCNO                  1

F2 - Acquisition Parameters
Date_           20211205
Time                20.57 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    512
DS                      4
SWH             24038.461 Hz
FIDRES              0.733596 Hz
AQ                1.3631488 sec
RG                  206.33
DW                  20.800 usec
DE                   6.50 usec
TE                  299.0 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                  10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2               90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404124 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```



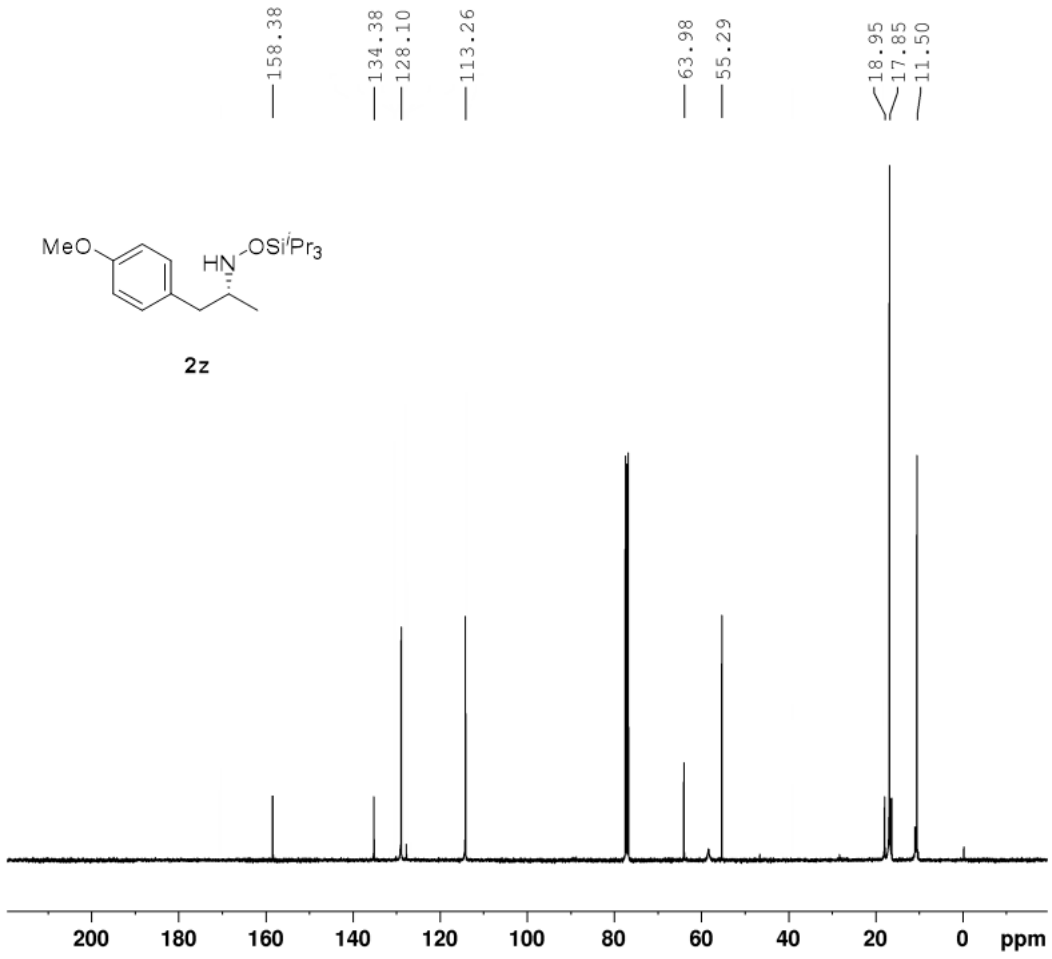

```
Current Data Parameters
NAME                  ch
EXPNO                 31
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210621
Time               15.43 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDC13
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                209.09
DW                 83.200 usec
DE                  6.50 usec
TE                 300.9 K
D1              1.00000000 sec
TD0                    1
SFO1          300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF            300.1300082 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



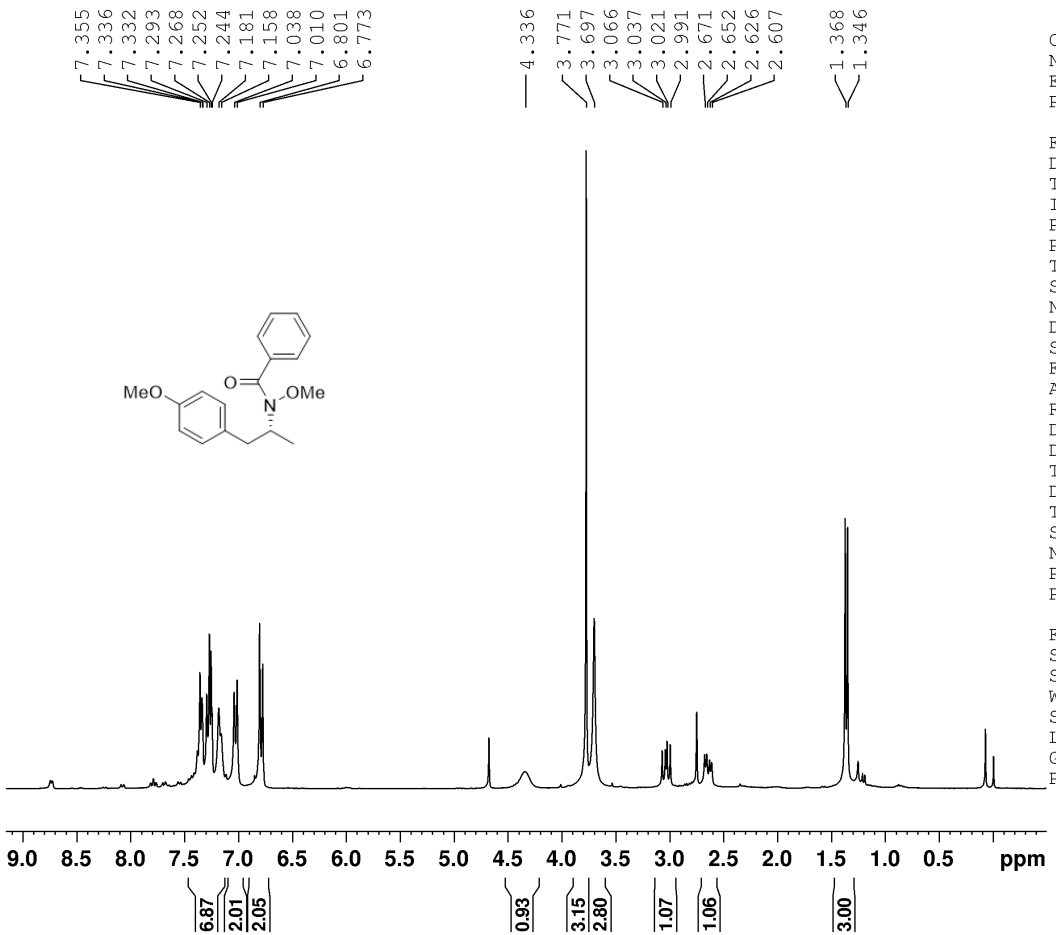

```
Current Data Parameters
NAME                   cc
EXPNO                  32
PROCNO                  1

F2 - Acquisition Parameters
Date_            20220106
Time                19.14 h
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                     500
DS                       4
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                1.3631488 sec
RG                   206.33
DW                   20.800 usec
DE                    6.50 usec
TE                   300.8 K
D1               2.00000000 sec
d11              0.03000000 sec
DELTA            1.89999998 sec
TD0                      1
SFO1           100.6504916 MHz
NUC1                   13C
P1                   10.00 usec
PLW1           54.00000000 W
SFO2           400.2416010 MHz
NUC2                   1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2           12.00000000 W
PLW12           0.30294999 W
PLW13           0.24539000 W

F2 - Processing parameters
SI                   32768
SF             100.6404067 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



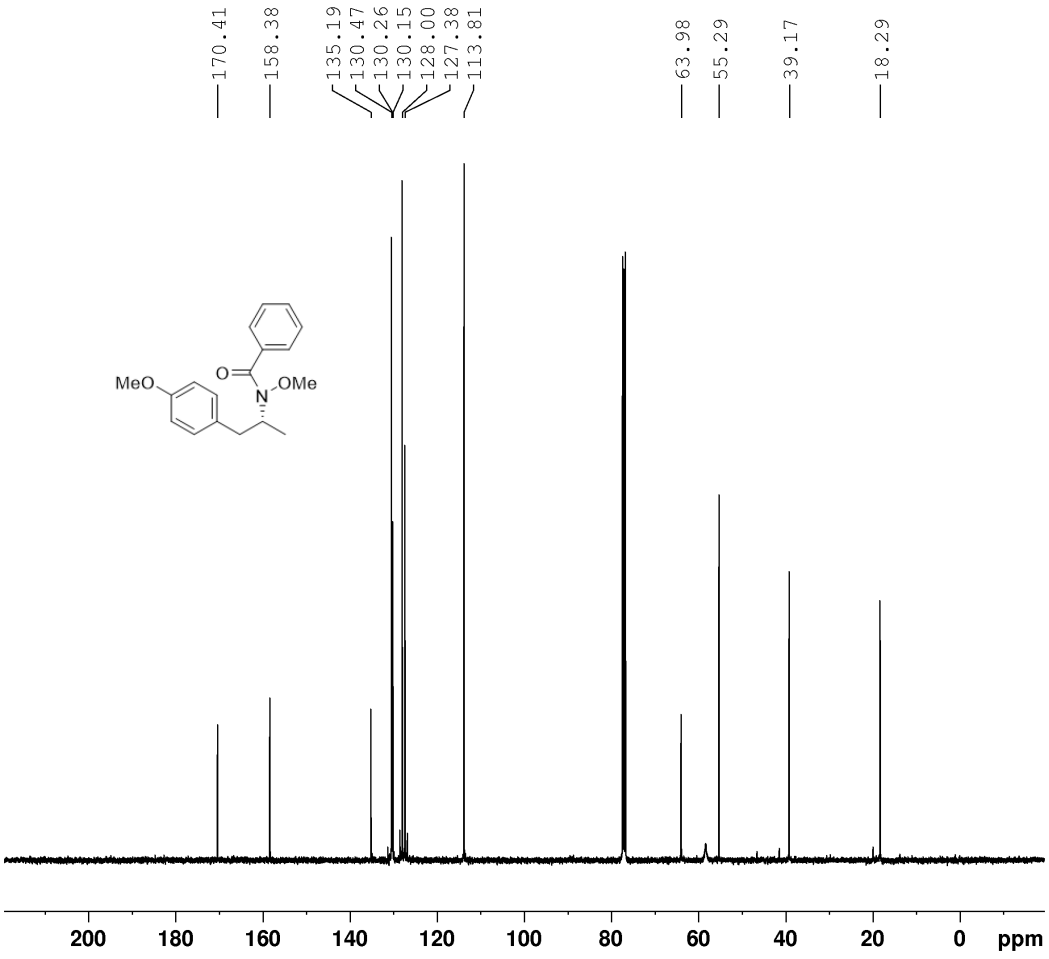

```
Current Data Parameters
NAME                      ch
EXPNO                      1
PROCNO                     1

F2 - Acquisition Parameters
Date_              20211218
Time                  19.47 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES             0.183399 Hz
AQ                 5.4525952 sec
RG                    142.81
DW                    83.200 usec
DE                     6.50 usec
TE                    298.3 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                     8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300733 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



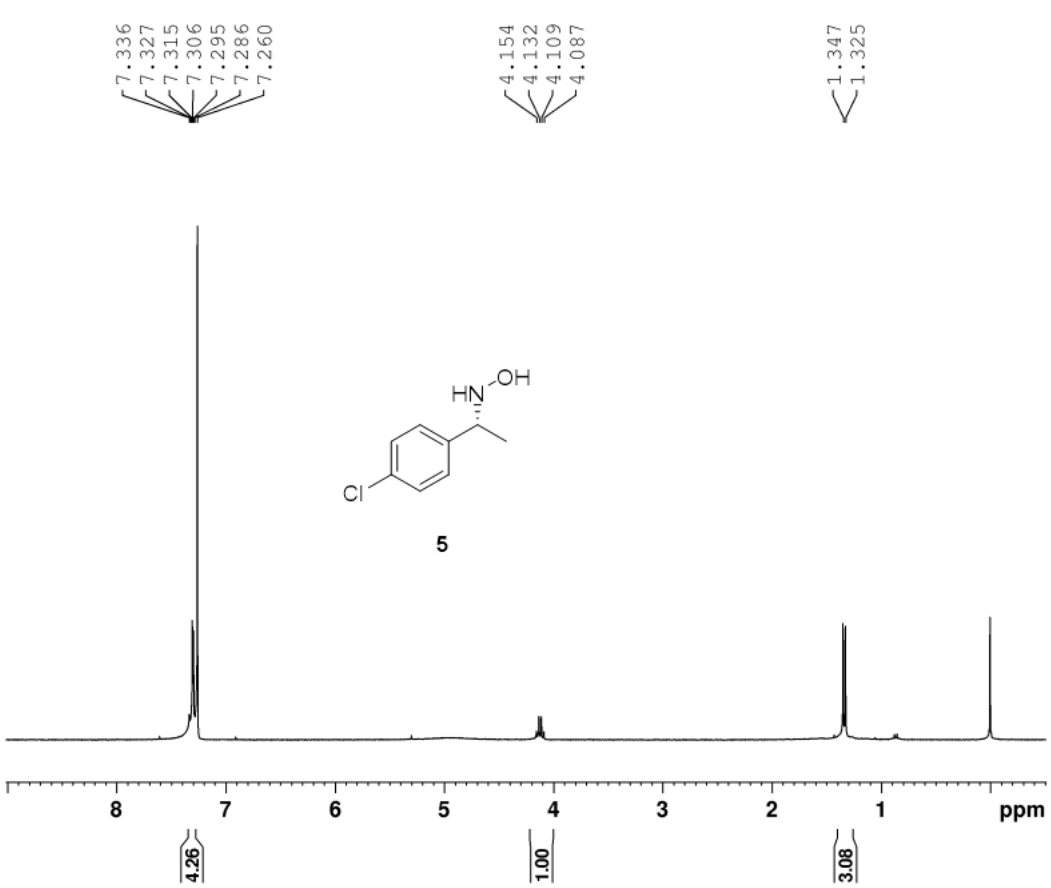

```
Current Data Parameters
NAME                   cc
EXPNO                  28
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211228
Time              19.59 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   800
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                299.5 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404280 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



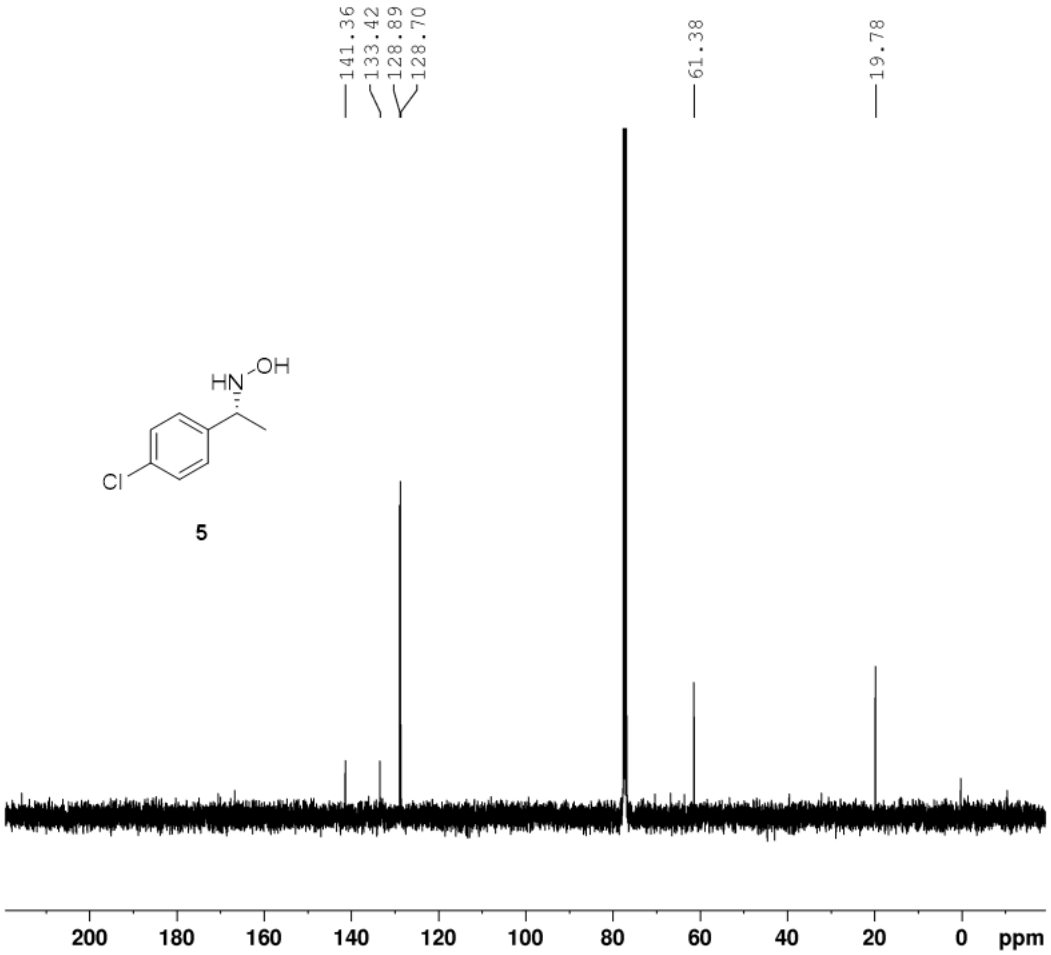

```
Current Data Parameters
NAME                  ch
EXPNO                359
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211225
Time               10.17 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    12
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                126.88
DW                83.200 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
TD0                    1
SFO1        300.1318534 MHz
NUC1                  1H
P1                 8.00 usec
PLW1        18.00000000 W

F2 - Processing parameters
SI                 65536
SF          300.1300096 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



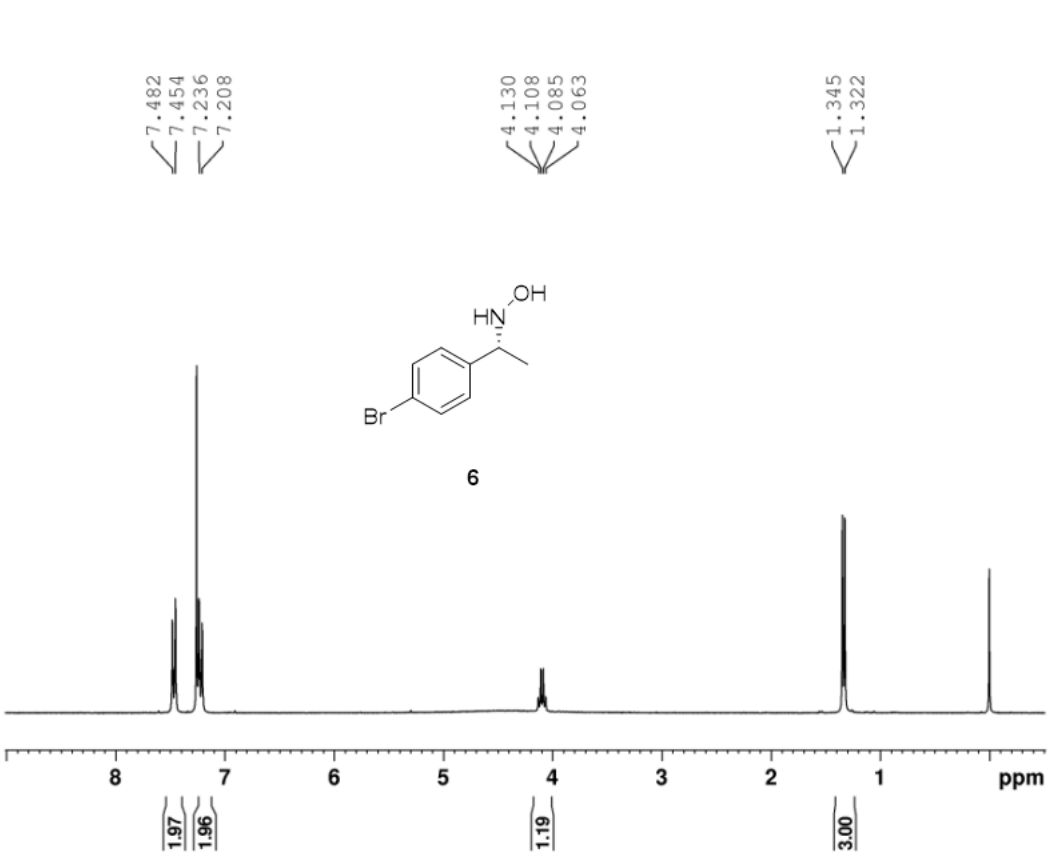

```
Current Data Parameters
NAME                  cc
EXPNO                 28
PROCNO                1

F2 - Acquisition Parameters
Date_           20211228
Time              19.59 h
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               299.5 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1
SFO1        100.6504916 MHz
NUC1               13C
P1                10.00 usec
PLW1        54.00000000 W
SFO2        400.2416010 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

F2 - Processing parameters
SI                32768
SF          100.6404280 MHz
WDW                EM
SSB                0
LB              1.00 Hz
GB                 0
PC              1.40
```



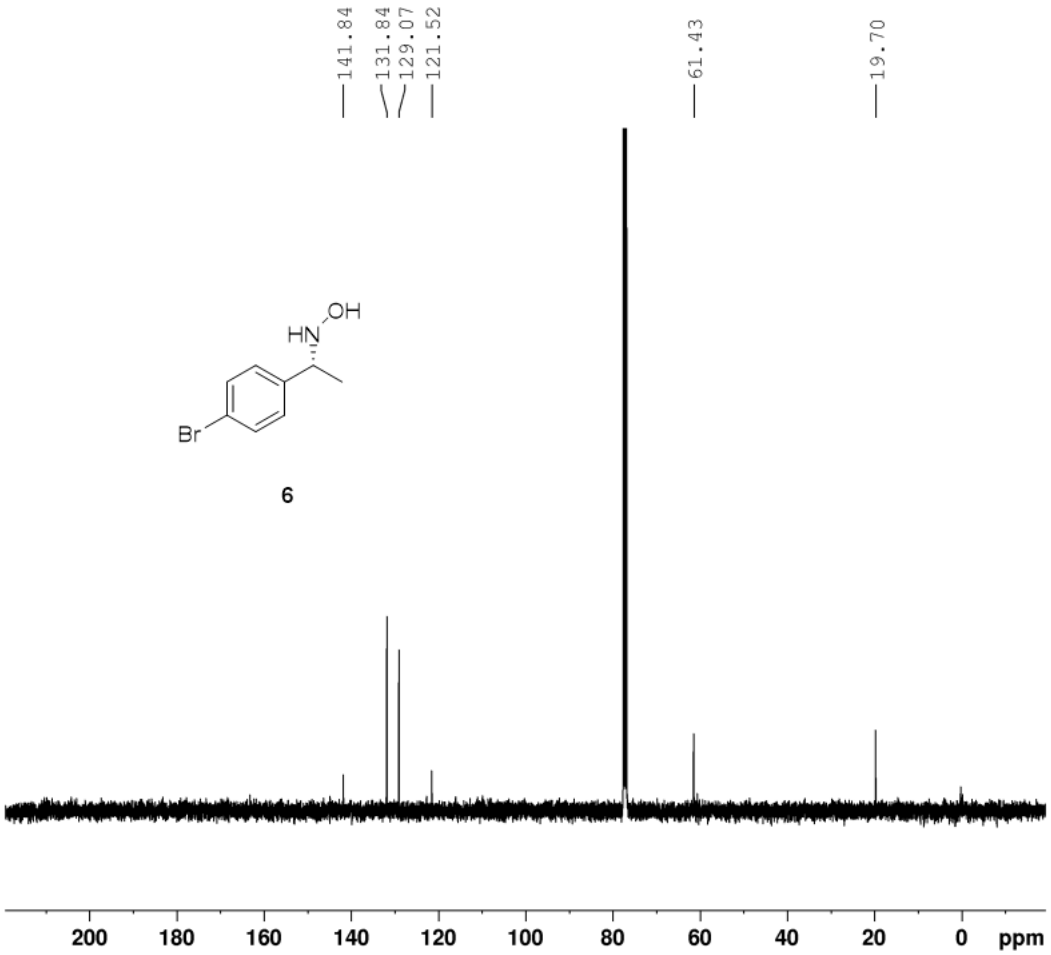

```
Current Data Parameters
NAME                      ch
EXPNO                    345
PROCNO                     1

F2 - Acquisition Parameters
Date_              20211216
Time                  21.54 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                   83.200 usec
DE                    6.50 usec
TE                   298.2 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300075 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



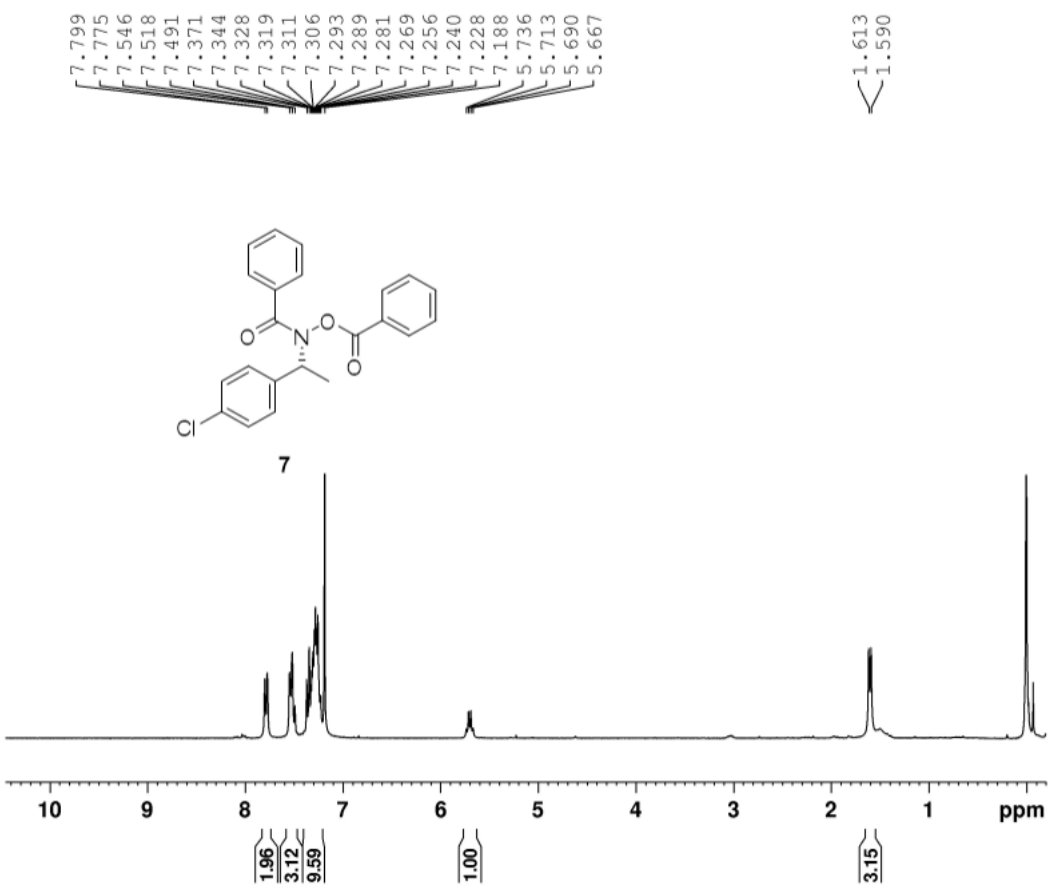

```
Current Data Parameters
NAME                   cc
EXPNO                  11
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211216
Time                22.53 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    500
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 298.0 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1           54.00000000 W
SFO2           400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2           12.00000000 W
PLW12           0.30294999 W
PLW13           0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404078 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



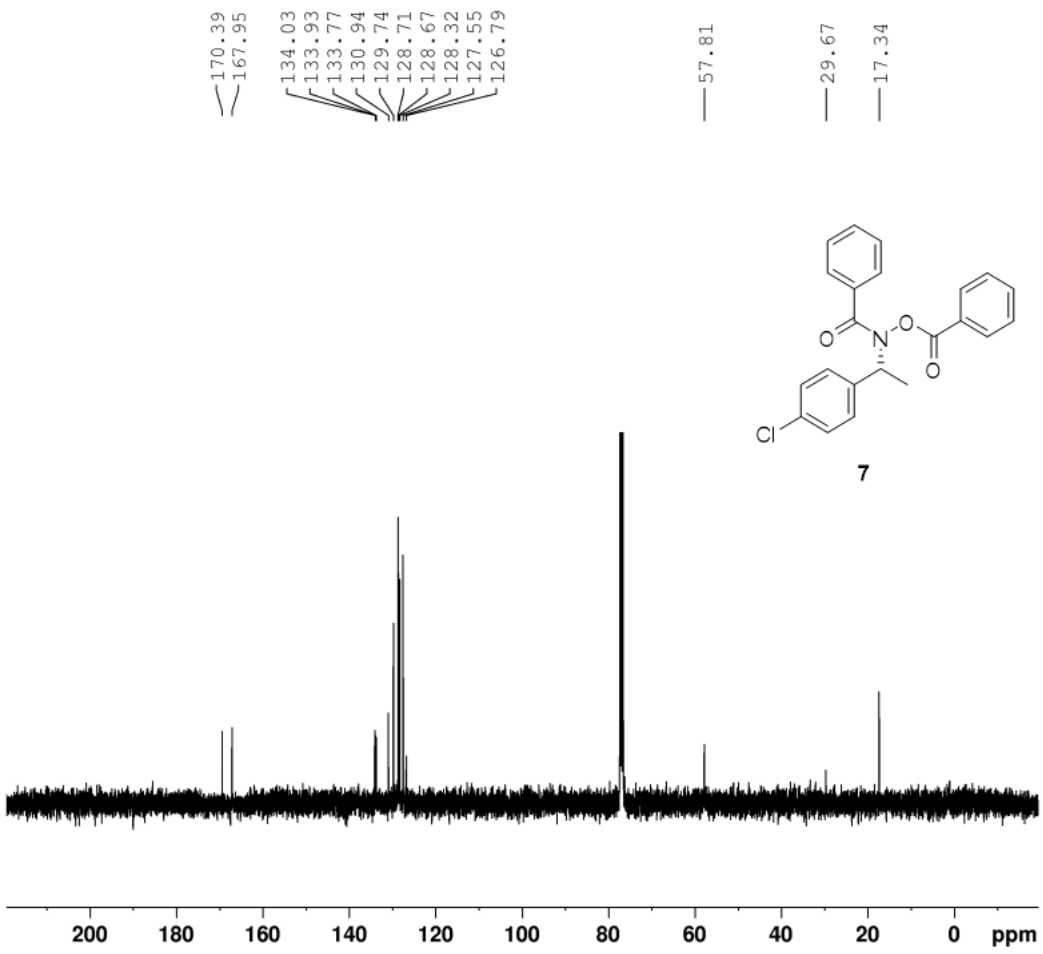

```
Current Data Parameters
NAME                      ch
EXPNO                      2
PROCNO                     1

F2 - Acquisition Parameters
Date_            20211218
Time                 16.41 h
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     10
DS                      2
SWH              6009.615 Hz
FIDRES           0.183399 Hz
AQ               5.4525952 sec
RG                  209.09
DW                  83.200 usec
DE                    6.50 usec
TE                  298.3 K
D1              1.00000000 sec
TD0                     1
SFO1           300.1318534 MHz
NUC1                   1H
P1                   8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                  65536
SF             300.1300073 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



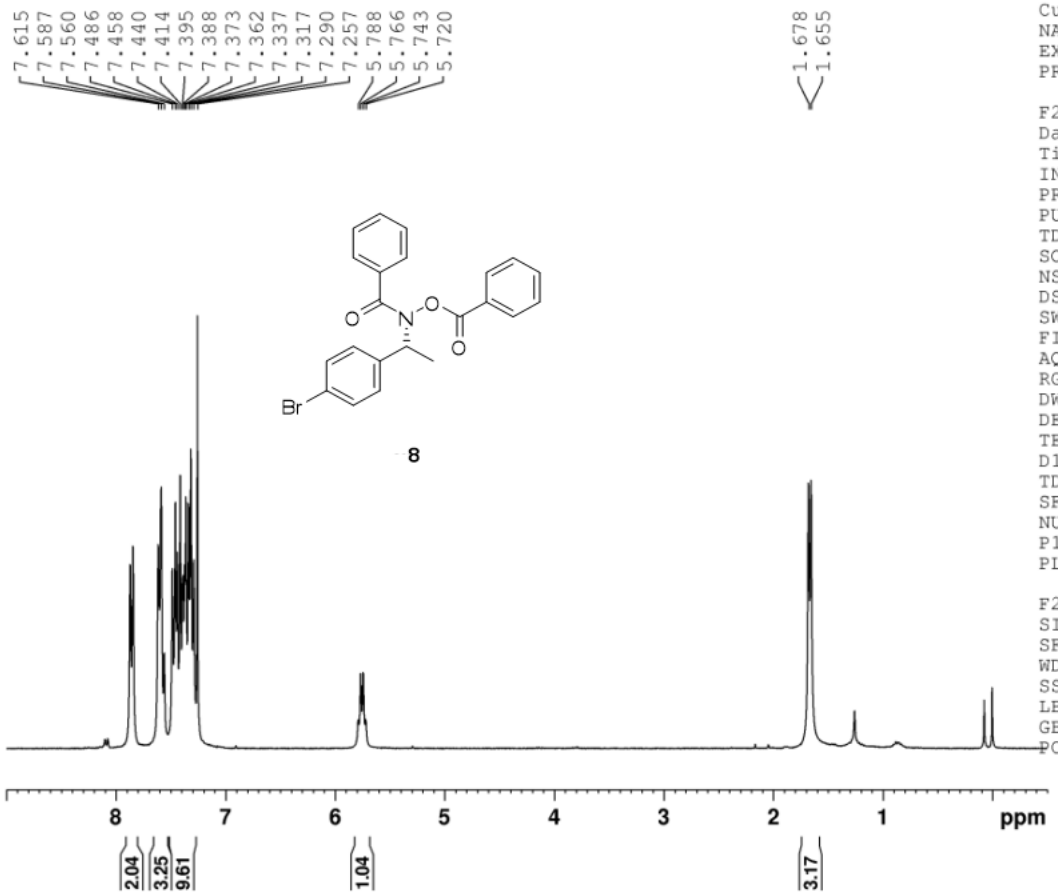

```
Current Data Parameters
NAME                   cc
EXPNO                  17
PROCNO                  1

F2 - Acquisition Parameters
Date_            20211218
Time                22.04 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    800
DS                      4
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               1.3631488 sec
RG                 206.33
DW                 20.800 usec
DE                  6.50 usec
TE                 299.3 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                     1
SFO1          100.6504916 MHz
NUC1                  13C
P1                 10.00 usec
PLW1           54.00000000 W
SFO2           400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2           12.00000000 W
PLW12           0.30294999 W
PLW13           0.24539000 W

F2 - Processing parameters
SI                  32768
SF            100.6404089 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



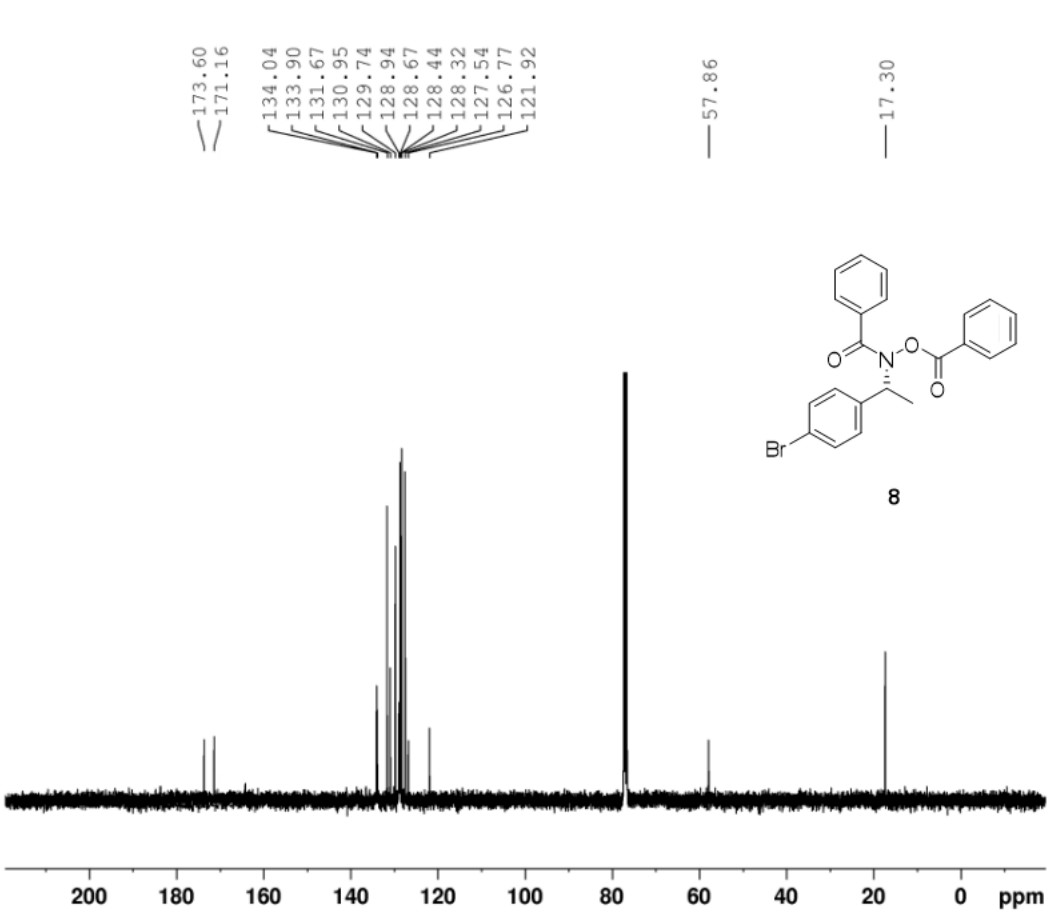

```
Current Data Parameters
NAME                      wb
EXPNO                      8
PROCNO                     1

F2 - Acquisition Parameters
Date_              20220216
Time                   9.12 h
INSTRUM               spect
PROBHD    5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                5.4525952 sec
RG                   209.09
DW                   83.200 usec
DE                    6.50 usec
TE                   298.3 K
D1              1.00000000 sec
TD0                       1
SFO1           300.1318534 MHz
NUC1                    1H
P1                    8.00 usec
PLW1           18.00000000 W

F2 - Processing parameters
SI                    65536
SF             300.1300289 MHz
WDW                      EM
SSB                       0
LB                    0.30 Hz
GB                        0
PC                    1.00
```




```
Current Data Parameters
NAME                   wb
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20220215
Time               20.47 h
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                298.9 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2          400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404315 MHz
WDW                   EM
SSB                    0
LB                 1.00 Hz
GB                     0
PC                 1.40
```




```
Current Data Parameters
NAME                   wb
EXPNO                   7
PROCNO                  1

F2 - Acquisition Parameters
Date_           20220215
Time               19.09 h
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              5.4525952 sec
RG                209.09
DW                 83.200 usec
DE                  6.50 usec
TE                 298.3 K
D1              1.00000000 sec
TD0                    1
SFO1          300.1318534 MHz
NUC1                  1H
P1                  8.00 usec
PLW1          18.00000000 W

F2 - Processing parameters
SI                 65536
SF            300.1300082 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME                   wb
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_            20220215
Time                22.53 h
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              1.3631488 sec
RG                206.33
DW                 20.800 usec
DE                  6.50 usec
TE                299.2 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                    1
SFO1         100.6504916 MHz
NUC1                13C
P1                 10.00 usec
PLW1          54.00000000 W
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2          12.00000000 W
PLW12          0.30294999 W
PLW13          0.24539000 W

F2 - Processing parameters
SI                 32768
SF           100.6404321 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```