Electronic Supplementary Information

Organocatalytic Asymmetric Synthesis of α-Amino Esters from Sulfoxonium Ylides

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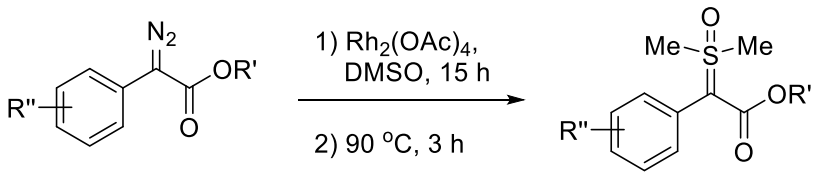
I. General Information

Flash column chromatography was performed over silica gel (200-300 mesh) purchased from Qindao Puke Co., China. All air or moisture sensitive reactions were conducted in oven-dried glassware under nitrogen atmosphere using anhydrous solvents. Anhydrous acetonitrile was purified by the Innovative® solvent purification system or purchased from J&K Scientific Ltd. Anhydrous dimethyl sulfoxide (DMSO), 1,2-dichloroethane (DCE), methyl *tert*-butyl ether (MTBE), tetrahydrofuran (THF), benzotrifluoride ($CF_3C_6H_5$), and chlorobenzene (ClC_6H_5) were purchased from J&K Scientific Ltd. Chloroform ($CHCl_3$, HPLC grade, stabilized with about 50 ppm amylene), dichloromethane (DCM, HPLC grade, stabilized with about 50 ppm amylene), and diethyl ether (Et_2O, AR grade) were purchased from RCI Labscan Ltd. *n*-Hexane (HPLC grade), *iso*-propanol (HPLC grade), ethyl acetate (HPLC grade), and methanol (MeOH, AR grade) were purchased from Scharlau BASIC Laboratory Chemicals. These solvents were directly used as received. ^{1}H, ^{13}C and ^{19}F NMR spectra were collected on a Bruker AV 400 MHz NMR spectrometer using residue solvent peaks as an internal standard (^{1}H NMR: $CDCl_3$ at 7.26 ppm; ^{13}C NMR: $CDCl_3$ at 77.0 ppm). Mass spectra were collected on an Agilent GC/MS 5975C system, a MALDI Micro MX mass spectrometer, or an API QSTAR XL System. IR spectra were recorded on Bruker TENSOR 27 spectrometer and reported in terms of frequency of absorption (cm^{-1}). Optical rotations were measured on JASCO P-2000 polarimeter with $[\alpha]^D$ values reported in degrees; concentration (c) is in 10 mg/mL. The enantiomeric excess values were determined by chiral HPLC using an Agilent 1260 LC system with a Daicel CHIRALCEL OD-H column, or a Daicel CHIRALPAK AD-H or IC column. Unless otherwise noted, the racemic samples in this study were prepared using the racemic catalyst 1,1′-binaphthyl-2,2′-diyl hydrogenphosphate (20 mol%). The racemic samples of **3k**-**m**, **4f**-**g**, **4k**-**m** were prepared using the racemic **C5** as catalyst (10 mol%).

II. Substrate Preparation

The sulfoxonium ylides were prepared according to the following modified literature procedures.[1,2]

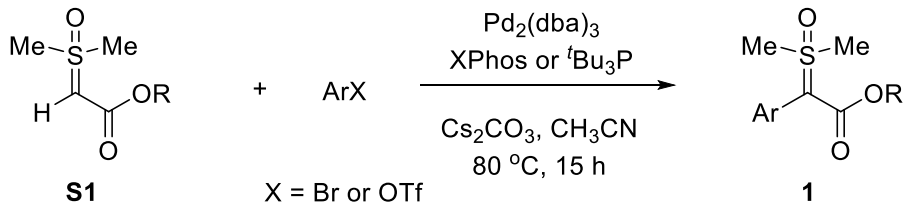
General Procedure A.[1]



S0 **1**

Under N_2, to a 100-mL flame-dried Schlenk tube were added the α-diazoester **S0** (10.0 mmol), and $Rh_2(OAc)_4$ (110.5 mg, 0.25 mmol, 2.5 mol%) in anhydrous DMSO (c = 1.0 M). The reaction mixture was stirred at 25 °C for 15 h (or noted otherwise). Then, the reaction mixture was heated to 90 °C and stirred for additional 3 h at the same temperature before it was cooled to room temperature. Water (50 mL) was added to quench the reaction. The mixture was extracted with dichloromethane (50 mL ×3), and the combined organic layers were washed with water (100 mL ×3), dried over anhydrous Na_2SO_4, and concentrated. The residue was purified by flash column chromatography on silica gel to afford the desired sulfoxonium ylide **1**.

General Procedure B.[2]



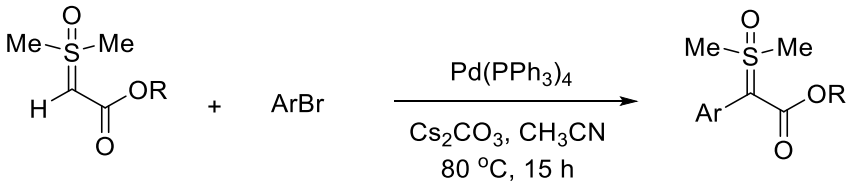
S1 X = Br or OTf **1**

1 (a) F. Dost, J. Gosselck, *Tetrahedron Lett*. **1970**, *58*, 5091–5093; (b) R. M. P. Dias, A. C. B. Burtoloso, *Org. Lett.* **2016**, *18*, 3034–3037.

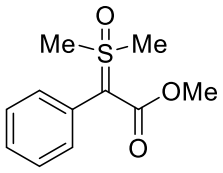
2 (a) C. Janot, P. Palamini, B. C. Dobson, J. Muir, C. Aïssa, *Org. Lett.* **2019**, *21*, 296–299; (b) C. Janot, J. B. Chagnoleau, N. R. Halcovitch, J. Muir, C. Aïssa, *J. Org. Chem.* **2020**, *85*, 1126–1137.

Under N_2, to a 100-mL round-bottomed flask equipped with a magnetic stir bar were sequentially added Xphos (381 mg, 0.8 mmol, 20 mol%), $Pd_2(dba)_3$ (183 mg, 0.2 mmol, 5 mol%), Cs_2CO_3 (1.4 g, 4.4 mmol, 1.1 equiv), and anhydrous CH_3CN (10 mL). The resulting mixture was stirred at room temperature for 10 min followed by addition of the aryl bromide or triflate (4.0 mmol, 1.0 equiv) and the sulfoxonium ylide **S1** (10 mmol, 2.5 equiv). The mixture was then heated with stirring at 80 °C. Upon completion (~ 15 h), the reaction mixture was cooled to room temperature and filtered through a short plug of silica gel, which was washed with DCM/MeOH (*v*/*v* = 50:1, 50 mL). The filtrate was concentrated, and the residue was purified by flash column chromatography on silica gel to afford the desired product **1**. In some cases, further crystallization was performed to remove the phosphine and/or phosphine oxide impurities, which was specified below.

General Procedure C.[2]



This procedure is essentially identical to the General Procedure B except that $Pd(PPh_3)_4$ was used in place of Xphos or tBu_3P and $Pd_2(dba)_3$. After purification of the crude product by flash column chromatography on silica gel, further purification was needed to remove the phosphine and/or phosphine oxide impurities.



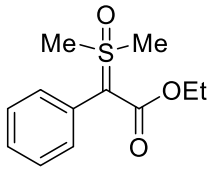
1a

Methyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-phenylacetate (1a) was prepared as a white solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 1.8 g,

80% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.37 – 7.29 (m, 5H), 3.63 (s, 3H), 3.43 (s, 6H) ppm.

It's a known compound, and the spectral data is consistent with the literature report.[1b]

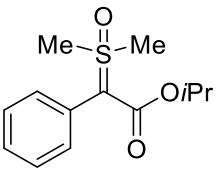


1b

Ethyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-phenylacetate (1b) was prepared as a light brown solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 1.5 g, 62% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34 – 7.24 (m, 5H), 4.12 (q, *J* = 7.1 Hz, 2H), 3.42 (s, 6H), 1.21 (t, *J* = 7.1 Hz, 3H) ppm.

It's a known compound, and the spectral data is consistent with the literature report.[2a]



1c

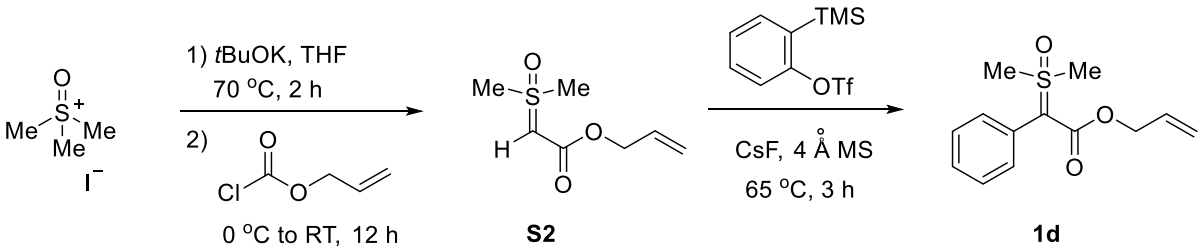
Isopropyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-phenylacetate (1c) was prepared as a light orange-brown solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 1.0 g, 40% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.31 – 7.21 (m, 5H), 5.06 – 4.97 (m, 1H), 3.40 (s, 6H), 1.19 (d, *J* = 6.2 Hz, 6H) ppm.

It's a known compound, and the spectral data is consistent with the literature report.[3]

3 H. Y. Zhang, J. Huang, S. D. Yang, *Chin. J. Org. Chem.* **2015**, *35*, 1961–1965.

Substrate **1d** was prepared according to the following procedure.[4]



Allyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)acetate (S2). Under N_2 atmosphere, to a 250-mL flame-dried round-bottomed flask charged with *t*BuOK (5.6 g, 49.8 mmol, 3.0 equiv) and dry THF (150 mL) was added trimethylsulfoxonium iodide (11.0 g, 49.8 mmol, 3.0 equiv) in one portion. The resulted suspension was heated at 70 °C for 2 h before it was cooled to 0 °C. Next, allyl chloroformate (2.0 g, 16.6 mmol, 1.0 equiv) was slowly added. The reaction mixture was warmed to room temperature and stirred for additional 12 h. The mixture was filtered through a plug of celite and the filtrate was concentrated under reduced pressure. The residue was purified by flash column chromatography on silica gel (eluent: DCM/MeOH = 50:1) to form **S2** as a colorless oil (2.3 g, 79% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 5.99 – 5.89 (m, 1H), 5.33 – 5.27 (m, 1H), 5.20 – 5.17 (m, 1H), 4.55 (d, *J* = 5.5 Hz, 2H), 4.02 (br, 1H), 3.40 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 166.7, 133.6, 117.1, 63.4, 55.6, 42.3 ppm.

IR (thin film) 3089, 3017, 2931, 1632, 1377, 1323, 1131, 1017 cm^{-1}.

HRMS (CI+) Calcd for $C_7H_{13}O_3S$ $[M+H]^+$: 177.0585, found: 177.0583.

Allyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-phenylacetate (1d). Under N_2, to a 100-mL single-neck round-bottom flask were added the sulfoxonium ylide **S2** (1.8 g, 10 mmol, 1.0 equiv), activated 4Å MS (1.8 g), anhydrous CsF (6.1 g, 40 mmol, 4.0 equiv), and anhydrous CH_3CN (20 mL). Under vigorously stirring, the mixture was heated at 65 °C. Then, 2-(trimethylsilyl)phenyl trifluoromethanesulfonate (4.5 g, 15 mmol, 1.5 equiv) was added in three portions at intervals of 1 h (3 h in total at 65 °C). The mixture

4 Talero, B. S. Martins, A. C. B. Burtoloso, *Org. Lett.* **2018**, *20*, 7206–7211.

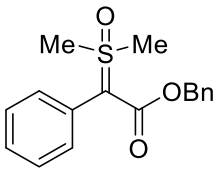
was cooled to room temperature and filtered through a short plug of celite, which was washed with dichloromethane (50 mL). The combined filtrate was concentrated under reduced pressure, and the crude product was purified by flash column chromatography on silica gel to give the desired product **1d** as a light orange-brown solid (eluent: *n*-hexane/ethyl acetate = 2:3, 0.9 g, 36% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.31 – 7.22 (m, 5H), 5.92 – 5.82 (m, 1H), 5.18 – 5.07 (m, 2H), 4.55 (d, *J* = 4.4 Hz, 2H), 3.34 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.7, 133.74, 133.69, 132.6, 128.4, 127.1, 116.2, 70.8, 63.4, 43.0 ppm.

IR (thin film) 3027, 2929, 1738, 1624, 1319, 1213, 1092, 1008 cm^{-1}.

HRMS (CI+) Calcd for $C_{13}H_{16}NaO_3S$ $[M+Na]^+$: 275.0718, found: 275.0725.

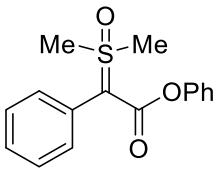


1e

Benzyl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-phenylacetate (1e) was prepared as a light brown solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 2.1 g, 70% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.38 – 7.24 (m, 10H), 5.15 (s, 2H), 3.41 (s, 6H) ppm.

It's a known compound, and the spectral data is consistent with the literature report.[3]

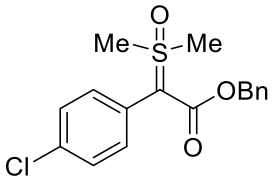


1f

Phenyl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-phenylacetate (1f) was prepared as a white solid according to the General Procedure A (eluent: *n*-hexane/ethyl acetate = 2:3, 2.3 g, 78% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 – 7.45 (m, 2H), 7.41 – 7.30 (m, 5H), 7.18 – 7.14 (m, 1H), 7.12 – 7.10 (m, 2H), 3.43 (s, 6H) ppm.

It's a known compound, and the spectral data is consistent with the literature report.[2a]



1g

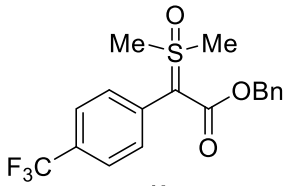
Benzyl 2-(4-chlorophenyl)-2-(dimethyl(oxo)-λ^6-sulfanylidene)acetate (1g) was prepared as a white solid according to the General Procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 420 mg, 62% yield after a single recrystallization from *n*-pentane/ethyl acetate (*v*/*v* = 20:1)).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 – 7.27 (m, 9H), 5.14 (s, 2H), 3.38 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.5, 137.6, 134.8, 132.8, 131.0, 128.5, 128.4, 127.5, 127.3, 69.3, 64.5, 43.2 ppm.

IR (thin film) 3047, 2936, 1632, 1320, 1214, 1086, 1013 cm^{-1}.

HRMS (CI+) Calcd for $C_{17}H_{18}ClO_3S$ $[M+H]^+$: 337.0665, found: 337.0664.



1h

Benzyl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-(4-(trifluoromethyl)phenyl)acetate (1h) was prepared as a light yellow solid according to the General Procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 1.3 g, 87% yield).

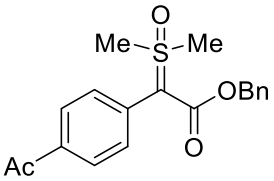
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.58 (d, *J* = 8.2 Hz, 2H), 7.48 (d, *J* = 8.2 Hz, 2H), 7.37 – 7.28 (m, 5H), 5.17 (s, 2H), 3.45 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.2, 137.4, 136.4, 133.0, 128.4, 128.1 (q, $^2J_{C\text{-}F}$ = 32.2 Hz), 127.6, 127.4, 125.0 (q, $^3J_{C\text{-}F}$ = 3.6 Hz), 124.4 (q, $^1J_{C\text{-}F}$ = 270.3 Hz), 69.3, 64.7, 43.5 ppm.

^{19}F NMR (376 MHz, $CDCl_3$) δ –62.2 ppm.

IR (thin film) 3038, 2941, 1622, 1393, 1320, 1216, 1117, 1013 cm^{-1}.

HRMS (CI+) Calcd for $C_{18}H_{18}F_3O_3S$ $[M+H]^+$: 371.0929, found: 371.0930.



1i

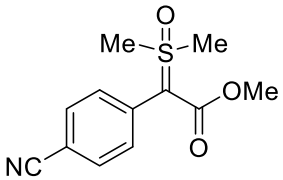
Benzyl 2-(4-acetylphenyl)-2-(dimethyl(oxo)-λ^6-sulfanylidene)acetate (1i) was prepared as a light brown solid according to the general procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 0.8 g, 57% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.87 (d, *J* = 8.2 Hz, 2H), 7.43 (d, *J* = 8.2 Hz, 2H), 7.33 – 7.25 (m, 5H), 5.14 (s, 2H), 3.43 (s, 6H), 2.56 (s, 3H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 197.8, 165.1, 138.2, 137.4, 134.6, 132.4, 128.4, 128.1, 127.6, 127.4, 70.1, 64.7, 43.5, 26.6 ppm.

IR (thin film) 3029, 2931, 1604, 1399, 1314, 1196, 1075, 1009 cm^{-1}.

HRMS (CI+) Calcd for $C_{19}H_{21}O_4S$ $[M+H]^+$: 345.1161, found: 345.1163.



1j

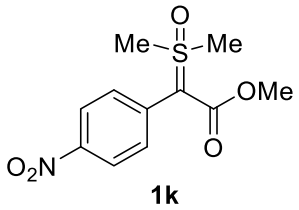
Methyl 2-(4-cyanophenyl)-2-(dimethyl(oxo)-λ^6-sulfanylidene)acetate (1j) was prepared as a white solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 1.2 g, 48% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.58 – 7.56 (m, 2H), 7.43 – 7.41 (m, 2H), 3.66 (s, 3H), 3.52 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.7, 137.7, 132.5, 131.6, 119.3, 108.9, 68.5, 50.6, 43.9 ppm.

IR (thin film) 3031, 2998, 2225, 1711, 1622, 1504, 1428, 1338, 1217, 1087 cm^{-1}.

HRMS (CI+) Calcd for $C_{12}H_{13}NNaO_3S$ $[M+Na]^+$: 274.0514, found: 274.0521.



1k

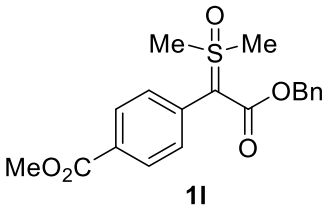
Methyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-(4-nitrophenyl)acetate (1k) was prepared as a yellow solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 0.8 g, 30% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.15 (d, *J* = 8.9 Hz, 2H), 7.48 (d, *J* = 8.9 Hz, 2H), 3.69 (s, 3H), 3.56 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.7, 145.1, 140.0, 131.9, 123.1, 68.4, 50.7, 44.1 ppm.

IR (thin film) 3022, 2942, 1711, 1627, 1506, 1429, 1324, 1214, 1095, 1016 cm^{-1}.

HRMS (CI+) Calcd for $C_{11}H_{14}NO_5S$ $[M+H]^+$: 272.0593, found: 272.0598.



1l

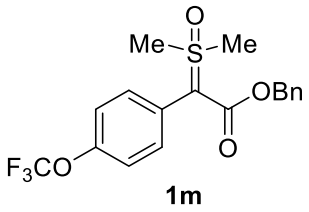
Methyl 4-(2-(benzyloxy)-1-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-oxoethyl)benzoate (1l) was prepared as a white solid according to the General Procedure A (eluent: DCM/MeOH = 50:1, 2.7 g, 75% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 – 7.97 (m, 2H), 7.45 – 7.42 (m, 2H), 7.35 – 7.28 (m, 5H), 5.16 (s, 2H), 3.92 (s, 3H), 3.48 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 167.1, 165.2, 137.7, 137.4, 132.4, 129.3, 128.4, 127.7, 127.6, 127.4, 69.9, 64.7, 52.0, 43.6 ppm.

IR (thin film) 3028, 2942, 1714, 1607, 1436, 1282, 1187, 1098, 1012 cm^{-1}.

HRMS (CI+) Calcd for $C_{19}H_{21}O_5S$ $[M+H]^+$: 361.1110, found: 361.1111.



1m

Benzyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-(4-(trifluoromethoxy)phenyl)acetate (1m) was prepared as a light brown solid according to the General Procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 1.7 g, 43% yield).

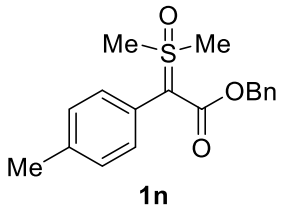
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 – 7.34 (m, 2H), 7.33 – 7.27 (m, 5H), 7.19 – 7.17 (m, 2H), 5.15 (s, 2H), 3.42 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.5, 148.0, 137.5, 134.8, 131.1, 128.4, 127.5, 127.3, 120.6, 120.5 (q, $^1J_{C\text{-}F}$ = 255.6 Hz), 68.9, 64.6, 43.3 ppm.

^{19}F NMR (376 MHz, $CDCl_3$) δ –57.7 ppm.

IR (thin film) 3041, 2934, 1632, 1502, 1217, 1085, 1013 cm^{-1}.

HRMS (CI+) Calcd for $C_{18}H_{18}F_3O_4S$ $[M+H]^+$: 387.0878, found: 387.0877.



1n

Benzyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-(*p*-tolyl)acetate (1n) was prepared as a white solid according to the General Procedure A, except that the reaction was run at room temperature (eluent: *n*-hexane/ethyl acetate = 2:3, 1.6 g, 50% yield).

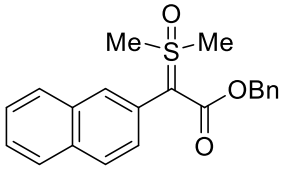
Note: It was found that sulfoxonium ylides bearing an electron-donating group (such as methyl group) are not stable when prepared at a higher temperature. Therefore, the reaction temperature in General Procedure A was slightly modified for a better isolated yield.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 – 7.22 (m, 7H), 7.15 (d, *J* = 7.8 Hz, 2H), 5.14 (s, 2H), 3.35 (s, 6H), 2.38 (s, 3H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.3, 137.3, 136.4, 133.1 (2C), 128.6, 127.7, 126.7, 126.6, 69.7, 63.7, 42.3, 20.6 ppm.

IR (thin film) 3025, 2929, 1707, 1628, 1506, 1375, 1322, 1214, 1173, 1081, 1015 cm^{-1}.

HRMS (CI+) Calcd for $C_{18}H_{21}O_3S$ $[M+H]^+$: 317.1211, found: 317.1214.



1o

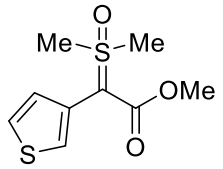
Benzyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-(naphthalen-2-yl)acetate (1o) was prepared as a white solid according to the General Procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 840 mg, 57% yield) after a single recrystallization from *n*-pentane/ethyl acetate (20:1, *v*/*v*).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 – 7.81 (m, 4H), 7.51 – 7.46 (m, 3H), 7.33 – 7.23 (m, 5H), 5.18 (s, 2H), 3.45 (s, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.8, 137.7, 133.5, 132.4, 131.9, 131.8, 130.0, 128.3, 127.9, 127.8, 127.6, 127.4, 127.3, 126.00, 125.95, 71.0, 64.5, 43.2 ppm.

IR (thin film) 3043, 2943, 1737, 1630, 1378, 1311, 1193, 1087, 1016 cm^{-1}.

HRMS (CI+) Calcd for $C_{21}H_{20}NaO_3S$ $[M+Na]^+$: 375.1031, found: 375.1039.



1p

Methyl 2-(dimethyl(oxo)-λ⁶-sulfanylidene)-2-(thiophen-3-yl)acetate (1p) was prepared as a white solid according to the General Procedure A, except that the reaction was run at room temperature for 1.5 h (eluent: *n*-hexane/ethyl acetate = 2:3, 600 mg, 26% yield).

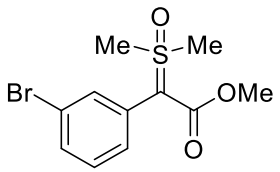
^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.34 – 7.32 (m, 1H), 7.19 – 7.18 (m, 1H), 7.03 – 7.01 (m,

1H), 3.61 (s, 3H), 3.40 (s, 6H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 166.2, 132.1, 132.0, 125.8, 124.4, 64.3, 50.1, 42.6 ppm.

IR (thin film) 3030, 2944, 1711, 1629, 1303, 1195, 1017 cm^{-1}.

HRMS (CI+) Calcd for $C_9H_{12}NaO_3S_2$ $[M+Na]^+$: 255.0126, found: 255.0123.



1q

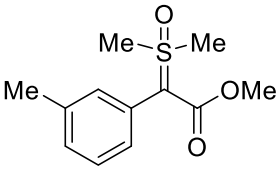
Methyl 2-(3-bromophenyl)-2-(dimethyl(oxo)-λ^6-sulfanylidene)acetate (1q) was prepared as a white solid according to the General Procedure C (eluent: *n*-hexane/ethyl acetate = 2:3, 400 mg, 33% yield after a single recrystallization from *n*-pentane/ethyl acetate (20:1, *v*/*v*).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.47 (s, 1H), 7.38 – 7.36 (m, 1H), 7.25 – 7.16 (m, 2H), 3.61 (s, 3H), 3.42 (m, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 166.2, 136.2, 134.5, 132.0, 129.9, 129.7, 122.0, 69.2, 50.5, 43.2 ppm.

IR (thin film) 3019, 2943, 1632, 1431, 1327, 1221, 1176, 1087, 1021cm^{-1}.

HRMS (CI+) Calcd for $C_{11}H_{14}BrO_3S$ $[M+H]^+$: 304.9847, found: 304.9850.



1r

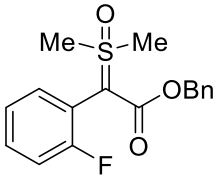
Methyl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-(*m*-tolyl)acetate (1r) was prepared as a white solid according to the General Procedure A, except that the reaction was run at room temperature (eluent: DCM/MeOH = 50:1, 630 mg, 26% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.28 – 7.19 (m, 1H), 7.12 – 7.06 (m, 3H), 3.59 (s, 3H), 3.35 (s, 6H), 2.33 (s, 3H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 166.7, 138.0, 134.5, 132.4, 130.8, 128.4, 128.2, 70.7, 50.4, 42.9, 21.4 ppm.

IR (thin film) 3046, 2942, 1630, 1434, 1327, 1239, 1177, 1092, 1023 cm^{-1}.

HRMS (CI+) Calcd for $C_{12}H_{16}NaO_3S$ $[M+Na]^+$: 263.0718, found: 263.0721.



1s

Benzyl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-(2-fluorophenyl)acetate (1s) was prepared as a white solid according to the General Procedure A (eluent: *n*-hexane/ethyl acetate = 2:3, 2.0 g, 63% yield).

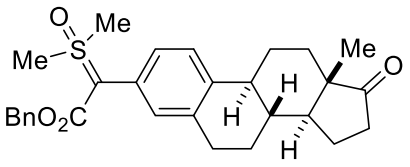
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42 – 7.26 (m, 7H), 7.16 – 7.07 (m, 2H), 5.14 (s, 2H), 3.44 (br, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 165.8, 162.2 (d, $^1J_{C\text{-}F}$ = 242.6 Hz), 137.8, 136.97, 136.96, 129.6 (d, $^3J_{C\text{-}F}$ = 8.5 Hz), 128.3, 127.3, 127.0, 124.0, 115.5 (d, $^2J_{C\text{-}F}$ = 23.4 Hz), 77.3, 64.4, 42.8 ppm.

^{19}F NMR (376 MHz, $CDCl_3$) δ –110.6 ppm.

IR (thin film) 3026, 2934, 1742, 1626, 1327, 1208, 1087 cm^{-1}.

HRMS (CI+) Calcd for $C_{17}H_{18}FO_3S$ $[M+H]^+$: 321.0961, found: 321.0966.



1t

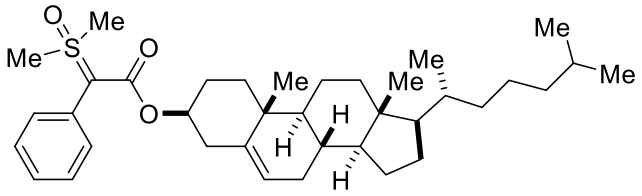
Benzyl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-((8*R*,9*S*,13*S*,14*S*)-13-methyl-17-oxo-7,8,9,11,12,13,14,15,16,17-decahydro-6H-cyclopenta[a]phenanthren-3-yl)acetate (1t) was prepared as a light yellow solid at 0.6-mmol scale according to the General Procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 205 mg, 71% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 – 7.22 (m, 6H), 7.11 – 7.08 (m, 2H), 5.13 (s, 2H), 3.39 (s, 3H), 3.37 (s, 3H), 2.91 – 2.88 (m, 2H), 2.58 – 2.39 (m, 2H), 2.32 – 2.27 (m, 1H), 2.18 – 1.93 (m, 4H), 1.66 – 1.42 (m, 6H), 0.91 (s, 3H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 221.0, 165.9, 138.7, 138.0, 136.4, 134.2, 131.0, 129.7, 128.3, 127.4, 127.3, 125.4, 70.3, 64.3, 50.5, 48.0, 44.4, 43.13, 43.09, 38.0, 35.9, 31.6, 29.3, 26.6, 25.6, 21.6, 13.9 ppm.

IR (thin film) 3026, 2934, 2871, 1732, 1626, 1496, 1450, 1383, 1326, 1226, 1171, 1084, 1019, 906 cm^{-1}.

HRMS (CI+) Calcd for $C_{29}H_{35}O_4S$ $[M+H]^+$: 479.2256, found: 479.2252.



1u

(3*S*,8*S*,9*S*,10*R*,13*R*,14*S*,17*R*)-10,13-dimethyl-17-((*R*)-6-methylheptan-2-yl)-2,3,4,7,8,9,10,11,12,13,14,15,16,17-tetradecahydro-1H-cyclopenta[a]phenanthren-3-yl 2-(dimethyl(oxo)-λ^6-sulfanylidene)-2-phenylacetate (1u) was prepared as a white foam according to the General Procedure B (eluent: *n*-hexane/ethyl acetate = 2:3, 929 mg, 40% yield).

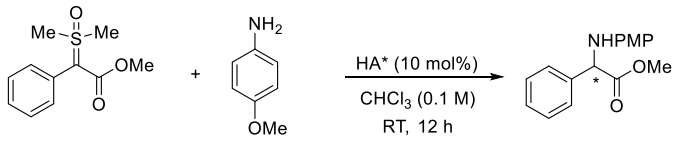
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.30 – 7.20 (m, 5H), 5.35 (s, 1H), 4.62 – 4.56 (m, 1H), 3.38 (s, 6H), 2.34 – 2.31 (m, 1H), 2.24 – 2.18 (m, 1H), 2.01 – 1.93 (m, 2H), 1.83 – 1.80 (m, 3H), 1.60 – 1.44 (m, 6H), 1.42 – 1.30 (m, 4H), 1.28 – 1.24 (m, 1H), 1.19 – 1.01 (m, 9H), 0.96 – 0.94 (m, 4H), 0.91 (d, *J* = 6.4 Hz, 3H), 0.87 – 0.85 (m, 6H), 0.67 (s, 3H) ppm.

It's a known compound, and the spectral data is consistent with the literature report.[5]

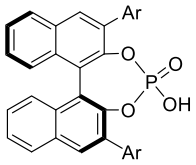
5 H. He, K. Yan, J. Li, R. Lai, Y. Luo, M. Guan, Y. Wu, *Synthesis*, **2020**, *52*, 3065–3070.

III. Catalytic Asymmetric Synthesis of Chiral α-Amino Esters

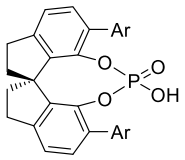
Table S1. Screening of CPAs for the N-H Insertion Reaction.



1a 0.05 mmol + **2a** 1.1 equiv → **3a**



C1, Ar = 2,4,6-Cy_3-C_6H_2;
C2, Ar = 9-phenanthryl;
C3, Ar = 1-pyrenyl;
C4, Ar = 9-anthryl;
C5, Ar = 9-((10-Ph)-anthryl);
C6, Ar = 2,6-*i*Pr_2-(4-(9-anthryl))-C_6H_2;
C7, Ar = 1,3-Me_2-9-phenanthryl;
C8, Ar = 3,5-$(NO_2)_2$-C_6H_3;
C9, Ar = 3,5-Ph_2-C_6H_3;

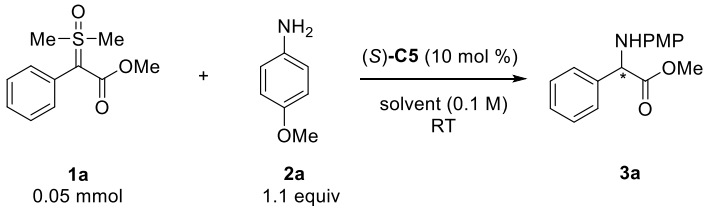


B1, Ar = 9-anthryl;
B2, Ar = 9-((10-Ph)-anthryl);
B3, Ar = 9-phenanthryl;
B4, Ar = 1,3-Me_2-9-phenanthryl;
B5, Ar = 1-pyrenyl;
B6, Ar = 2,4,6-Me_3-C_6H_2;
B7, Ar = 3,5-$(CF_3)_2$-C_6H_3;

entry	HA*	solvent	T/°C	t	Conv. (%)[a]	ee (%)[b]
1	(*S*)-**C1**	$CHCl_3$	25	12 h	50	(+)-3
2	(*S*)-**C2**	$CHCl_3$	25	6 h	>95	(+)-20
3	(*S*)-**C3**	$CHCl_3$	25	6 h	>95	(+)-21
4	(*S*)-**C4**	$CHCl_3$	25	15 min	>95	(+)-54
5	(*S*)-**C5**	$CHCl_3$	25	15 min	>95	(+)-79
6	(*S*)-**C6**	$CHCl_3$	25	12 h	52	(+)-22
7	(*S*)-**C7**	$CHCl_3$	25	6 h	>95	(+)-28
8	(*S*)-C**8**	$CHCl_3$	25	6 h	>95	(+)-13
9	(*S*)-C**9**	$CHCl_3$	25	6 h	>95	(+)-10
10	(*R*)-**B1**	$CHCl_3$	25	12 h	63	(−)-27
11	(*R*)-**B2**	$CHCl_3$	25	12 h	49	(+)-4
12	(*R*)-**B3**	$CHCl_3$	25	12 h	70	(−)-63
13	(*R*)-**B4**	$CHCl_3$	25	12 h	75	(−)-49
14	(*R*)-**B5**	$CHCl_3$	25	12 h	81	(−)-67
15	(*R*)-**B6**	$CHCl_3$	25	12 h	<20	(−)-4
16	(*R*)-**B7**	$CHCl_3$	25	12 h	78	(−)-23

[a] Determined by crude ^{1}H NMR anaylsis. [b] Determined by chiral HPLC analysis.

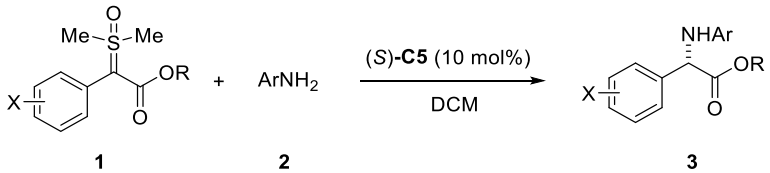
Table S2. Screening of Solvents for the N-H Insertion Reaction.



entry	HA*	solvent	T/°C	t	Conv. (%)[a]	ee (%)[b]
1	(*S*)-**C5**	$CHCl_3$	25	15 min	>95	(+)-79
2	(*S*)-**C5**	DCM	25	15 min	>95	(+)-90
3	(*S*)-**C5**	DCE	25	15 min	>95	(+)-88
4	(*S*)-**C5**	toluene	25	14 h	>95	(+)-75
5	(*S*)-**C5**	Ph-Cl	25	14 h	>95	(+)-79
6	(*S*)-**C5**	Ph-CF_3	25	14 h	<20[c]	(+)-68
7	(*S*)-**C5**	THF	25	14 h	82	(+)-80
8	(*S*)-**C5**	MTBE	25	14 h	<20[c]	(+)-67
9	(*S*)-**C5**	EtOAc	25	14 h	>95	(+)-79
10	(*S*)-**C5**	CH_3CN	25	14 h	70	(+)-72

[a] Determined by crude ^{1}H NMR anaylsis. [b] Determined by Chiral HPLC analysis. [c] Poor solubility of sulfoxonium ylides in these solvents led to lower conversion.

General Procedure D.

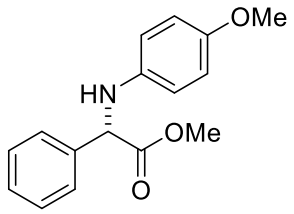


An oven-dried 4-mL vial equipped with a magnetic stirring bar was charged with the sulfoxonium ylide **1** (0.2 mmol, 1.0 equiv) and the CPA catalyst (*S*)-**C5** (17 mg, 0.02 mmol, 10 mol%). The vial was carefully sealed with a puncturable screw-cap and electric tape before it was cooled to the specified temperature (either −10 °C or −15 °C

or room temperature). DCM (1.0 mL) was injected into the vial through the cap. The solution was stirred at the same temperature for 2 min before addition of the aniline **2** (0.22 mmol, 1.1 equiv). Then, the reaction mixture was stirred at the same temperature and the progress was monitored by TLC. Upon completion, the mixture was directly subjected to flash column chromatography on silica gel (eluent: *n*-hexane/ethyl acetate = 10:1 to 5:1) to give the desired product **3**.

Note: 1) When the arylamine is a solid, all the reactants were directly added into the vial before cooling to the reaction temperature followed by addition of DCM.

2) All the products are bench-stable.



3a

Methyl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3a) was prepared as a light yellow solid according to the General Procedure D (48 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 50.5 mg, 93% yield, 95% ee).

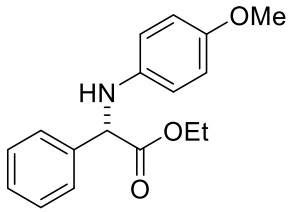
$[\alpha]_D^{25}$: +106.0 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 16.9 min (major), 14.7 min (minor).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 – 7.51 (m, 2H), 7.41 – 7.33 (m, 3H), 6.76 – 6.74 (m, 2H), 6.59 – 6.57 (m, 2H), 5.06 (s, 1H), 3.75 – 3.73 (m, 6H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 172.5, 152.6, 140.0, 137.7, 128.9, 128.3, 127.3, 114.93, 114.85, 61.8, 55.7, 52.8 ppm.

IR (thin film) 3402, 3028, 2938, 1740, 1624, 1512, 1445, 1315, 1225, 1182, 1089 cm^{-1}.

HRMS (CI+) Calcd for $C_{16}H_{17}NO_3$ $[M]^+$: 271.1208, found: 271.1211.



3b

Ethyl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3b) was prepared as a light yellow oil according to the General Procedure D (48 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 51.9 mg, 91% yield, 94% ee).

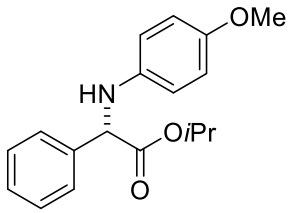
$[\alpha]_D^{25}$: +103.5 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 14.4 min (major), 13.0 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.56 – 7.54 (m, 2H), 7.44 – 7.34 (m, 3H), 6.78 – 6.75 (m, 2H), 6.61 – 6.59 (m, 2H), 5.09 (s, 1H), 4.78 (br, 1H), 4.30 – 4.12 (m, 2H), 3.73 (s, 3H), 1.25 (t, *J* = 7.1 Hz, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.9, 152.5, 140.3, 138.1, 128.7, 128.2, 127.3, 114.7, 114.6, 61.7, 61.5, 55.5, 13.8 ppm.

IR (thin film) 3405, 3031, 2985, 1736, 1513, 1307, 1237, 1185, 1029 cm^{-1}.

HRMS (CI+) Calcd for $C_{17}H_{19}NO_3$ $[M]^+$: 285.1365, found: 285.1364.



3c

Isopropyl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3c) was prepared as a light yellow oil according to the General Procedure D (48 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 49.7 mg, 83% yield, 86% ee).

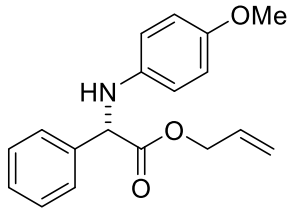
$[\alpha]_D^{25}$: +69.9 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® AD-H column; 20% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 9.6 min (major), 8.0 min (minor).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 – 7.50 (m, 2H), 7.39 – 7.29 (m, 3H), 6.76 – 6.74 (m, 2H), 6.59 – 6.57 (m, 2H), 5.10 – 5.00 (m, 2H), 3.73 (s, 3H), 1.29 (d, *J* = 6.4 Hz, 3H), 1.11 (d, *J* = 6.4 Hz, 3H) ppm. (the proton of NH bond is not displayed)

^{13}C NMR (100 MHz, $CDCl_3$) δ 171.5, 152.5, 140.1, 137.8, 128.7, 128.1, 127.2, 114.9, 114.8, 69.4, 61.9, 55.7, 21.8, 21.4 ppm.

IR (thin film) 3407, 3035, 2989, 1731, 1513, 1449, 1261, 1109, 1031 cm^{-1}.

HRMS (CI+) Calcd for $C_{18}H_{21}NO_3$ $[M]^+$: 299.1521, found: 299.1535.



3d

Allyl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3d) was prepared as a light yellow oil according to the General Procedure D (48 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 56.5 mg, 95% yield, 96% ee).

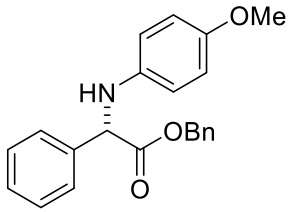
$[\alpha]_D^{25}$: +76.8 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 13.8 min (major), 11.9 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.56 – 7.54 (m, 2H), 7.44 – 7.35 (m, 3H), 6.78 – 6.74 (m, 2H), 6.62 – 6.58 (m, 2H), 5.94 – 5.84 (m, 1H), 5.23 – 5.18 (m, 2H), 5.13 (s, 1H), 4.78 (br, 1H), 4.71 – 4.61 (m, 2H), 3.73 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.6, 152.6, 140.2, 138.0, 131.7, 128.8, 128.3, 127.3, 117.9, 114.70, 114.66, 65.9, 61.5, 55.5 ppm.

IR (thin film) 3405, 3045, 2942, 2839, 1737, 1512, 1452, 1306, 1233, 1178, 1031 cm^{-1}.

HRMS (CI+) Calcd for $C_{18}H_{20}NO_3$ $[M+H]^+$: 298.1443, found: 298.1449.



3e

Benzyl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3e) was prepared as a light yellow solid according to the General Procedure D (48 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 59.8 mg, 86% yield, 95% ee).

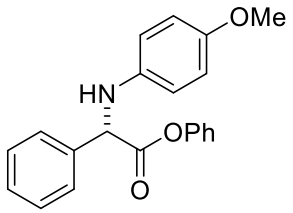
$[\alpha]_D^{25}$: +63.5 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 18.5 min (major), 14.1 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.55 – 7.53 (m, 2H), 7.44 – 7.34 (m, 6H), 7.24 – 7.22 (m, 2H), 6.76 – 6.74 (m, 2H), 6.60 – 6.58 (m, 2H), 5.25 – 5.14 (m, 3H), 4.77 (d, *J* = 6.0 Hz, 1H), 3.73 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.8, 152.6, 140.2, 137.9, 135.6, 128.8, 128.5, 128.3, 128.2, 127.8, 127.3, 114.70, 114.68, 67.1, 61.6, 55.5 ppm.

IR (thin film) 3397, 3029, 2944, 2835, 1734, 1508, 1301, 1232, 1169, 1028 cm^{-1}.

HRMS (CI+) Calcd for $C_{22}H_{21}NO_3$ $[M]^+$: 347.1521, found: 347.1535.



3f

Phenyl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3f) was prepared as a white solid according to the General Procedure D (48 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 54.7 mg, 82% yield, 87% ee).

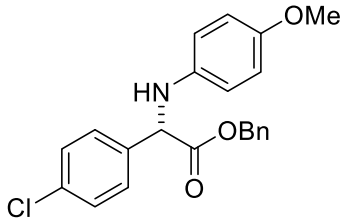
$[\alpha]_D^{25}$: +64.7 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 17.7 min (major), 14.0 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.69 – 7.66 (m, 2H), 7.52 – 7.39 (m, 5H), 7.32 – 7.28 (m, 1H), 7.04 – 7.01 (m, 2H), 6.84 – 6.81 (m, 2H), 6.73 – 6.70 (m, 2H), 5.39 (s, 1H), 4.79 (br, 1H), 3.77 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.0, 152.8, 150.6, 140.1, 137.4, 129.5, 129.1, 128.6, 127.5, 126.2, 121.2, 114.84, 114.81, 61.8, 55.6 ppm.

IR (thin film) 3405, 3037, 2941, 1756, 1592, 1510, 1300, 1241, 1183, 1033 cm^{-1}.

HRMS (CI+) Calcd for $C_{21}H_{20}NO_3$ $[M+H]^+$: 334.1443, found: 334.1433.



3g

Benzyl (*S*)-2-(4-chlorophenyl)-2-((4-methoxyphenyl)amino)acetate (3g) was prepared as a light yellow solid according to the General Procedure D (66 h at –10 °C, eluent: *n*-hexane/ethyl acetate = 10:1, 72.6 mg, 95% yield, 94% ee).

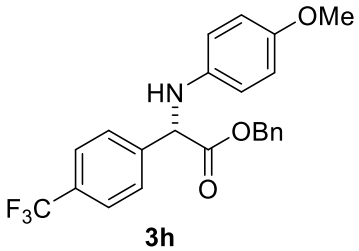
$[\alpha]_D^{25}$: +52.2 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 14.4 min (major), 12.1 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.53 – 7.50 (m, 2H), 7.42 – 7.36 (m, 5H), 7.27 – 7.25 (m, 2H), 6.79 – 6.75 (m, 2H), 6.61 – 6.57 (m, 2H), 5.26 – 5.15 (m, 3H), 4.83 (br, 1H), 3.74 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.4, 152.7, 139.9, 136.6, 135.4, 134.0, 128.9, 128.8, 128.5, 128.4, 127.9, 114.78, 114.76, 67.4, 61.0, 55.5 ppm.

IR (thin film) 3410, 3008, 2841, 1742, 1597, 1510, 1244, 1177, 1025 cm^{-1}.

HRMS (CI+) Calcd for $C_{22}H_{20}ClNO_3$ $[M]^+$: 381.1132, found: 381.1130.



3h

Benzyl (*S*)-2-((4-methoxyphenyl)amino)-2-(4-(trifluoromethyl)phenyl)acetate (3h) was prepared as a light yellow solid according to the General Procedure D (60 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 64.8 mg, 78% yield, 91% ee).

$[\alpha]_D^{25}$: +40.5 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 10.6 min (major), 9.0 min (minor).

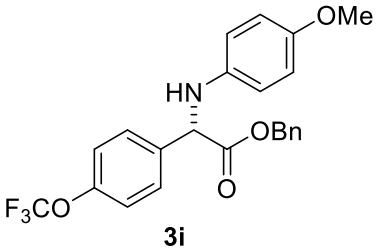
^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.73 – 7.67 (m, 4H), 7.38 – 7.36 (m, 3H), 7.25 – 7.23 (m, 2H), 6.79 – 6.76 (m, 2H), 6.60 – 6.58 (m, 2H), 5.27 – 5.18 (m, 3H), 4.91 (br, 1H), 3.74 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.0, 152.8, 142.3, 139.7, 135.3, 130.2 (q, $^2J_{C\text{-}F}$ = 32.0 Hz), 128.5, 128.4, 127.9 (2C), 125.7 (q, $^3J_{C\text{-}F}$ = 3.6 Hz), 124.2 (q, $^1J_{C\text{-}F}$ = 270.4 Hz), 114.8 (2C), 67.5, 61.3, 55.5 ppm.

^{19}F NMR (376 MHz, CD_2Cl_2) δ –62.8 ppm.

IR (thin film) 3401, 2945, 2837, 1739, 1616, 1513, 1456, 1318, 1235, 1168, 1061 cm^{-1}.

HRMS (CI+) Calcd for $C_{23}H_{20}F_3NO_3$ $[M]^+$: 415.1395, found: 415.1393.



3i

Benzyl (*S*)-2-((4-methoxyphenyl)amino)-2-(4-(trifluoromethoxy)phenyl)acetate (3i) was prepared as a light yellow solid according to the General Procedure D (91 h at –15 °C, eluent: *n*-hexane/EtOAc = 10:1, 80.2 mg, 93% yield, 90% ee).

$[\alpha]_D^{25}$: +35.3 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC

column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 10.3 min (major), 8.8 min (minor).

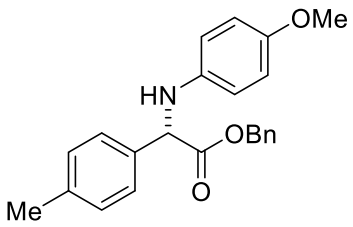
^{1}H NMR (400 MHz, acetone-d_6) δ 7.73 – 7.69 (m, 2H), 7.35 – 7.22 (m, 7H), 6.74 – 6.69 (m, 4H), 5.45 (d, J = 7.6 Hz, 1H), 5.34 – 5.33 (m, 1H), 5.23 – 5.16 (m, 2H), 3.67 (s, 3H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.3, 152.6, 148.7, 140.6, 137.7, 136.0, 129.4, 128.3, 128.0, 127.7, 121.1, 120.5 (q, $^{1}J_{C\text{-}F}$ = 254.0 Hz), 114.8, 114.5, 66.6, 60.6, 54.8 ppm.

^{19}F NMR (376 MHz, acetone-d_6) δ –58.5 ppm.

IR (thin film) 3404, 3031, 2943, 1740, 1511, 1238, 1170, 1031 cm^{-1}.

HRMS (CI+) Calcd for $C_{23}H_{21}F_3NO_4$ $[M+H]^+$: 432.1423, found: 432.1429.



3j

Benzyl (*S*)-2-((4-methoxyphenyl)amino)-2-(p-tolyl)acetate (3j) was prepared as a white solid according to the General Procedure D (46 h at –15 °C, eluent: *n*-hexane/EtOAc = 10:1, 65.1 mg, 90% yield, 97% ee).

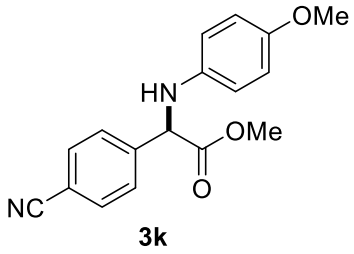
$[\alpha]_D^{25}$: +55.6 (c = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 3% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 26.6 min (major), 23.3 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.44 – 7.42 (m, 2H), 7.38 – 7.35 (m, 3H), 7.26 – 7.23 (m, 4H), 6.78 – 6.74 (m, 2H), 6.62 – 6.59 (m, 2H), 5.26 – 5.13 (m, 3H), 4.74 (d, J = 5.6 Hz, 1H), 3.74 (s, 3H), 2.40 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 172.0, 152.5, 140.3, 138.3, 135.7, 134.8, 129.5, 128.5, 128.2, 127.8, 127.2, 114.7 (2C), 67.1, 61.3, 55.5, 20.9 ppm.

IR (thin film) 3403, 3033, 2941, 2839, 1738, 1512, 1455, 1303, 1238, 1174, 1033 cm^{-1}.

HRMS (CI+) Calcd for $C_{23}H_{23}NNaO_3$ $[M+Na]^+$: 384.1576, found: 384.1584.



3k

Methyl (*R*)-2-(4-cyanophenyl)-2-((4-methoxyphenyl)amino)acetate (3k) was prepared as a yellow oil according to the General Procedure D, except that (*R*)-**C5** was used as the catalyst (12 h at 25 °C, 55.1 mg, 93% yield, 86% ee).

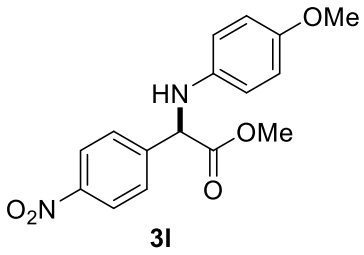
$[\alpha]_D^{25}$: −114.2 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 15% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 30.5 min (major), 35.7 min (minor).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.66 (s, 4H), 6.74 – 6.72 (m, 2H), 6.50 – 6.48 (m, 2H), 5.09 (d, *J* = 5.2 Hz, 1H), 4.85 (d, *J* = 5.2 Hz, 1H), 3.76 (s, 3H), 3.72 (s, 3H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 171.2, 152.8, 143.4, 139.4, 132.7, 128.1, 118.6, 114.9, 114.8, 112.2, 61.3, 55.7, 53.2 ppm.

IR (thin film) 3394, 2945, 2839, 1739, 1510, 1304, 1232, 1028 cm^{-1}.

HRMS (CI+) Calcd for $C_{17}H_{17}N_2O_3$ $[M+H]^+$: 297.1239, found: 297.1237.



3l

Methyl (*R*)-2-((4-methoxyphenyl)amino)-2-(4-nitrophenyl)acetate (3l) was prepared as a brown oil according to the General Procedure D, except that (*R*)-**C5** was used as the catalyst (12 h at 25 °C, 59.5 mg, 94% yield, 81% ee).

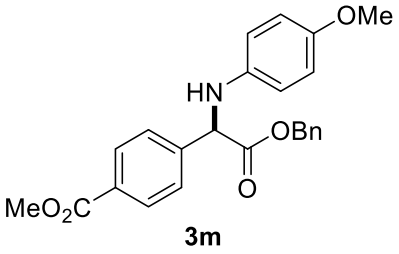
$[\alpha]_D^{25}$: −134.1 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 10% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 29.9 min (major), 35.7 min (minor).

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.25 – 8.22 (m, 2H), 7.74 – 7.71 (m, 2H), 6.76 – 6.72 (m, 2H), 6.51 – 6.47 (m, 2H), 5.14 (d, *J* = 5.0 Hz, 1H), 4.87 (d, *J* = 5.0 Hz, 1H), 3.78 (s, 3H), 3.72 (s, 3H) ppm.

^{13}C NMR (100 MHz, $CDCl_3$) δ 171.0, 152.9, 147.9, 145.4, 139.3, 128.3, 124.1, 114.9, 114.8, 61.2, 55.7, 53.3 ppm.

IR (thin film) 3400, 2947, 2842, 1741, 1602, 1515, 1450, 1343, 1236, 1181, 1033 cm^{-1}.

HRMS (CI+) Calcd for $C_{16}H_{17}N_2O_5$ $[M+H]^+$: 317.1137, found: 317.1136.



3m

Methyl (*R*)-4-(2-(benzyloxy)-1-((4-methoxyphenyl)amino)-2-oxoethyl)benzoate (3m) was prepared as a white solid according to the General Procedure D, except that (*R*)-**C5** was used as the catalyst (12 h at 25 °C, 78.7 mg, 97% yield, 90% ee).

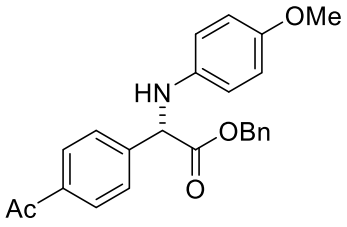
$[\alpha]_D^{25}$: –39.2 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 10% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 26.1 min (major), 36.6 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 8.02 – 8.00 (m, 2H), 7.72 – 7.70 (m, 2H), 7.33 – 7.23 (m, 5H), 6.74 – 6.69 (m, 4H), 5.47 (d, *J* = 7.7 Hz, 1H), 5.38 – 5.36 (m, 1H), 5.23 – 5.15 (m, 2H), 3.88 (s, 3H), 3.66 (s, 3H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.1, 166.1, 152.6, 143.6, 140.5, 135.9, 130.0, 129.6, 128.4, 128.1, 127.79, 127.75, 114.9, 114.5, 66.8, 61.1, 54.9, 51.5 ppm.

IR (thin film) 3399, 2947, 2843, 1729, 1513, 1446, 1283, 1178, 1114, 1028 cm^{-1}.

HRMS (CI+) Calcd for $C_{24}H_{24}NO_5$ $[M+H]^+$: 406.1654, found: 406.1657.



3n

Benzyl (*S*)-2-(4-acetylphenyl)-2-((4-methoxyphenyl)amino)acetate (3n) was prepared as a light yellow solid according to the General Procedure D (64 h at –15 °C, eluent: *n*-hexane/EtOAc = 10:1 to 5:1, 43.6 mg, 56% yield (>90% based on recovered starting material, 95% ee).

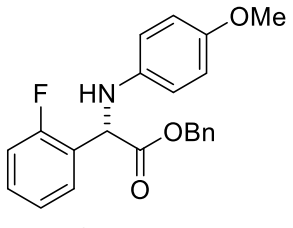
$[\alpha]_D^{25}$: +64.9 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® OD-H column; 20% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 26.5 min (major), 24.1 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.97 – 7.94 (m, 2H), 7.64 – 7.62 (m, 2H), 7.34 – 7.32 (m, 3H), 7.23 – 7.20 (m, 2H), 6.73 – 6.71 (m, 2H), 6.56 – 6.54 (m, 2H), 5.23 – 5.13 (m, 3H), 4.84 (d, *J* = 5.7 Hz, 1H), 3.70 (s, 3H), 2.59 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 196.7, 170.4, 152.1, 142.4, 139.1, 136.5, 134.7, 128.1, 127.9, 127.7, 127.2, 126.9, 114.10, 114.08, 66.8, 60.8, 54.9, 25.9 ppm.

IR (thin film) 3399, 2948, 2838, 1741, 1681, 1604, 1513, 1445, 1244, 1175, 1030 cm^{-1}.

HRMS (CI+) Calcd for $C_{24}H_{24}NO_4$ $[M+H]^+$: 390.1705, found: 390.1708.



3o

Benzyl (*S*)-2-(2-fluorophenyl)-2-((4-methoxyphenyl)amino)acetate (3o) was prepared as a light yellow oil according to the General Procedure D (48 h at 25 °C, eluent: *n*-hexane/EtOAc = 10:1, 82% yield, 74% ee).

$[\alpha]_D^{25}$: +71.4 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 14.6 min (major), 11.9

min (minor).

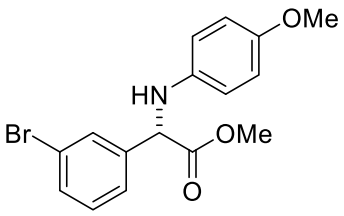
^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.51 – 7.47 (m, 1H), 7.40 – 7.34 (m, 4H), 7.26 – 7.16 (m, 4H), 6.80 – 6.76 (m, 2H), 6.66 – 6.62 (m, 2H), 5.53 (s, 1H), 5.27 – 5.19 (m, 2H), 4.81 (br, 1H), 3.74 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.2, 160.9 (d, $^{1}J_{C\text{-}F}$ = 245.7 Hz), 152.8, 139.8, 135.5, 130.0 (d, $^{3}J_{C\text{-}F}$ = 8.4 Hz), 128.5, 128.3 (d, $^{4}J_{C\text{-}F}$ = 3.3 Hz), 128.2, 127.6, 125.4 (d, $^{2}J_{C\text{-}F}$ = 13.9 Hz), 124.6 (d, $^{3}J_{C\text{-}F}$ = 3.3 Hz), 115.7 (d, $^{2}J_{C\text{-}F}$ = 21.8 Hz), 114.8, 114.7, 67.3, 55.5, 54.9 (d, $^{3}J_{C\text{-}F}$ = 2.9 Hz) ppm.

^{19}F NMR (376 MHz, CD_2Cl_2) δ –118.8 ppm.

IR (thin film) 3397, 3034, 2945, 2834, 1737, 1509, 1300, 1230, 1033, 980 cm^{-1}.

HRMS (CI+) Calcd for $C_{22}H_{20}FNNaO_3$ $[M+Na]^+$: 388.1325, found: 388.1330.



3p

Methyl (*S*)-2-(3-bromophenyl)-2-((4-methoxyphenyl)amino)acetate (3p) was prepared as a light yellow oil according to the General Procedure D (64 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 63.7 mg, 91% yield, 92% ee).

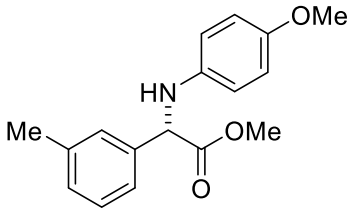
$[\alpha]_D^{25}$: +110.4 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 13.7 min (major), 11.8 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 7.77 – 7.76 (m, 1H), 7.58 – 7.56 (m, 1H), 7.51 – 7.49 (m, 1H), 7.33 (t, *J* = 7.9 Hz, 1H), 6.74 – 6.67 (m, 4H), 5.43 (d, *J* = 7.5 Hz, 1H), 5.22 (d, *J* = 7.5 Hz, 1H), 3.70 (s, 3H), 3.67 (s, 3H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.7, 152.5, 141.3, 140.4, 131.0, 130.6, 130.3, 126.5, 122.2, 114.8, 114.5, 60.5, 54.8, 52.1 ppm.

IR (thin film) 3400, 3003, 2949, 2837, 1738, 1512, 1297, 1235, 1180, 1034 cm^{-1}.

HRMS (CI+) Calcd for $C_{16}H_{16}BrNO_3$ [M]$^+$: 349.0314, found: 349.0316.



3q

Methyl (*S*)-2-((4-methoxyphenyl)amino)-2-(*m*-tolyl)acetate (3q) was prepared as a light yellow oil according to the General Procedure D (60 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 50.8 mg, 89% yield, 93% ee).

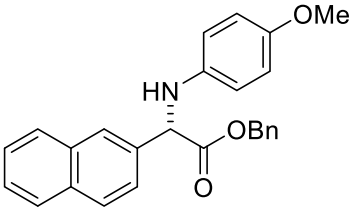
$[\alpha]_D^{25}$: +115.4 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 15.9 min (major), 14.7 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.36 – 7.28 (m, 3H), 7.20 – 7.18 (m, 1H), 6.79 – 6.75 (m, 2H), 6.62 – 6.58 (m, 2H), 5.06 (d, *J* = 4.1 Hz, 1H), 4.75 (br, 1H), 3.75 (s, 3H), 3.74 (s, 3H), 2.40 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 172.5, 152.5, 140.3, 138.7, 138.0, 129.0, 128.6, 127.9, 124.4, 114.7, 114.6, 61.4, 55.5, 52.5, 21.2 ppm.

IR (thin film) 3403, 3009, 2948, 2838, 1738, 1511, 1451, 1302, 1237, 1034 cm^{-1}.

HRMS (CI+) Calcd for $C_{17}H_{19}NNaO_3$ [M+Na]$^+$: 308.1263, found: 308.1266.



3r

Benzyl (*S*)-2-((4-methoxyphenyl)amino)-2-(naphthalen-2-yl)acetate (3r) was prepared as a light yellow solid according to the General Procedure D (91 h at –15 °C, 70.8 mg, 89% yield, 92% ee).

$[\alpha]_D^{25}$: +51.4 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC

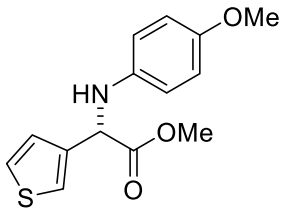
column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 22.1 min (major), 18.0 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 8.07 (s, 1H), 7.92 – 7.87 (m, 3H), 7.72 – 7.69 (m, 1H), 7.54 – 7.50 (m, 2H), 7.29 – 7.22 (m, 5H), 6.76 – 6.70 (m, 4H), 5.50 – 5.42 (m, 2H), 5.25 – 5.14 (m, 2H), 3.66 (s, 3H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.7, 152.4, 140.9, 136.1, 135.9, 133.4, 133.3, 128.3, 128.0, 127.9, 127.8, 127.6, 126.6, 126.3, 126.2, 125.4, 114.8 (2C), 114.5, 66.5, 61.5, 54.8 ppm.

IR (thin film) 3402, 3044, 2944, 2836, 1738, 1594, 1512, 1455, 1239, 1174, 1032 cm^{-1}.

HRMS (CI+) Calcd for $C_{26}H_{23}NO_3$ [M]$^+$: 397.1678, found: 397.1683.



3s

Methyl (*S*)-2-((4-methoxyphenyl)amino)-2-(thiophen-3-yl)acetate (3s) was prepared as a light yellow oil according to the General Procedure D (50 h at −15 °C, eluent: *n*-hexane/EtOAc = 10:1, 45.5 mg, 82% yield, 90% ee).

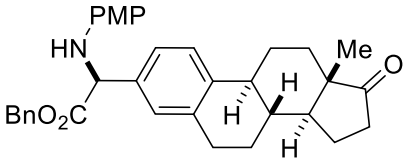
$[\alpha]_D^{25}$: +71.9 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® AD-H column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 29.5 min (major), 26.7 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.40 – 7.37 (m, 2H), 7.22 – 7.21 (m, 1H), 6.81 – 6.77 (m, 2H), 6.65 – 6.61 (m, 2H), 5.22 (s, 1H), 4.61 (br, 1H), 3.77 (s, 3H), 3.75 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 172.2, 152.8, 140.3, 138.6, 126.5, 126.4, 122.9, 114.8, 114.7, 57.6, 55.5, 52.6 ppm.

IR (thin film) 3396, 3104, 2947, 2837, 1739, 1511, 1452, 1299, 1232, 1173, 1032 cm^{-1}.

HRMS (CI+) Calcd for $C_{14}H_{15}NNaO_3S$ [M+Na]$^+$: 300.0670, found: 300.0683.



3t

Benzyl (*S*)-2-((4-methoxyphenyl)amino)-2-((8*R*,9*S*,13*S*,14*S*)-13-methyl-17-oxo-7,8,9,11,12,13,14,15,16,17-decahydro-6H-cyclopenta[a]phenanthren-3-yl)acetate (3t) was prepared as a white foam according to the General Procedure D (62 h at –15 °C, eluent: *n*-hexane/EtOAc = 10:1 to 5:1, 51.3 mg, 49% yield, >30:1 dr). The yield was >95% based on recovered starting material.

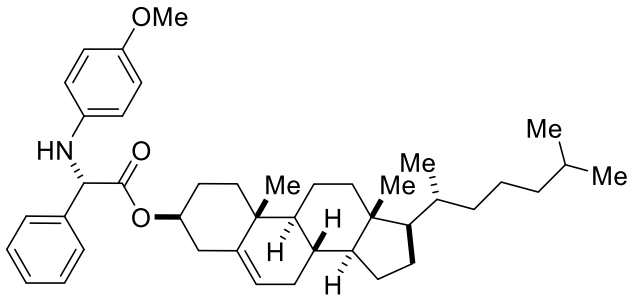
$[\alpha]_D^{25}$: +123.6 (*c* = 1.0, CH_2Cl_2).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.41 – 7.33 (m, 4H), 7.30 – 7.23 (m, 4H), 6.77 – 6.75 (m, 2H), 6.61 – 6.59 (m, 2H), 5.24 – 5.14 (m, 2H), 5.09 (s, 1H), 4.71 – 4.70 (m, 1H), 3.74 (s, 3H), 2.95 – 2.92 (m, 2H), 2.55 – 2.43 (m, 2H), 2.38 – 2.33 (m, 1H), 2.20 – 2.05 (m, 3H), 1.98 – 1.94 (m, 1H), 1.70 – 1.46 (m, 6H), 0.94 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 220.2, 172.0, 152.5, 140.3, 140.2, 137.3, 135.7, 135.0, 128.4, 128.2, 127.8, 127.7, 125.8, 124.6, 114.7, 114.6, 67.0, 61.3, 55.5, 50.5, 47.8, 44.4, 38.1, 35.8, 31.7, 29.4, 26.4, 25.7, 21.5, 13.7 ppm.

IR (thin film) 3393, 2930, 1733, 1510, 1308, 1232, 1169, 1027 cm^{-1}.

HRMS (CI+) Calcd for $C_{34}H_{37}NNaO_4$ $[M+Na]^+$: 546.2620, found: 546.2628.



3u

(3*S*,8*S*,9*S*,10*R*,13*R*,14*S*,17*R*)-10,13-Dimethyl-17-((*R*)-6-methylheptan-2-yl)-2,3,4,7,8,9,10,11,12,13,14,15,16,17-tetradecahydro-1H-cyclopenta[a]phenanthren-3-yl (*S*)-2-((4-methoxyphenyl)amino)-2-phenylacetate (3u) was prepared as a light yellow

foam according to the General Procedure D (0.1 mmol scale, 50 h at –15 °C, eluent: *n*-hexane/EtOAc = 10:1, 54.5 mg, 87% yield, >50:1 dr).

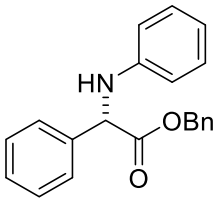
$[\alpha]_D^{25}$: +18.2 (*c* = 1.0, CH_2Cl_2).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.56 – 7.53 (m, 2H), 7.44 – 7.34 (m, 3H), 6.78 – 6.74 (m, 2H), 6.61 – 6.57 (m, 2H), 5.37 – 5.35 (m, 1H), 5.06 (s, 1H), 4.75 – 4.63 (m, 2H), 3.73 (s, 3H), 2.25 – 1.85 (m, 7H), 1.74 – 1.41 (m, 10H), 1.38 – 1.12 (m, 8H), 1.10 – 1.02 (m, 5H), 1.01 – 0.98 (m, 4H), 0.94 (d, *J* = 1.5 Hz, 3H), 0.92 (d, *J* = 1.5 Hz, 3H), 0.74 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.3, 152.5, 140.3, 139.4, 138.2, 128.7, 128.1, 127.2, 122.8, 114.7, 114.6, 75.4, 61.6, 56.7, 56.2, 55.5, 50.1, 42.3, 39.8, 39.5, 37.6, 36.9, 36.5, 36.2, 35.8, 31.9, 31.8, 28.2, 28.0, 27.7, 24.3, 23.8, 22.6, 22.4, 21.0, 19.1, 18.5, 11.6 ppm.

IR (thin film) 3410, 2938, 1730, 1511, 1310, 1230, 1015 cm^{-1}.

HRMS (CI+) Calcd for $C_{42}H_{59}NNaO_3$ $[M+Na]^+$: 648.4393, found: 648.4398.



4a

Benzyl (*S*)-2-phenyl-2-(phenylamino)acetate (4a) was prepared as a light yellow oil according to the General Procedure D (60 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 60.3 mg, 95% yield, 94% ee).

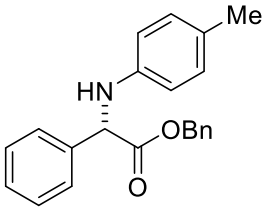
$[\alpha]_D^{25}$: +49.4 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 8.2 min (major), 6.3 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.60 – 7.57 (m, 2H), 7.47 – 7.36 (m, 6H), 7.29 – 7.25 (m, 2H), 7.21 – 7.16 (m, 2H), 6.79 – 6.75 (m, 1H), 6.67 – 664 (m, 2H), 5.29 – 5.18 (m, 3H), 5.11 (br, 1H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.6, 146.1, 137.7, 135.6, 129.2, 128.9, 128.5, 128.4, 128.3, 127.8, 127.4, 118.1, 113.4, 67.3, 60.7 ppm.

IR (thin film) 3406, 3036, 2941, 1735, 1600, 1501, 1449, 1308, 1241, 1169, 1076 cm^{-1}.

HRMS (CI+) Calcd for $C_{21}H_{19}NNaO_2$ $[M+Na]^+$: 340.1313, found: 340.1318.



4b

Benzyl (*S*)-2-phenyl-2-(p-tolylamino)acetate (4b) was prepared as a white solid according to the General Procedure D (60 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 60.3 mg, 91% yield, 95% ee).

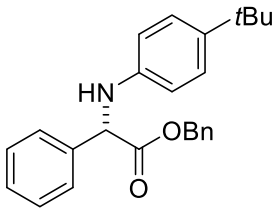
$[\alpha]_D^{25}$: +58.3 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 10.5 min (major), 7.7 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.59 – 7.57 (m, 2H), 7.47 – 7.37 (m, 6H), 7.29 – 7.26 (m, 2H), 7.02 (d, *J* = 8.4 Hz, 2H), 6.59 (d, *J* = 8.4 Hz, 2H), 5.28 – 5.18 (m, 3H), 4.96 (d, *J* = 5.7 Hz, 1H), 2.28 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.8, 143.8, 137.9, 135.6, 129.7, 128.8, 128.5, 128.32, 128.25, 127.8, 127.4 (2C), 113.6, 67.2, 61.0, 20.1 ppm.

IR (thin film) 3403, 3028, 2921, 1733, 1616, 1517, 1453, 1378, 1301, 1241, 1168 cm^{-1}.

HRMS (CI+) Calcd for $C_{22}H_{22}NO_2$ $[M+H]^+$: 332.1651, found: 332.1653.



4c

Benzyl (*S*)-2-((4-(*tert*-butyl)phenyl)amino)-2-phenylacetate (4c) was prepared as a white solid according to the General Procedure D (72 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 74.0 mg, 99% yield, 92% ee).

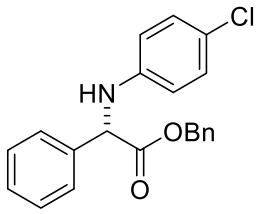
$[\alpha]_D^{25}$: +52.8 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 7.0 min (major), 8.2 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 7.60 – 7.58 (m, 2H), 7.40 – 7.29 (m, 6H), 7.25 – 7.22 (m, 2H), 7.16 – 7.13 (m, 2H), 6.70 – 6.66 (m, 2H), 5.54 (d, *J* = 7.3 Hz, 1H), 5.30 – 5.28 (m, 1H), 5.23 – 5.14 (m, 2H), 1.25 (s, 9H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.6, 144.4, 139.9, 138.3, 136.1, 128.6, 128.4, 128.1, 128.0, 127.7, 127.5, 125.6, 113.2, 66.5, 60.7, 33.4, 31.0 ppm.

IR (thin film) 3408, 3034, 2957, 1736, 1613, 1518, 1462, 1306, 1243, 1172 cm^{-1}.

HRMS (CI+) Calcd for $C_{25}H_{28}NO_2$ $[M+H]^+$: 374.2120, found: 374.2127.



4d

Benzyl (*S*)-2-((4-chlorophenyl)amino)-2-phenylacetate (4d) was prepared as a light yellow solid according to the General Procedure D (72 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 66.1 mg, 94% yield, 92% ee).

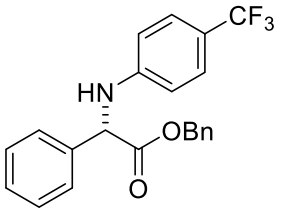
$[\alpha]_D^{25}$: +63.8 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 7.4 min (major), 6.1 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 7.58 – 7.55 (m, 2H), 7.40 – 7.30 (m, 6H), 7.26 – 7.22 (m, 2H), 7.11 – 7.07 (m, 2H), 6.77 – 6.73 (m, 2H), 5.91 (d, *J* = 7.2 Hz, 1H), 5.33 – 5.31 (m, 1H), 5.24 – 5.14 (m, 2H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.2, 145.7, 137.7 136.0, 128.70, 128.68, 128.4, 128.2, 128.0, 127.7, 127.5, 121.5, 114.8, 66.6, 60.5 ppm.

IR (thin film) 3408, 3037, 2948, 1736, 1598, 1498, 1453, 1382, 1309, 1240, 1172, 1091 972 cm^{-1}.

HRMS (CI+) Calcd for $C_{21}H_{19}ClNO_2$ [M+H]$^+$: 352.1104, found: 352.1100.



4e

Benzyl (*S*)-2-phenyl-2-((4-(trifluoromethyl)phenyl)amino)acetate (4e) was prepared as a light yellow solid according to the General Procedure D (126 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 26.2 mg, 34% yield, 85% ee). The yield was >95% based on recovered starting material.

$[\alpha]_D^{25}$: +60.2 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 5.2 min (major), 4.7 min (minor).

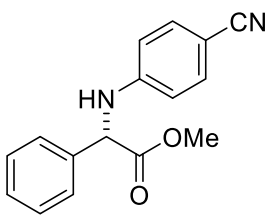
^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.55 – 7.52 (m, 2H), 7.45 – 7.33 (m, 8H), 7.24 – 7.21 (m, 2H), 6.64 (d, *J* = 8.6 Hz, 2H), 5.49 (d, *J* = 5.7 Hz, 1H), 5.27 – 5.16 (m, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.0, 148.5, 136.8, 135.3, 129.0, 128.6, 128.5, 128.3, 127.8, 127.2, 126.5 (q, $^3J_{C\text{-}F}$ = 3.4 Hz), 125.0 (q, $^1J_{C\text{-}F}$ = 267 Hz), 119.2 (q, $^2J_{C\text{-}F}$ = 31.4 Hz), 112.7, 67.5, 60.2 ppm.

^{19}F NMR (376 MHz, CD_2Cl_2) δ –61.4 ppm.

IR (thin film) 3383, 3044, 2938, 1735, 1613, 1530, 1316, 1170, 1111 cm^{-1}.

HRMS (CI+) Calcd for $C_{22}H_{19}F_3NO_2$ [M+H]$^+$: 386.1368, found: 386.1363.



4f

Methyl (*S*)-2-((4-cyanophenyl)amino)-2-phenylacetate (4f) was prepared as a light yellow oil according to the General Procedure D (67 h at 25 °C, eluent: *n*-hexane/EtOAc

= 10:1 to 5:1, 45.3 mg, 85% yield, 74% ee).

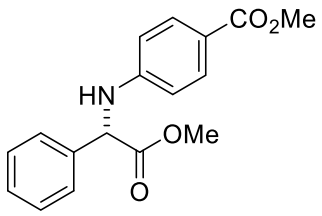
$[\alpha]_D^{25}$: +46.3 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® AD-H column; 10% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 25.1 min (major), 39.9 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 7.57 – 7.55 (m, 2H), 7.46 – 7.33 (m, 5H), 6.86 – 6.82 (m, 2H), 6.60 (d, *J* = 6.9 Hz, 1H), 5.37 (d, *J* = 6.9 Hz, 1H), 3.71 (s, 3H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.3, 150.2, 137.2, 133.3, 128.8, 128.4, 127.5, 119.7, 113.2, 99.0, 59.5, 52.1 ppm.

IR (thin film) 3402, 3036, 2922, 2857, 1740, 1606, 1522, 1446, 1332, 1244, 1173 cm^{-1}.

HRMS (CI+) Calcd for $C_{16}H_{15}N_2O_2$ $[M+H]^+$: 267.1134, found: 267.1136.



4g

Methyl (*S*)-4-((2-methoxy-2-oxo-1-phenylethyl)amino)benzoate (4g) was prepared as a white solid according to the General Procedure D (24 h at 25 °C, eluent: *n*-hexane/EtOAc = 10:1 to 5:1, 46.7 mg, 78% yield, 82% ee).

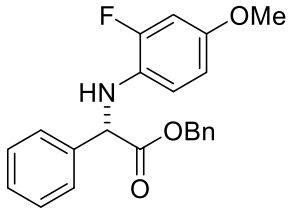
$[\alpha]_D^{25}$: +125.1 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® AD-H column; 10% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 22.5 min (major), 24.9 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.84 – 7.81(m, 2H), 7.54 – 7.51 (m, 2H), 7.44 – 7.36 (m, 3H), 6.61 – 6.59 (m, 2H), 5.60 (d, *J* = 5.9 Hz, 1H), 5.21 (d, *J* = 5.9 Hz, 1H), 3.83 (s, 3H), 3.77 (s, 3H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.6, 166.8, 149.7, 137.0, 131.2, 129.0, 128.5, 127.2, 119.3, 112.3, 60.0, 52.9, 51.4 ppm.

IR (thin film) 3405, 3059, 2945, 1735, 1701, 1603, 1523, 1432, 1324, 1283, 1173 cm^{-1}.

HRMS (CI+) Calcd for $C_{17}H_{18}NO_4$ $[M+H]^+$: 300.1236, found: 300.1237.



4h

Benzyl (*S*)-2-((2-fluoro-4-methoxyphenyl)amino)-2-phenylacetate (4h) was prepared as a light yellow solid according to the General Procedure D (72 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 70.9 mg, 97% yield, 96% ee).

$[\alpha]_D^{25}$: +47.8 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 10.3 min (major), 8.2 min (minor).

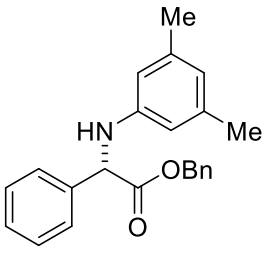
^{1}H NMR (400 MHz, acetone-d_6) δ 7.58 – 7.56 (m, 2H), 7.41 – 7.29 (m, 6H), 7.25 – 7.22 (m, 2H), 6.74 – 6.70 (m, 1H), 6.66 – 6.61 (m, 1H), 6.53 – 6.50 (m, 1H), 5.32 (d, *J* = 7.4 Hz, 1H), 5.24 – 5.16 (m, 2H), 5.07 (d, *J* = 7.4 Hz, 1H), 3.69 (s, 3H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.4, 152.4 (d, $^3J_{C\text{-}F}$ = 9.9 Hz), 152.1 (d, $^1J_{C\text{-}F}$ = 237.1 Hz), 137.9, 135.9, 128.7, 128.378 (d, $^3J_{C\text{-}F}$ = 11.8 Hz), 128.376, 128.1 (d, $^2J_{C\text{-}F}$ = 20.0 Hz), 127.7, 127.4, 114.8, 114.7, 109.3 (d, $^4J_{C\text{-}F}$ = 3.1Hz), 102.1 (d, $^2J_{C\text{-}F}$ = 22.5 Hz), 66.7, 60.9, 55.1 ppm.

^{19}F NMR (376 MHz, acetone-d_6) δ –133.4 ppm.

IR (thin film) 3413, 3035, 2945, 2838, 1738, 1516, 1454, 1379, 1294, 1159, 1096 cm^{-1}.

HRMS (CI+) Calcd for $C_{22}H_{20}FNNaO_3$ $[M+Na]^+$: 388.1325, found: 388.1329.



4i

Benzyl (*S*)-2-((3,5-dimethylphenyl)amino)-2-phenylacetate (4i) was prepared as a

white solid according to the General Procedure D (72 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 67.0 mg, 97% yield, 91% ee).

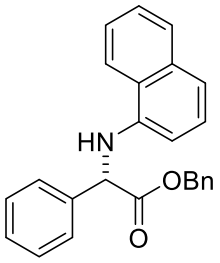
$[\alpha]_D^{25}$: +56.2 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 7.9 min (major), 5.7 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.59 – 7.57 (m, 2H), 7.47 – 7.37 (m, 6H), 7.29 – 7.26 (m, 2H), 6.46 (s, 1H), 6.31 (s, 2H), 5.30 – 5.16 (m, 3H), 4.91 (d, *J* = 6.7 Hz, 1H), 2.25 (s, 6H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.8, 146.2, 138.9, 137.9, 135.7, 128.9, 128.5, 128.33, 128.25, 127.8, 128.3, 120.2, 111.4, 67.2, 60.8, 21.2 ppm.

IR (thin film) 3412, 3039, 2924, 1738, 1601, 1500, 1330, 1179 cm^{-1}.

HRMS (CI+) Calcd for $C_{23}H_{24}NO_2$ $[M+H]^+$: 346.1807, found: 346.1809.



4j

Benzyl (*S*)-2-(naphthalen-1-ylamino)-2-phenylacetate (4j) was prepared as a light-yellow oil according to the General Procedure D (96 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 68.3 mg, 93% yield, 96% ee).

$[\alpha]_D^{25}$: –76.3 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 5% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 7.2 min (major), 6.1 min (minor).

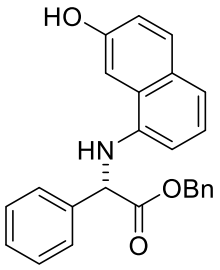
^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.91 – 7.89 (m, 1H), 7.67 – 7.65 (m, 1H), 7.47 – 7.44 (m, 2H), 7.38 – 7.33 (m, 2H), 7.27 – 7.15 (m, 6H), 7.11 – 7.03 (m, 4H), 6.25 – 6.23 (m, 1H), 5.68 (d, *J* = 5.4 Hz, 1H), 5.21 (d, *J* = 5.4 Hz, 1H), 5.12 – 5.02 (m, 2H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.7, 141.0, 137.5, 135.5, 134.4, 128.9, 128.6, 128.53,

128.48, 128.3, 127.8, 127.4, 126.3, 126.0, 125.0, 123.5, 120.1, 118.0, 105.6, 67.4, 60.9 ppm.

IR (thin film) 3426, 3049, 2947, 1735, 1582, 1524, 1474, 1405, 1311, 1171 cm^{-1}.

HRMS (CI+) Calcd for $C_{25}H_{22}NO_2$ $[M+H]^+$: 368.1651, found: 368.1653.



4k

Benzyl (*S*)-2-((7-hydroxynaphthalen-1-yl)amino)-2-phenylacetate (4k) was prepared as a light yellow oil according to the General Procedure D (78 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1 to 5:1, 39.9 mg, 52% yield, 79% ee). The yield was >95% based on recovered starting material.

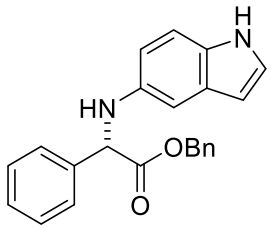
$[\alpha]_D^{25}$: –60.4 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 15% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 11.2 min (major), 8.4 min (minor).

^{1}H NMR (400 MHz, acetone-d_6) δ 8.68 (s, 1H), 7.71 (d, *J* = 8.8 Hz, 1H), 7.67 – 7.64 (m, 2H), 7.46 (d, *J* = 2.0 Hz, 1H), 7.42 – 7.34 (m, 3H), 7.33 – 7.30 (m, 3H), 7.28 – 7.24 (m, 2H), 7.18 – 7.15 (m, 2H), 7.00 (t, *J* = 7.8 Hz, 1H), 6.44 (d, *J* = 7.5 Hz, 1H), 5.72 (d, *J* = 6.0 Hz, 1H), 5.45 (d, *J* = 6.0 Hz, 1H), 5.30 – 5.20 (m, 2H) ppm.

^{13}C NMR (100 MHz, acetone-d_6) δ 171.8, 155.0, 140.1, 138.0, 136.0, 130.1, 129.1, 128.7, 128.4, 128.2, 128.0, 127.7, 127.5, 125.2, 123.1, 118.0, 117.8, 106.2, 102.7, 66.8, 60.7 ppm.

IR (thin film) 3400, 3041, 2989, 2801, 1740, 1643, 1516, 1506, 1410, 1379, 1200 cm^{-1}.

HRMS (CI+) Calcd for $C_{25}H_{22}NO_3$ $[M+H]^+$: 384.1600, found: 384.1601.



4l

Benzyl (*S*)-2-((1*H*-indol-5-yl)amino)-2-phenylacetate (4l) was prepared as a light yellow oil according to the General Procedure D (78 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1 to 5:1, 65.6 mg, 92% yield, 96% ee).

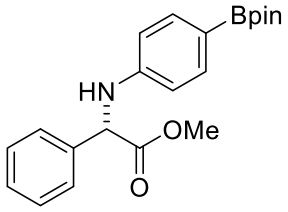
$[\alpha]_D^{25}$: +54.6 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 15% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 29.9 min (major), 21.9 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 8.14 (br, 1H), 7.64 – 7.61 (m, 2H), 7.47 – 7.36 (m, 6H), 7.29 – 7.22 (m, 3H), 7.13 (t, *J* = 2.8 Hz, 1H), 6.82 – 6.81 (m, 1H), 6.74 – 6.72 (m, 1H), 6.39 – 6.37 (m, 1H), 5.31 – 5.18 (m, 3H), 4.83 (br, 1H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 172.3, 140.1, 138.2, 135.7, 130.4, 128.8, 128.7, 128.5, 128.3, 128.2, 127.8, 127.5, 124.7, 112.4, 111.8, 103.1, 101.5, 67.1, 62.1 ppm.

IR (thin film) 3410, 3046, 2930, 1735, 1582, 1470, 1311, 1230, 1173 cm^{-1}.

HRMS (CI+) Calcd for $C_{23}H_{21}N_2O_2$ $[M+H]^+$: 357.1603, found: 357.1615.



4m

Methyl (*S*)-2-phenyl-2-((4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl) amino)acetate (4m) was prepared as a white solid according to the General Procedure D (83 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1 to 5:1, 55.1 mg, 75% yield, 94% ee).

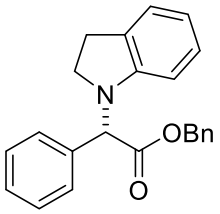
$[\alpha]_D^{25}$: +98.9 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 10% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 5.6 min (major), 7.7 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.56 – 7.51 (m, 4H), 7.43 – 7.34 (m, 3H), 6.59 (d, *J* = 8.5 Hz, 2H), 5.28 (d, *J* = 5.7 Hz, 1H), 5.20 (d, *J* = 5.7 Hz, 1H), 3.76 (s, 3H), 1.32 (s, 12H) ppm.

^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.9, 148.4, 137.5, 136.1, 128.8 (2C), 128.3, 127.2, 112.5, 83.2, 60.0, 52.7, 24.64, 24.59 ppm.

IR (thin film) 3410, 3042, 2979, 1740, 1604, 1531, 1475, 1358, 1319, 1143, 1087 cm^{-1}.

HRMS (CI+) Calcd for $C_{21}H_{27}BNO_4$ $[M+H]^+$: 368.2033, found: 368.2039.



4n

Benzyl (*S*)-2-(indolin-1-yl)-2-phenylacetate (4n) was prepared as a light yellow oil according to the General Procedure D (84 h at –10 °C, eluent: *n*-hexane/EtOAc = 10:1, 62.5 mg, 91% yield, 57% ee).

$[\alpha]_D^{25}$: +68.9 (*c* = 1.0, CH_2Cl_2). HPLC analysis of the product: Daicel CHIRALPAK® IC column; 1% *i*-PrOH in *n*-hexane; 1.0 mL/min; retention times: 15.0 min (major), 7.6 min (minor).

^{1}H NMR (400 MHz, CD_2Cl_2) δ 7.46 – 7.29 (m, 10H), 7.15 – 7.05 (m, 2H), 6.77 – 6.73 (m, 1H), 6.50 (d, *J* = 7.8 Hz, 1H), 5.43 (s, 1H), 5.30 – 5.22 (m, 2H), 3.73 – 3.66 (m, 1H), 3.20 – 3.14 (m, 1H), 3.04 – 2.88 (m, 2H) ppm.

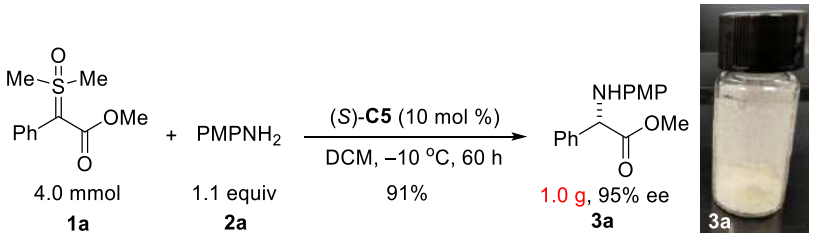
^{13}C NMR (100 MHz, CD_2Cl_2) δ 171.0, 151.0, 135.7, 135.2, 130.4, 128.8, 128.7, 128.5, 128.33, 128.25, 128.2, 127.1, 124.6, 118.3, 106.8, 66.7, 63.7, 49.8, 28.1 ppm.

IR (thin film) 3040, 2946, 2858, 1737, 1602, 1481, 1383, 1326, 1237, 1154 cm^{-1}.

HRMS (CI+) Calcd for $C_{23}H_{22}NO_2$ $[M+H]^+$: 344.1651, found: 344.1660.

IV. Gram-Scale Reaction

Gram-Scale Synthesis of 3a



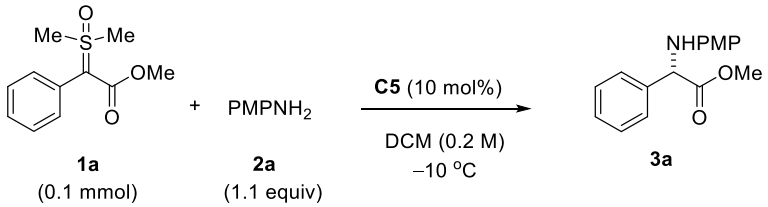
The sulfoxonium ylide **1a** (905 mg, 4 mmol, 1.0 equiv) and catalyst (*S*)-**C5** (340 mg, 0.4 mmol, 0.1 equiv) were added to a 50-mL flask equipped with a magnetic stir bar. The flask was carefully sealed with a rubber stopper and cooled to –10 °C. Then, DCM (20 mL) was injected into the flask, and the suspension was stirred at –10 °C for 15 min followed by slow addition of a solution of aniline **2a** (542 mg, 4.4 mmol, 1.1 equiv) in DCM (2.0 mL). The reaction mixture was stirred at the same temperature and the progress was monitored by TLC. Upon completion (~60 h), a clear reaction solution was obtained, and it was directly subjected to flash column chromatography on silica gel (eluent: *n*-hexane/EtOAc = 10:1) to afford the desired product **3a** as a light yellow solid (1.0 g, 91% yield, 95% ee). Moreover, the CPA catalyst (*S*)-**C5** was also recovered in 95% yield (eluent: DCM/MeOH = 50:1).

Note: Regular ACS grade solvent (DCM) was used for this reaction.

V. Mechanistic Study

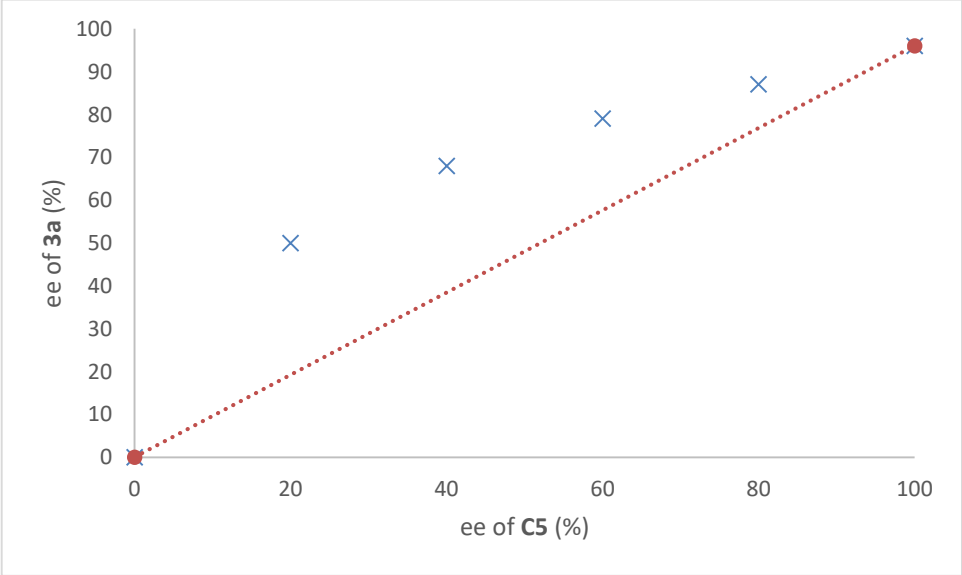
(1) Non-linear effect

a) 10 mol% C5 at –10 °C

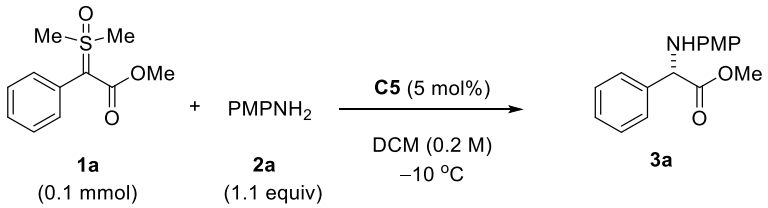


1a (0.1 mmol) **2a** (1.1 equiv) **3a**

entry	ee of **C5** (%)	ee of **3a** (%)
1	>99	96
2	80	87
3	60	79
4	40	68
5	20	50
6	0	0

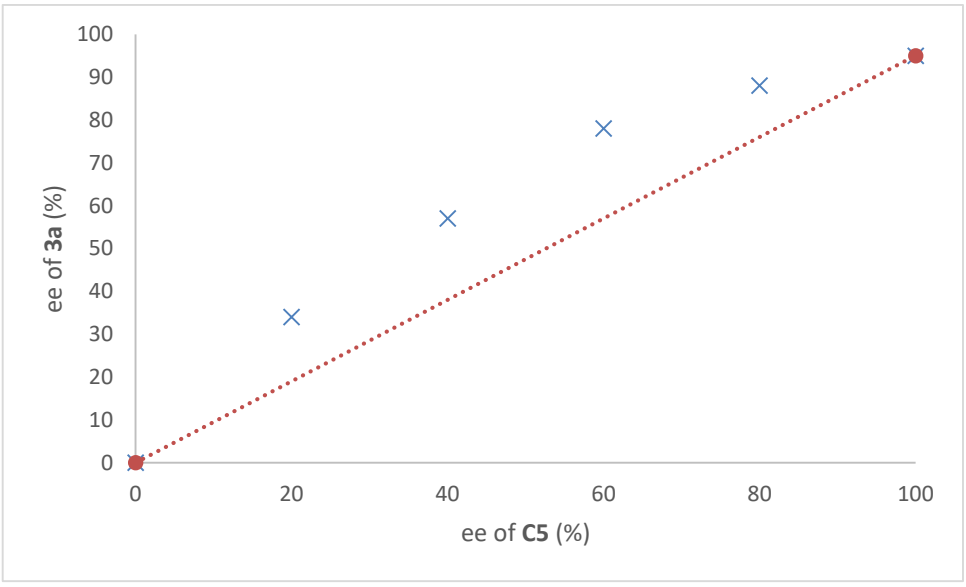


b) 5 mol % C5 at –10 °C

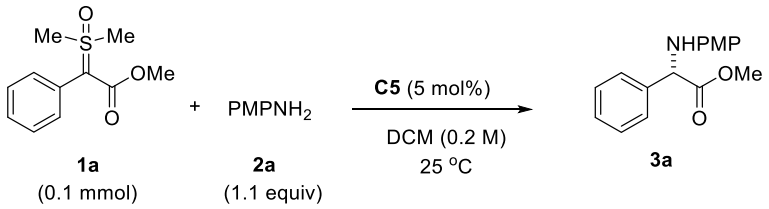


1a (0.1 mmol) + **2a** (1.1 equiv) → **3a**

entry	ee of **C5** (%)	ee of **3a** (%)
1	>99	95
2	80	88
3	60	78
4	40	57
5	20	34
6	0	0

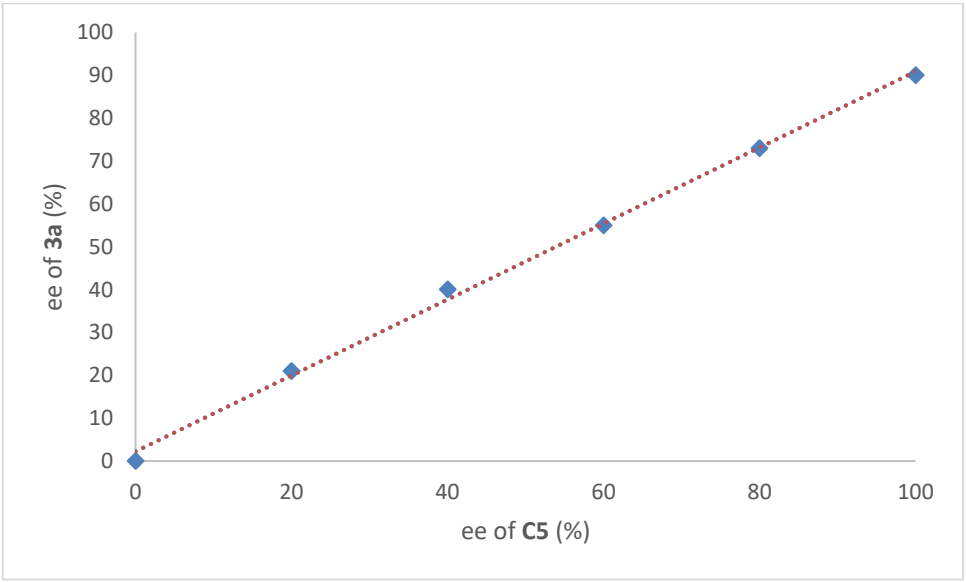


c) 5 mol% C5 at 25 °C

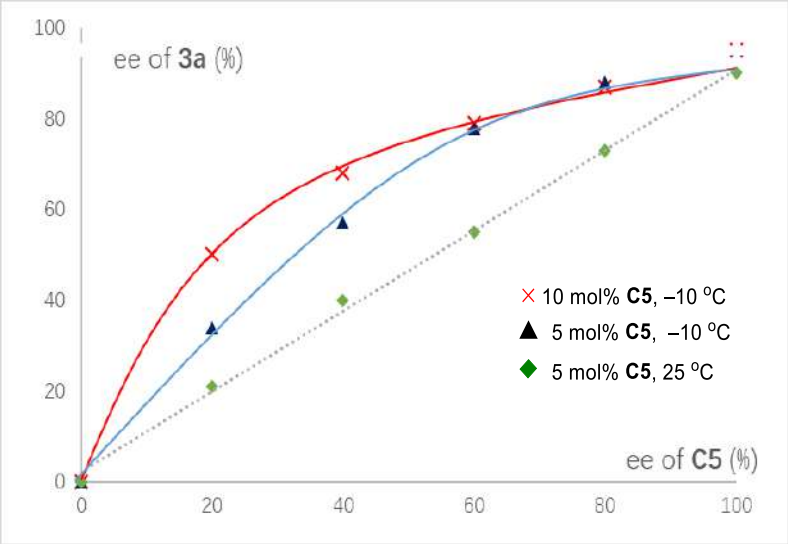


1a (0.1 mmol) + **2a** (1.1 equiv) → **3a**

entry	ee of **C5** (%)	ee of **3a** (%)
1	>99	90
2	80	73
3	60	55
4	40	40
5	20	21
6	0	0

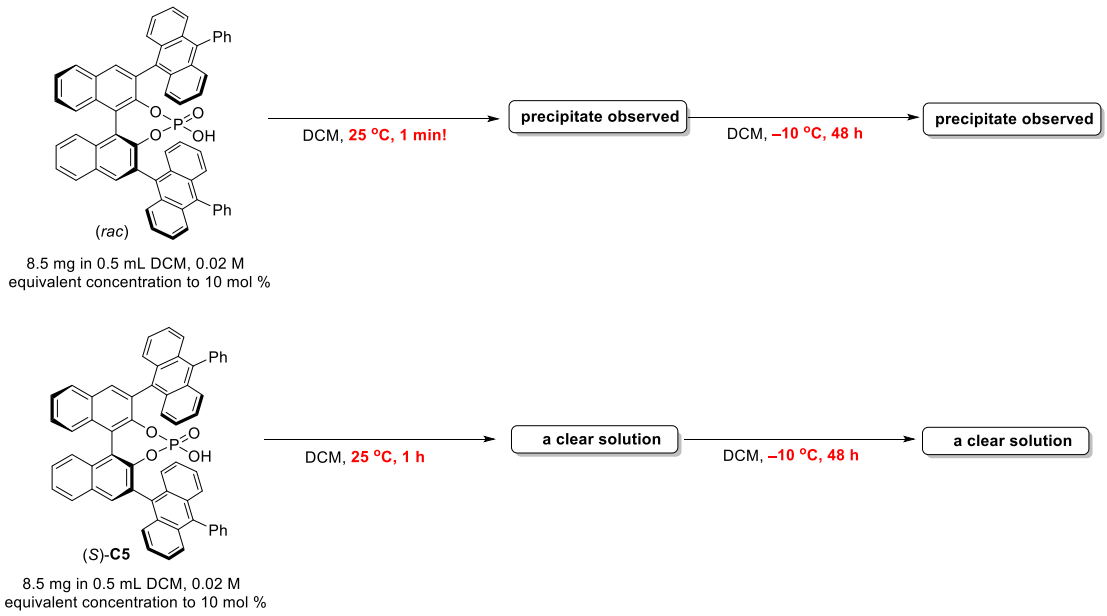


d) The overlapped plot

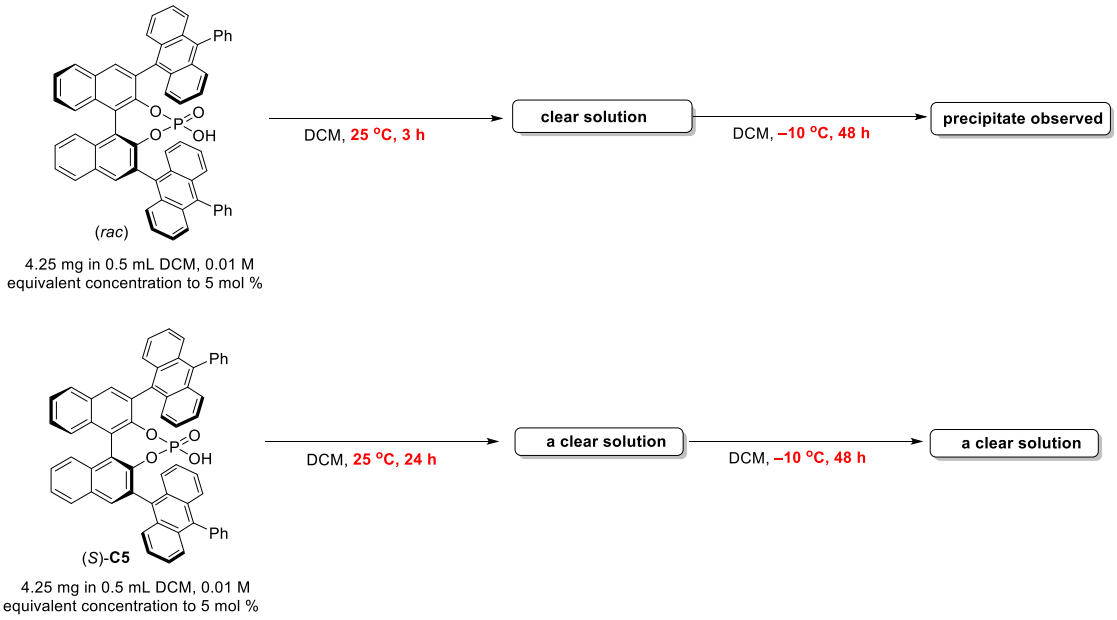


(2) Precipitation studies

The solubility of the optically pure and racemic catalyst **C5** (10 mol%, 0.02 M) was compared in DCM at 25 °C and –10 °C, respectively, to find the cause of asymmetric amplification.

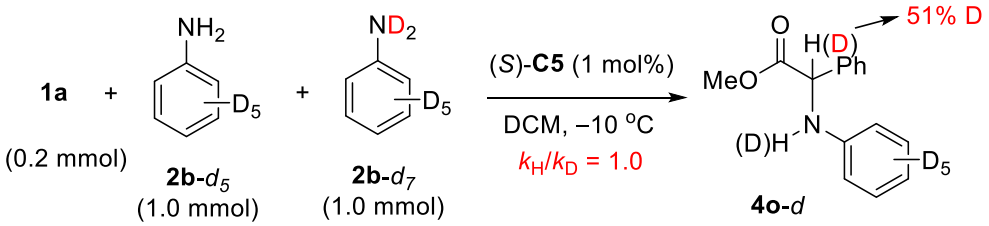


We observed that precipitate was immediately formed in less than 1 min after mixing of DCM solutions of (*R*) and (*S*)-**C5** (4.25 mg in 0.25 mL DCM, respectively). However, the solution of enantiopure **C5** kept homogeneous at room temperature even after over 1 h. Moreover, the DCM solution of racemic **C5** remained turbid after stirring at –10 °C for 48 h. In contrast, the solution of enantiopure sample remained homogeneous for 48 h at the same temperature.

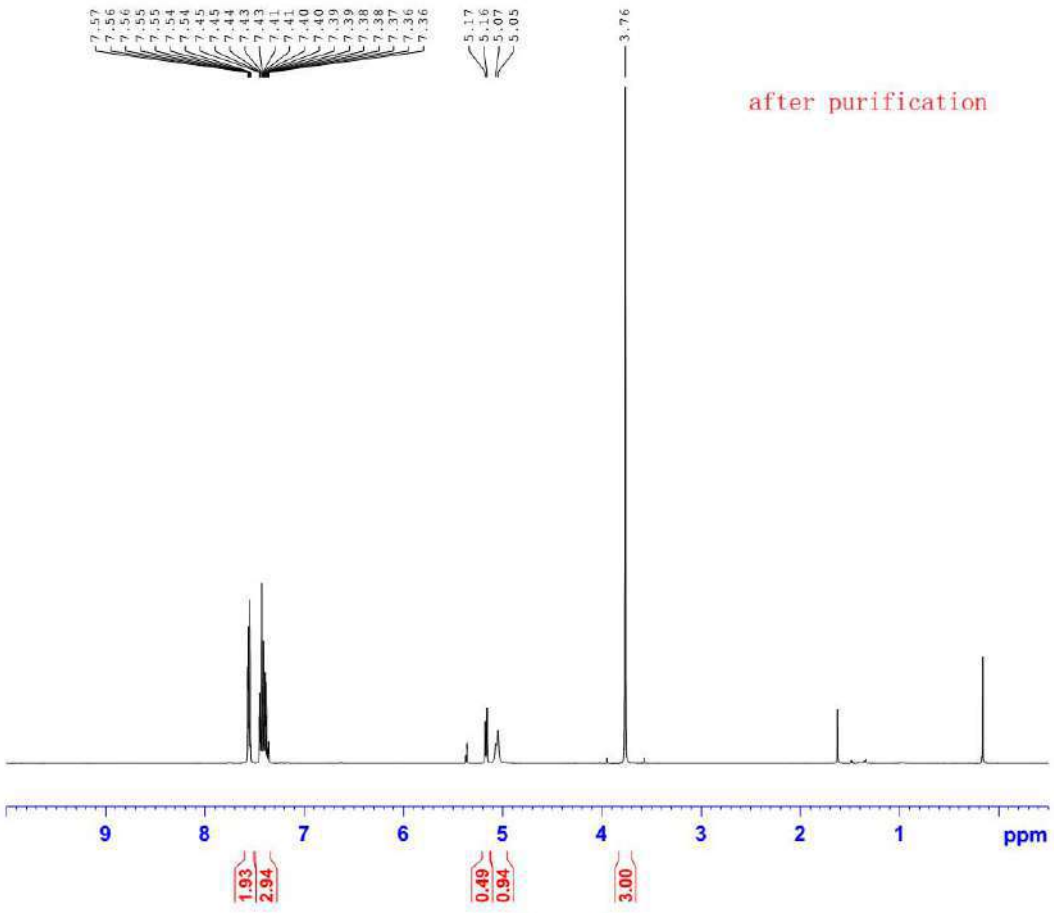


In the meantime, reducing the catalyst loading to 5 mol%, clear DCM solutions of both samples were observed at room temperature, even after an extended period of 3 h, and 24 h, respectively. However, a solution of the racemic sample gradually became turbid when cooling to –10 °C in 48 h.

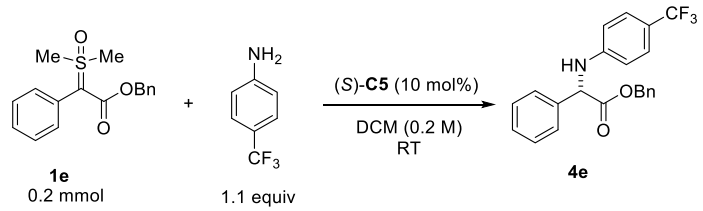
(3) Kinetic isotope effect (KIE)

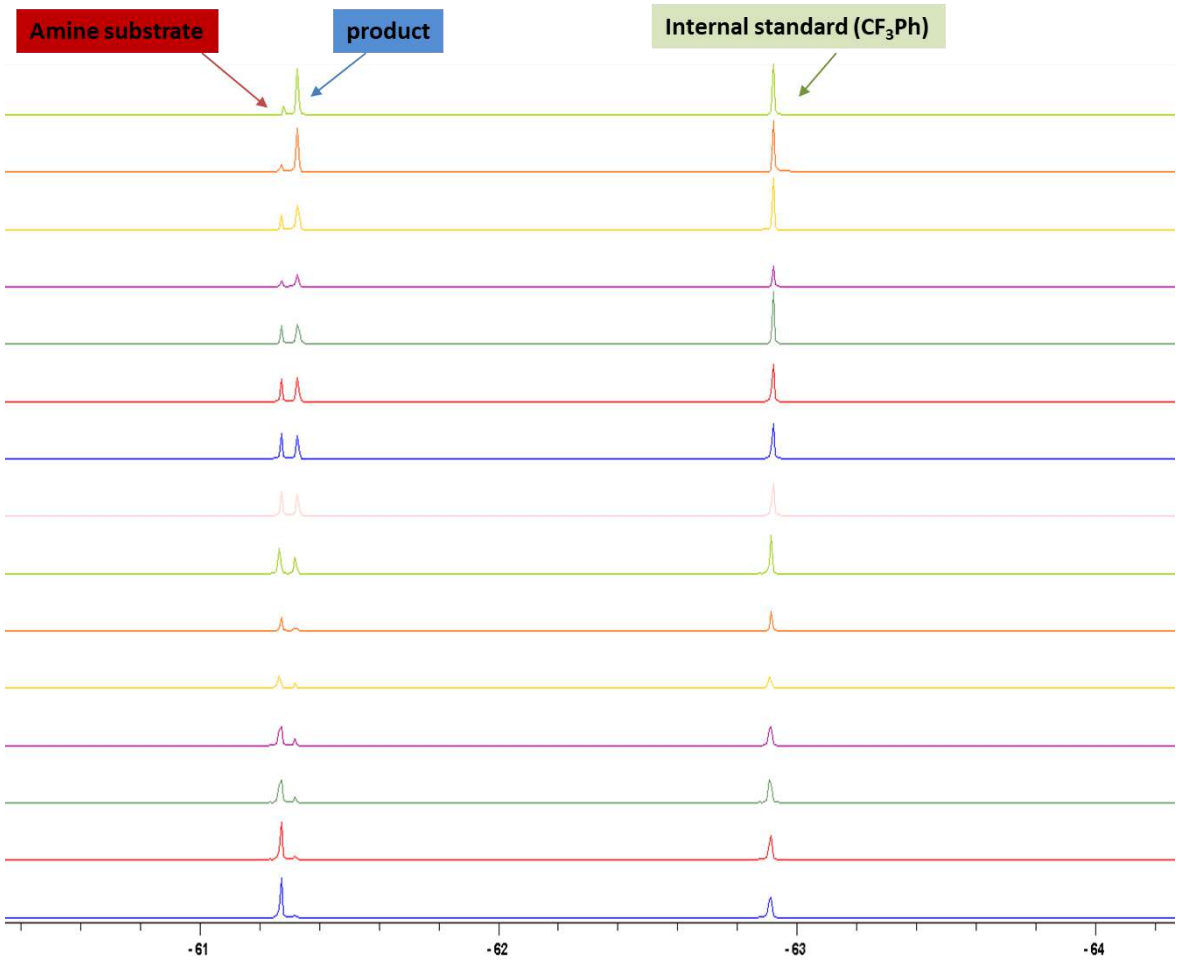


At room temperature, to an oven-dried 4 mL vial were added sulfoxonium ylide **1a** (0.2 mmol, 45.2 mg, 1.0 equiv), and (*S*)-**C5** (17.0 mg, 1 mol%). Then, the vial was sealed with a puncturable screw cap and cooled down to –10 °C, aniline **2b**-d_5 (98 mg, 1.0 mmol, 5.0 equiv), and aniline **2b**-d_7 (102 mg, 1.0 mmol, 5.0 equiv) in CD_2Cl_2 (1.0 mL) was injected into the vial. The reaction mixture was stirred at the same temperature until full conversion of **1a** (48 h). The mixture was transferred to an NMR tube for analysis, which indicated 51% D-incorporation at the α-position in the **4o-***d* product.



(4) In situ NMR kinetic analysis

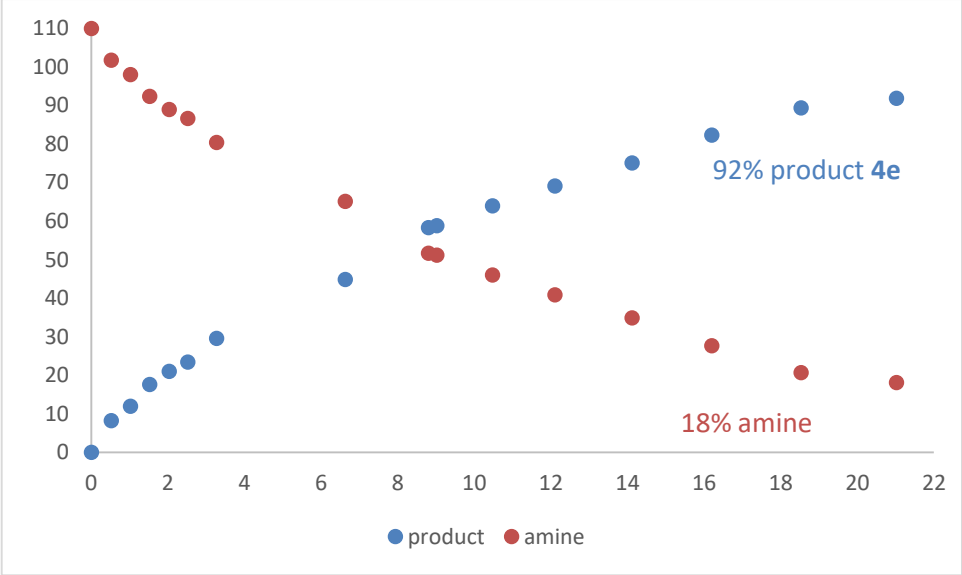




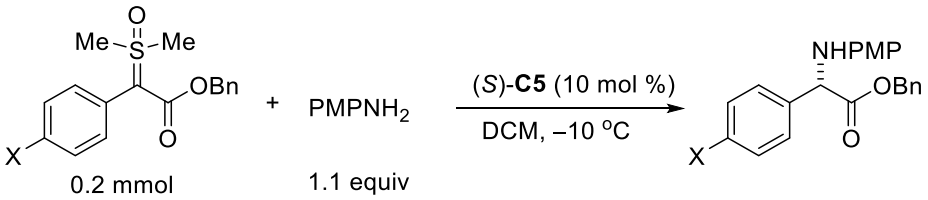
^{19}F NMR spectra overlaid in about 0.5 – 3 h intervals (t = 0.5 h on the bottom, t = 21 h at the top)

The points were collected from t = 0 to 21 h. The product NMR yield was determined by ^{19}F NMR using benzotrifluoride as an internal standard.

time/h	product(%)	amine(%)
0.00	0.00	110.00
0.52	8.25	101.75
1.02	12.00	98.00
1.52	17.65	92.35
2.03	21.00	89.00
2.52	23.40	86.60
3.27	29.60	80.40
6.63	44.85	65.15
8.80	58.35	51.65
9.02	58.85	51.15
10.47	63.95	46.05
12.10	69.10	40.90
14.12	75.10	34.90
16.20	82.30	27.70
18.53	89.35	20.65
21.02	91.90	18.10

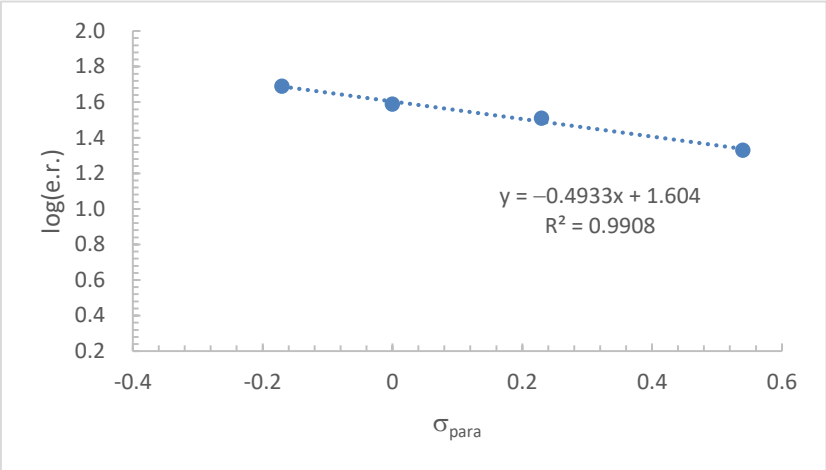


(5) The Hammett plot

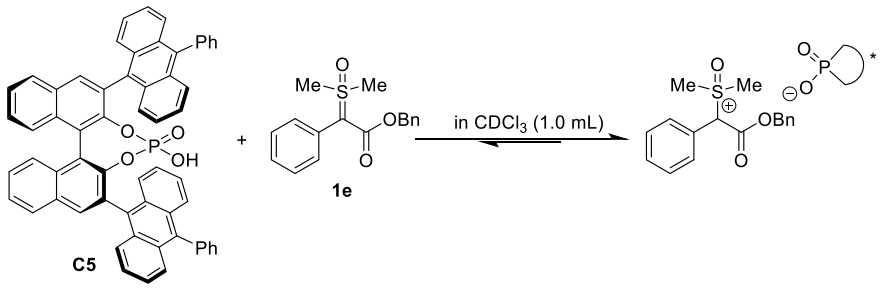


substituent	σ_{para}	log(e.r.)	e.r.
Cl	0.23	1.51	97:3
CF3	0.54	1.33	95.5:4.5
Me	–0.17	1.69	98.0:2.0[a]
H	0	1.59	97.5:2.5

[a] Reaction at –10 °C

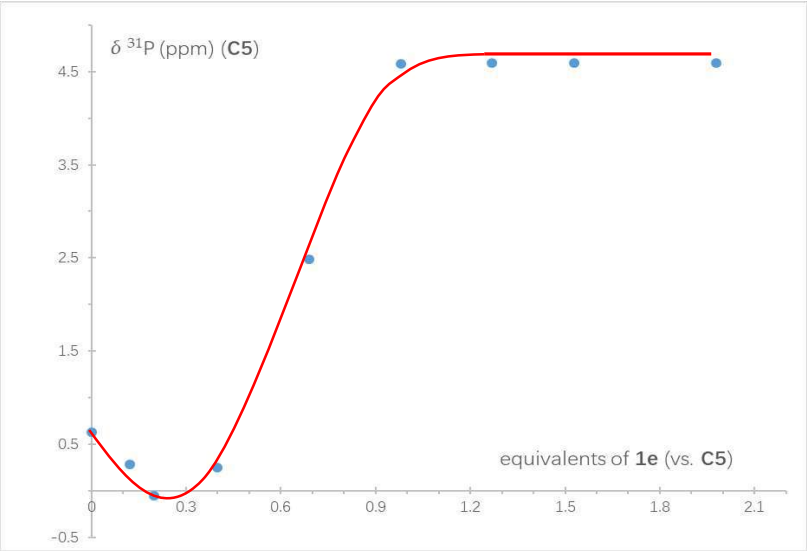


(6) ^{31}P NMR titration



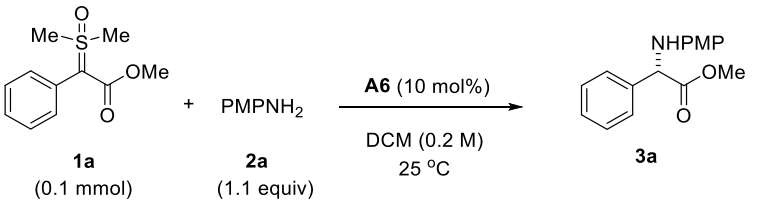
C5 [M]	**1e** [M][a]	**1e/C5**	δ (^{31}P NMR) ppm
0.0489	0.0000	0	0.6291
0.0489	0.0060	0.1227	0.2822
0.0489	0.0097	0.1984	–0.0556
0.0489	0.0195	0.3988	0.252
0.0489	0.0337	0.6892	2.4829
0.0489	0.0480	0.9816	4.5831
0.0489	0.0620	1.2679	4.5946
0.0489	0.0747	1.5276	4.5941
0.0489	0.0967	1.9775	4.5921

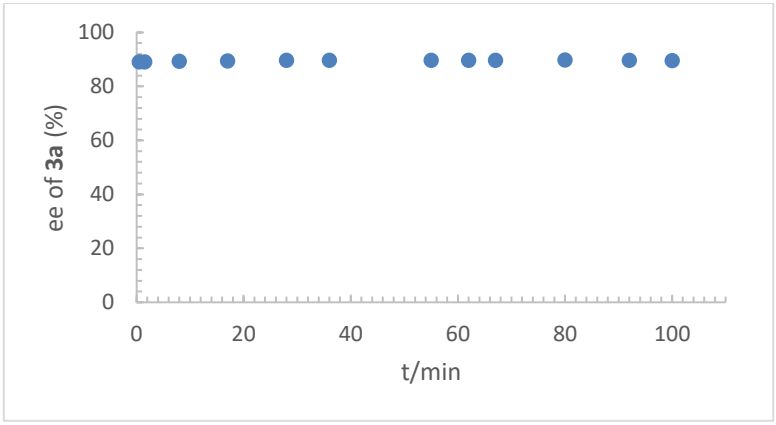
[a] Determined by using CH_2Br_2 as an internal standard.



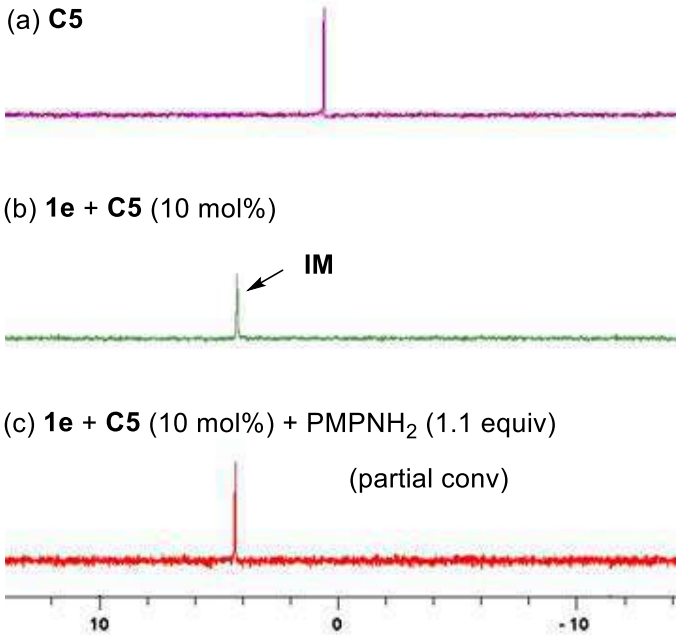
(7) Product ee dependence on time.

The enantiopurity of the product kept unchanged with conversion (Conv. < 90% in less than 8 min) and reaction time, indicating the stereoinduction is not affected by the in situ generated DMSO byproduct.





(8) ^{31}P NMR study of the reaction species involved



(a) (*S*)-**C5** in CD_2Cl_2 (purple, 0.58 ppm);

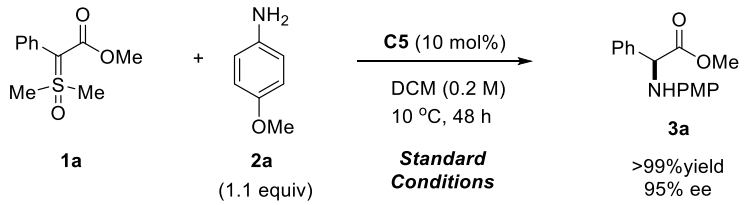
(b) **1e** + (*S*)-**C5** (green, 0.1 mmol **1e**, 10 mol% **C5**, 4.23 ppm);

(c) **1e** + (*S*)-**C5** + $PMPNH_2$ (0.1 mmol **1e**, 1.1 equiv $PMPNH_2$, 10 mol% **C5**, red, 4.30 ppm).

VI. Sensitivity Assessment

The results of the sensitivity assessment are shown in Table S3, which was conducted using the model reaction of sulfoxonium **1a** with $PMPNH_2$ **2a**. The optimized conditions were chosen as the reference for comparison. Tables S3 and S4 describe the results on yield and enantioselectivity, respectively.

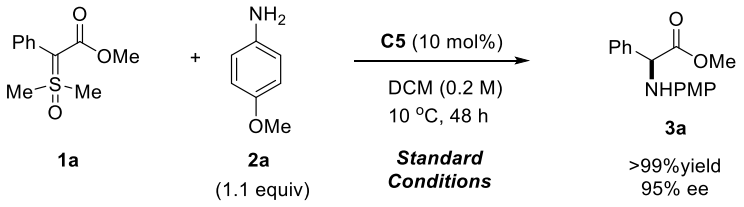
Table S3. Sensitivity assessment on the yield of **3a**[a]



Entry	Deviation from standard conditions	Symbol	Yield **3a** (%)[b]	Deviation (%)
1	/		>99	/
2	[**1a**] = 0.4 M	High *c*	>99	0
3	[**1a**] = 0.1 M	Low *c*	95	–5
4[c]	+1 vol% H_2O	Low H_2O	>99	0
5[d]	+10 vol% H_2O	High H_2O	>99	0
6[e]	1 atm O_2	High O_2	>99	0
7	T = –20 °C	Low T	>99	0
8	T = 0 °C	High T	>99	0
9	5 mol % **C5**	Low Cat.	92	–8
10	20 mol % **C5**	High Cat.	>99	0
11	Standard Conditions*20	Big Scale	>99	0

[a] Unless otherwise noted, the results are the average of two independent experiments under identical reaction conditions. [b] Yield was determined by ^1H NMR using CH_2Br_2 as the internal standard. [c] Run with 10 μL of saturated aqueous NaCl solution. [d] Run with 100 μL of saturated aqueous NaCl solution. [e] Molecular oxygen in balloon.

Table S4. Sensitivity assessment on enantioselectivity[a]



Entry	Deviation from standard conditions	Symbol	Ee of **3a** (%)[b]	Deviation (%)
1	/		95	/
2	[**1a**] = 0.4 M	High *c*	95	0
3	[**1a**] = 0.1 M	Low *c*	96	+1
4[c]	+1 vol% H_2O	Low H_2O	95	0
5[d]	+10 vol% H_2O	High H_2O	95	0
6[e]	1 atm O_2	High O_2	95	0
7	T = –20 °C	Low T	96	+1
8	T = 0 °C	High T	93	–2
9	5 mol% **C5**	Low Cat.	96	+1
10	20 mol% **C5**	High Cat.	95	0
11	Standard Conditions*20	Big Scale	95	0

[a] Unless otherwise noted, the results are the average of two independent experiments under identical reaction conditions. [b] Yield was determined by ^1H NMR using CH_2Br_2 as the internal standard. [c] Run with 10 μL of saturated aqueous NaCl solution. [d] Run with 100 μL of saturated aqueous NaCl solution. [e] Molecular oxygen in balloon.

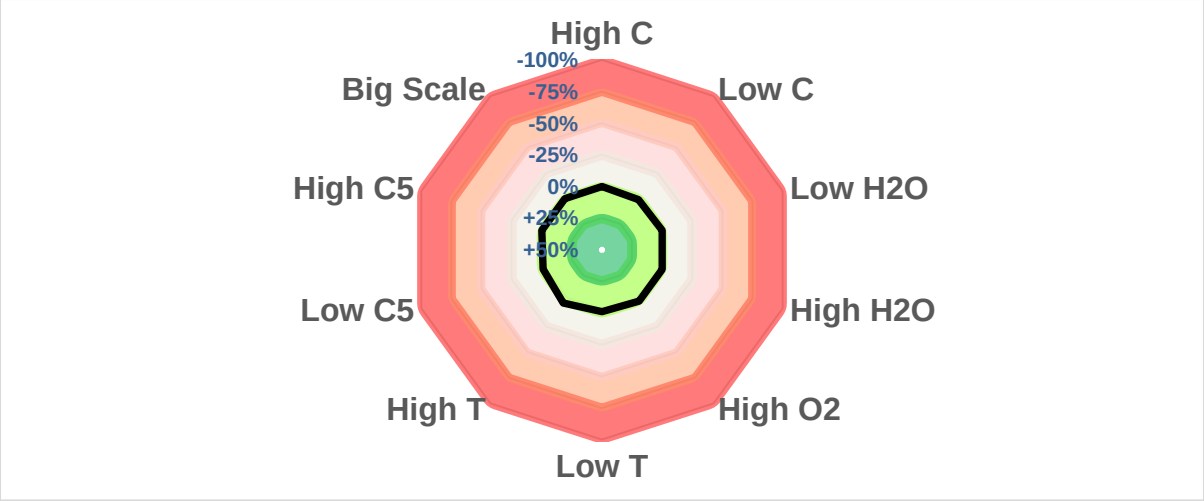


Figure S1. Sensitivity assessment on reaction yield yields.

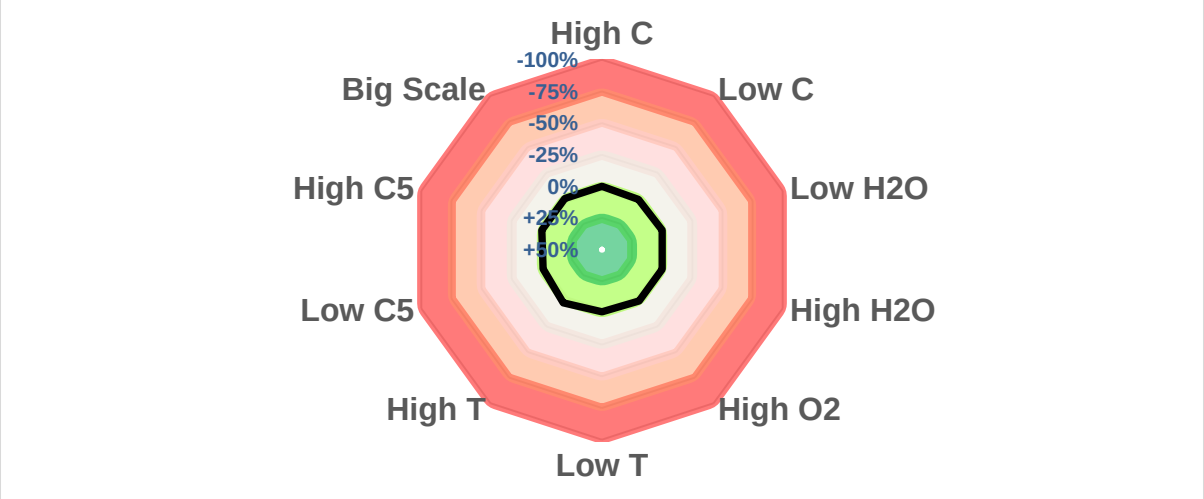


Figure S2. Sensitivity assessment on enantioselectivity.

The original method of sensitivity assessment was developed by Glorius and coworkers.[6] In the case of substrate concentrations, 0.4 M and 0.1 M were denoted as "high *c*" and "low *c*", respectively. Marginal different values in NMR yields and ee of **3a** were obtained (entries 2–3, Tables S3–4). In addition, for the concentration of water, +1 vol% H_2O (10 μL brine) and +10 vol% H_2O (100 μL brine) were denoted as "Low H_2O" and "High H_2O", respectively. To our delight, our reaction is insensitive to the concentration of water, and essentially same yield and enantioselectivity were

6 L. Pitzer, F. Schäfers, and F. Glorius. *Angew. Chem., Int. Ed.* **2019**, *58*, 8572–8576.

afforded (entries 4–5, Tables S3–4). When the reactions were conducted under the atmosphere of oxygen, the outcome also remained same (entry 6, Tables S3–4). Moreover, a slightly lower enantioselectivity was observed at 0 °C (93% ee, entries 7–8, Tables S3–4)

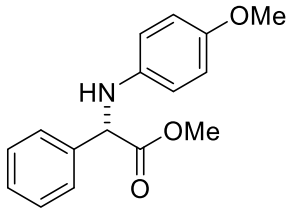
Our reaction is also insensitive to catalyst loading. The enantioselectivity remained same when the catalyst loading was increased or decreased (to 20 mol% or 5 mol%) (entries 9–10, Tables S3–4). Finally, a 20-fold scale-up reaction was also assessed, leading to the same outcome.

These findings were illustrated clearly in the radar diagram (Figure S1 and S2). In conclusion, this chiral phosphoric acid catalyzed N–H insertion reaction of sulfoxonium ylide is an eminently robust reaction.

VII. Determination of the Product Stereochemistry

The absolute stereochemistry of the α-aryl glycines products were based on (1) comparison of the optical rotation value of **3a** with the literature value and (2) single crystal X-ray crystallography of **3f.** The X-ray data have been deposited at the Cambridge Crystallographic Data Center (CCDC 2080963). The stereochemistry of other products was assumed by analogy.

(a) Comparison of the optical rotation value with the literature data.

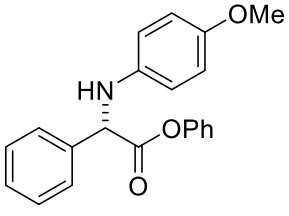


3a

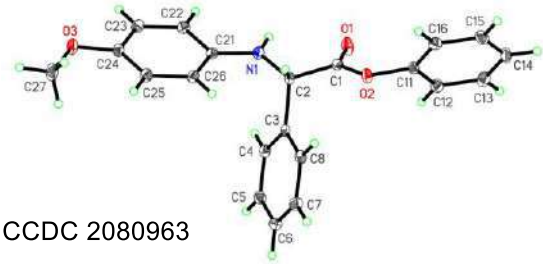
The literature optical rotation value for (*S*)-**3a** in 91% ee was reported to be $[\alpha]_D^{25}$ = +100.0 (*c* = 0.88, DCM).[7] The measured value of our product in 95% ee was $[\alpha]_D^{25}$: +106.1 (*c* = 1.0, DCM). Thus, the absolute configuration of our product was assigned to be *S*.

(b) X-ray crystallography.

The proper chiral single crystal was obtained by slow evaporation of a diethyl ether solution of **3f** at 25 °C (0.2 mmol in 5 mL Et_2O).



3f



CCDC 2080963

6 X.-H. Hu, X.-P. Hu, *Adv. Syn. Catal.* **2019**, *361*, 5063–5068.

Table S5. Crystal data and structure refinement for 3f.

Identification code	**3f**
Empirical formula	$C_{21}H_{19}NO_3$
Formula weight	333.37
Temperature/K	99.93(17)
Crystal system	monoclinic
Space group	C2
a/Å	20.2280(4)
b/Å	7.9448(2)
c/Å	10.7105(2)
α/°	90
β/°	94.888(2)
γ/°	90
Volume/Å^3	1715.00(6)
Z	4
ρ_{calc}g/cm^3	1.291
μ/mm^{-1}	0.696
F(000)	704.0
Crystal size/mm^3	0.05 × 0.05 × 0.03
Radiation	CuKα (λ = 1.54184)
2Θ range for data collection/°	8.286 to 145.13
Index ranges	-19 ≤ h ≤ 24, -9 ≤ k ≤ 9, -12 ≤ l ≤ 10
Reflections collected	4868
Independent reflections	3026 [R_{int} = 0.0180, R_{sigma} = 0.0266]
Data/restraints/parameters	3026/1/227
Goodness-of-fit on F^2	1.040
Final R indexes [I>=2σ (I)]	R_1 = 0.0283, wR_2 = 0.0686
Final R indexes [all data]	R_1 = 0.0295, wR_2 = 0.0695
Largest diff. peak/hole / e Å^{-3}	0.23/-0.20
Flack parameter	0.05(10)

Table S6. Fractional Atomic Coordinates (×10^4) and Equivalent Isotropic Displacement Parameters (Å^2×10^3) for 3f. U_{eq} is defined as 1/3 of the trace of the orthogonalised U_{IJ} tensor.

Atom	*x*	*y*	*z*	U(eq)
O^1	4590.8(7)	2350(2)	1341.1(12)	24.5(3)
O^2	4628.8(6)	2994.2(19)	3397.1(12)	18.2(3)
O^3	8668.7(6)	2188(2)	1111.5(12)	21.4(3)
N^1	5933.7(7)	2506(2)	1412.8(14)	17.2(3)
C^1	4892.1(9)	2806(2)	2286.2(17)	15.5(4)

C^{2}	5627.2(9)	3259(2)	2435.0(17)	14.7(4)
C^{3}	5705.8(9)	5169(3)	2585.9(17)	14.9(4)
C^{4}	5844.1(9)	6177(3)	1578.2(18)	17.4(4)
C^{5}	5935.2(9)	7905(3)	1741.2(18)	20.0(4)
C^{6}	5884.3(9)	8623(3)	2908.3(19)	20.8(4)
C^{7}	5742.1(10)	7624(3)	3914.9(18)	20.9(4)
C^{8}	5656.2(10)	5903(3)	3757.6(18)	17.3(4)
C^{11}	3942.7(9)	2714(3)	3462.0(17)	16.8(4)
C^{12}	3469.7(10)	3594(3)	2724.9(19)	20.4(4)
C^{13}	2804.6(10)	3340(3)	2913(2)	24.1(5)
C^{14}	2626.8(10)	2233(3)	3830(2)	24.1(5)
C^{15}	3112.8(10)	1365(3)	4559.8(19)	23.5(5)
C^{16}	3776.9(10)	1602(3)	4372.9(17)	18.8(4)
C^{21}	6621.5(9)	2487(3)	1380.2(17)	15.7(4)
C^{22}	6895.2(9)	1740(3)	347.8(17)	17.4(4)
C^{23}	7572.6(10)	1667(3)	288.2(18)	19.1(4)
C^{24}	8000.6(9)	2332(3)	1255.9(18)	17.3(4)
C^{25}	7740.4(9)	3055(3)	2284.6(18)	18.6(4)
C^{26}	7052.2(9)	3131(3)	2343.2(18)	17.7(4)
C^{27}	9112.4(10)	2911(3)	2066(2)	28.4(5)

Table S7. Anisotropic Displacement Parameters ($Å^2×10^3$) for 3f. The Anisotropic displacement factor exponent takes the form: $-2\pi^2[h^2a^{*2}U_{11}+2hka^*b^*U_{12}+\ldots]$.

Atom	U_{11}	U_{22}	U_{33}	U_{23}	U_{13}	U_{12}
O^{1}	16.1(6)	40.9(10)	16.5(7)	-5.1(6)	1.7(5)	-5.2(6)
O^{2}	13.9(6)	25.7(8)	15.4(6)	-1.8(6)	3.2(5)	-2.7(5)
O^{3}	12.7(6)	30.7(9)	21.0(7)	-2.8(6)	1.7(5)	0.9(6)
N^{1}	14.4(7)	20.7(9)	16.2(7)	-5.1(7)	0.4(6)	0.0(6)
C^{1}	15.7(8)	14.3(10)	16.9(9)	0.9(7)	3.0(7)	0.1(7)
C^{2}	12.5(8)	17.2(10)	14.7(9)	-0.2(7)	2.4(7)	0.9(7)
C^{3}	8.8(8)	17.4(10)	18.8(9)	-0.4(7)	1.9(6)	0.6(7)
C^{4}	15.2(9)	21.0(11)	16.6(9)	-0.9(8)	3.7(7)	0.4(7)
C^{5}	17.5(9)	19.2(10)	23.8(10)	4.9(8)	4.4(7)	-0.3(8)
C^{6}	19.3(9)	15.5(10)	27.5(11)	-1.1(8)	2.1(8)	-0.9(8)
C^{7}	22.2(9)	20.6(11)	20.0(9)	-2.9(8)	2.5(7)	0.4(8)
C^{8}	16.3(9)	19.9(10)	15.8(9)	1.8(7)	2.6(7)	-1.0(7)
C^{11}	15.1(8)	19.0(10)	16.6(8)	-5.1(8)	4.1(6)	-1.9(7)
C^{12}	19.7(9)	19.9(11)	21.9(10)	2.1(8)	3.9(7)	0.1(8)
C^{13}	18.7(10)	27.4(12)	26.1(10)	-1.3(8)	1.9(8)	3.2(8)

C^{14}	15.7(9)	29.1(12)	28.6(10)	-8.0(9)	8.0(7)	-4.7(8)
C^{15}	26.3(11)	22.4(11)	23.1(10)	-1.8(9)	9.7(8)	-6.0(8)
C^{16}	22.9(10)	18.0(11)	15.6(9)	-1.1(8)	3.1(7)	-0.8(8)
C^{21}	16.4(9)	13.8(9)	17.1(8)	2.3(7)	2.0(7)	1.1(7)
C^{22}	18.5(9)	17.8(10)	15.7(9)	-1.2(7)	-0.4(7)	0.2(7)
C^{23}	20.5(9)	21.8(11)	15.6(9)	-0.8(8)	4.3(7)	2.8(8)
C^{24}	13.4(8)	19.5(10)	19.1(9)	3.4(8)	2.1(7)	1.4(7)
C^{25}	15.6(9)	21.0(10)	18.5(9)	-1.8(8)	-1.4(7)	0.6(7)
C^{26}	17.0(9)	19.8(10)	16.5(9)	-1.8(8)	3.1(7)	1.7(7)
C^{27}	13.8(9)	37.8(13)	33.3(11)	-8.6(10)	-0.1(8)	0.0(9)

Table S8. Bond Lengths for 3f.

Atom	Atom	Length/Å	Atom	Atom	Length/Å
O^1	C^1	1.193(2)	C^7	C^8	1.387(3)
O^2	C^1	1.353(2)	C^{11}	C^{12}	1.378(3)
O^2	C^{11}	1.413(2)	C^{11}	C^{16}	1.378(3)
O^3	C^{24}	1.378(2)	C^{12}	C^{13}	1.392(3)
O^3	C^{27}	1.422(2)	C^{13}	C^{14}	1.388(3)
N^1	C^2	1.434(2)	C^{14}	C^{15}	1.387(3)
N^1	C^{21}	1.395(2)	C^{15}	C^{16}	1.388(3)
C^1	C^2	1.525(2)	C^{21}	C^{22}	1.409(3)
C^2	C^3	1.533(3)	C^{21}	C^{26}	1.390(3)
C^3	C^4	1.391(3)	C^{22}	C^{23}	1.378(3)
C^3	C^8	1.395(3)	C^{23}	C^{24}	1.396(3)
C^4	C^5	1.394(3)	C^{24}	C^{25}	1.385(3)
C^5	C^6	1.386(3)	C^{25}	C^{26}	1.400(3)
C^6	C^7	1.389(3)			

Table S9. Bond Angles for 3f.

Atom	Atom	Atom	Angle/°	Atom	Atom	Atom	Angle/°
C^1	O^2	C^{11}	119.20(14)	C^{12}	C^{11}	C^{16}	122.13(17)
C^{24}	O^3	C^{27}	116.79(15)	C^{16}	C^{11}	O^2	115.77(16)
C^{21}	N^1	C^2	121.38(15)	C^{11}	C^{12}	C^{13}	118.39(19)
O^1	C^1	O^2	124.68(17)	C^{14}	C^{13}	C^{12}	120.43(19)
O^1	C^1	C^2	125.71(17)	C^{15}	C^{14}	C^{13}	119.99(18)
O^2	C^1	C^2	109.61(15)	C^{14}	C^{15}	C^{16}	119.97(19)
N^1	C^2	C^1	107.64(15)	C^{11}	C^{16}	C^{15}	119.07(18)
N^1	C^2	C^3	116.47(15)	N^1	C^{21}	C^{22}	118.93(16)

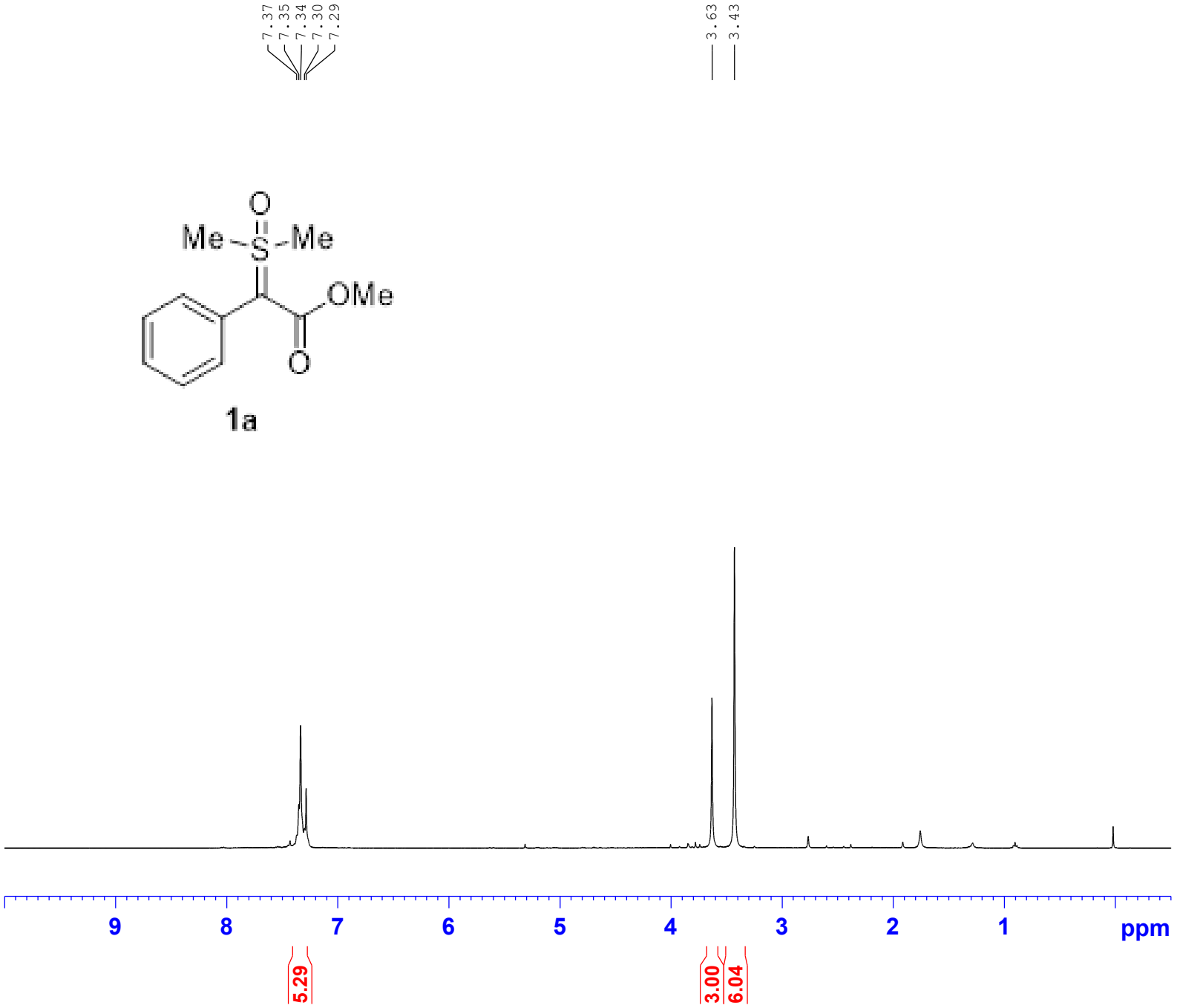
C^{1}	C^{2}	C^{3}	109.63(15)	C^{26}	C^{21}	N^{1}	122.75(16)
C^{4}	C^{3}	C^{2}	120.91(17)	C^{26}	C^{21}	C^{22}	118.30(16)
C^{4}	C^{3}	C^{8}	119.49(18)	C^{23}	C^{22}	C^{21}	120.84(17)
C^{8}	C^{3}	C^{2}	119.58(17)	C^{22}	C^{23}	C^{24}	120.37(17)
C^{3}	C^{4}	C^{5}	120.17(18)	O^{3}	C^{24}	C^{23}	115.93(17)
C^{6}	C^{5}	C^{4}	119.96(19)	O^{3}	C^{24}	C^{25}	124.49(17)
C^{5}	C^{6}	C^{7}	120.07(19)	C^{25}	C^{24}	C^{23}	119.58(17)
C^{8}	C^{7}	C^{6}	120.10(19)	C^{24}	C^{25}	C^{26}	120.01(18)
C^{7}	C^{8}	C^{3}	120.21(19)	C^{21}	C^{26}	C^{25}	120.90(17)
C^{12}	C^{11}	O^{2}	121.92(17)				

Table S10. Torsion Angles for 3f.

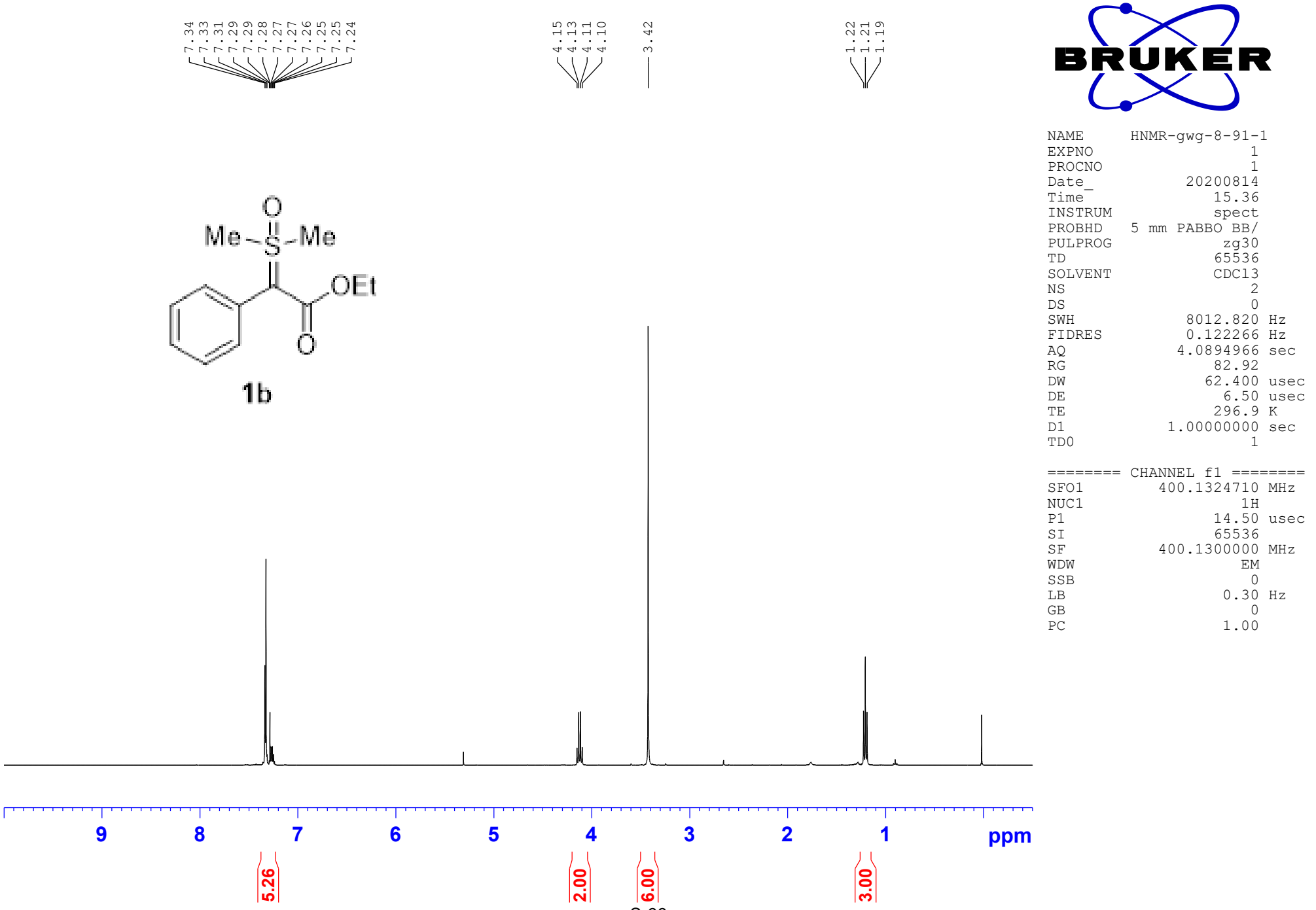
A	B	C	D	Angle/°	A	B	C	D	Angle/°
O^{1}	C^{1}	C^{2}	N^{1}	-19.7(3)	C^{5}	C^{6}	C^{7}	C^{8}	0.5(3)
O^{1}	C^{1}	C^{2}	C^{3}	107.9(2)	C^{6}	C^{7}	C^{8}	C^{3}	-0.6(3)
O^{2}	C^{1}	C^{2}	N^{1}	160.11(15)	C^{8}	C^{3}	C^{4}	C^{5}	0.3(3)
O^{2}	C^{1}	C^{2}	C^{3}	-72.31(19)	C^{11}	O^{2}	C^{1}	O^{1}	-3.1(3)
O^{2}	C^{11}	C^{12}	C^{13}	-175.07(18)	C^{11}	O^{2}	C^{1}	C^{2}	177.15(16)
O^{2}	C^{11}	C^{16}	C^{15}	174.94(17)	C^{11}	C^{12}	C^{13}	C^{14}	0.5(3)
O^{3}	C^{24}	C^{25}	C^{26}	-179.66(19)	C^{12}	C^{11}	C^{16}	C^{15}	-0.3(3)
N^{1}	C^{2}	C^{3}	C^{4}	22.4(2)	C^{12}	C^{13}	C^{14}	C^{15}	-0.4(3)
N^{1}	C^{2}	C^{3}	C^{8}	-155.78(16)	C^{13}	C^{14}	C^{15}	C^{16}	0.0(3)
N^{1}	C^{21}	C^{22}	C^{23}	-178.84(18)	C^{14}	C^{15}	C^{16}	C^{11}	0.4(3)
N^{1}	C^{21}	C^{26}	C^{25}	178.66(19)	C^{16}	C^{11}	C^{12}	C^{13}	-0.1(3)
C^{1}	O^{2}	C^{11}	C^{12}	-57.3(2)	C^{21}	N^{1}	C^{2}	C^{1}	-170.69(17)
C^{1}	O^{2}	C^{11}	C^{16}	127.40(18)	C^{21}	N^{1}	C^{2}	C^{3}	65.8(2)
C^{1}	C^{2}	C^{3}	C^{4}	-100.03(19)	C^{21}	C^{22}	C^{23}	C^{24}	0.1(3)
C^{1}	C^{2}	C^{3}	C^{8}	81.7(2)	C^{22}	C^{21}	C^{26}	C^{25}	0.6(3)
C^{2}	N^{1}	C^{21}	C^{22}	-179.56(17)	C^{22}	C^{23}	C^{24}	O^{3}	179.64(18)
C^{2}	N^{1}	C^{21}	C^{26}	2.4(3)	C^{22}	C^{23}	C^{24}	C^{25}	0.6(3)
C^{2}	C^{3}	C^{4}	C^{5}	-177.94(17)	C^{23}	C^{24}	C^{25}	C^{26}	-0.7(3)
C^{2}	C^{3}	C^{8}	C^{7}	178.44(18)	C^{24}	C^{25}	C^{26}	C^{21}	0.1(3)
C^{3}	C^{4}	C^{5}	C^{6}	-0.4(3)	C^{26}	C^{21}	C^{22}	C^{23}	-0.7(3)
C^{4}	C^{3}	C^{8}	C^{7}	0.2(3)	C^{27}	O^{3}	C^{24}	C^{23}	177.84(19)
C^{4}	C^{5}	C^{6}	C^{7}	-0.1(3)	C^{27}	O^{3}	C^{24}	C^{25}	-3.1(3)

Table S11. Hydrogen Atom Coordinates (Å×10^4) and Isotropic Displacement Parameters (Å^2×10^3) for 3f.

Atom	*x*	*y*	*z*	U(eq)
H^{1}	5688	2057	807	21
H^{2}	5820	2733	3210	18
H^{4}	5876	5696	794	21
H^{5}	6030	8575	1067	24
H^{6}	5946	9776	3017	25
H^{7}	5704	8109	4696	25
H^{8}	5565	5235	4435	21
H^{12}	3592	4340	2116	24
H^{13}	2477	3915	2422	29
H^{14}	2182	2074	3954	29
H^{15}	2994	624	5174	28
H^{16}	4106	1020	4856	23
H^{22}	6615	1290	-302	21
H^{23}	7746	1171	-400	23
H^{25}	8023	3489	2936	22
H^{26}	6881	3619	3036	21
H^{27A}	9561	2756	1858	43
H^{27B}	9055	2372	2851	43
H^{27C}	9021	4092	2131	43

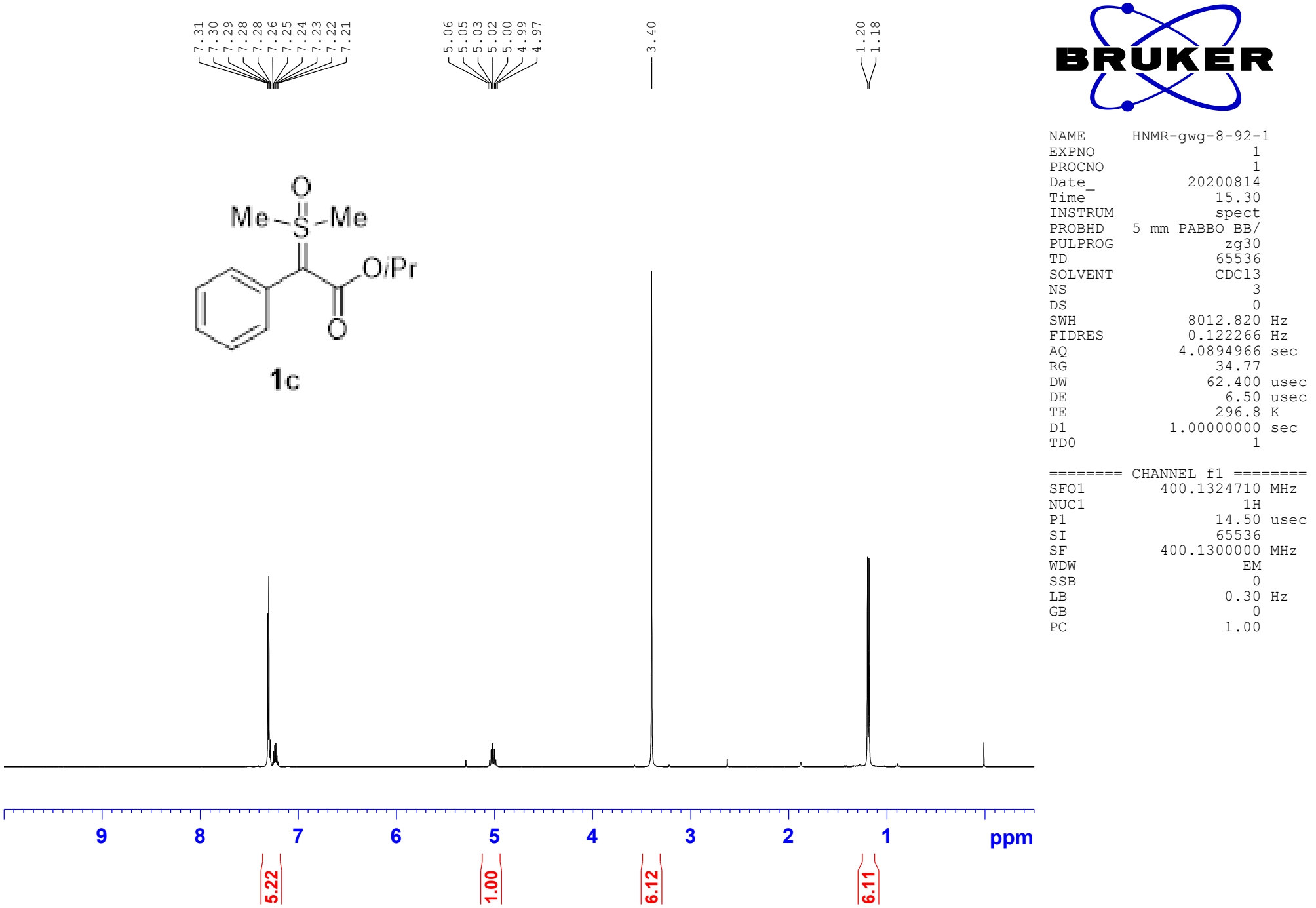



```
NAME      HNMR-gwg-8-95-1
EXPNO                   1
PROCNO                  1
Date_            20200815
Time                16.02
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  103.52
DW                  62.400 usec
DE                   6.50 usec
TE                  296.5 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                   1H
P1                  14.50 usec
SI                  65536
SF            400.1300000 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



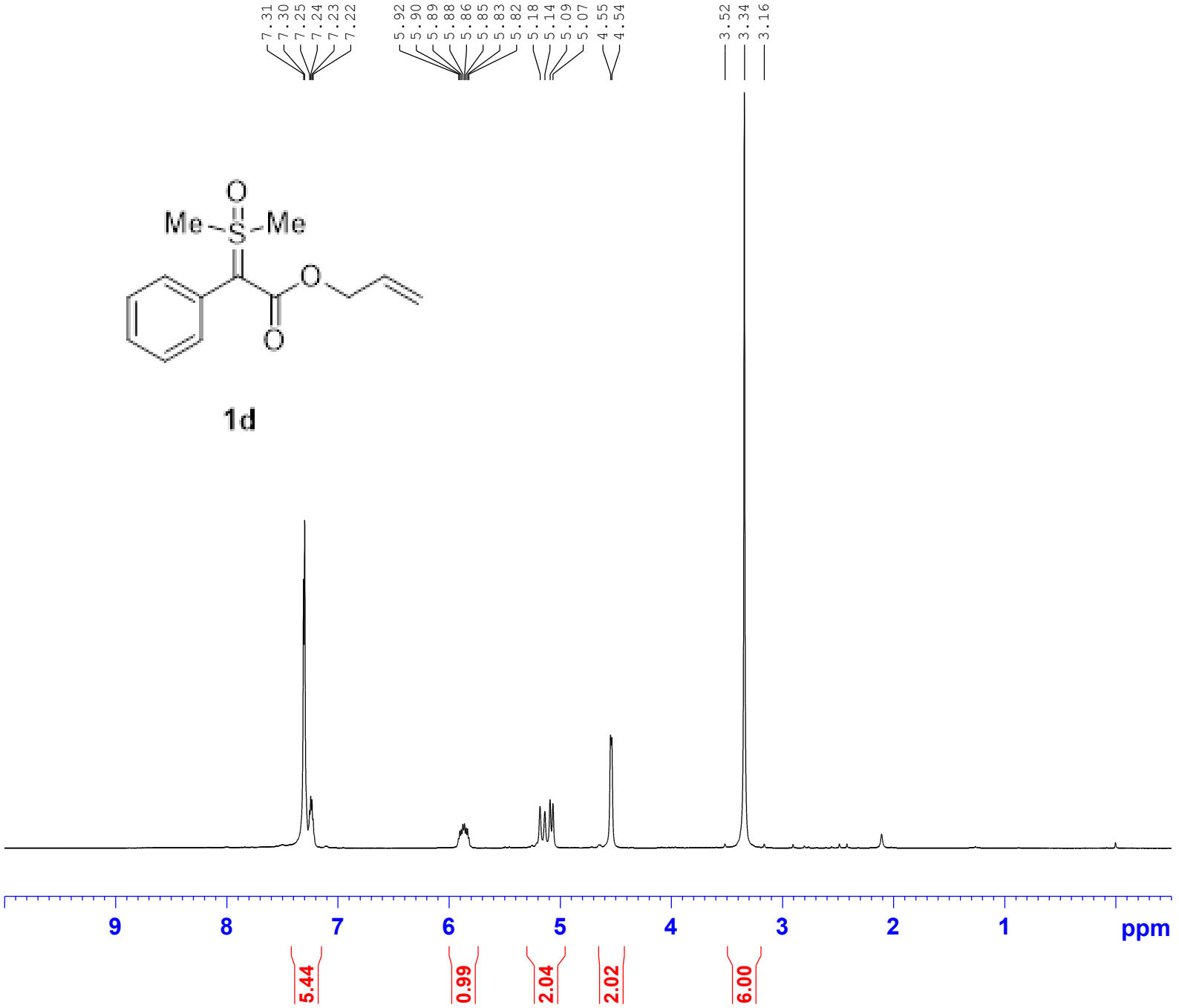
BRUKER

NAME	HNMR-gwg-8-91-1
EXPNO	1
PROCNO	1
Date_	20200814
Time	15.36
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	2
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	82.92
DW	62.400 usec
DE	6.50 usec
TE	296.9 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

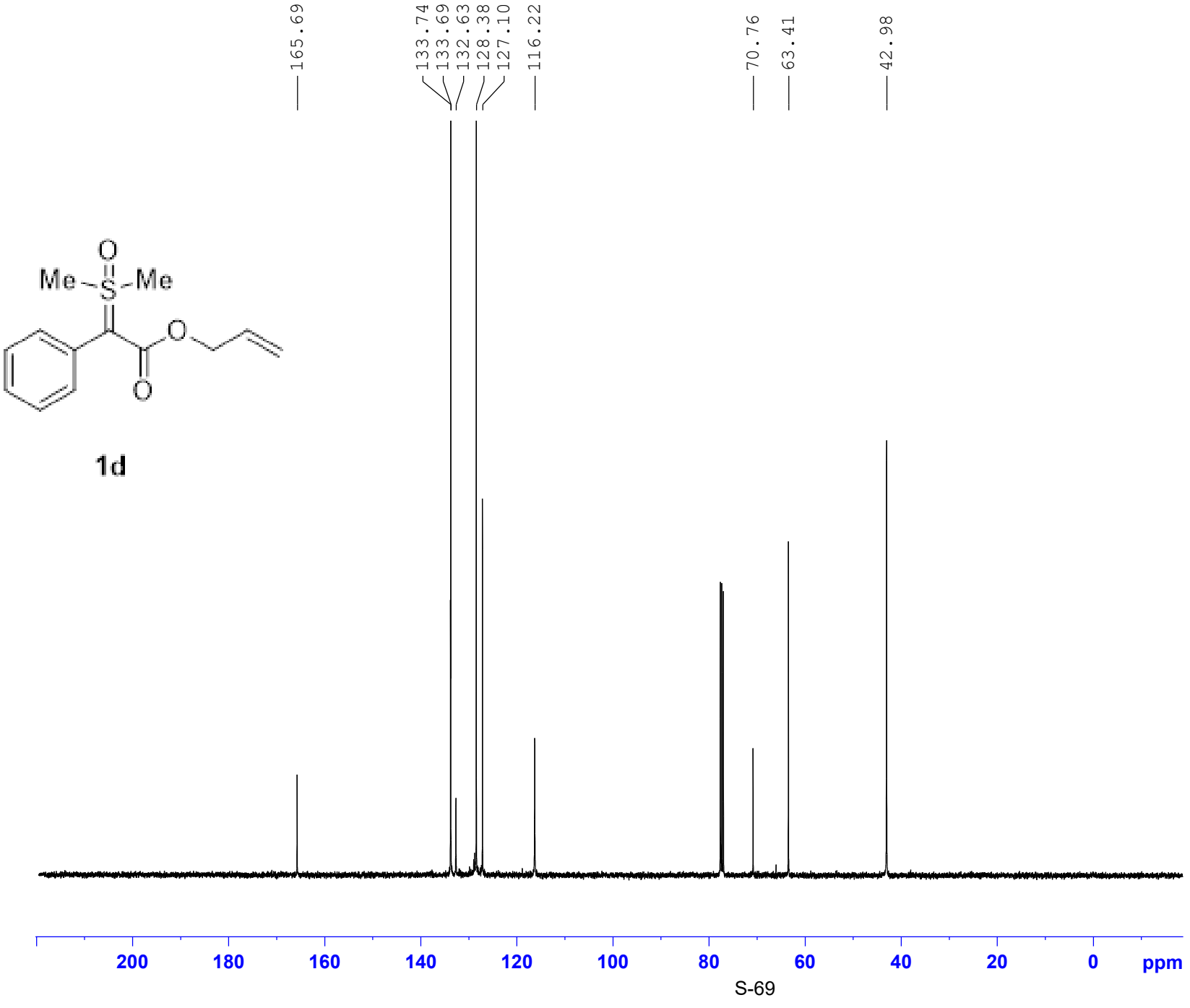


BRUKER

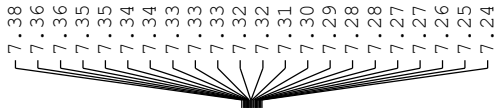
```
NAME        HNMR-gwg-8-92-1
EXPNO                     1
PROCNO                    1
Date_              20200814
Time                  15.30
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        3
DS                        0
SWH                8012.820 Hz
FIDRES            0.122266 Hz
AQ               4.0894966 sec
RG                    34.77
DW                  62.400 usec
DE                   6.50 usec
TE                  296.8 K
D1              1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                     1H
P1                   14.50 usec
SI                    65536
SF            400.1300000 MHz
WDW                      EM
SSB                       0
LB                   0.30 Hz
GB                        0
PC                     1.00
```

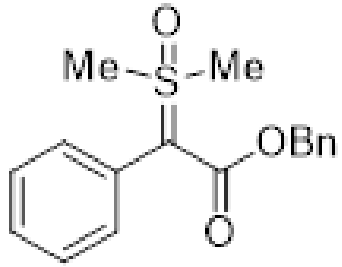



```
NAME      HNMR-gwg-8-163-1
EXPNO                    1
PROCNO                   1
Date_             20200908
Time                 13.40
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                    19.7
DW                  62.400 usec
DE                   6.50 usec
TE                  296.8 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



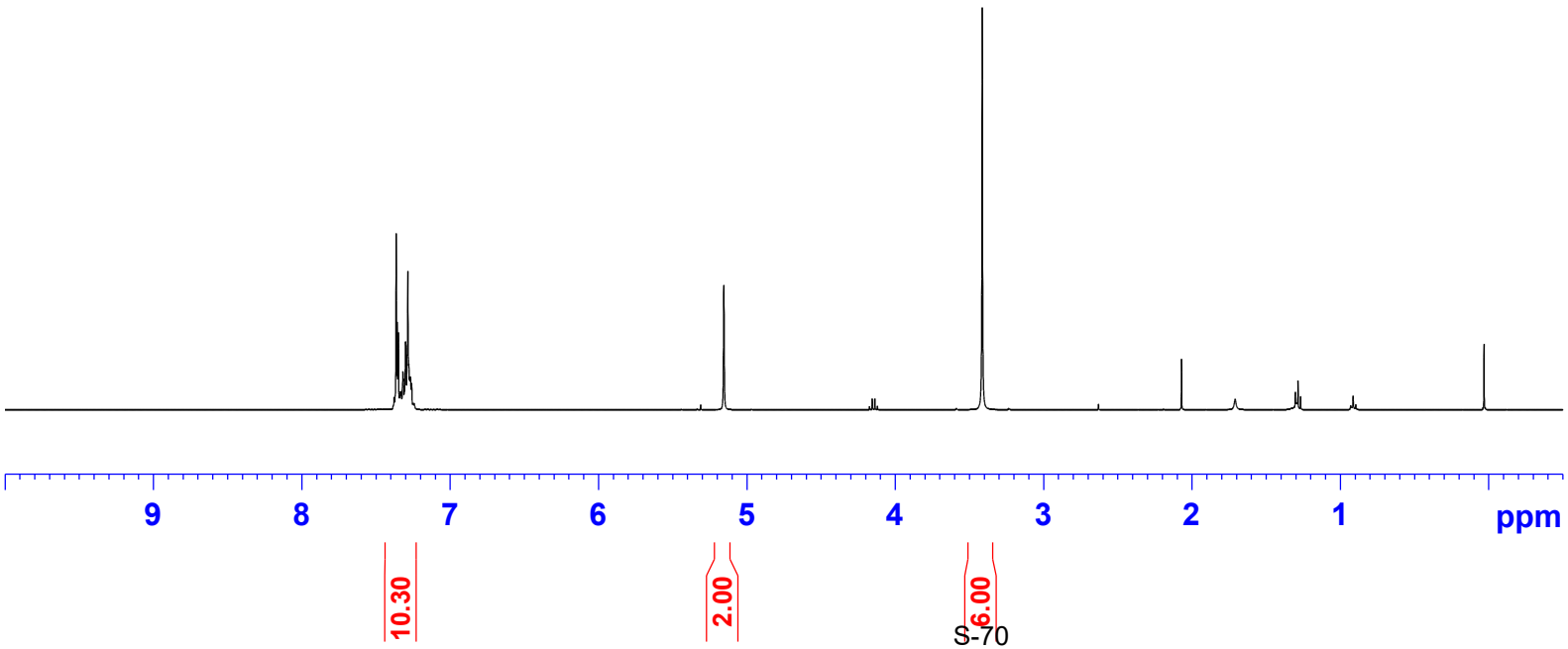

```
NAME        CNMR-gwg-8-163-1
EXPNO                     1
PROCNO                    1
Date_              20200908
Time                  13.52
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                     183
DS                       0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ              1.3631988 sec
RG                  196.92
DW                20.800 usec
DE                 6.50 usec
TE                 297.9 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                    13C
P1                   9.70 usec
SI                    32768
SF            100.6127690 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

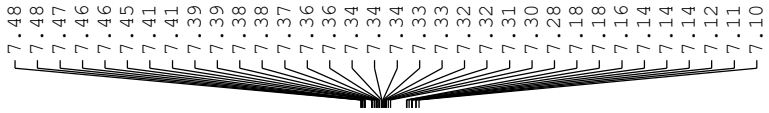


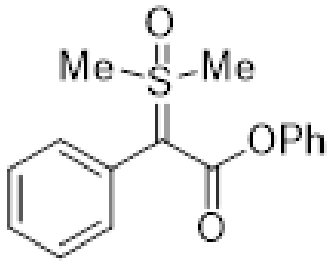


1e

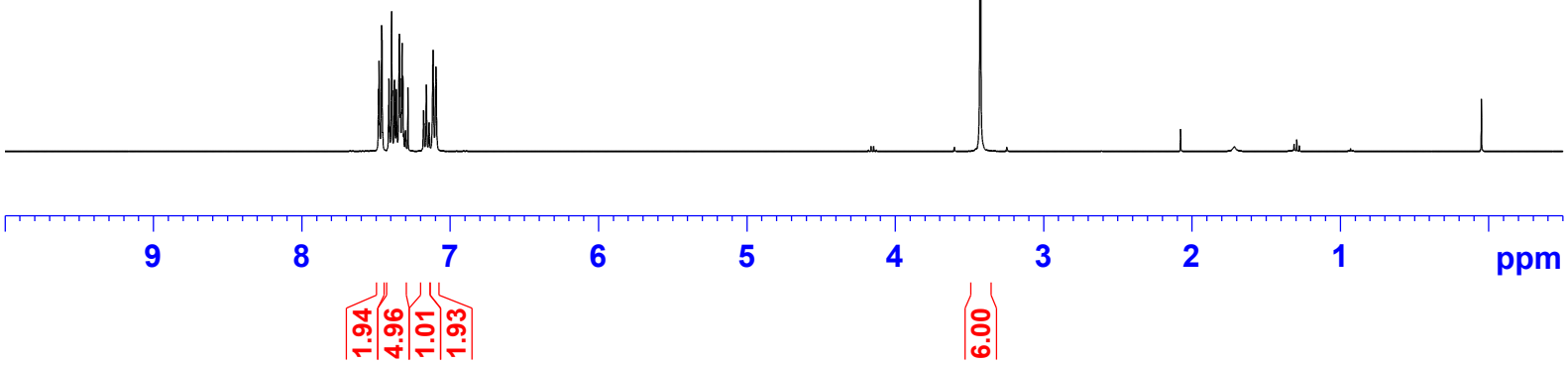
```
NAME      HNMR-gwg-8-106-1
EXPNO                    1
PROCNO                   1
Date_             20200819
Time                 19.34
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   82.92
DW                   62.400 usec
DE                    6.50 usec
TE                   296.4 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1           400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF             400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



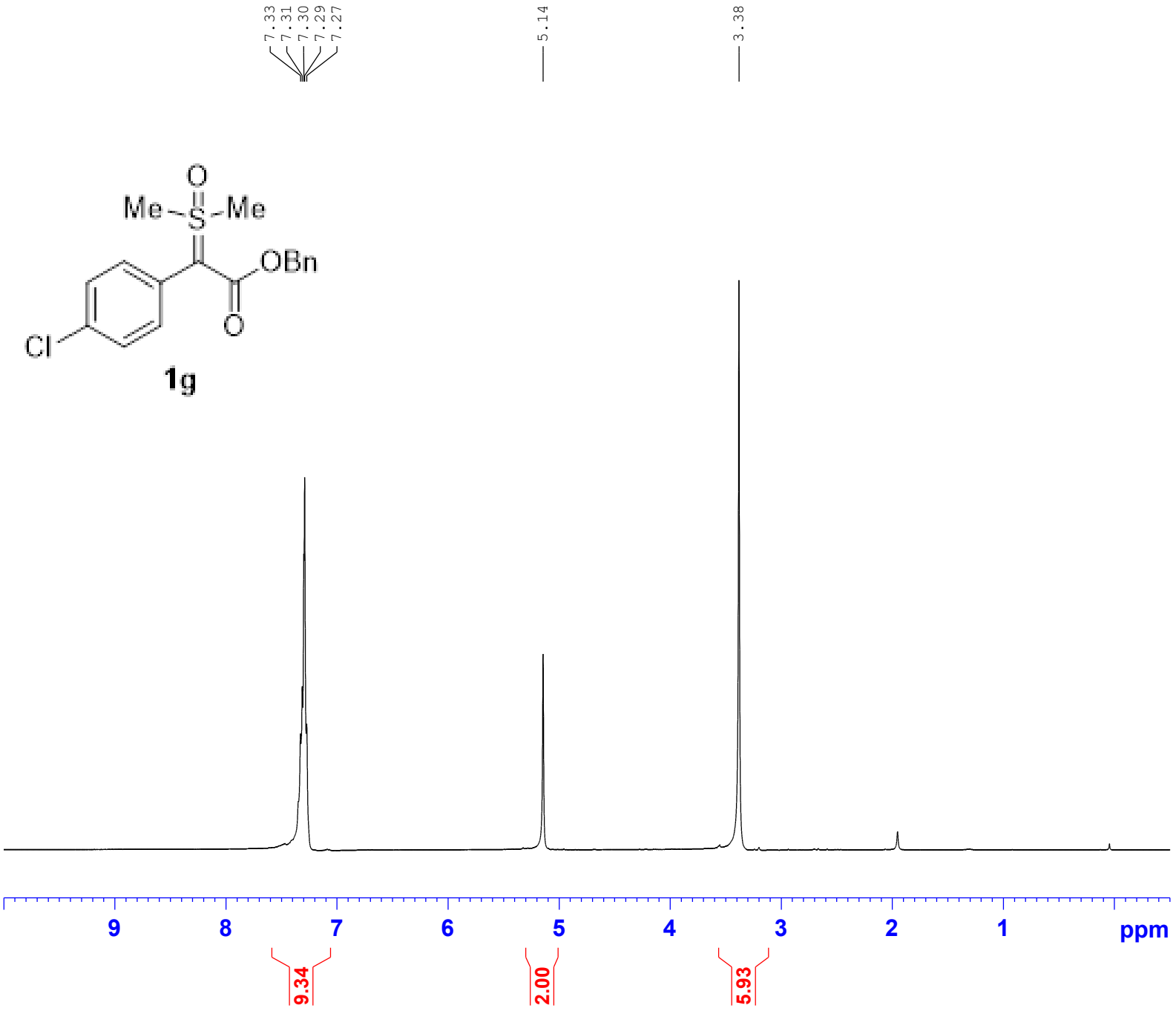




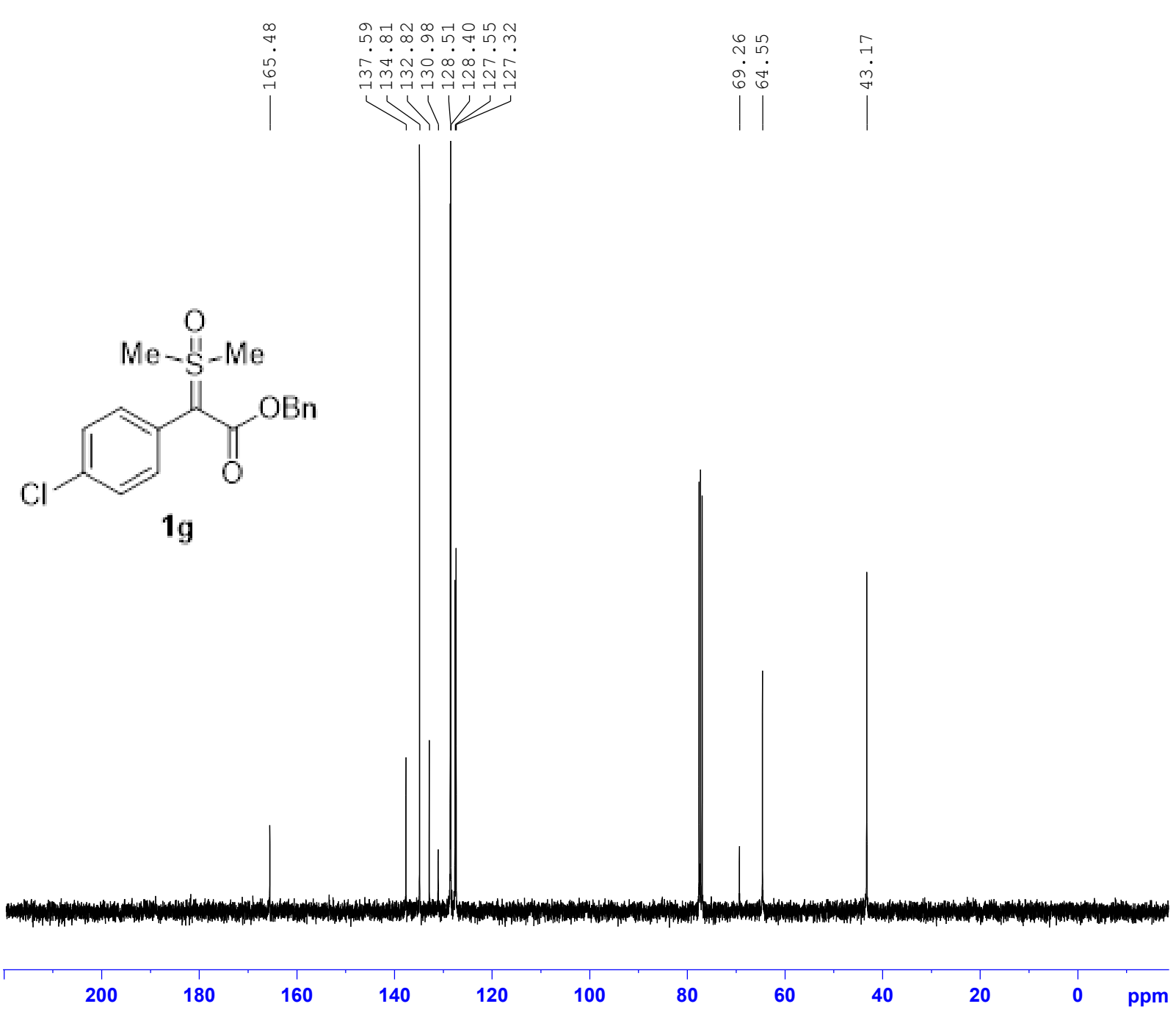
1f



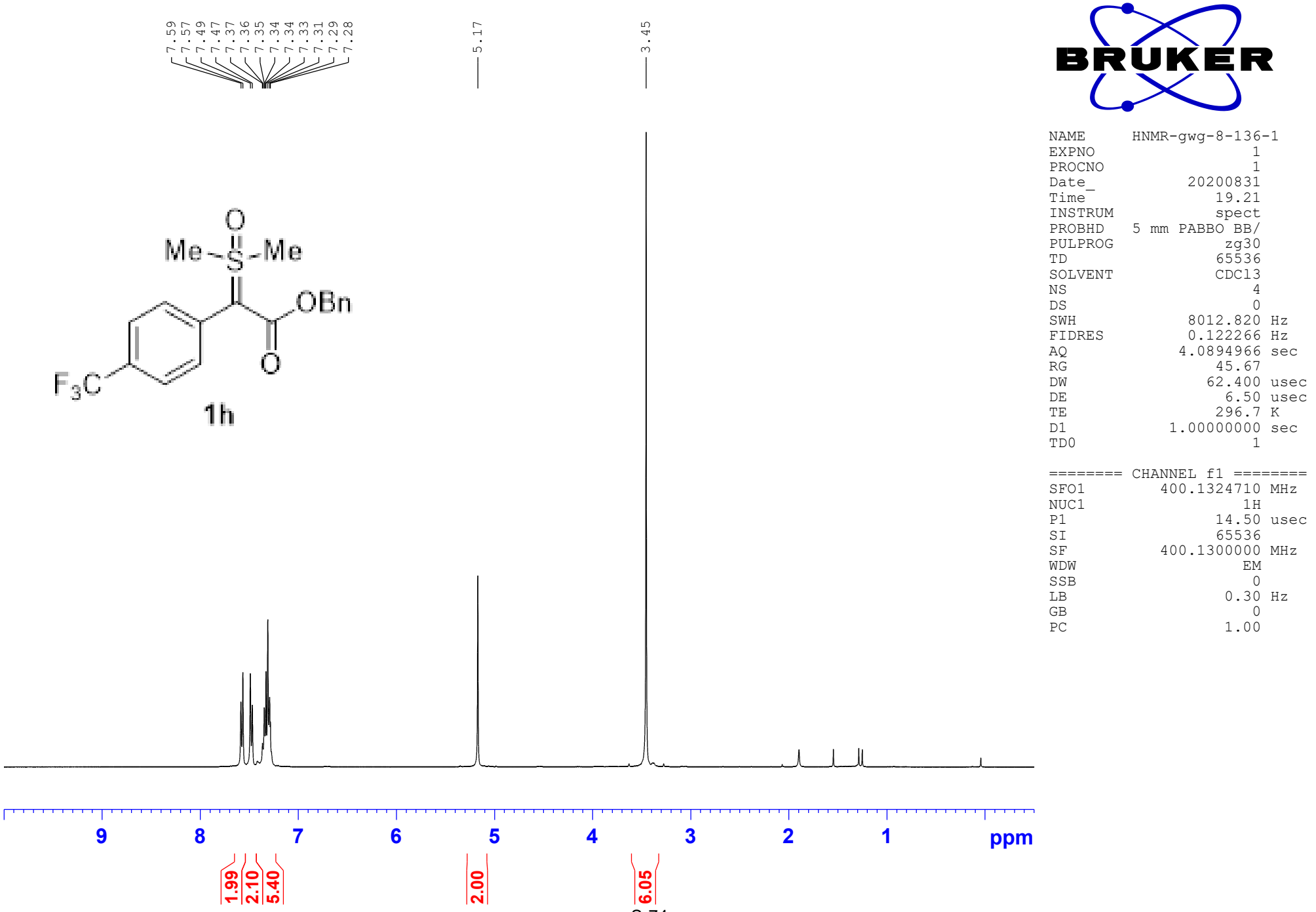

```
NAME      HNMR-gwg-8-135-1
EXPNO                    1
PROCNO                   1
Date_             20200831
Time                 21.28
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   34.77
DW                   62.400 usec
DE                    6.50 usec
TE                   297.0 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



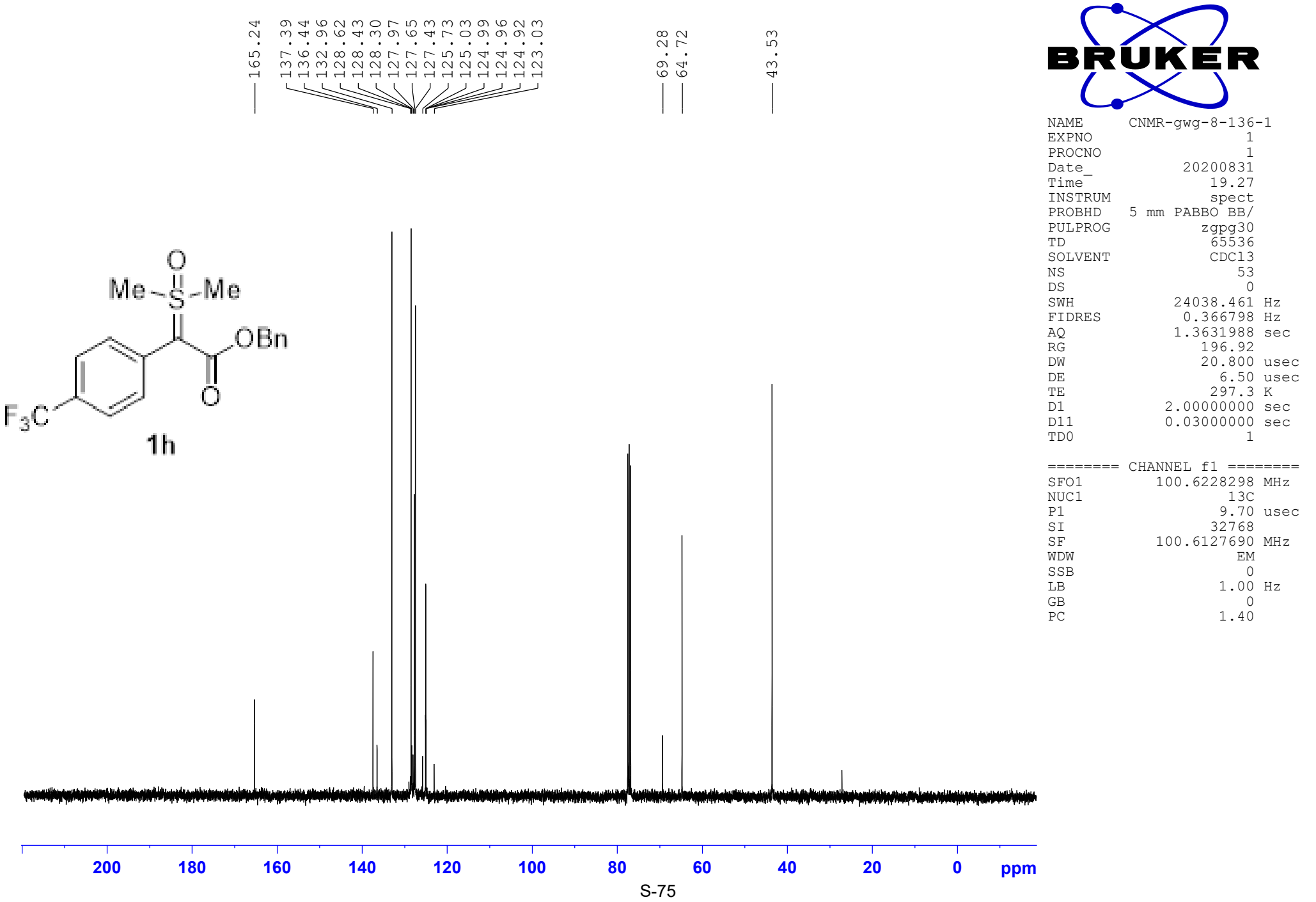

```
NAME      HNMR-gwg-8-133-1
EXPNO                    1
PROCNO                   1
Date_             20200830
Time                 13.37
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   25.32
DW                   62.400 usec
DE                    6.50 usec
TE                   296.8 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



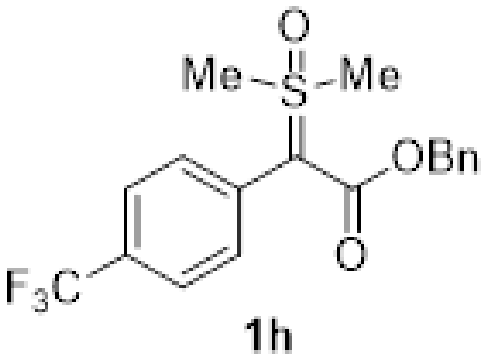

```
NAME        CNMR-gwg-8-133-1
EXPNO                      1
PROCNO                     1
Date_               20200830
Time                   13.40
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG              zgpg30
TD                     65536
SOLVENT                CDCl3
NS                        28
DS                         0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.5 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1           100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```



NAME	HNMR-gwg-8-136-1
EXPNO	1
PROCNO	1
Date_	20200831
Time	19.21
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	45.67
DW	62.400 usec
DE	6.50 usec
TE	296.7 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

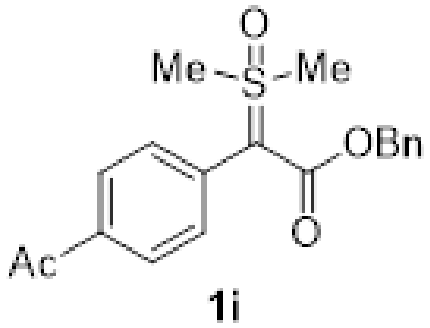



```
NAME        CNMR-gwg-8-136-1
EXPNO                     1
PROCNO                    1
Date_              20200831
Time                  19.27
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                      53
DS                       0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.3 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



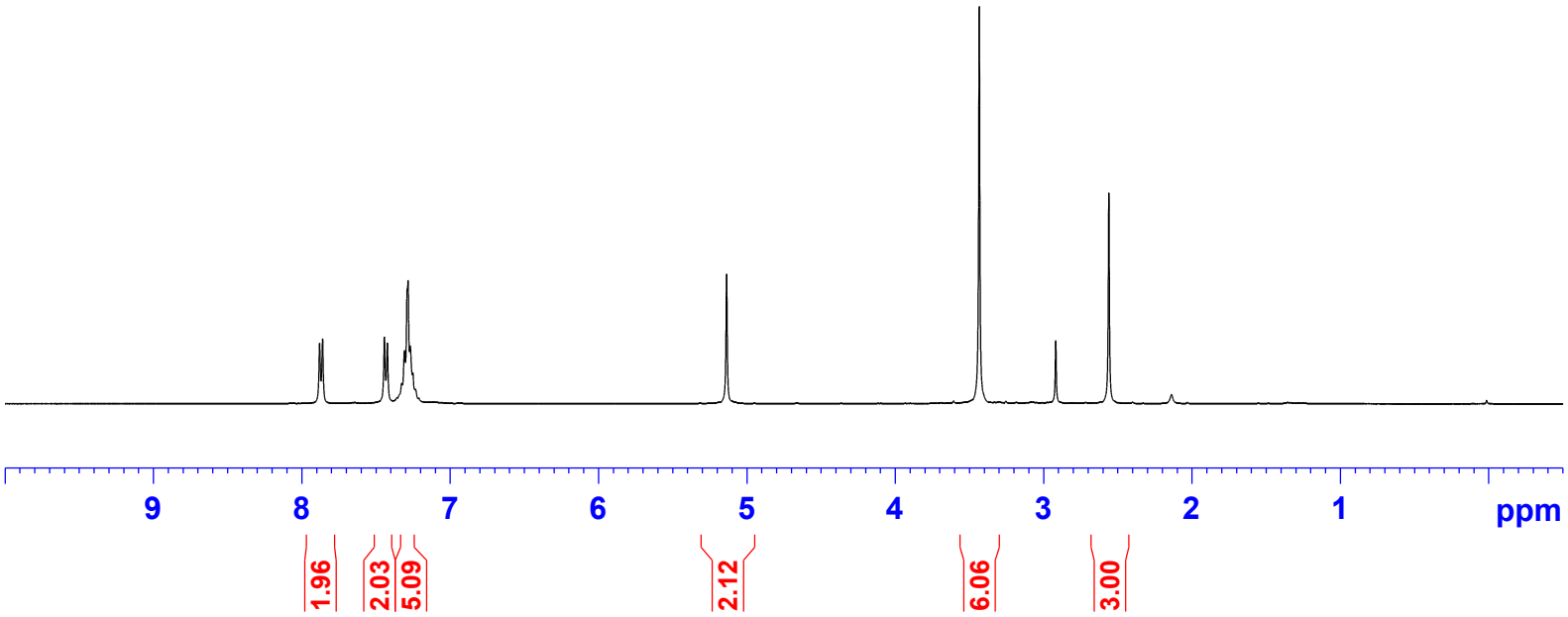
1h

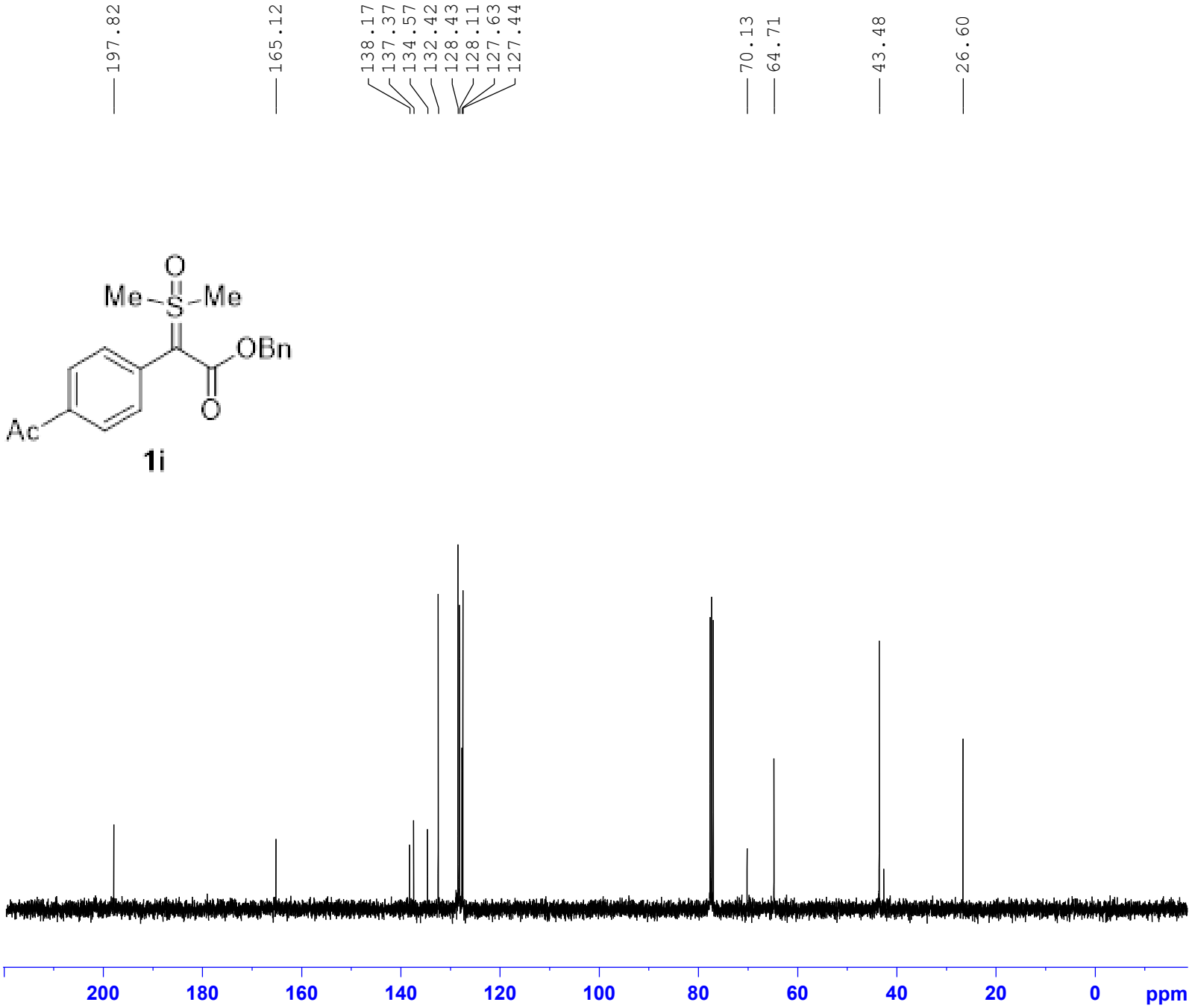

```
NAME      FNMR-gwg-8-136-1
EXPNO                    1
PROCNO                   1
Date_             20200831
Time                 19.24
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                       4
DS                       0
SWH              93750.000 Hz
FIDRES            1.430511 Hz
AQ                0.3495753 sec
RG                   196.92
DW                   5.333 usec
DE                    6.50 usec
TE                   296.7 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          376.4607162 MHz
NUC1                   19F
P1                   14.70 usec
SI                   32768
SF            376.4983660 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



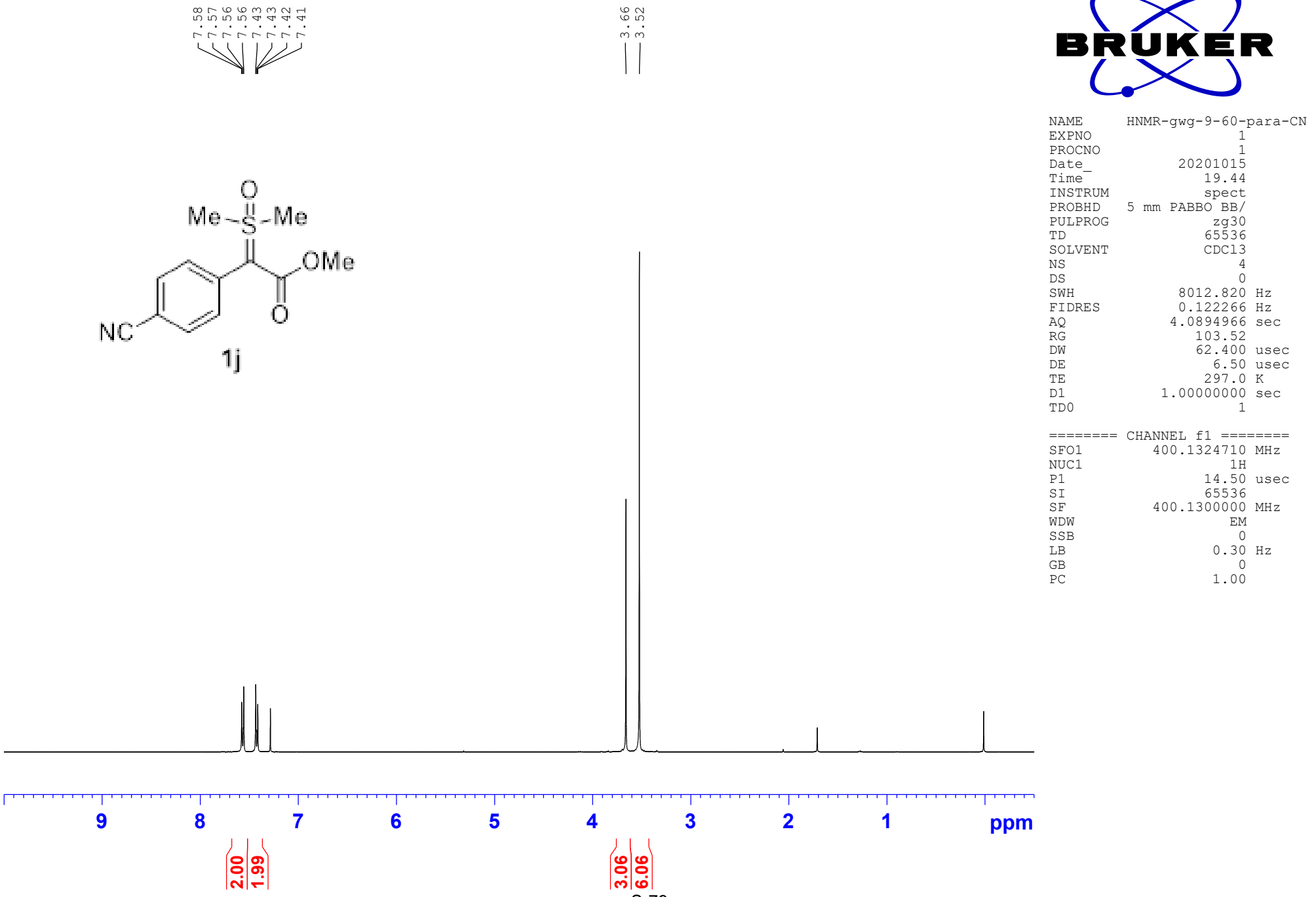
1i

```
NAME        HNMR-gwg-8-166-1
EXPNO                     1
PROCNO                    1
Date_              20200909
Time                 21.51
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       2
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   22.47
DW                   62.400 usec
DE                    6.50 usec
TE                   297.0 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1           400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF             400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



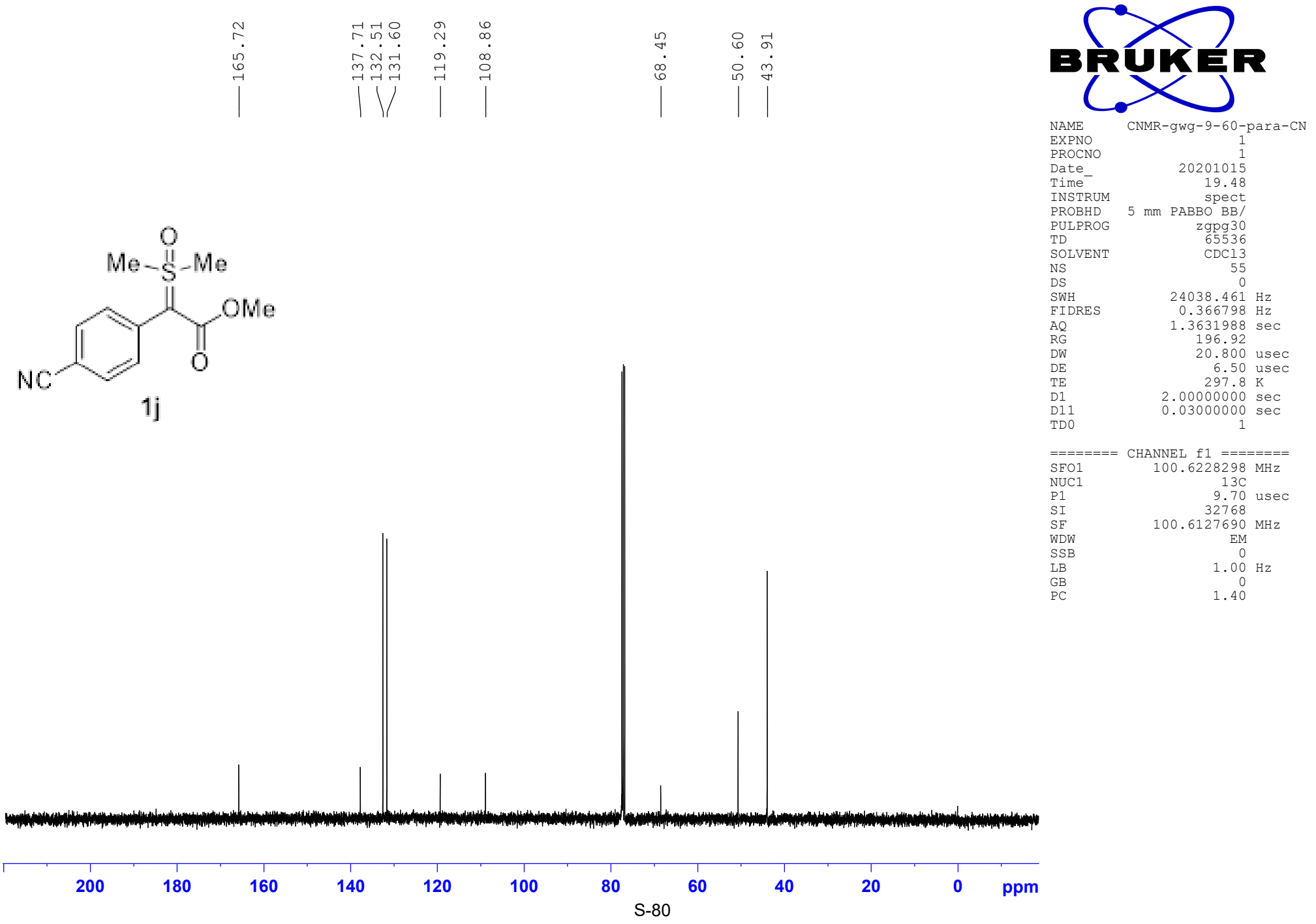



```
NAME        CNMR-gwg-8-166-1
EXPNO                     1
PROCNO                    1
Date_              20200909
Time                  21.54
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                       6
DS                       0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631988 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  297.2 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

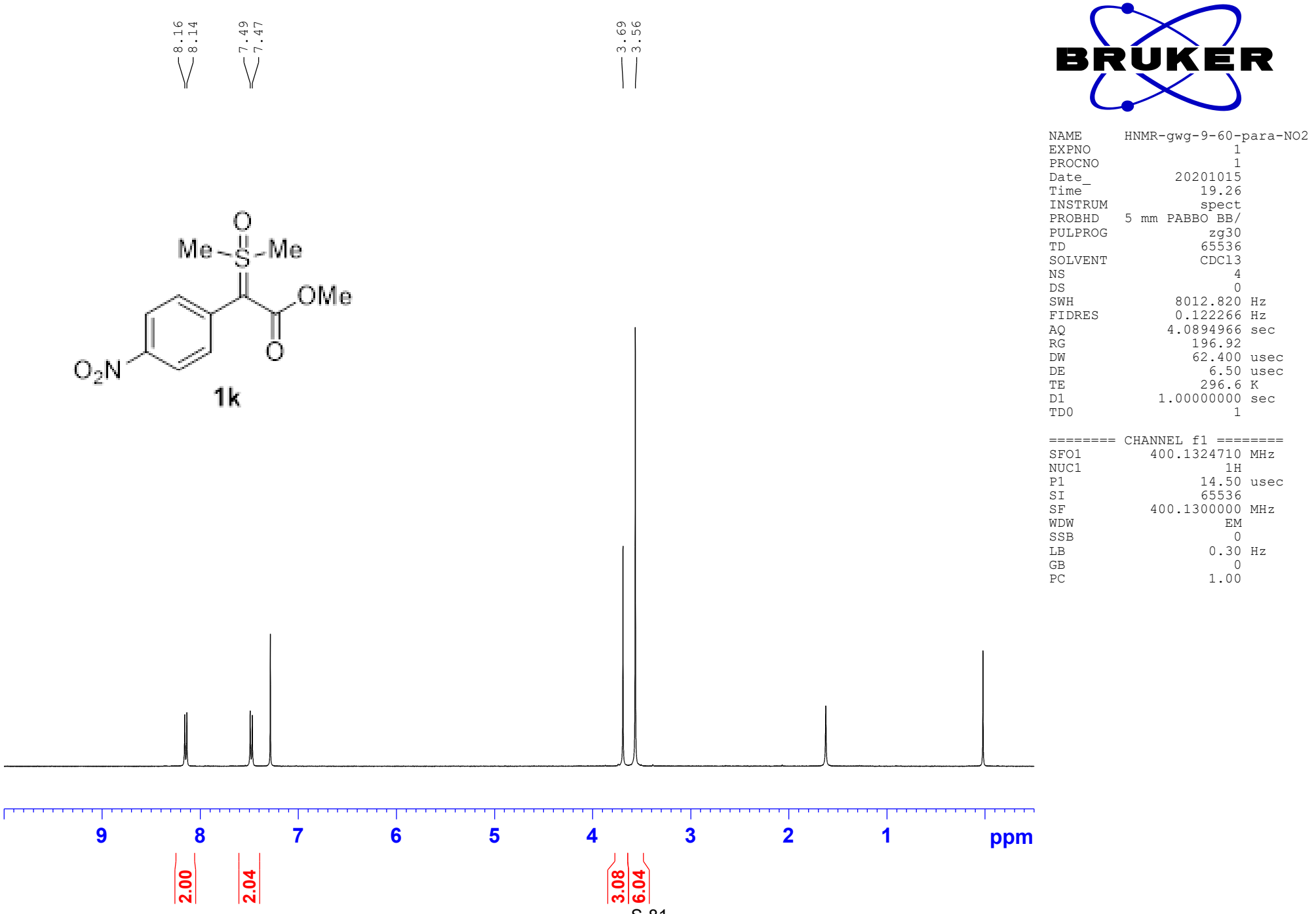


NAME HNMR-gwg-9-60-para-CN
EXPNO 1
PROCNO 1
Date_ 20201015
Time 19.44
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 4
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 103.52
DW 62.400 usec
DE 6.50 usec
TE 297.0 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 400.1324710 MHz
NUC1 1H
P1 14.50 usec
SI 65536
SF 400.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



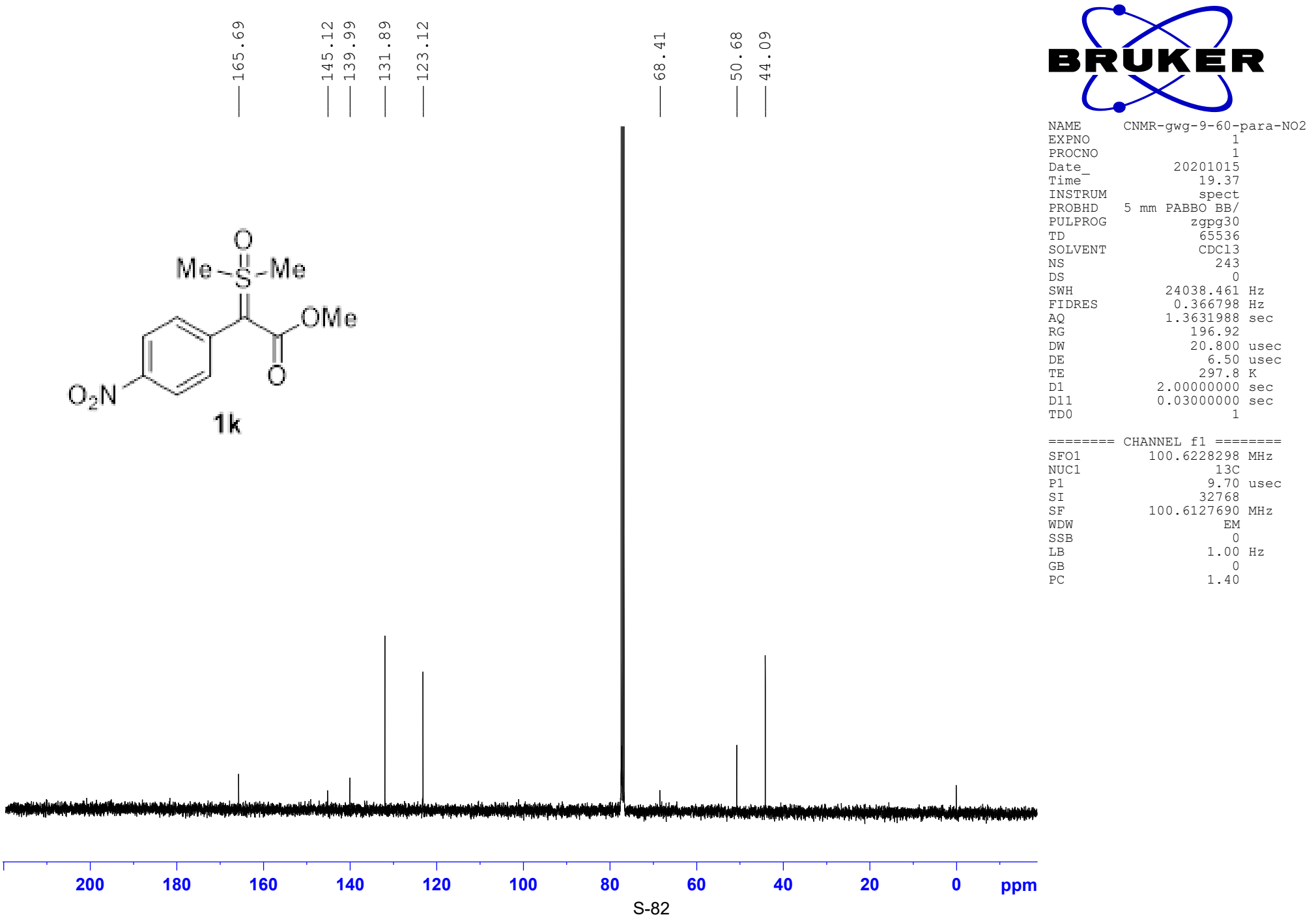

```
NAME          CNMR-gwg-9-60-para-CN
EXPNO                            1
PROCNO                           1
Date_                     20201015
Time                         19.48
INSTRUM                      spect
PROBHD       5 mm PABBO BB/
PULPROG                   zgpg30
TD                            65536
SOLVENT                     CDCl3
NS                               55
DS                                0
SWH                   24038.461 Hz
FIDRES                 0.366798 Hz
AQ                     1.3631988 sec
RG                        196.92
DW                        20.800 usec
DE                         6.50 usec
TE                        297.8 K
D1                    2.00000000 sec
D11                   0.03000000 sec
TD0                              1

======== CHANNEL f1 ========
SFO1                100.6228298 MHz
NUC1                        13C
P1                        9.70 usec
SI                       32768
SF                  100.6127690 MHz
WDW                         EM
SSB                          0
LB                        1.00 Hz
GB                           0
PC                        1.40
```



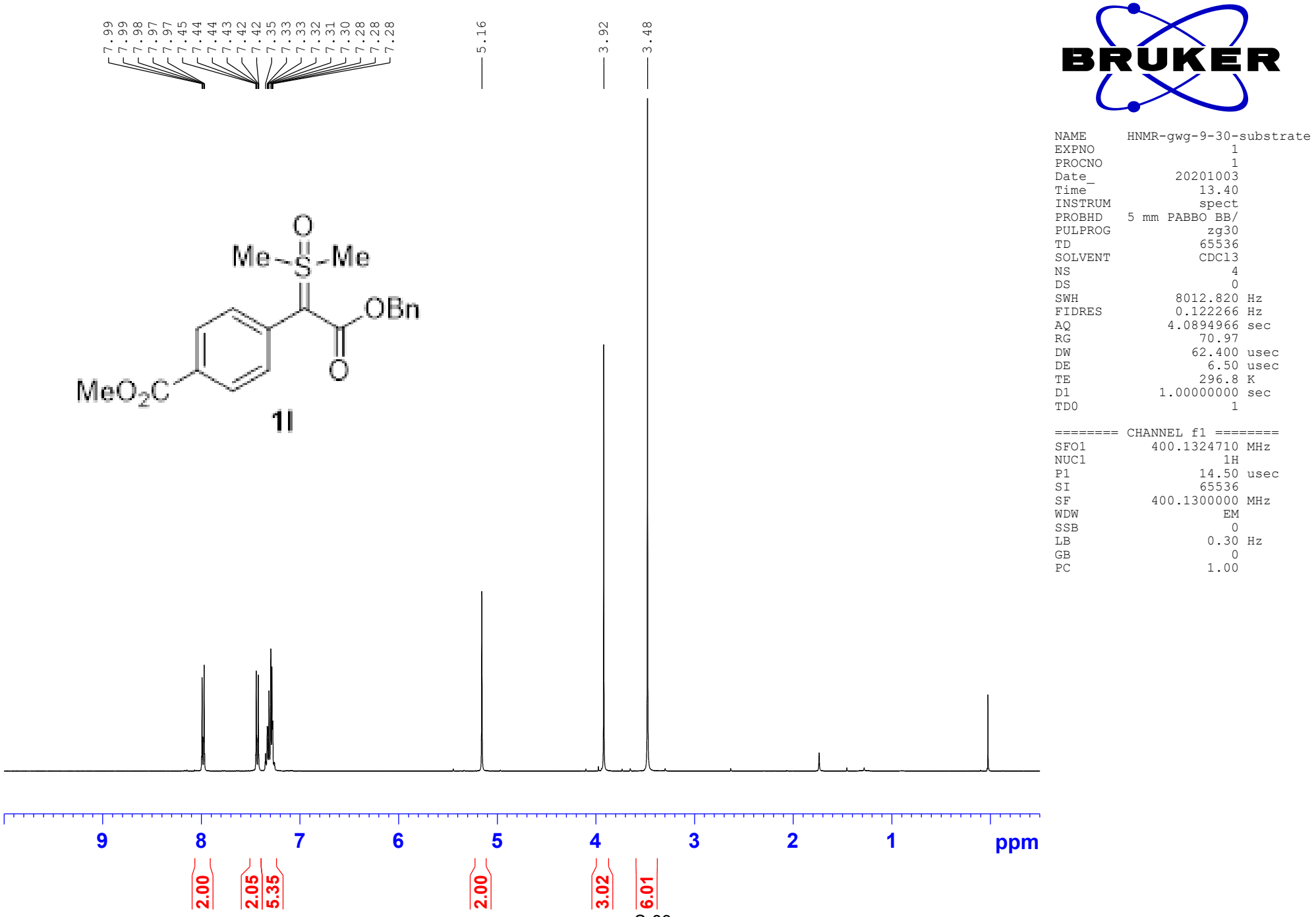
BRUKER

NAME	HNMR-gwg-9-60-para-NO2
EXPNO	1
PROCNO	1
Date_	20201015
Time	19.26
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	196.92
DW	62.400 usec
DE	6.50 usec
TE	296.6 K
D1	1.00000000 sec
TD0	1

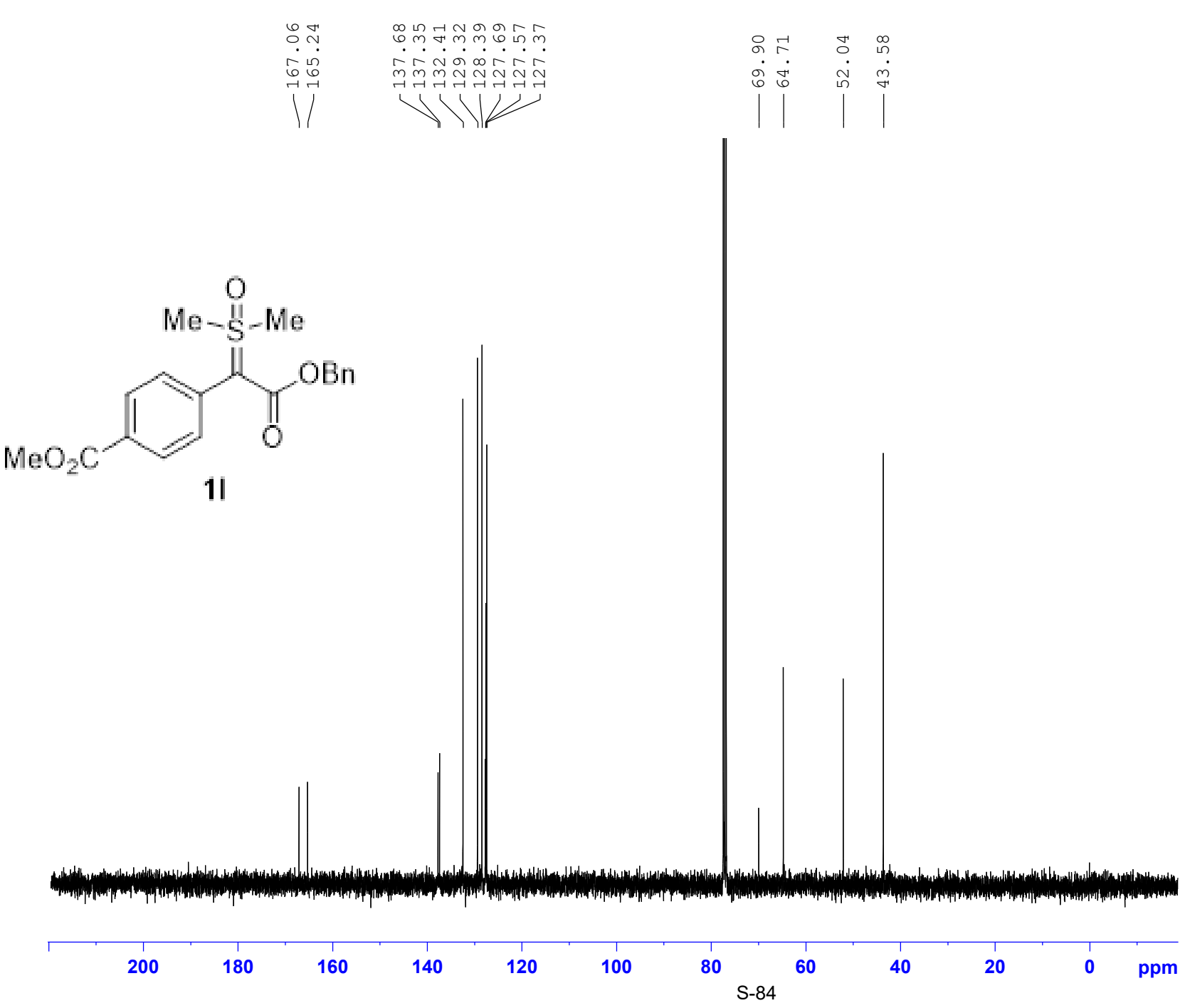
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00




```
NAME          CNMR-gwg-9-60-para-NO2
EXPNO                              1
PROCNO                             1
Date_                       20201015
Time                           19.37
INSTRUM                        spect
PROBHD       5 mm PABBO BB/
PULPROG                     zgpg30
TD                              65536
SOLVENT                       CDCl3
NS                               243
DS                                 0
SWH                      24038.461 Hz
FIDRES                    0.366798 Hz
AQ                       1.3631988 sec
RG                             196.92
DW                           20.800 usec
DE                            6.50 usec
TE                           297.8 K
D1                      2.00000000 sec
D11                     0.03000000 sec
TD0                                1

======== CHANNEL f1 ========
SFO1                  100.6228298 MHz
NUC1                          13C
P1                           9.70 usec
SI                           32768
SF                    100.6127690 MHz
WDW                            EM
SSB                             0
LB                           1.00 Hz
GB                              0
PC                           1.40
```



NAME	HNMR-gwg-9-30-substrate
EXPNO	1
PROCNO	1
Date_	20201003
Time	13.40
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	70.97
DW	62.400 usec
DE	6.50 usec
TE	296.8 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



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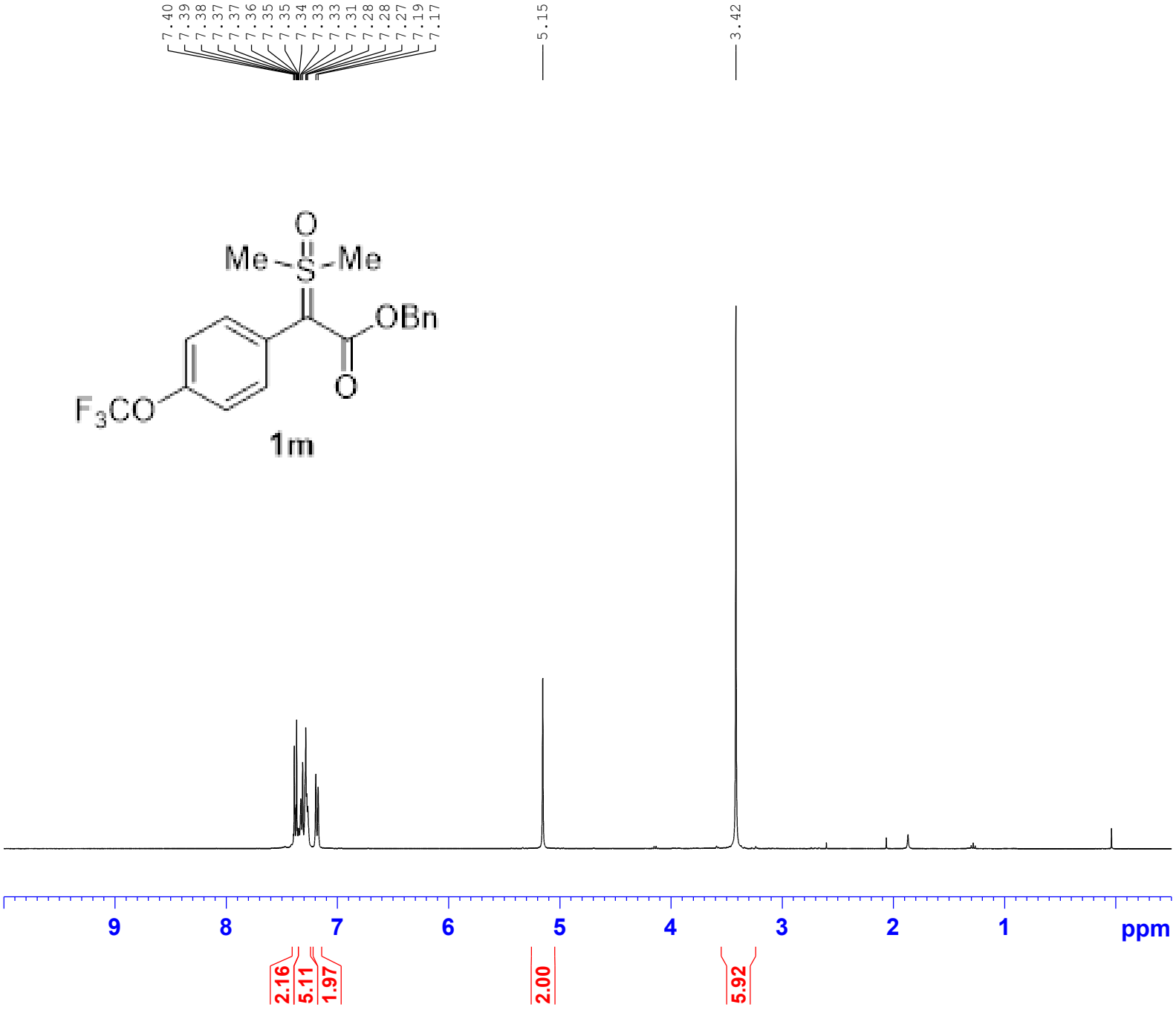
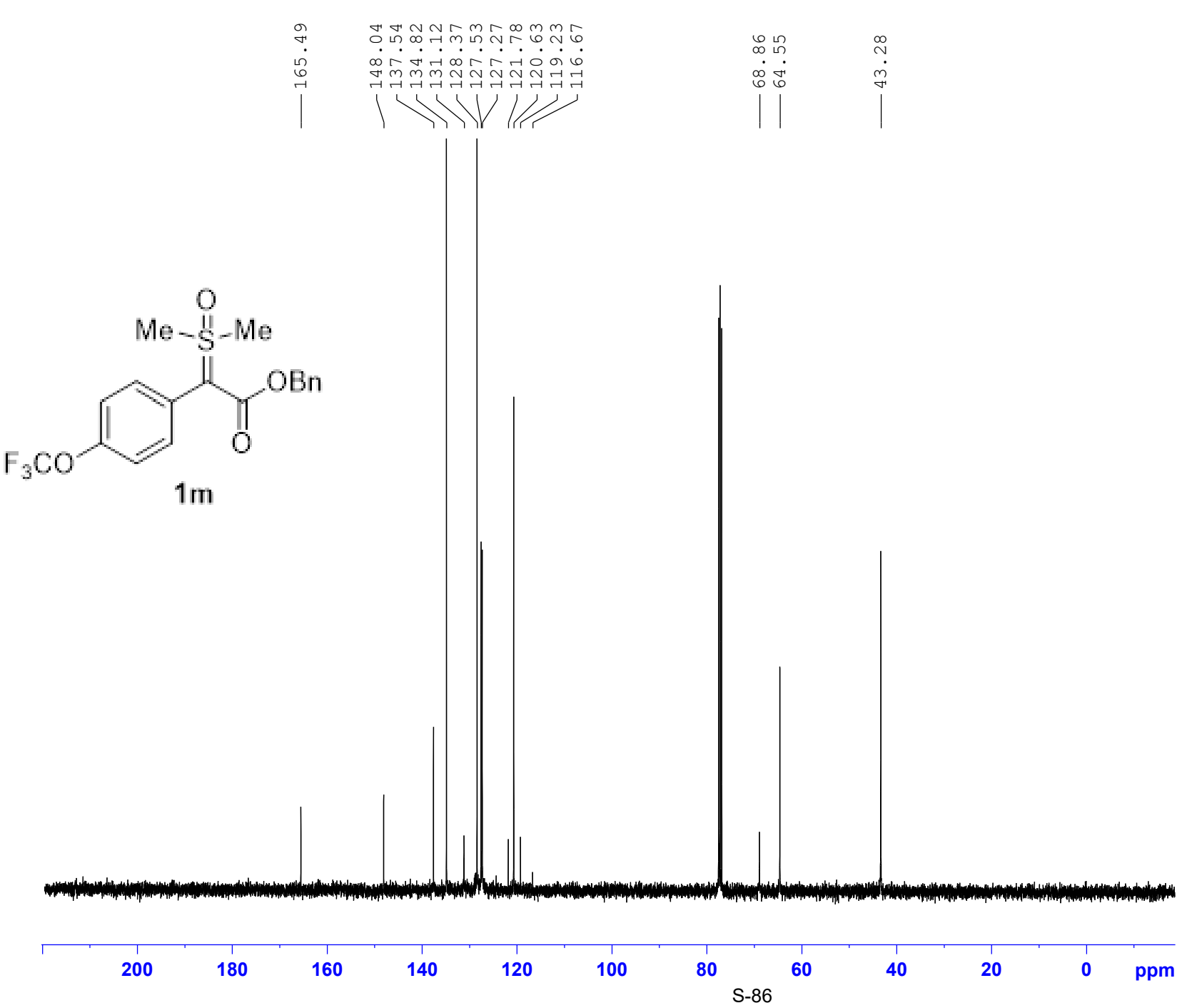
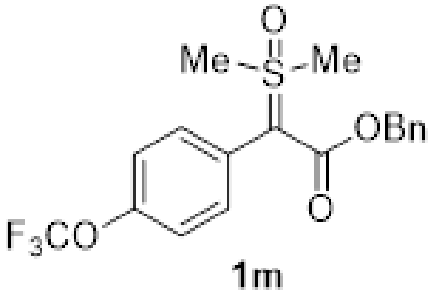
NAME	CNMR-gwg-9-30-substrate
EXPNO	1
PROCNO	1
Date_	20201003
Time	13.44
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	47
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.6 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40




```
NAME      HNMR-gwg-8-134-1
EXPNO                    1
PROCNO                   1
Date_             20200901
Time                 13.37
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       1
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   31.55
DW                   62.400 usec
DE                    6.50 usec
TE                   296.9 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

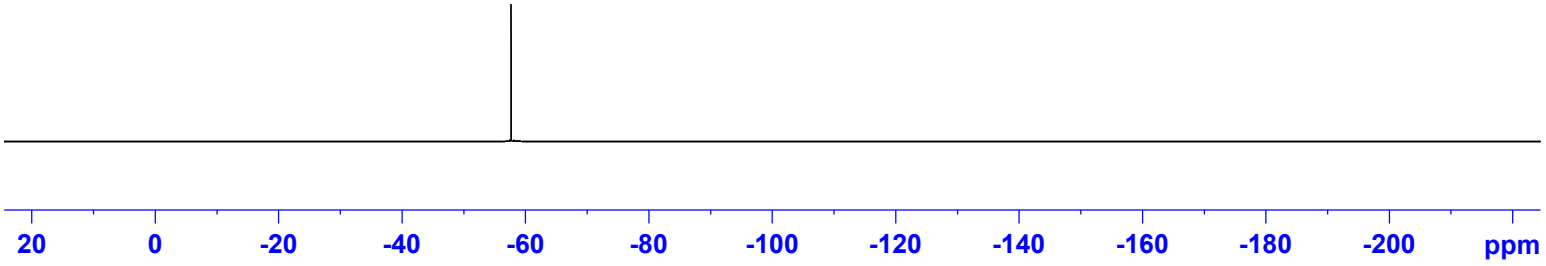



```
NAME        CNMR-gwg-8-134-1
EXPNO                     1
PROCNO                    1
Date_              20200901
Time                  13.43
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                      69
DS                       0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.6 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

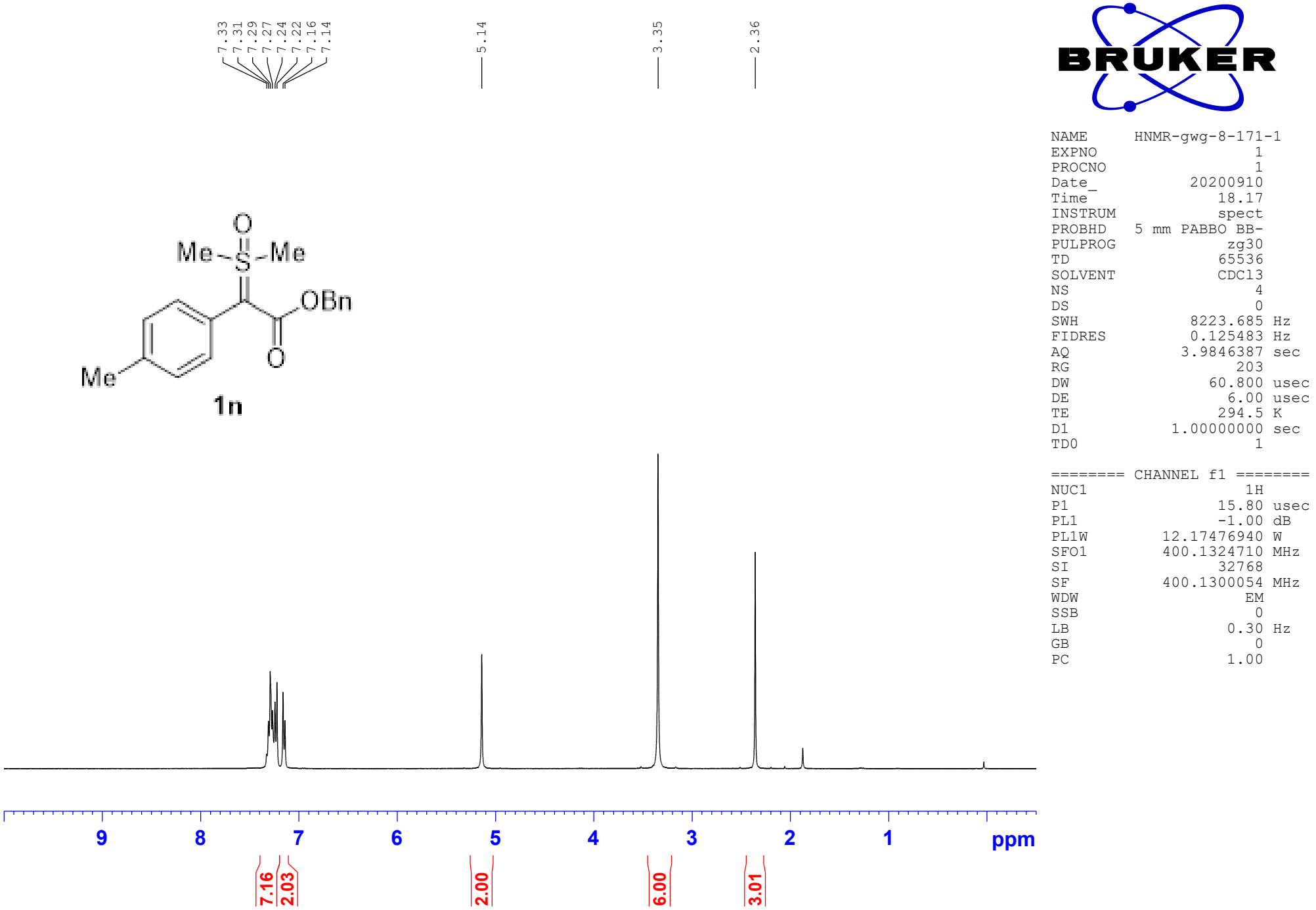


1m

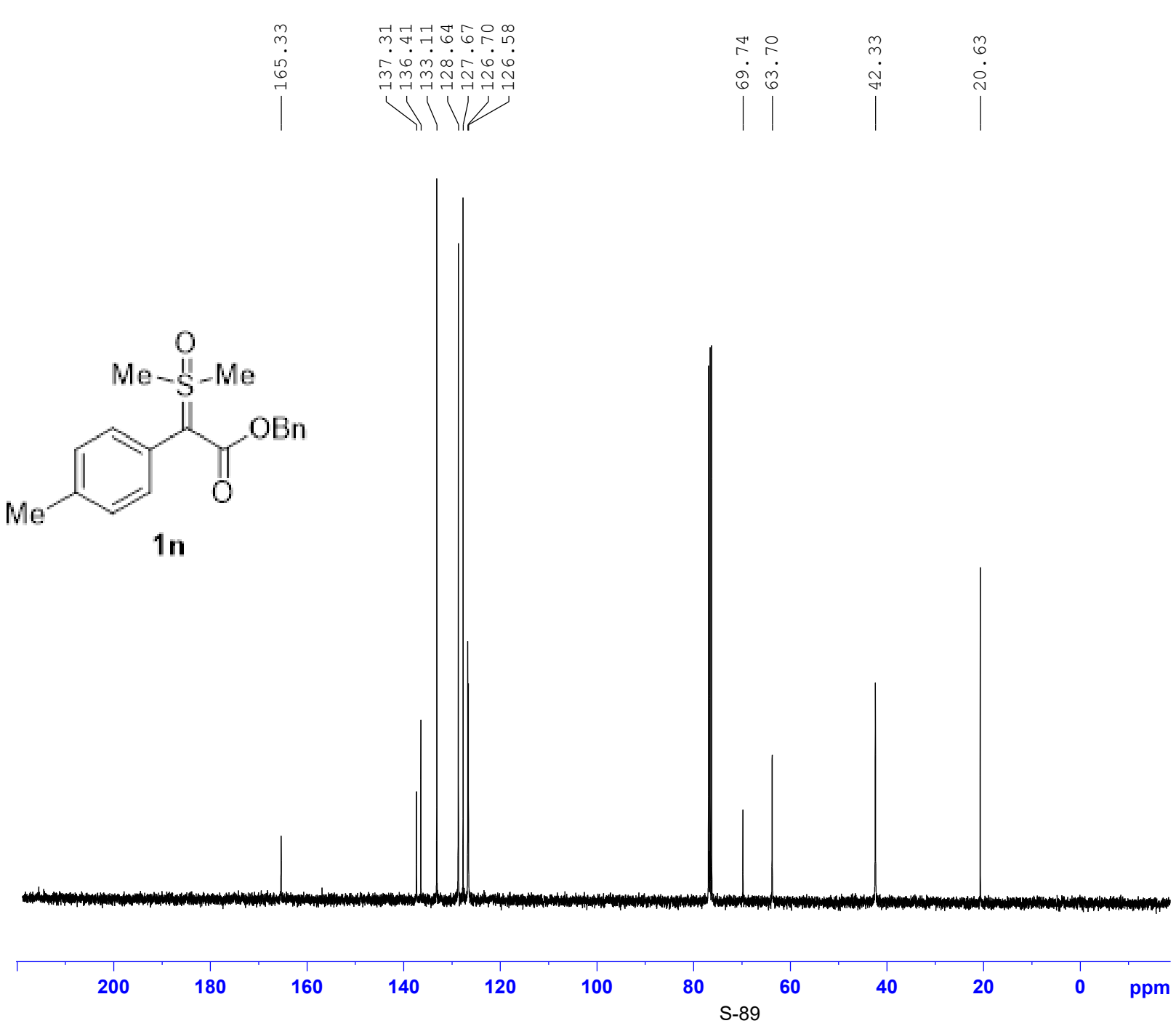
-57.69



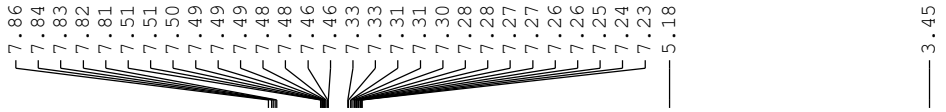

```
NAME      FNMR-gwg-8-134-1
EXPNO                    1
PROCNO                   1
Date_             20200901
Time                 13.39
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                       4
DS                       0
SWH              93750.000 Hz
FIDRES           1.430511 Hz
AQ               0.3495753 sec
RG                  196.92
DW                  5.333 usec
DE                   6.50 usec
TE                  296.9 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          376.4607162 MHz
NUC1                   19F
P1                   14.70 usec
SI                   32768
SF            376.4983660 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

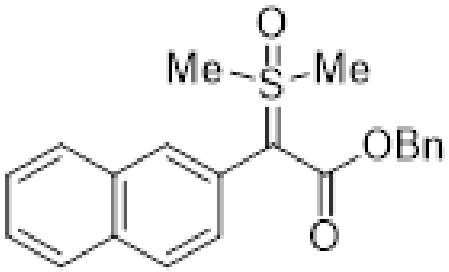



```
NAME        HNMR-gwg-8-171-1
EXPNO                      1
PROCNO                     1
Date_               20200910
Time                   18.17
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                         4
DS                         0
SWH                 8223.685 Hz
FIDRES              0.125483 Hz
AQ                3.9846387 sec
RG                       203
DW                    60.800 usec
DE                     6.00 usec
TE                    294.5 K
D1                1.00000000 sec
TD0                        1

======== CHANNEL f1 ========
NUC1                      1H
P1                     15.80 usec
PL1                    -1.00 dB
PL1W           12.17476940 W
SFO1           400.1324710 MHz
SI                     32768
SF             400.1300054 MHz
WDW                       EM
SSB                        0
LB                     0.30 Hz
GB                         0
PC                     1.00
```

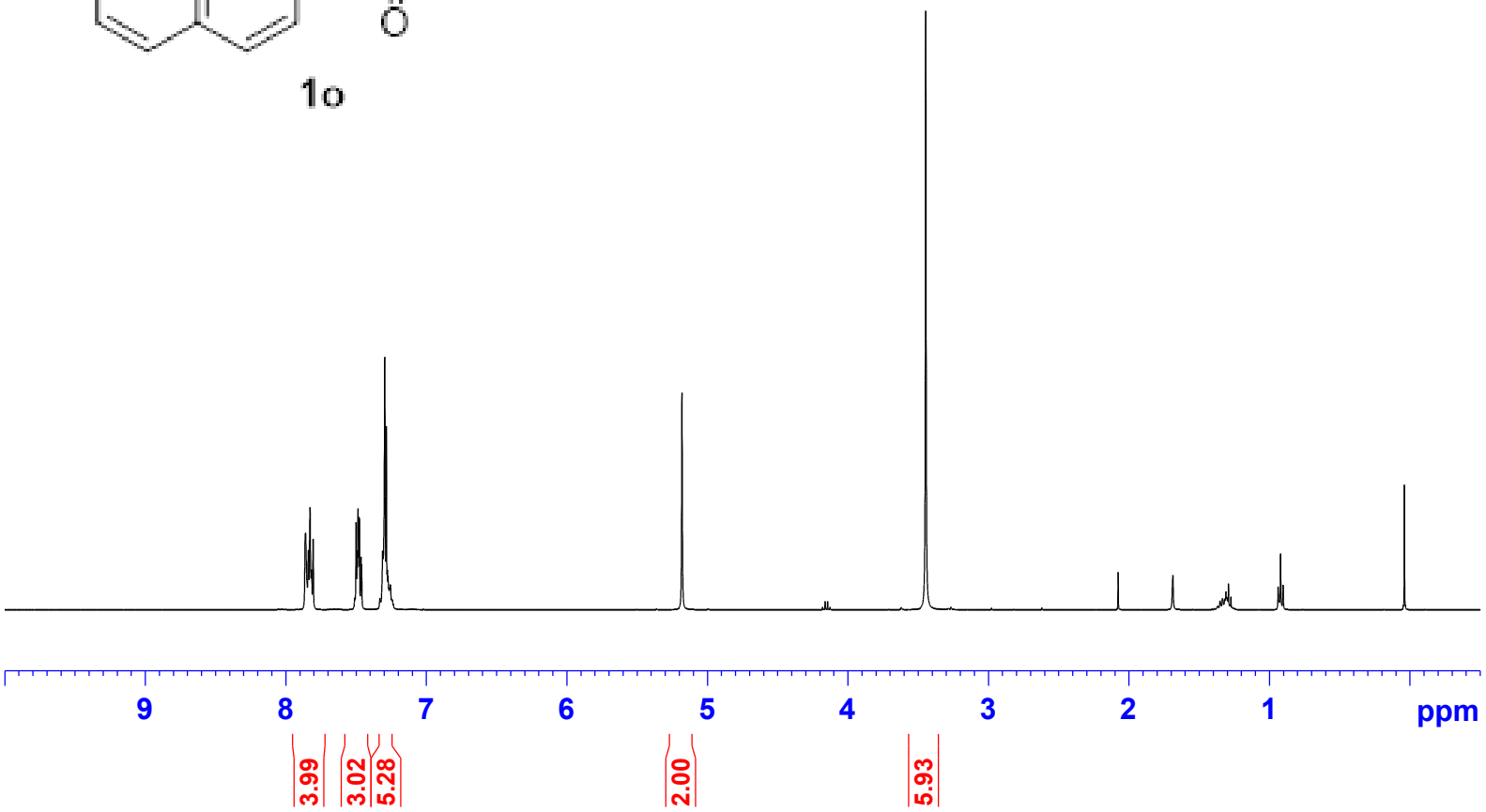



```
NAME          CNMR-gwg-8-171-1
EXPNO                       1
PROCNO                      1
Date_                20200910
Time                    18.22
INSTRUM                 spect
PROBHD    5 mm PABBO BB-
PULPROG                 zgpg30
TD                      65536
SOLVENT                 CDCl3
NS                        139
DS                          0
SWH                 24038.461 Hz
FIDRES              0.366798 Hz
AQ                  1.3631988 sec
RG                        114
DW                     20.800 usec
DE                      6.00 usec
TE                     295.0 K
D1                  2.00000000 sec
D11                 0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                      13C
P1                      8.60 usec
PL1                    -3.00 dB
PL1W               60.64365387 W
SFO1              100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  80.00 usec
PL2                    -1.00 dB
PL12                   14.39 dB
PL13                   18.00 dB
PL2W               12.17476940 W
PL12W               0.35193357 W
PL13W               0.15327126 W
SFO2              400.1316005 MHz
SI                      32768
SF                100.6128330 MHz
WDW                        EM
SSB                         0
LB                     1.00 Hz
GB                          0
PC                      1.40
```

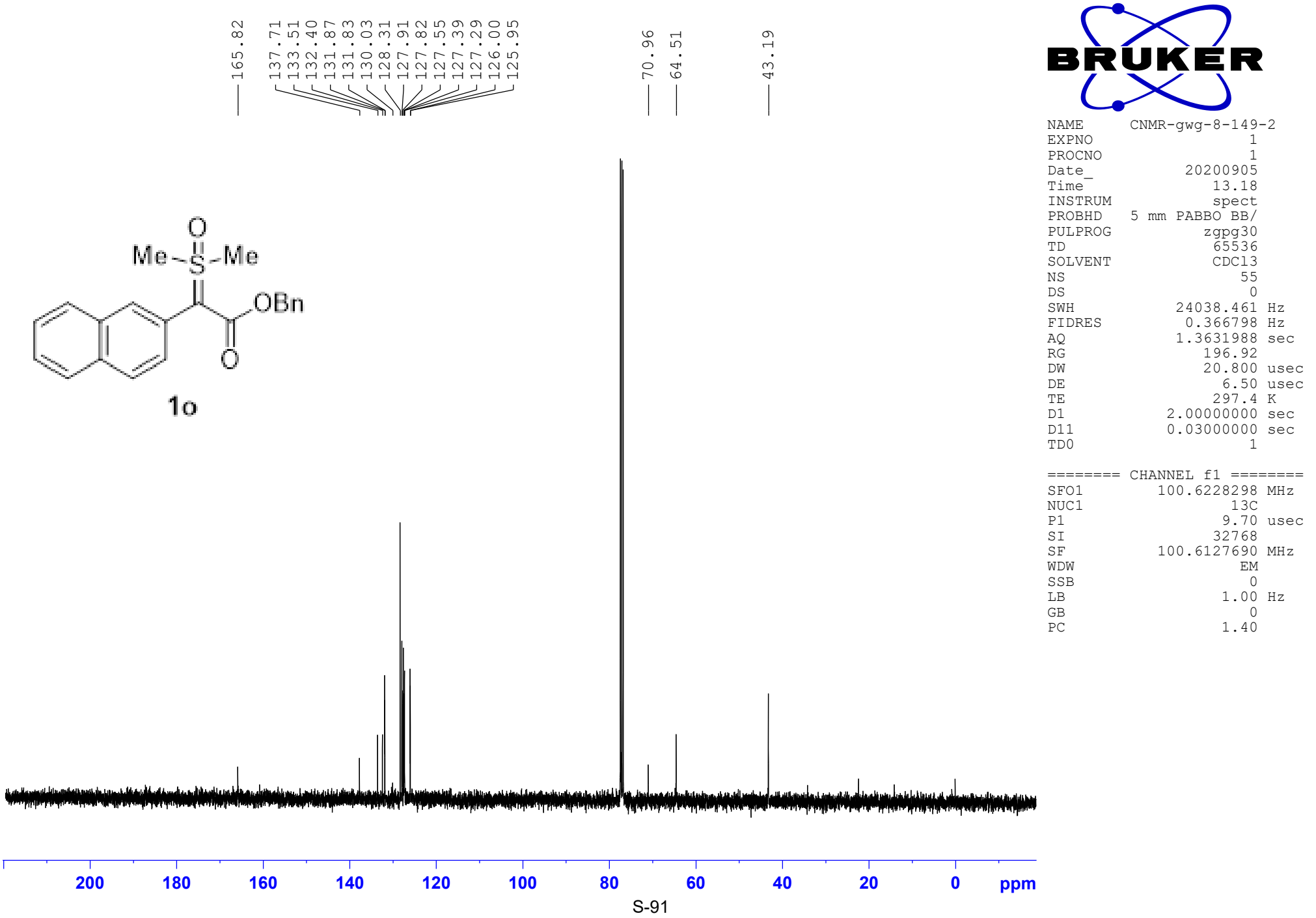




1o



NAME	HNMR-gwg-8-149-2
EXPNO	1
PROCNO	1
Date_	20200905
Time	13.12
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	88.84
DW	62.400 usec
DE	6.50 usec
TE	296.7 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



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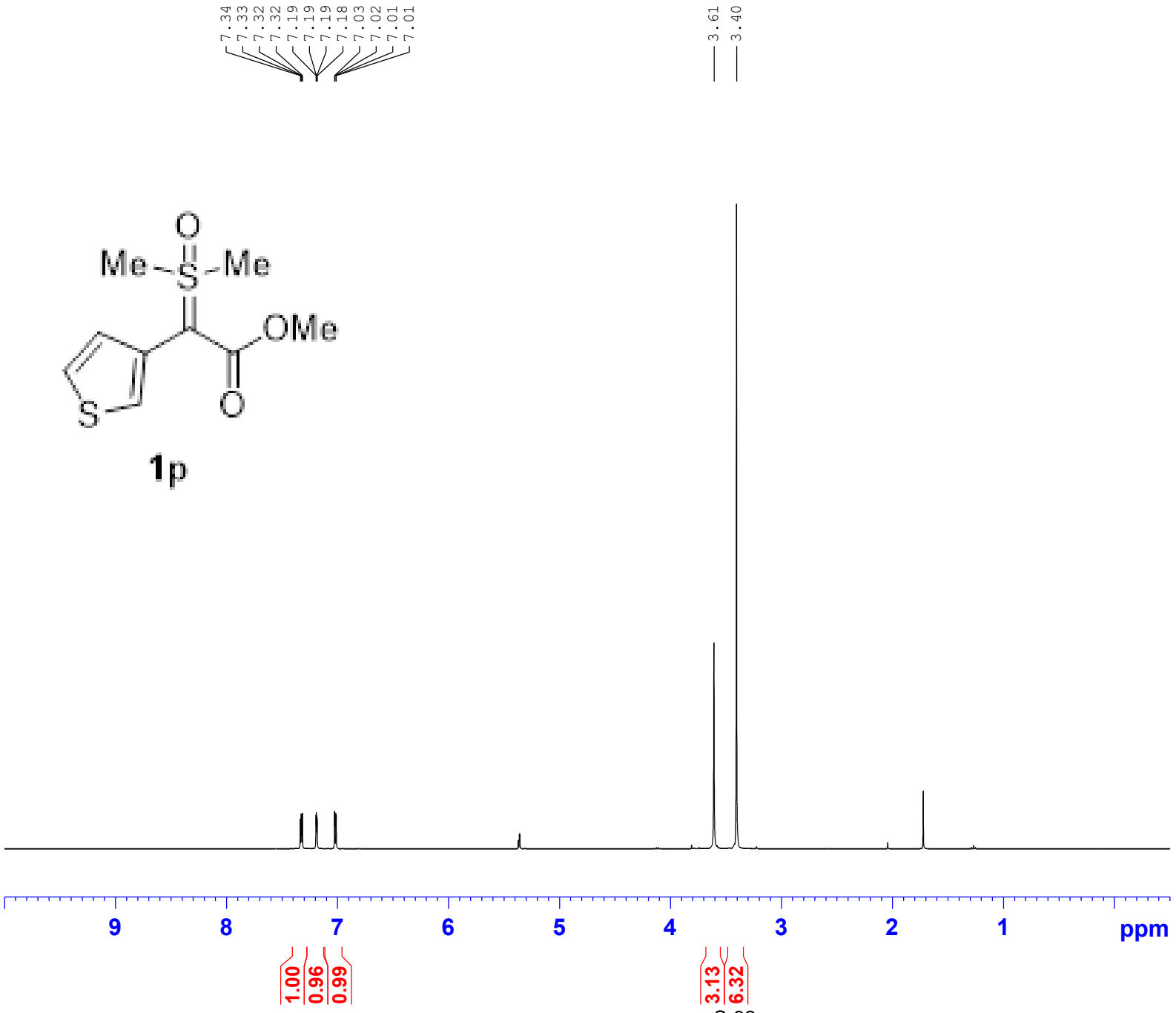
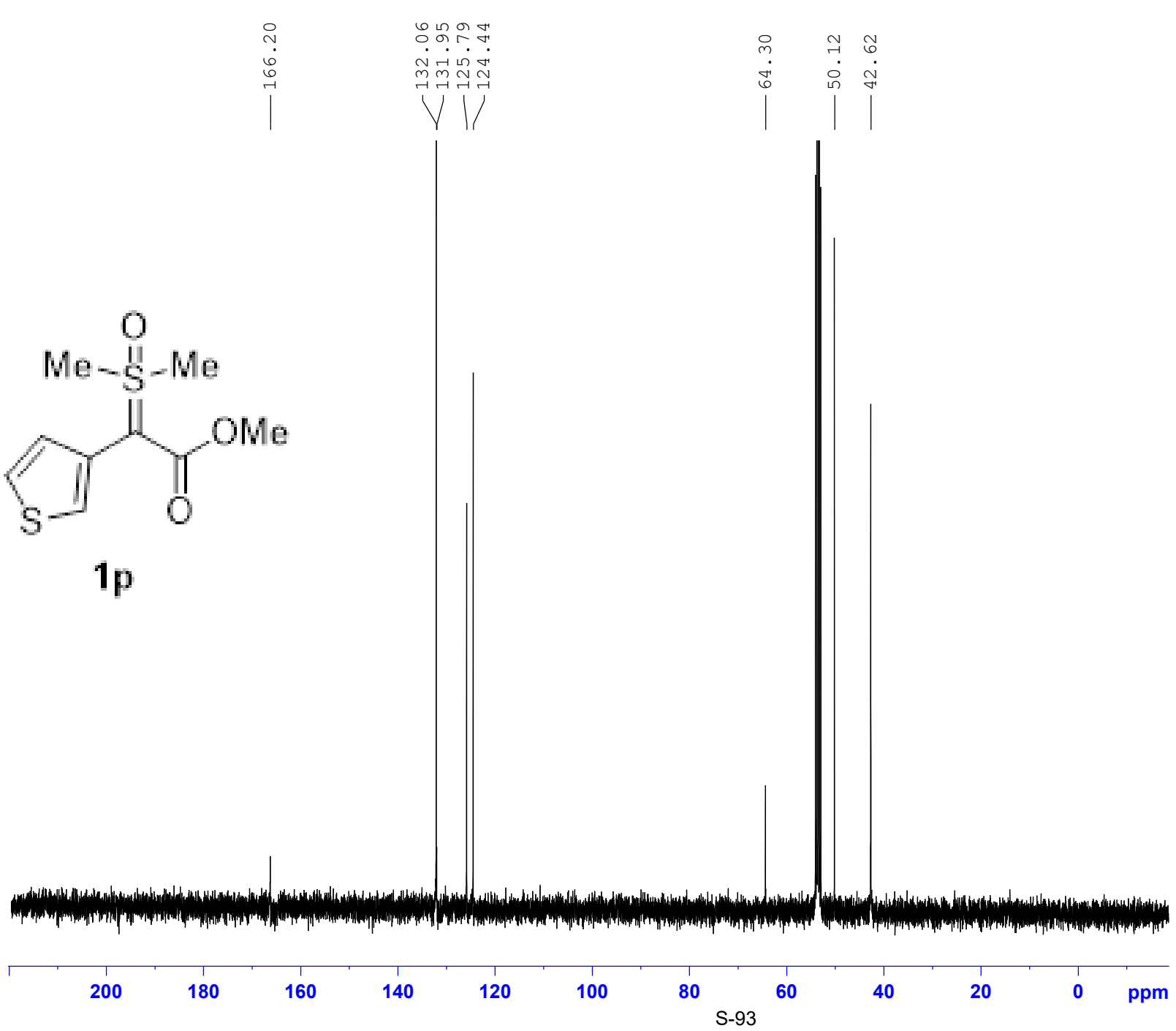
NAME	CNMR-gwg-8-149-2
EXPNO	1
PROCNO	1
Date_	20200905
Time	13.18
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	55
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.4 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40




```
NAME      HNMR-gwg-8-190-2
EXPNO                    1
PROCNO                   1
Date_             20200917
Time                 16.44
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT           CD2Cl2
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   103.52
DW                   62.400 usec
DE                    6.50 usec
TE                   296.3 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

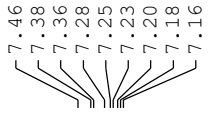


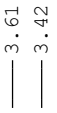
BRUKER

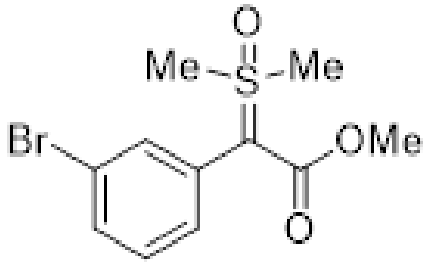
NAME	CNMR-gwg-8-190-2
EXPNO	1
PROCNO	1
Date_	20200917
Time	16.46
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	248
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	296.8 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

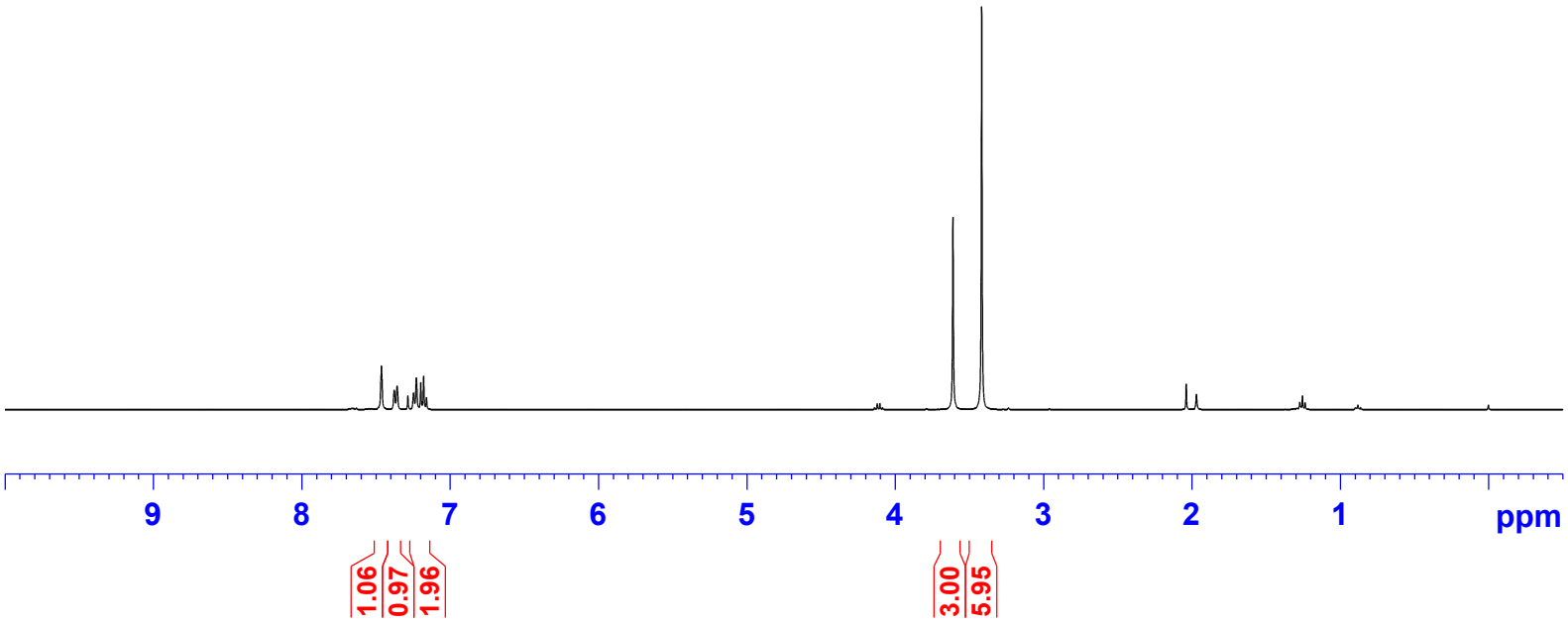


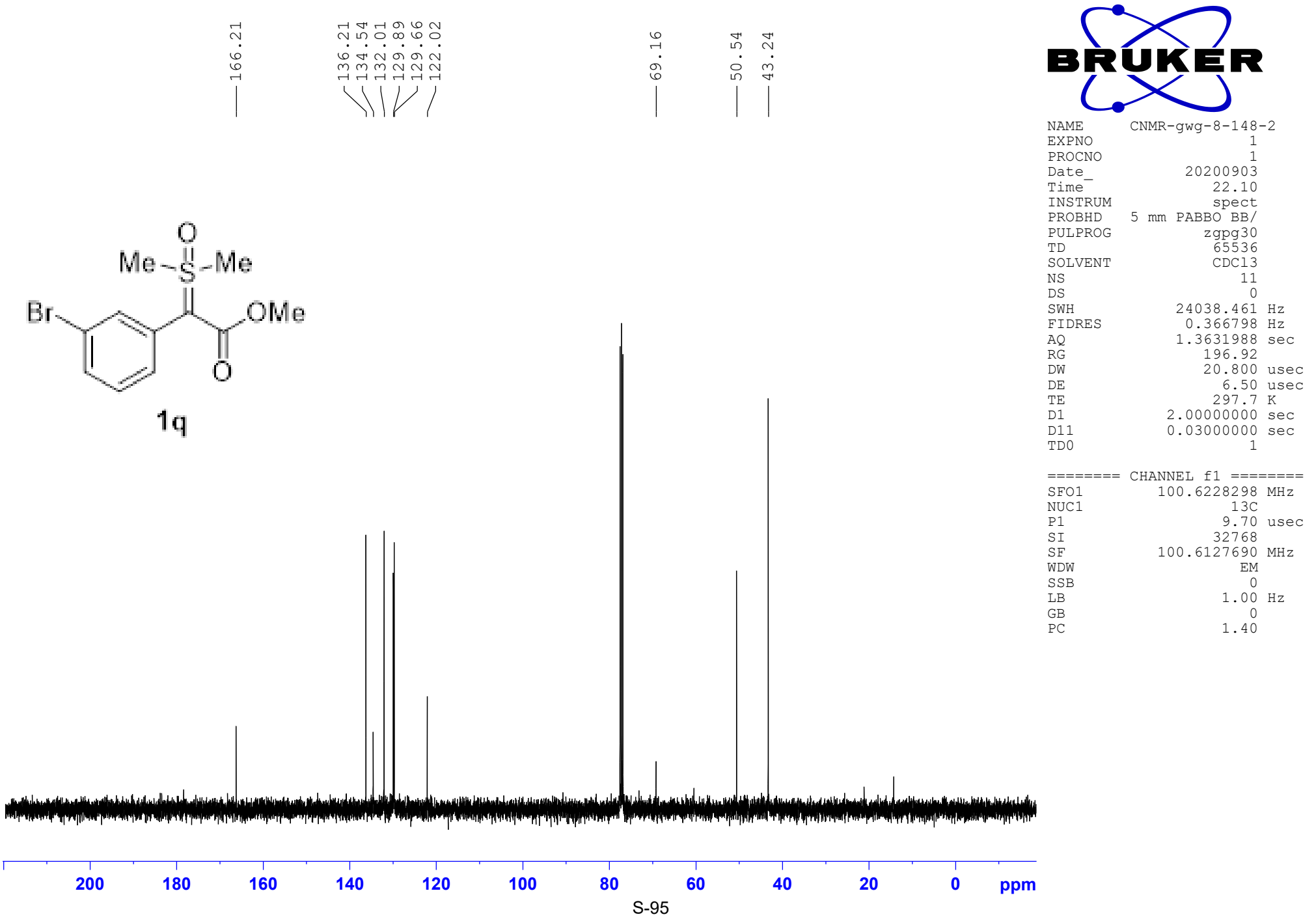




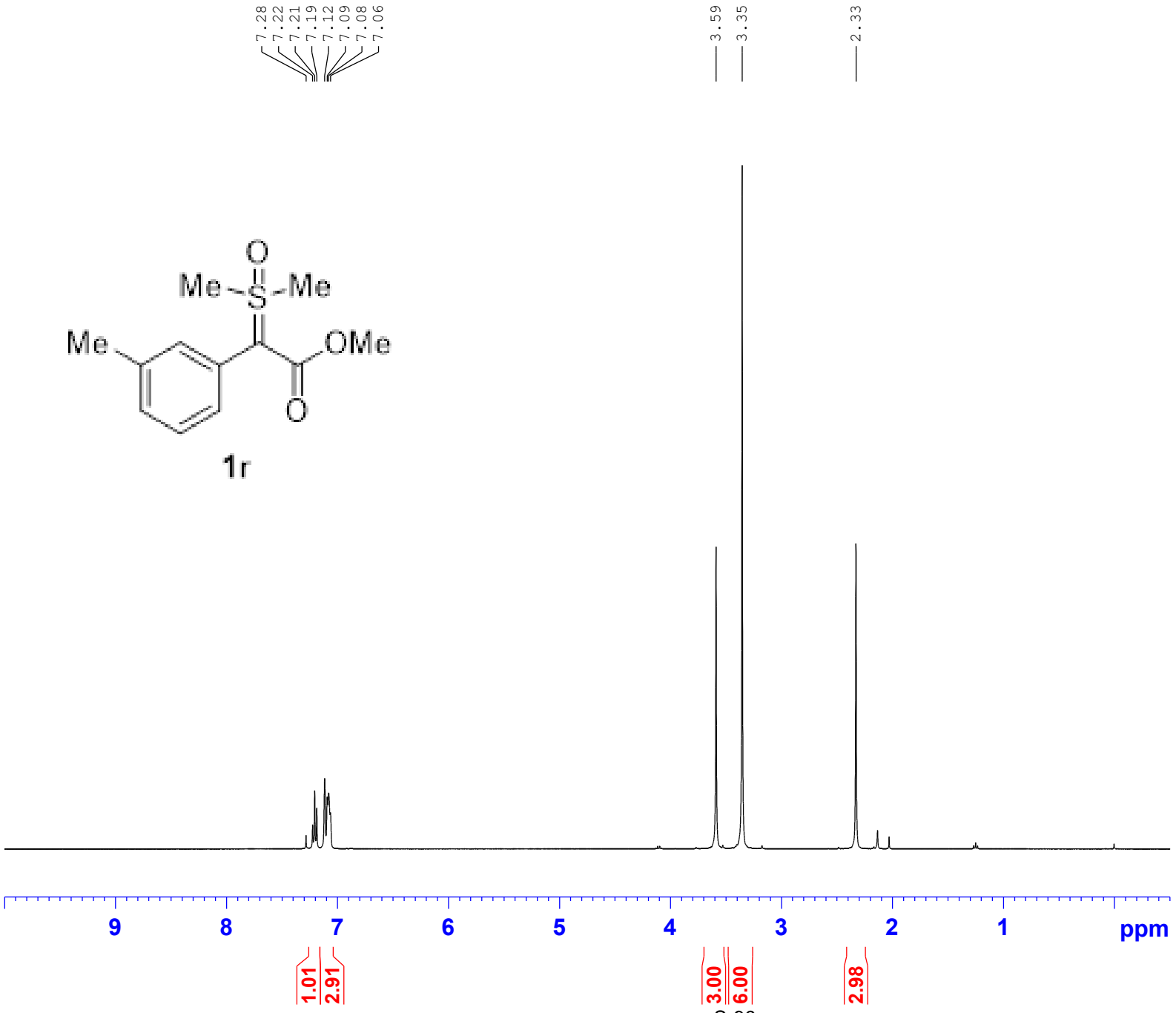
1q

```
NAME      HNMR-gwg-8-148-2
EXPNO                    1
PROCNO                   1
Date_             20200903
Time                 22.08
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       2
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                   34.77
DW                 62.400 usec
DE                  6.50 usec
TE                 297.3 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



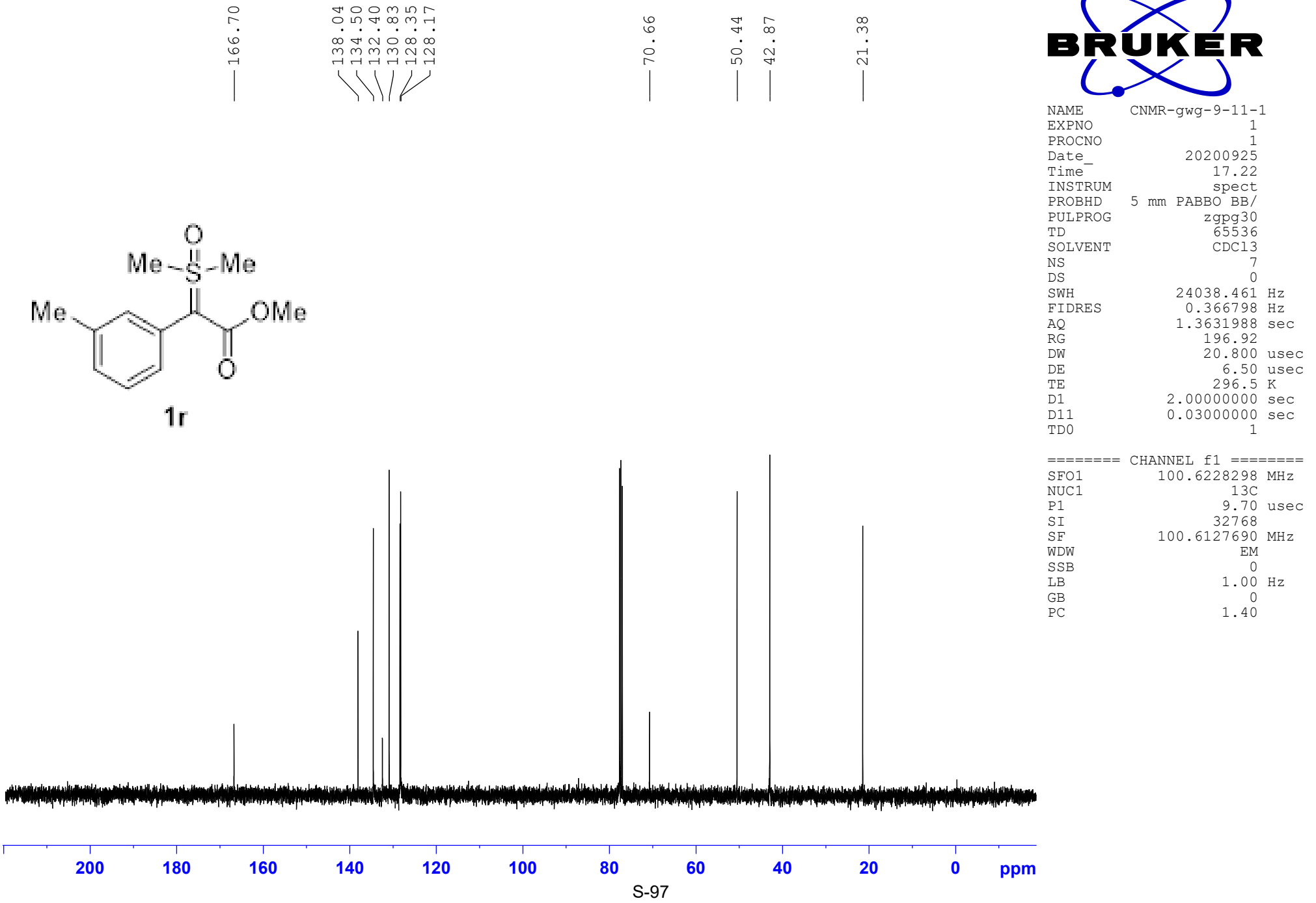



```
NAME        CNMR-gwg-8-148-2
EXPNO                     1
PROCNO                    1
Date_              20200903
Time                  22.10
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                      11
DS                       0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ               1.3631988 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  297.7 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

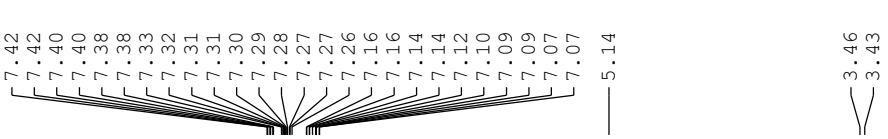


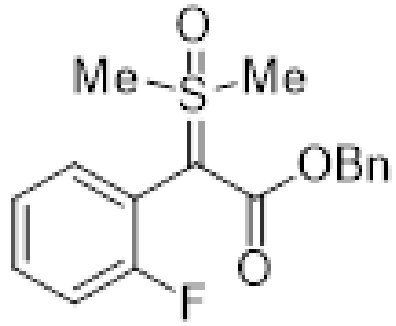
NAME HNMR-gwg-9-11-1
EXPNO 1
PROCNO 1
Date_ 20200925
Time 17.20
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 2
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 22.47
DW 62.400 usec
DE 6.50 usec
TE 296.5 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 400.1324710 MHz
NUC1 1H
P1 14.50 usec
SI 65536
SF 400.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



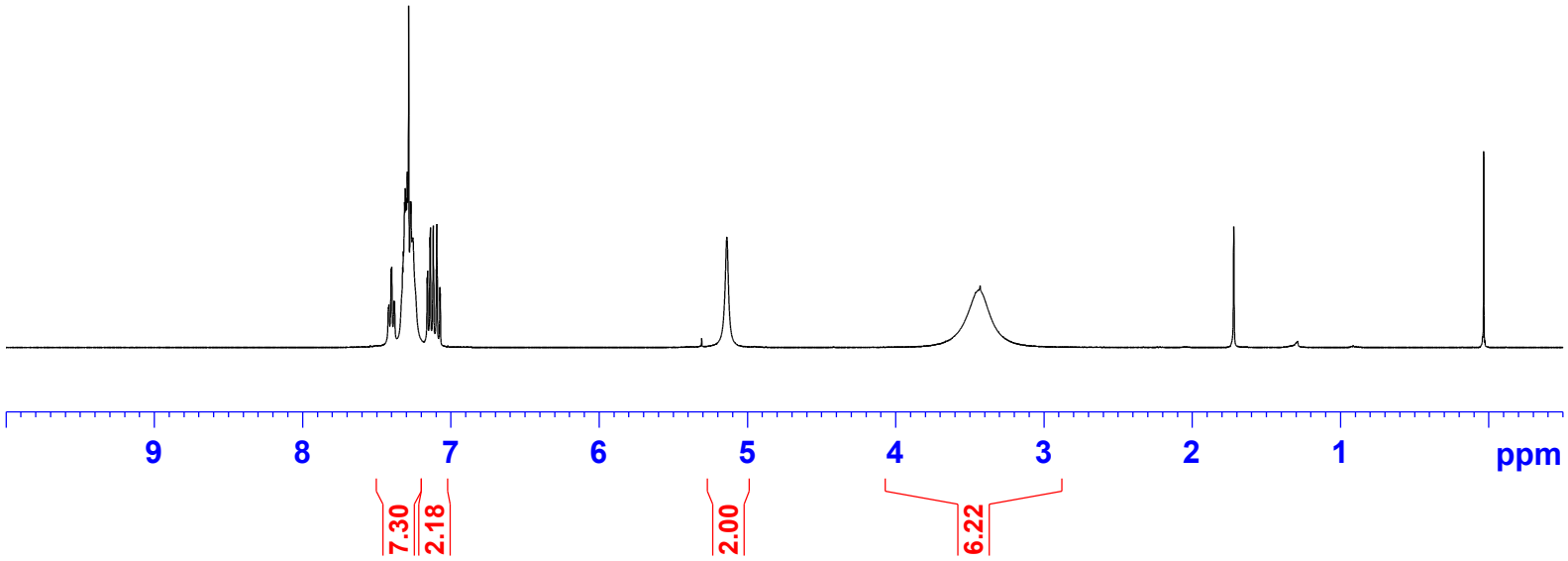

```
NAME        CNMR-gwg-9-11-1
EXPNO                     1
PROCNO                    1
Date_              20200925
Time                  17.22
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                       7
DS                       0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   296.5 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

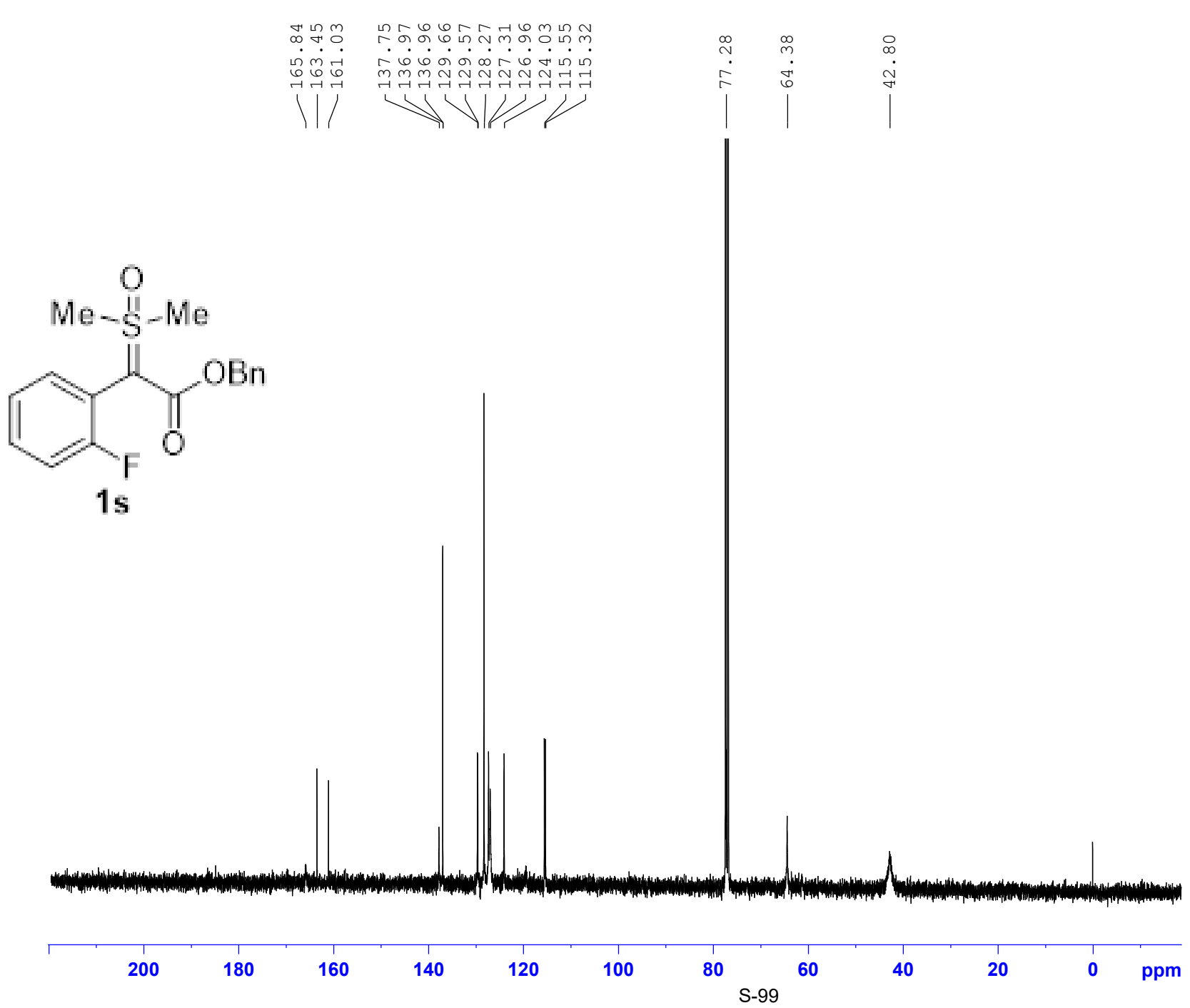




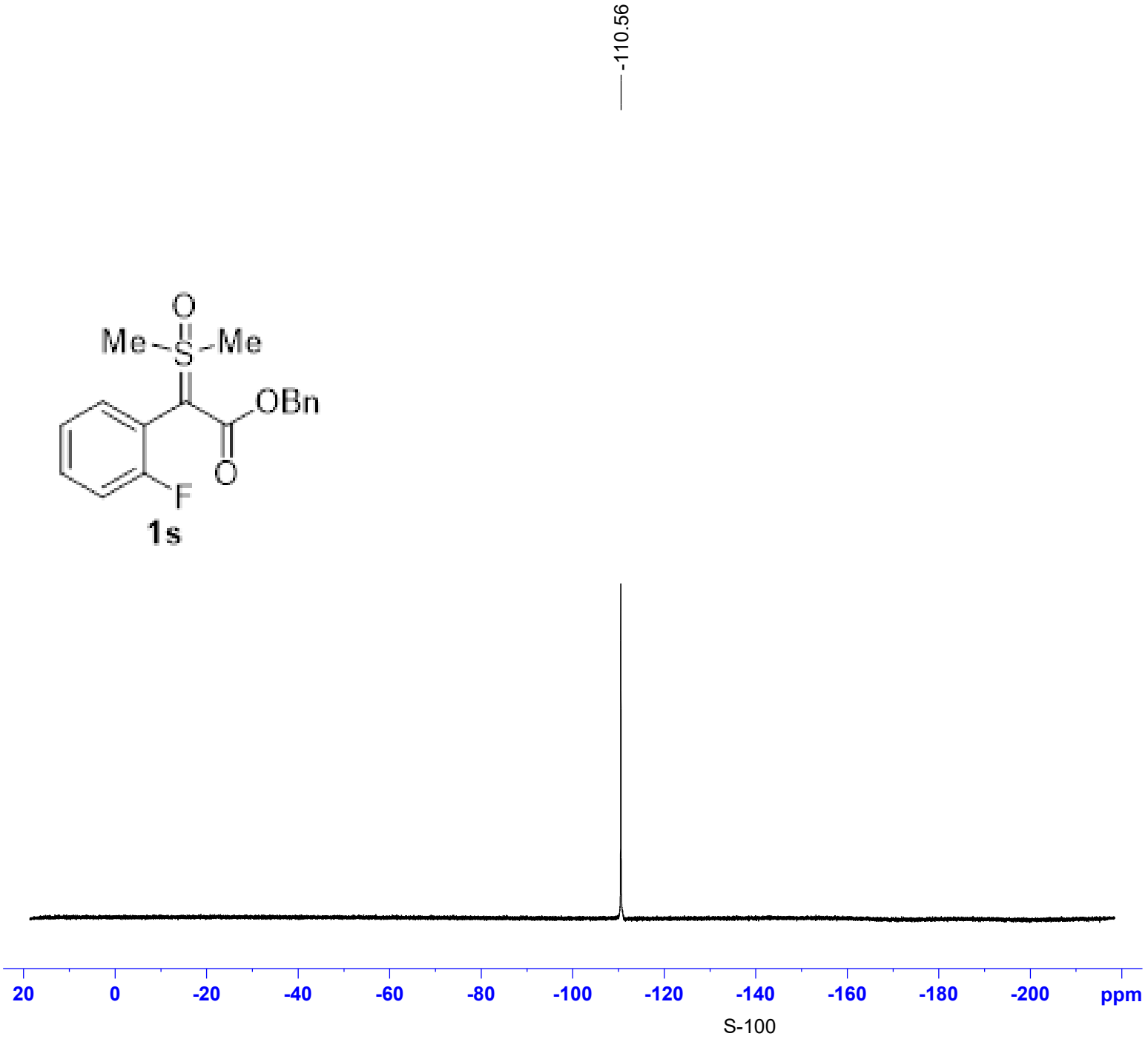
1s

```
NAME      HNMR-gwg-8-183-2
EXPNO                    1
PROCNO                   1
Date_             20200915
Time                 15.51
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       2
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   70.97
DW                   62.400 usec
DE                    6.50 usec
TE                   296.8 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1           400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF             400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

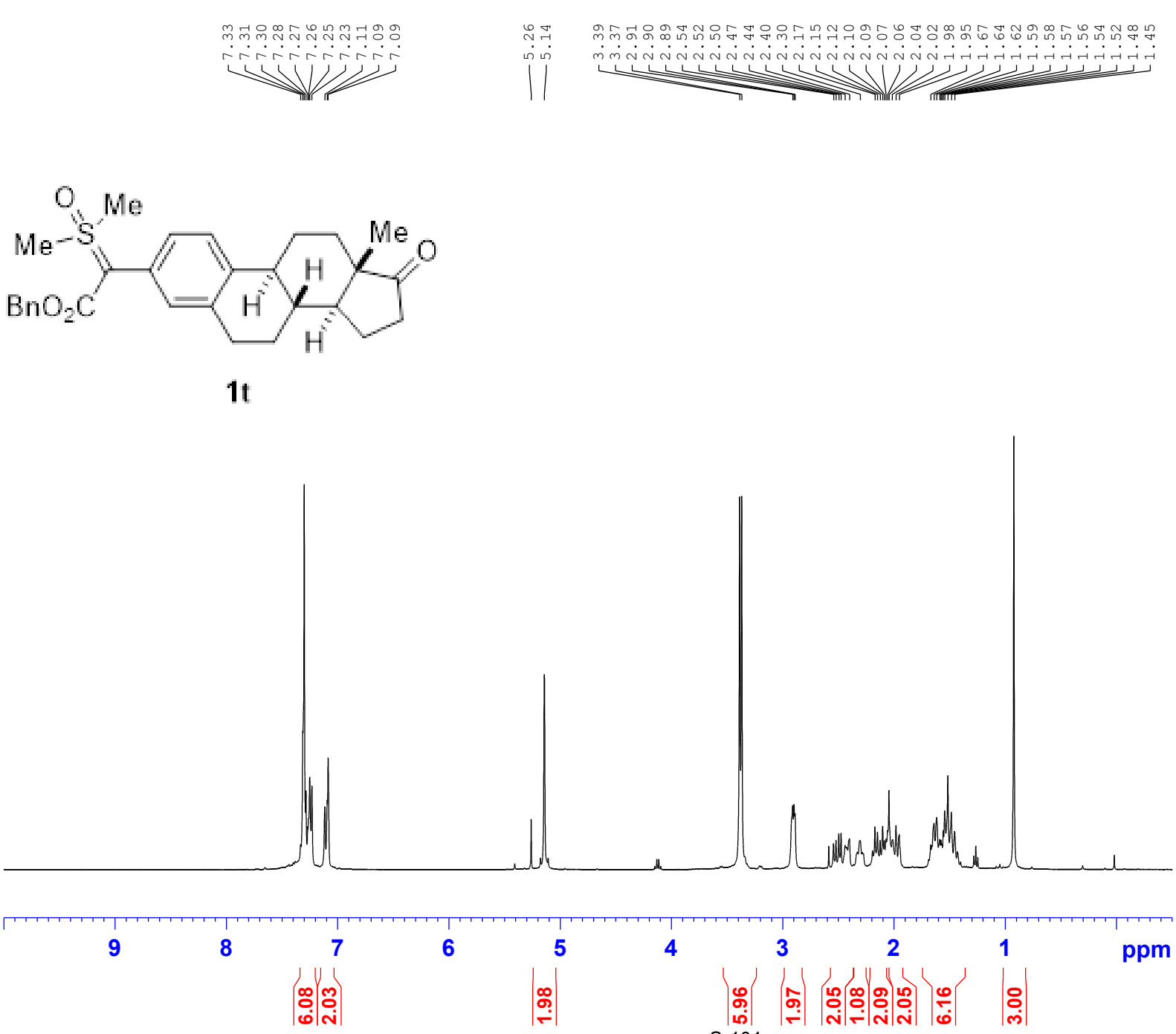




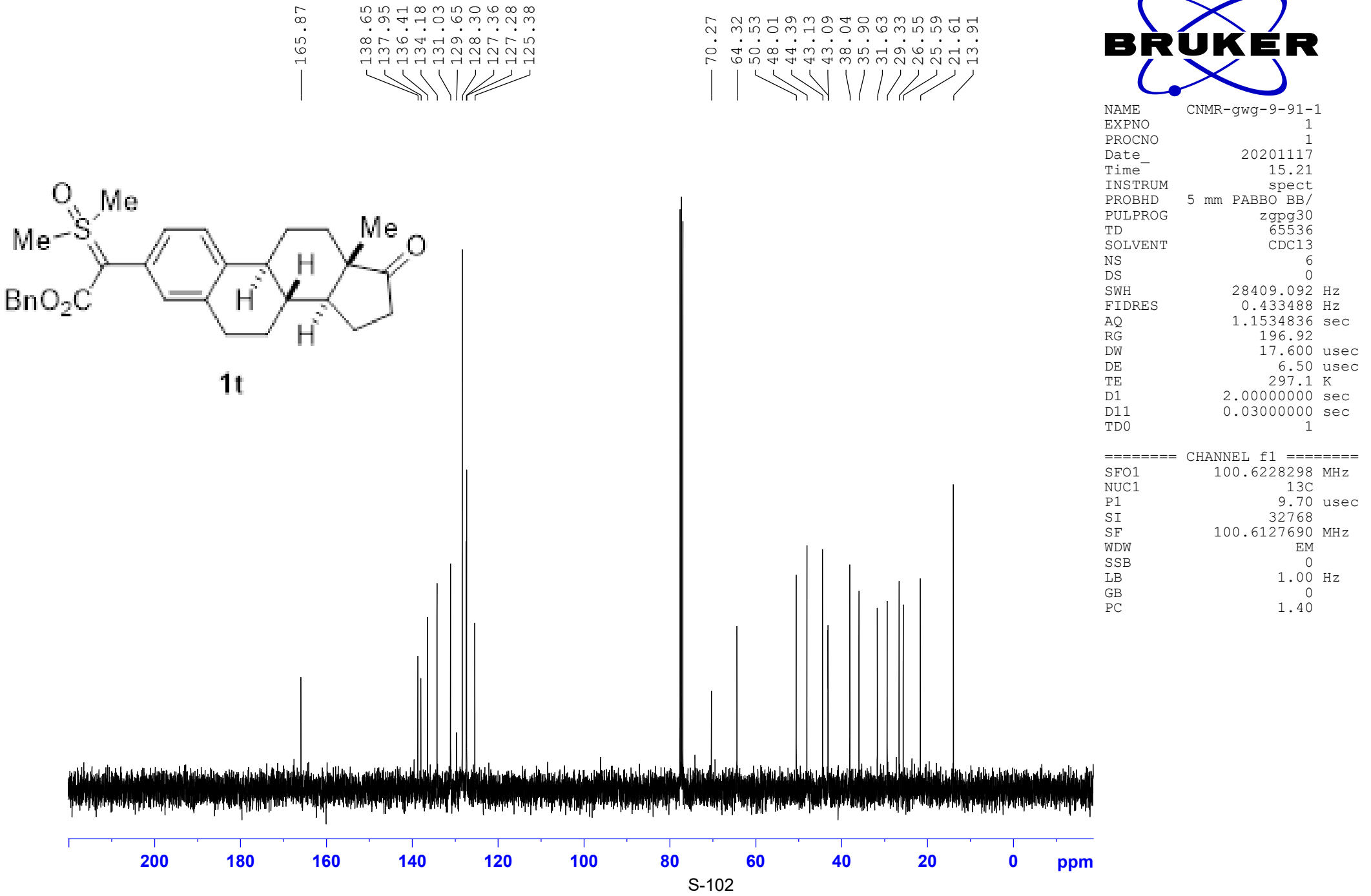
NAME	CNMR-gwg-8-183-2
EXPNO	1
PROCNO	1
Date_	20200915
Time	15.58
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	400
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.8 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40




```
NAME      FNMR-gwg-8-183-2
EXPNO                    1
PROCNO                   1
Date_             20200915
Time                 16.20
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgflqn
TD                  131072
SOLVENT               CDCl3
NS                        4
DS                        0
SWH               89285.711 Hz
FIDRES             0.681196 Hz
AQ                 0.7340532 sec
RG                    196.92
DW                     5.600 usec
DE                     6.50 usec
TE                    297.1 K
D1              1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1            376.4607164 MHz
NUC1                    19F
P1                    14.70 usec
SI                    65536
SF              376.4983660 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```




```
NAME      HNMR-gwg-9-91-1
EXPNO                   1
PROCNO                  1
Date_            20201117
Time                15.10
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      3
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  22.47
DW                62.400 usec
DE                 6.50 usec
TE                296.7 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00
```

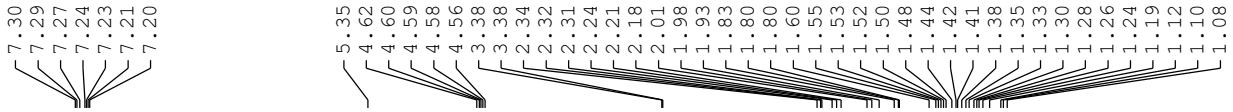


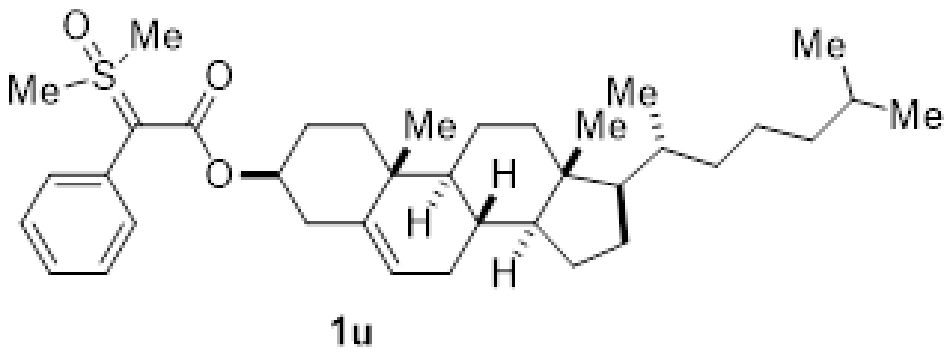
BRUKER

NAME	CNMR-gwg-9-91-1
EXPNO	1
PROCNO	1
Date_	20201117
Time	15.21
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	6
DS	0
SWH	28409.092 Hz
FIDRES	0.433488 Hz
AQ	1.1534836 sec
RG	196.92
DW	17.600 usec
DE	6.50 usec
TE	297.1 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

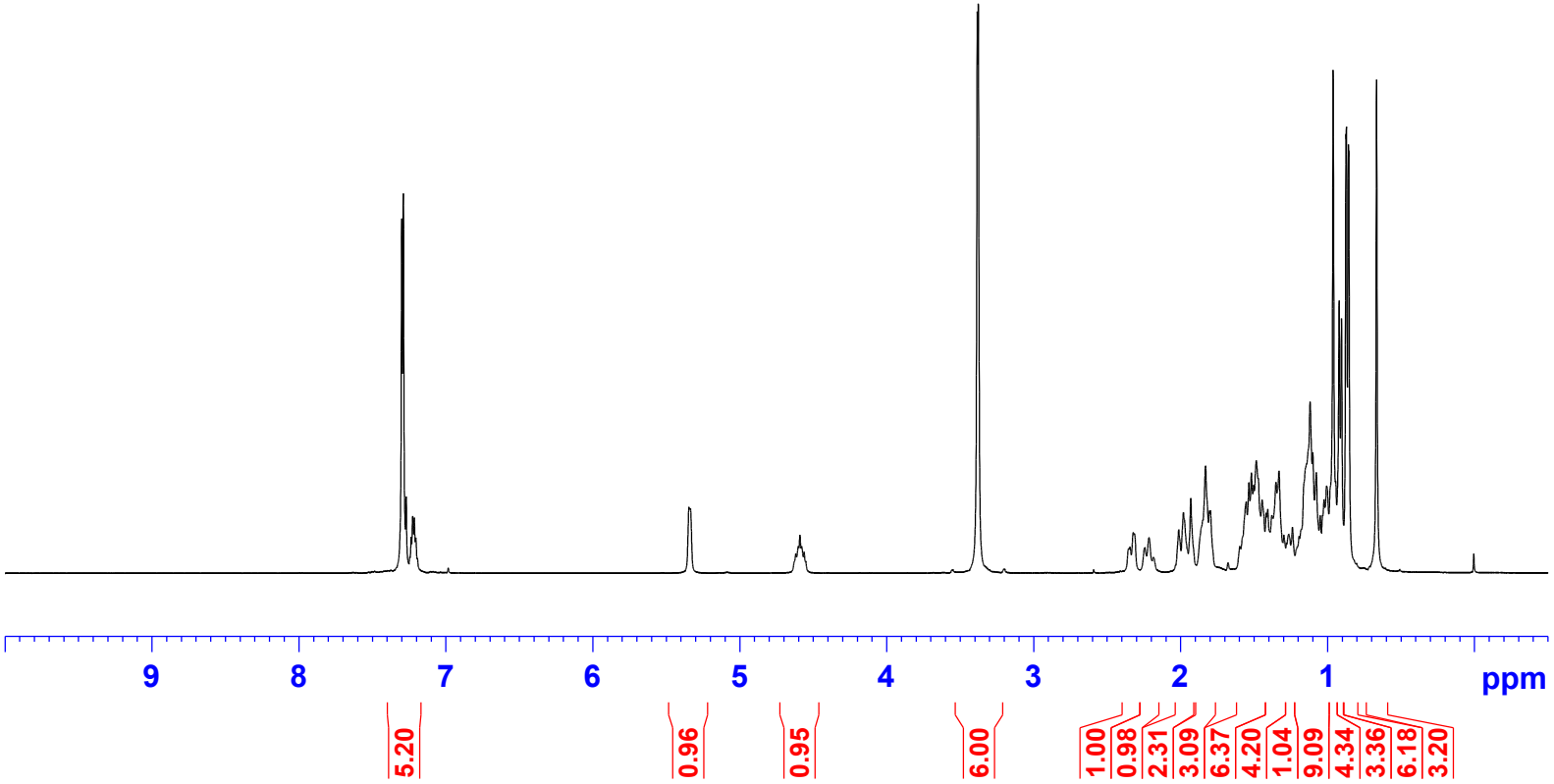
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

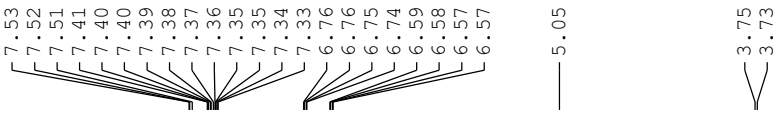


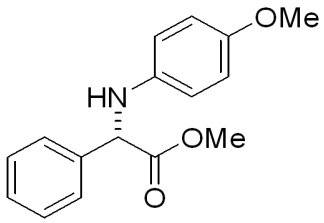


1u

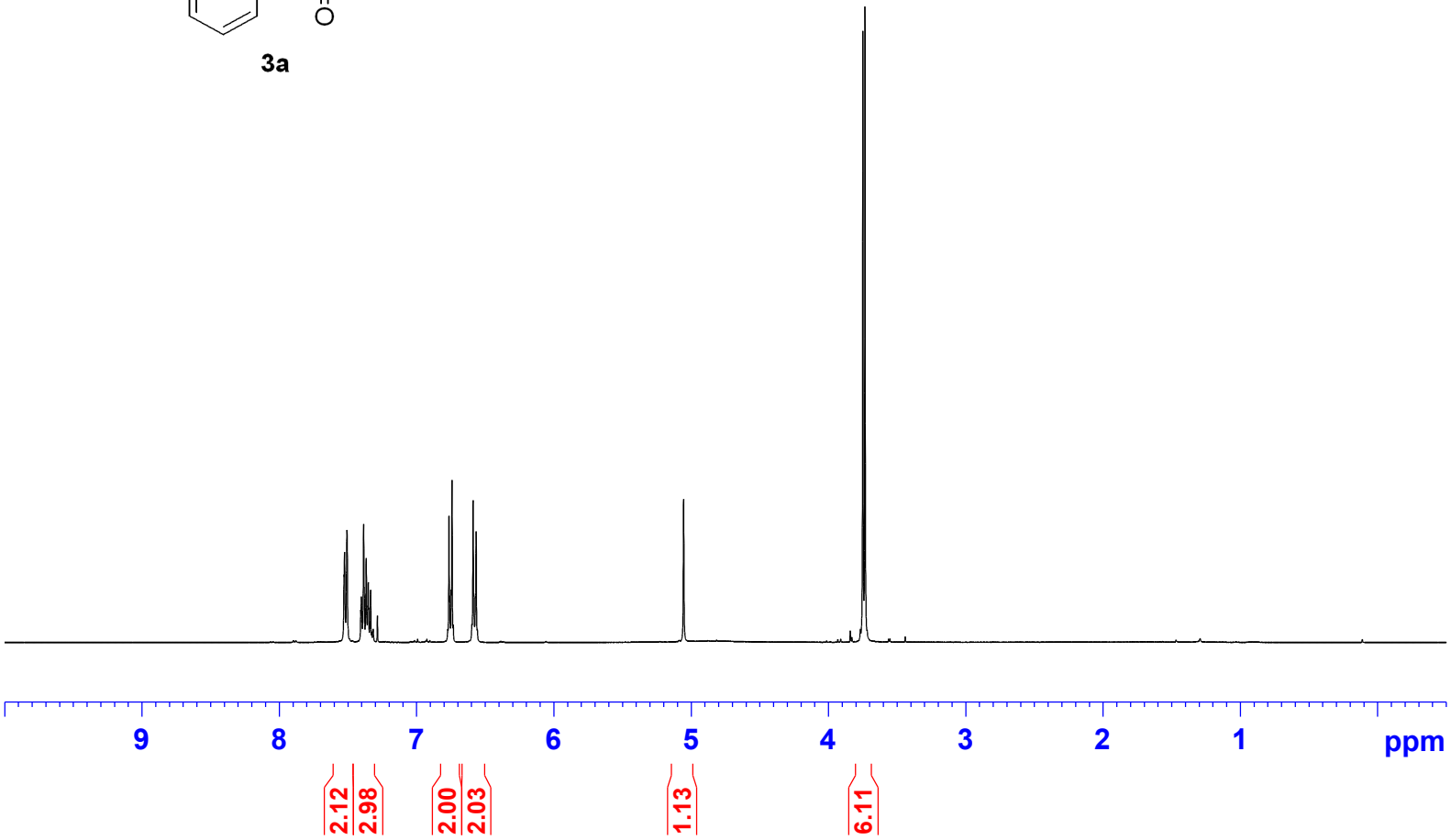
```
NAME      HNMR-gwg-8-189-reactant
EXPNO                   1
PROCNO                  1
Date_            20200916
Time                21.10
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      4
DS                      0
SWH              8223.685 Hz
FIDRES           0.125483 Hz
AQ               3.9846387 sec
RG                     36
DW                 60.800 usec
DE                  6.00 usec
TE                 294.5 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   1H
P1                  15.80 usec
PL1                 -1.00 dB
PL1W          12.17476940 W
SFO1          400.1324710 MHz
SI                  32768
SF            400.1300054 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



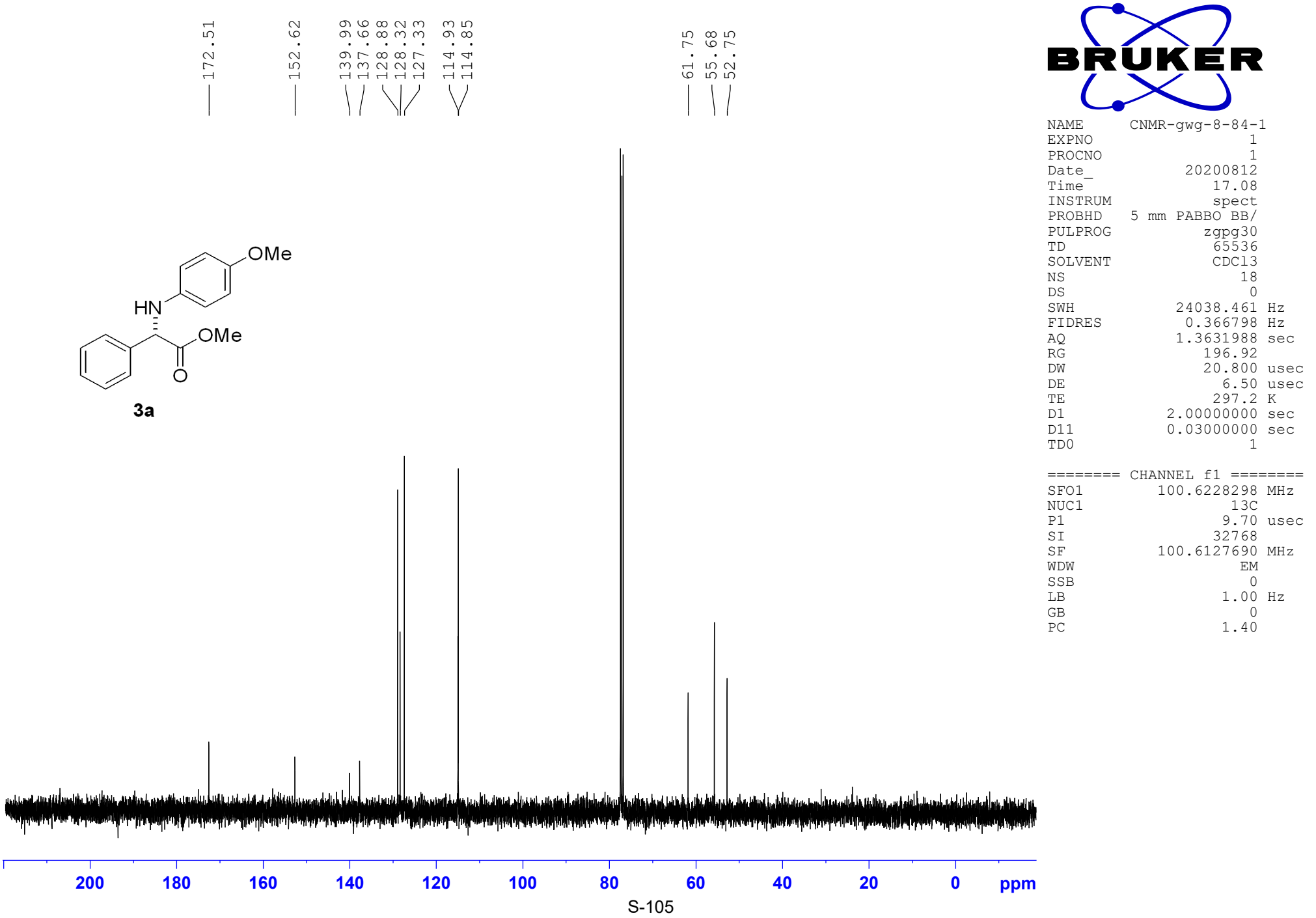




3a




```
NAME      HNMR-gwg-8-84-1
EXPNO                   1
PROCNO                  1
Date_            20200812
Time                17.05
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      2
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  88.84
DW                62.400 usec
DE                 6.50 usec
TE                296.6 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00
```

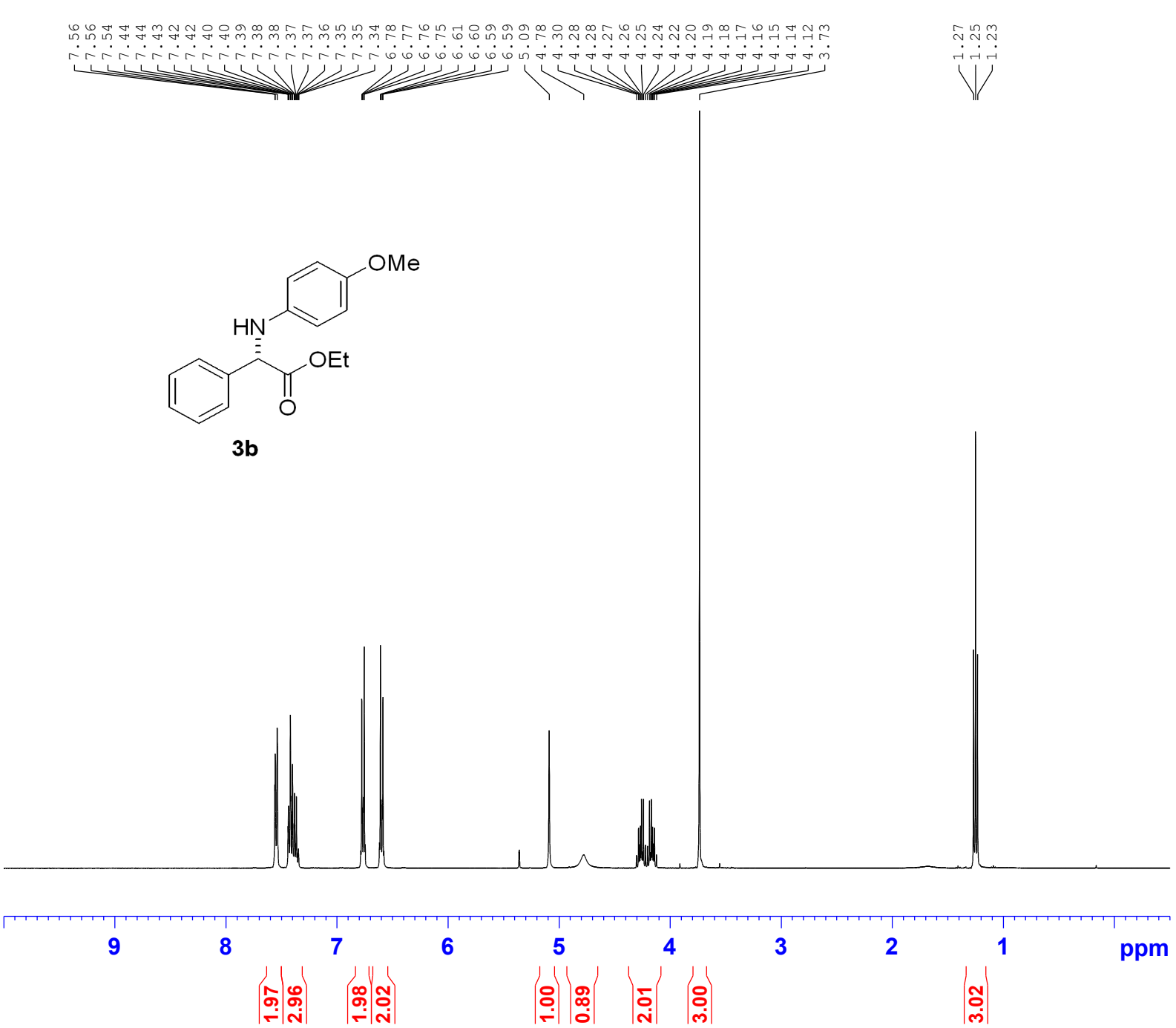


BRUKER

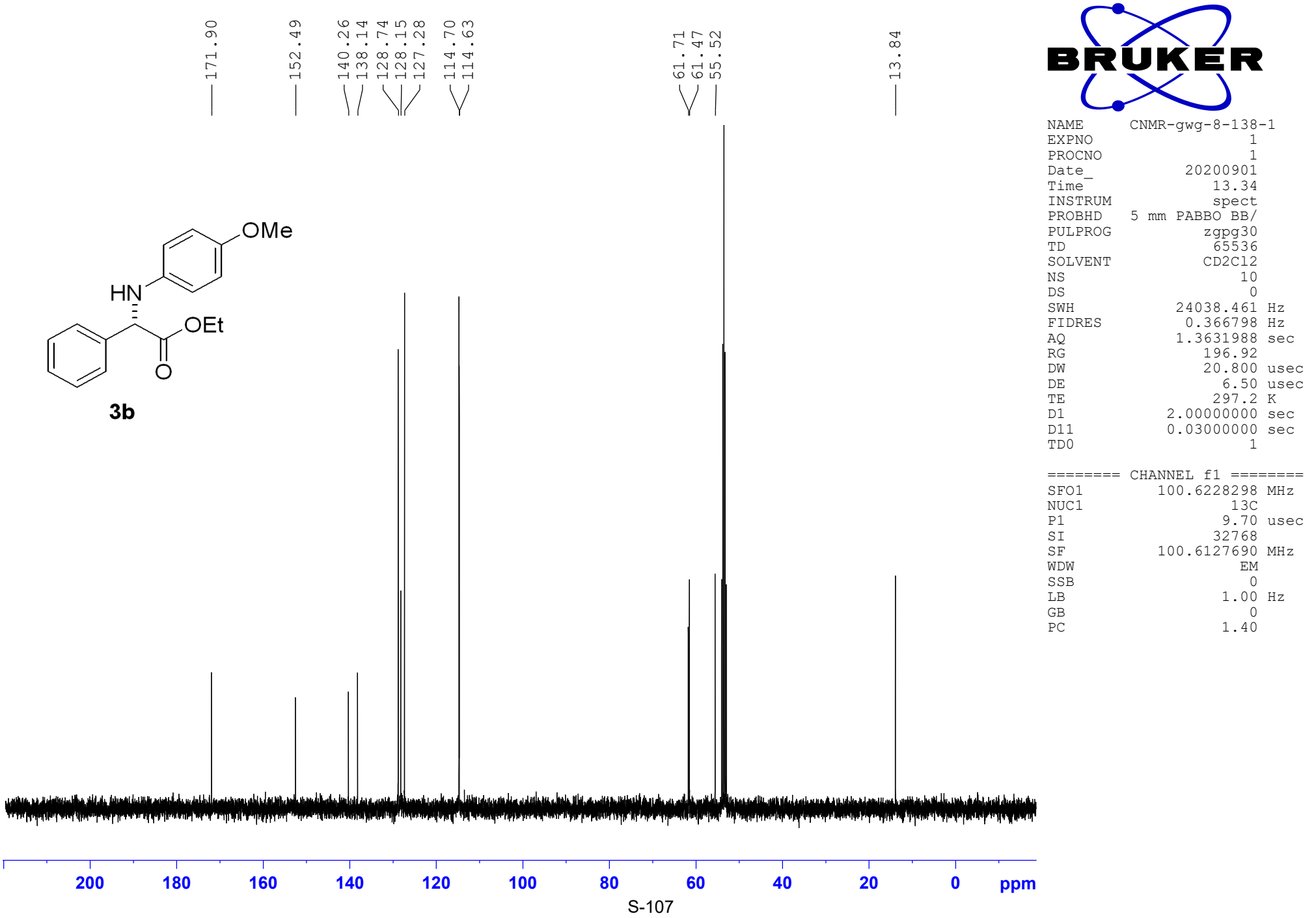
NAME	CNMR-gwg-8-84-1
EXPNO	1
PROCNO	1
Date_	20200812
Time	17.08
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	18
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.2 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

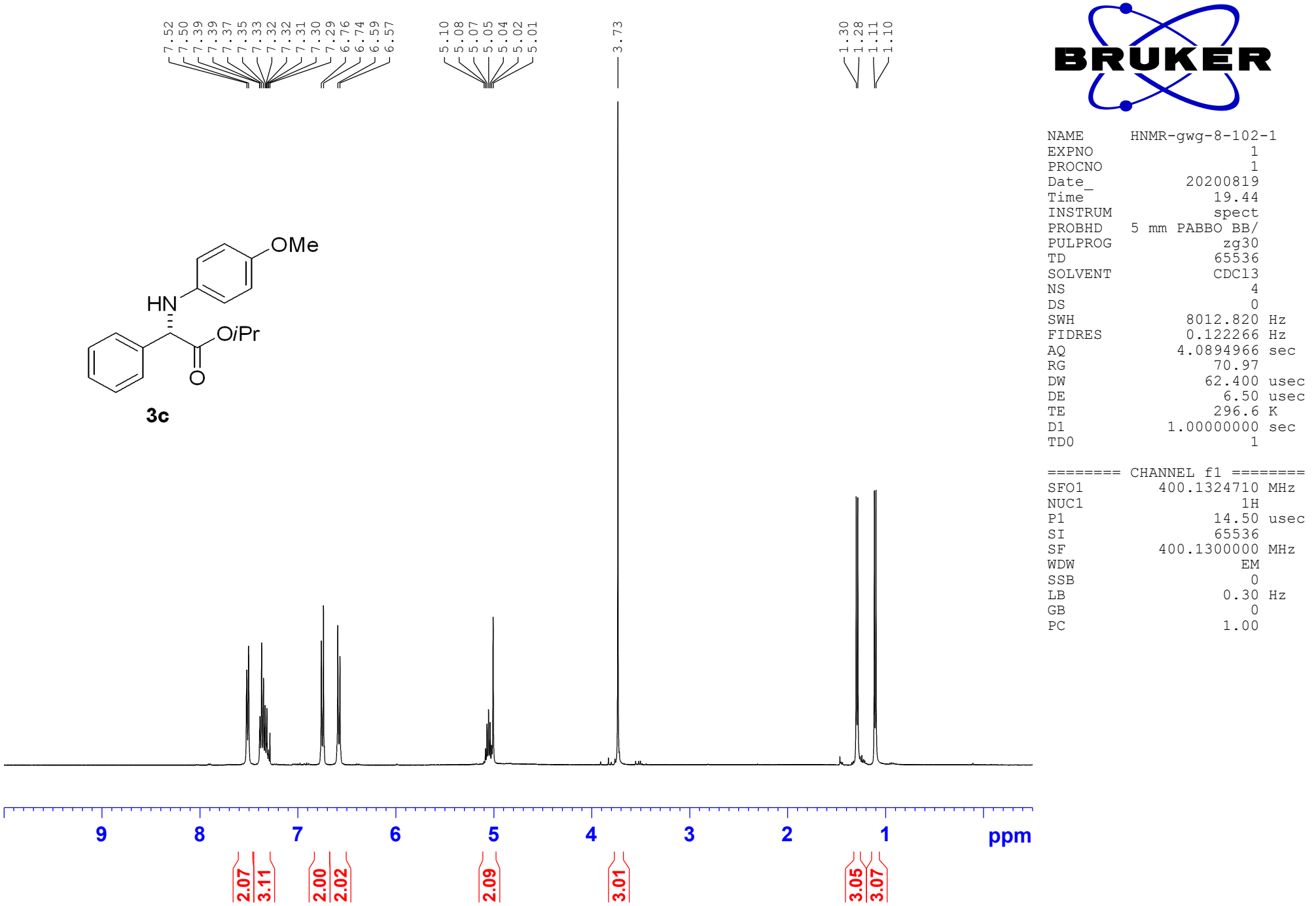



```
NAME      HNMR-gwg-8-138-1
EXPNO                    1
PROCNO                   1
Date_             20200901
Time                 13.31
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT           CD2Cl2
NS                       2
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                   31.55
DW                 62.400 usec
DE                  6.50 usec
TE                 296.9 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                  14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                  0.30 Hz
GB                       0
PC                    1.00
```

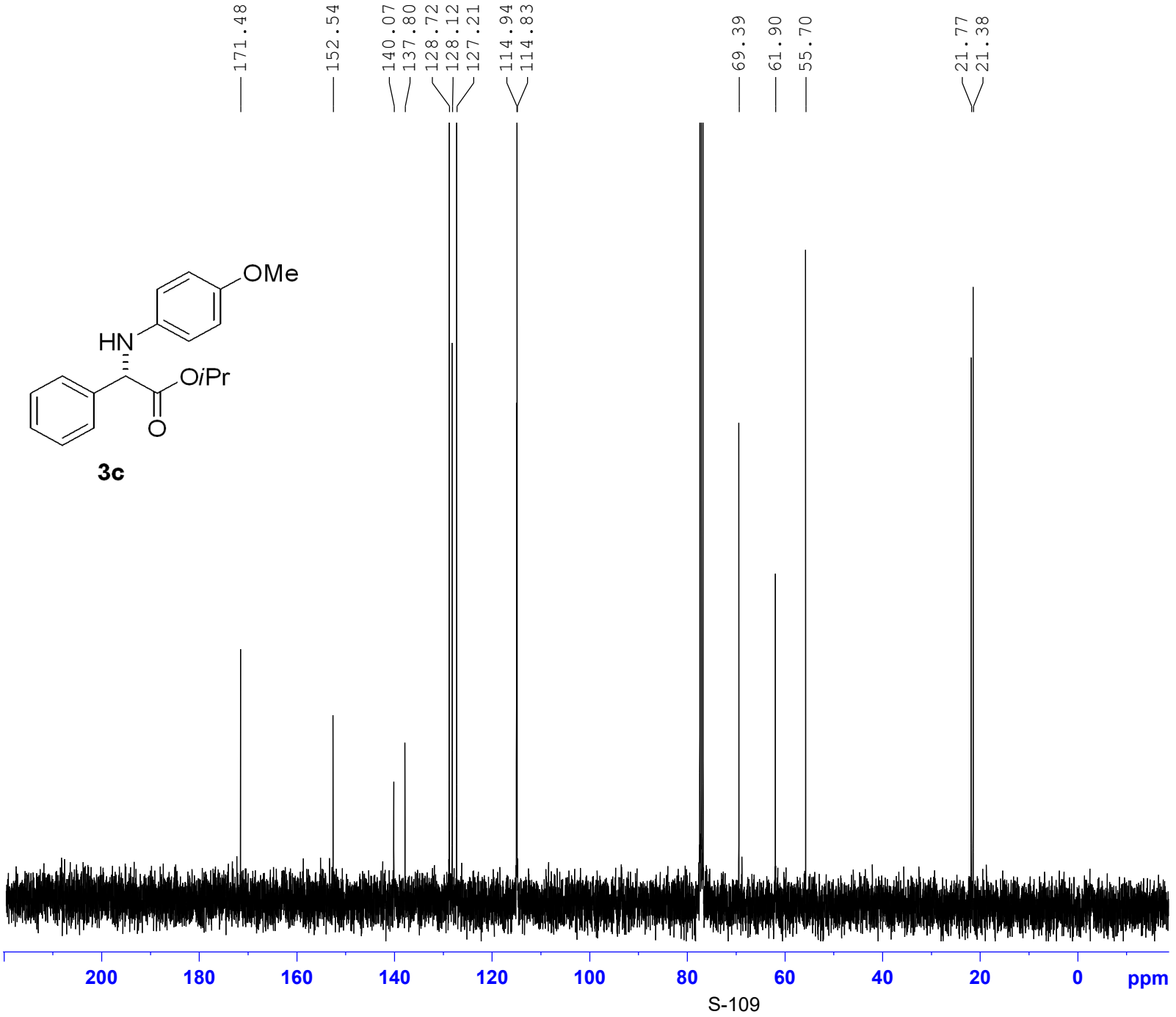


NAME CNMR-gwg-8-138-1
EXPNO 1
PROCNO 1
Date_ 20200901
Time 13.34
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 65536
SOLVENT CD2Cl2
NS 10
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 196.92
DW 20.800 usec
DE 6.50 usec
TE 297.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6228298 MHz
NUC1 13C
P1 9.70 usec
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

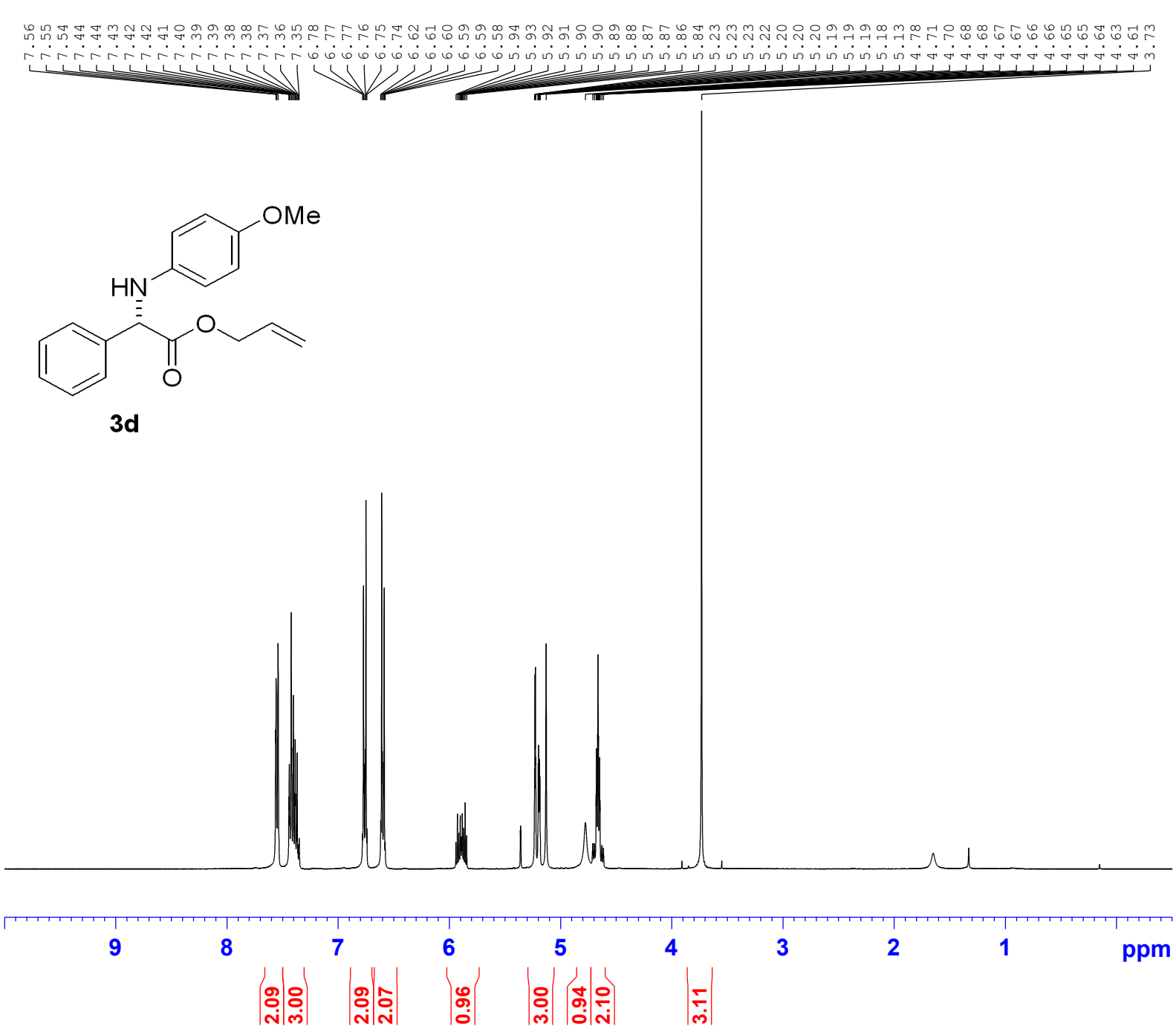



```
NAME        HNMR-gwg-8-102-1
EXPNO                     1
PROCNO                    1
Date_              20200819
Time                  19.44
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        4
DS                        0
SWH                8012.820 Hz
FIDRES                0.122266 Hz
AQ                 4.0894966 sec
RG                    70.97
DW                    62.400 usec
DE                     6.50 usec
TE                    296.6 K
D1                 1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                    14.50 usec
SI                    65536
SF              400.1300000 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```



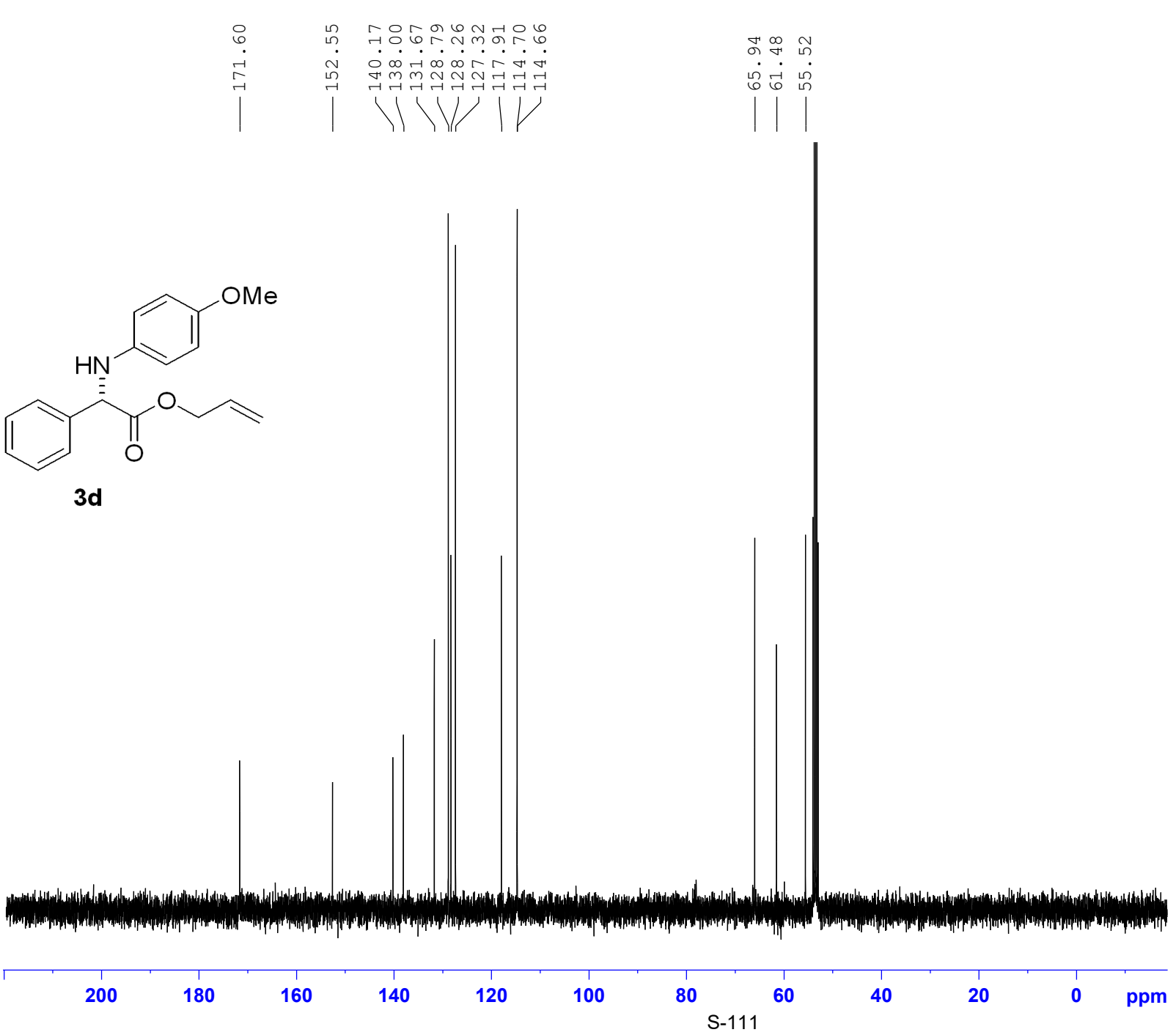
BRUKER

```
NAME        CNMR-gwg-8-102-1
EXPNO                     1
PROCNO                    1
Date_              20200819
Time                  19.48
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                      56
DS                       0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.3 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

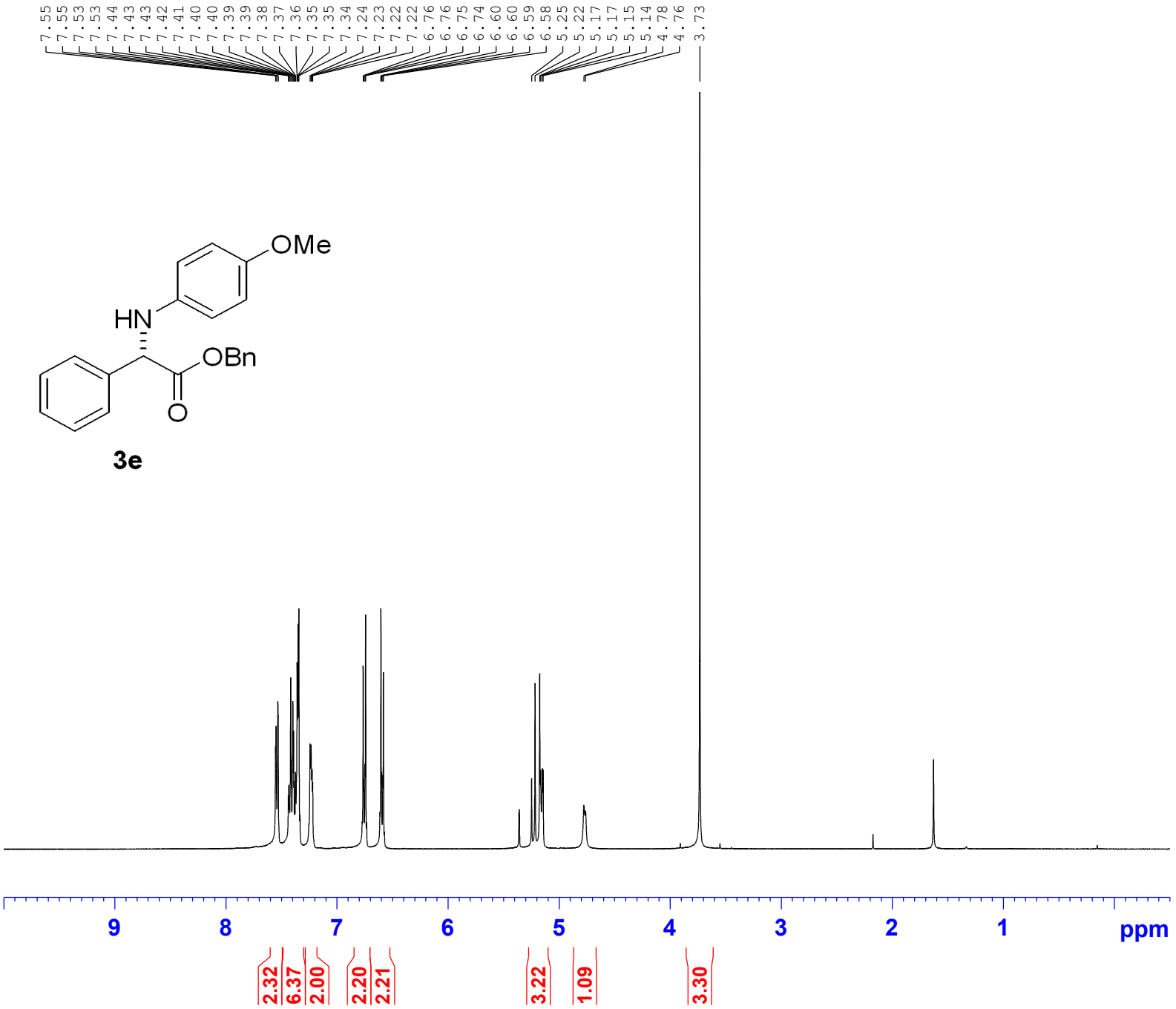


BRUKER

NAME	HNMR-gwg-8-167-1
EXPNO	1
PROCNO	1
Date_	20200909
Time	21.59
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	39.46
DW	62.400 usec
DE	6.50 usec
TE	297.1 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

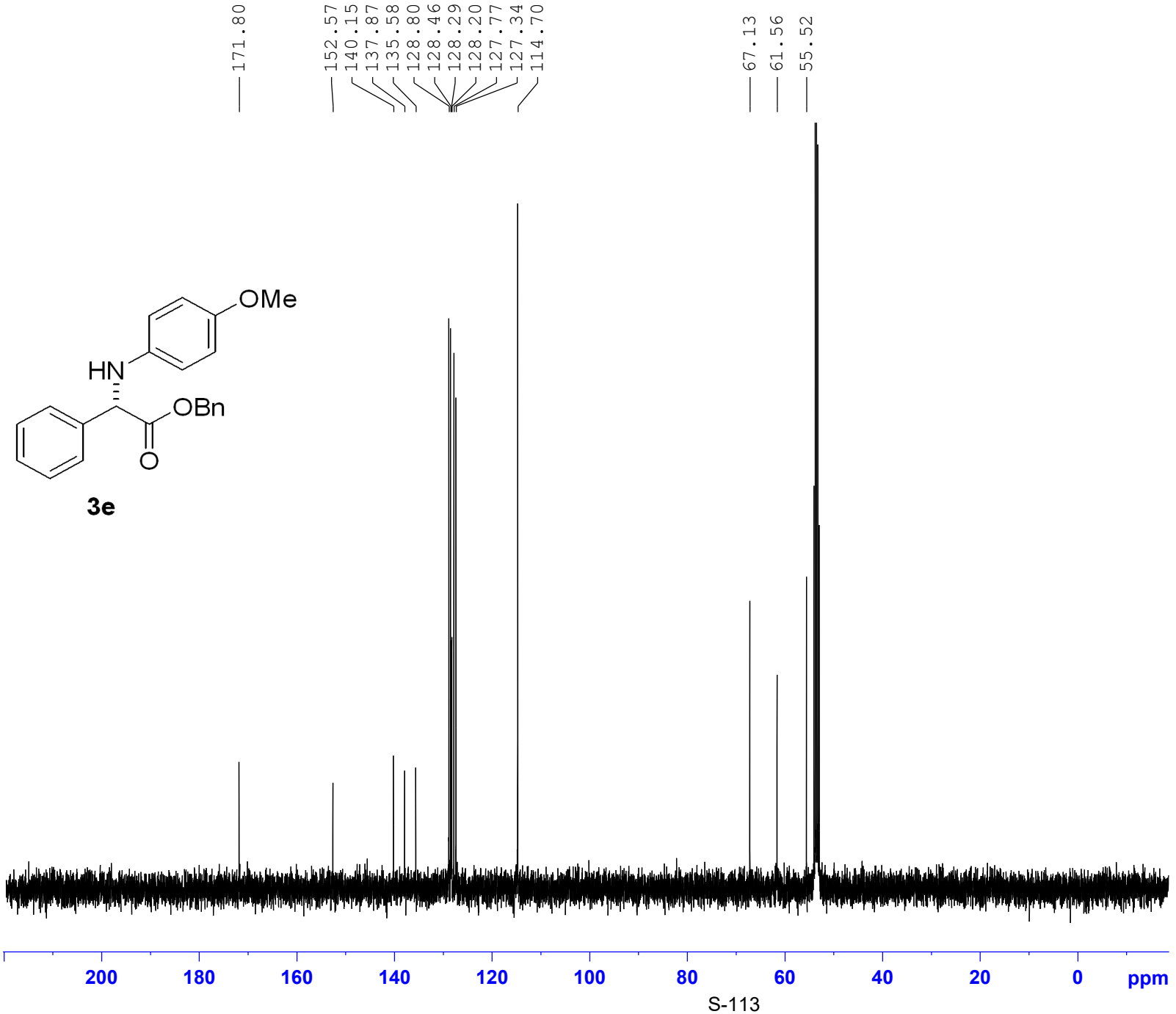



```
NAME        CNMR-gwg-8-167-1
EXPNO                     1
PROCNO                    1
Date_              20200909
Time                  22.03
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       19
DS                        0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.5 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                       0
LB                    1.00 Hz
GB                        0
PC                    1.40
```

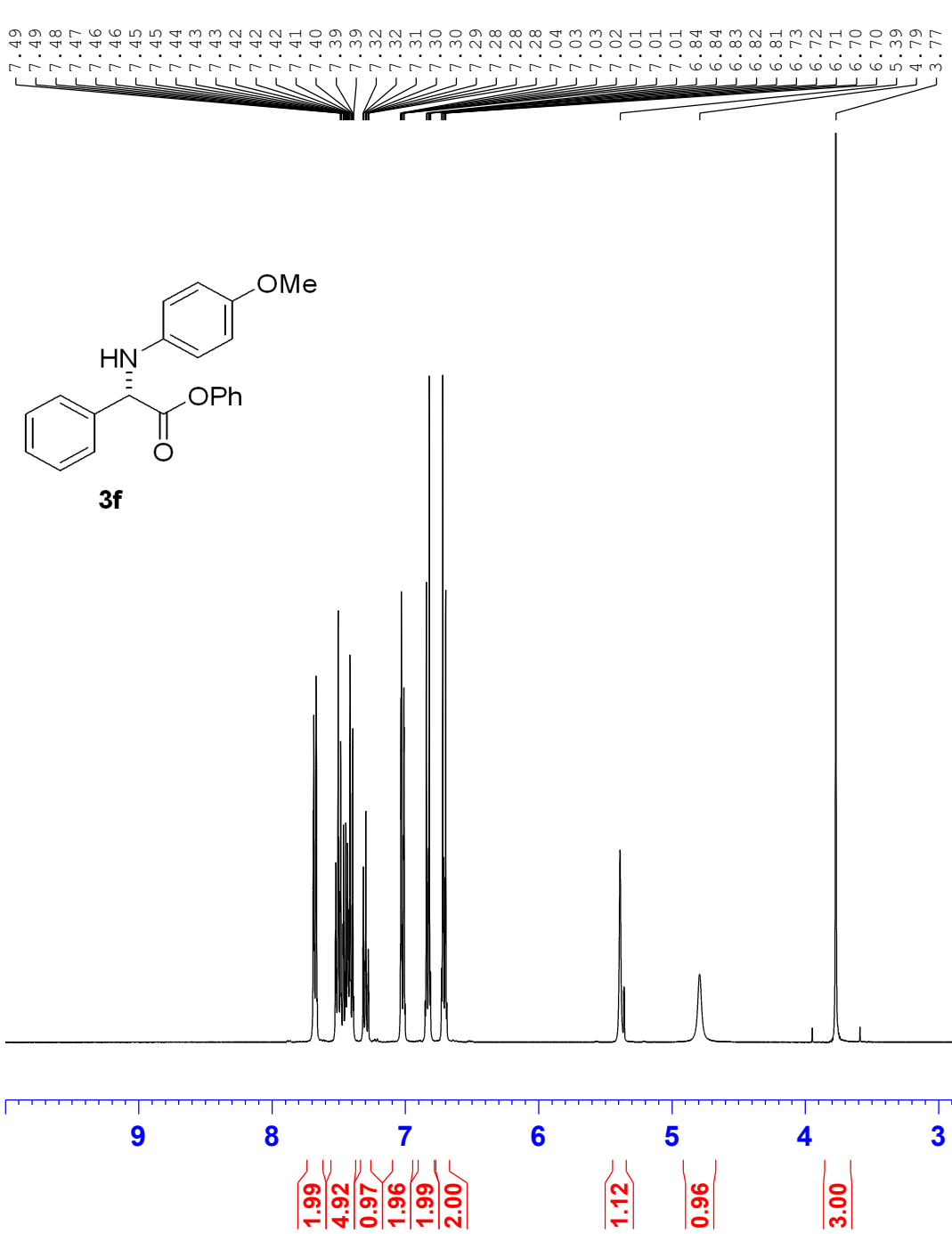


BRUKER

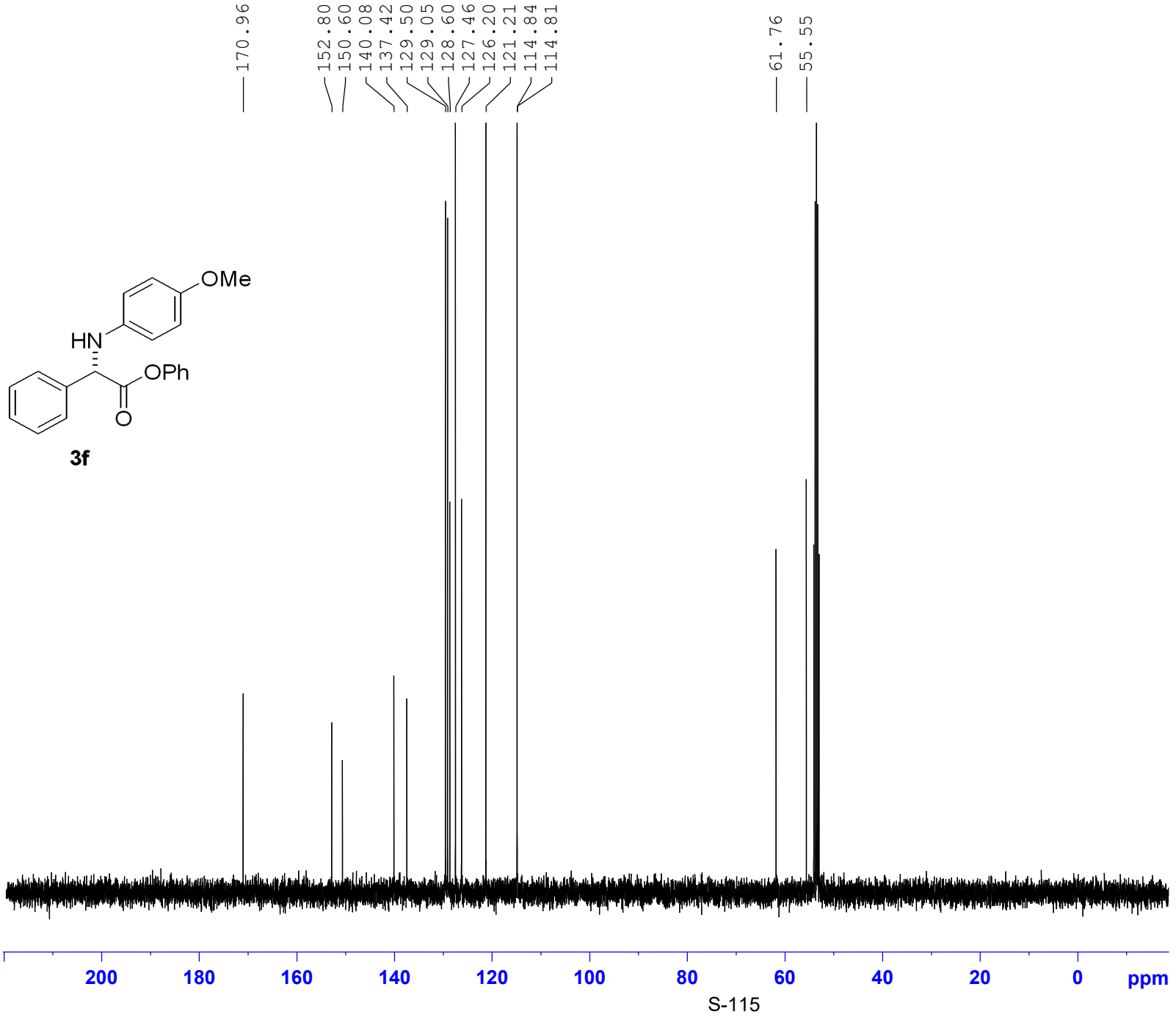
NAME	HNMR-gwg-8-108-1
EXPNO	1
PROCNO	1
Date_	20200822
Time	14.08
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	82.92
DW	62.400 usec
DE	6.50 usec
TE	296.5 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



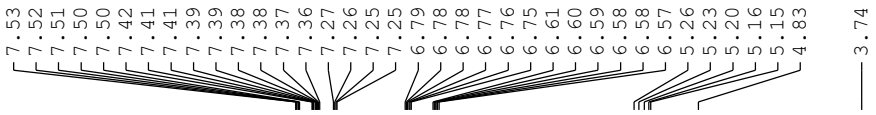

```
NAME        CNMR-gwg-8-108-1
EXPNO                     1
PROCNO                    1
Date_              20200822
Time                  14.15
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       24
DS                        0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                       0
LB                    1.00 Hz
GB                        0
PC                    1.40
```

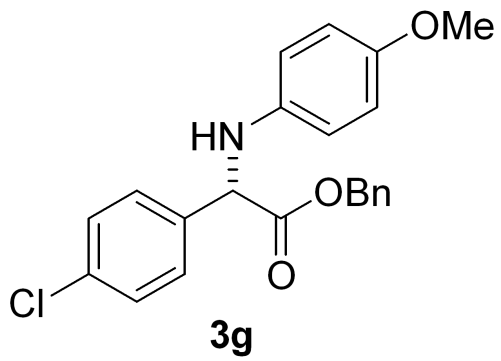


NAME	HNMR-gwg-8-143-1
EXPNO	1
PROCNO	1
Date_	20200903
Time	14.48
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	31.55
DW	62.400 usec
DE	6.50 usec
TE	296.5 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

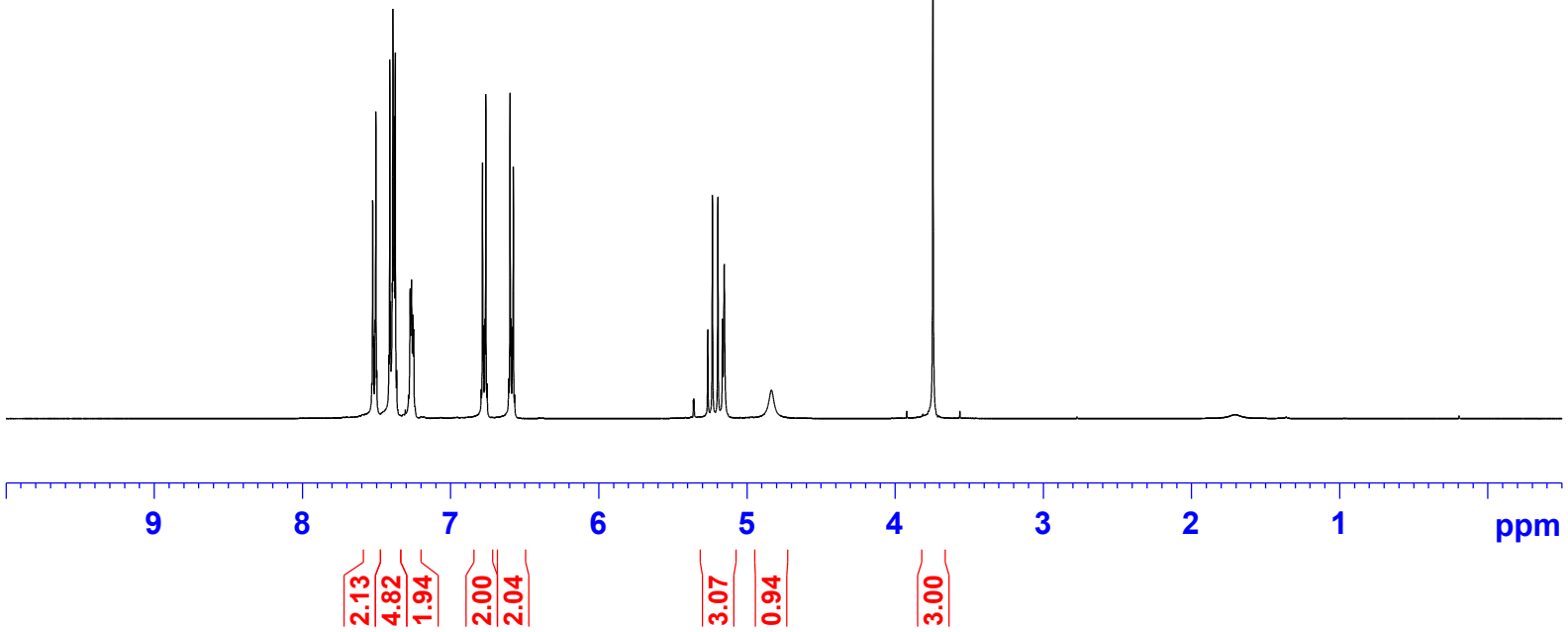



```
NAME        CNMR-gwg-8-143-1
EXPNO                     1
PROCNO                    1
Date_              20200903
Time                  14.51
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       14
DS                        0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.0 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                       0
LB                    1.00 Hz
GB                        0
PC                    1.40
```

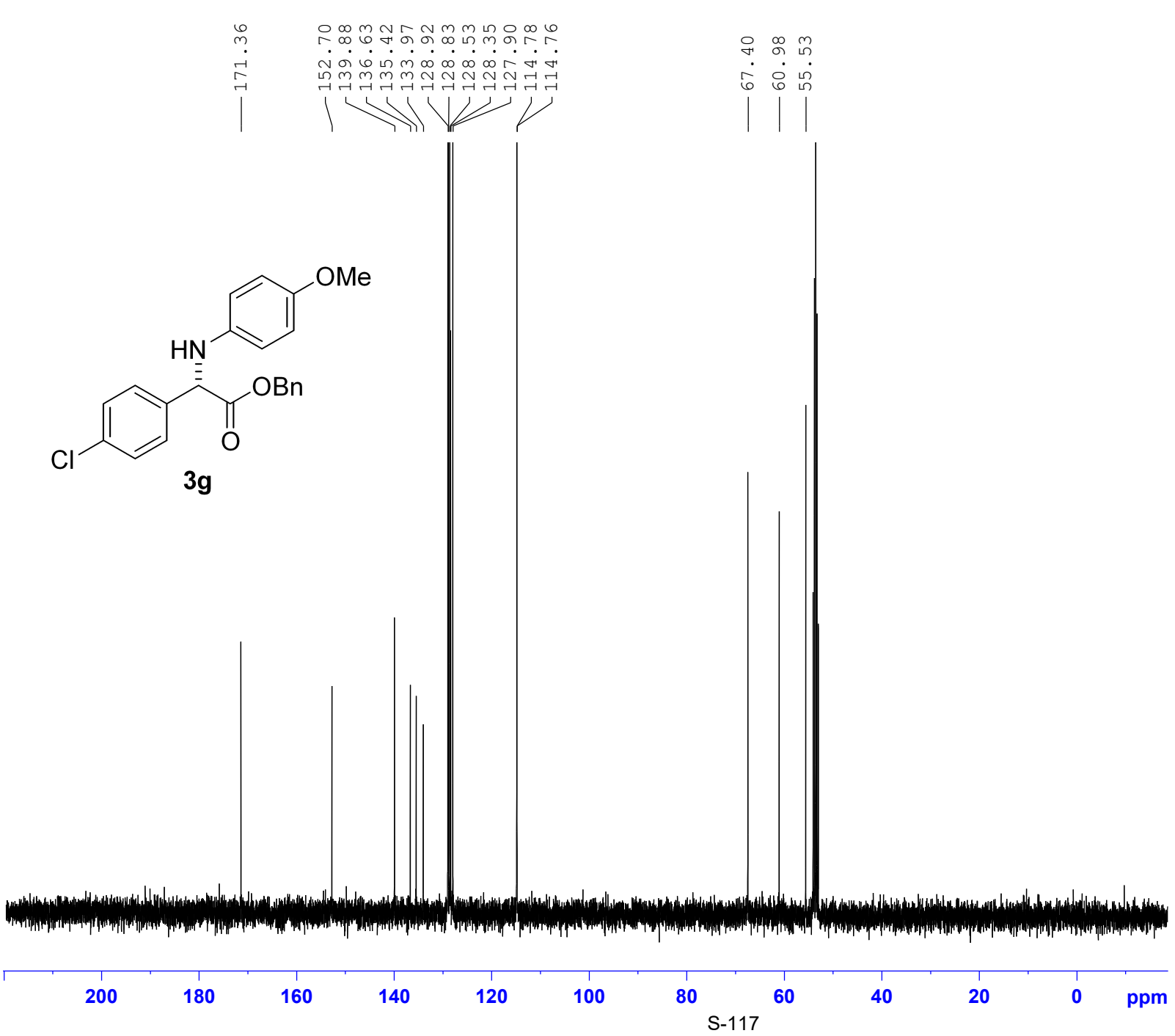




3g




```
NAME      HNMR-gwg-8-140-1
EXPNO                    1
PROCNO                   1
Date_             20200902
Time                 17.45
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT           CD2Cl2
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                   27.78
DW                  62.400 usec
DE                   6.50 usec
TE                  296.8 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

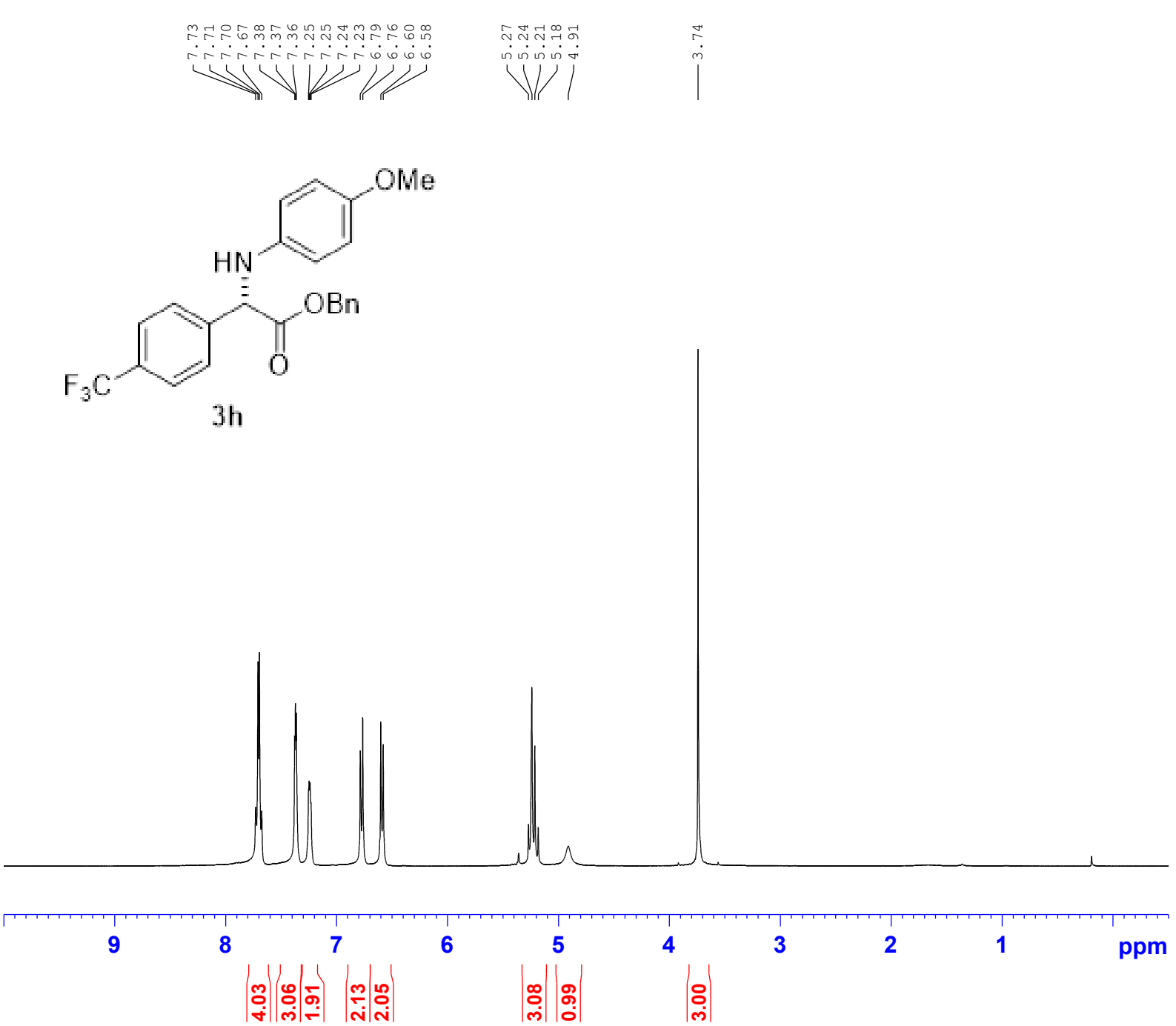


BRUKER

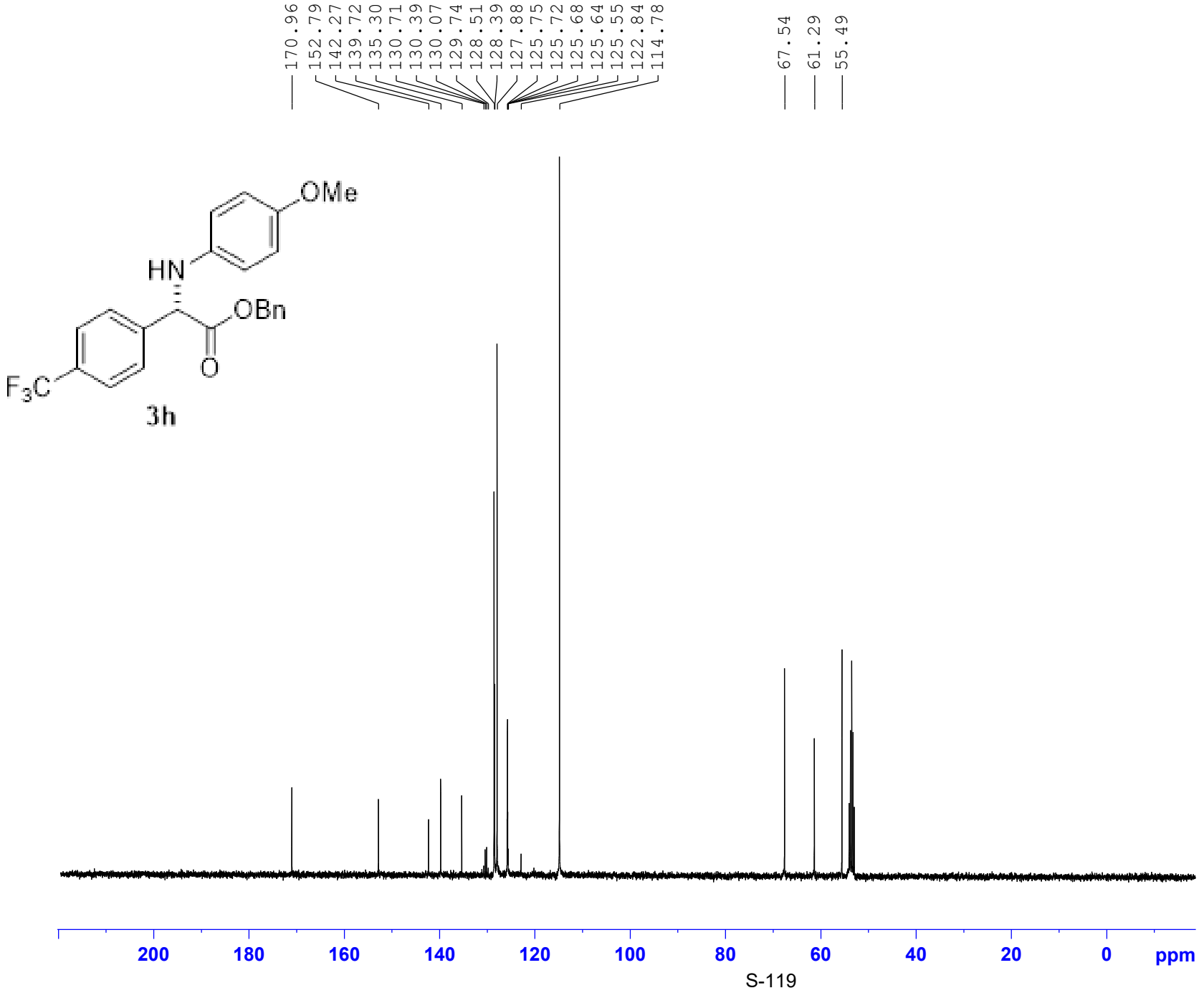
NAME	CNMR-gwg-8-140-1-true
EXPNO	1
PROCNO	1
Date_	20200902
Time	17.49
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	17
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	296.9 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

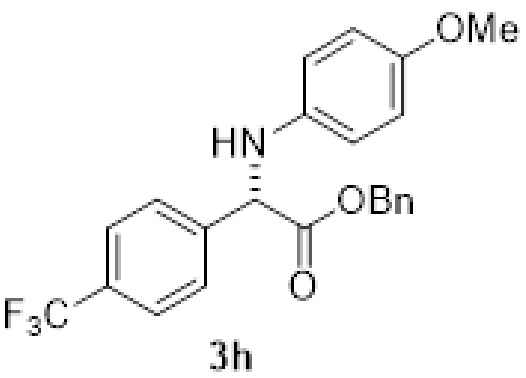
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40




```
NAME      HNMR-gwg-8-141-1
EXPNO                    1
PROCNO                   1
Date_             20200902
Time                 17.32
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT           CD2Cl2
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                   39.46
DW                 62.400 usec
DE                  6.50 usec
TE                 296.7 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                 14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                  0.30 Hz
GB                       0
PC                    1.00
```

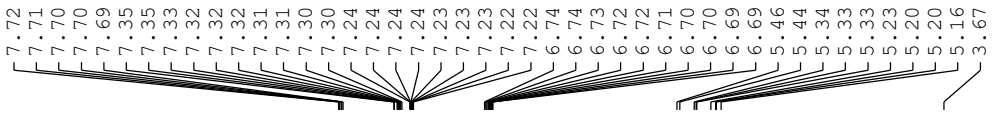


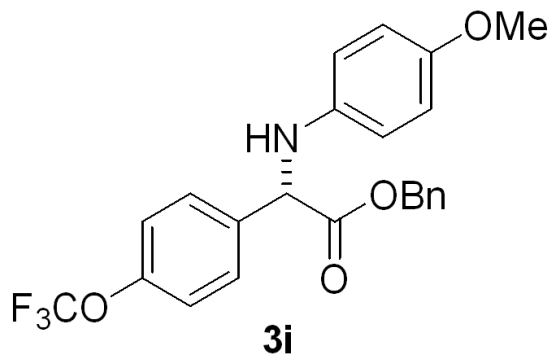
NAME	CNMR-gwg-8-141-1
EXPNO	1
PROCNO	1
Date_	20200902
Time	17.36
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	97
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40



3h

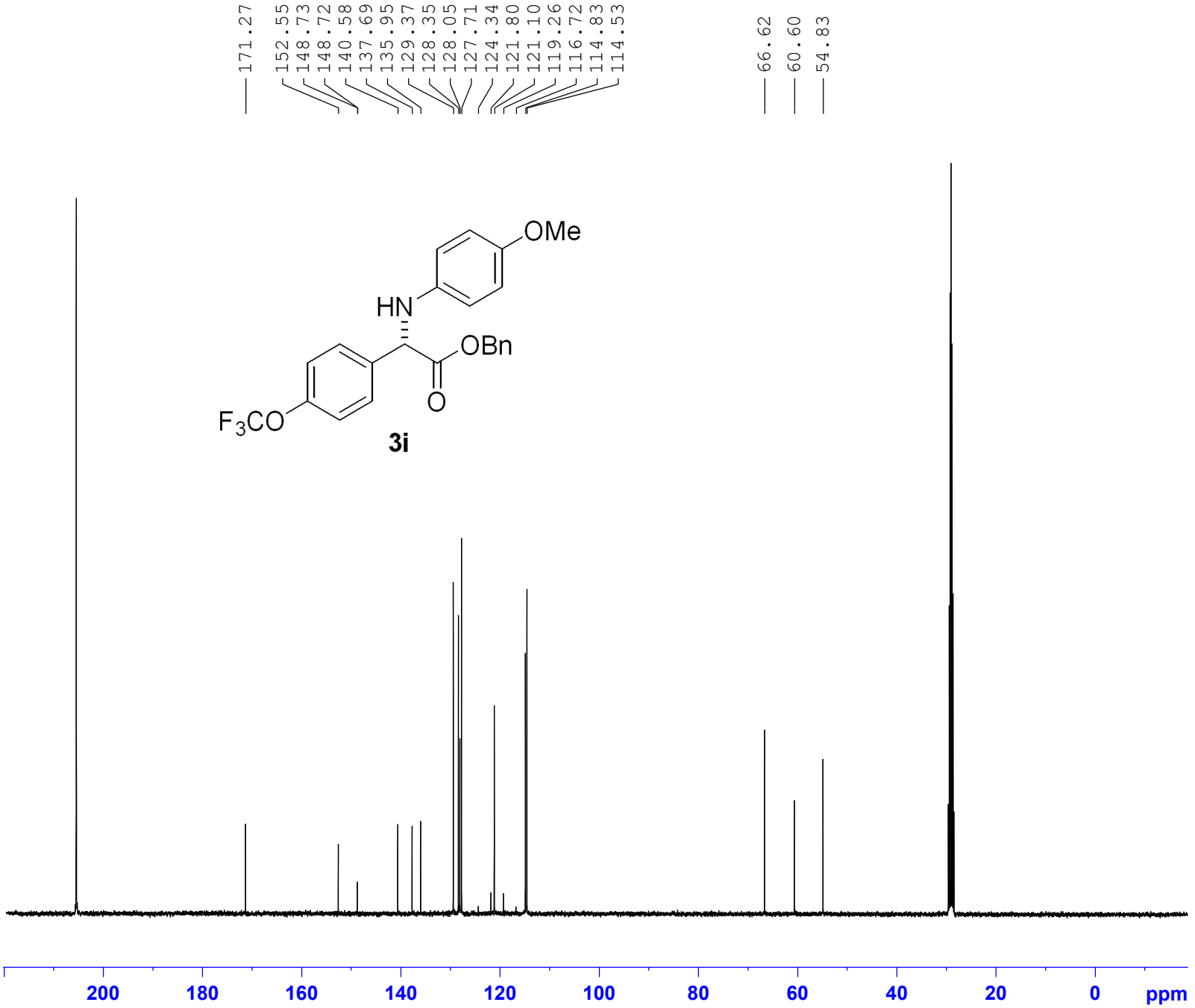

```
NAME      FNMR-gwg-8-141-1
EXPNO                    1
PROCNO                   1
Date_             20200902
Time                 17.41
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                        4
DS                        0
SWH              93750.000 Hz
FIDRES            1.430511 Hz
AQ               0.3495753 sec
RG                  196.92
DW                   5.333 usec
DE                    6.50 usec
TE                  297.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          376.4607162 MHz
NUC1                   19F
P1                   14.70 usec
SI                   32768
SF            376.4983660 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```





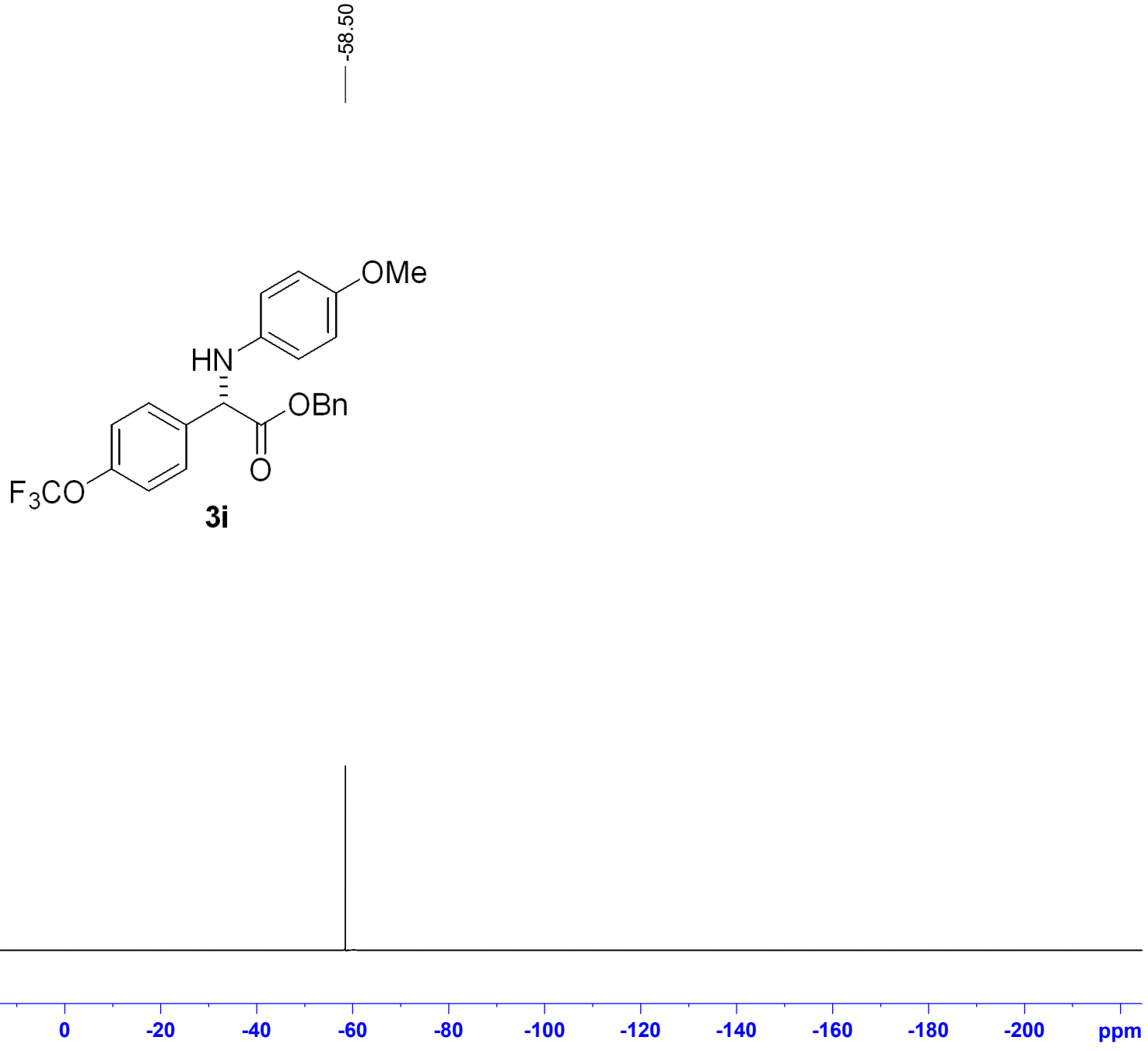
3i


```
NAME      HNMR-gwg-8-144-1
EXPNO                    1
PROCNO                   1
Date_             20200904
Time                 13.18
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           Acetone
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                   31.55
DW                 62.400 usec
DE                  6.50 usec
TE                 296.9 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                 14.50 usec
SI                  65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                  0.30 Hz
GB                       0
PC                    1.00
```

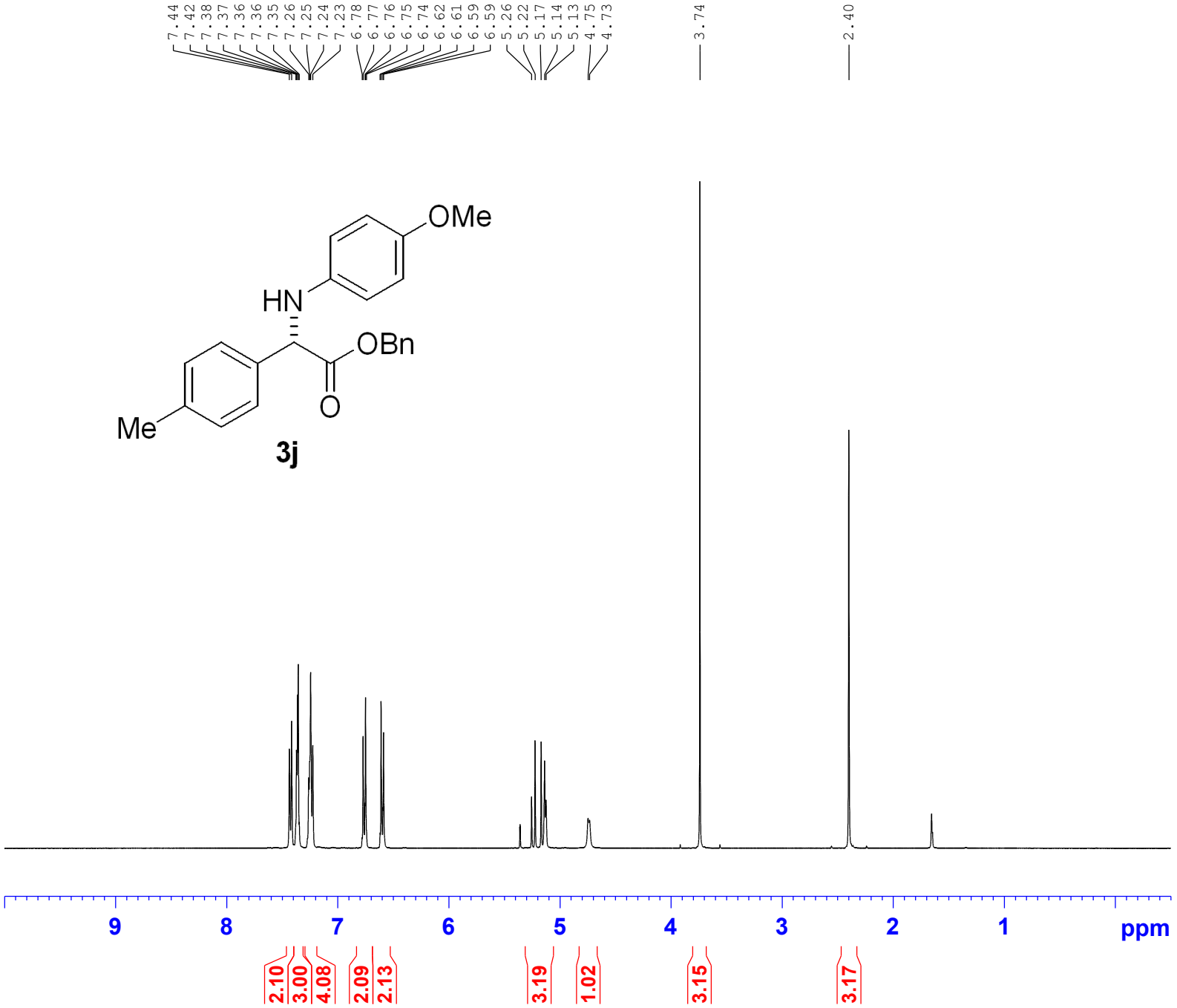


NAME	CNMR-gwg-8-144-1
EXPNO	1
PROCNO	1
Date_	20200904
Time	13.24
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	Acetone
NS	134
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.7 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

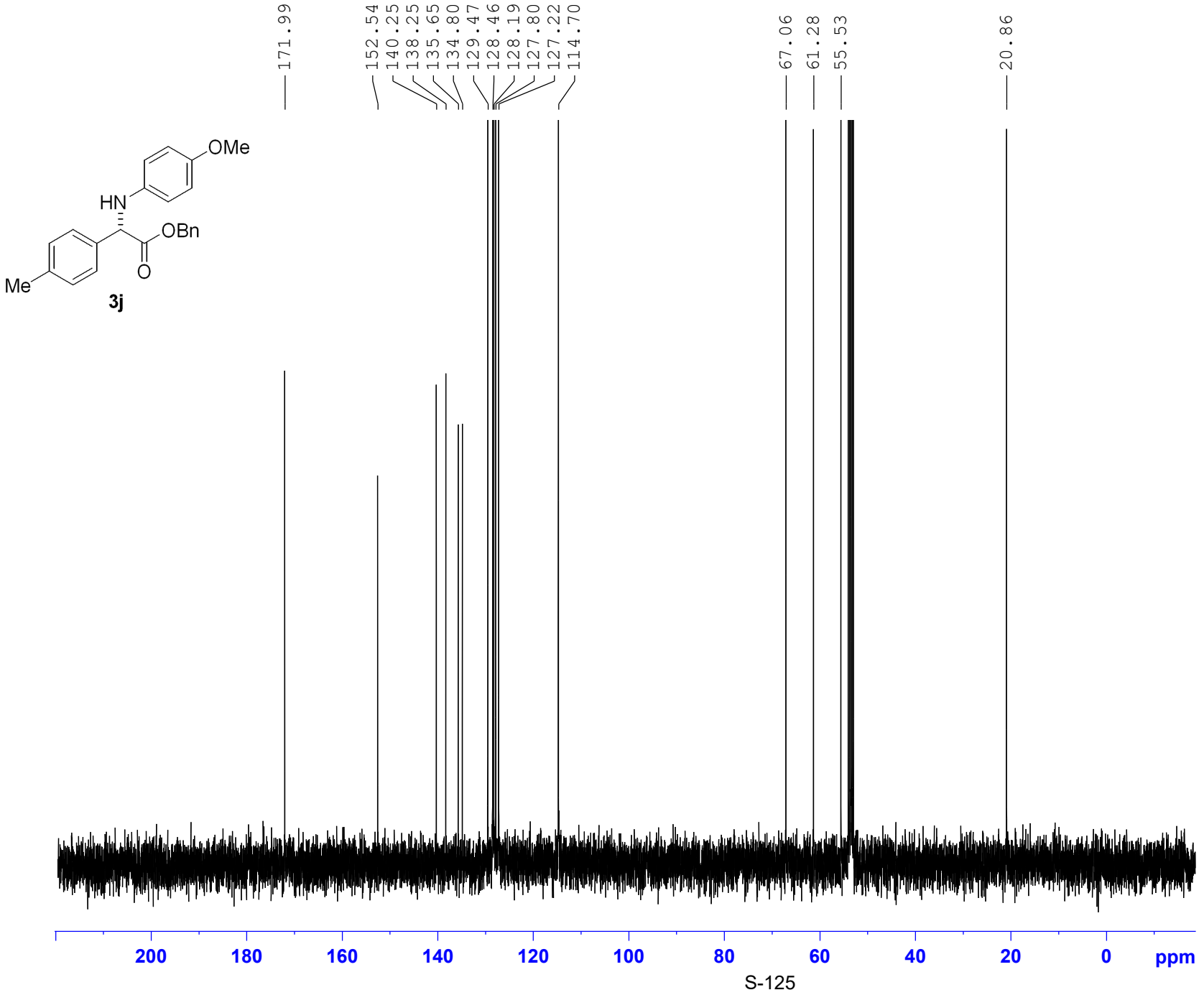
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40




```
NAME      FNMR-gwg-8-144-1
EXPNO                    1
PROCNO                   1
Date_             20200904
Time                 13.31
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            Acetone
NS                       3
DS                       0
SWH              93750.000 Hz
FIDRES            1.430511 Hz
AQ               0.3495753 sec
RG                  196.92
DW                   5.333 usec
DE                    6.50 usec
TE                   297.3 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          376.4607162 MHz
NUC1                   19F
P1                   14.70 usec
SI                   32768
SF            376.4983660 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```




```
NAME      HNMR-gwg-8-175-1
EXPNO                    1
PROCNO                   1
Date_             20200911
Time                 20.51
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT           CD2Cl2
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ              4.0894966 sec
RG                   34.77
DW                 62.400 usec
DE                  6.50 usec
TE                 296.9 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                  14.50 usec
SI                   65536
SF            400.1300000 MHz
WDW                     EM
SSB                      0
LB                  0.30 Hz
GB                       0
PC                    1.00
```

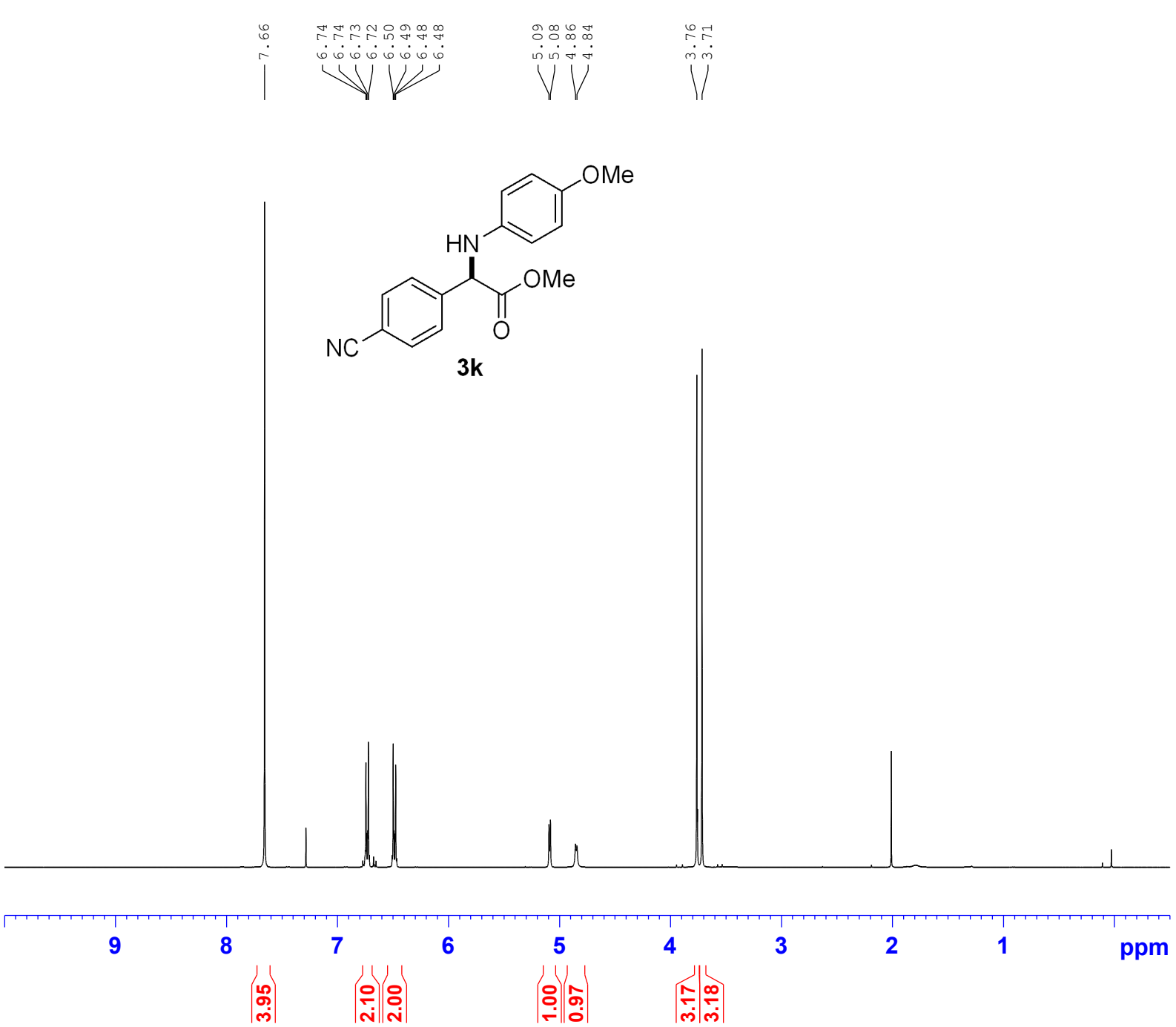


BRUKER

NAME	CNMR-gwg-8-175-1
EXPNO	1
PROCNO	1
Date_	20200911
Time	20.54
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	57
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.2 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

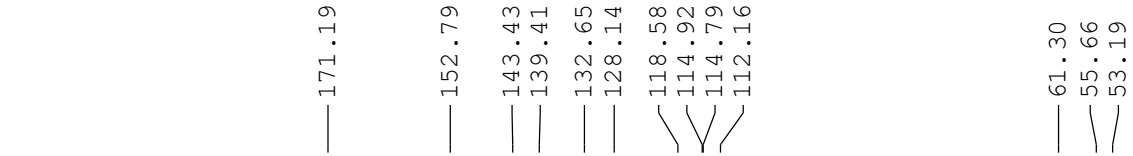
======== CHANNEL f1 ========

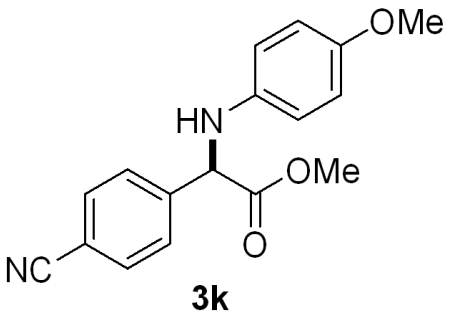
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40



BRUKER

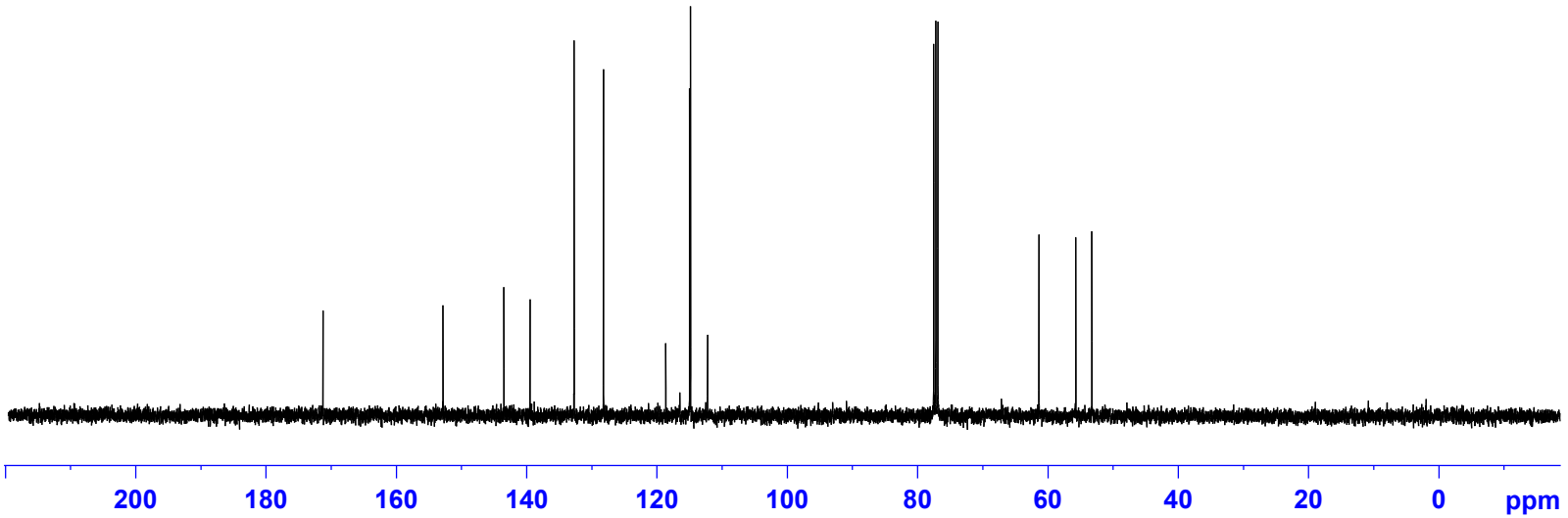
NAME	HNMR-lsj-1-9
EXPNO	1
PROCNO	1
Date_	20201009
Time	20.07
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	31.55
DW	62.400 usec
DE	6.50 usec
TE	296.5 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

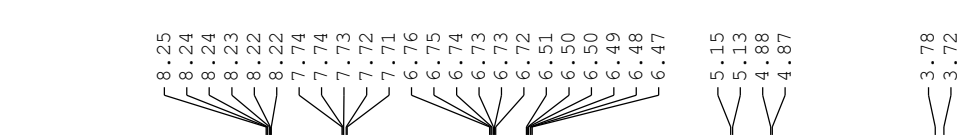


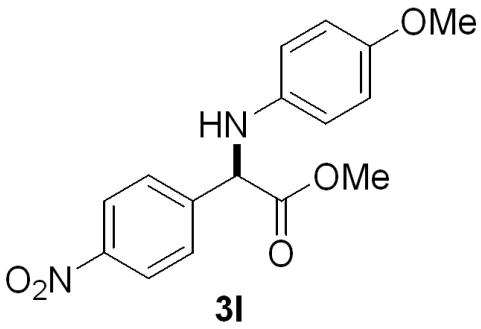


3k

```
NAME          CNMR-lsj-1-9
EXPNO                    1
PROCNO                   1
Date_             20201009
Time                 20.11
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG           zgpg30
TD                  65536
SOLVENT             CDCl3
NS                     10
DS                      0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631988 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  296.6 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

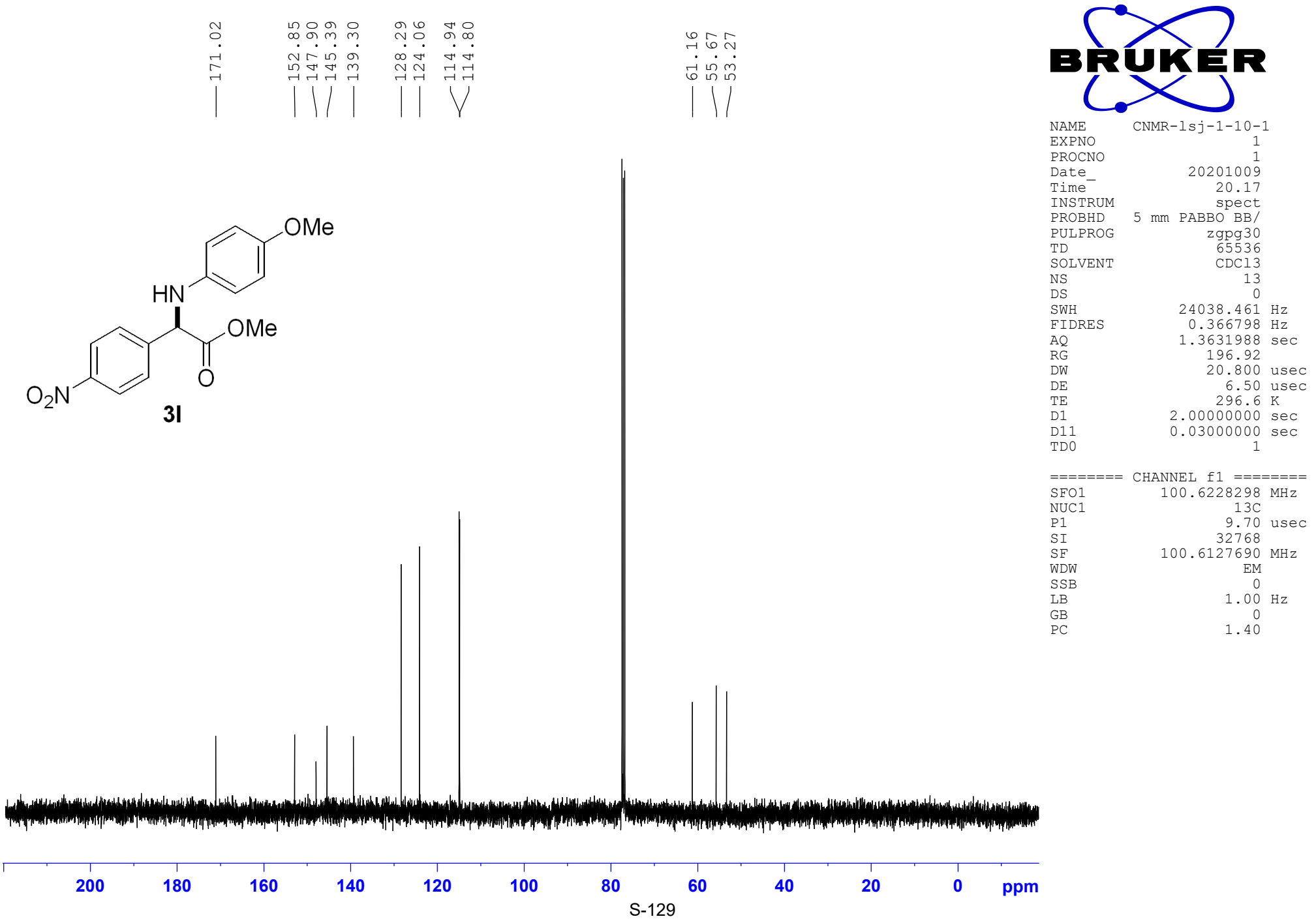






3l


```
NAME      HNMR-lsj-1-10-1
EXPNO                   1
PROCNO                  1
Date_            20201009
Time                20.15
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                     2
DS                     0
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ            4.0894966 sec
RG                 88.84
DW                62.400 usec
DE                 6.50 usec
TE                296.3 K
D1           1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                 65536
SF          400.1300000 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                 1.00
```

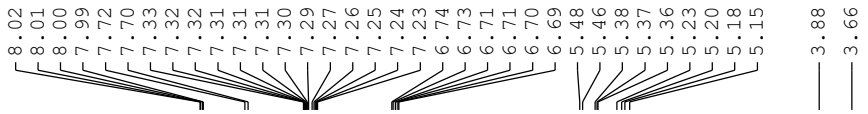


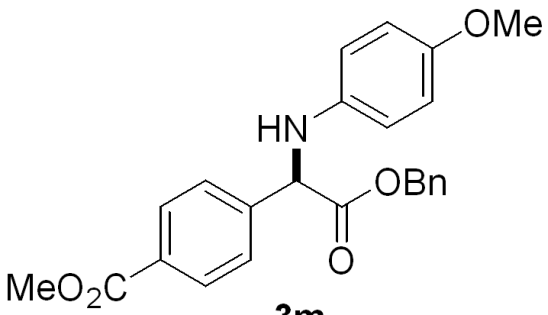
BRUKER

NAME	CNMR-lsj-1-10-1
EXPNO	1
PROCNO	1
Date_	20201009
Time	20.17
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	13
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	296.6 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

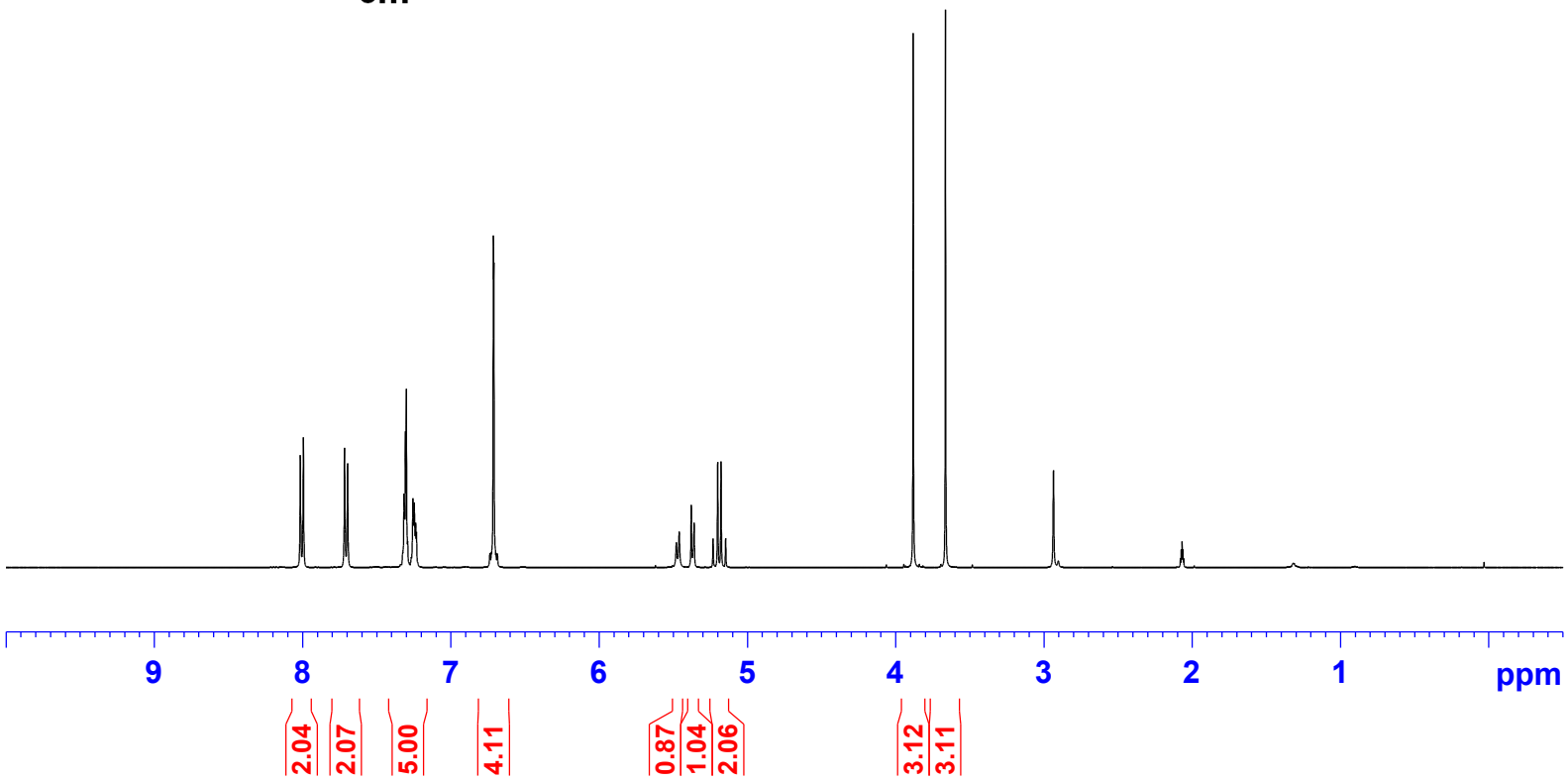
======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

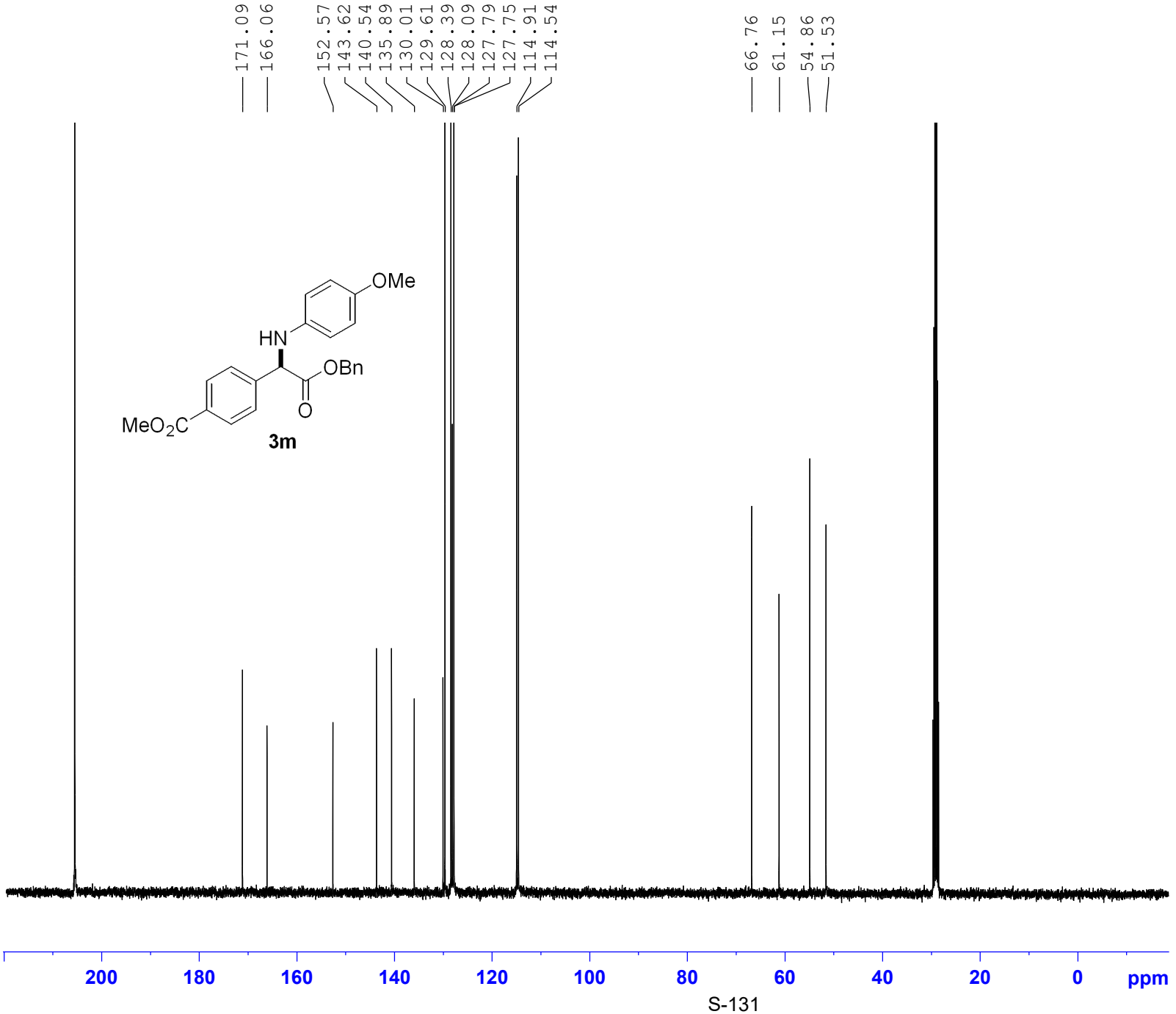




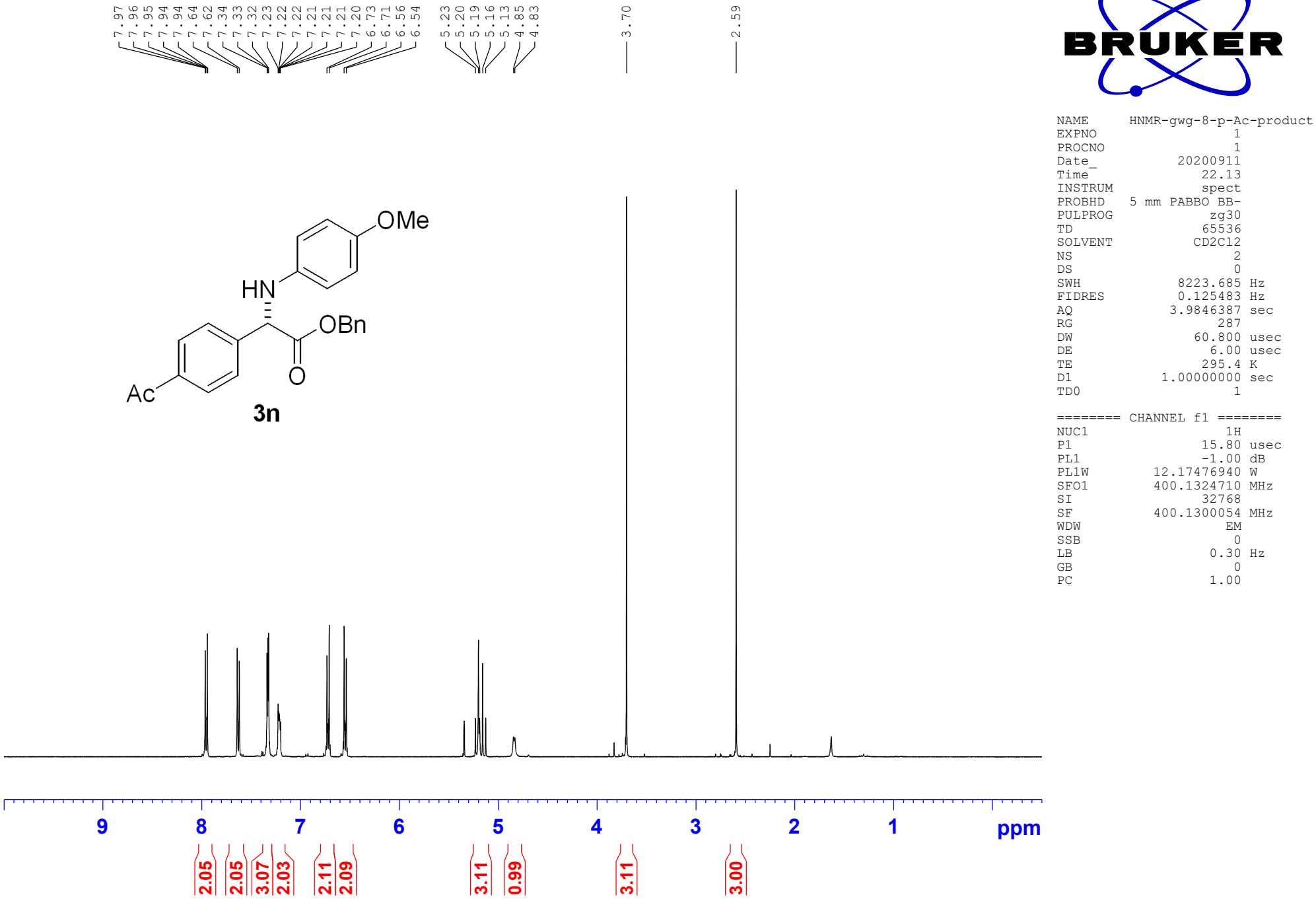
3m



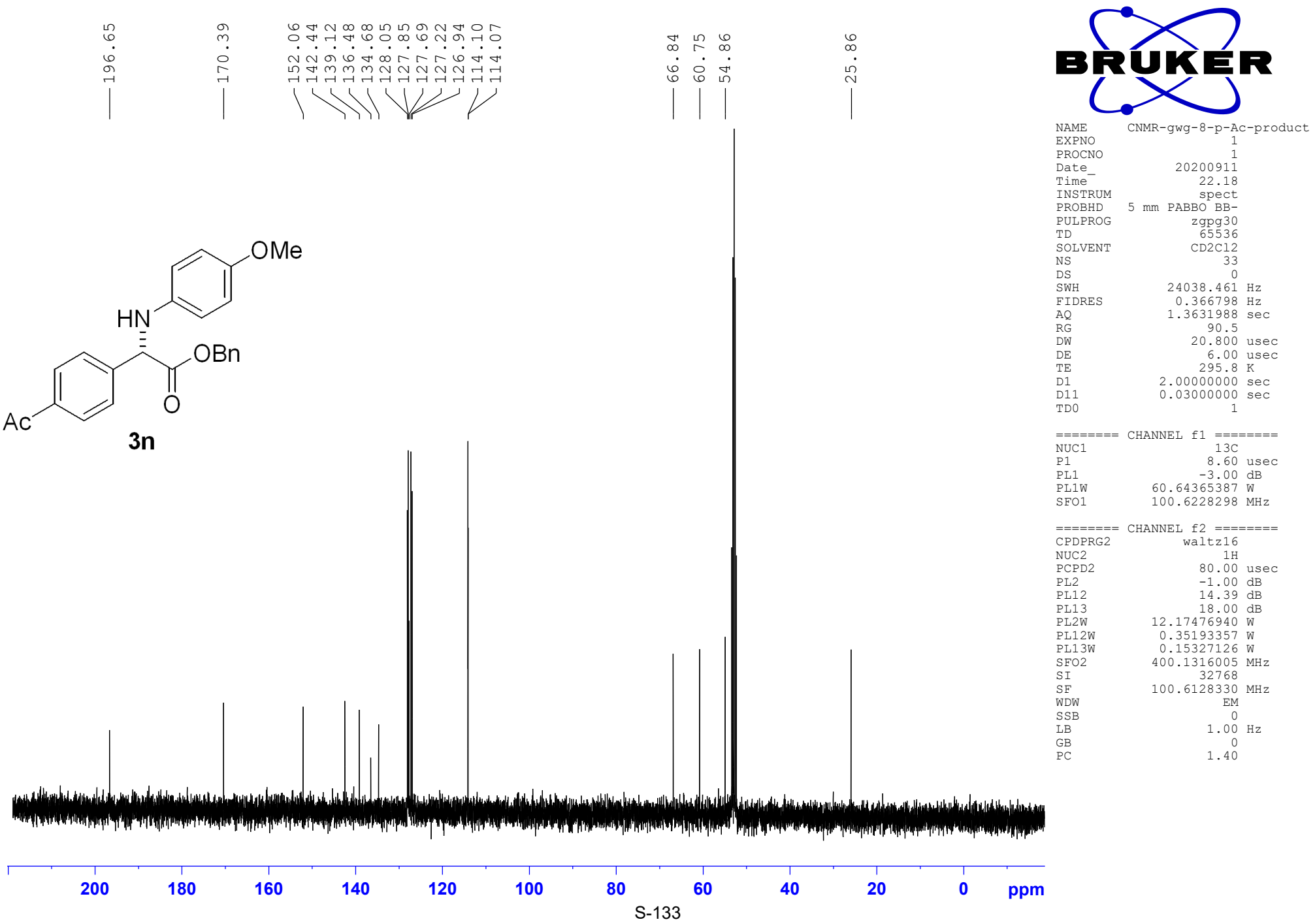

```
NAME      HNMR-lsj-1-14-1
EXPNO                   1
PROCNO                  1
Date_            20201010
Time                19.16
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           Acetone
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  27.78
DW                 62.400 usec
DE                  6.50 usec
TE                 297.5 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



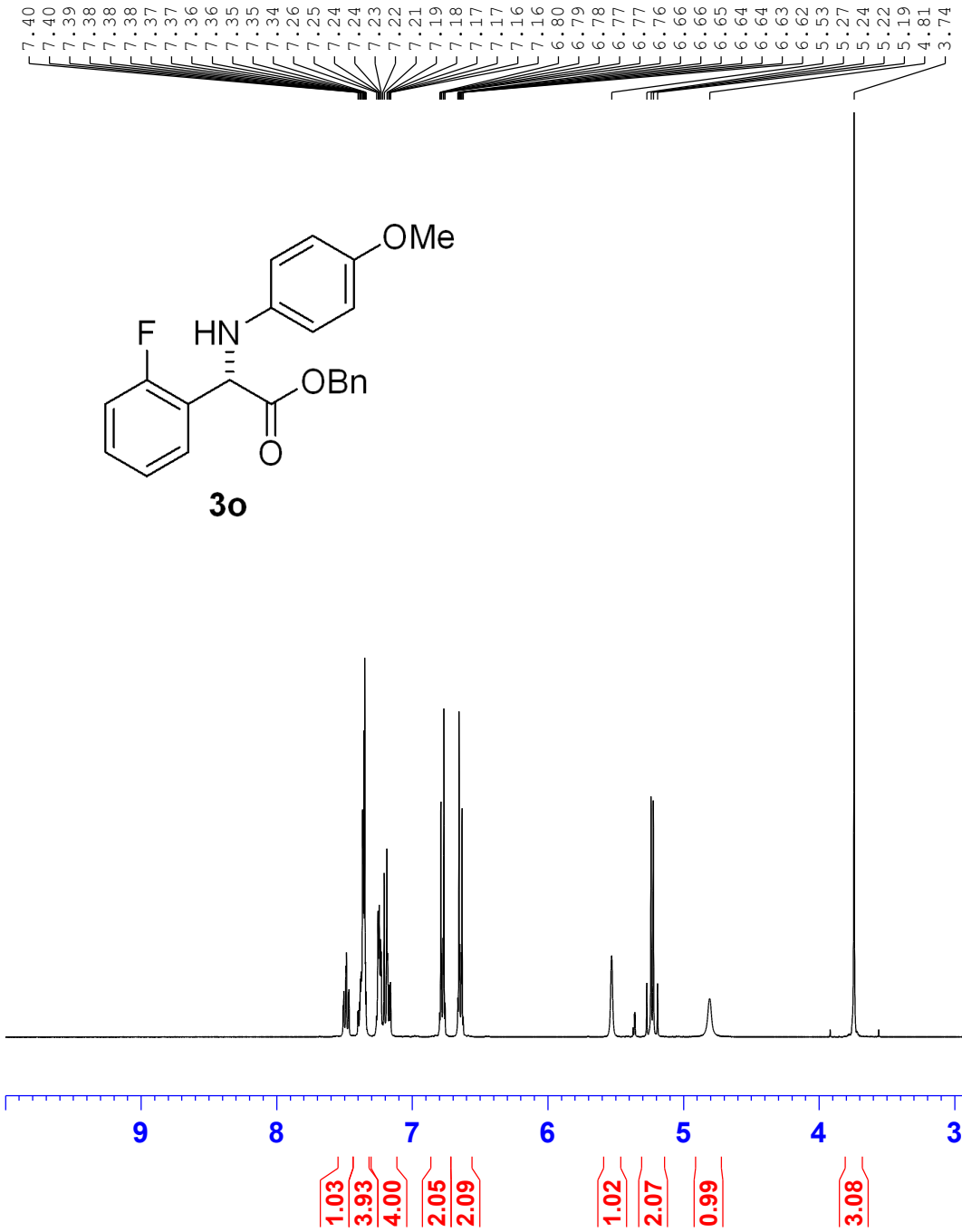

```
NAME        CNMR-lsj-1-14-1
EXPNO                     1
PROCNO                    1
Date_              20201010
Time                  19.26
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT           Acetone
NS                    121
DS                      0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631988 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  298.0 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```




```
NAME      HNMR-gwg-8-p-Ac-product
EXPNO                   1
PROCNO                  1
Date_            20200911
Time                22.13
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                  65536
SOLVENT           CD2Cl2
NS                      2
DS                      0
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG                    287
DW               60.800 usec
DE                6.00 usec
TE                295.4 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   1H
P1                 15.80 usec
PL1                -1.00 dB
PL1W        12.17476940 W
SFO1       400.1324710 MHz
SI                  32768
SF         400.1300054 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                 1.00
```

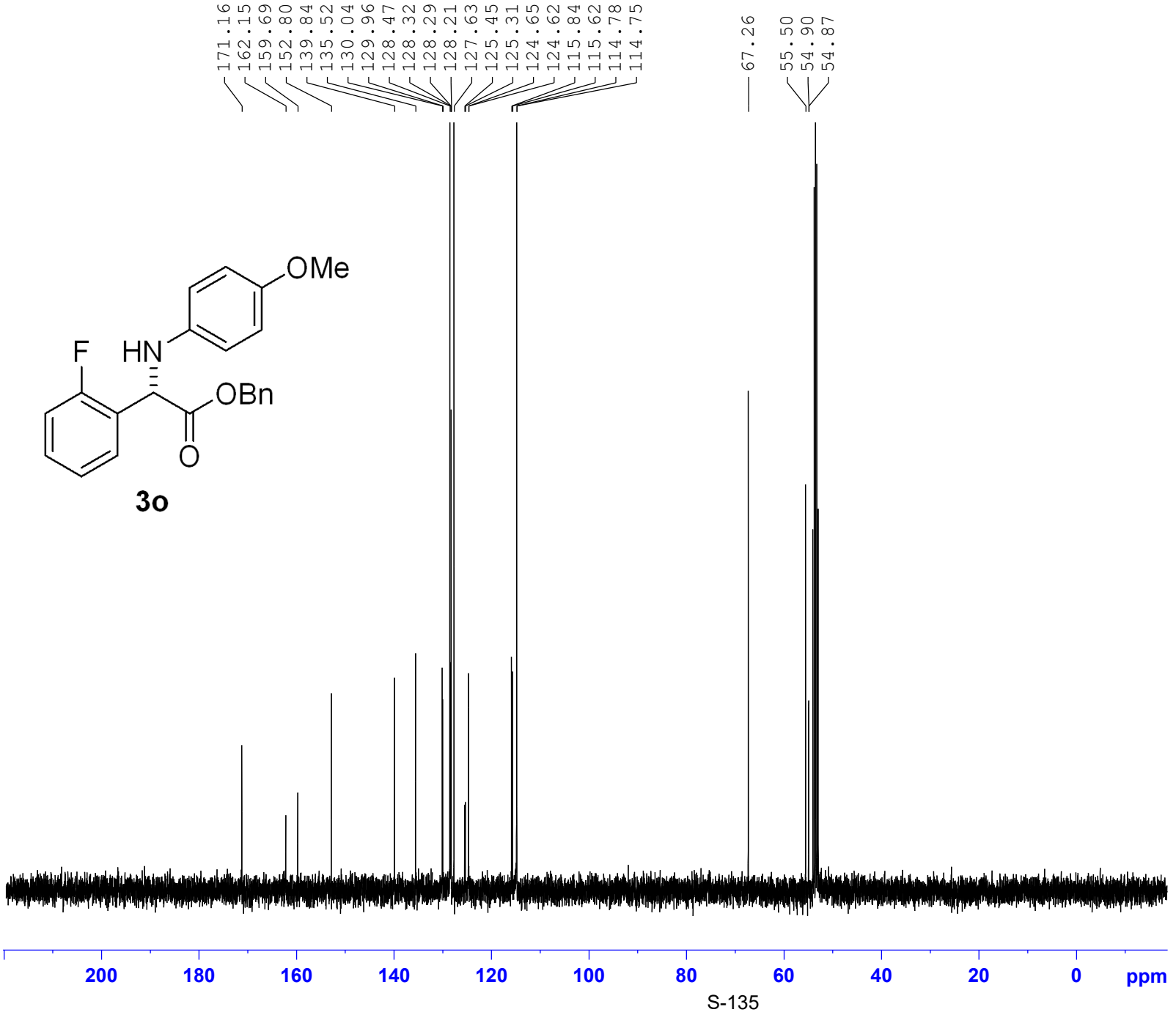



```
NAME      CNMR-gwg-8-p-Ac-product
EXPNO                   1
PROCNO                  1
Date_            20200911
Time                22.18
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                  65536
SOLVENT             CD2Cl2
NS                      33
DS                       0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631988 sec
RG                    90.5
DW                  20.800 usec
DE                   6.00 usec
TE                  295.8 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                    8.60 usec
PL1                  -3.00 dB
PL1W          60.64365387 W
SFO1         100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                   1H
PCPD2                80.00 usec
PL2                  -1.00 dB
PL12                 14.39 dB
PL13                 18.00 dB
PL2W          12.17476940 W
PL12W          0.35193357 W
PL13W          0.15327126 W
SFO2         400.1316005 MHz
SI                   32768
SF           100.6128330 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```



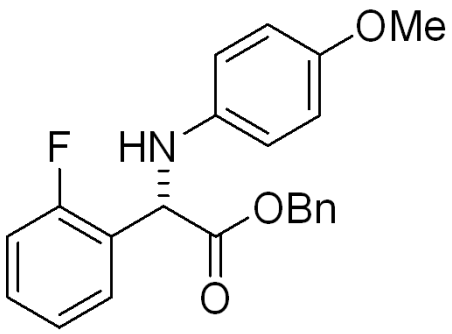
BRUKER

NAME	HNMR-gwg-8-186-1
EXPNO	1
PROCNO	1
Date_	20200925
Time	17.11
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	2
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	31.55
DW	62.400 usec
DE	6.50 usec
TE	296.6 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



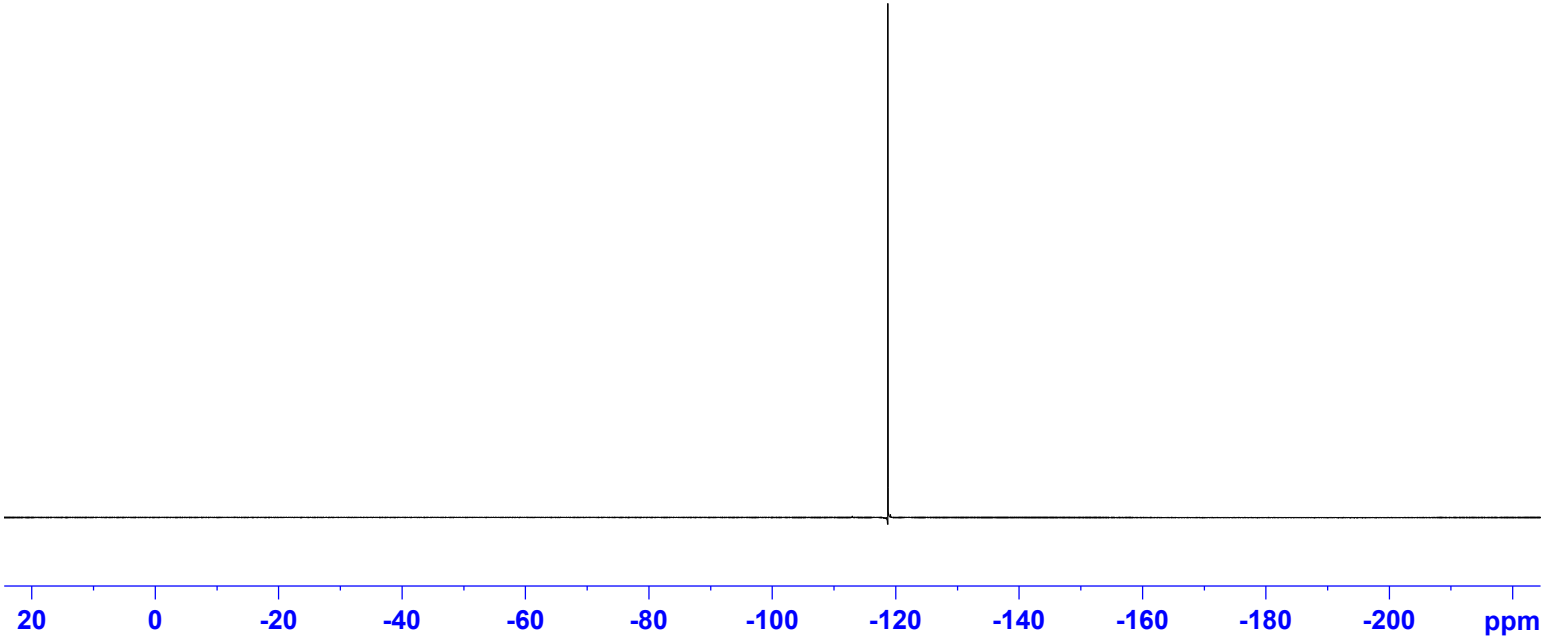
BRUKER

NAME	CNMR-gwg-8-186-1
EXPNO	1
PROCNO	1
Date_	20200925
Time	17.14
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	16
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	296.7 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

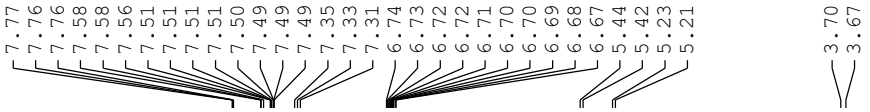


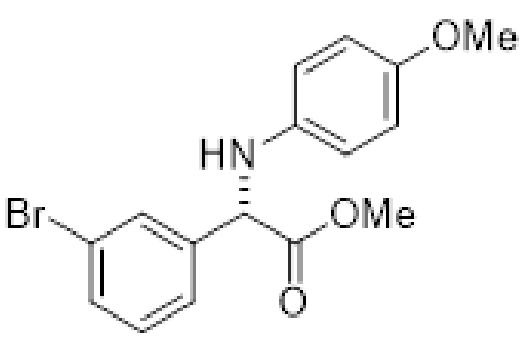
3o

-118.75



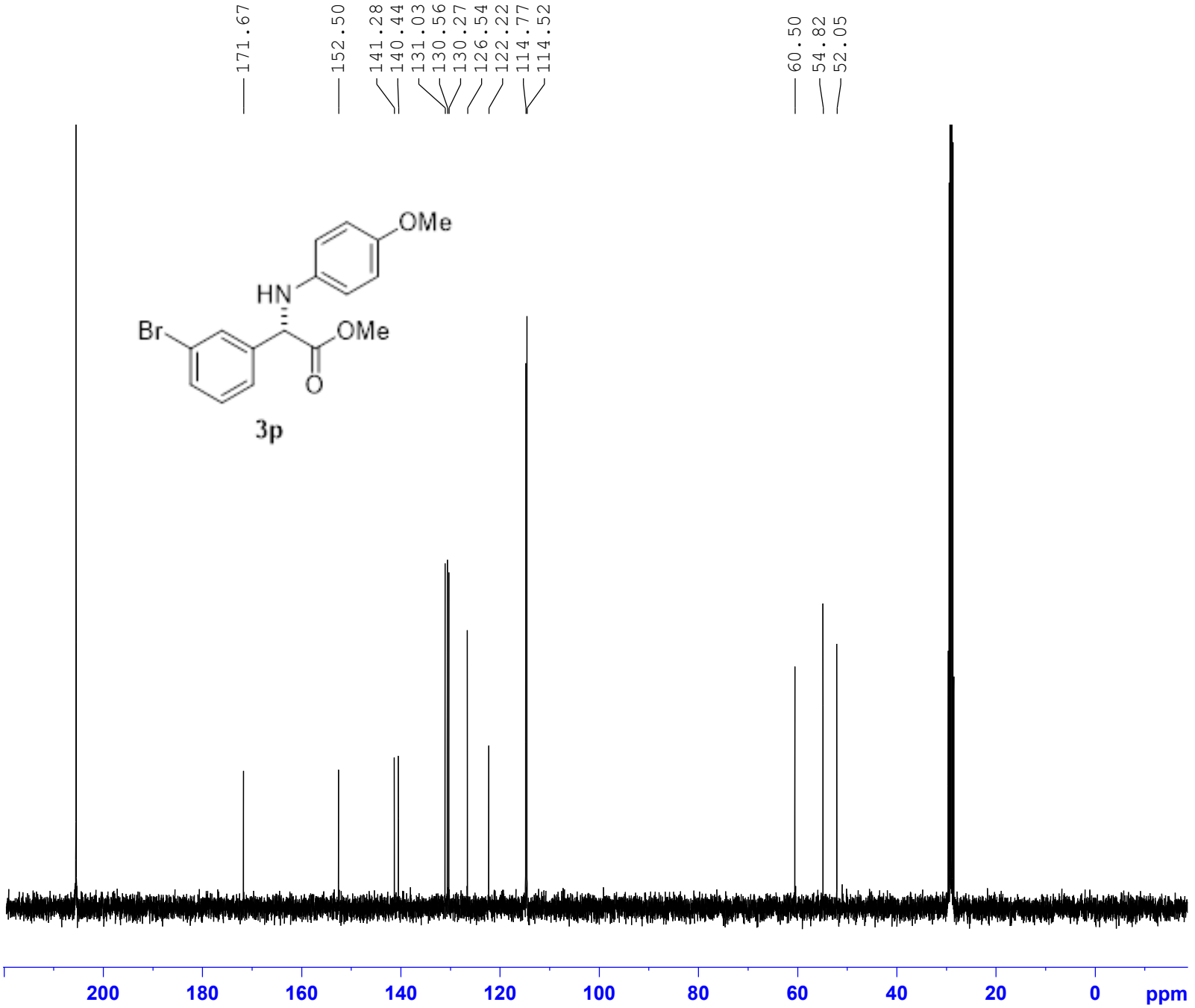

```
NAME      FNMR-gwg-8-186-1
EXPNO                    1
PROCNO                   1
Date_             20200925
Time                 17.17
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                        2
DS                        0
SWH              93750.000 Hz
FIDRES            1.430511 Hz
AQ               0.3495753 sec
RG                  196.92
DW                   5.333 usec
DE                    6.50 usec
TE                   296.7 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          376.4607162 MHz
NUC1                   19F
P1                   14.70 usec
SI                   32768
SF            376.4983660 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```



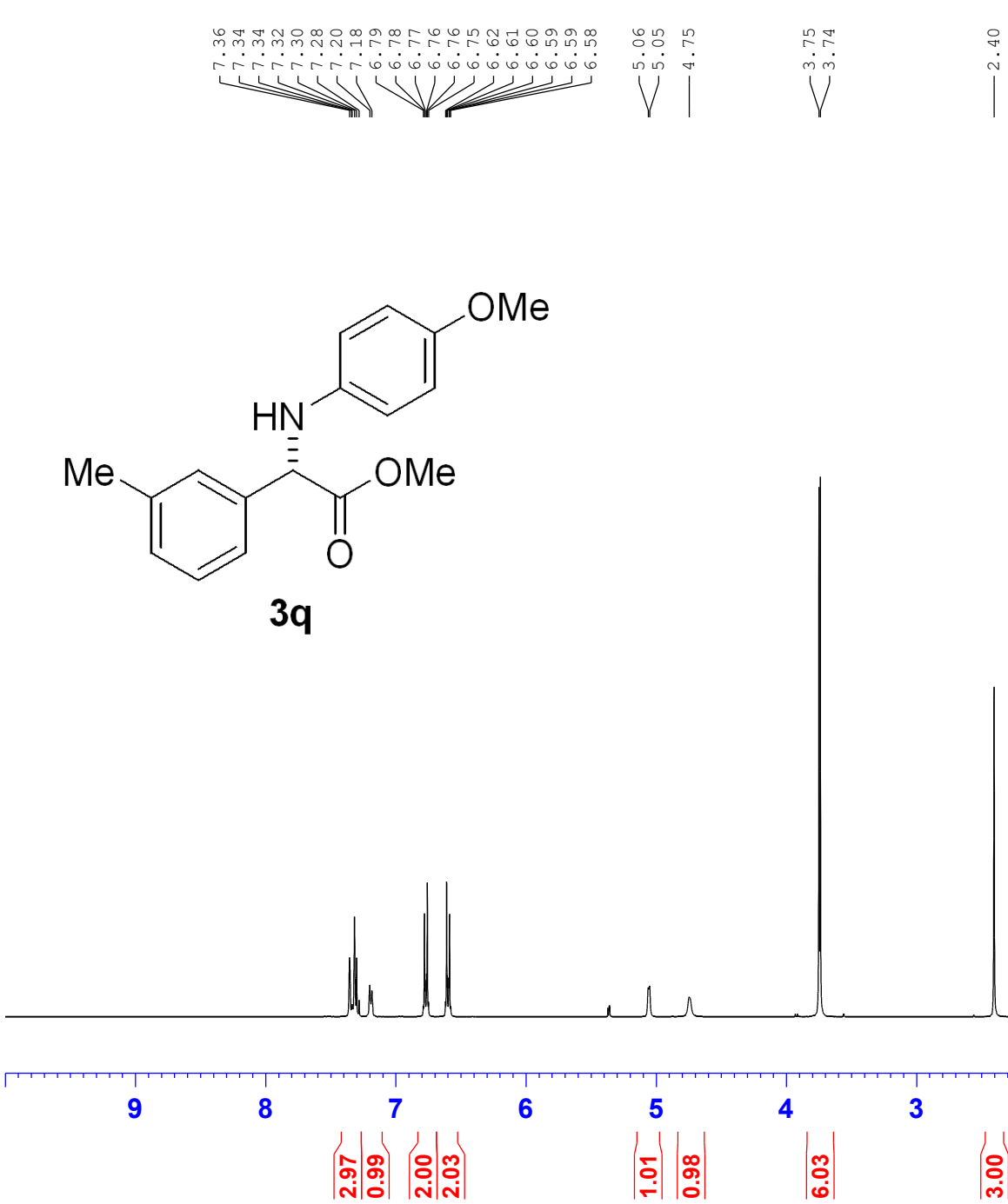


3p


```
NAME      HNMR-gwg-8-151-1
EXPNO                    1
PROCNO                   1
Date_             20200906
Time                 15.50
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT            Acetone
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   34.77
DW                   62.400 usec
DE                    6.50 usec
TE                   296.7 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1           400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF             400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

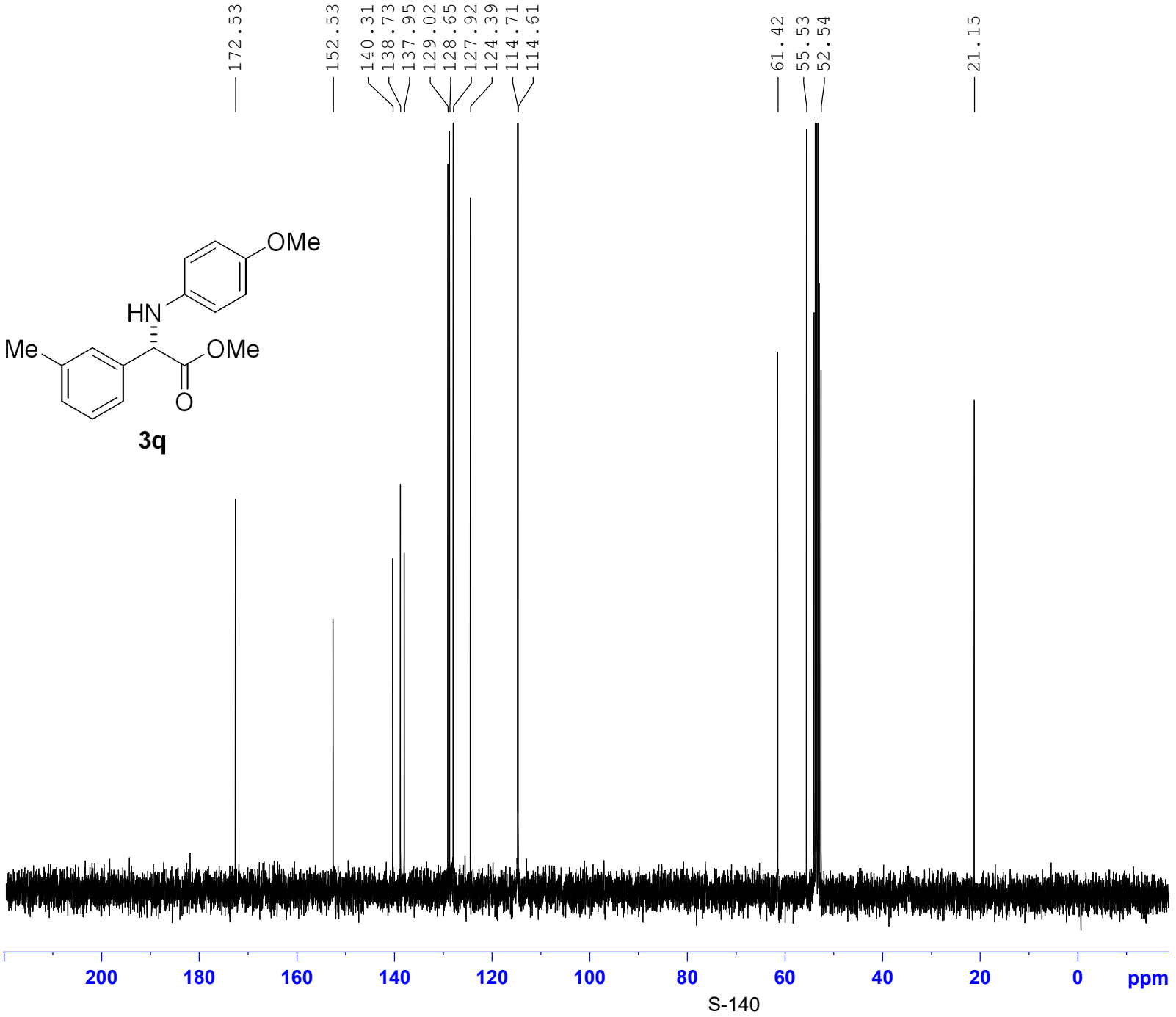



```
NAME        CNMR-gwg-8-151-1
EXPNO                     1
PROCNO                    1
Date_              20200906
Time                  15.52
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            Acetone
NS                        12
DS                         0
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.0 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228298 MHz
NUC1                     13C
P1                     9.70 usec
SI                    32768
SF              100.6127690 MHz
WDW                      EM
SSB                       0
LB                     1.00 Hz
GB                        0
PC                     1.40
```

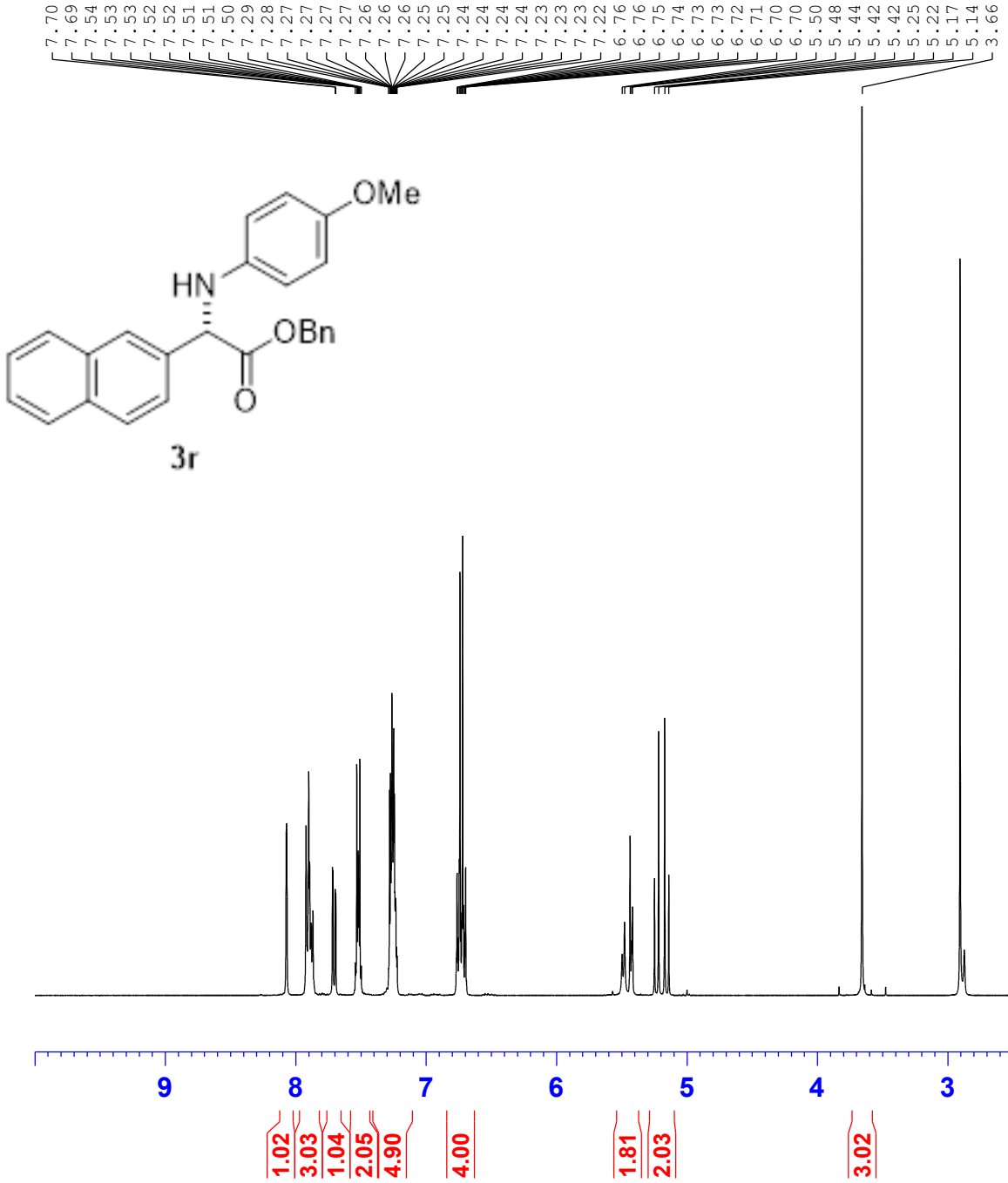


NAME HNMR-gwg-9-14-1
EXPNO 1
PROCNO 1
Date_ 20201001
Time 19.22
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CD2Cl2
NS 4
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 34.77
DW 62.400 usec
DE 6.50 usec
TE 297.7 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 400.1324710 MHz
NUC1 1H
P1 14.50 usec
SI 65536
SF 400.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

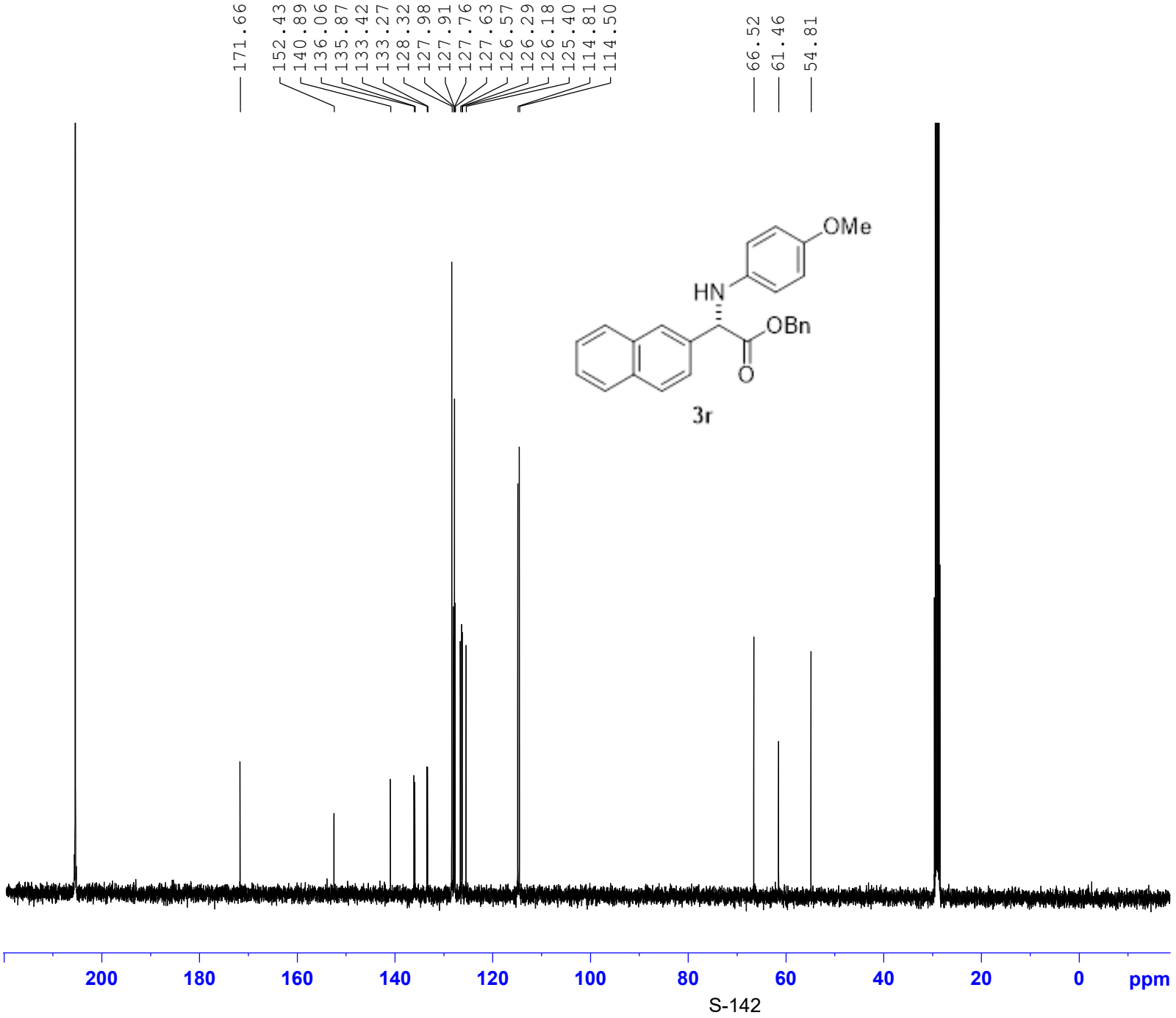



```
NAME        CNMR-gwg-9-14-1
EXPNO                     1
PROCNO                    1
Date_              20201001
Time                  19.24
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       31
DS                        0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ               1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   298.3 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```



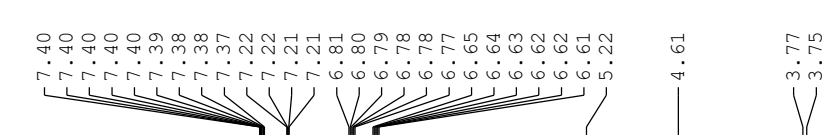
BRUKER

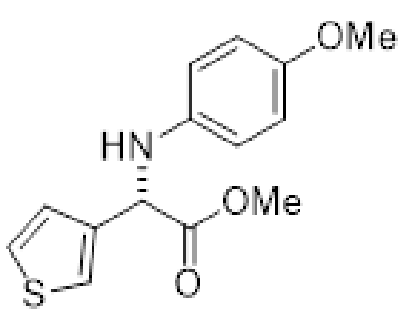
NAME	HNMR-gwg-8-159-true
EXPNO	1
PROCNO	1
Date_	20200908
Time	17.11
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	Acetone
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	45.67
DW	62.400 usec
DE	6.50 usec
TE	296.4 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



NAME	CNMR-gwg-8-159-true
EXPNO	1
PROCNO	1
Date_	20200908
Time	17.16
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	Acetone
NS	96
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.0 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

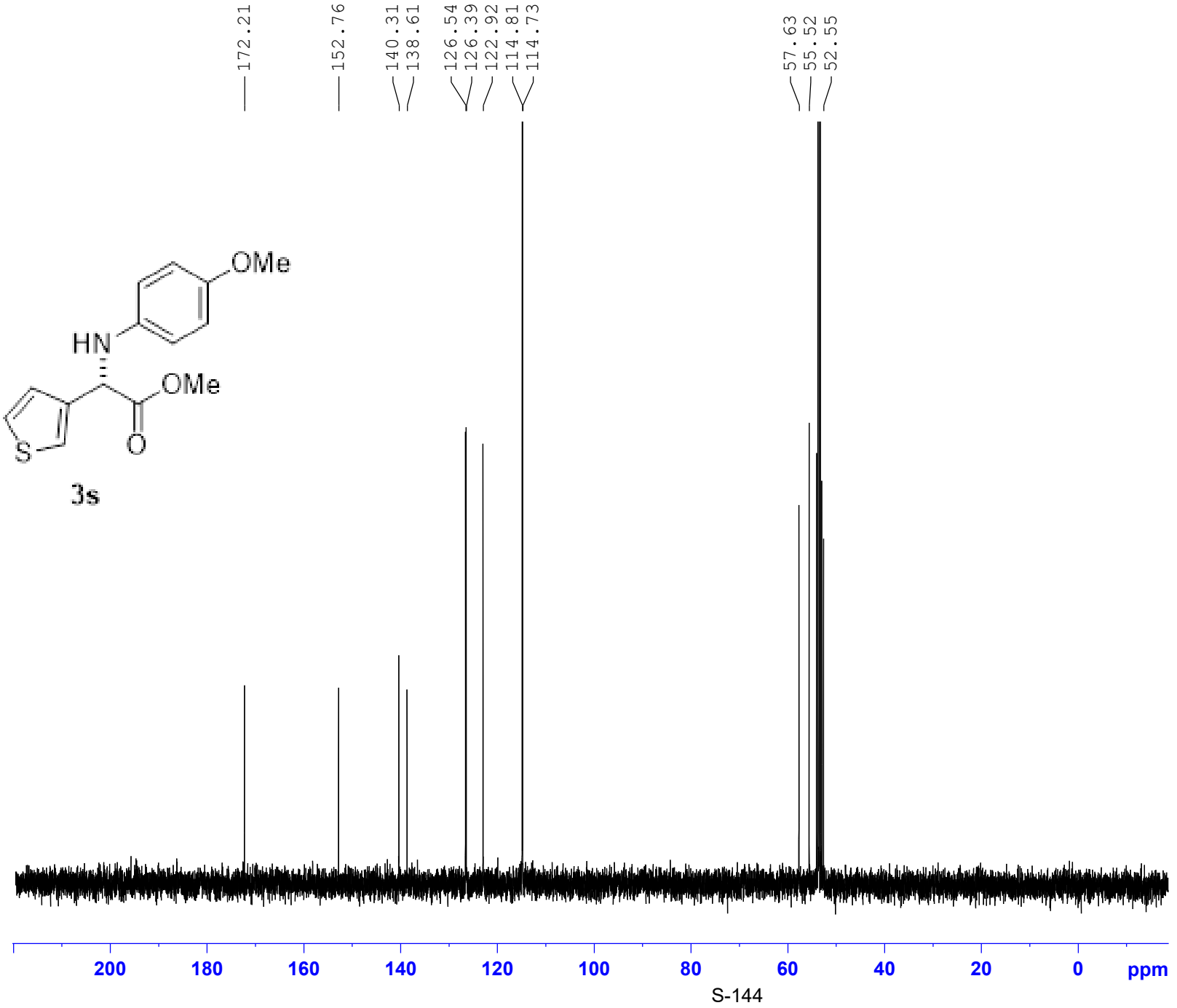
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40





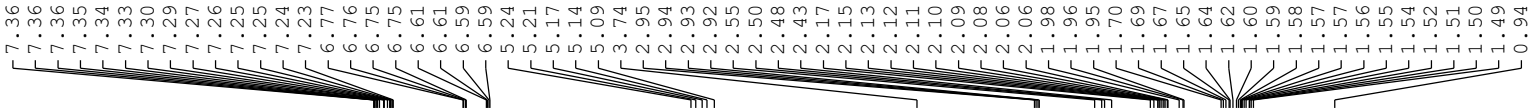
3s

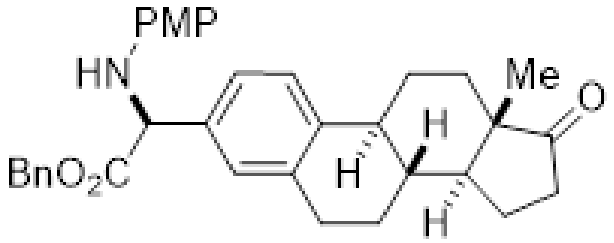
NAME	HNMR-gwg-9-1
EXPNO	1
PROCNO	1
Date_	20200920
Time	22.03
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	39.46
DW	62.400 usec
DE	6.50 usec
TE	298.0 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



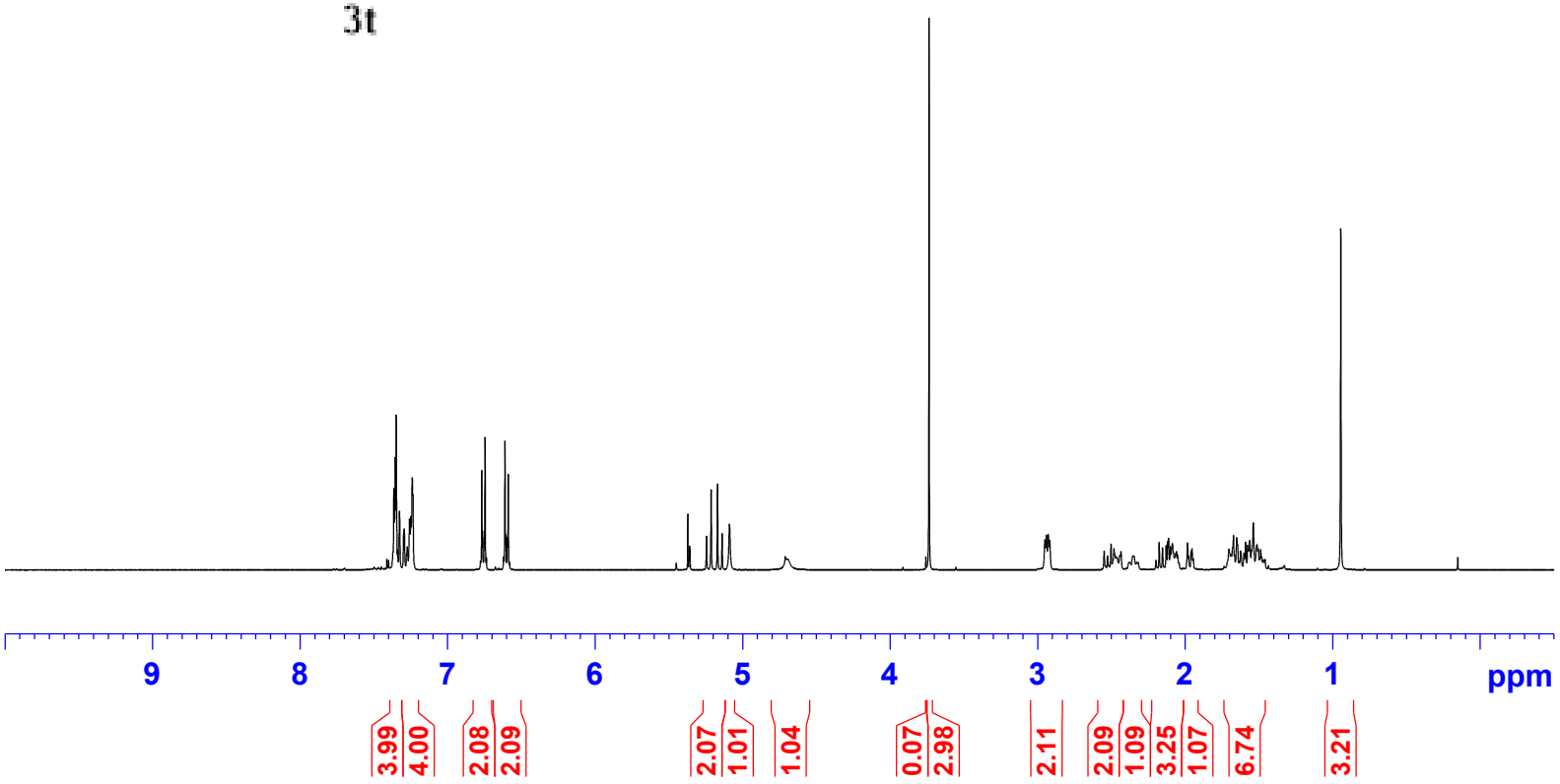
BRUKER

NAME	CNMR-gwg-9-1
EXPNO	1
PROCNO	1
Date_	20200920
Time	22.06
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	19
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	298.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

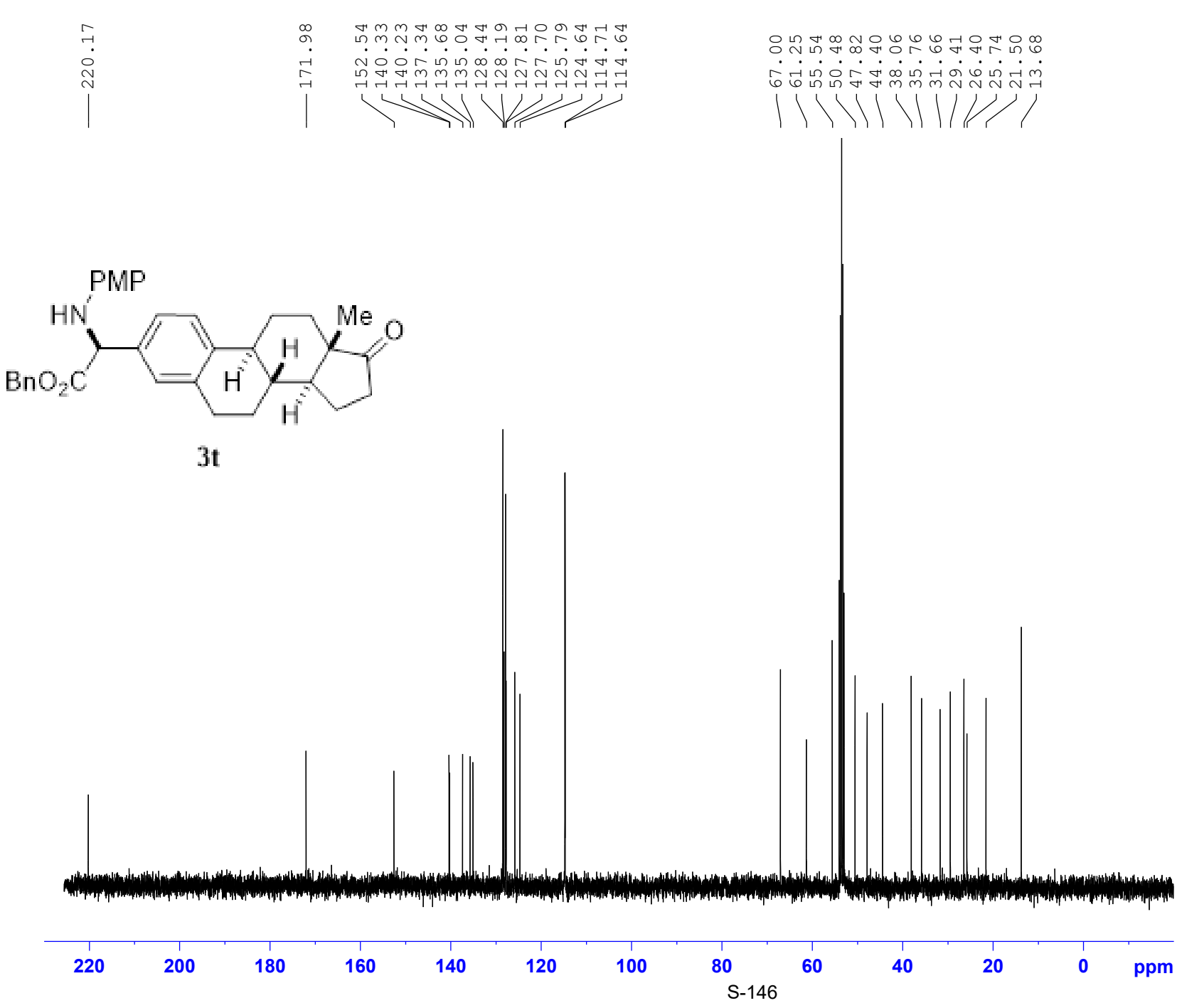




3t

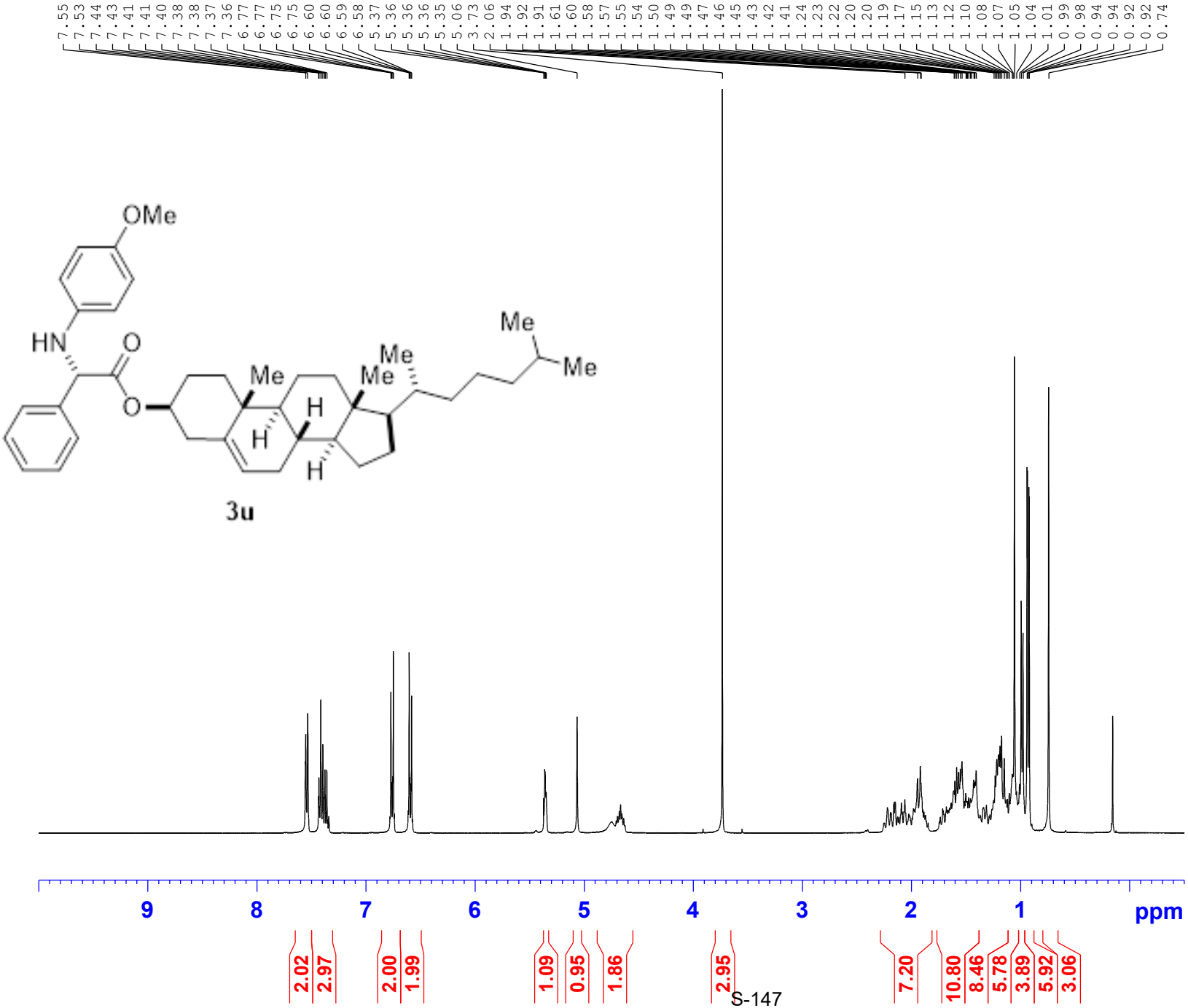



```
NAME          HNMR-gwg-8-180-1
EXPNO                       1
PROCNO                      1
Date_                20200915
Time                    12.47
INSTRUM                 spect
PROBHD    5 mm PABBO BB/
PULPROG                 zg30
TD                     65536
SOLVENT             CD2Cl2
NS                          3
DS                          0
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      34.77
DW                      62.400 usec
DE                       6.50 usec
TE                      296.9 K
D1                   1.00000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                       1H
P1                      14.50 usec
SI                     65536
SF               400.1300000 MHz
WDW                        EM
SSB                         0
LB                       0.30 Hz
GB                          0
PC                       1.00
```

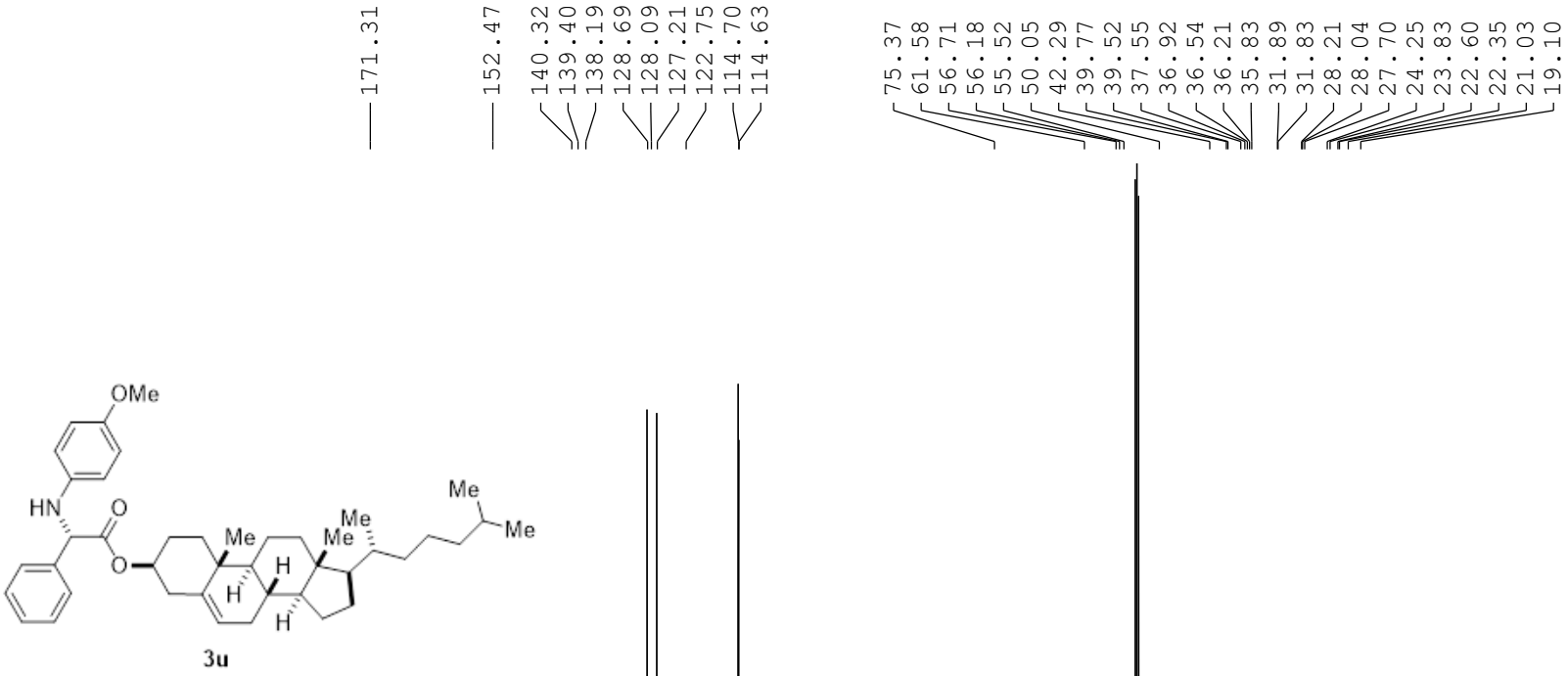


BRUKER

NAME	CNMR-gwg-8-180-2
EXPNO	1
PROCNO	1
Date_	20200915
Time	13.16
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	38
DS	2
SWH	25252.525 Hz
FIDRES	0.385323 Hz
AQ	1.2976629 sec
RG	196.92
DW	19.800 usec
DE	6.50 usec
TE	297.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40



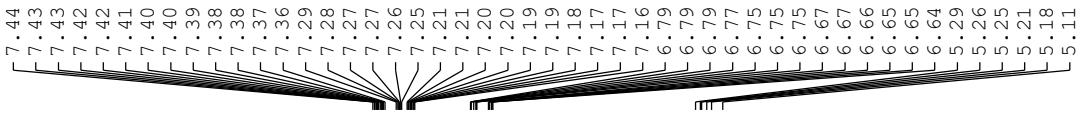

```
NAME      HNMR-gwg-8-189-1
EXPNO                    1
PROCNO                   1
Date_             20200920
Time                 22.10
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           CD2Cl2
NS                       4
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   22.47
DW                   62.400 usec
DE                    6.50 usec
TE                   298.1 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF              400.1300000 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```

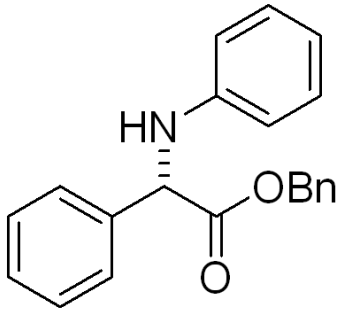


3u

171.31
152.47
140.32
139.40
138.19
128.69
128.09
127.21
122.75
114.70
114.63
75.37
61.58
56.71
56.18
55.52
50.05
42.29
39.77
39.52
37.55
36.92
36.54
36.21
35.83
31.89
31.83
28.21
28.04
27.70
24.25
23.83
22.60
22.35
21.03
19.10

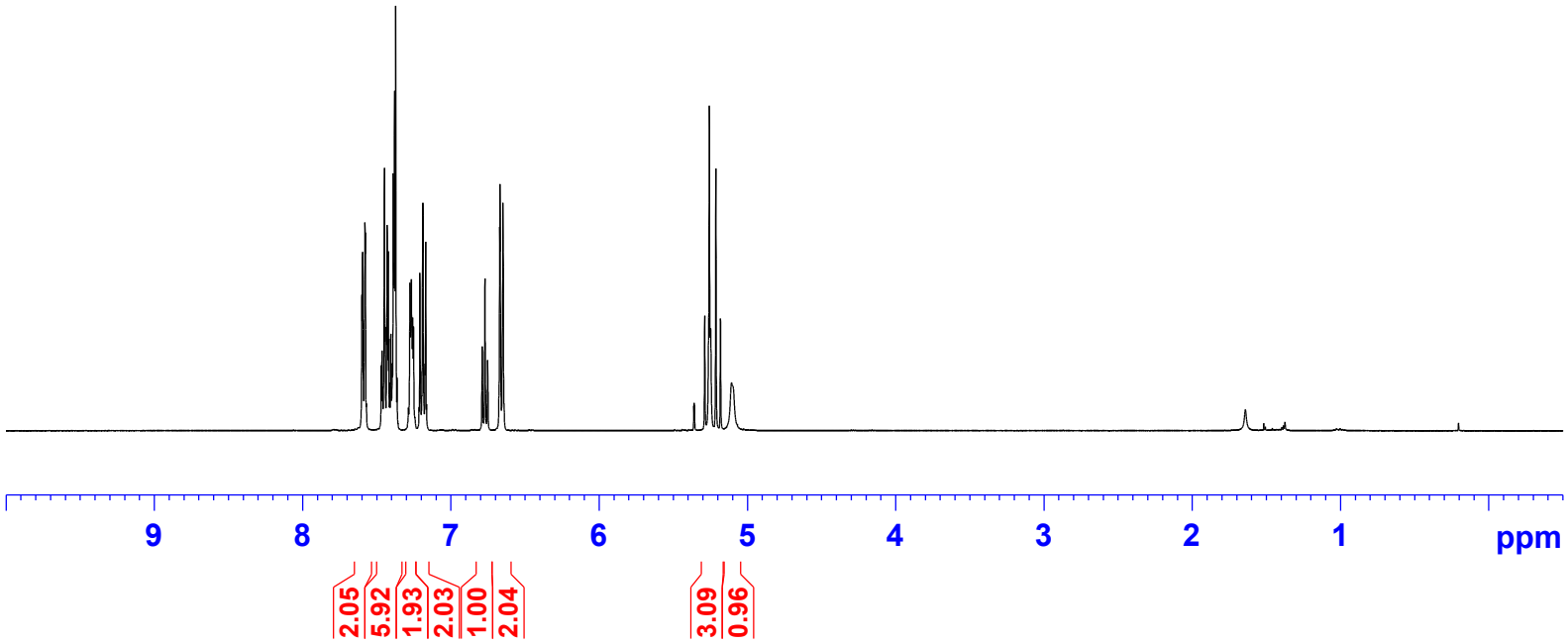

```
NAME        CNMR-gwg-8-189-1
EXPNO                     1
PROCNO                    1
Date_              20200920
Time                  22.14
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       22
DS                        0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631988 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  298.6 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                   9.70 usec
SI                  32768
SF            100.6127690 MHz
WDW                    EM
SSB                       0
LB                   1.00 Hz
GB                        0
PC                   1.40
```

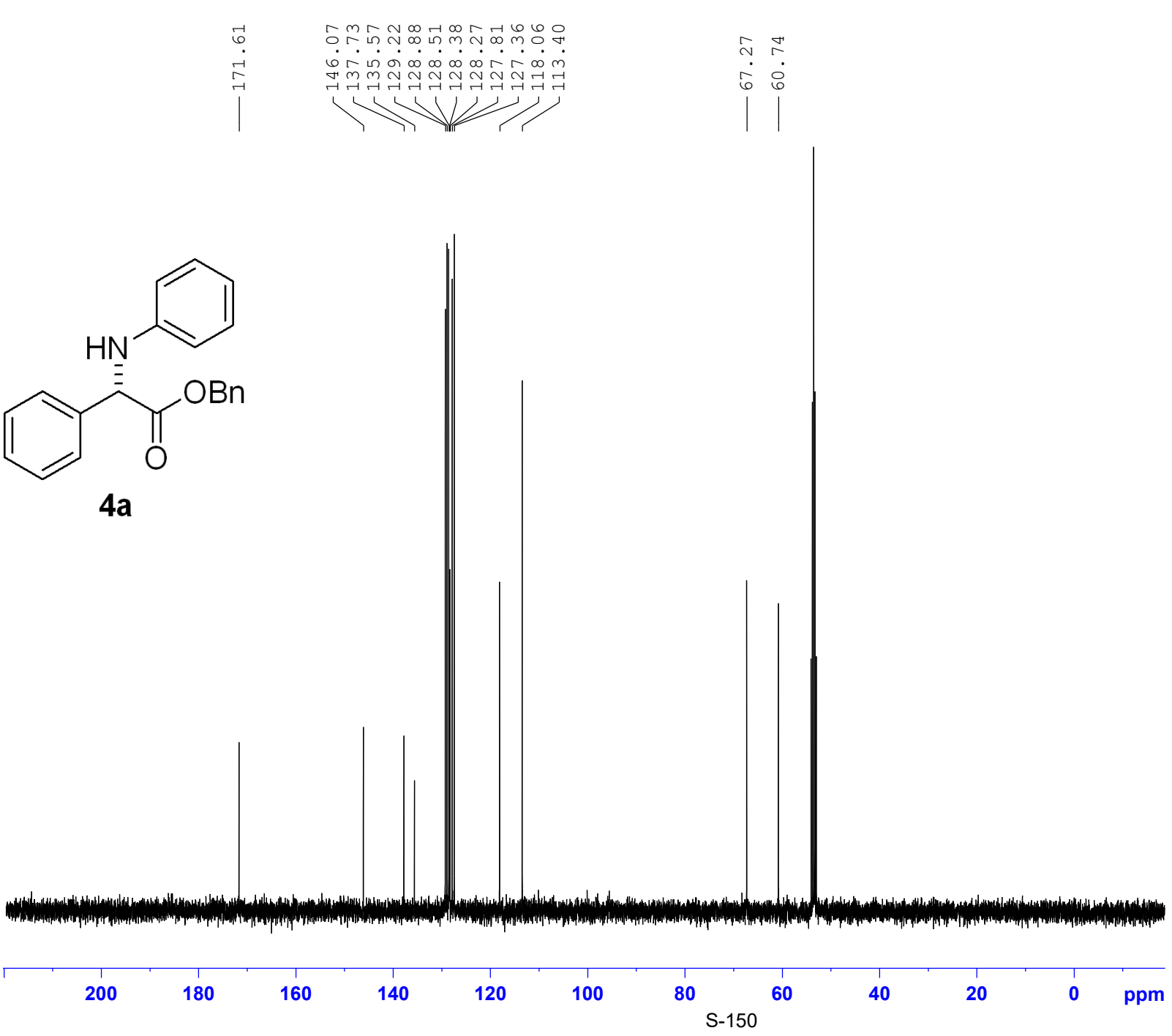




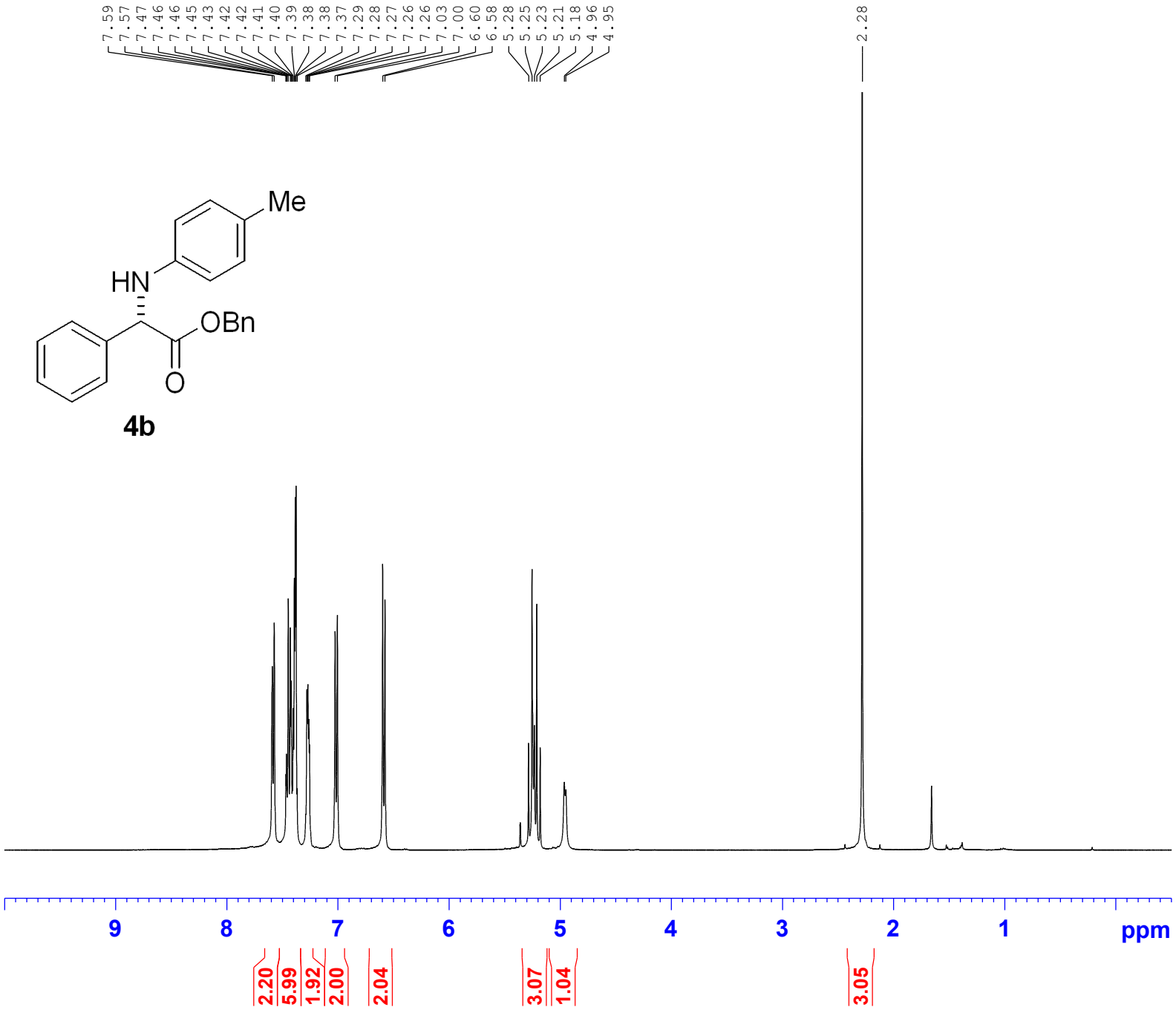
4a

```
NAME      HNMR-gwg-9-15-1
EXPNO                   1
PROCNO                  1
Date_            20201001
Time                19.28
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT          CD2Cl2
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  31.55
DW                  62.400 usec
DE                   6.50 usec
TE                  297.8 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                    1H
P1                  14.50 usec
SI                  65536
SF            400.1300000 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```



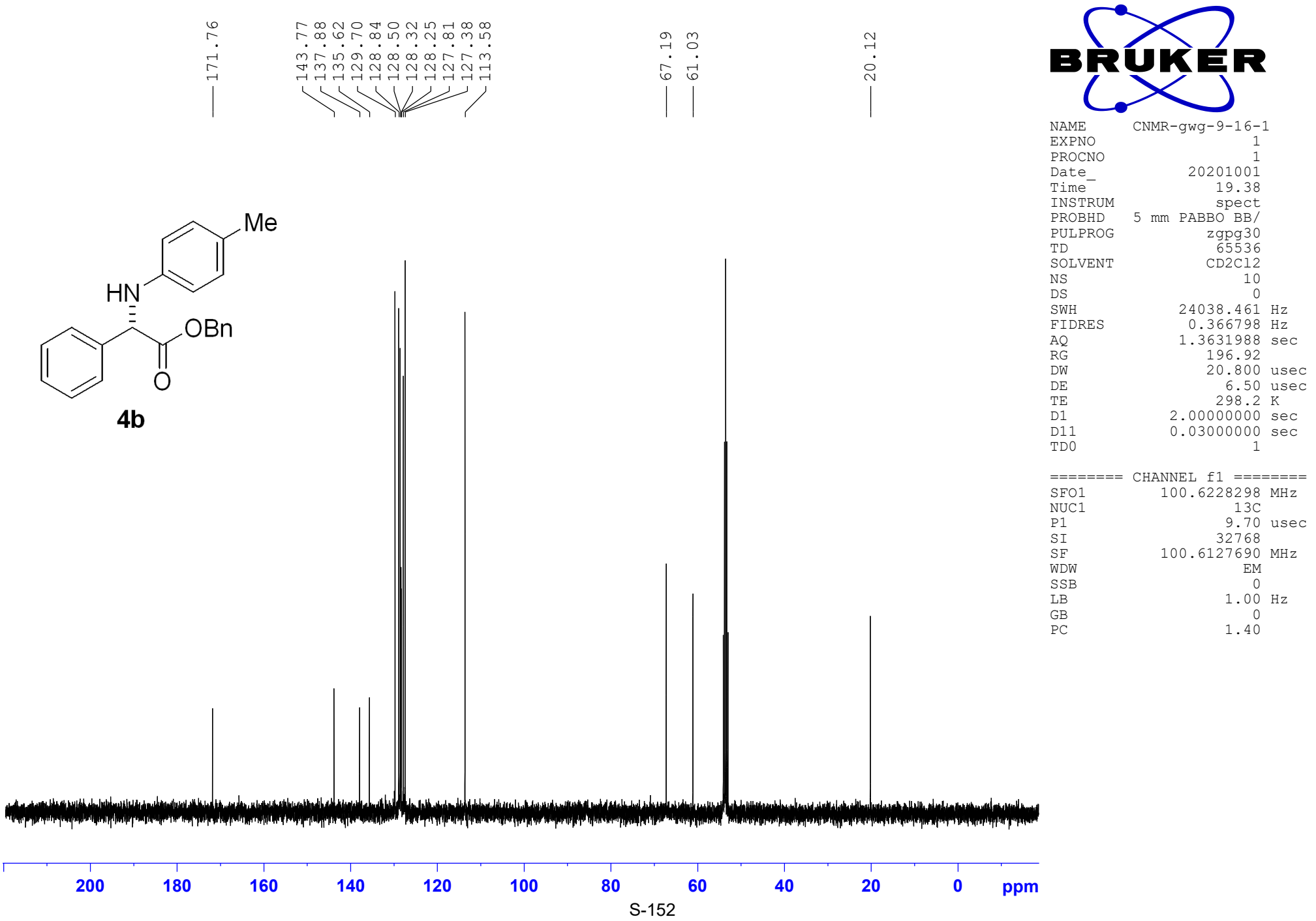



```
NAME        CNMR-gwg-9-15-1
EXPNO                     1
PROCNO                    1
Date_              20201001
Time                  19.32
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       10
DS                        0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   298.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

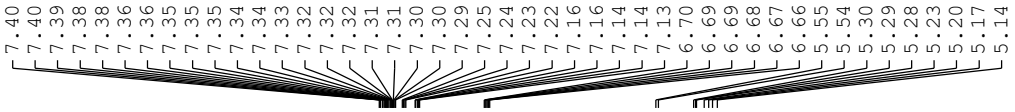


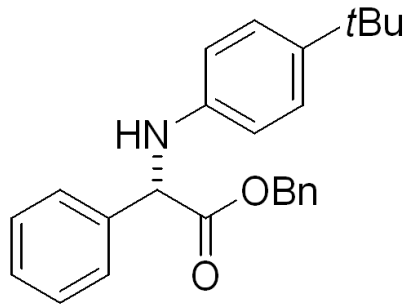
BRUKER

NAME	HNMR-gwg-9-16-1
EXPNO	1
PROCNO	1
Date_	20201001
Time	19.36
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	27.78
DW	62.400 usec
DE	6.50 usec
TE	297.8 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

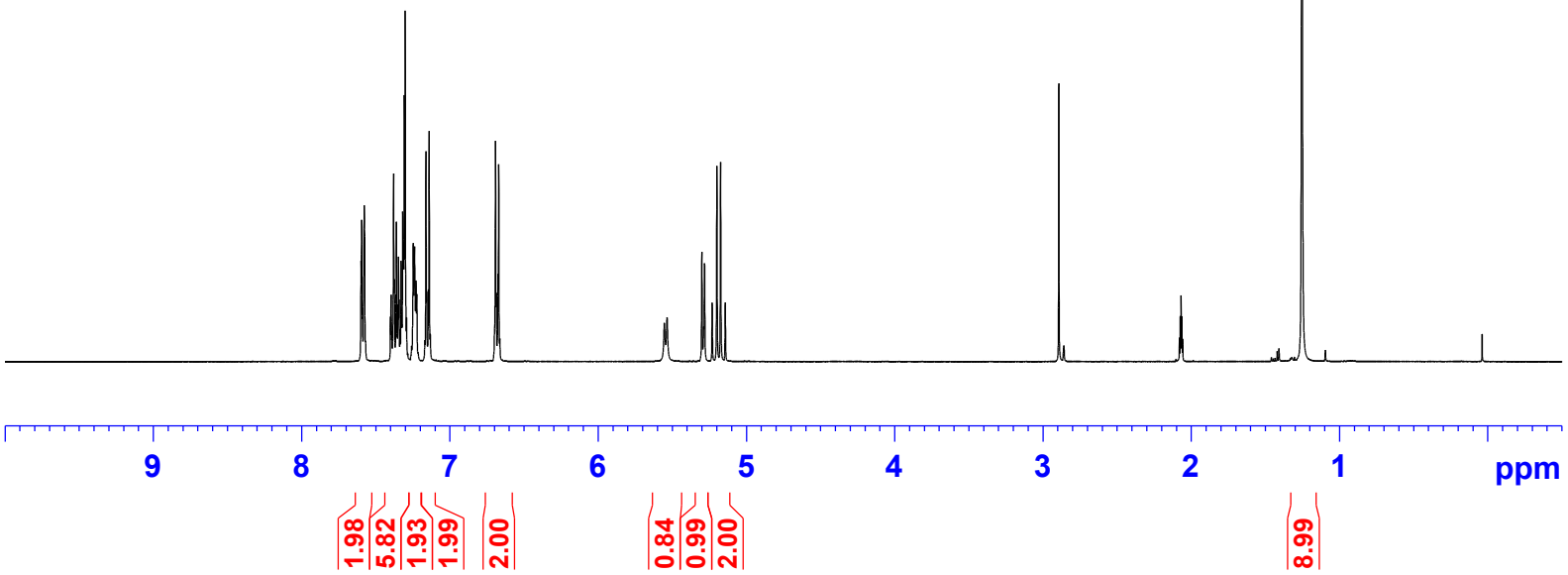



```
NAME        CNMR-gwg-9-16-1
EXPNO                     1
PROCNO                    1
Date_              20201001
Time                  19.38
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       10
DS                        0
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   298.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF             100.6127690 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

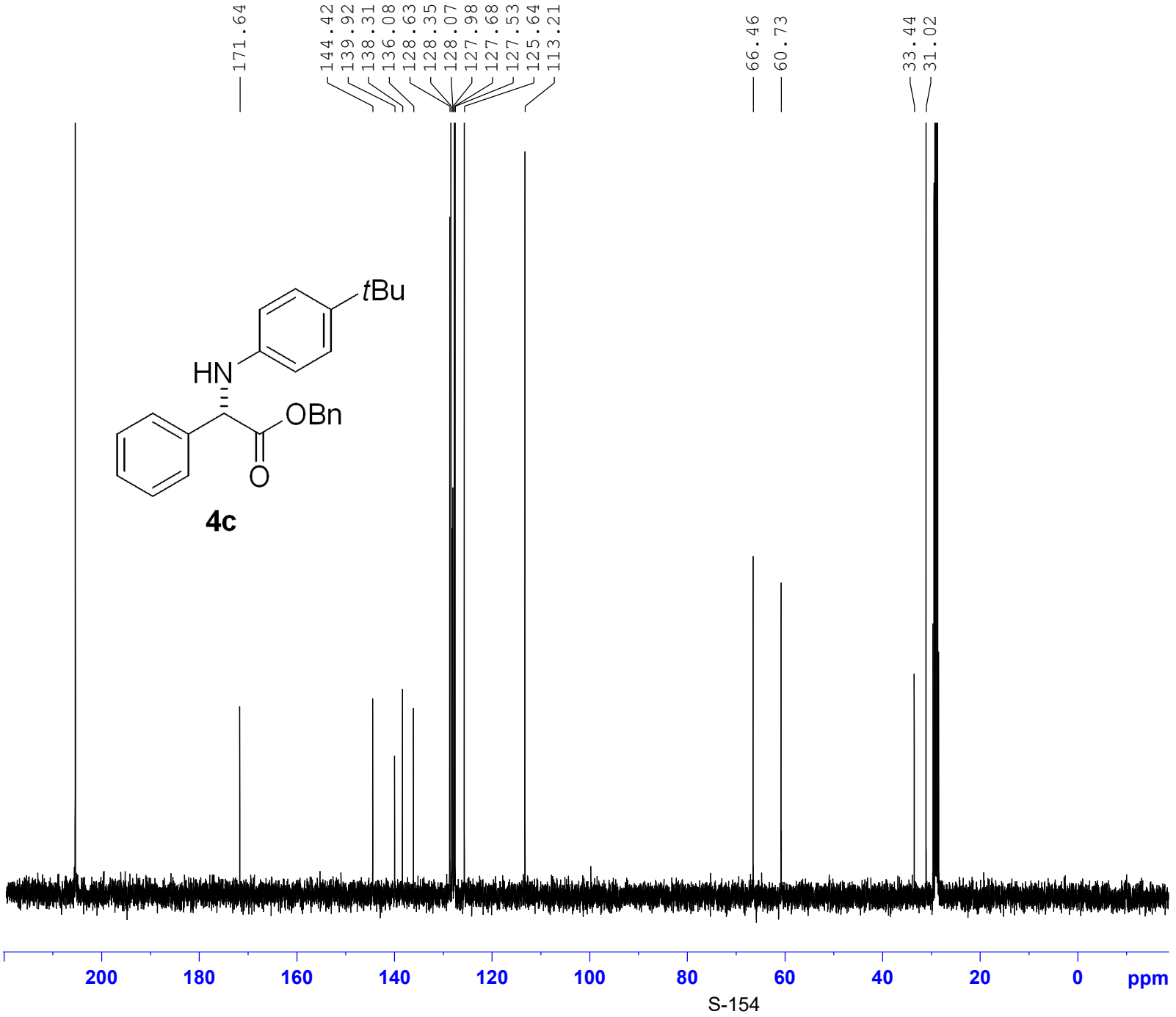




4c




```
NAME      HNMR-gwg-9-17-1
EXPNO                   1
PROCNO                  1
Date_            20201001
Time                19.48
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           Acetone
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ              4.0894966 sec
RG                  27.78
DW                62.400 usec
DE                 6.50 usec
TE                297.9 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00
```

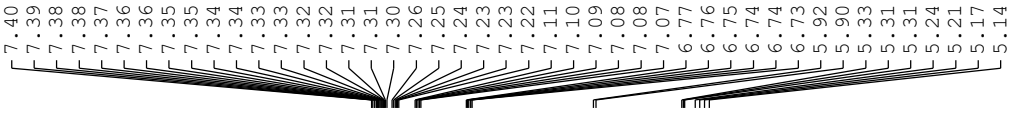


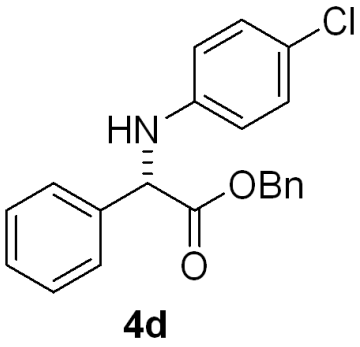
BRUKER

NAME	CNMR-gwg-9-17-1
EXPNO	1
PROCNO	1
Date_	20201001
Time	19.51
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	Acetone
NS	16
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	298.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

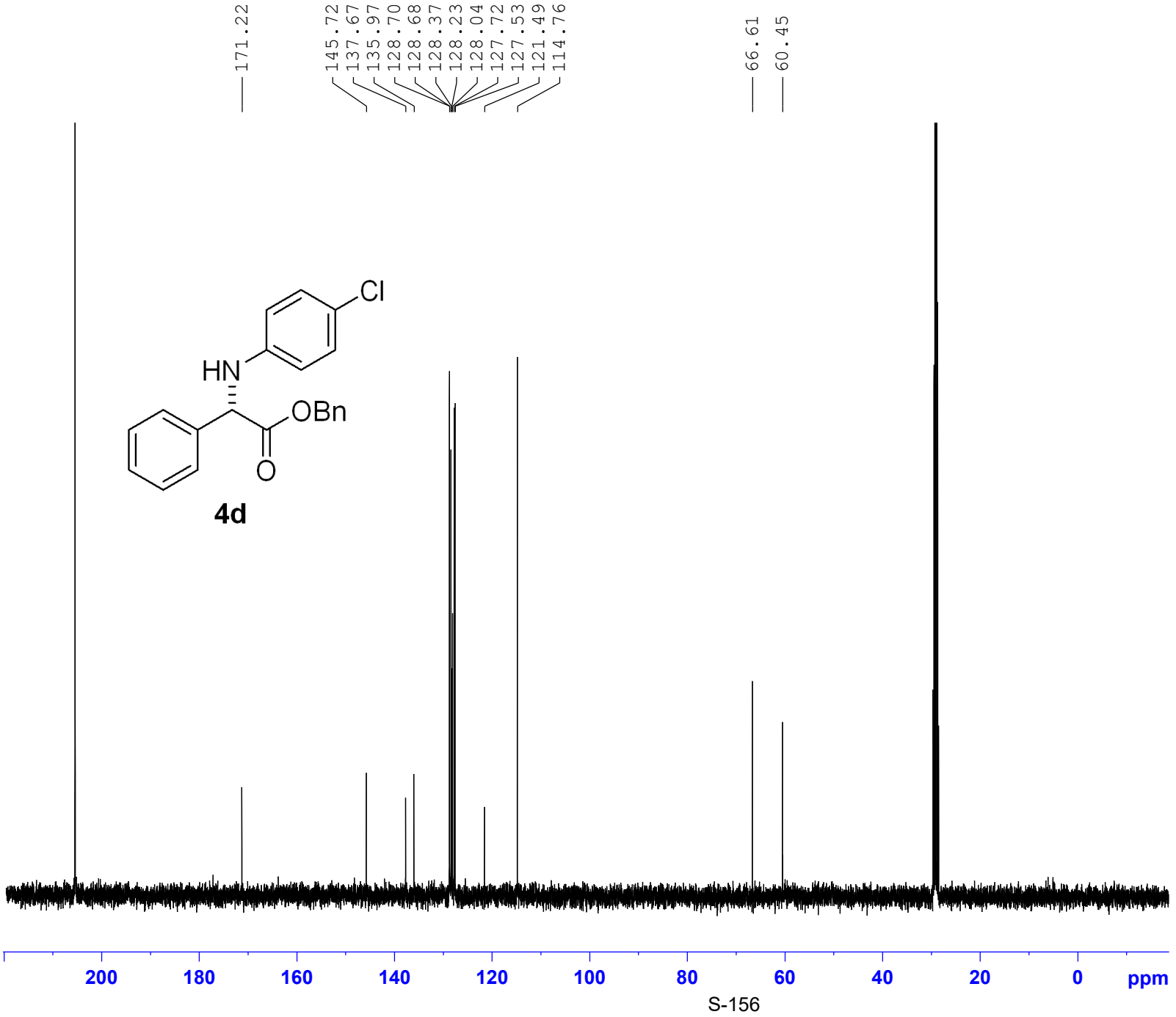
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40





4d


```
NAME      HNMR-gwg-9-18-1
EXPNO                   1
PROCNO                  1
Date_            20201001
Time                19.54
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           Acetone
NS                      1
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  34.77
DW                62.400 usec
DE                 6.50 usec
TE                298.0 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00
```

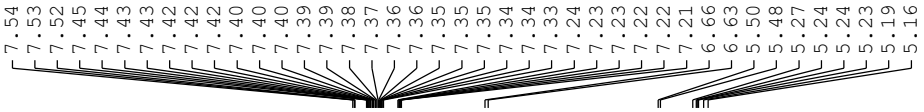


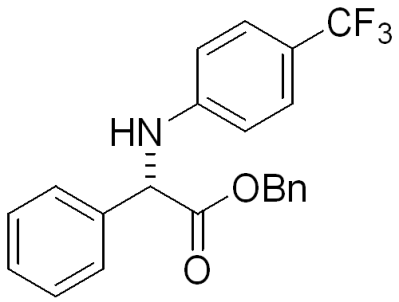
BRUKER

NAME	CNMR-gwg-9-18-1
EXPNO	1
PROCNO	1
Date_	20201001
Time	19.55
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	Acetone
NS	10
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	298.3 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

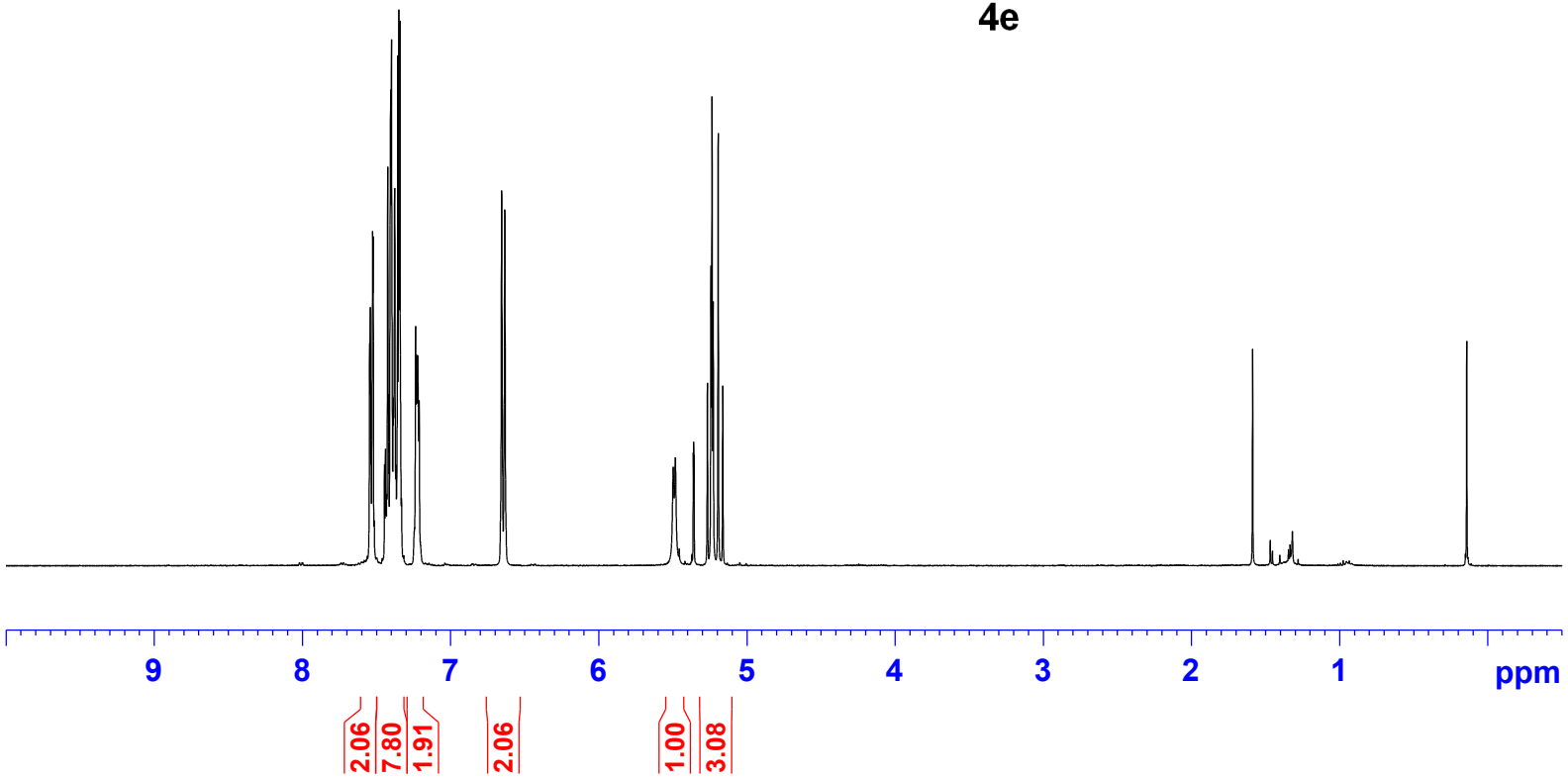
======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

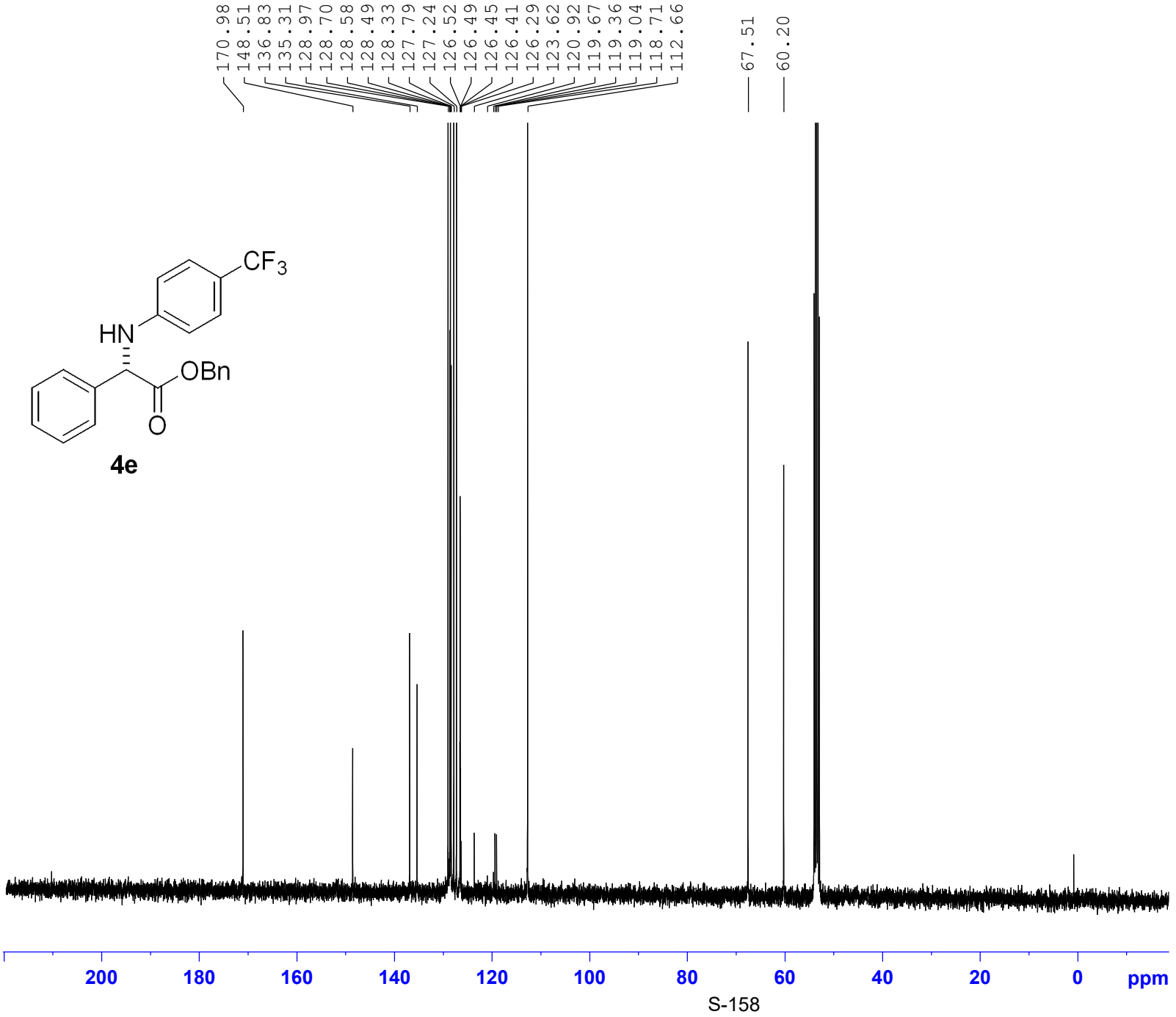




4e

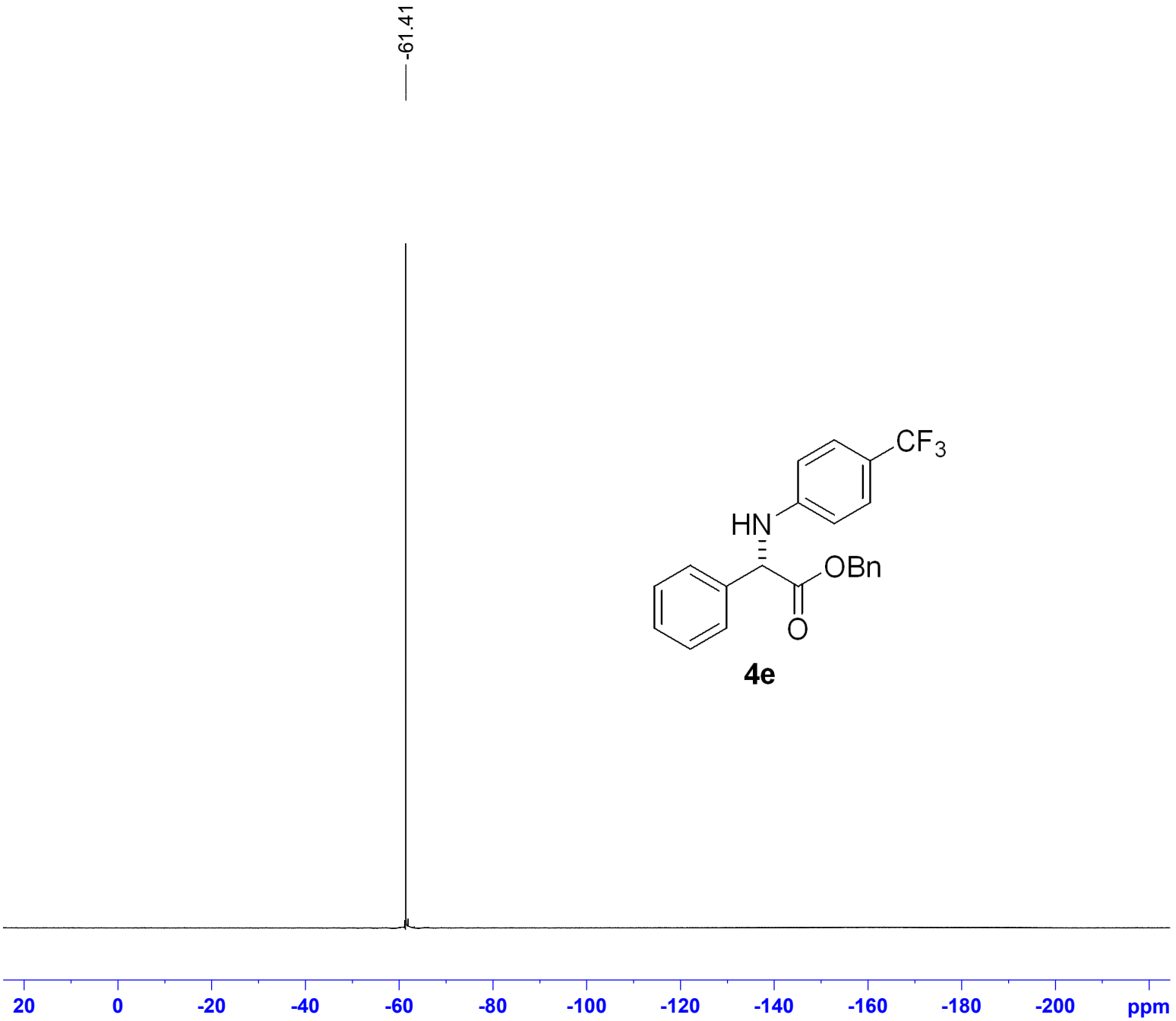



```
NAME      HNMR-gwg-9-28-1
EXPNO                   1
PROCNO                  1
Date_            20201008
Time                19.01
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT           CD2Cl2
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ              4.0894966 sec
RG                  82.92
DW                 62.400 usec
DE                  6.50 usec
TE                 296.0 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                 65536
SF           400.1300000 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

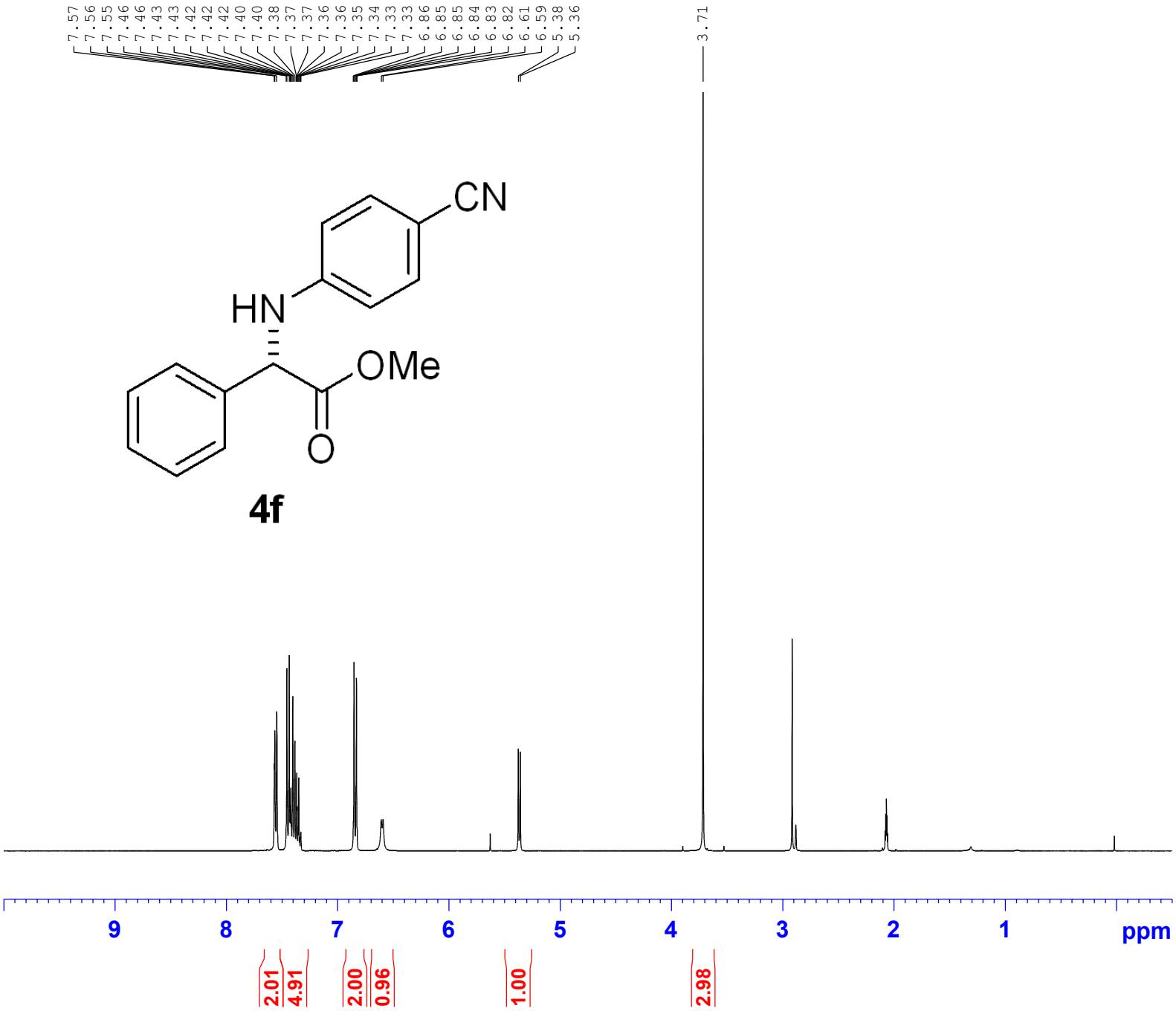


NAME CNMR-gwg-9-28-1
EXPNO 1
PROCNO 1
Date_ 20201010
Time 10.00
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 65536
SOLVENT CD2Cl2
NS 415
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 196.92
DW 20.800 usec
DE 6.50 usec
TE 297.8 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6228298 MHz
NUC1 13C
P1 9.70 usec
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

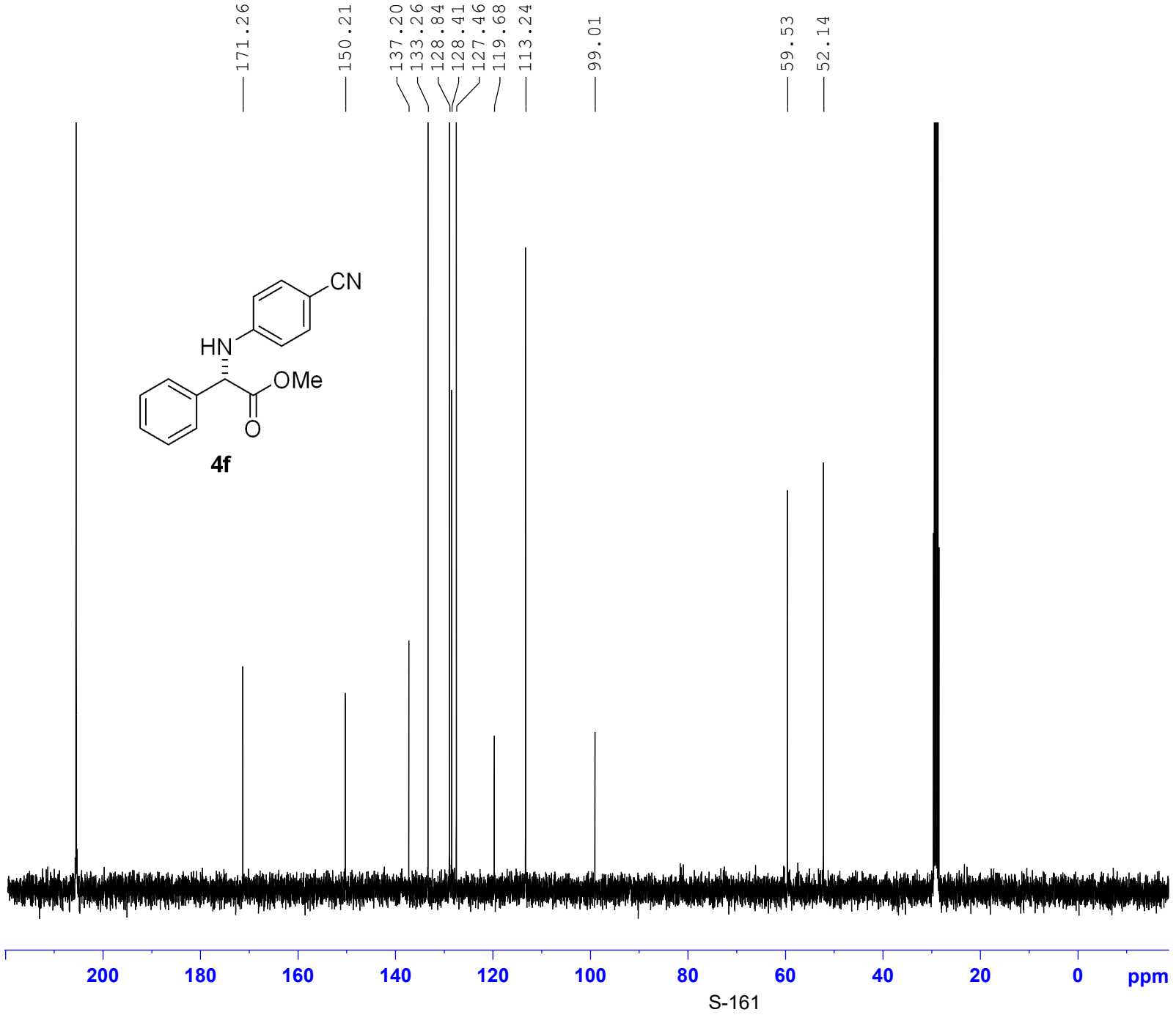



```
NAME      FNMR-gwg-9-28-1
EXPNO                   1
PROCNO                  1
Date_            20201008
Time                19.03
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT            CD2Cl2
NS                      4
DS                      0
SWH             93750.000 Hz
FIDRES          1.430511 Hz
AQ              0.3495753 sec
RG                 196.92
DW                 5.333 usec
DE                  6.50 usec
TE                 296.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         376.4607162 MHz
NUC1                  19F
P1                 14.70 usec
SI                 32768
SF           376.4983660 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                 1.40
```

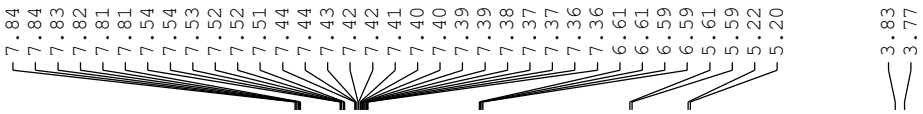


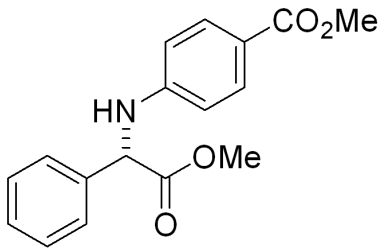
BRUKER

NAME	HNMR-gwg-9-50-1
EXPNO	1
PROCNO	1
Date_	20201015
Time	19.20
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	Acetone
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	31.55
DW	62.400 usec
DE	6.50 usec
TE	296.7 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



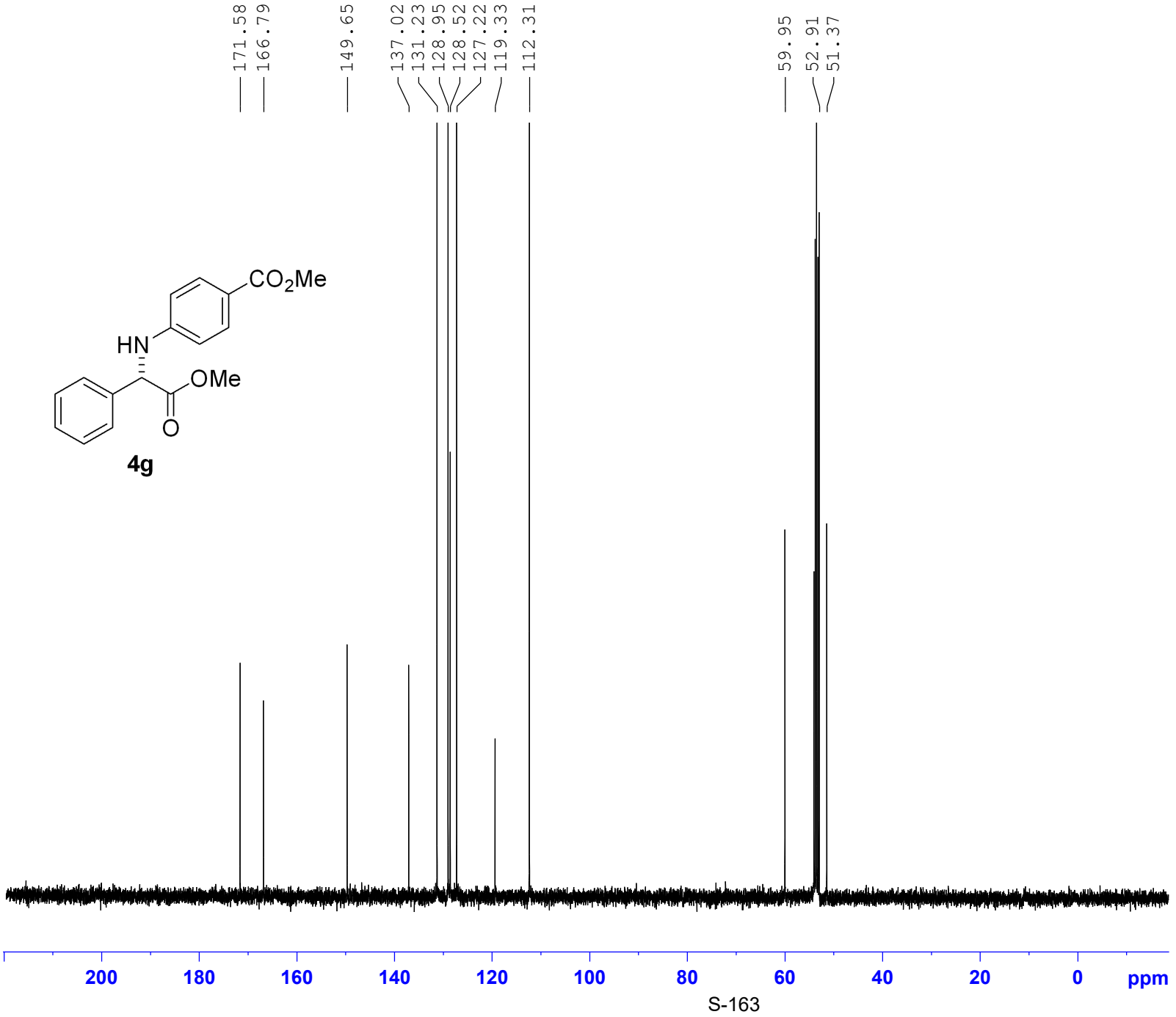

```
NAME        CNMR-gwg-9-50-1
EXPNO                     1
PROCNO                    1
Date_              20201015
Time                  19.22
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            Acetone
NS                        18
DS                         0
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1           100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF             100.6127690 MHz
WDW                      EM
SSB                       0
LB                    1.00 Hz
GB                        0
PC                    1.40
```



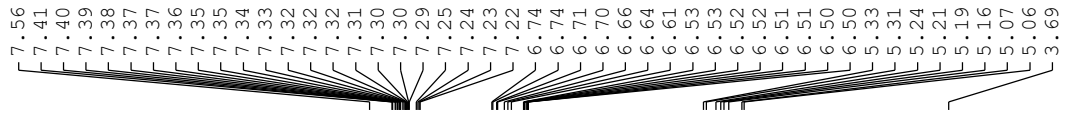


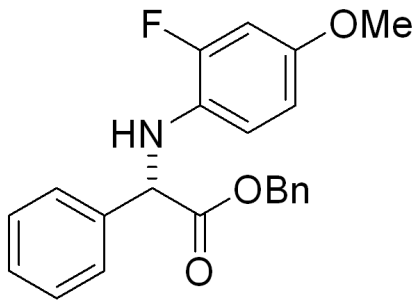
4g

NAME	HNMR-lsj-1-18
EXPNO	1
PROCNO	1
Date_	20201011
Time	17.19
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	8
DS	2
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	49.32
DW	62.400 usec
DE	6.50 usec
TE	296.6 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



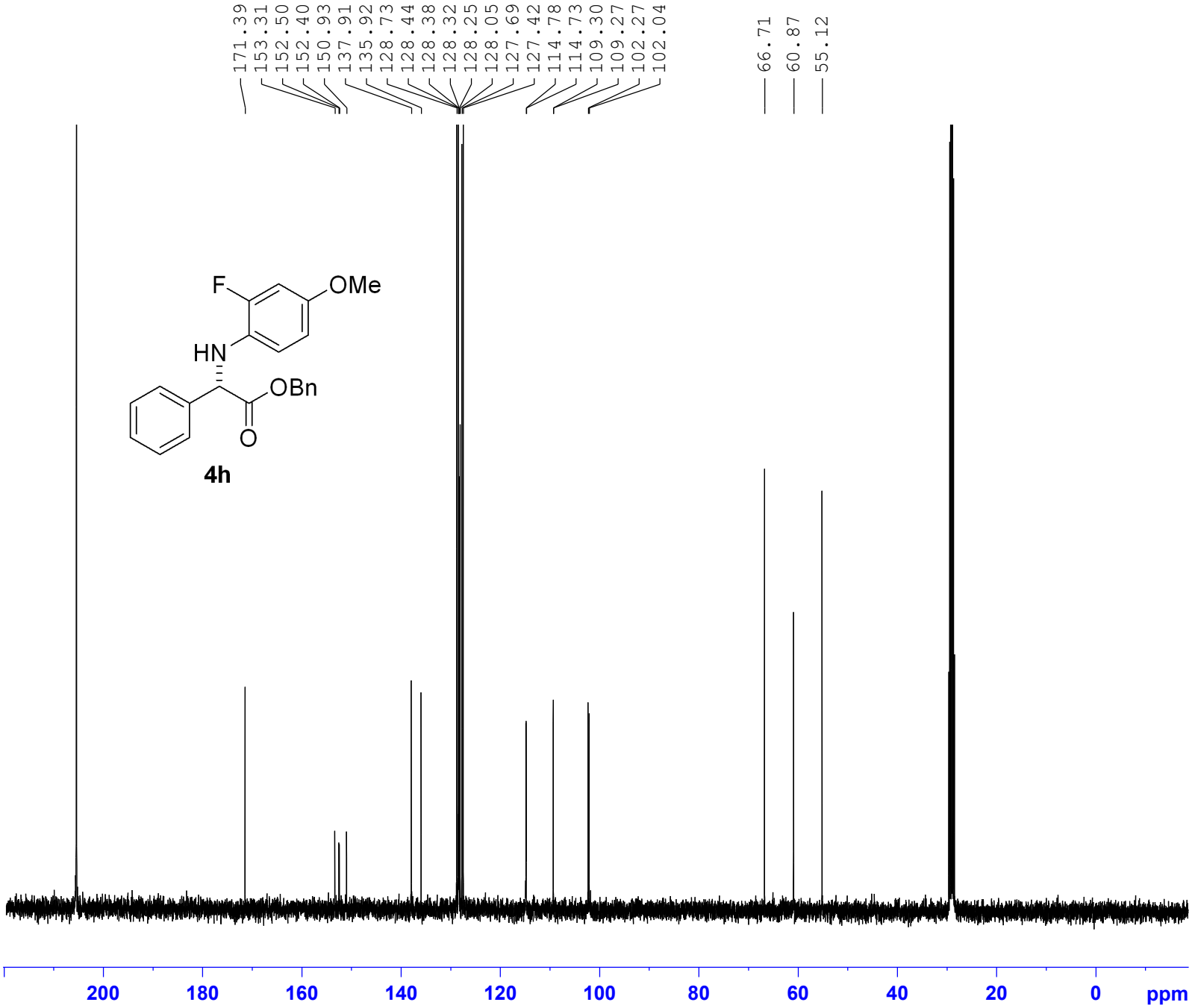

```
NAME          CNMR-lsj-1-18
EXPNO                     1
PROCNO                    1
Date_              20201011
Time                  17.24
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       82
DS                        2
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   297.0 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF             100.6127690 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```





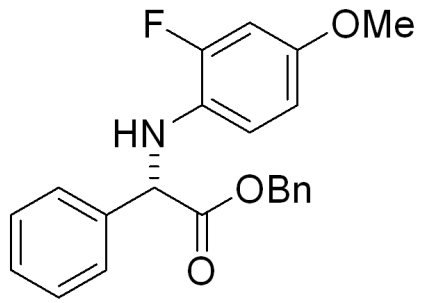
4h


```
NAME      HNMR-gwg-9-20-1
EXPNO                   1
PROCNO                  1
Date_            20201001
Time                19.58
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           Acetone
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  31.55
DW                62.400 usec
DE                 6.50 usec
TE                298.0 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00
```



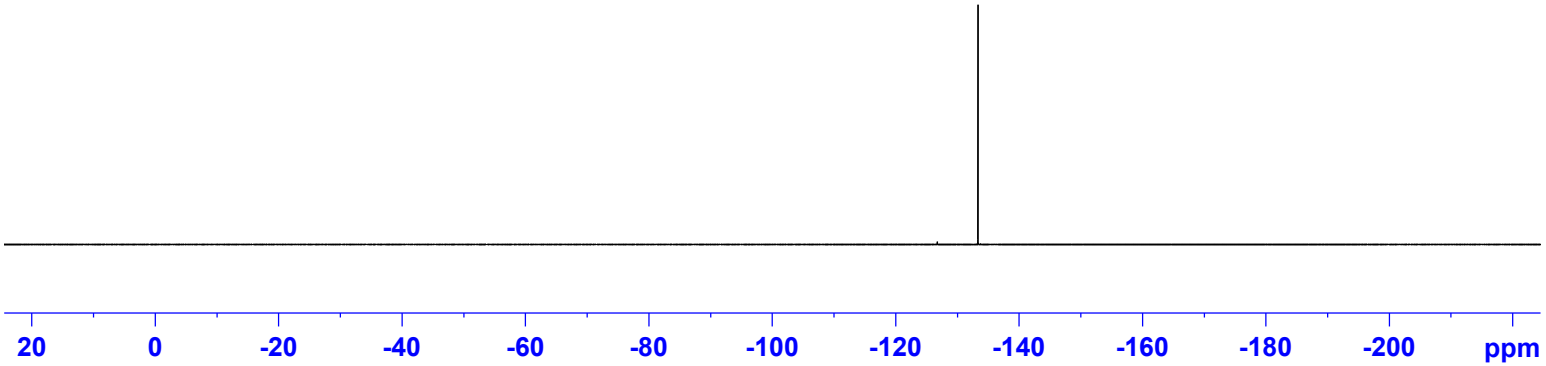
BRUKER

NAME	CNMR-gwg-9-20-1
EXPNO	1
PROCNO	1
Date_	20201001
Time	20.00
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	Acetone
NS	33
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	298.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

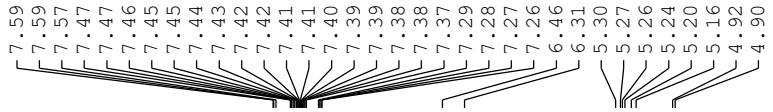


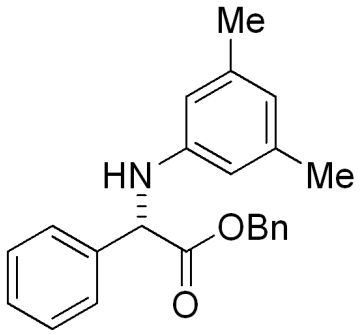
4h

-133.37

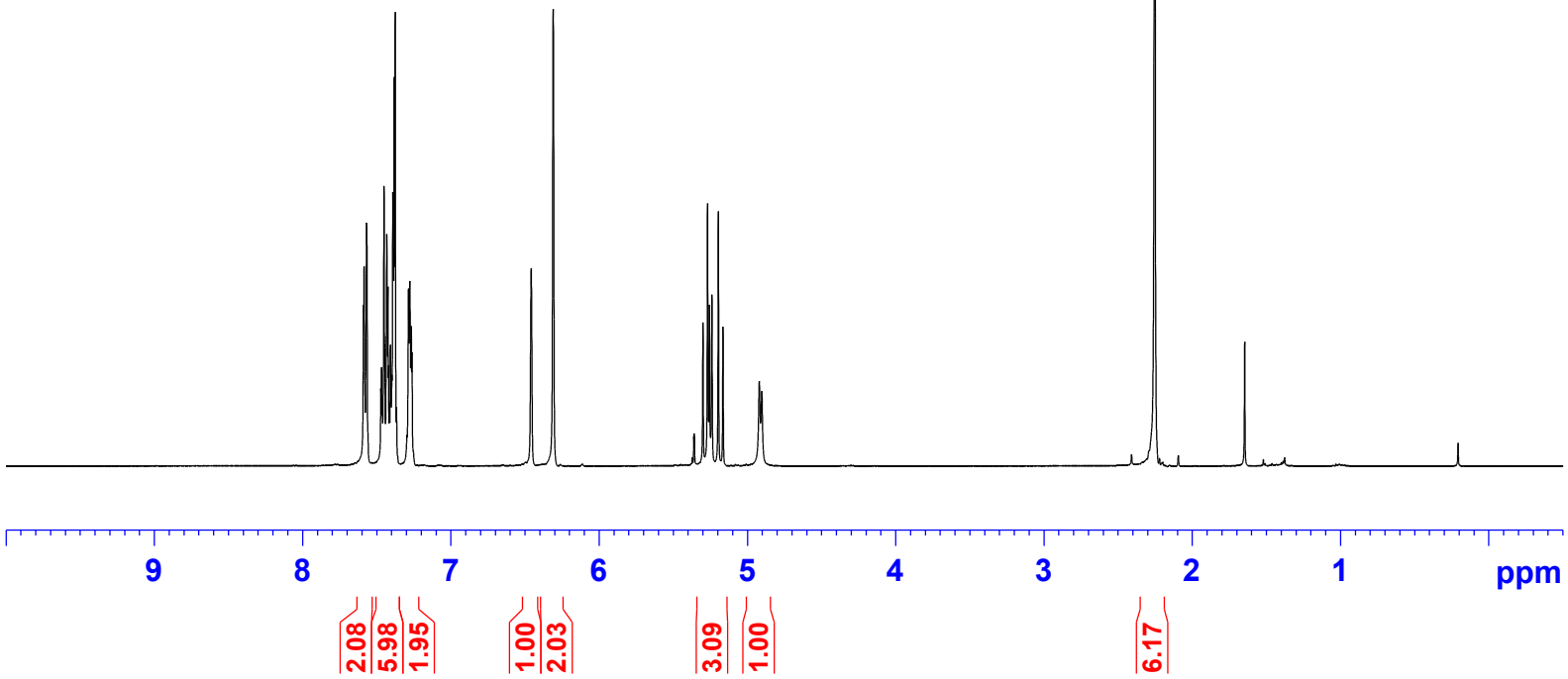



```
NAME        FNMR-gwg-9-20-1
EXPNO                     1
PROCNO                    1
Date_              20201001
Time                  20.03
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG              zgpg30
TD                    65536
SOLVENT           Acetone
NS                        1
DS                        0
SWH              93750.000 Hz
FIDRES            1.430511 Hz
AQ               0.3495753 sec
RG                   196.92
DW                    5.333 usec
DE                     6.50 usec
TE                   298.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          376.4607162 MHz
NUC1                   19F
P1                   14.70 usec
SI                   32768
SF            376.4983660 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```

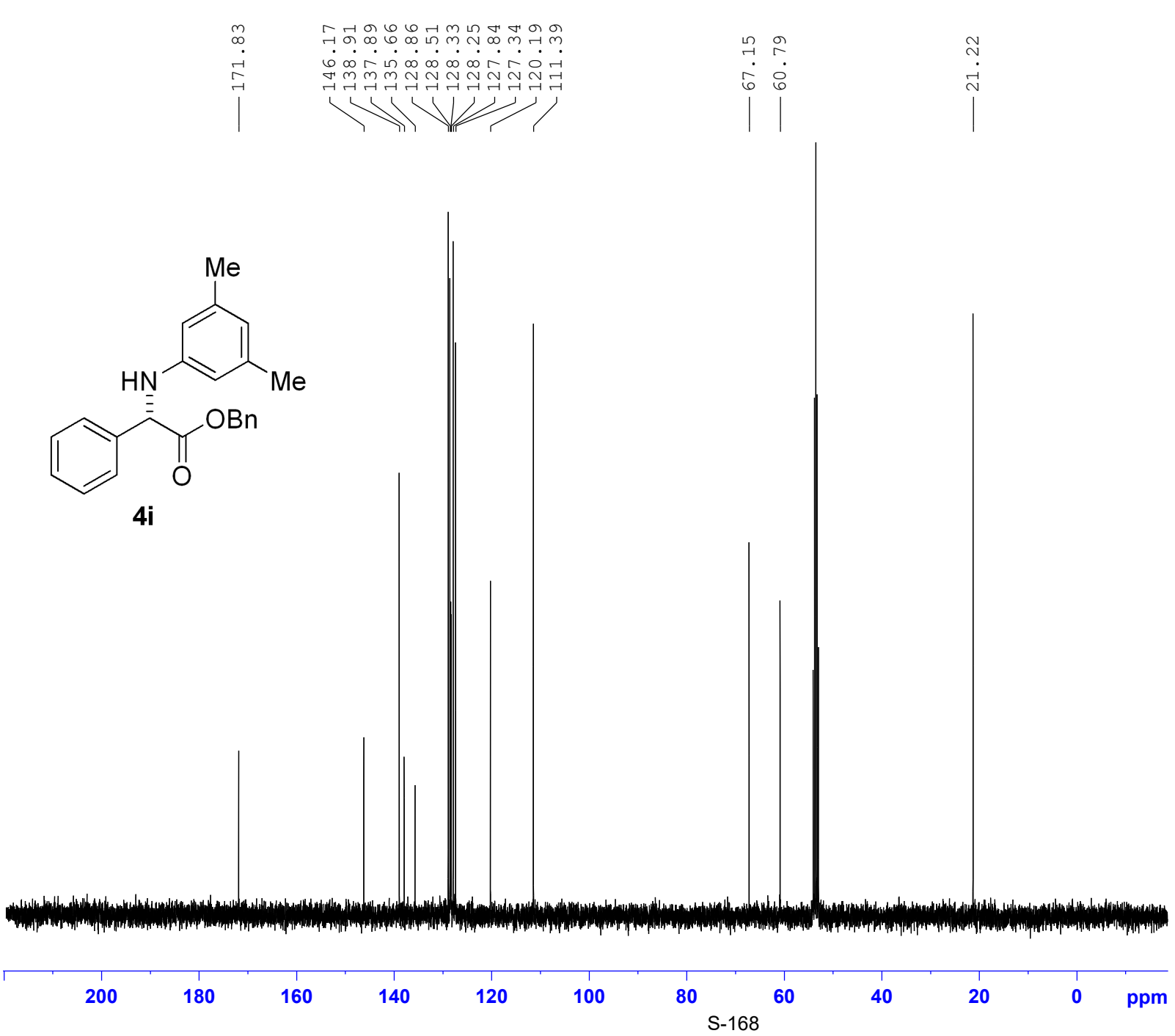




4i




```
NAME      HNMR-gwg-9-19-1
EXPNO                   1
PROCNO                  1
Date_            20201001
Time                19.42
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT           CD2Cl2
NS                      3
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ              4.0894966 sec
RG                 27.78
DW                 62.400 usec
DE                  6.50 usec
TE                 297.9 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                 65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                  0.30 Hz
GB                      0
PC                   1.00
```

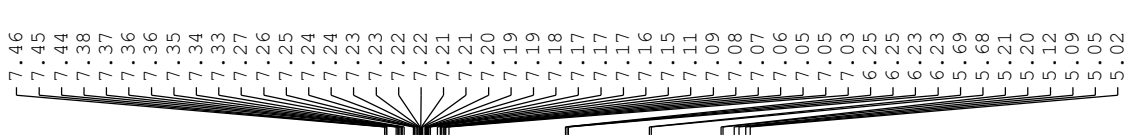


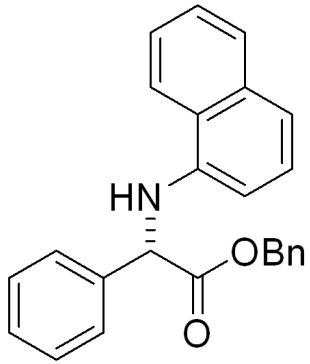
BRUKER

NAME	CNMR-gwg-9-19-1
EXPNO	1
PROCNO	1
Date_	20201001
Time	19.44
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	12
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	298.3 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

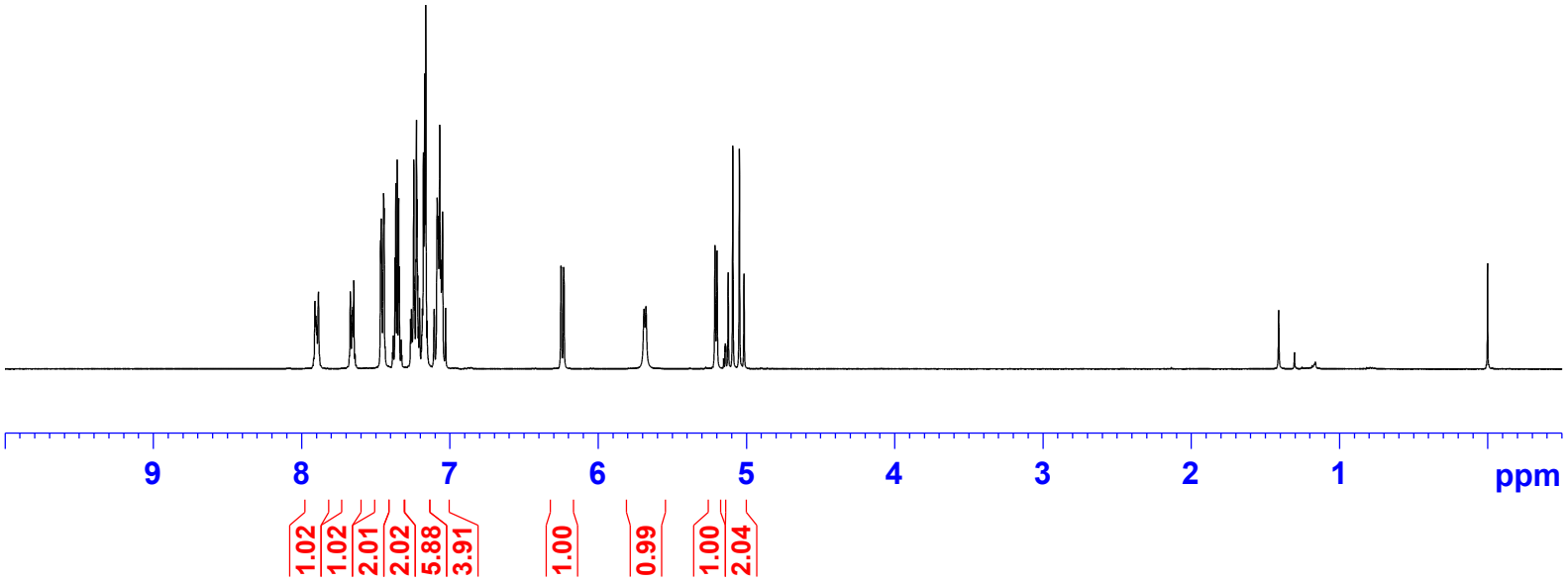
======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

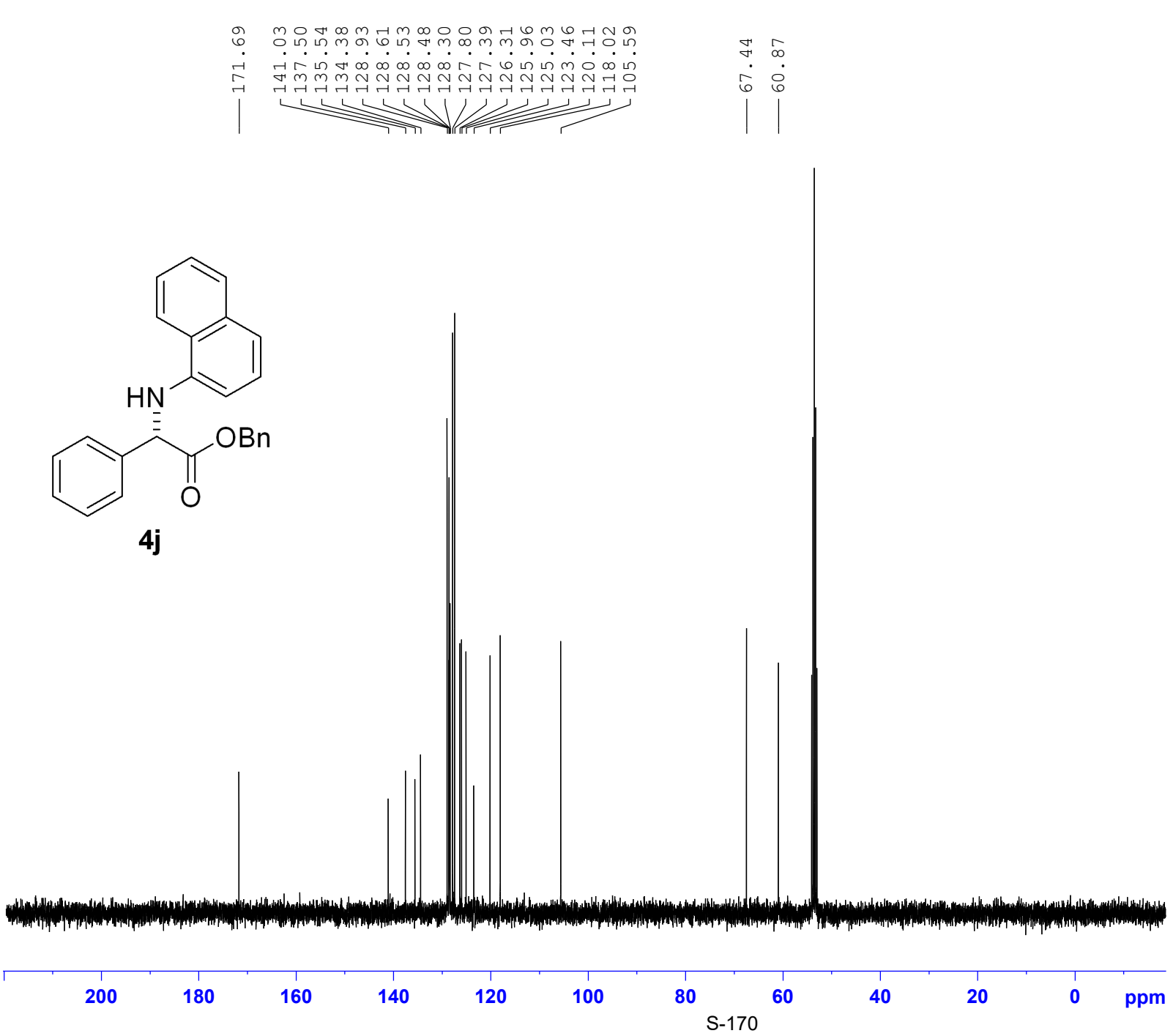




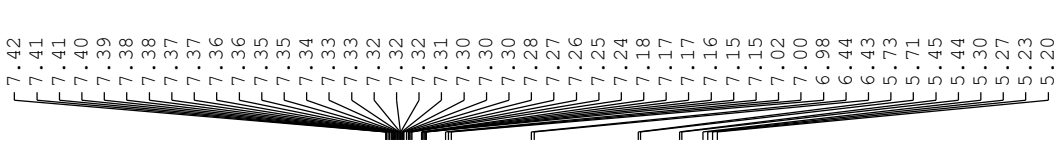
4j

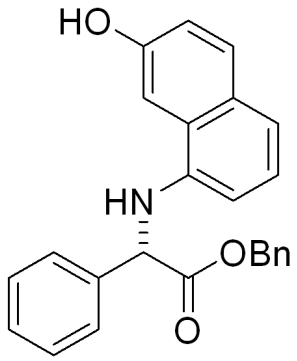



```
NAME      HNMR-gwg-9-27-1-true
EXPNO                    1
PROCNO                   1
Date_             20201007
Time                 17.53
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT           CD2Cl2
NS                       2
DS                       0
SWH               8012.820 Hz
FIDRES               0.122266 Hz
AQ                4.0894966 sec
RG                   31.55
DW                   62.400 usec
DE                    6.50 usec
TE                   295.9 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                    1H
P1                   14.50 usec
SI                   65536
SF              400.1300869 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```



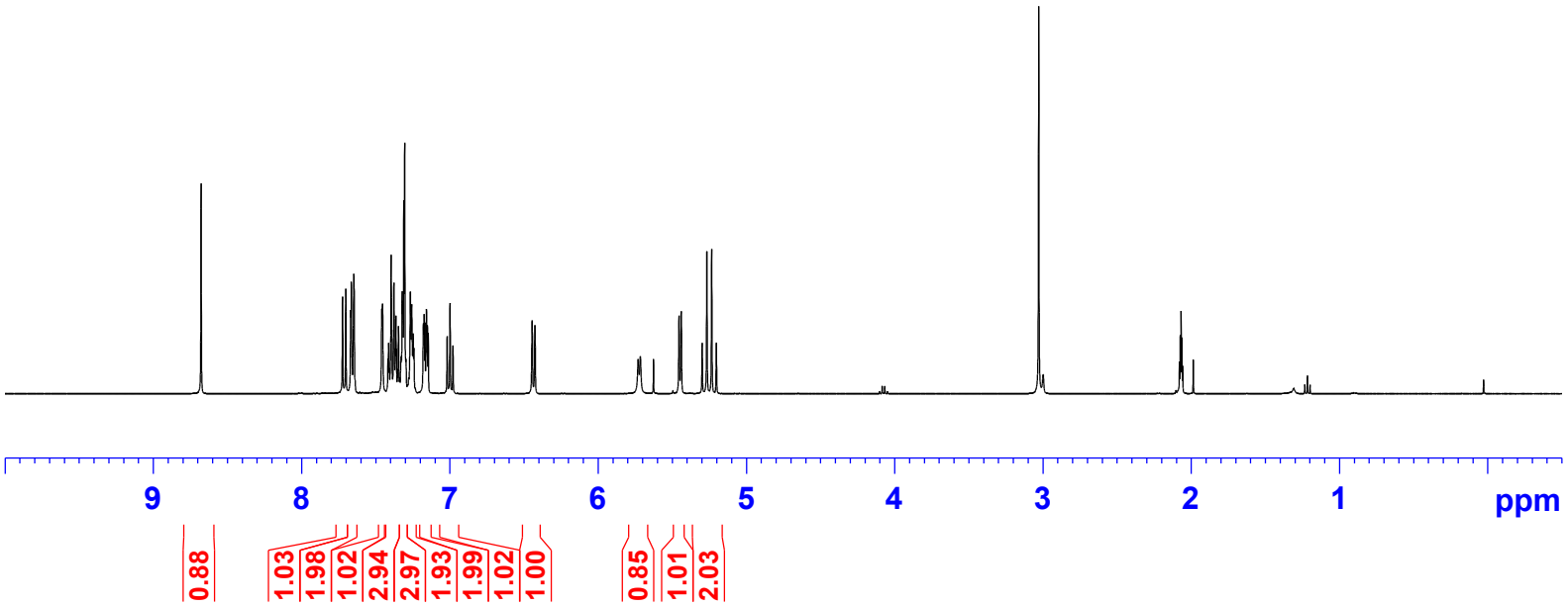

```
NAME        CNMR-gwg-9-27-1-true
EXPNO                          1
PROCNO                         1
Date_                   20201007
Time                       17.55
INSTRUM                    spect
PROBHD     5 mm PABBO BB/
PULPROG                   zgpg30
TD                         65536
SOLVENT                   CD2Cl2
NS                            10
DS                             0
SWH                    24038.461 Hz
FIDRES                  0.366798 Hz
AQ                      1.3631988 sec
RG                         196.92
DW                         20.800 usec
DE                          6.50 usec
TE                         296.2 K
D1                     2.00000000 sec
D11                    0.03000000 sec
TD0                            1

======== CHANNEL f1 ========
SFO1                 100.6228298 MHz
NUC1                         13C
P1                         9.70 usec
SI                        32768
SF                   100.6127690 MHz
WDW                          EM
SSB                           0
LB                         1.00 Hz
GB                            0
PC                         1.40
```

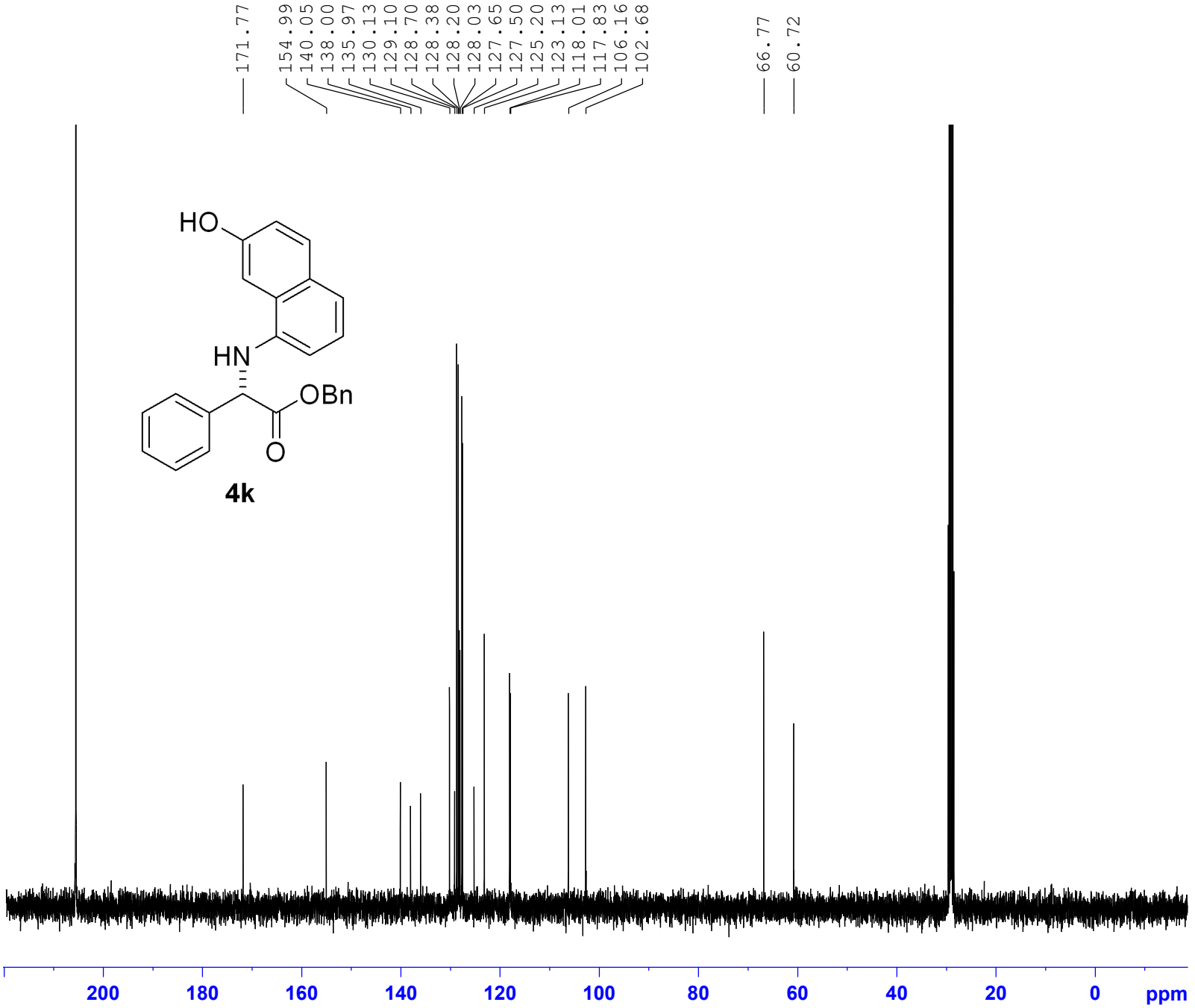




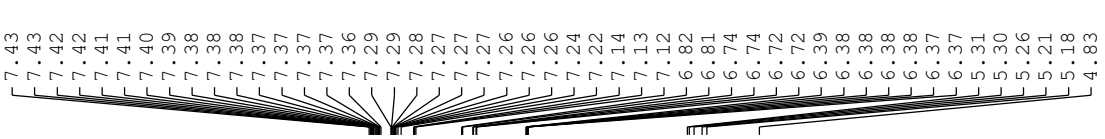
4k

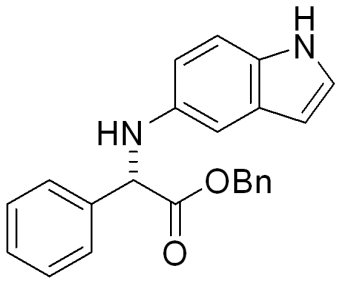
```
NAME      HNMR-gwg-9-45-1
EXPNO                   1
PROCNO                  1
Date_            20201013
Time                22.49
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT           Acetone
NS                      4
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ             4.0894966 sec
RG                  39.46
DW                62.400 usec
DE                 6.50 usec
TE                297.6 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                  65536
SF           400.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00
```



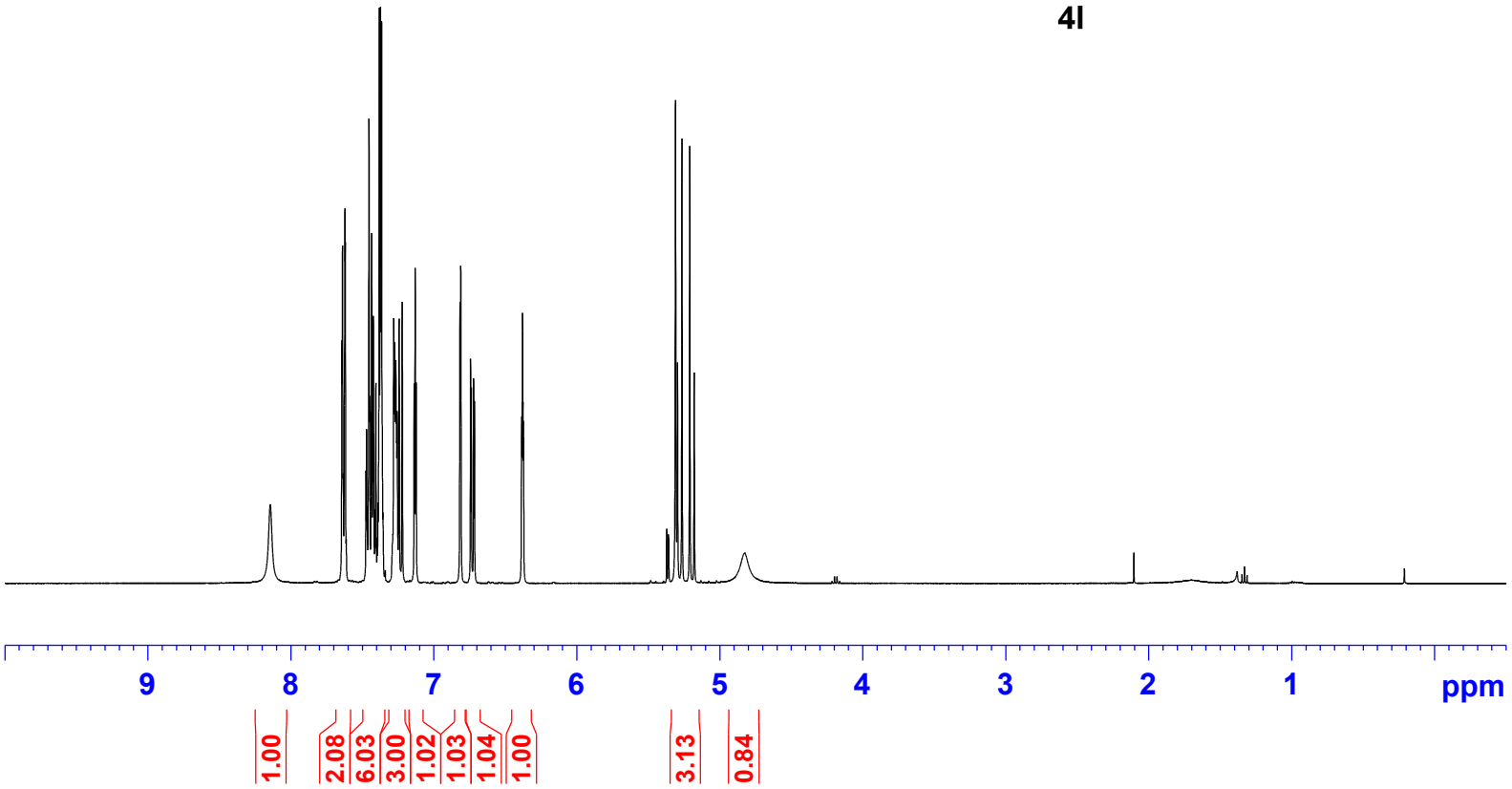



```
NAME        CNMR-gwg-9-45-1
EXPNO                     1
PROCNO                    1
Date_              20201013
Time                  22.54
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            Acetone
NS                        21
DS                         0
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                1.3631988 sec
RG                   196.92
DW                   20.800 usec
DE                    6.50 usec
TE                   298.0 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228298 MHz
NUC1                    13C
P1                    9.70 usec
SI                   32768
SF              100.6127690 MHz
WDW                     EM
SSB                        0
LB                    1.00 Hz
GB                         0
PC                    1.40
```

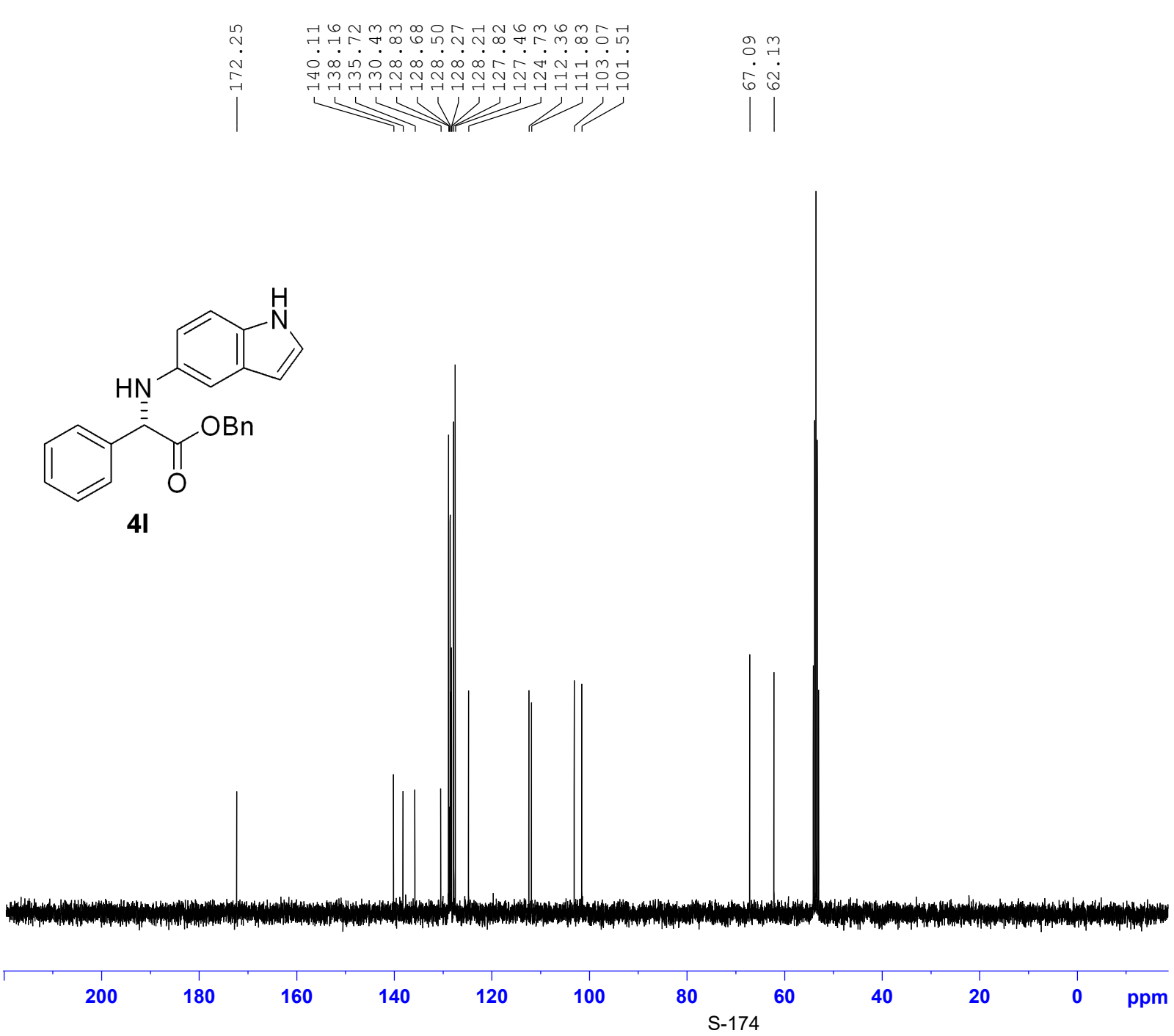




4l



NAME	HNMR-gwg-9-46-1
EXPNO	1
PROCNO	1
Date_	20201013
Time	22.42
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	4
DS	0
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	31.55
DW	62.400 usec
DE	6.50 usec
TE	297.6 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

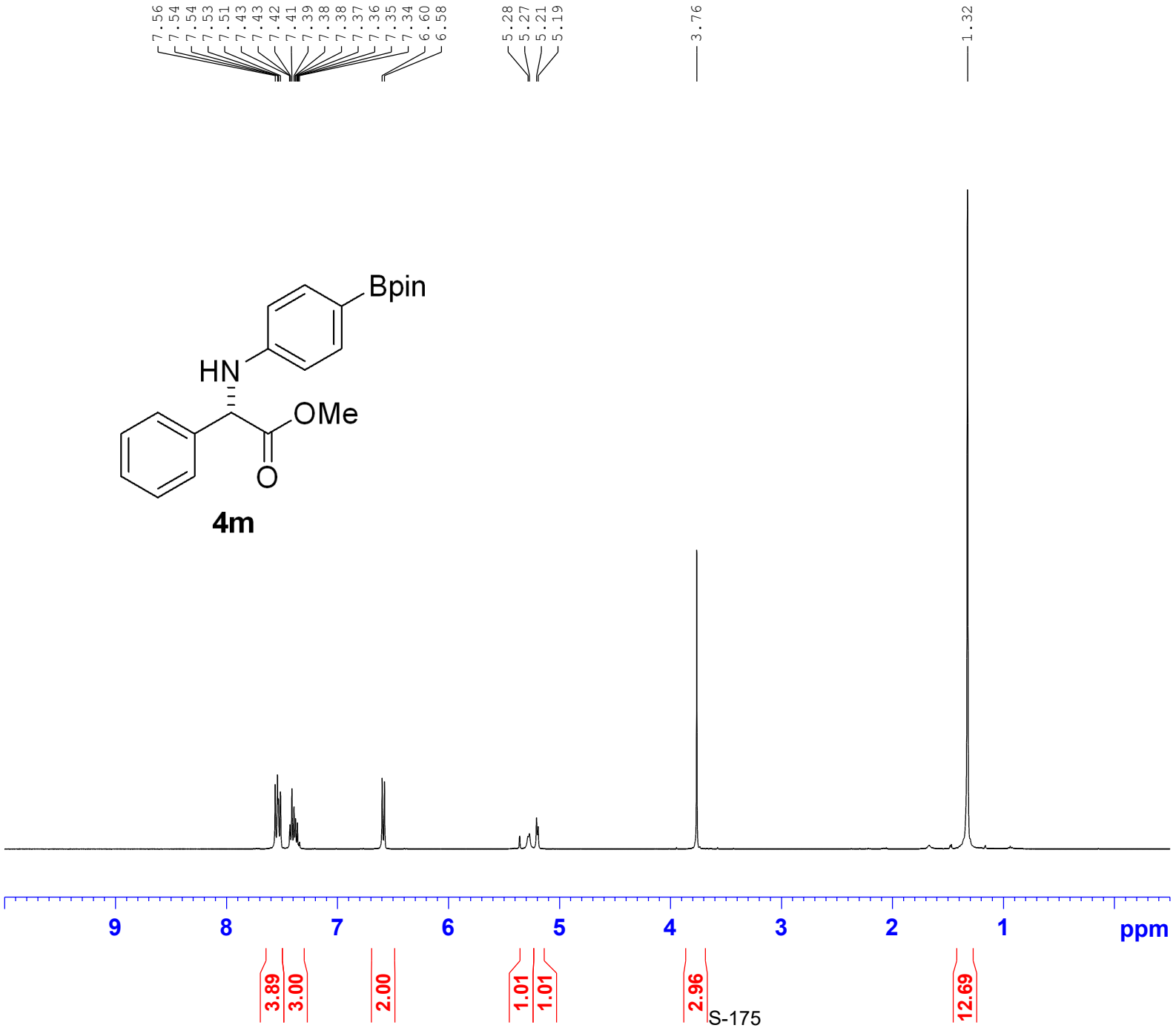


BRUKER

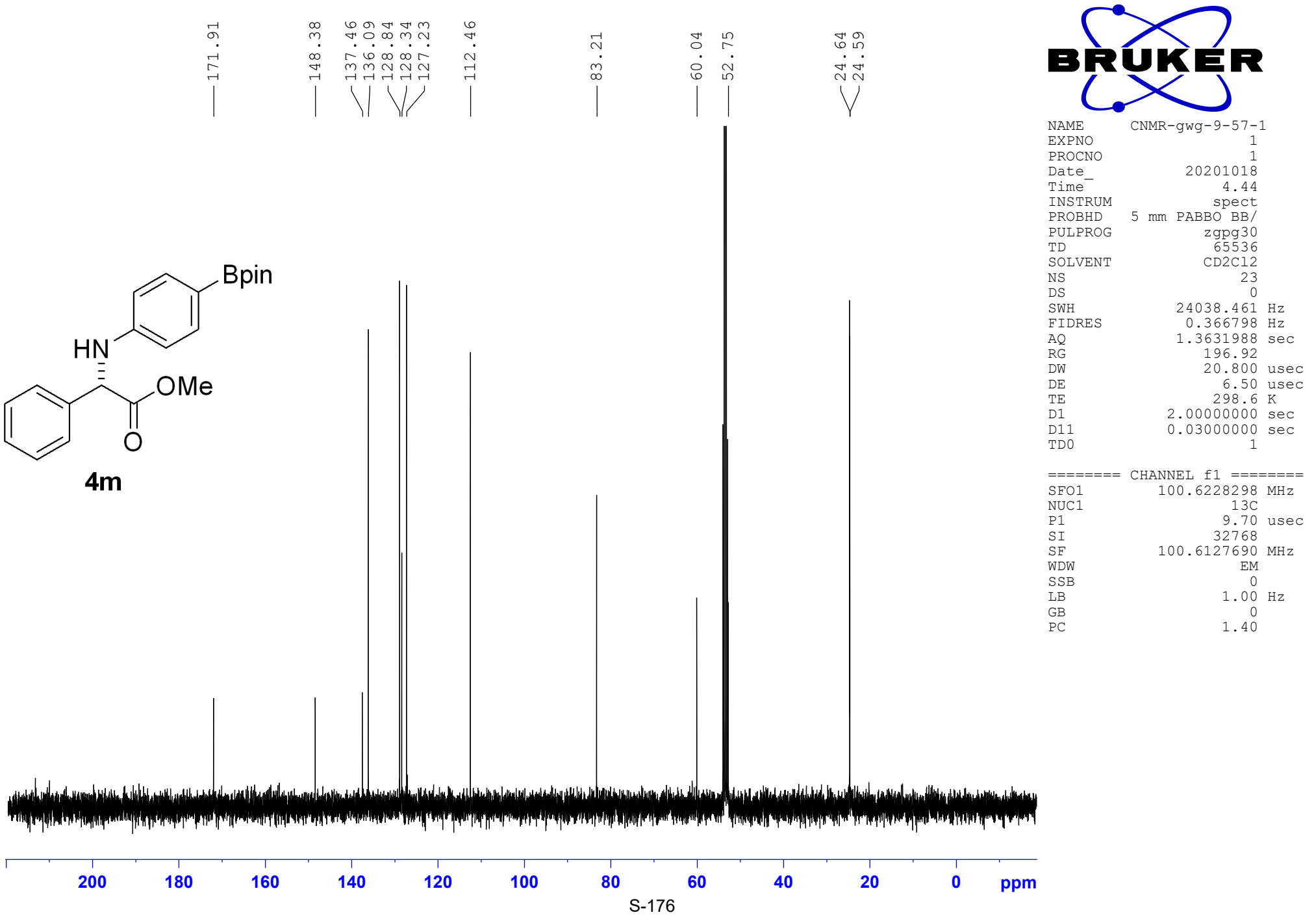
NAME	CNMR-gwg-9-46-1
EXPNO	1
PROCNO	1
Date_	20201013
Time	22.45
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	9
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	297.9 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

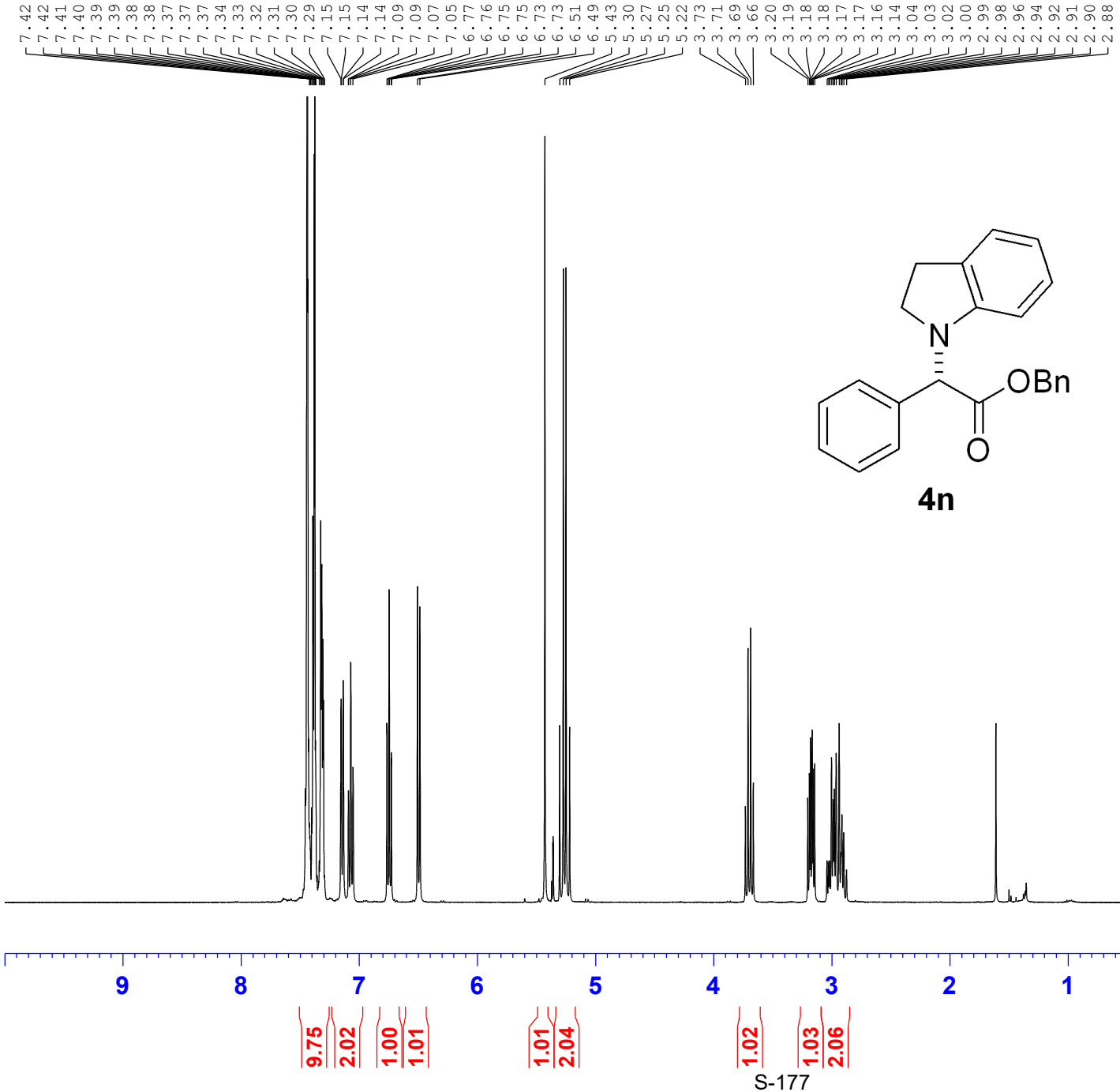



```
NAME      HNMR-gwg-9-57-1
EXPNO                   1
PROCNO                  1
Date_            20201018
Time                4.41
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 65536
SOLVENT           CD2Cl2
NS                      3
DS                      0
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ              4.0894966 sec
RG                  39.46
DW                62.400 usec
DE                 6.50 usec
TE                297.9 K
D1           1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                   1H
P1                 14.50 usec
SI                 65536
SF           400.1300000 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                  1.00
```

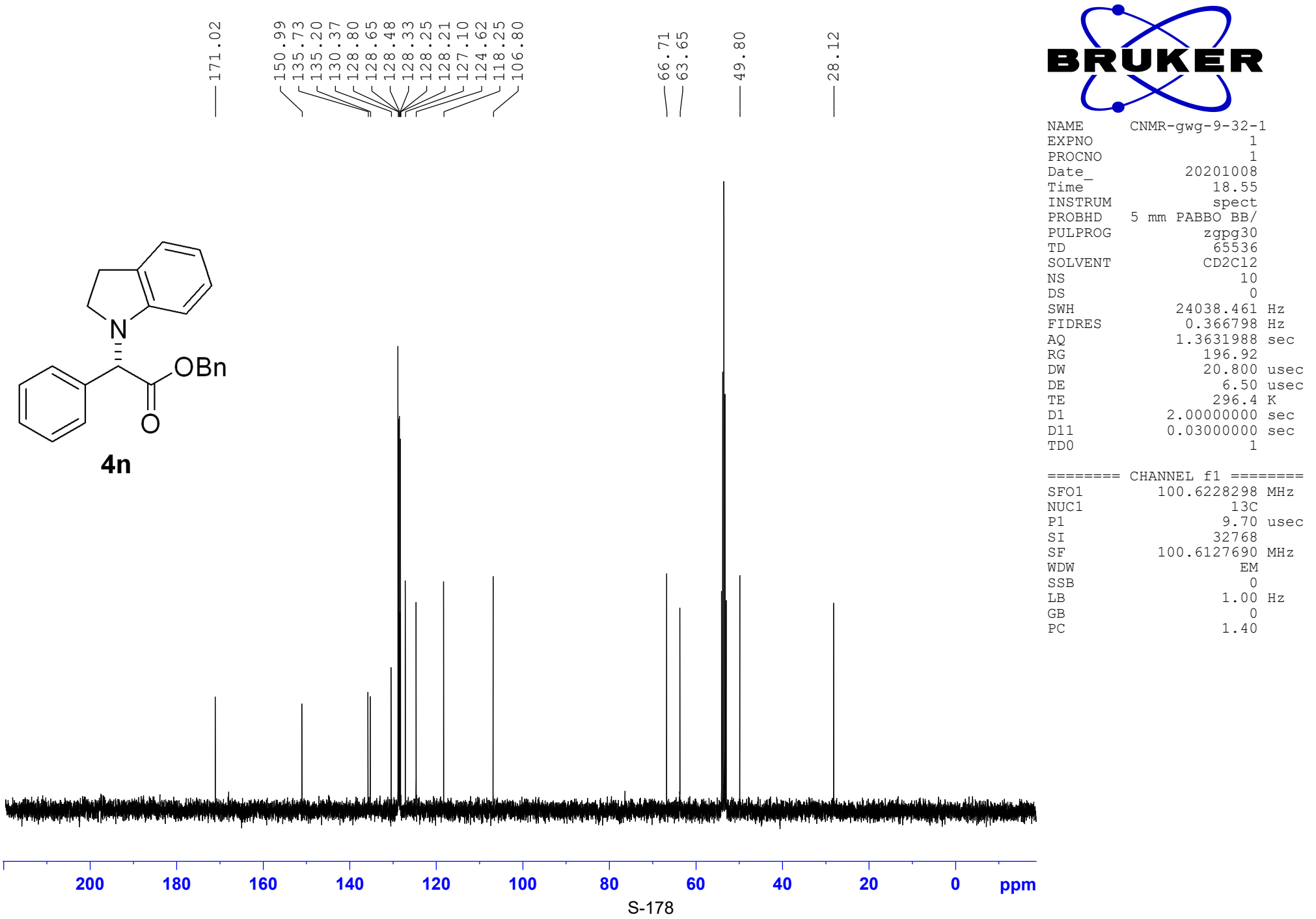


BRUKER

```
NAME        CNMR-gwg-9-57-1
EXPNO                     1
PROCNO                    1
Date_              20201018
Time                   4.44
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   65536
SOLVENT            CD2Cl2
NS                       23
DS                        0
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631988 sec
RG                  196.92
DW                  20.800 usec
DE                   6.50 usec
TE                  298.6 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          100.6228298 MHz
NUC1                   13C
P1                    9.70 usec
SI                   32768
SF            100.6127690 MHz
WDW                    EM
SSB                       0
LB                    1.00 Hz
GB                        0
PC                    1.40
```



NAME	HNMR-gwg-9-32-1
EXPNO	1
PROCNO	1
Date_	20201008
Time	18.53
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	65536
SOLVENT	CD2Cl2
NS	3
DS	2
SWH	8012.820 Hz
FIDRES	0.122266 Hz
AQ	4.0894966 sec
RG	4.51
DW	62.400 usec
DE	6.50 usec
TE	296.1 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
SFO1	400.1324710 MHz
NUC1	1H
P1	14.50 usec
SI	65536
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



BRUKER

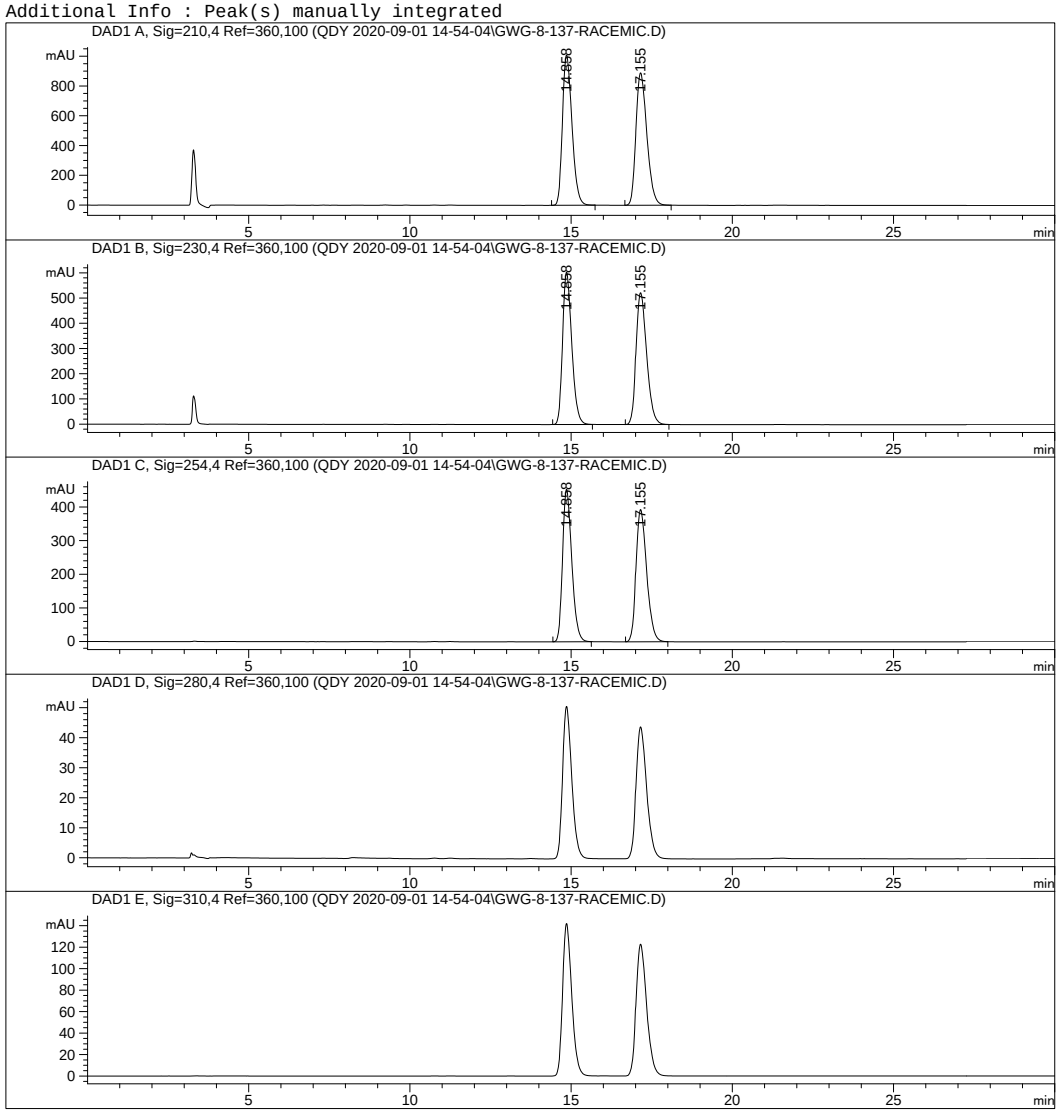
NAME	CNMR-gwg-9-32-1
EXPNO	1
PROCNO	1
Date_	20201008
Time	18.55
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	65536
SOLVENT	CD2Cl2
NS	10
DS	0
SWH	24038.461 Hz
FIDRES	0.366798 Hz
AQ	1.3631988 sec
RG	196.92
DW	20.800 usec
DE	6.50 usec
TE	296.4 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	9.70 usec
SI	32768
SF	100.6127690 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

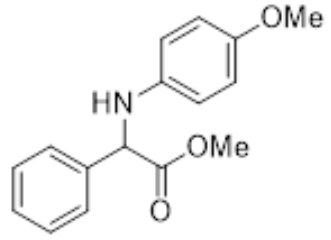
Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-137-RACEMIC.D
Sample Name: gwg-8-137-racemic

```
======================================================================
Acq. Operator   :                          Seq. Line :   2
Acq. Instrument : Instrument 1              Location : Vial 51
Injection Date  : 9/1/2020 3:17:17 PM            Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\IC-05-30.M
Last changed    : 9/1/2020 3:16:27 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-137-RACEMIC.D
Sample Name: gwg-8-137-racemic

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.858 BB    0.3227 2.08261e4  1009.49969  49.7909
   2  17.155 BB    0.3694 2.10010e4   889.57947  50.2091

Totals :                  4.18271e4  1899.07916



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.858 BB    0.3055 1.19880e4   604.24005  50.0737
   2  17.155 BB    0.3528 1.19527e4   522.65009  49.9263

Totals :                  2.39407e4  1126.89014



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.858 BB    0.3085 9035.15527  453.41522  50.0292
   2  17.155 BB    0.3558 9024.61426  393.09067  49.9708

Totals :                  1.80598e4   846.50589



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```

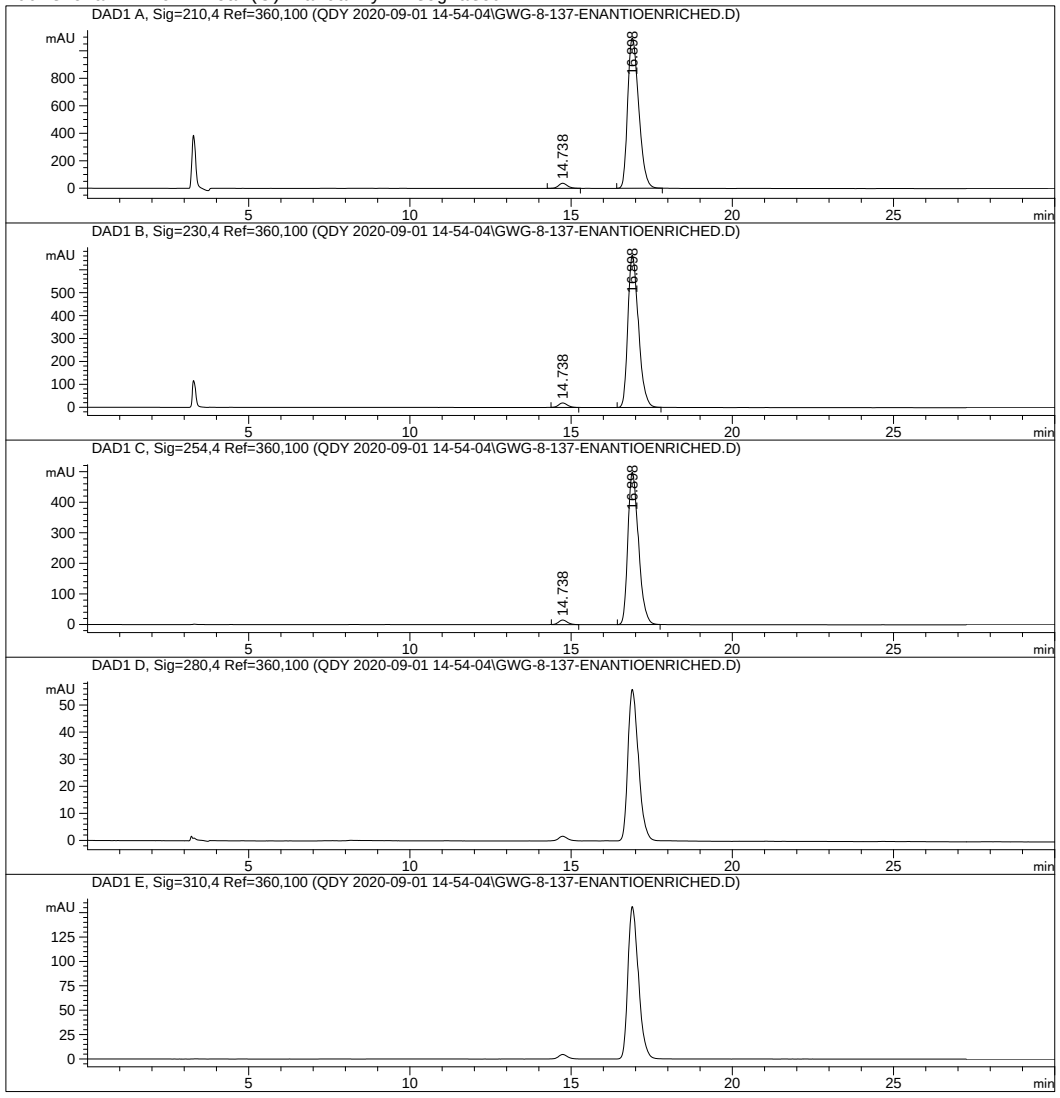


3a
racemic

Instrument 1 9/1/2020 3:52:28 PM

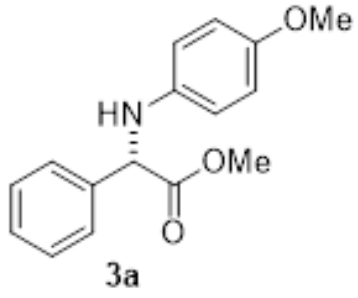
Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-137-ENANTIOENRICHED.D
Sample Name: gwg-8-137-enantioenriched

```
======================================================================
Acq. Operator   :                          Seq. Line :   3
Acq. Instrument : Instrument 1              Location : Vial 52
Injection Date  : 9/1/2020 3:48:22 PM            Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\IC-05-30.M
Last changed    : 9/1/2020 3:16:27 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-137-ENANTIOENRICHED.D
Sample Name: gwg-8-137-enantioenriched

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.738 BB    0.2954  724.81329   37.18166   2.7117
   2  16.898 BB    0.3714 2.60047e4  1093.56177  97.2883

Totals :                  2.67295e4  1130.74343



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.738 BB    0.2935  378.28503   19.75071   2.4413
   2  16.898 BB    0.3514 1.51167e4   664.42096  97.5587

Totals :                  1.54950e4   684.17167



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.738 BB    0.2943  286.00613   15.00942   2.4490
   2  16.898 BB    0.3548 1.13924e4   498.24713  97.5510

Totals :                  1.16784e4   513.25655



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```

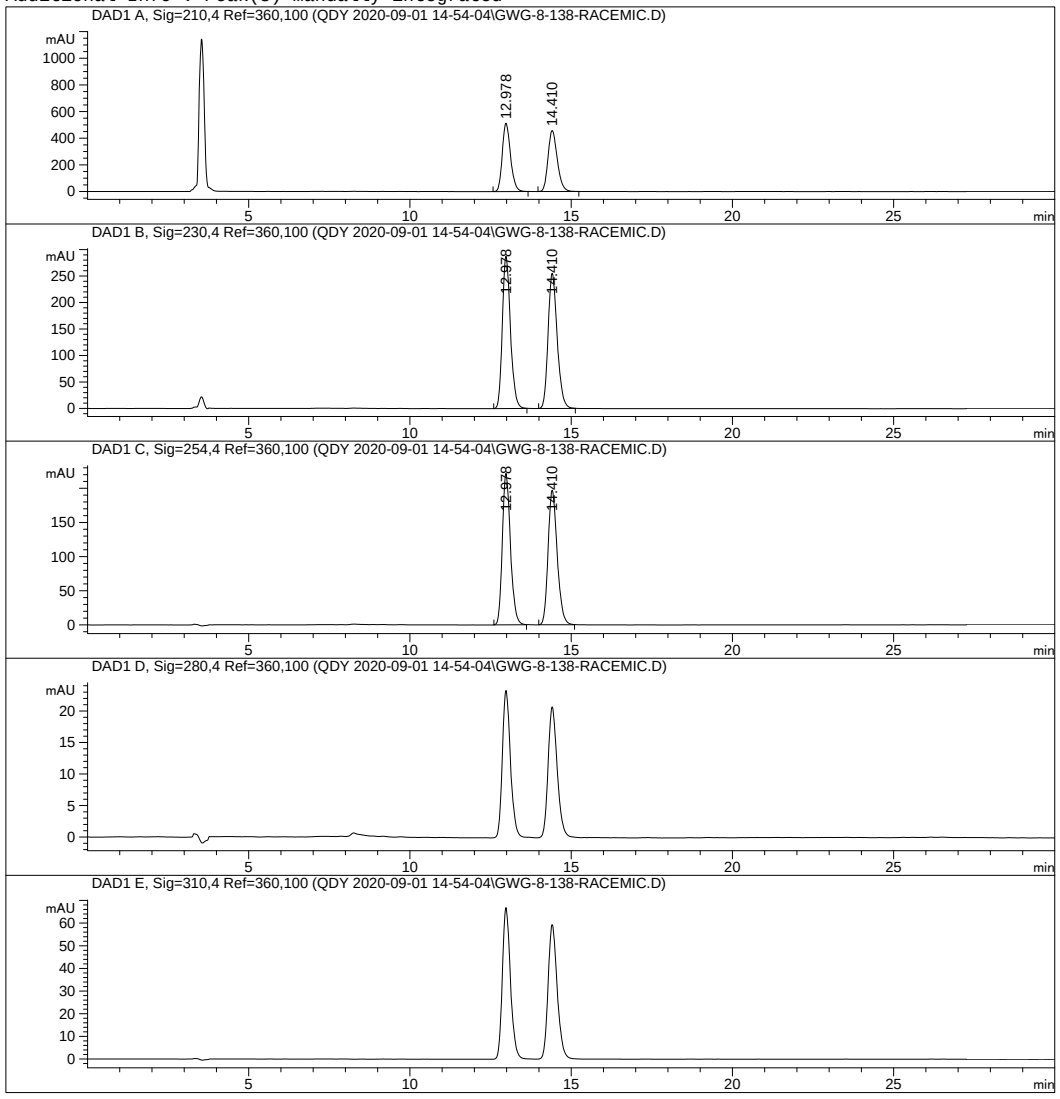


3a

enantioenriched

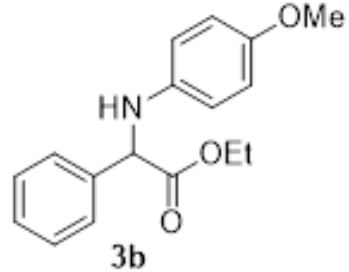
Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-138-RACEMIC.D
Sample Name: gwg-8-138-racemic

```
======================================================================
Acq. Operator   :                          Seq. Line :   5
Acq. Instrument : Instrument 1              Location : Vial 53
Injection Date  : 9/1/2020 4:40:50 PM            Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-138-RACEMIC.D
Sample Name: gwg-8-138-racemic

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.978 BB    0.2752 9105.52539  512.78381  49.9484
   2  14.410 BB    0.3086 9124.32227  457.57535  50.0516

Totals :                  1.82298e4   970.35916



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.978 BB    0.2698 5026.75049  287.69846  50.0714
   2  14.410 BB    0.3032 5012.41064  255.17485  49.9286

Totals :                  1.00392e4   542.87331



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.978 BB    0.2702 3883.92163  221.84990  50.0640
   2  14.410 BB    0.3035 3873.99731  196.92349  49.9360

Totals :                  7757.91895  418.77339



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```

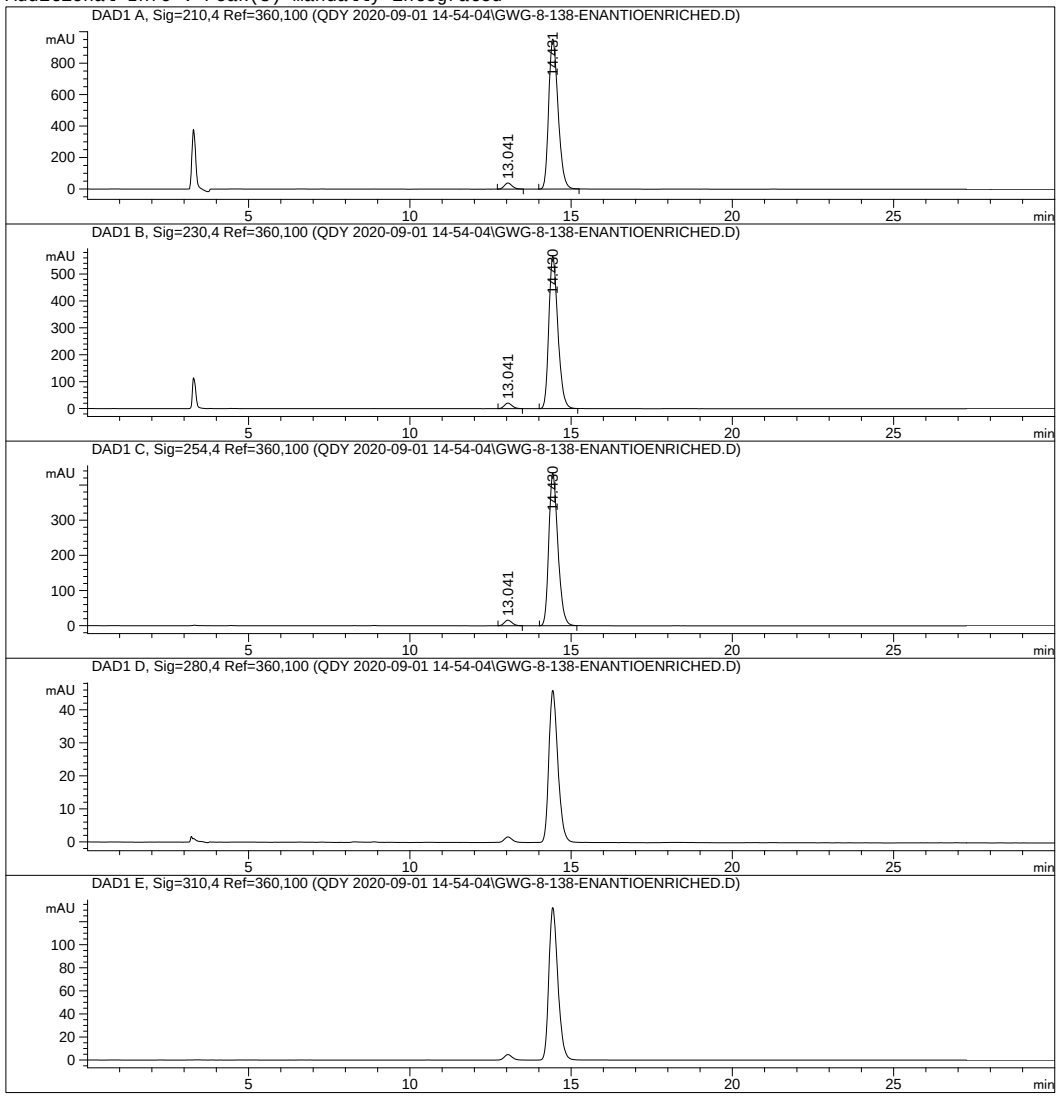


3b
racemic

Instrument 1 9/1/2020 5:57:07 PM

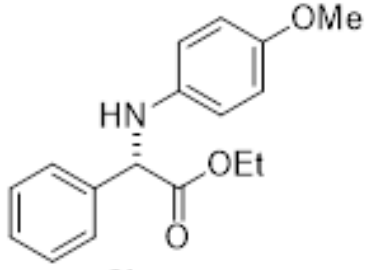
Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-138-ENANTIOENRICHED.D
Sample Name: gwg-8-138-enantioenriched

```
======================================================================
Acq. Operator   :                          Seq. Line :   6
Acq. Instrument : Instrument 1              Location : Vial 54
Injection Date  : 9/1/2020 5:11:53 PM            Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-138-ENANTIOENRICHED.D
Sample Name: gwg-8-138-enantioenriched

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  13.041 BB    0.2641  663.79102   38.69476   3.3377
   2  14.431 BB    0.3153 1.92239e4   953.35455  96.6623

Totals :                  1.98877e4   992.04931



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  13.041 BB    0.2626  352.62909   20.71931   3.0986
   2  14.430 BB    0.3011 1.10278e4   566.47827  96.9014

Totals :                  1.13804e4   587.19758



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  13.041 BB    0.2623  273.48157   16.08755   3.1255
   2  14.430 BB    0.3021 8476.39063  433.53259  96.8745

Totals :                  8749.87219  449.62014



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```



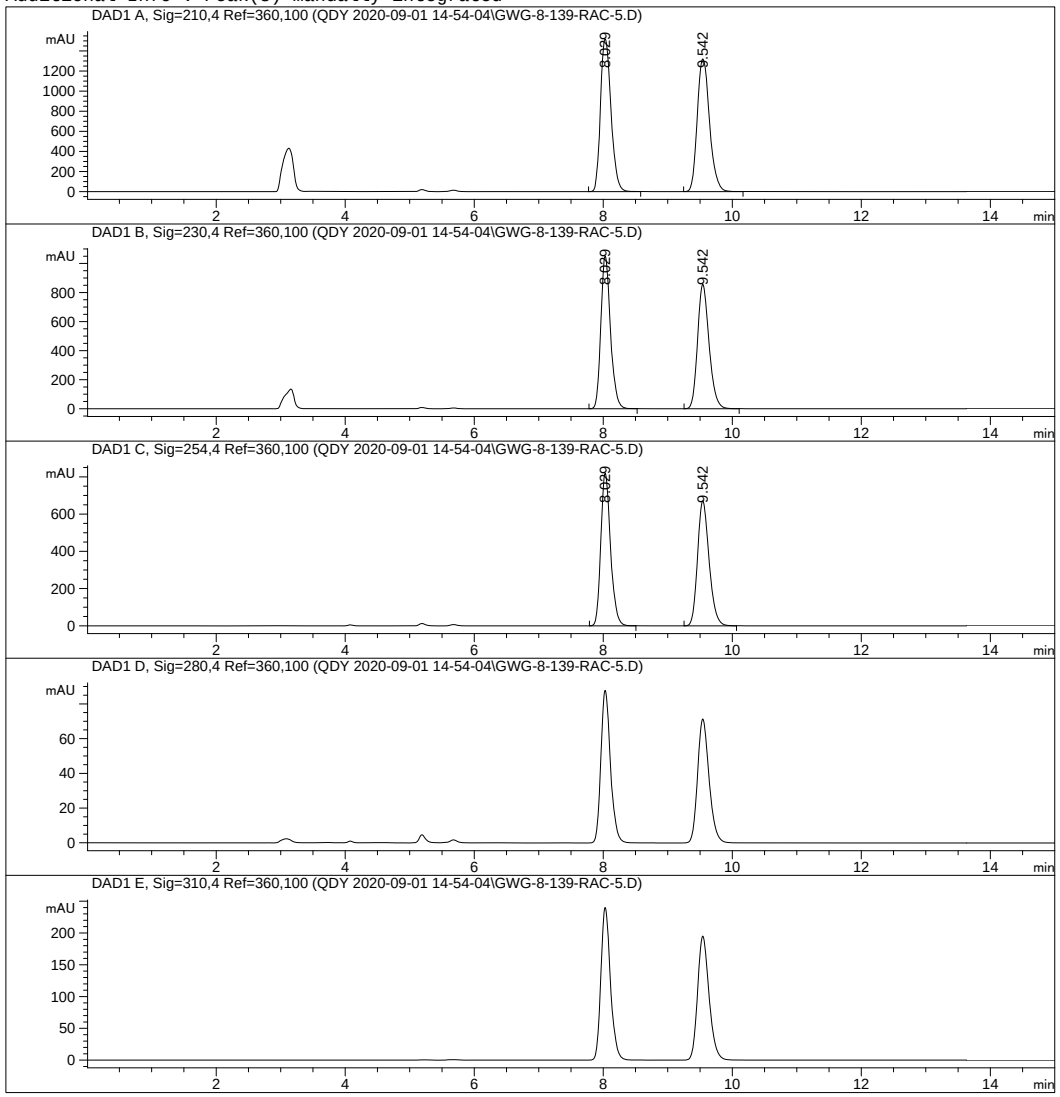
3b

enantioenriched

Instrument 1 9/1/2020 5:57:47 PM

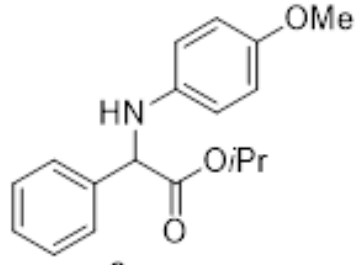
Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-139-RAC-5.D
Sample Name: gwg-8-139-racemic

```
======================================================================
Acq. Operator   :                          Seq. Line :  18
Acq. Instrument : Instrument 1              Location : Vial 55
Injection Date  : 9/1/2020 9:12:52 PM            Inj :  1
                                          Inj Volume : 5.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\AD-20-15.M
Last changed    : 9/1/2020 9:11:59 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-139-RAC-5.D
Sample Name: gwg-8-139-racemic

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.029 BB    0.1778 1.71643e4  1519.39392  49.5794
   2   9.542 BB    0.2062 1.74556e4  1320.54407  50.4206

Totals :                  3.46199e4  2839.93799



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.029 BB    0.1583 1.08413e4  1051.26514  50.5394
   2   9.542 BB    0.1905 1.06099e4   856.66278  49.4606

Totals :                  2.14512e4  1907.92792



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.029 BB    0.1612 8516.29004  820.01440  50.4630
   2   9.542 BB    0.1934 8360.01953  670.96411  49.5370

Totals :                  1.68763e4  1490.97852



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```

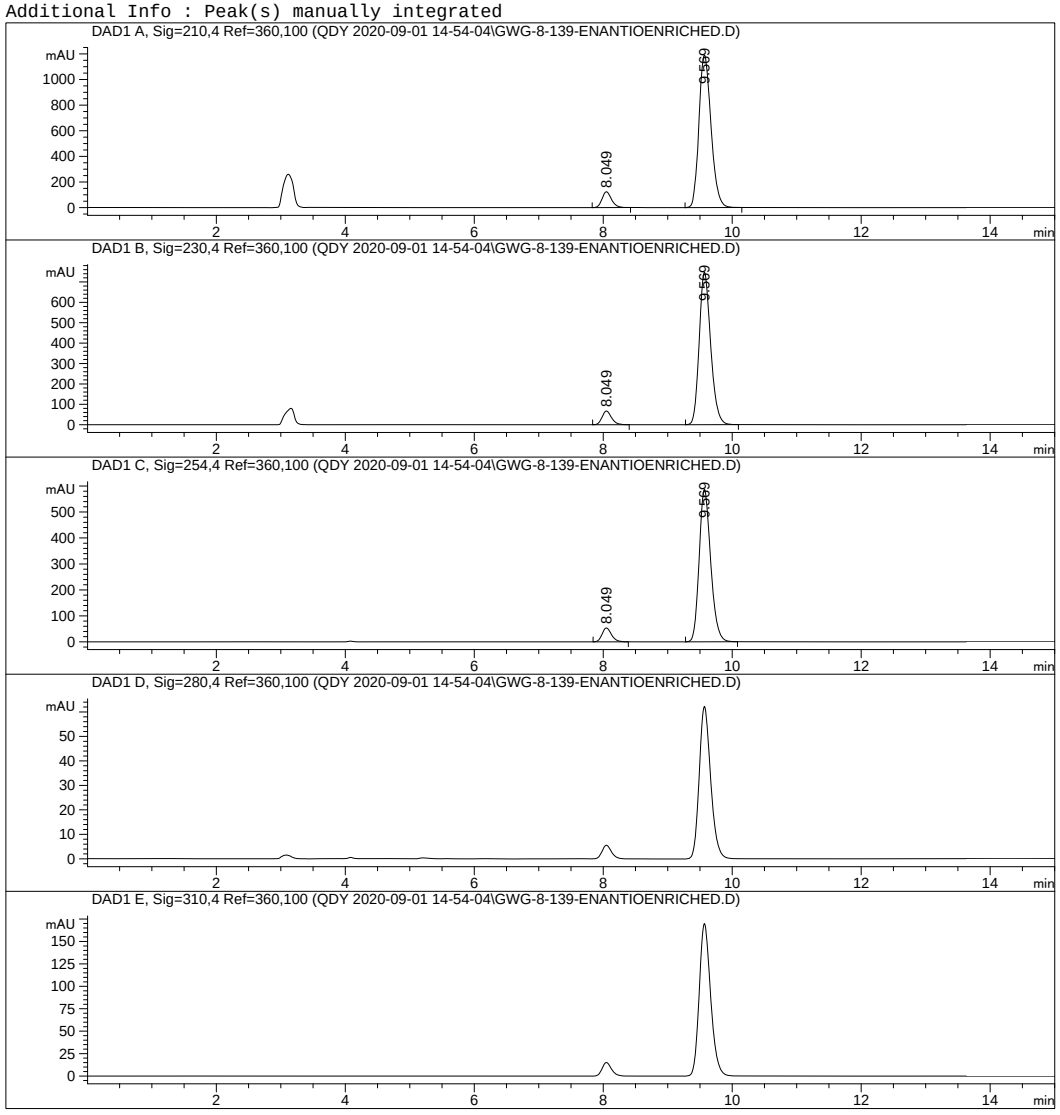


3c
racemic

Instrument 1 9/1/2020 9:28:36 PM

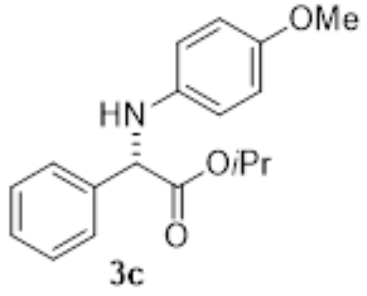
Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-139-ENANTIOENRICHED.D
Sample Name: gwg-8-139-enantioenriched

```
======================================================================
Acq. Operator   :                          Seq. Line :  19
Acq. Instrument : Instrument 1              Location : Vial 56
Injection Date  : 9/1/2020 9:28:54 PM            Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\AD-20-15.M
Last changed    : 9/1/2020 9:11:59 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-01 14-54-04\GWG-8-139-ENANTIOENRICHED.D
Sample Name: gwg-8-139-enantioenriched

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.049 BB    0.1568 1256.21899  123.34299   7.4980
   2   9.569 BB    0.2018 1.54979e4  1191.04883  92.5020

Totals :                  1.67542e4  1314.39182



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.049 BB    0.1564  683.32629   67.30994   6.8900
   2   9.569 BB    0.1900 9234.27734  747.95123  93.1100

Totals :                  9917.60364  815.26118



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.049 BB    0.1565  545.69214   53.74457   6.9633
   2   9.569 BB    0.1908 7291.00195  587.32318  93.0367

Totals :                  7836.69409  641.06775



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```



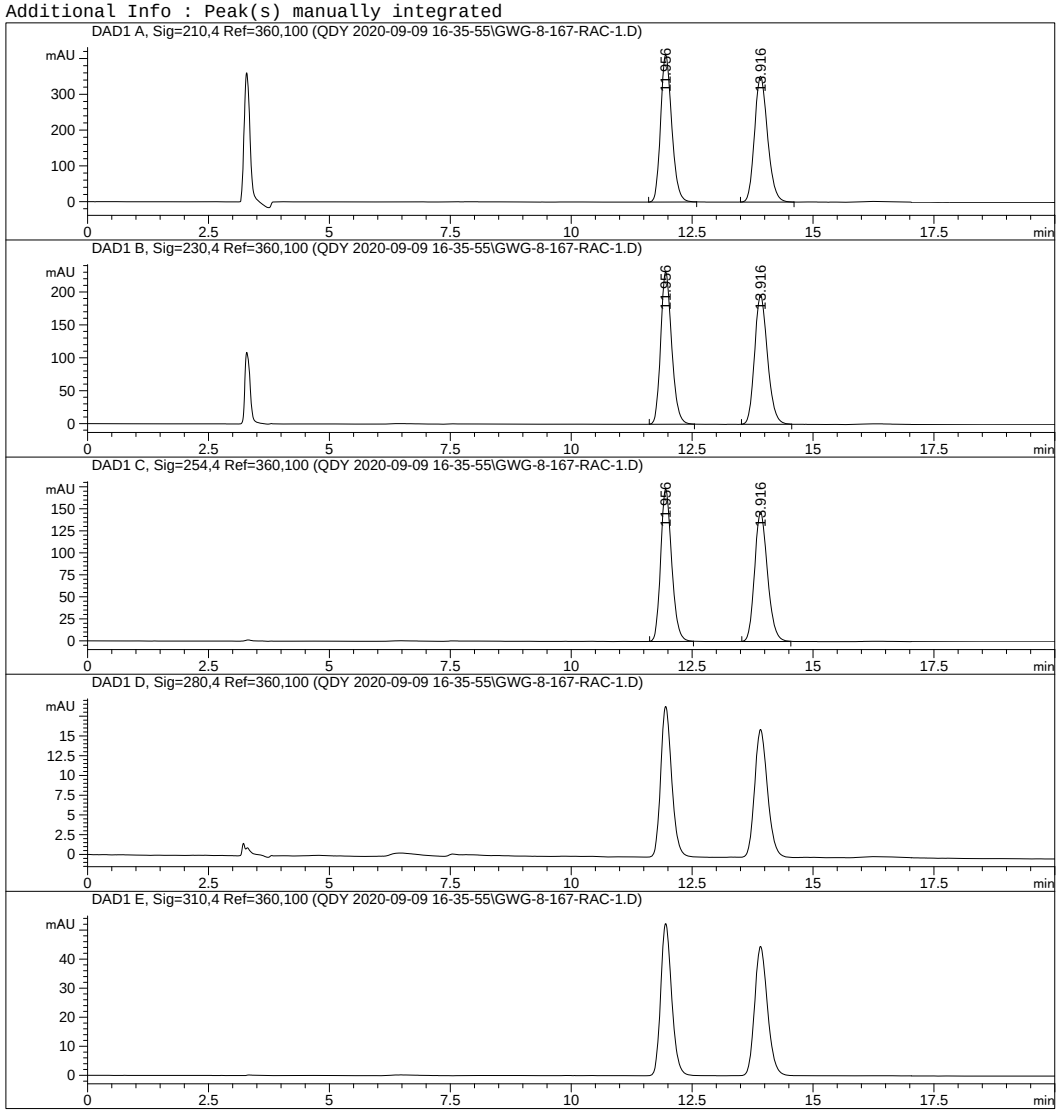
3c

enantioenriched

Instrument 1 9/1/2020 9:48:05 PM

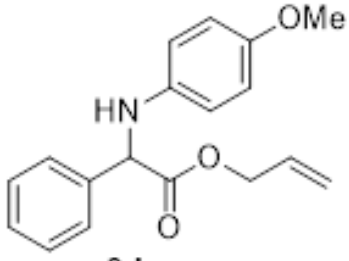
Data File C:\CHEM32\1\DATA\QDY 2020-09-09 16-35-55\GWG-8-167-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  17
Acq. Instrument : Instrument 1                  Location : Vial 58
Injection Date  : 9/9/2020 9:07:33 PM               Inj :   1
                                               Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-09 16-35-55\IC-05-30.M
Last changed    : 9/9/2020 9:06:41 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/10/2020 8:14:52 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-09 16-35-55\GWG-8-167-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.956 BB    0.2461 6556.05420  411.06625  49.9083
   2  13.916 BB    0.2883 6580.14648  351.67401  50.0917

Totals :                  1.31362e4   762.74026



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.956 BB    0.2418 3641.34033  231.07304  50.0242
   2  13.916 BB    0.2860 3637.81128  196.51901  49.9758

Totals :                  7279.15161  427.59206



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.956 BB    0.2421 2728.55420  172.87291  50.0081
   2  13.916 BB    0.2863 2727.67480  147.14206  49.9919

Totals :                  5456.22900  320.01497



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

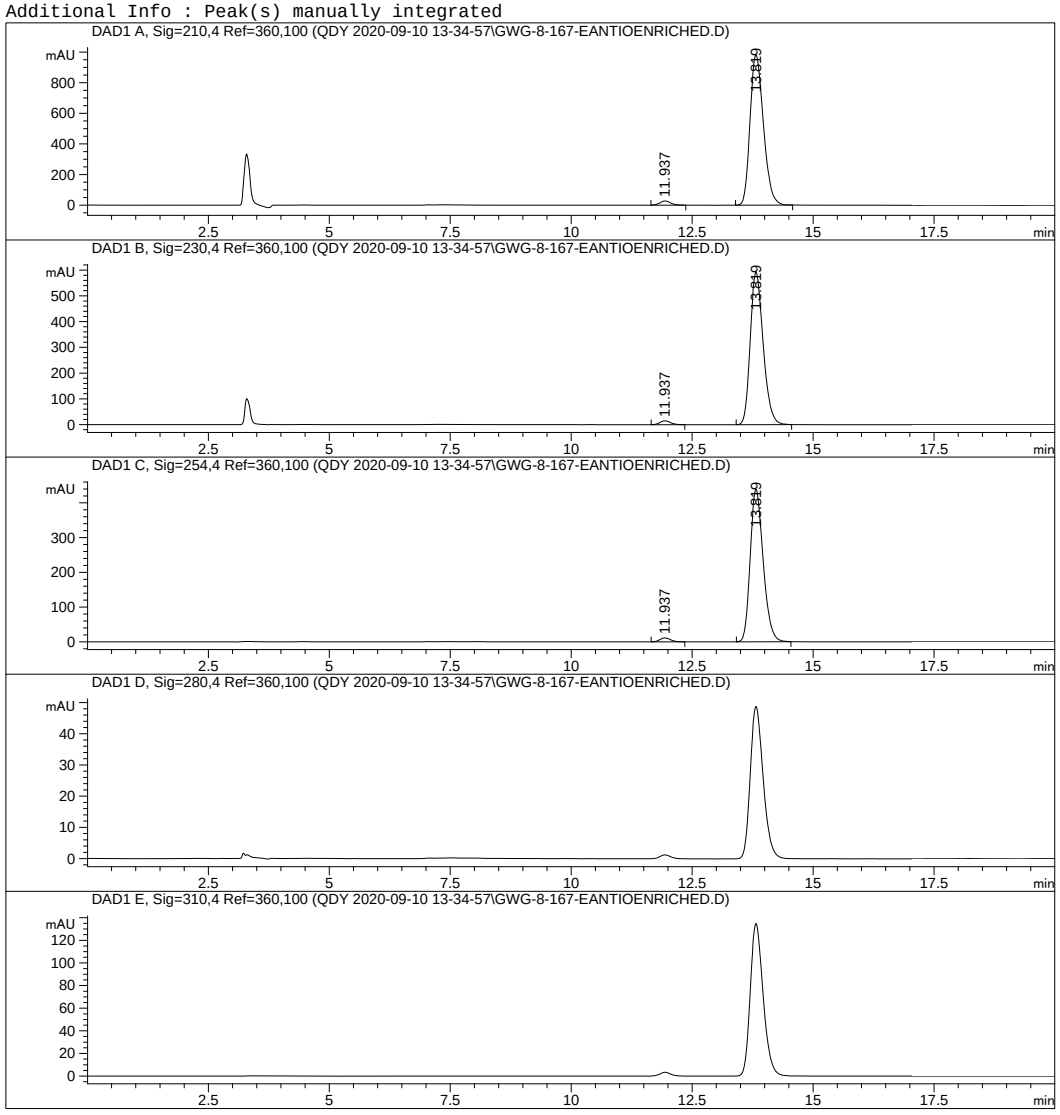


3d

racemic

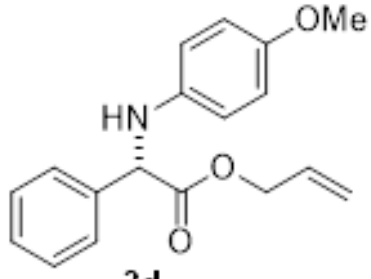
Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-167-EANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :  19
Acq. Instrument : Instrument 1                    Location : Vial 57
Injection Date  : 9/10/2020 7:50:58 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\IC-05-30.M
Last changed    : 9/10/2020 8:10:29 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/10/2020 8:13:01 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-167-EANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.937 BB    0.2389  430.23438   27.74086   2.2309
   2  13.819 BB    0.2983 1.88553e4   980.63647  97.7691

Totals :                  1.92855e4  1008.37733



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.937 BB    0.2387  233.41516   15.06614   2.0812
   2  13.819 BB    0.2863 1.09820e4   592.40356  97.9188

Totals :                  1.12154e4   607.46970



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.937 BB    0.2389  175.86203   11.34225   2.1052
   2  13.819 BB    0.2873 8177.84814  439.11755  97.8948

Totals :                  8353.71017  450.45981



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

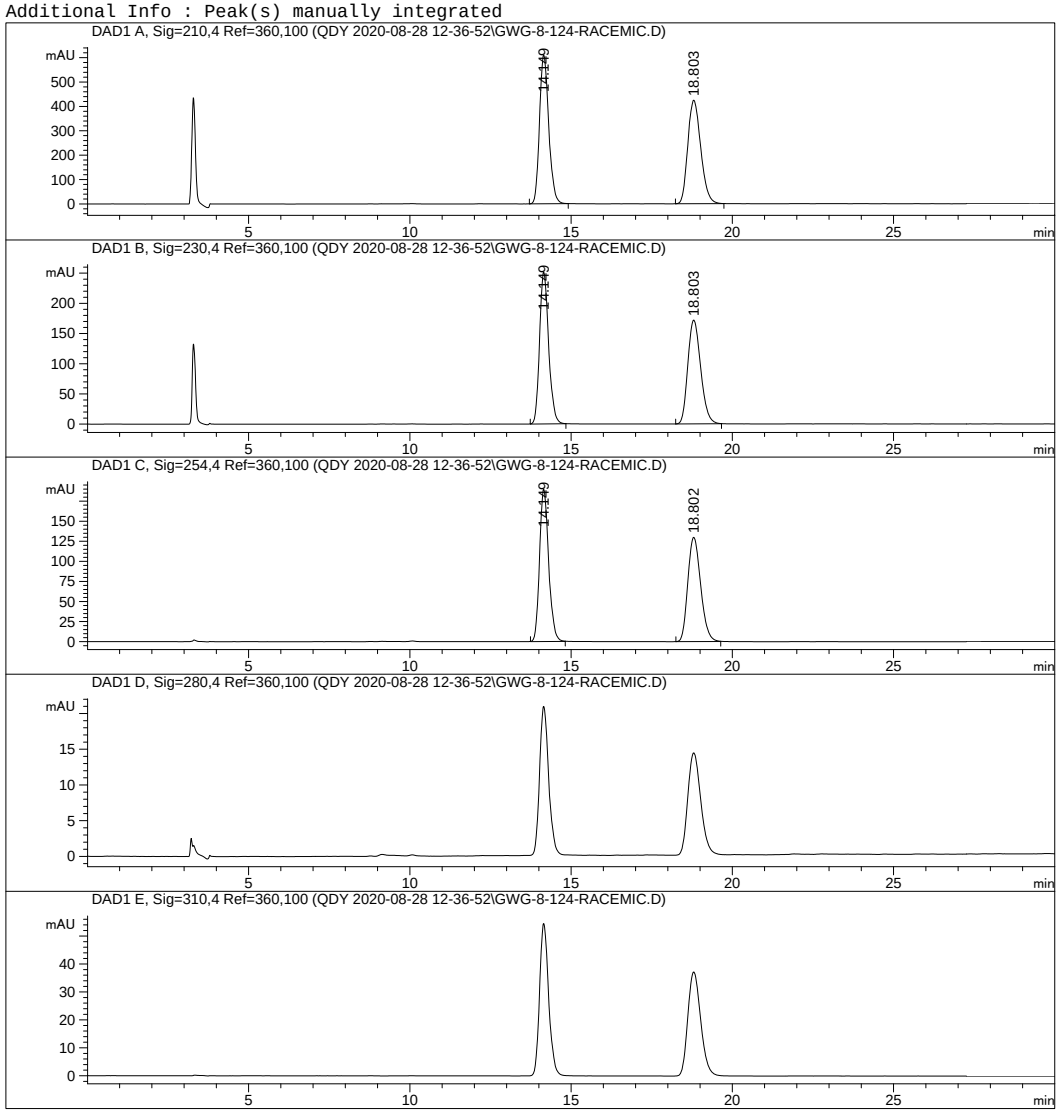


3d

enantioenriched

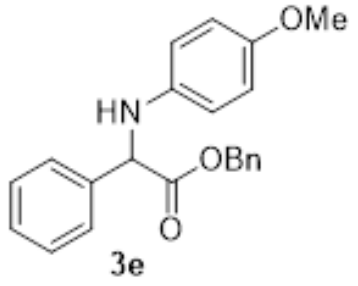
Data File C:\CHEM32\1\DATA\QDY 2020-08-28 12-36-52\GWG-8-124-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   5
Acq. Instrument : Instrument 1                    Location : Vial 54
Injection Date  : 8/28/2020 2:38:32 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-08-28 12-36-52\IC-05-30.M
Last changed    : 8/28/2020 1:04:13 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-08-28 12-36-52\GWG-8-124-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.149 BB    0.3071 1.20880e4   610.33667  50.4652
   2  18.803 BB    0.4379 1.18651e4   424.71149  49.5348

Totals :                  2.39531e4  1035.04816



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.149 BB    0.3013 4897.87598  251.34285  50.7380
   2  18.803 BB    0.4346 4755.40186  171.97484  49.2620

Totals :                  9653.27783  423.31769



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.149 BB    0.3017 3700.36816  189.61874  50.7212
   2  18.802 BB    0.4348 3595.13086  129.95302  49.2788

Totals :                  7295.49902  319.57176



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

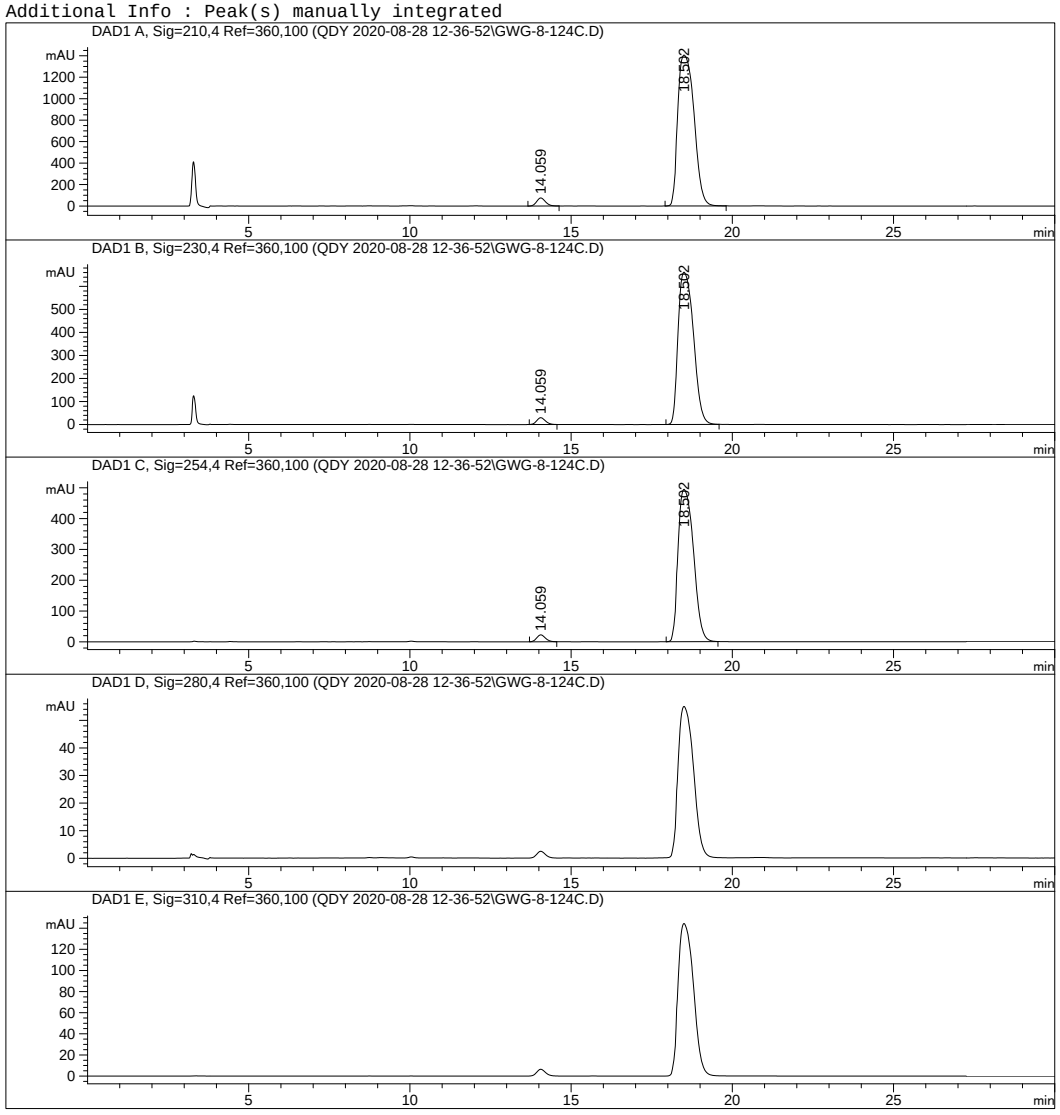


3e

racemic

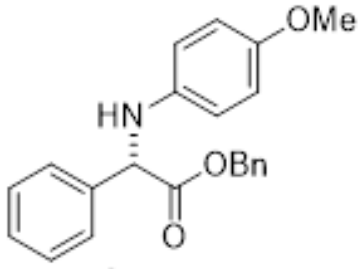
Data File C:\CHEM32\1\DATA\QDY 2020-08-28 12-36-52\GWG-8-124C.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   4
Acq. Instrument : Instrument 1                  Location : Vial 53
Injection Date  : 8/28/2020 2:07:30 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-08-28 12-36-52\IC-05-30.M
Last changed    : 8/28/2020 1:04:13 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-08-28 12-36-52\GWG-8-124C.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.059 BB    0.2938 1432.52673   75.36388   2.8319
   2  18.502 BB    0.5758 4.91529e4  1406.31335  97.1681

Totals :                  5.05854e4  1481.67724



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.059 BB    0.2925  561.97382   29.72887   2.5101
   2  18.502 BB    0.5430 2.18265e4   661.41437  97.4899

Totals :                  2.23885e4   691.14324



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.059 BB    0.2925  425.81079   22.53081   2.5342
   2  18.502 BB    0.5443 1.63766e4   494.56448  97.4658

Totals :                  1.68024e4   517.09530



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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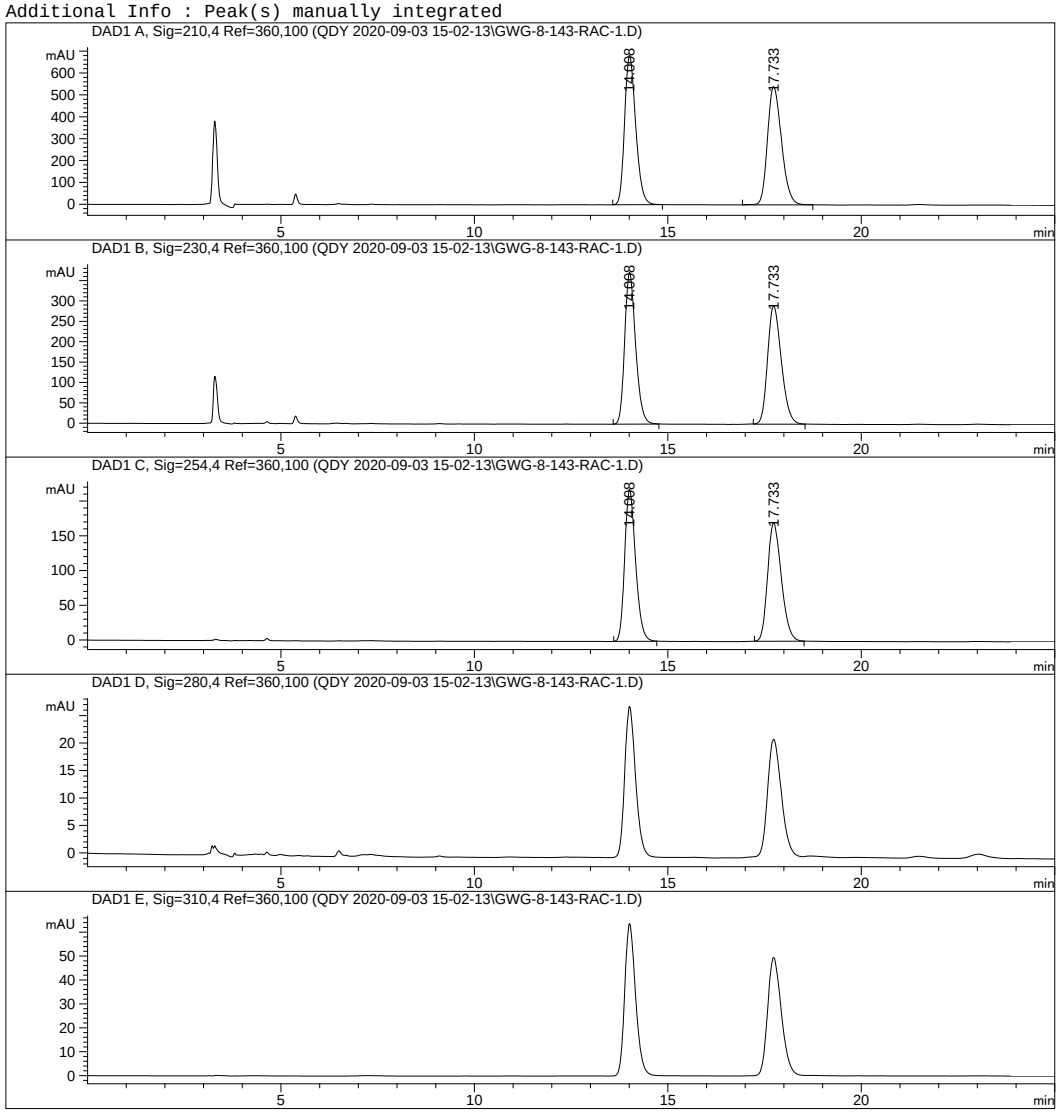
Instrument 1 9/1/2020 3:40:47 PM

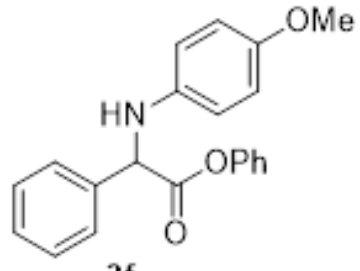
Data File C:\CHEM32\1\DATA\QDY 2020-09-03 15-02-13\GWG-8-143-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   2
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 9/3/2020 3:15:26 PM               Inj :   1
                                               Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-03 15-02-13\IC-05-30.M
Last changed    : 9/3/2020 3:35:41 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-03 15-02-13\GWG-8-143-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.008 BB    0.3093 1.36875e4   684.36139  50.1823
   2  17.733 BB    0.3892 1.35881e4   540.68433  49.8177

Totals :                  2.72756e4  1225.04572



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.008 BB    0.3025 7305.53760  372.99680  50.5403
   2  17.733 BB    0.3816 7149.33887  290.05386  49.4597

Totals :                  1.44549e4   663.05066



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.008 BB    0.3029 4295.03418  218.90845  50.5388
   2  17.733 BB    0.3837 4203.46240  170.46912  49.4612

Totals :                  8498.49658  389.37756



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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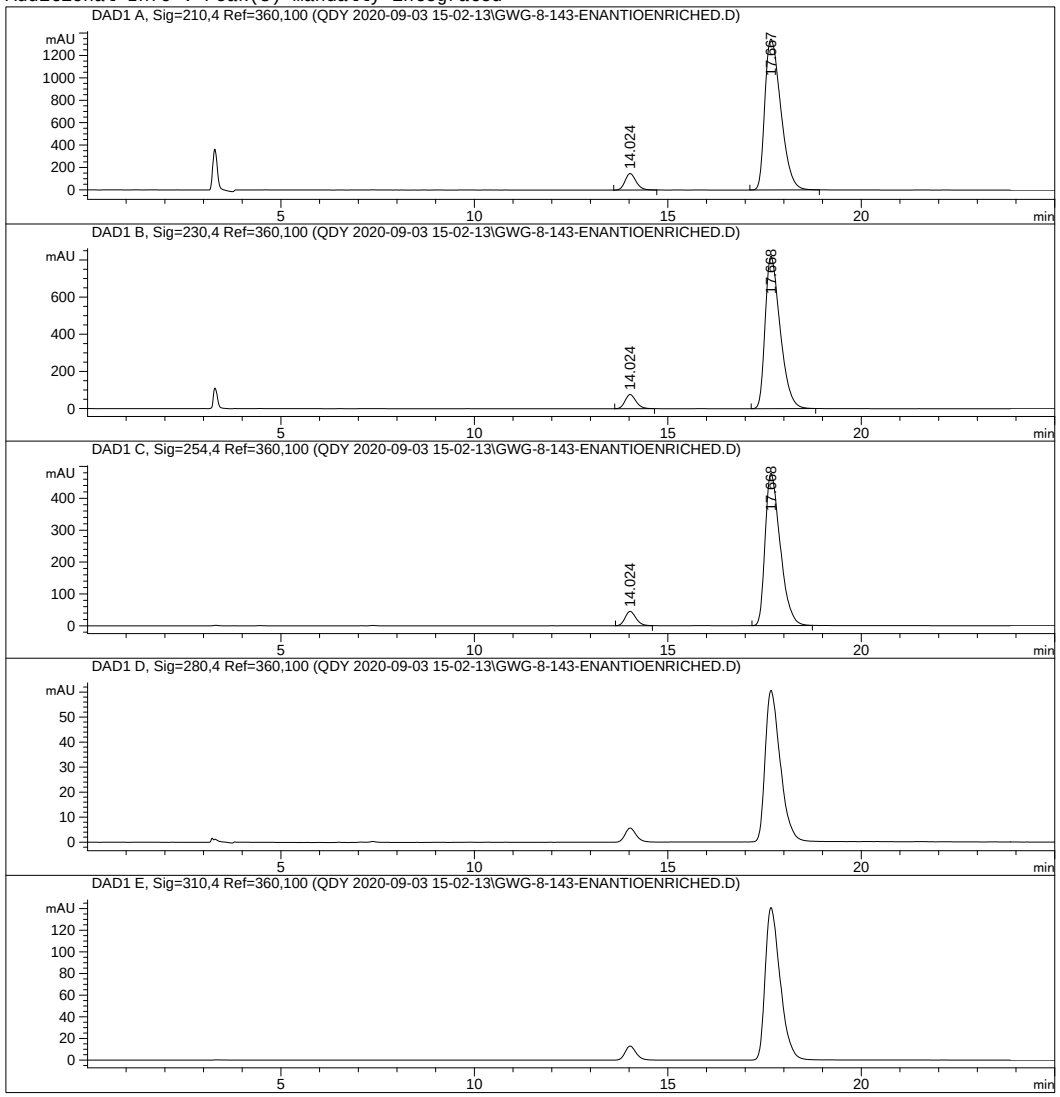
Instrument 1 9/3/2020 3:41:53 PM

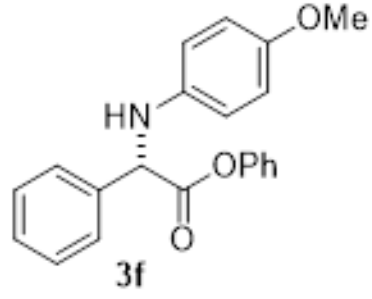
Data File C:\CHEM32\1\DATA\QDY 2020-09-03 15-02-13\GWG-8-143-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   4
Acq. Instrument : Instrument 1                  Location : Vial 52
Injection Date  : 9/3/2020 3:52:39 PM               Inj :   1
                                               Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-03 15-02-13\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-03 15-02-13\GWG-8-143-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.024 BB    0.3060 2927.62671  147.23438   7.0401
   2  17.667 BB    0.4468 3.86576e4  1347.08411  92.9599

Totals :                  4.15852e4  1494.31848



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.024 BB    0.3049 1509.46753   76.25905   6.4015
   2  17.668 BB    0.4117 2.20706e4   820.78735  93.5985

Totals :                  2.35800e4   897.04640



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.024 BB    0.3045  890.23651   45.05556   6.4546
   2  17.668 BB    0.4131 1.29020e4   477.75421  93.5454

Totals :                  1.37922e4   522.80977



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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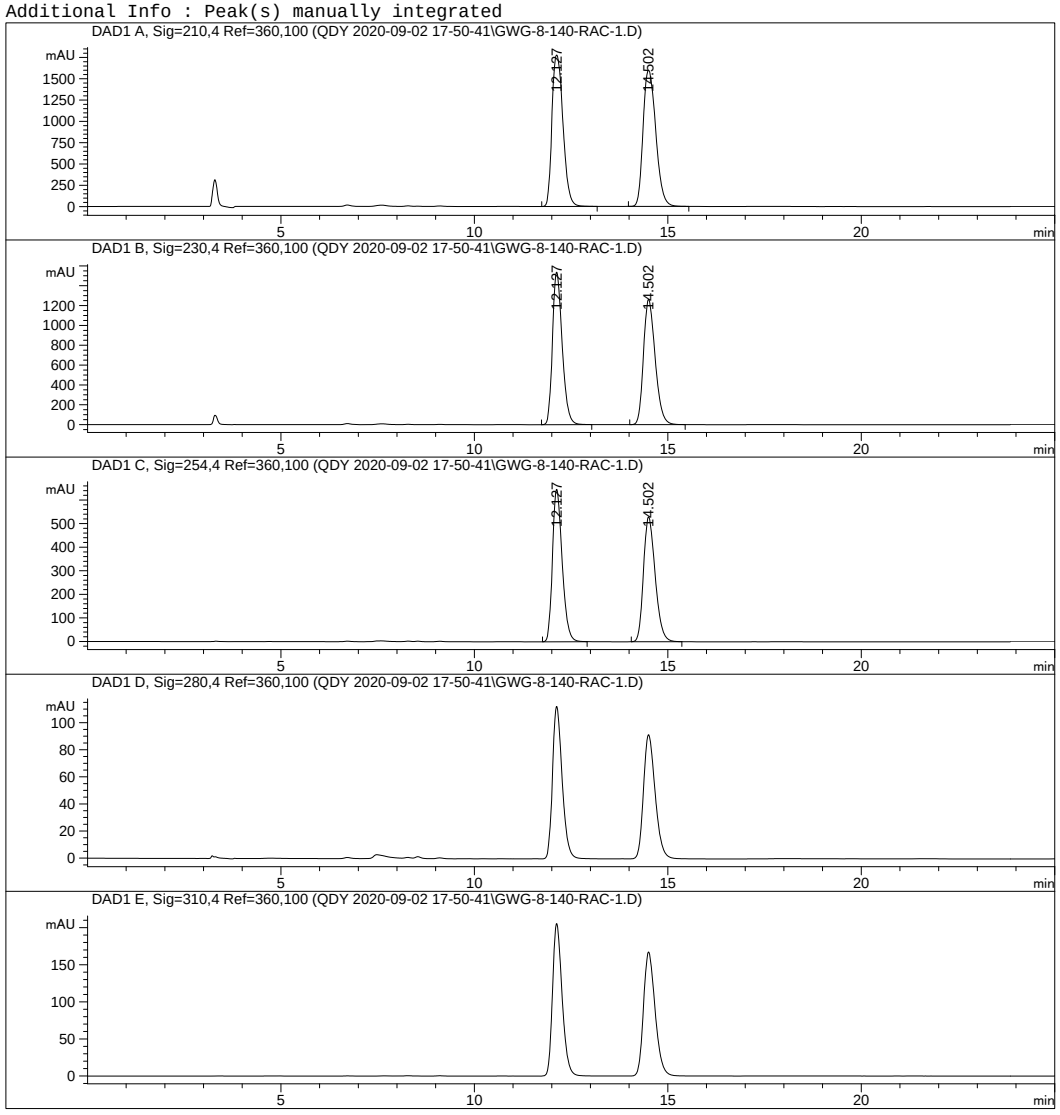
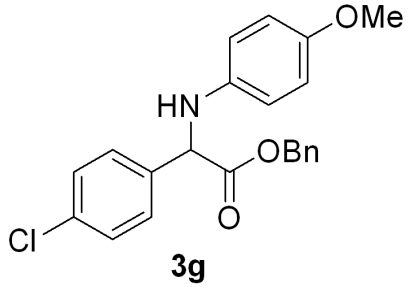
Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-140-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   2
Acq. Instrument : Instrument 1                    Location : Vial 57
Injection Date  : 9/2/2020 6:04:01 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\IC-05-30.M
Last changed    : 9/2/2020 6:28:48 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-140-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.127 BB    0.3145 3.50981e4  1776.35156  49.0493
   2  14.502 BB    0.3623 3.64587e4  1596.97571  50.9507

Totals :                  7.15568e4  3373.32727



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.127 BB    0.2690 2.67558e4  1537.37354  50.2862
   2  14.502 BB    0.3245 2.64513e4  1262.39563  49.7138

Totals :                  5.32071e4  2799.76917



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.127 BB    0.2691 1.12604e4   646.95313  50.2751
   2  14.502 BB    0.3252 1.11372e4   529.95831  49.7249

Totals :                  2.23976e4  1176.91144



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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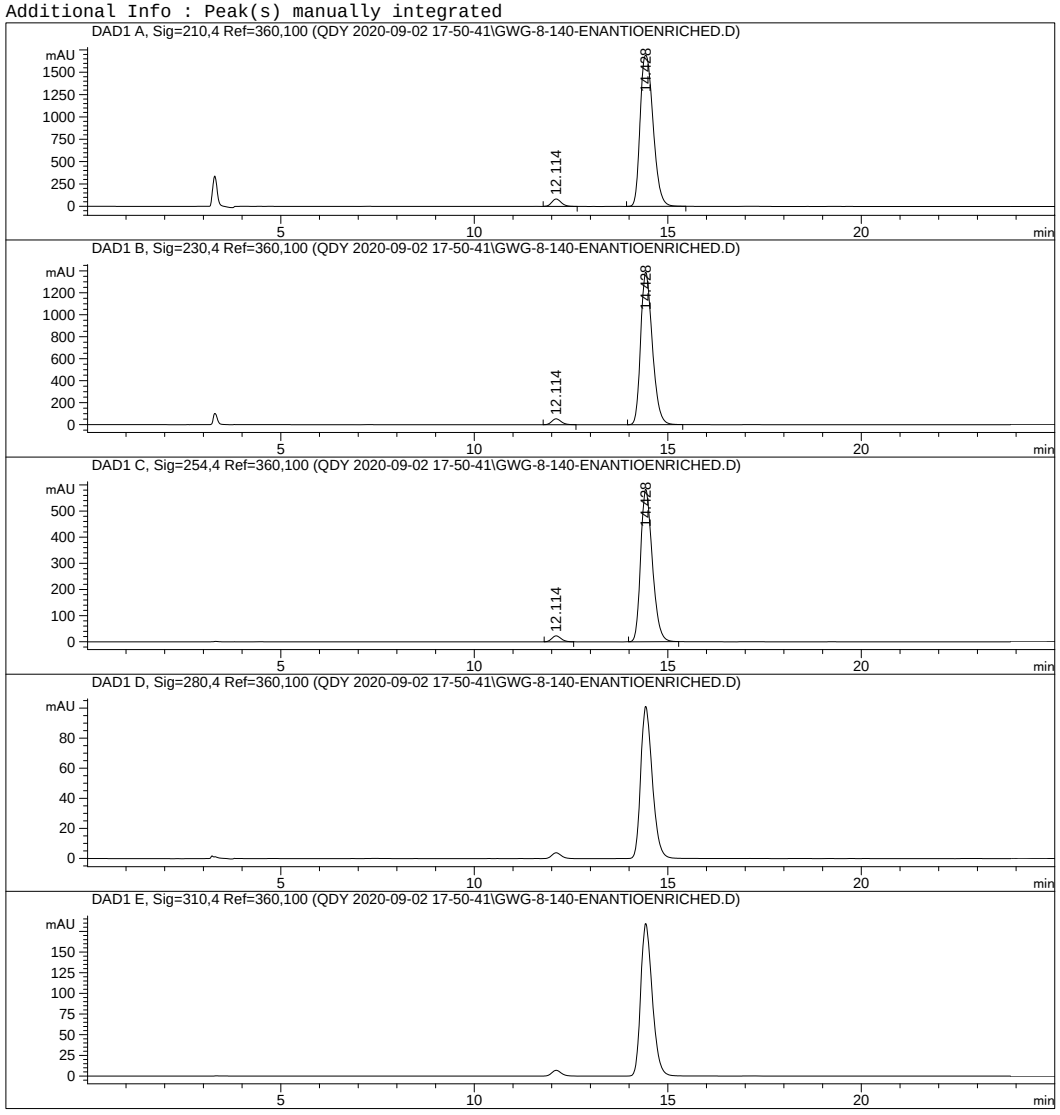
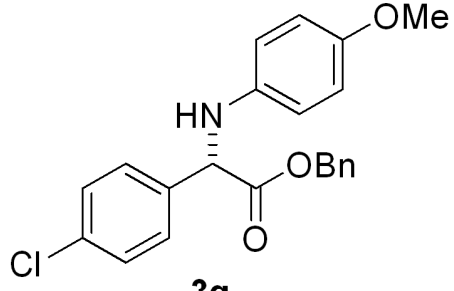
Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-140-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
Acq. Operator   :                          Seq. Line :   3
Acq. Instrument : Instrument 1              Location : Vial 58
Injection Date  : 9/2/2020 6:30:06 PM            Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\IC-05-30.M
Last changed    : 9/2/2020 6:28:48 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-140-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.114 BB    0.2598 1414.02136   83.41586   3.4784
   2  14.428 BB    0.3682 3.92375e4  1694.03796  96.5216

Totals :                  4.06515e4  1777.45383



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.114 BB    0.2594  907.84955   53.65527   3.0301
   2  14.428 BB    0.3241 2.90529e4  1388.43530  96.9699

Totals :                  2.99607e4  1442.09057



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.114 BB    0.2588  385.92538   22.88168   3.0589
   2  14.428 BB    0.3246 1.22307e4   583.26300  96.9411

Totals :                  1.26166e4   606.14468



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```



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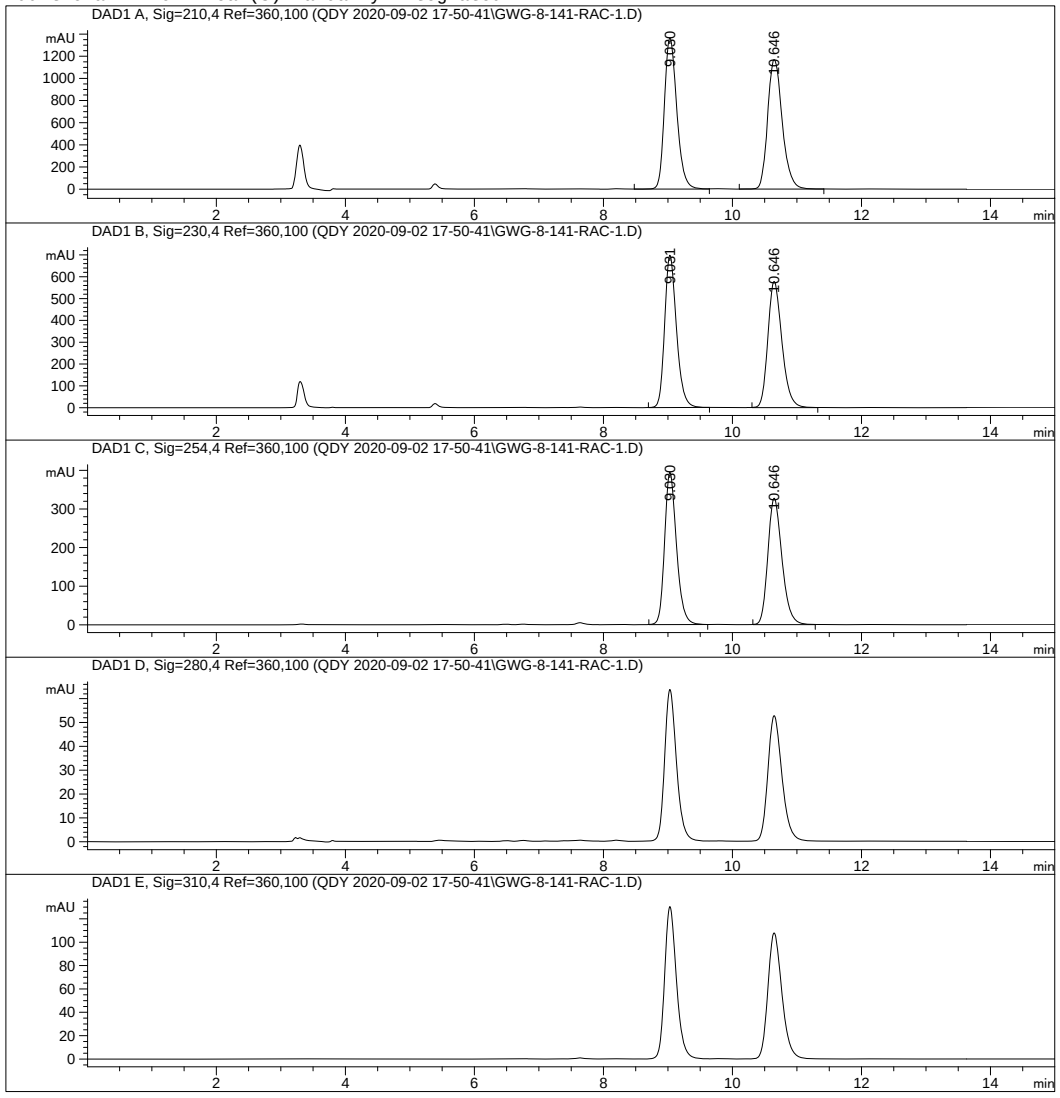
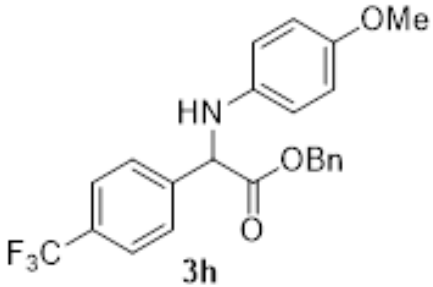
Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-141-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   5
Acq. Instrument : Instrument 1                  Location : Vial 59
Injection Date  : 9/2/2020 7:07:39 PM               Inj :   1
                                               Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\IC-05-30.M
Last changed    : 9/2/2020 7:18:35 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-141-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.030 VV    0.2083 1.82759e4  1363.92664  49.8949
   2  10.646 VB    0.2432 1.83529e4  1168.99854  50.1051

Totals :                  3.66288e4  2532.92517



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.031 BB    0.1943 8875.26563  698.10834  50.3599
   2  10.646 BB    0.2327 8748.42285  577.68878  49.6401

Totals :                  1.76237e4  1275.79712



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.030 BB    0.1953 5043.11377  394.09100  50.3434
   2  10.646 BB    0.2335 4974.31445  327.04181  49.6566

Totals :                  1.00174e4   721.13281



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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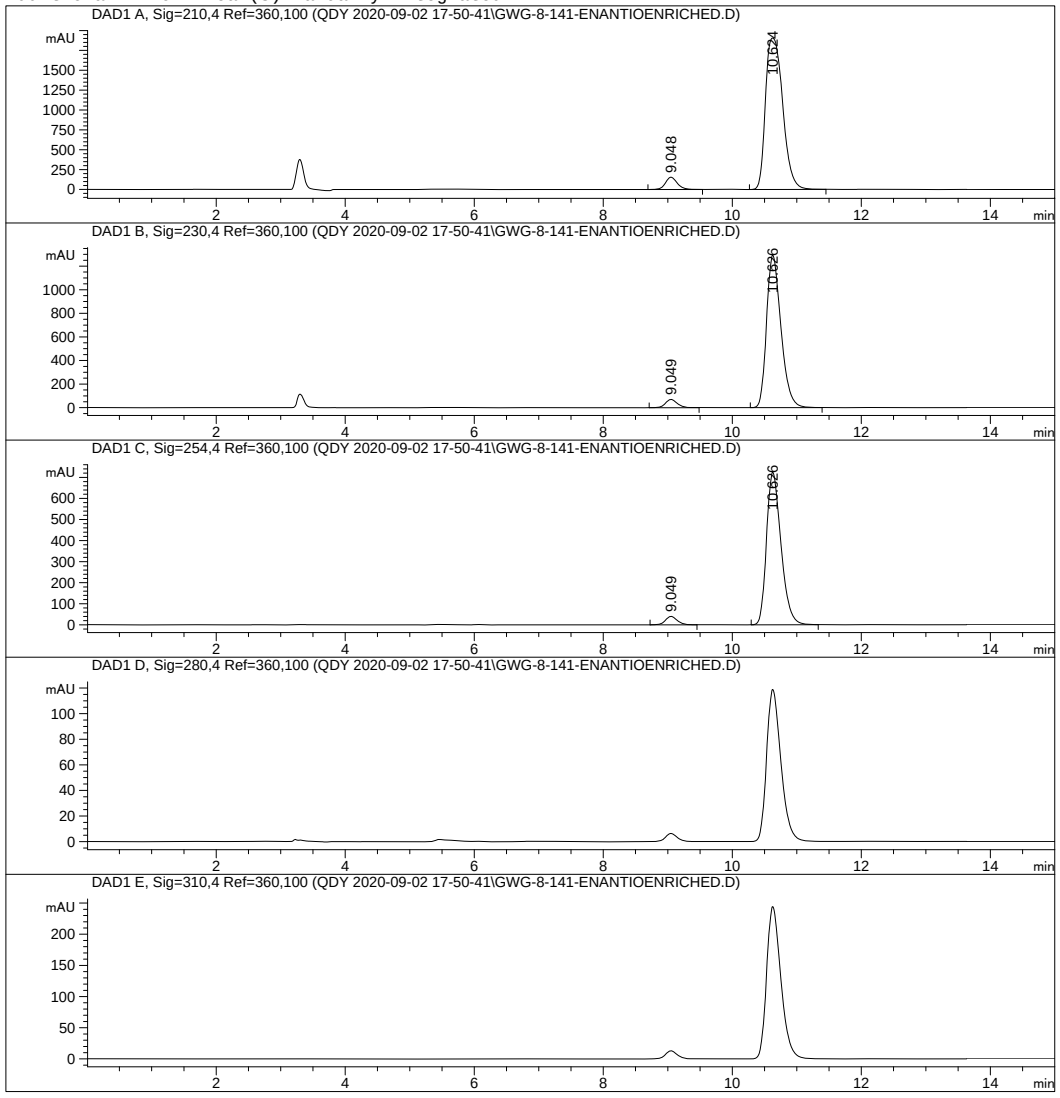
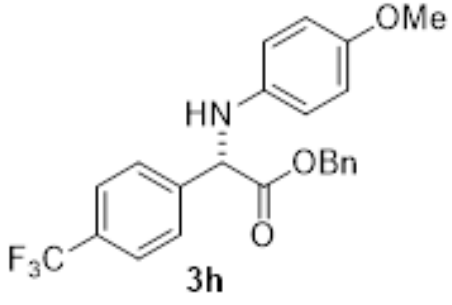
Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-141-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   6
Acq. Instrument : Instrument 1                  Location : Vial 60
Injection Date  : 9/2/2020 7:23:43 PM               Inj :   1
                                               Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\IC-05-30.M
Last changed    : 9/2/2020 7:18:35 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/1/2020 3:40:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-02 17-50-41\GWG-8-141-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.048 BB    0.1953 1980.82336  154.80215   5.3162
   2  10.624 BB    0.2940 3.52791e4  1905.22363  94.6838

Totals :                  3.72600e4  2060.02579



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.049 BB    0.1948  897.21790   70.34921   4.2891
   2  10.626 BB    0.2407 2.00215e4  1292.87073  95.7109

Totals :                  2.09187e4  1363.21993



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.049 BB    0.1955  515.98309   40.27771   4.3768
   2  10.626 BB    0.2417 1.12731e4   723.74994  95.6232

Totals :                  1.17890e4   764.02765



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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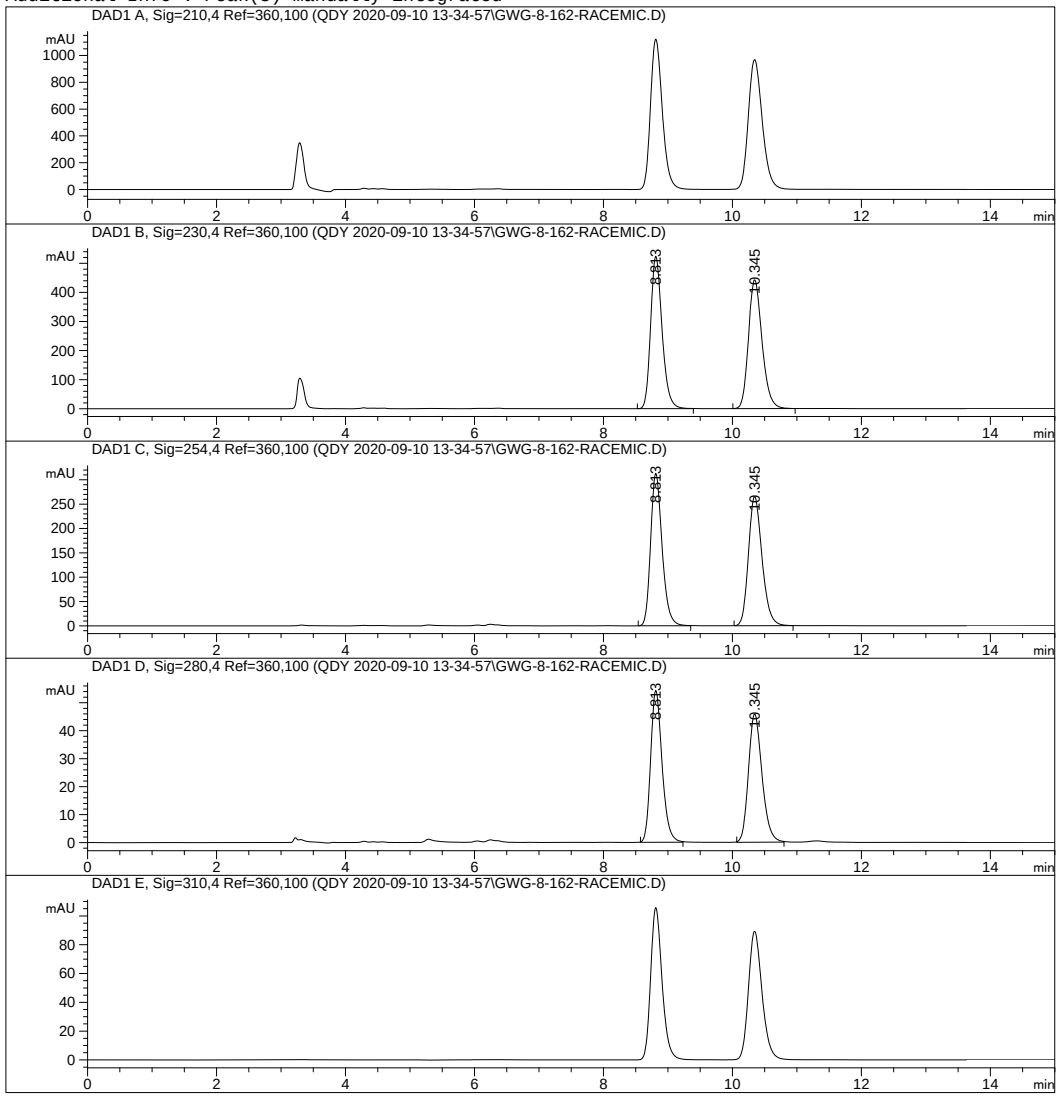
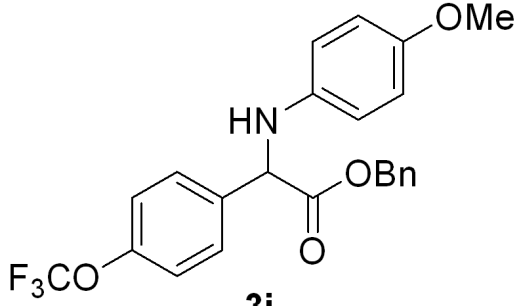
Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-162-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   8
Acq. Instrument : Instrument 1                    Location : Vial 56
Injection Date  : 9/10/2020 4:19:15 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/10/2020 8:08:46 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-162-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.813 BB    0.1897 6456.85742  524.21906  49.8921
   2  10.345 BB    0.2269 6484.79004  442.80795  50.1079

Totals :                  1.29416e4   967.02701



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.813 BB    0.1903 3872.62427  313.17105  49.8569
   2  10.345 BB    0.2274 3894.86011  265.06952  50.1431

Totals :                  7767.48438  578.24057



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.813 BB    0.1895  667.67902   54.30044  49.9036
   2  10.345 BB    0.2245  670.25879   45.86591  50.0964

Totals :                  1337.93781  100.16636



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

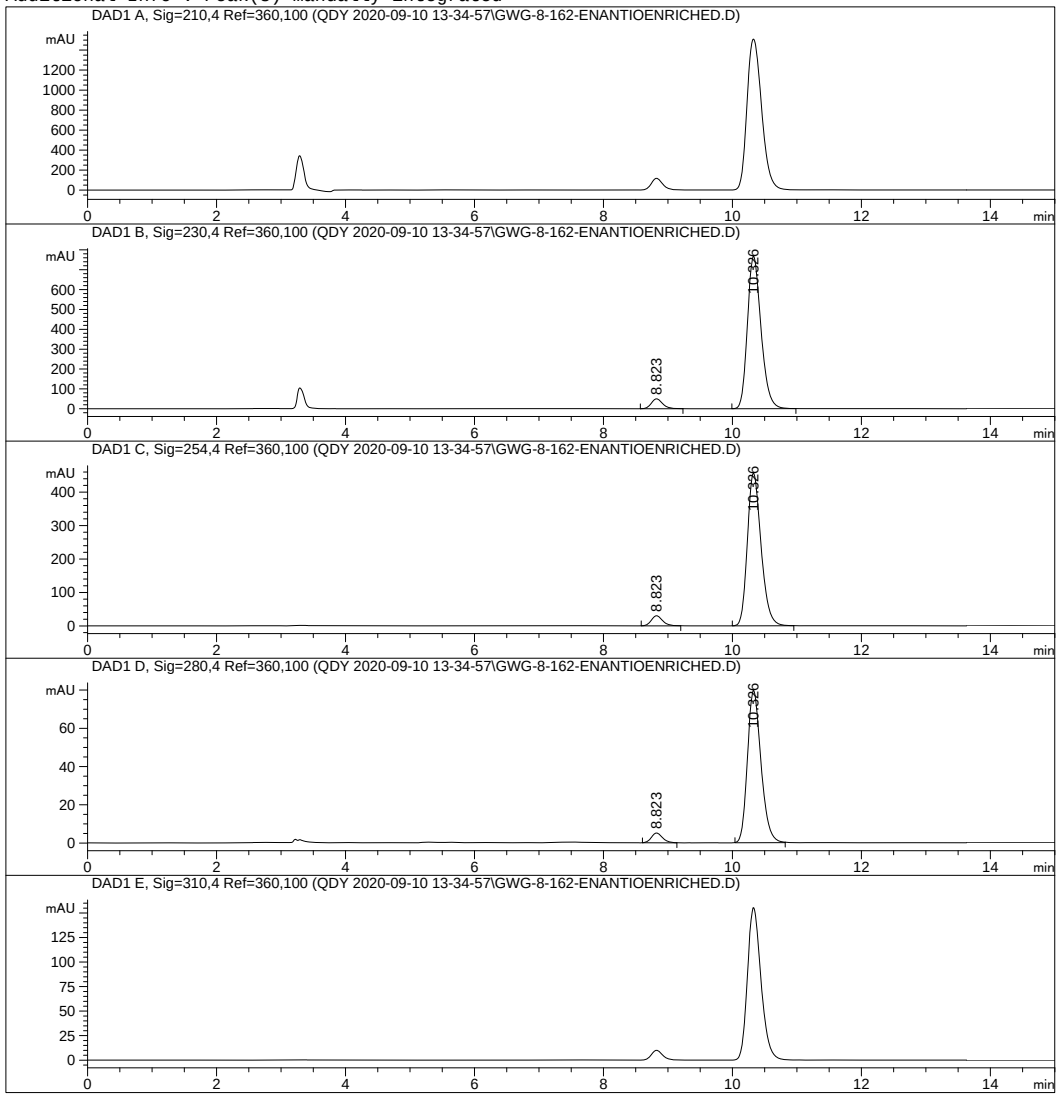


3i

racemic

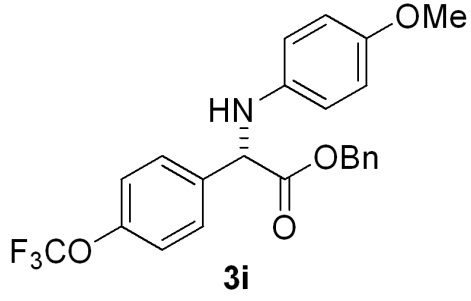
Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-162-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   7
Acq. Instrument : Instrument 1                    Location : Vial 55
Injection Date  : 9/10/2020 3:48:13 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/10/2020 4:21:01 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-162-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.823 BB    0.1859  607.03156   49.90976   5.1190
   2  10.326 BB    0.2251 1.12514e4   767.23541  94.8810

Totals :                  1.18585e4   817.14517



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.823 BB    0.1858  366.62070   30.16608   5.1726
   2  10.326 BB    0.2280 6721.14990  455.80380  94.8274

Totals :                  7087.77060  485.96988



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.823 BB    0.1843   61.78724    5.13759   5.0365
   2  10.326 BB    0.2246 1165.00574   79.65732  94.9635

Totals :                  1226.79298   84.79491



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



3i

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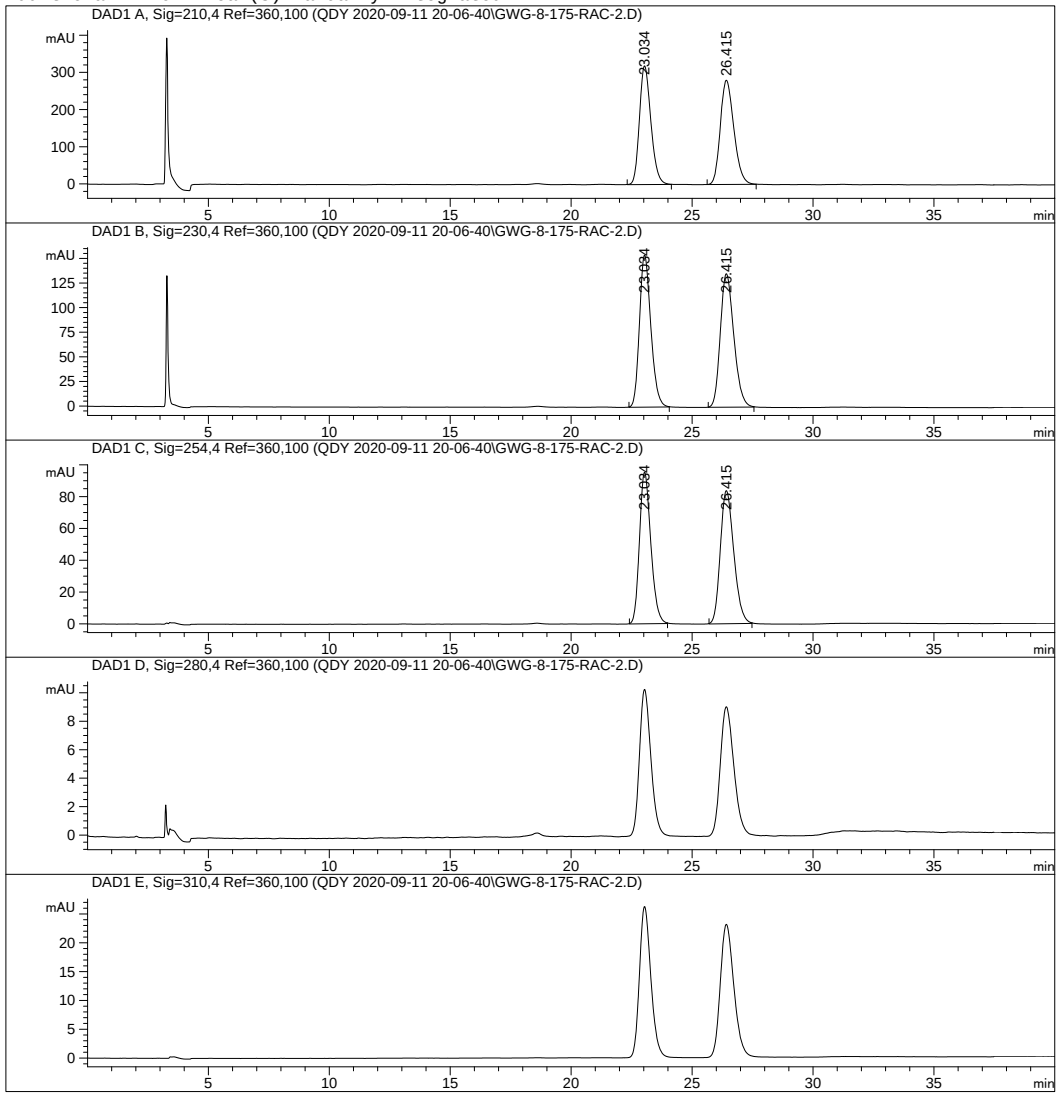
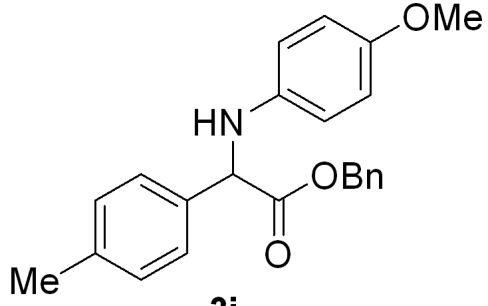
Data File C:\CHEM32\1\DATA\QDY 2020-09-11 20-06-40\GWG-8-175-RAC-2.D
Sample Name:

```
==================================================================
Acq. Operator   :                          Seq. Line :   4
Acq. Instrument : Instrument 1              Location : Vial 51
Injection Date  : 9/11/2020 9:01:45 PM           Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-11 20-06-40\IC-03-40.M
Last changed    : 9/11/2020 9:00:52 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/11/2020 9:43:10 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-11 20-06-40\GWG-8-175-RAC-2.D
Sample Name:

```
==================================================================
                        Area Percent Report
==================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.034 BB    0.5101 1.05082e4   319.15567  49.0075
   2  26.415 BB    0.6049 1.09338e4   280.40665  50.9925

Totals :                  2.14420e4   599.56232



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.034 BB    0.5031 5043.83984  154.42055  48.9949
   2  26.415 BB    0.5997 5250.78125  135.62695  51.0051

Totals :                  1.02946e4   290.04750



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.034 BB    0.5027 3110.99243   95.32832  49.0061
   2  26.415 BB    0.6010 3237.18481   83.73515  50.9939

Totals :                  6348.17725  179.06348



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==================================================================
                        *** End of Report ***
```

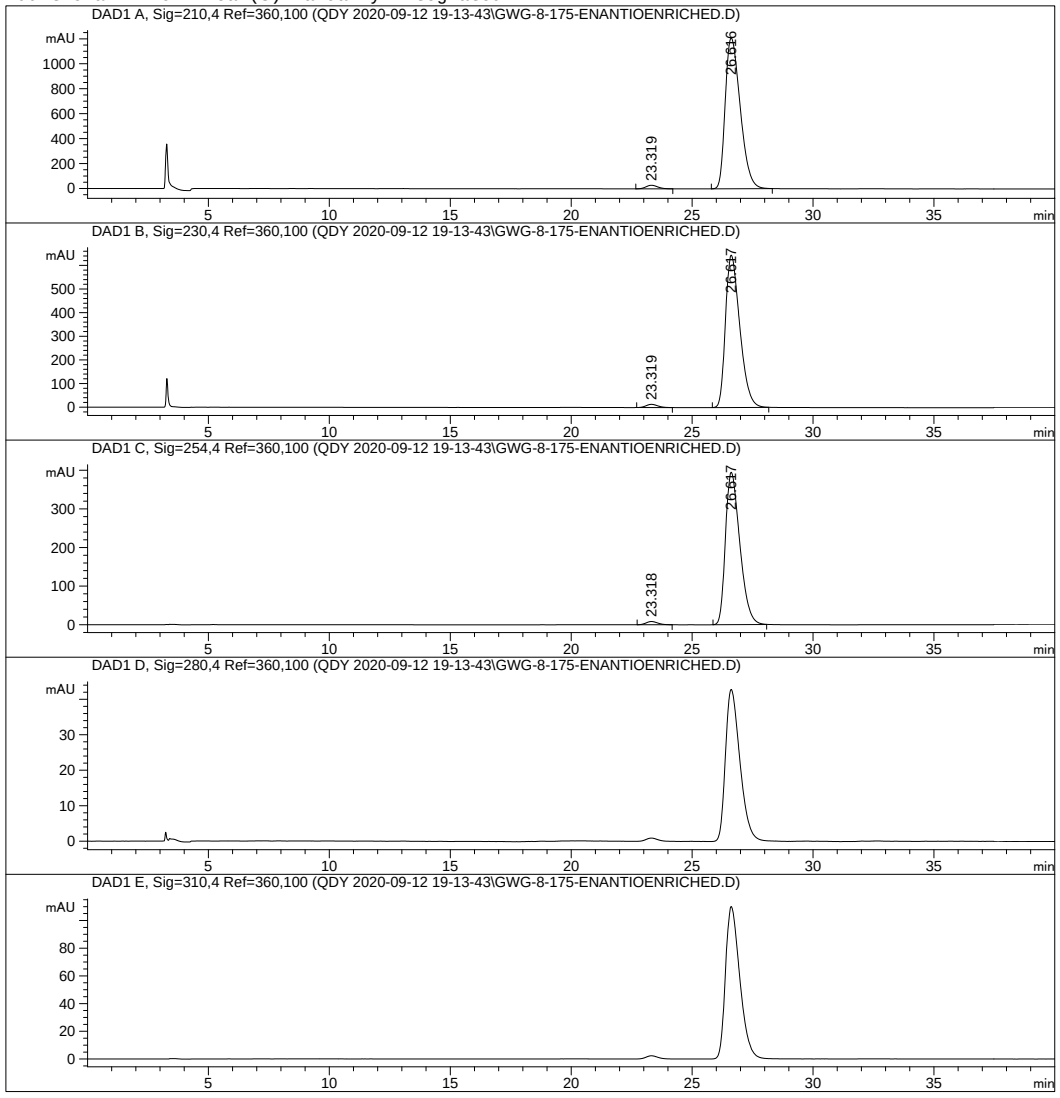


3j

racemic

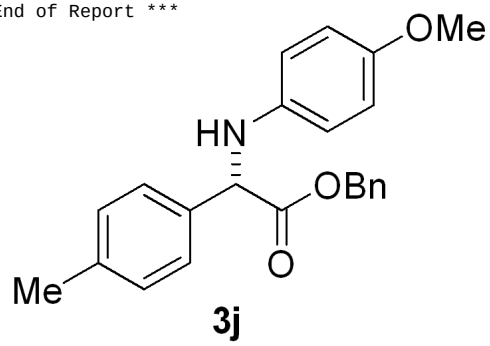
Data File C:\CHEM32\1\DATA\QDY 2020-09-12 19-13-43\GWG-8-175-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   3
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 9/12/2020 8:07:39 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-12 19-13-43\IC-03-40.M
Last changed    : 9/12/2020 8:06:47 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/12/2020 7:52:02 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-12 19-13-43\GWG-8-175-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.319 BB    0.5196  963.31384   28.55461   1.8198
   2  26.616 BB    0.6737 5.19721e4  1208.55933  98.1802

Totals :                  5.29354e4  1237.11394



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.319 BB    0.5188  455.05374   13.58382   1.6854
   2  26.617 BB    0.6362 2.65446e4   644.86804  98.3146

Totals :                  2.69997e4   658.45186



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.318 BB    0.5175  280.17941    8.39287   1.6906
   2  26.617 BB    0.6377 1.62922e4   394.61450  98.3094

Totals :                  1.65724e4   403.00738



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



3j

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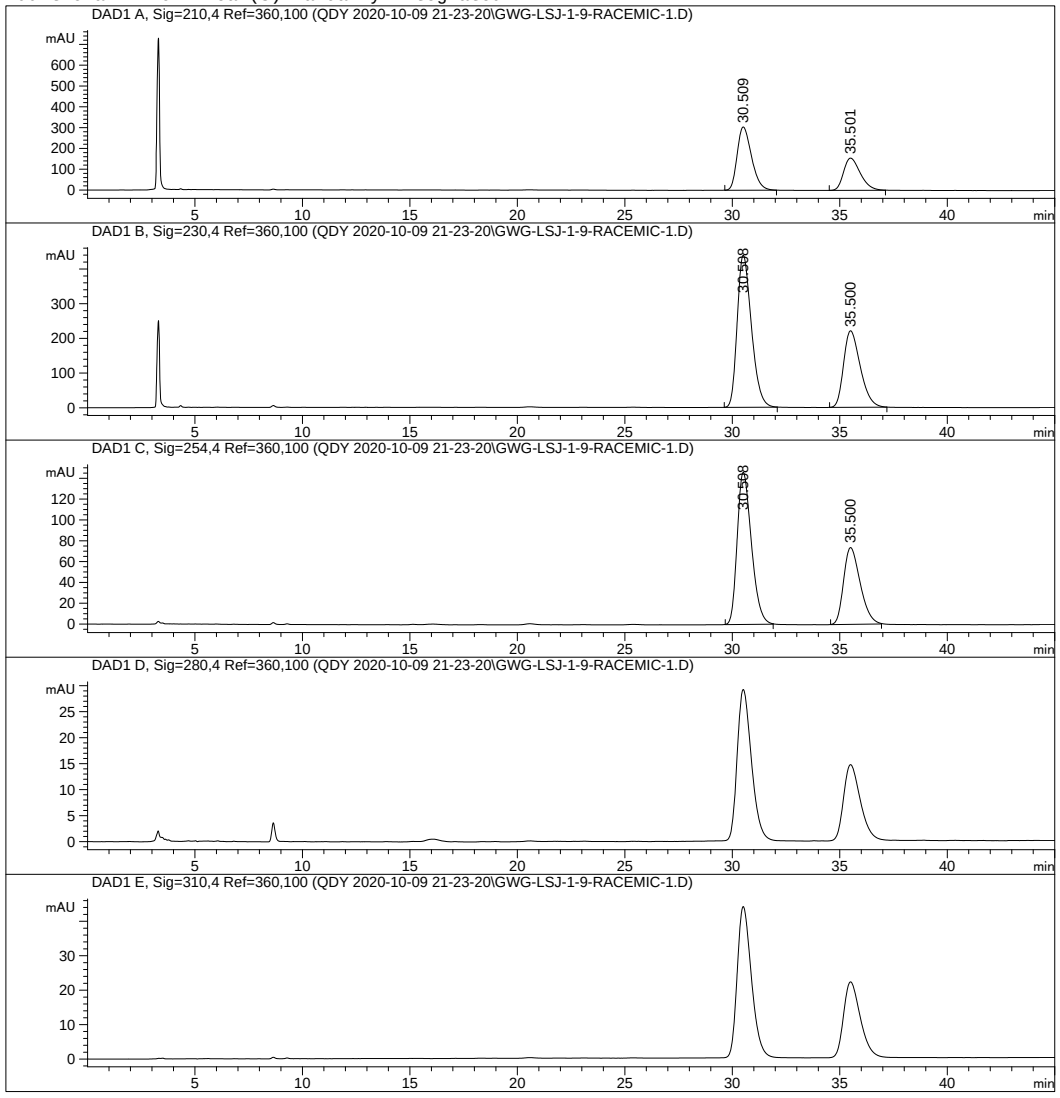
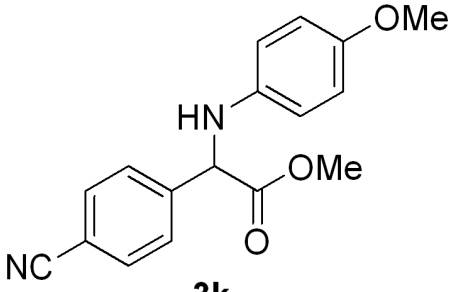
Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-9-RACEMIC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   2
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 10/9/2020 9:36:11 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\IC-15-30.M
Last changed    : 10/9/2020 9:50:35 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 10:08:16 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-9-RACEMIC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  30.509 BB    0.7126 1.40856e4   303.95694  62.6945
   2  35.501 BB    0.8352 8381.48047  154.90536  37.3055

Totals :                  2.24671e4   458.86230



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  30.508 BB    0.7123 2.01542e4   438.43222  62.8464
   2  35.500 BB    0.8356 1.19148e4   220.79034  37.1536

Totals :                  3.20690e4   659.22256



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  30.508 BB    0.7103 6718.23730  146.13780  62.9290
   2  35.500 BB    0.8280 3957.65527   73.76090  37.0710

Totals :                  1.06759e4   219.89870



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

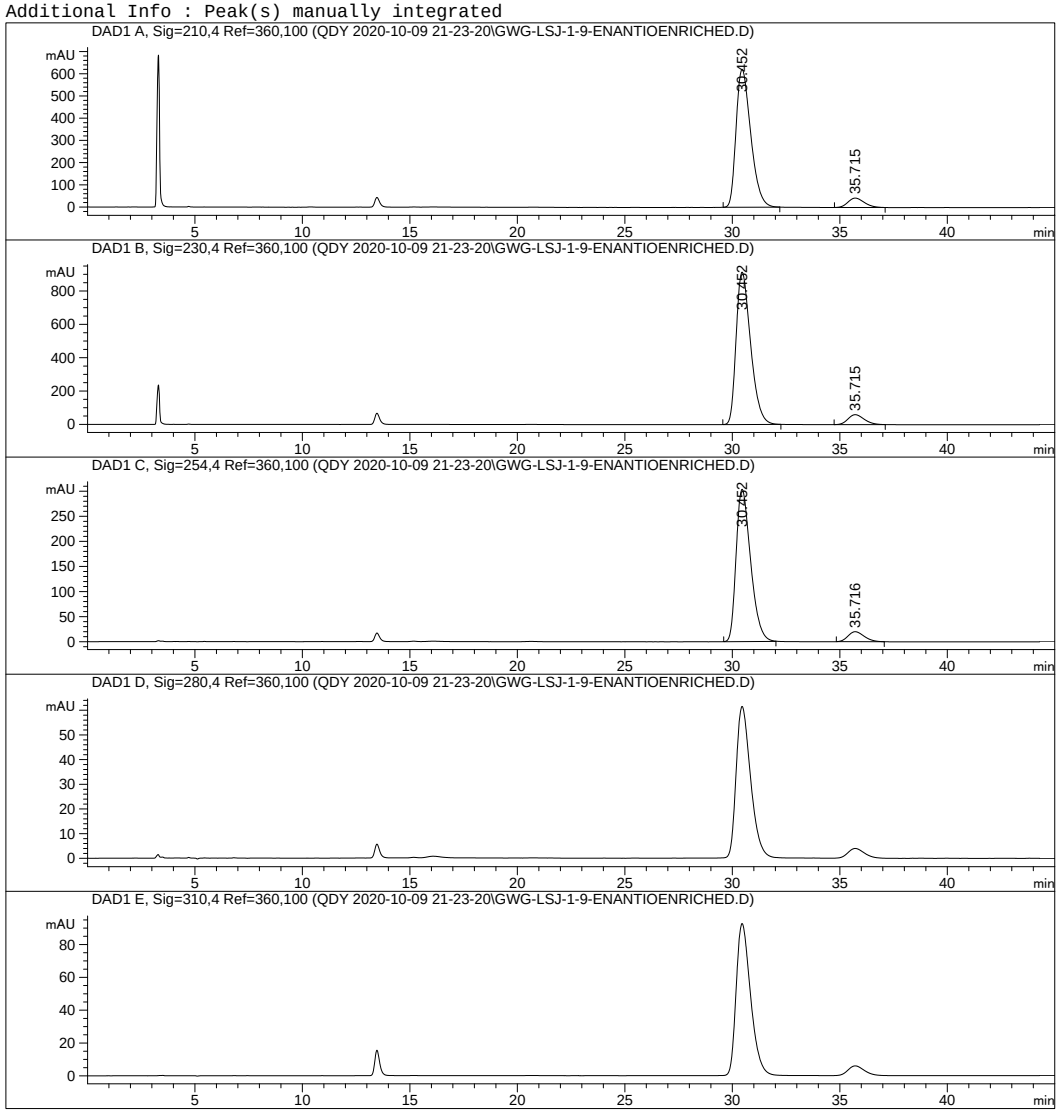


3k

racemic

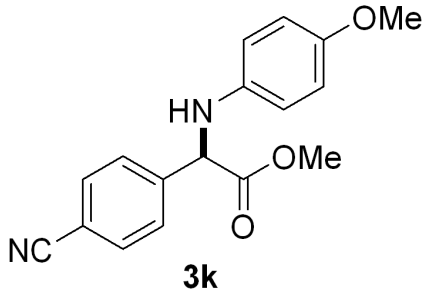
Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-9-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   3
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 10/9/2020 10:22:13 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\IC-15-30.M
Last changed    : 10/9/2020 9:50:35 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 10:08:16 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-9-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  30.452 BB    0.7355 2.94765e4   621.35602  92.9196
   2  35.715 BB    0.7598 2246.07397   42.41673   7.0804

Totals :                  3.17226e4   663.77274



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  30.452 BB    0.7220 4.27786e4   914.09973  93.1369
   2  35.715 BB    0.8187 3152.27661   59.63350   6.8631

Totals :                  4.59308e4   973.73323



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  30.452 BB    0.7242 1.42124e4   303.59375  93.1402
   2  35.716 BB    0.8042 1046.75024   19.94781   6.8598

Totals :                  1.52591e4   323.54156



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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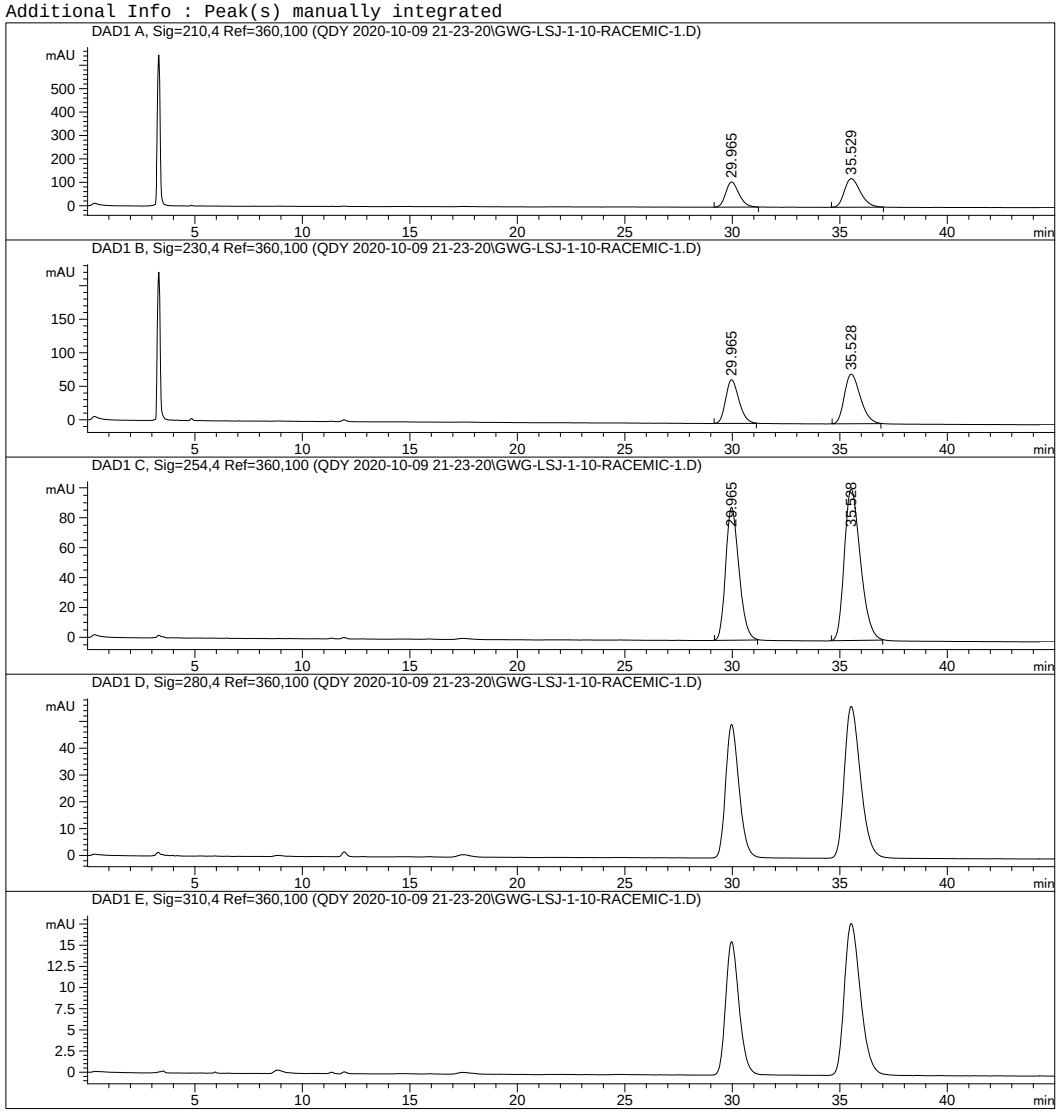
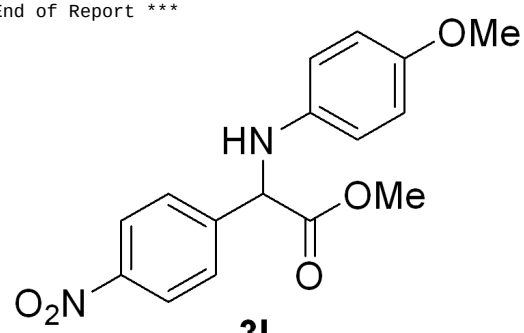
Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-10-RACEMIC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   5
Acq. Instrument : Instrument 1                    Location : Vial 51
Injection Date  : 10/9/2020 11:19:23 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\IC-10-30.M
Last changed    : 10/9/2020 11:50:30 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 10:08:16 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-10-RACEMIC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  29.965 BB    0.6703 4622.48877  107.36497  42.1413
   2  35.529 BB    0.7984 6346.52246  122.10793  57.8587

Totals :                  1.09690e4   229.47291



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  29.965 BB    0.6624 2790.62842   65.06458  42.1905
   2  35.528 BB    0.7991 3823.73145   73.97218  57.8095

Totals :                  6614.35986  139.03676



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  29.965 BB    0.6651 3817.77197   88.89240  42.1397
   2  35.528 BB    0.8029 5242.02881  101.11050  57.8603

Totals :                  9059.80078  190.00290



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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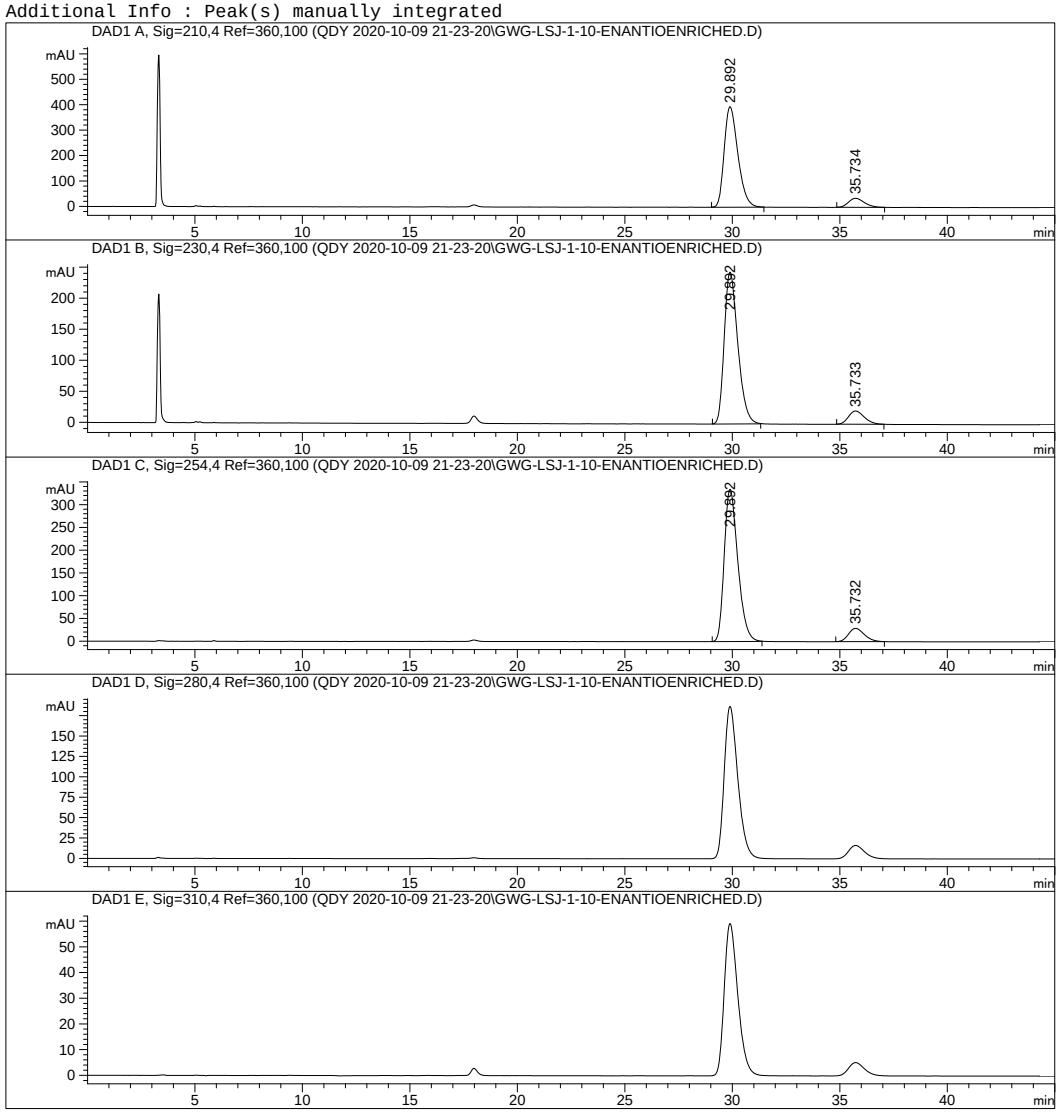
racemic

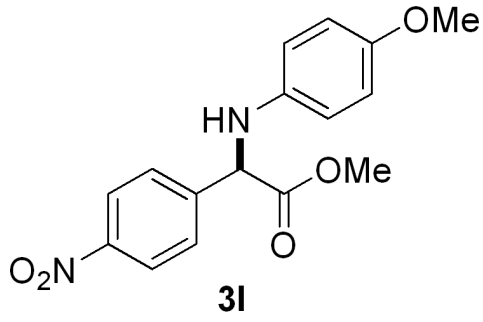
Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-10-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   6
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 10/10/2020 12:05:22 AM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\IC-10-30.M
Last changed    : 10/9/2020 11:50:30 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 10:08:16 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-09 21-23-20\GWG-LSJ-1-10-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  29.892 BB    0.6833 1.75279e4   395.32166  90.5202
   2  35.734 BB    0.7714 1835.62036   35.49043   9.4798

Totals :                  1.93635e4   430.81208



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  29.892 BB    0.6775 1.07185e4   244.47308  90.7105
   2  35.733 BB    0.7793 1097.66614   21.36965   9.2895

Totals :                  1.18162e4   265.84273



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  29.892 BB    0.6774 1.46665e4   334.57648  90.6924
   2  35.732 BB    0.7988 1505.20349   29.22900   9.3076

Totals :                  1.61717e4   363.80548



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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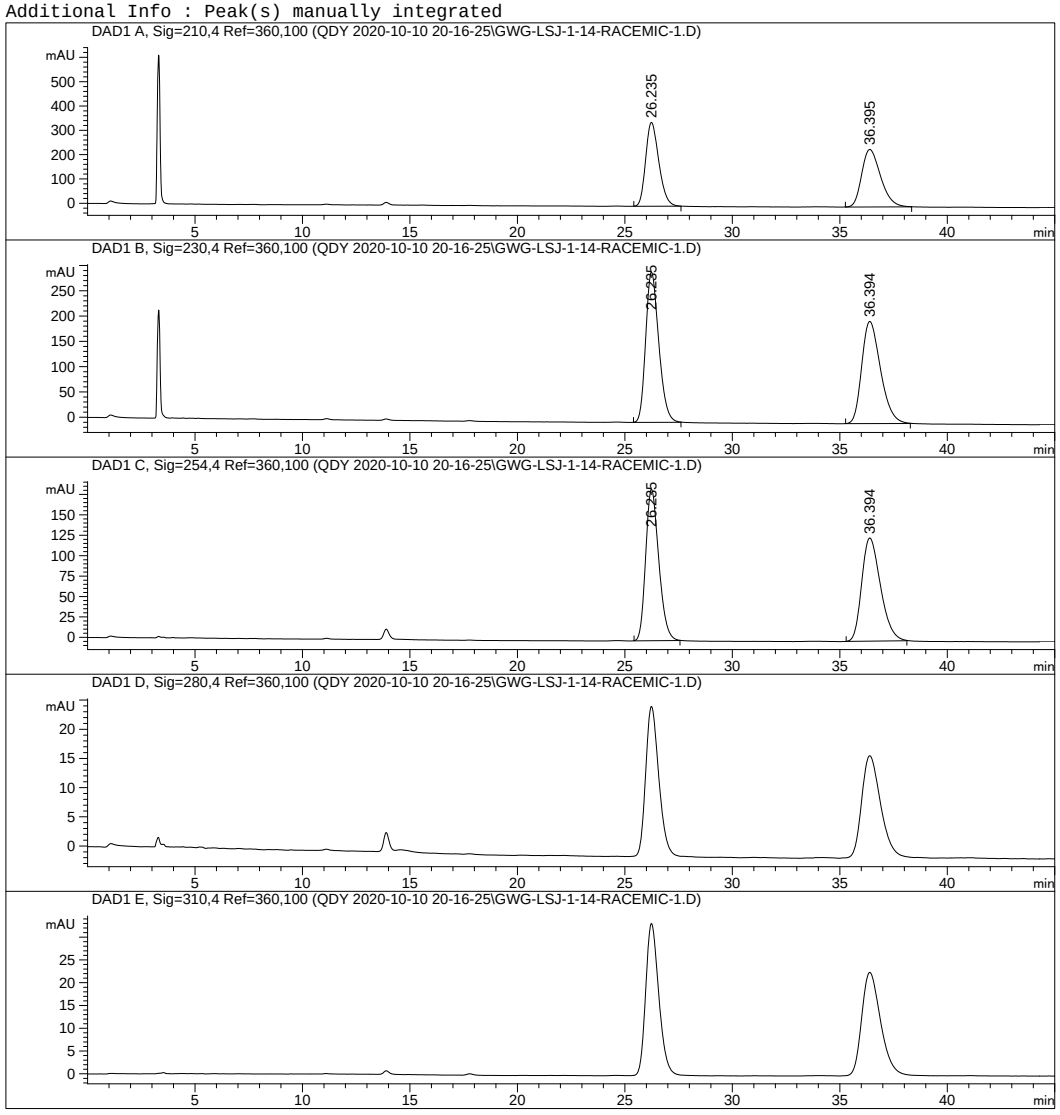
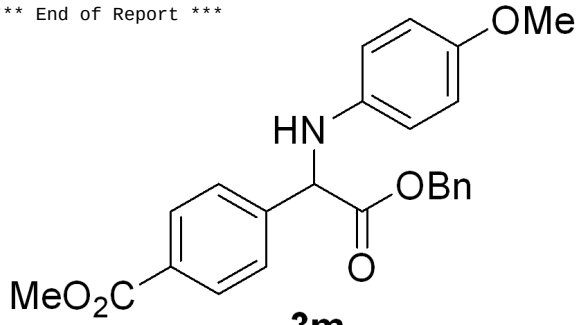
Data File C:\CHEM32\1\DATA\QDY 2020-10-10 20-16-25\GWG-LSJ-1-14-RACEMIC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   2
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 10/10/2020 8:29:11 PM              Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-10 20-16-25\IC-10-30.M
Last changed    : 10/10/2020 8:49:01 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 10:08:16 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-10 20-16-25\GWG-LSJ-1-14-RACEMIC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.235 BB    0.6574 1.46934e4   344.61758  50.3839
   2  36.395 BB    0.9519 1.44695e4   236.45473  49.6161

Totals :                  2.91629e4   581.07231



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.235 BB    0.6495 1.25605e4   296.95313  50.5709
   2  36.394 BB    0.9409 1.22769e4   202.03667  49.4291

Totals :                  2.48373e4   498.98979



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.235 BB    0.6525 7864.40771  185.52826  50.6459
   2  36.394 BB    0.9434 7663.81836  126.38996  49.3541

Totals :                  1.55282e4   311.91822



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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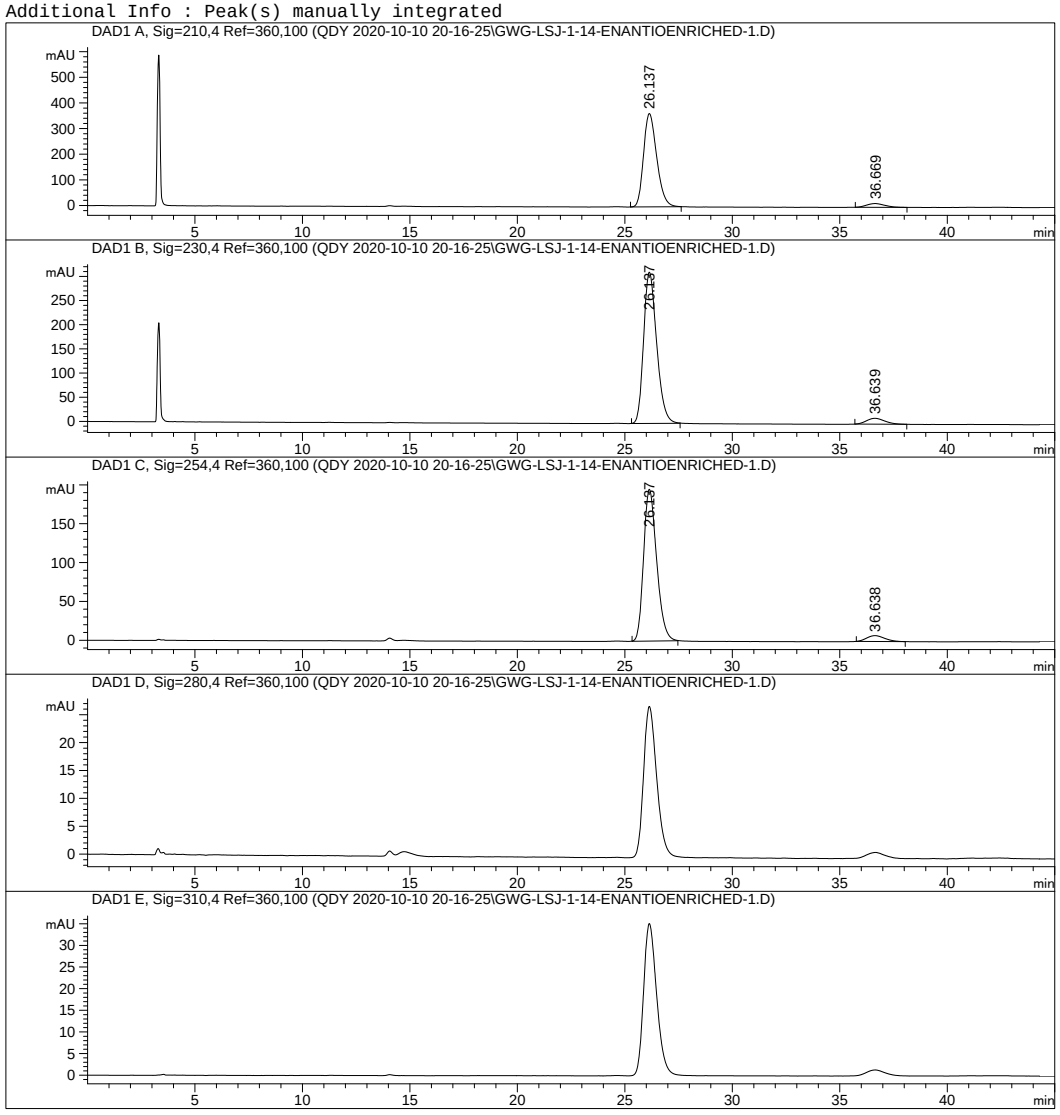
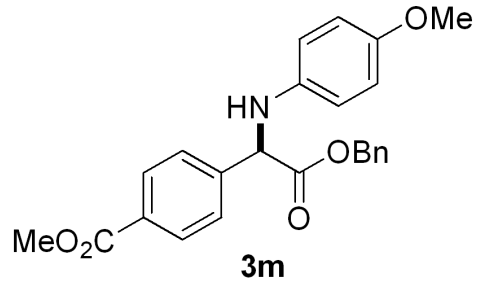
Data File C:\CHEM32\1\DATA\QDY 2020-10-10 20-16-25\GWG-LSJ-1-14-ENANTIOENRICHED-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   3
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 10/10/2020 9:15:11 PM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-10 20-16-25\IC-10-30.M
Last changed    : 10/10/2020 8:49:01 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 10:08:16 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-10 20-16-25\GWG-LSJ-1-14-ENANTIOENRICHED-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.137 BB    0.6620 1.55421e4   364.10287  94.8230
   2  36.669 BB    0.7045  848.54608   14.54840   5.1770

Totals :                  1.63907e4   378.65128



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.137 BB    0.6529 1.32207e4   312.94702  94.8432
   2  36.639 BB    0.8618  718.83026   12.15848   5.1568

Totals :                  1.39395e4   325.10550



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.137 BB    0.6535 8266.79688  195.41634  94.9221
   2  36.638 BB    0.8704  442.23718    7.58240   5.0779

Totals :                  8709.03406  202.99873



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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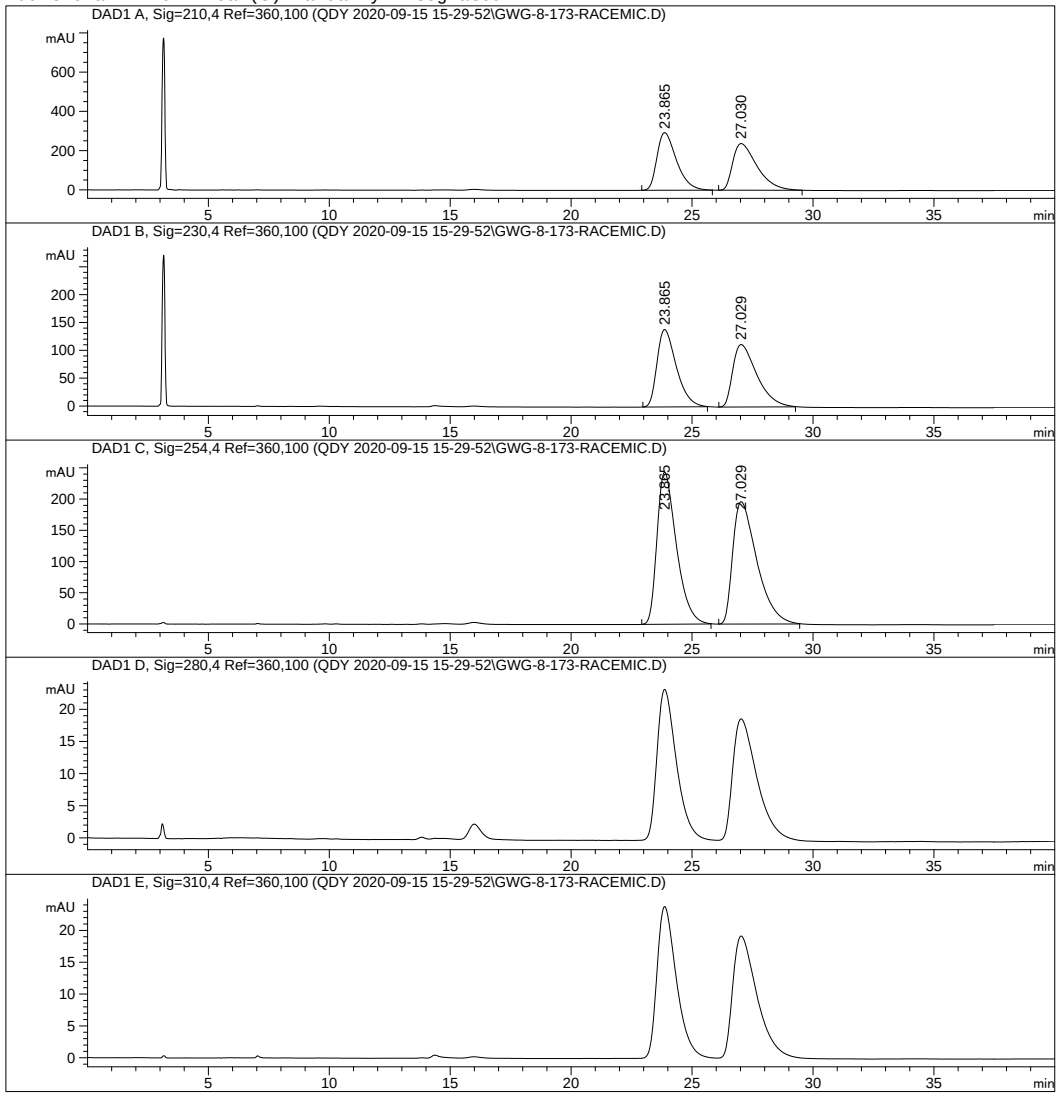
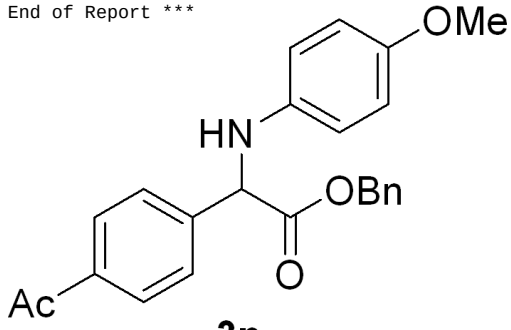
Data File C:\CHEM32\1\DATA\QDY 2020-09-15 15-29-52\GWG-8-173-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  12
Acq. Instrument : Instrument 1                  Location : Vial 56
Injection Date  : 9/15/2020 8:03:28 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-15 15-29-52\OD-20-40.M
Last changed    : 9/15/2020 7:21:33 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/12/2020 7:52:02 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-15 15-29-52\GWG-8-173-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.865 BB    0.8552 1.65367e4   293.55722  49.8188
   2  27.030 BB    1.0437 1.66570e4   237.66818  50.1812

Totals :                  3.31936e4   531.22540



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.865 BB    0.8537 7743.70996  139.05214  49.9894
   2  27.029 BB    1.0506 7746.98291  112.05037  50.0106

Totals :                  1.54907e4   251.10251



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  23.865 BB    0.8559 1.35976e4   243.35191  50.0078
   2  27.029 BB    1.0617 1.35934e4   195.86734  49.9922

Totals :                  2.71910e4   439.21925



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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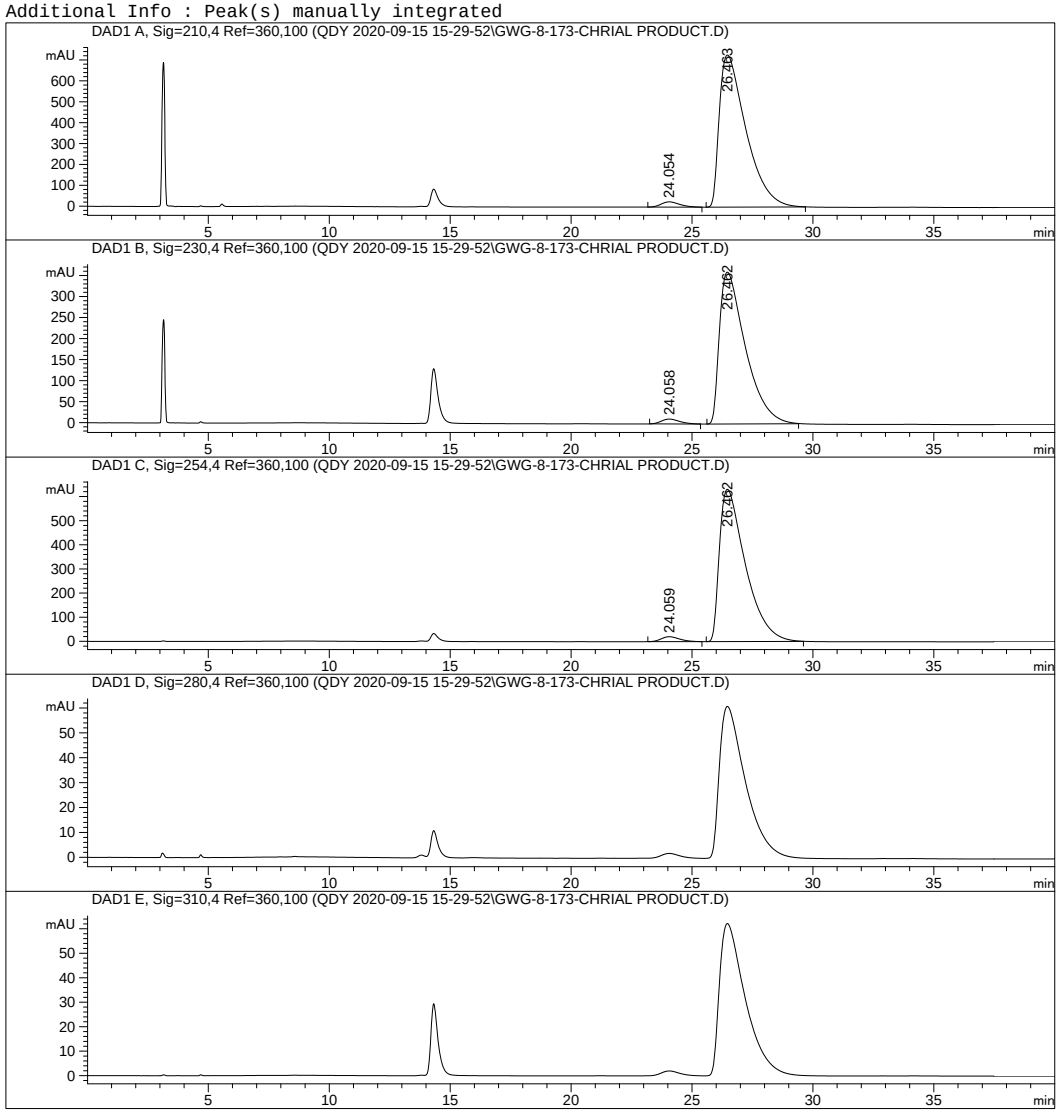
Instrument 1 9/15/2020 8:44:32 PM

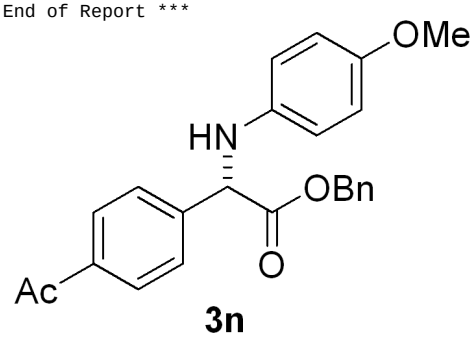
Data File C:\CHEM32\1\DATA\QDY 2020-09-15 15-29-52\GWG-8-173-CHRIAL PRODUCT.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  11
Acq. Instrument : Instrument 1                  Location : Vial 55
Injection Date  : 9/15/2020 7:22:25 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-15 15-29-52\OD-20-40.M
Last changed    : 9/15/2020 7:21:33 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/12/2020 7:52:02 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-15 15-29-52\GWG-8-173-CHRIAL PRODUCT.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  24.054 BB    0.7862 1315.75586   24.99308   2.3119
   2  26.463 BB    1.1313 5.55967e4   727.73792  97.6881

Totals :                  5.69124e4   752.73100



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  24.058 BB    0.7867  608.32654   11.62053   2.2166
   2  26.462 BB    1.1215 2.68358e4   360.91928  97.7834

Totals :                  2.74441e4   372.53981



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  24.059 BB    0.8143 1084.67859   20.53423   2.2556
   2  26.462 BB    1.1250 4.70045e4   631.02130  97.7444

Totals :                  4.80891e4   651.55553



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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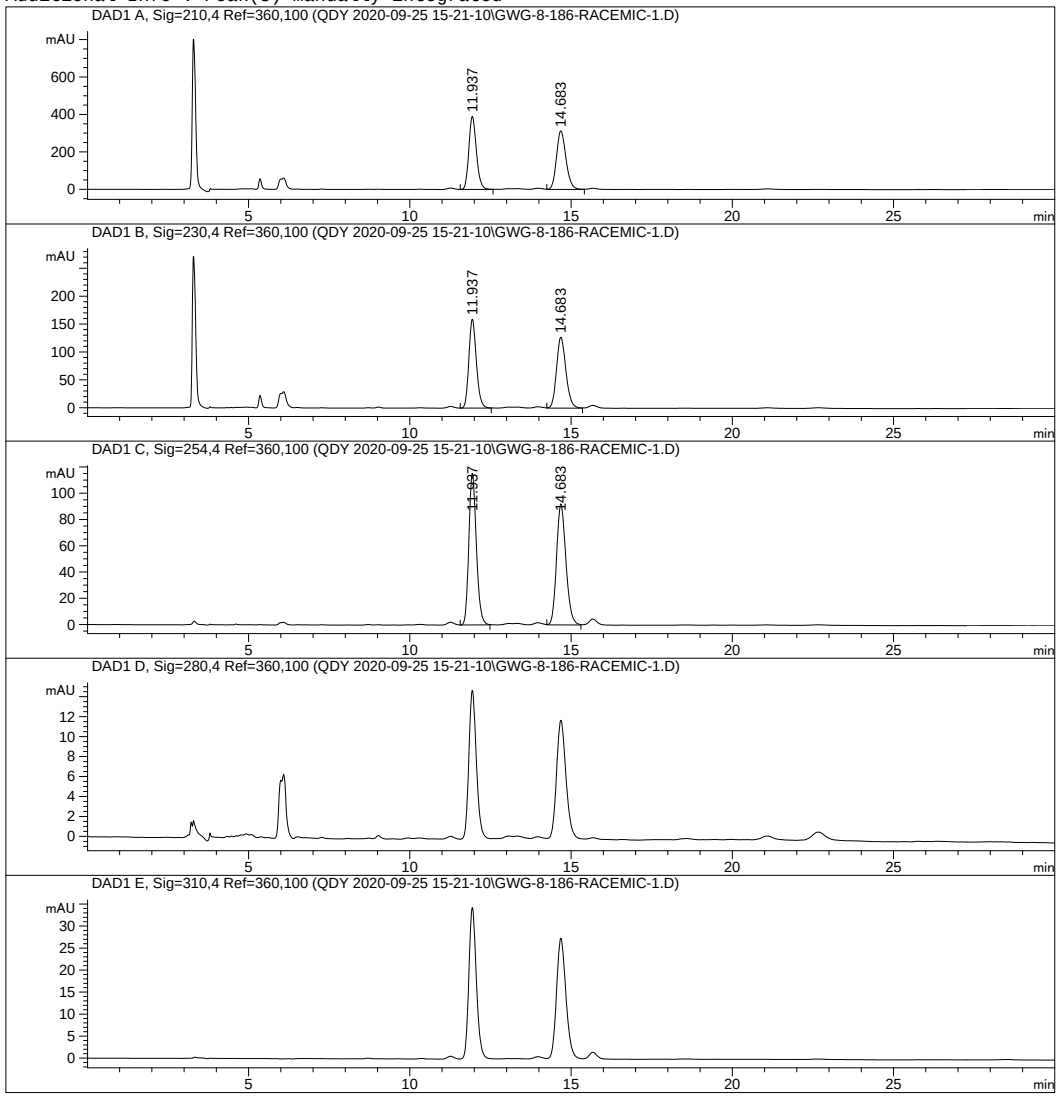
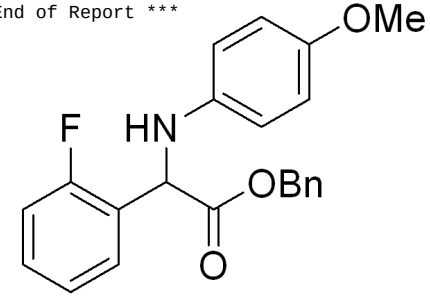
Data File C:\CHEM32\1\DATA\QDY 2020-09-25 15-21-10\GWG-8-186-RACEMIC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  15
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 9/25/2020 8:28:00 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-25 15-21-10\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\AD-02-60-04M.M
Last changed    : 9/23/2020 11:07:51 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-25 15-21-10\GWG-8-186-RACEMIC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.937 VB    0.2525 6367.23877  389.88403  49.8057
   2  14.683 VB    0.3171 6416.91943  313.15021  50.1943

Totals :                  1.27842e4   703.03424



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.937 VB    0.2481 2568.90527  159.33723  49.9077
   2  14.683 VB    0.3125 2578.40698  127.17684  50.0923

Totals :                  5147.31226  286.51408



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.937 VB    0.2481 1863.18982  115.54543  49.9268
   2  14.683 VB    0.3123 1868.65210   92.25445  50.0732

Totals :                  3731.84192  207.79987



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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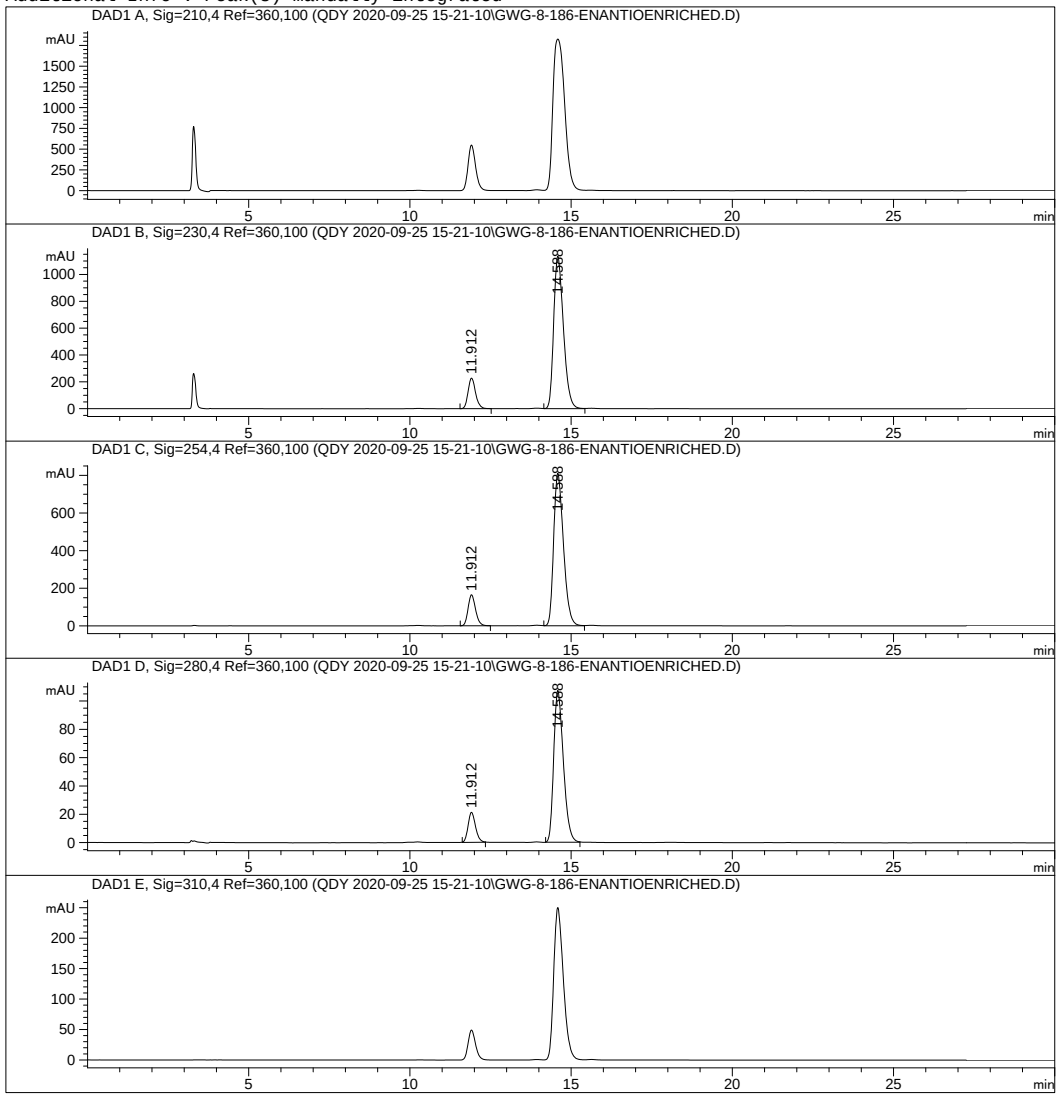
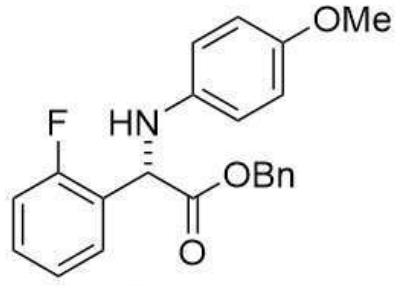
Data File C:\CHEM32\1\DATA\QDY 2020-09-25 15-21-10\GWG-8-186-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :  16
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 9/25/2020 8:59:00 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-25 15-21-10\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\OD-25-60.M
Last changed    : 9/17/2020 3:49:36 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-25 15-21-10\GWG-8-186-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.912 BB    0.2486 3677.56104  227.48489  13.3646
   2  14.588 VB    0.3249 2.38396e4  1135.78113  86.6354

Totals :                  2.75172e4  1363.26602



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.912 BB    0.2488 2667.91016  164.83203  13.4952
   2  14.588 VB    0.3262 1.71014e4   810.53961  86.5048

Totals :                  1.97693e4   975.37164



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.912 BB    0.2473  340.40387   21.20450  13.2456
   2  14.588 BB    0.3226 2229.53760  107.22606  86.7544

Totals :                  2569.94147  128.43056



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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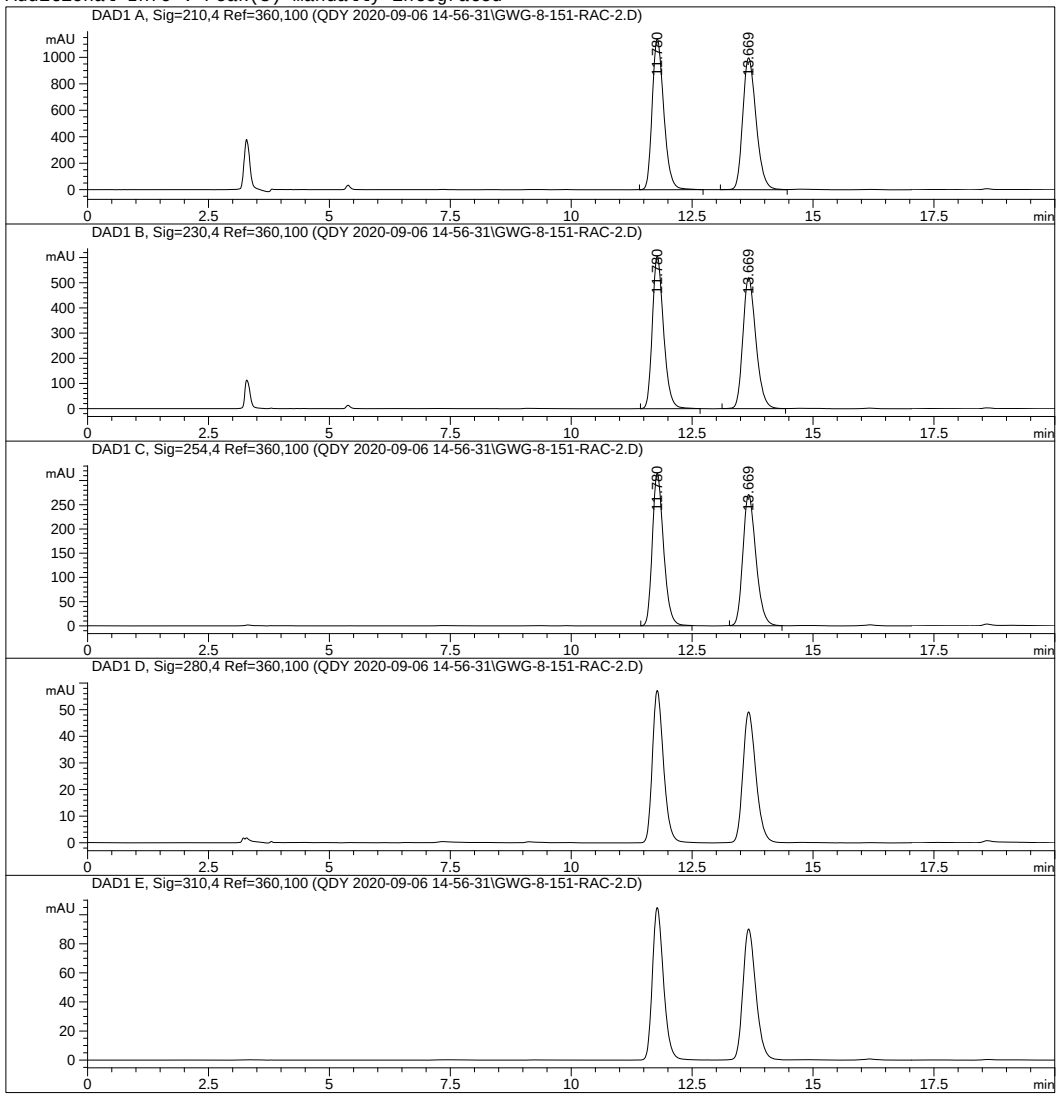
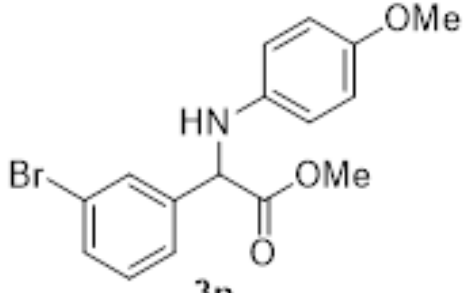
Data File C:\CHEM32\1\DATA\QDY 2020-09-06 14-56-31\GWG-8-151-RAC-2.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   6
Acq. Instrument : Instrument 1                    Location : Vial 54
Injection Date  : 9/6/2020 4:39:13 PM                  Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-06 14-56-31\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/6/2020 3:56:12 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-06 14-56-31\GWG-8-151-RAC-2.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.780 BB    0.2583 1.89660e4  1138.67407  49.7559
   2  13.669 BB    0.2981 1.91521e4   997.25116  50.2441

Totals :                  3.81181e4  2135.92523



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.780 BB    0.2457 9747.52539  605.99182  50.0312
   2  13.669 BB    0.2880 9735.36914  520.98975  49.9688

Totals :                  1.94829e4  1126.98157



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.780 BB    0.2478 5068.40430  314.83176  50.0123
   2  13.669 BB    0.2881 5065.91797  270.99857  49.9877

Totals :                  1.01343e4   585.83032



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

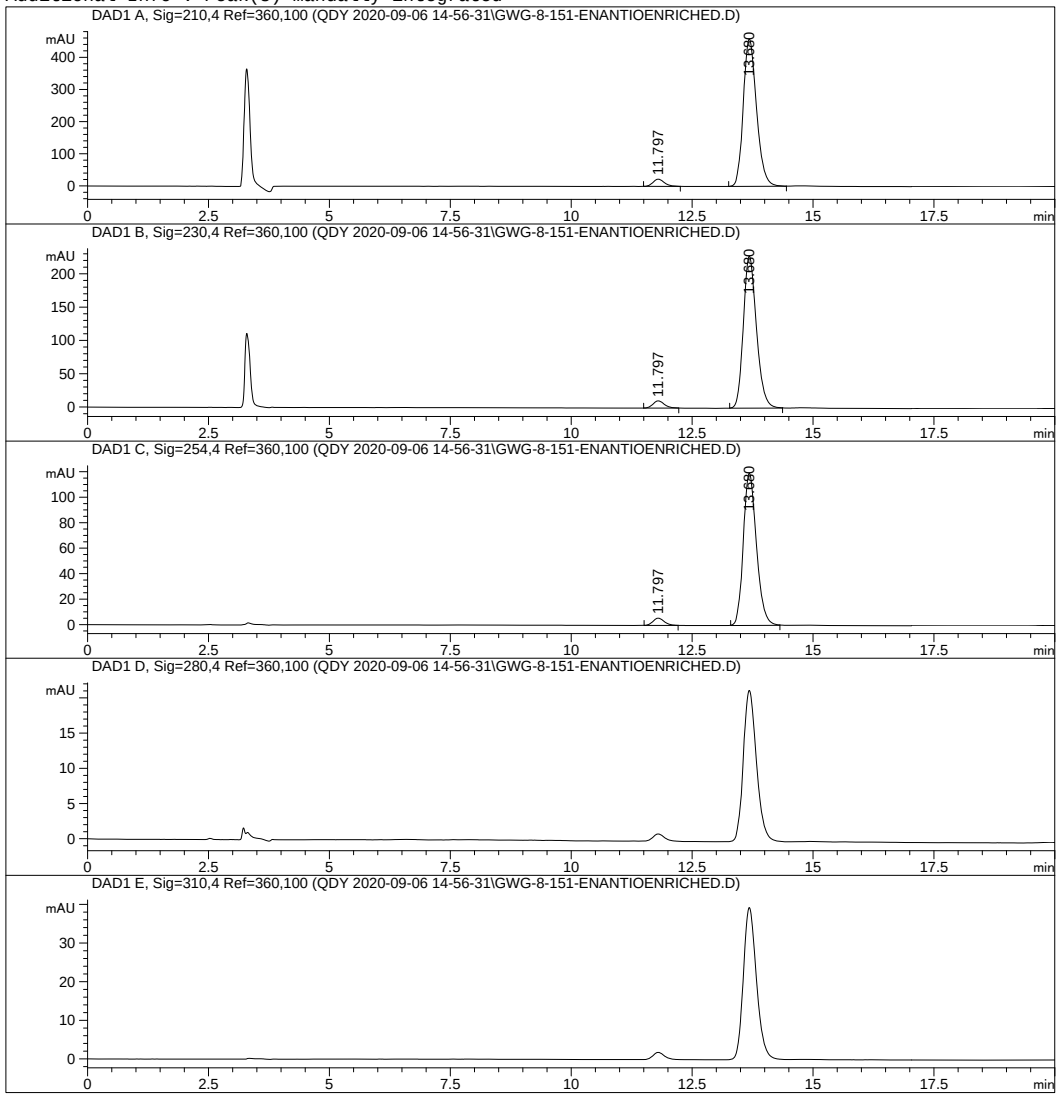


3p

racemic

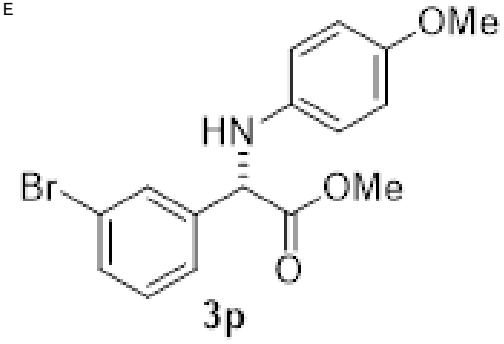
Data File C:\CHEM32\1\DATA\QDY 2020-09-06 14-56-31\GWG-8-151-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   4
Acq. Instrument : Instrument 1                    Location : Vial 55
Injection Date  : 9/6/2020 3:56:50 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-06 14-56-31\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 9/6/2020 3:56:12 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-06 14-56-31\GWG-8-151-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.797 BB    0.2498  368.12686   22.63284   4.0513
   2  13.680 BB    0.2940 8718.41699  458.25592  95.9487

Totals :                  9086.54385  480.88876



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.797 BB    0.2488  176.86041   10.93003   3.9553
   2  13.680 BB    0.2916 4294.61670  228.15088  96.0447

Totals :                  4471.47711  239.08091



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.797 BB    0.2466   92.93744    5.74776   3.9666
   2  13.680 BB    0.2918 2250.06421  119.43469  96.0334

Totals :                  2343.00165  125.18245



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** E
```

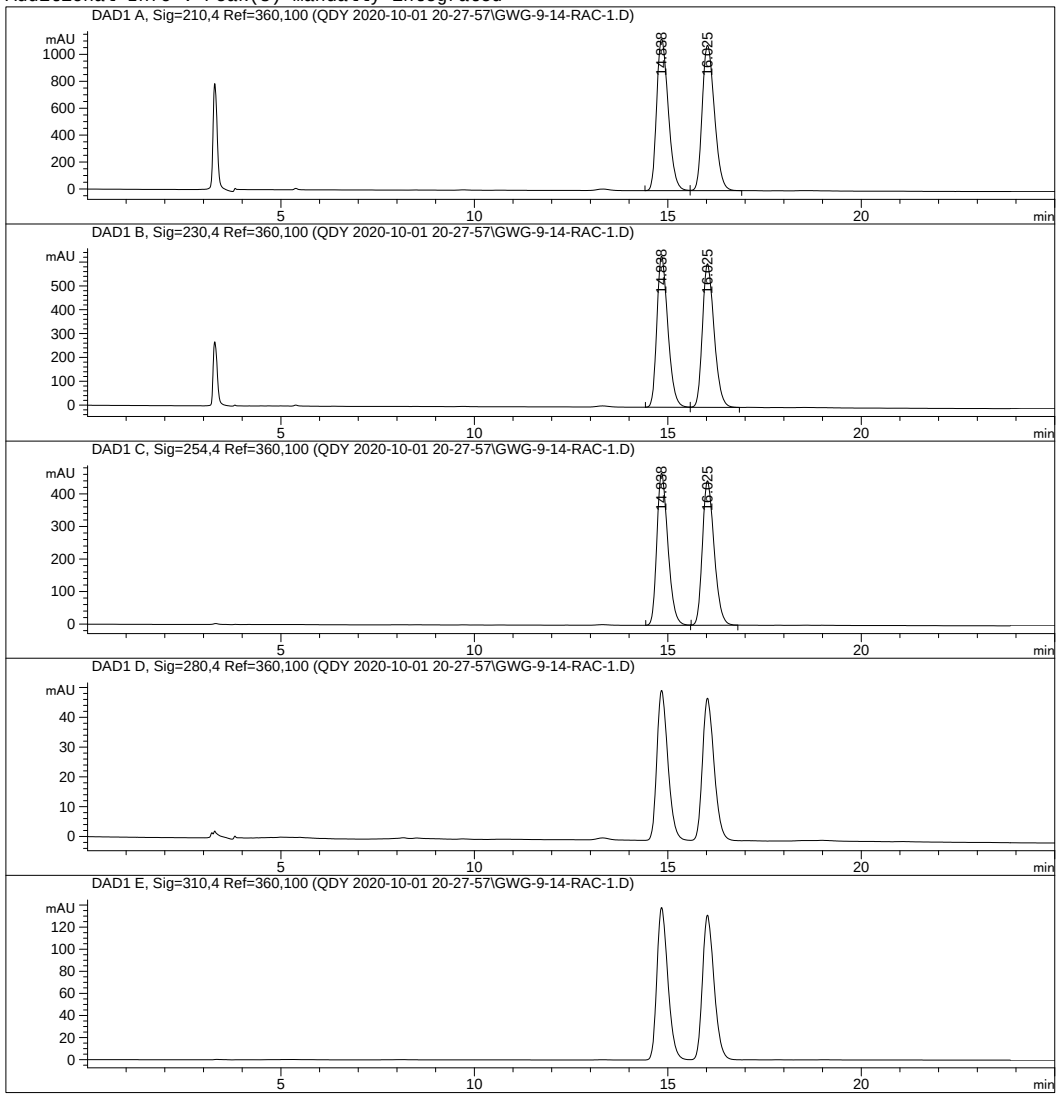


3p

enantioenriched

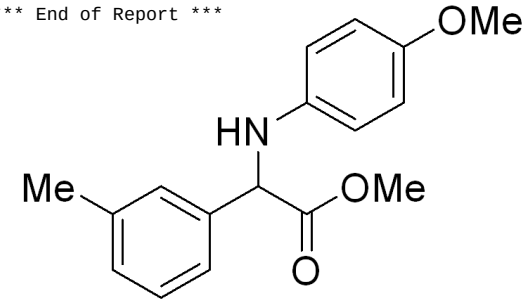
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-14-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   2
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 10/1/2020 8:40:46 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 9:01:47 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-14-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.838 BV    0.3273 2.35001e4  1126.83875  49.8194
   2  16.025 VB    0.3437 2.36705e4  1079.87891  50.1806

Totals :                  4.71706e4  2206.71765



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.838 BV    0.3056 1.25815e4   633.68262  49.9470
   2  16.025 VB    0.3224 1.26082e4   601.84320  50.0530

Totals :                  2.51896e4  1235.52582



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.838 BB    0.3067 9314.60254  467.08243  49.9373
   2  16.025 BB    0.3274 9338.00000  443.91196  50.0627

Totals :                  1.86526e4   910.99438



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

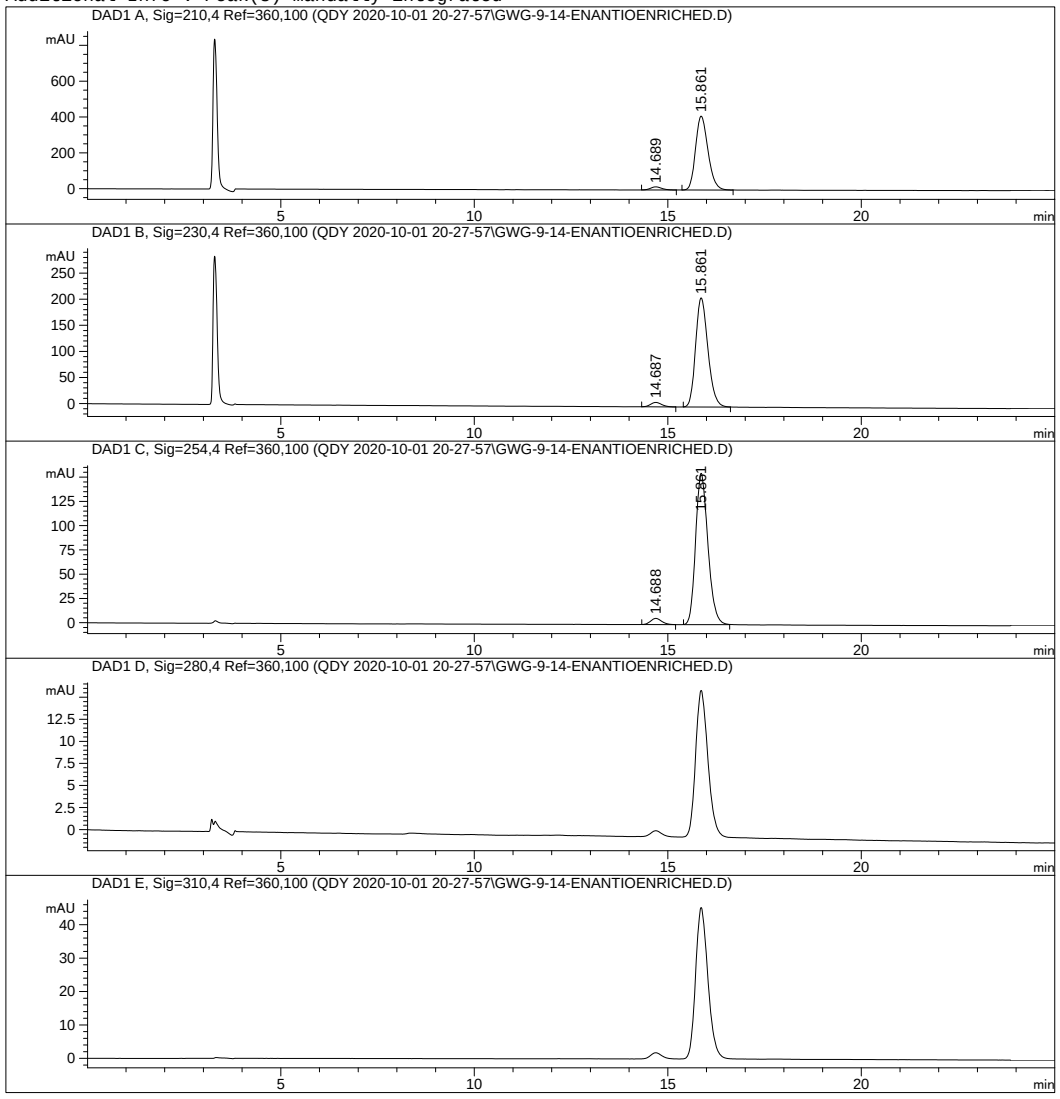


3q

racemic

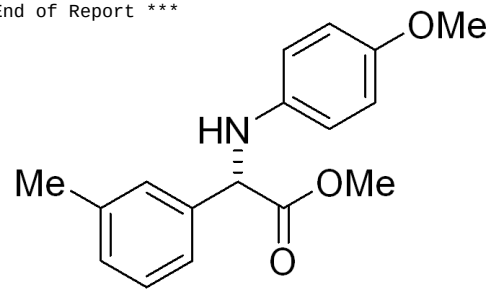
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-14-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
Acq. Operator   :                          Seq. Line :   3
Acq. Instrument : Instrument 1              Location : Vial 52
Injection Date  : 10/1/2020 9:06:45 PM           Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 9:01:47 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-14-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.689 BB    0.3072  347.31454   17.37383   3.6250
   2  15.861 BB    0.3450 9233.77246  412.78757  96.3750

Totals :                  9581.08701  430.16140



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.687 BB    0.3098  171.29361    8.54630   3.5665
   2  15.861 BB    0.3421 4631.50000  209.31664  96.4335

Totals :                  4802.79361  217.86294



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.688 BB    0.3098  128.17906    6.39562   3.5781
   2  15.861 BB    0.3425 3454.13062  155.90680  96.4219

Totals :                  3582.30968  162.30241



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```



3q

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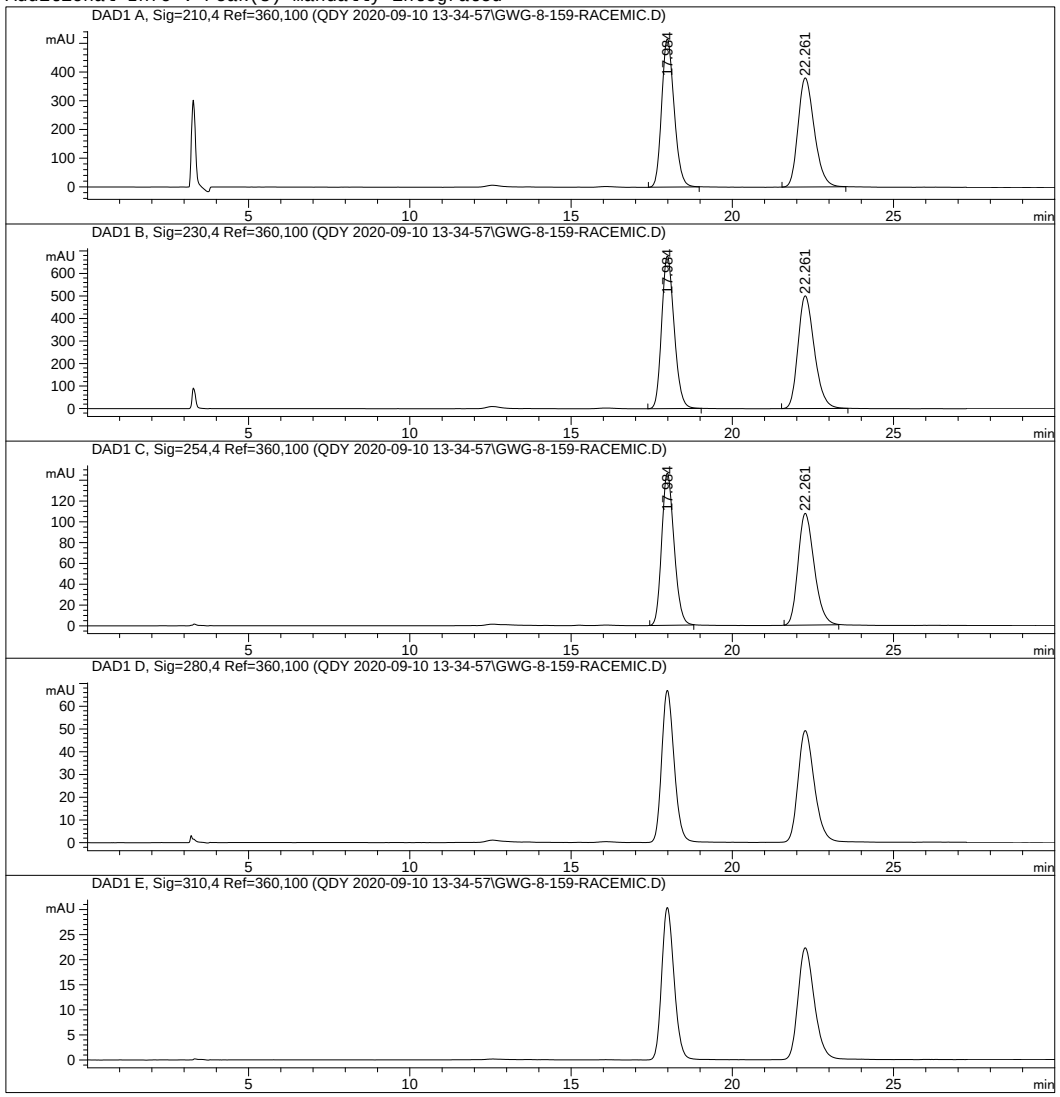
Instrument 1 10/1/2020 9:47:12 PM

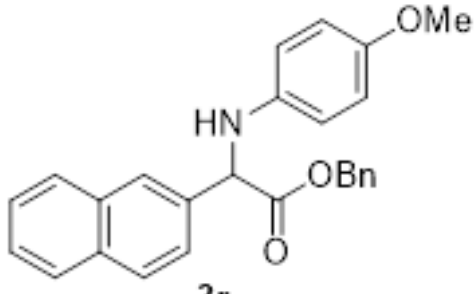
Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-159-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   3
Acq. Instrument : Instrument 1                  Location : Vial 52
Injection Date  : 9/10/2020 2:18:51 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\IC-05-30.M
Last changed    : 9/10/2020 1:46:58 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-159-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  17.984 BB    0.4141 1.37956e4   515.67871  50.8847
   2  22.261 BB    0.5409 1.33159e4   379.95822  49.1153

Totals :                  2.71114e4   895.63693



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  17.984 BB    0.4154 1.81871e4   676.97601  50.7853
   2  22.261 BB    0.5429 1.76246e4   500.43408  49.2147

Totals :                  3.58117e4  1177.41010



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  17.984 BB    0.4126 3891.23584  146.17824  50.9440
   2  22.261 BB    0.5389 3747.01807  107.43631  49.0560

Totals :                  7638.25391  253.61455



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

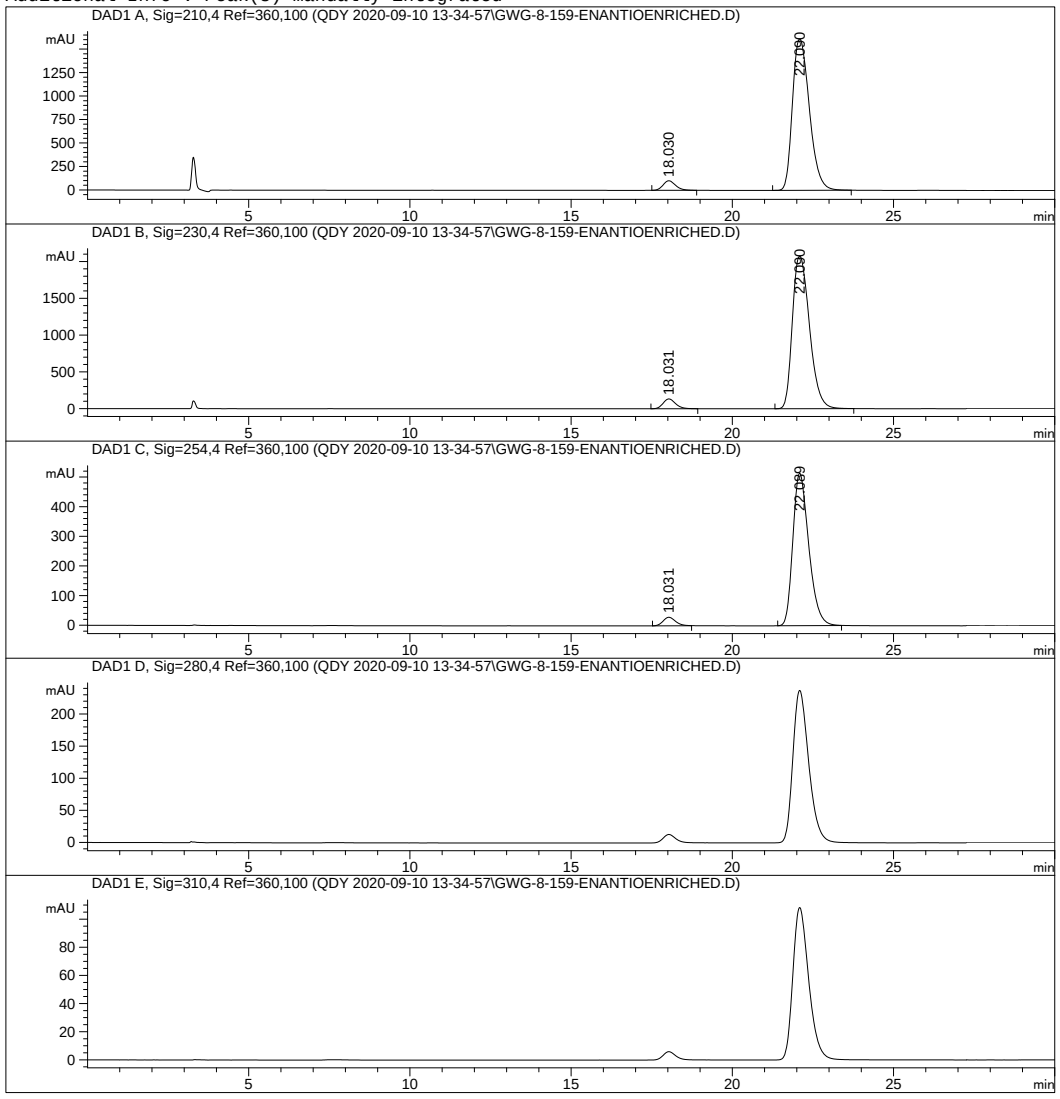


3r
racemic

Instrument 1 9/10/2020 3:17:20 PM

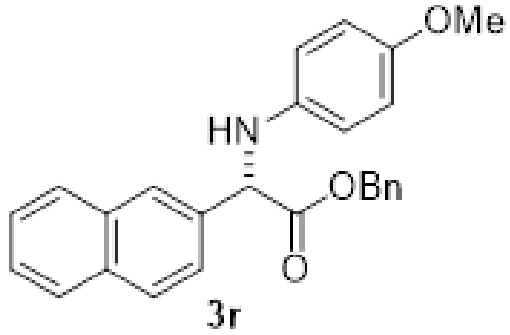
Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-159-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   2
Acq. Instrument : Instrument 1                    Location : Vial 51
Injection Date  : 9/10/2020 1:47:48 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\IC-05-30.M
Last changed    : 9/10/2020 1:46:58 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-10 13-34-57\GWG-8-159-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  18.030 BB    0.4132 2758.36768  102.10255   4.4779
   2  22.090 BB    0.5741 5.88417e4  1611.20361  95.5221

Totals :                  6.16001e4  1713.30617



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  18.031 BB    0.4143 3613.62866  134.14085   4.5129
   2  22.090 BB    0.5801 7.64596e4  2073.82007  95.4871

Totals :                  8.00732e4  2207.96092



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  18.031 BB    0.4130  770.92889   28.73931   4.1917
   2  22.089 BB    0.5299 1.76208e4   514.12024  95.8083

Totals :                  1.83918e4   542.85955



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                              ***
```



3r

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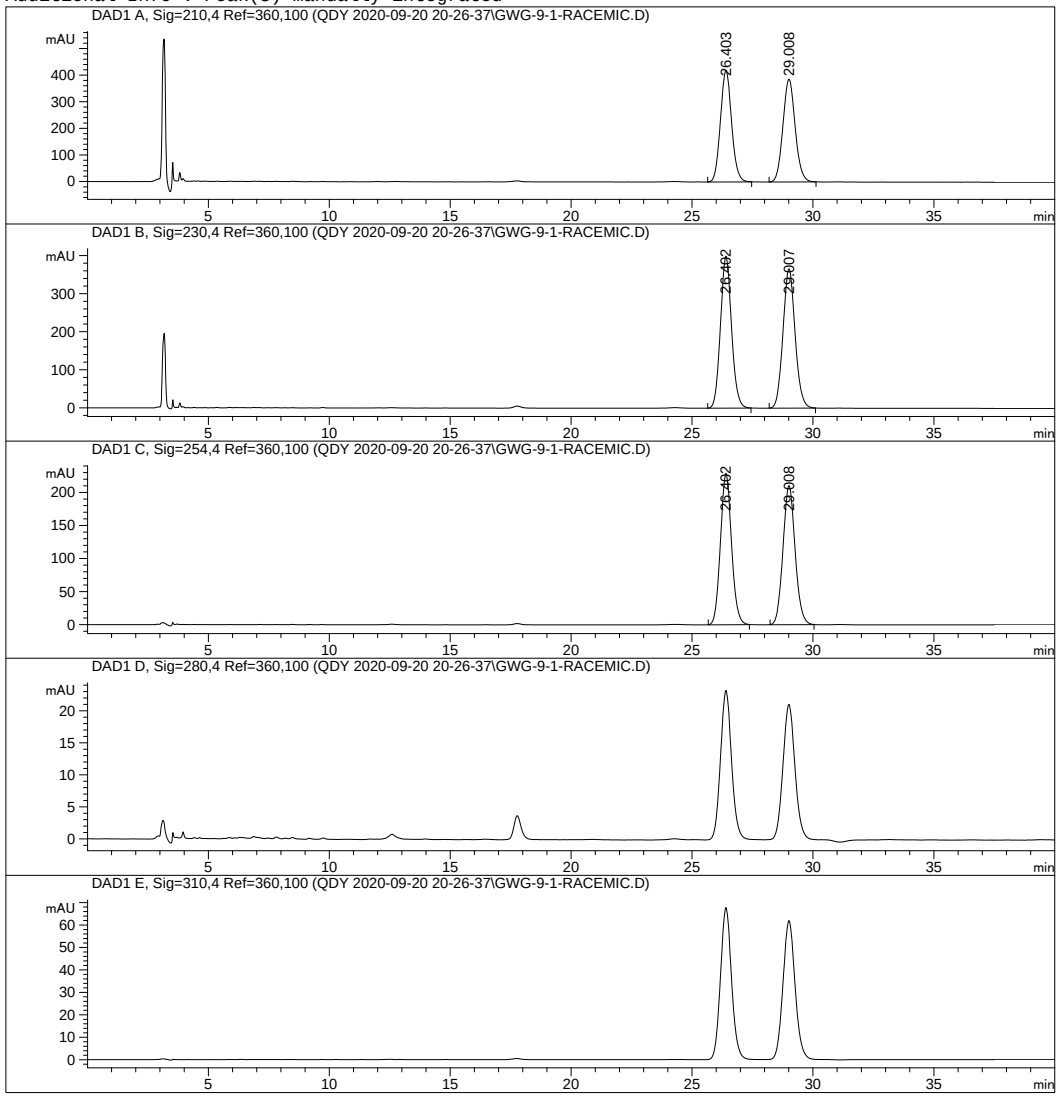
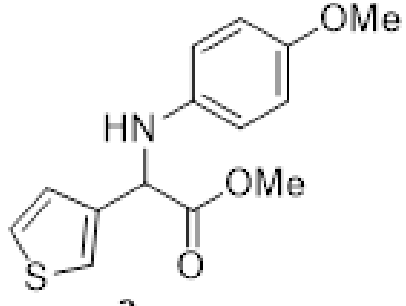
Data File C:\CHEM32\1\DATA\QDY 2020-09-20 20-26-37\GWG-9-1-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   3
Acq. Instrument : Instrument 1                  Location : Vial 58
Injection Date  : 9/20/2020 9:20:31 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-20 20-26-37\AD-05-40.M
Last changed    : 9/20/2020 8:38:36 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\OD-25-60.M
Last changed    : 9/17/2020 3:49:36 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-20 20-26-37\GWG-9-1-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.403 BB    0.4965 1.34850e4   420.08789  49.8311
   2  29.008 BB    0.5421 1.35764e4   386.19119  50.1689

Totals :                  2.70613e4   806.27908



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.402 BB    0.4889 1.26961e4   399.37640  49.9257
   2  29.007 BB    0.5360 1.27339e4   365.89413  50.0743

Totals :                  2.54301e4   765.27054



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.402 BB    0.4900 7304.78467  229.11505  49.8793
   2  29.008 BB    0.5373 7340.14648  210.27077  50.1207

Totals :                  1.46449e4   439.38582



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of
```



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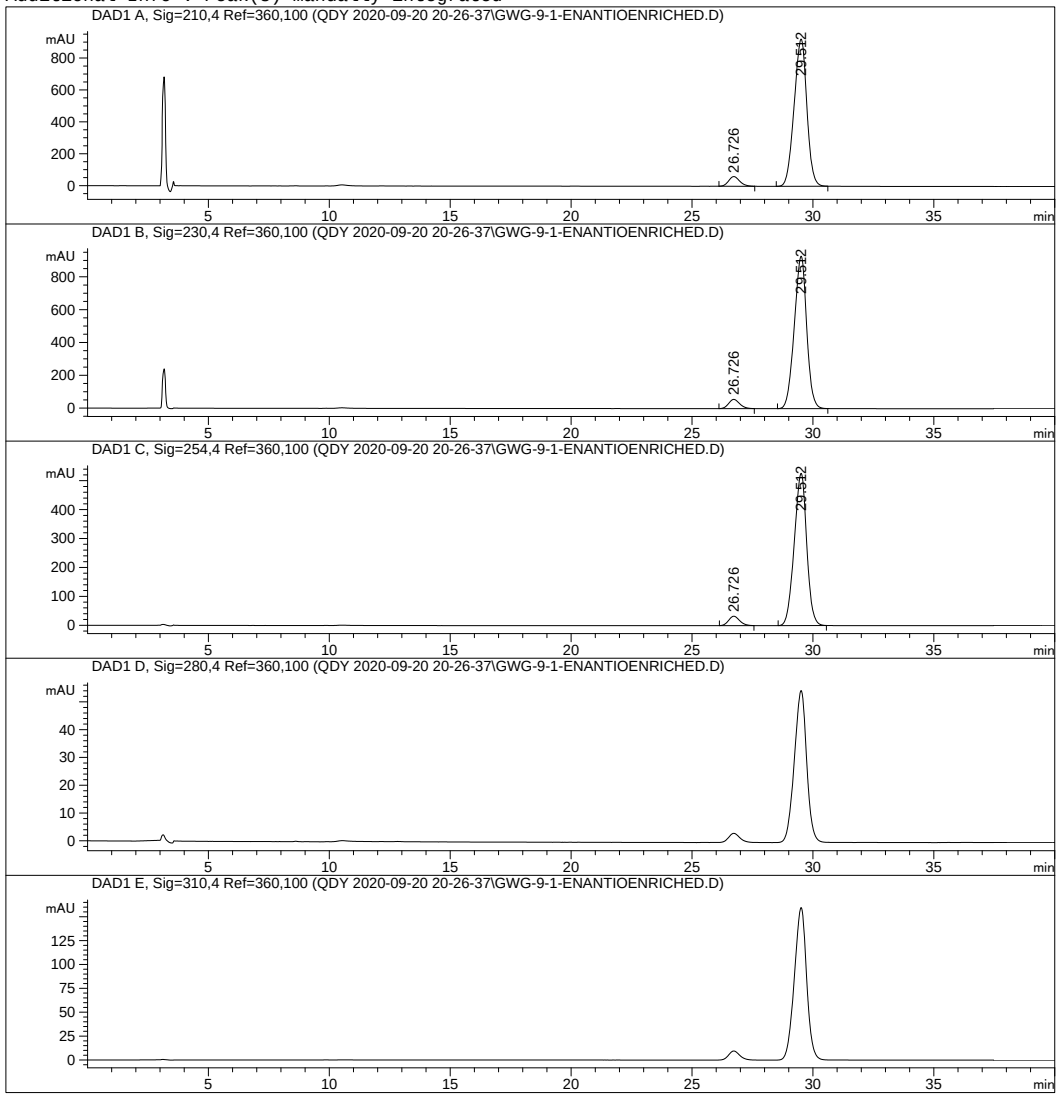
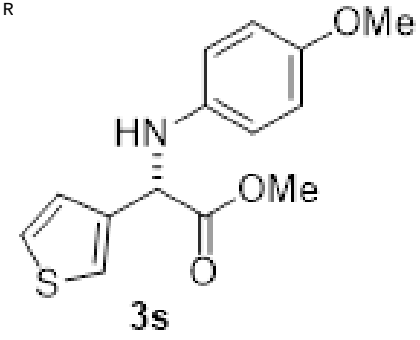
Data File C:\CHEM32\1\DATA\QDY 2020-09-20 20-26-37\GWG-9-1-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   2
Acq. Instrument : Instrument 1                    Location : Vial 59
Injection Date  : 9/20/2020 8:39:28 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-09-20 20-26-37\AD-05-40.M
Last changed    : 9/20/2020 8:38:36 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\OD-25-60.M
Last changed    : 9/17/2020 3:49:36 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-09-20 20-26-37\GWG-9-1-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.726 BB    0.4870 1945.73560   60.86244   5.4434
   2  29.512 BB    0.5672 3.37988e4   922.96783  94.5566

Totals :                  3.57446e4   983.83028



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.726 BB    0.4894 1792.55957   56.30274   5.1497
   2  29.512 BB    0.5446 3.30167e4   929.09381  94.8503

Totals :                  3.48093e4   985.39655



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  26.726 BB    0.4892 1038.13770   32.63188   5.2234
   2  29.512 BB    0.5512 1.88366e4   526.76526  94.7766

Totals :                  1.98748e4   559.39714



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of R
```

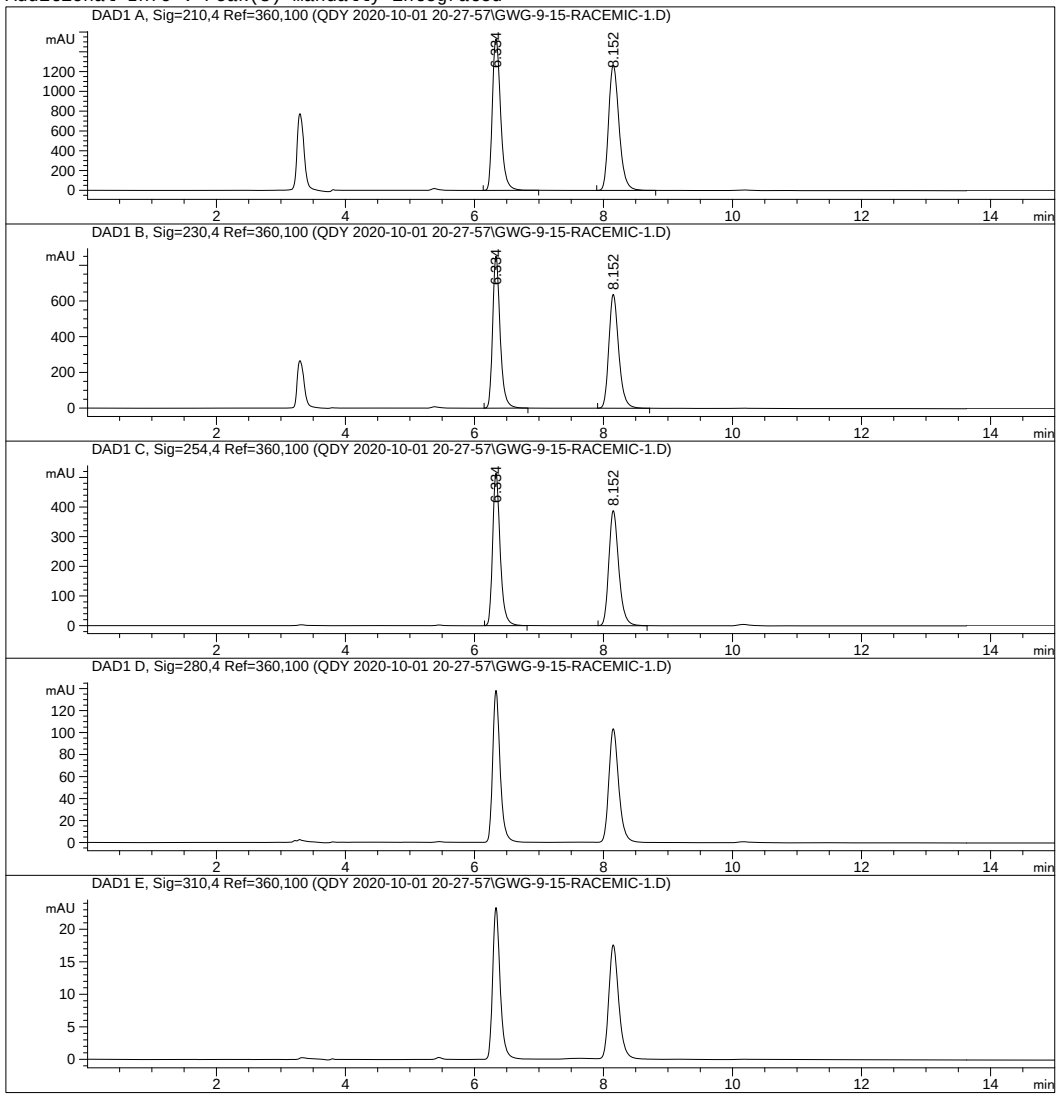


3s

enantioenriched

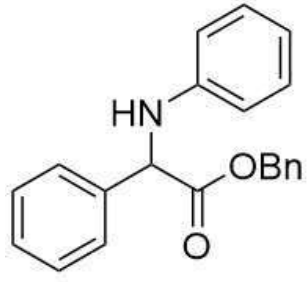
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-15-RACEMIC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   5
Acq. Instrument : Instrument 1                    Location : Vial 53
Injection Date  : 10/1/2020 9:43:53 PM                Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 9:55:16 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-15-RACEMIC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.334 BB    0.1381 1.36477e4  1529.98914  48.7856
   2   8.152 BB    0.1763 1.43271e4  1263.26636  51.2144

Totals :                   2.79748e4  2793.25549



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.334 BB    0.1216 6831.34424  851.50146  50.2574
   2   8.152 BB    0.1617 6761.37207  637.66229  49.7426

Totals :                   1.35927e4  1489.16376



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.334 BB    0.1224 4163.83057  514.40582  50.1080
   2   8.152 BB    0.1646 4145.88477  388.29019  49.8920

Totals :                   8309.71533  902.69601



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

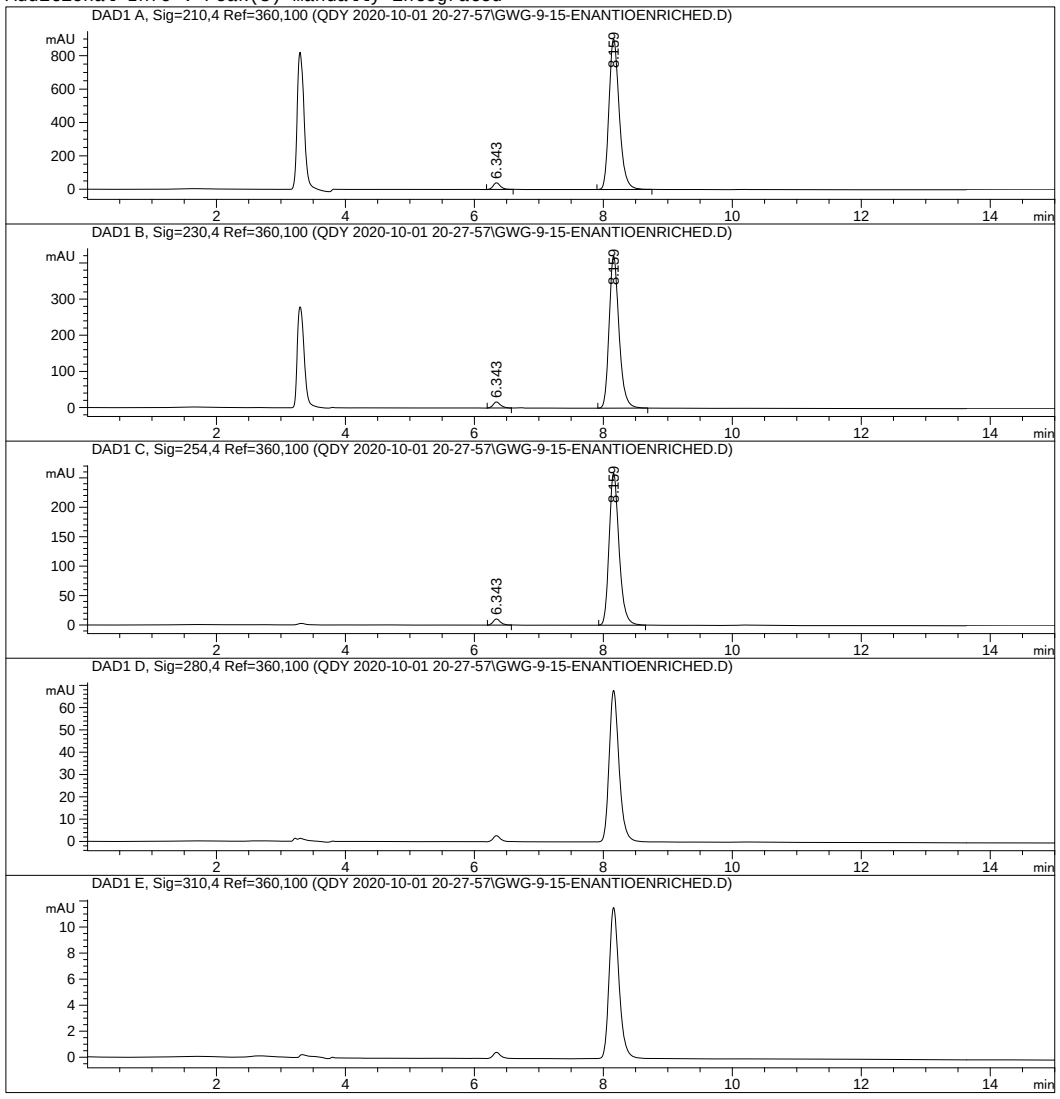


4a

racemic

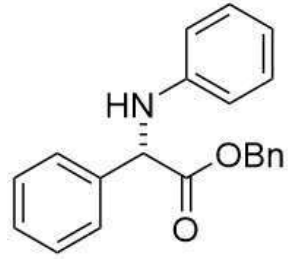
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-15-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   6
Acq. Instrument : Instrument 1                    Location : Vial 54
Injection Date  : 10/1/2020 9:59:52 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 9:55:16 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-15-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.343 BB    0.1221  315.79340   40.01955   3.0764
   2   8.159 BB    0.1687 9949.17090  901.94348  96.9236

Totals :                  1.02650e4   941.96303



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.343 BB    0.1207  129.99261   16.72466   2.8233
   2   8.159 BB    0.1641 4474.32471  420.53915  97.1767

Totals :                  4604.31732  437.26382



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.343 BB    0.1216   82.40293   10.49207   2.8988
   2   8.159 BB    0.1647 2760.25903  258.17502  97.1012

Totals :                  2842.66196  268.66709



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

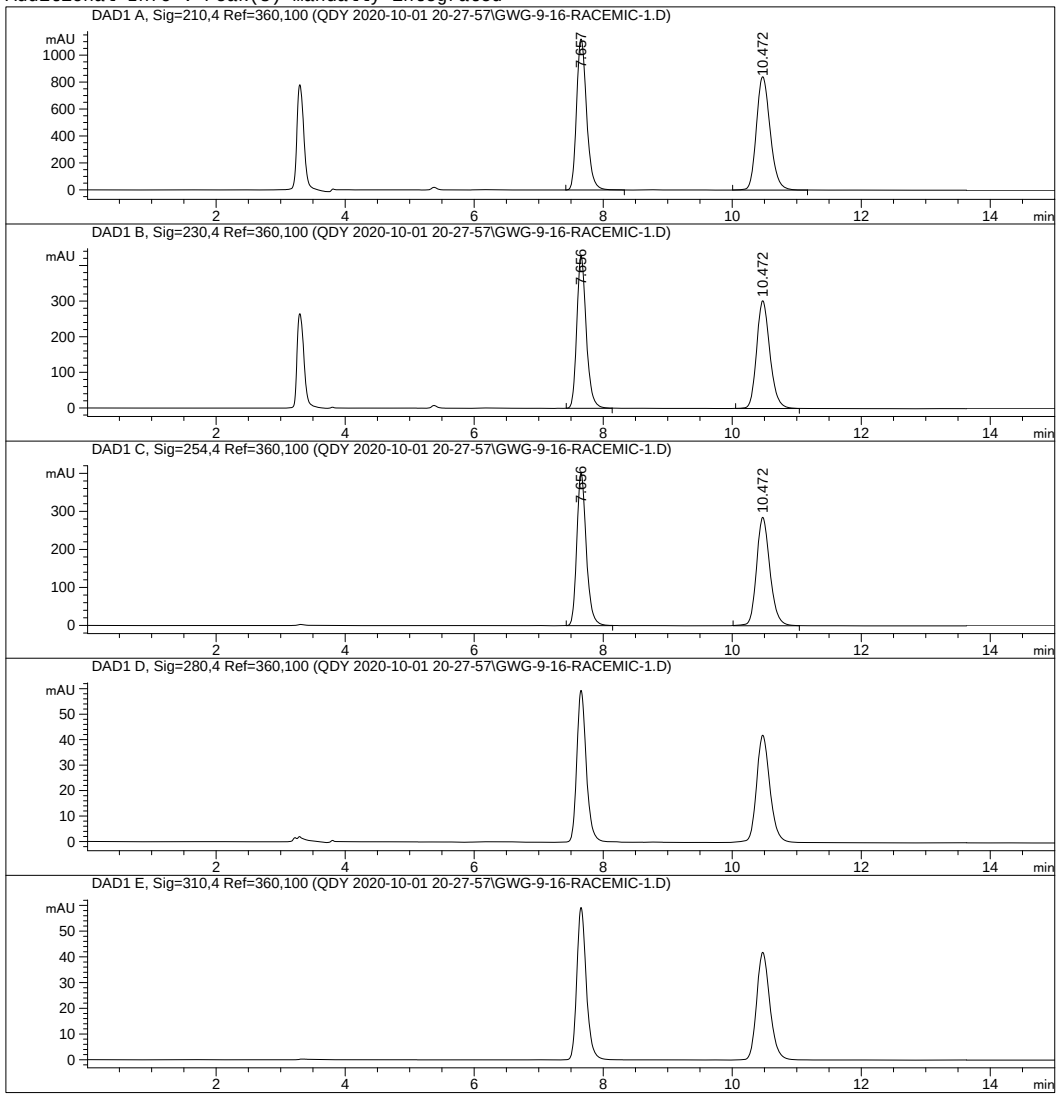


4a

enantioenriched

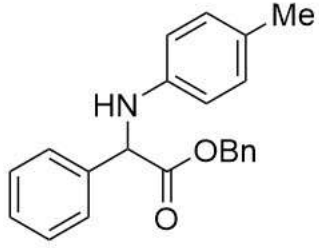
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-16-RACEMIC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   8
Acq. Instrument : Instrument 1                    Location : Vial 55
Injection Date  : 10/1/2020 10:26:58 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 10:40:13 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-16-RACEMIC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.657 BB    0.1651 1.20157e4  1120.98608  49.1311
   2  10.472 BB    0.2307 1.24407e4   840.58875  50.8689

Totals :                  2.44565e4  1961.57483



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.656 BB    0.1541 4329.91943  427.64667  50.0556
   2  10.472 BB    0.2186 4320.30322  302.51138  49.9444

Totals :                  8650.22266  730.15805



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.656 BB    0.1547 4080.04590  401.04770  49.8467
   2  10.472 BB    0.2221 4105.14941  284.98923  50.1533

Totals :                  8185.19531  686.03693



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

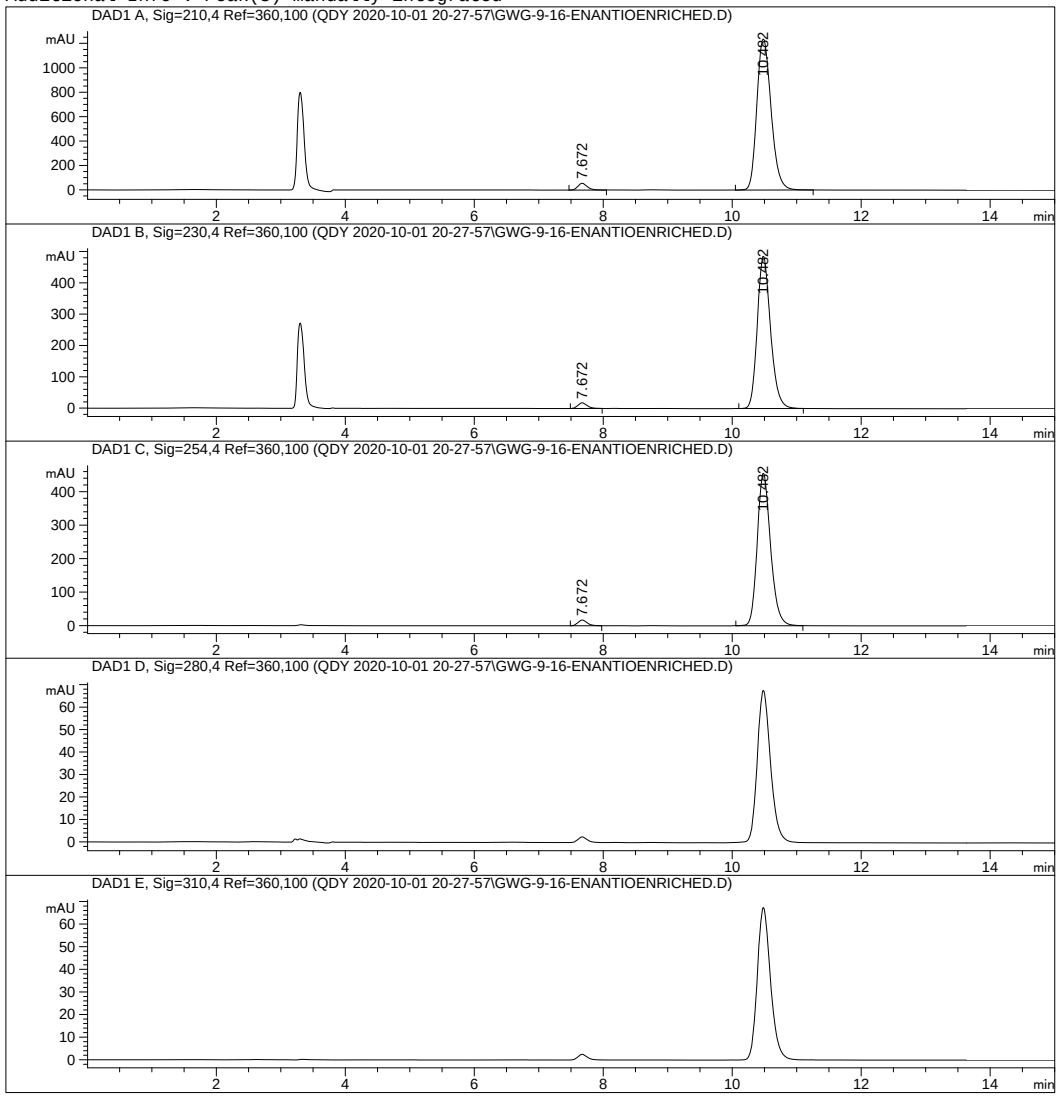


4b

racemic

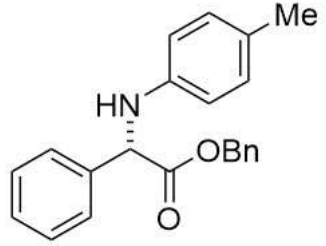
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-16-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   9
Acq. Instrument : Instrument 1                    Location : Vial 56
Injection Date  : 10/1/2020 10:43:00 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 10:40:13 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-16-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.672 BB    0.1534  557.14185   55.38483   2.8481
   2  10.482 BB    0.2413 1.90044e4  1236.79028  97.1519

Totals :                  1.95616e4  1292.17511



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.672 BB    0.1511  178.08618   18.04414   2.4920
   2  10.482 BB    0.2211 6968.24902  486.43753  97.5080

Totals :                  7146.33521  504.48167



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.672 BB    0.1517  170.65707   17.21195   2.5341
   2  10.482 BB    0.2222 6563.81445  455.22379  97.4659

Totals :                  6734.47153  472.43574



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

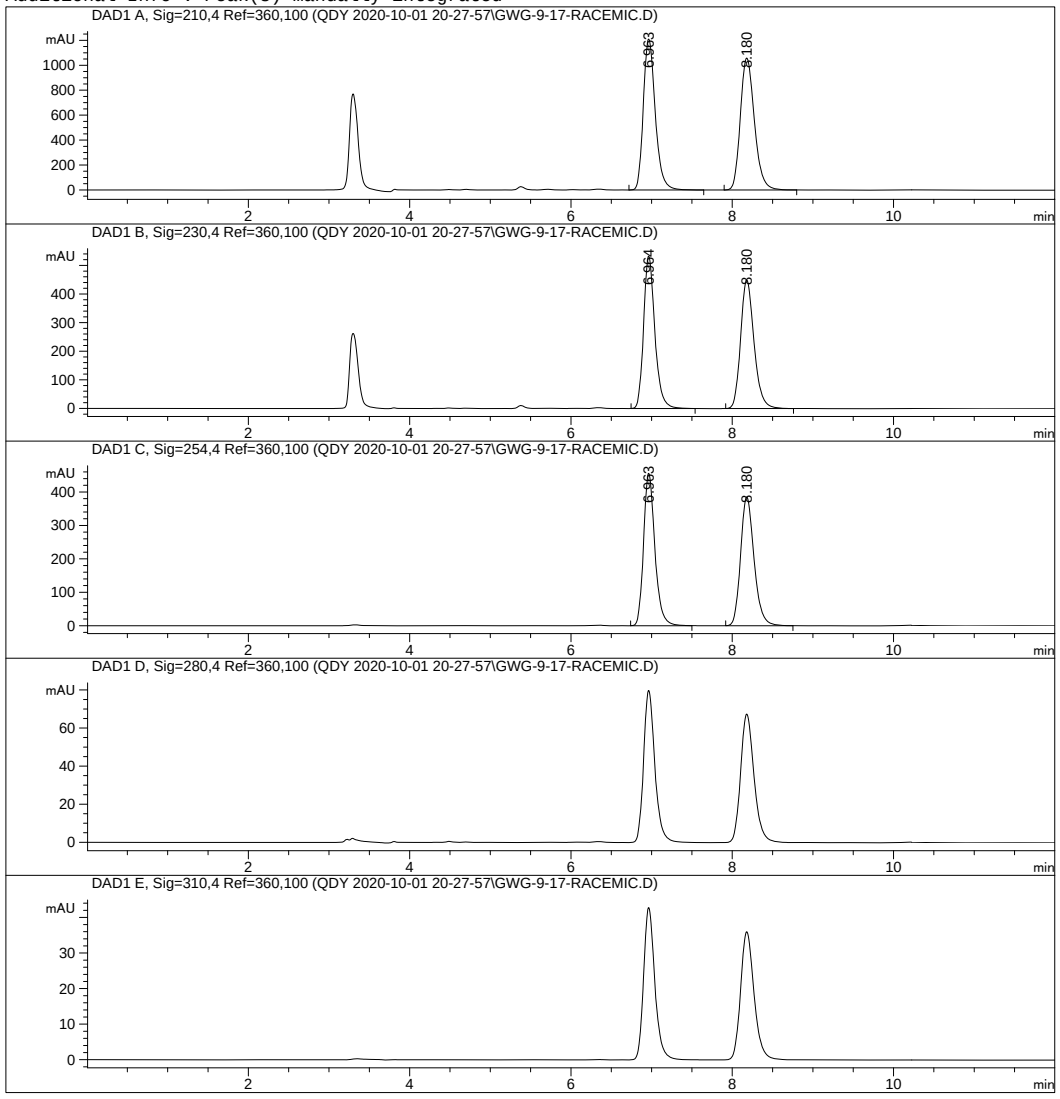


4b

enantioenriched

Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-17-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :  10
Acq. Instrument : Instrument 1                    Location : Vial 57
Injection Date  : 10/1/2020 10:59:00 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 11:07:50 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-17-RACEMIC.D
Sample Name:

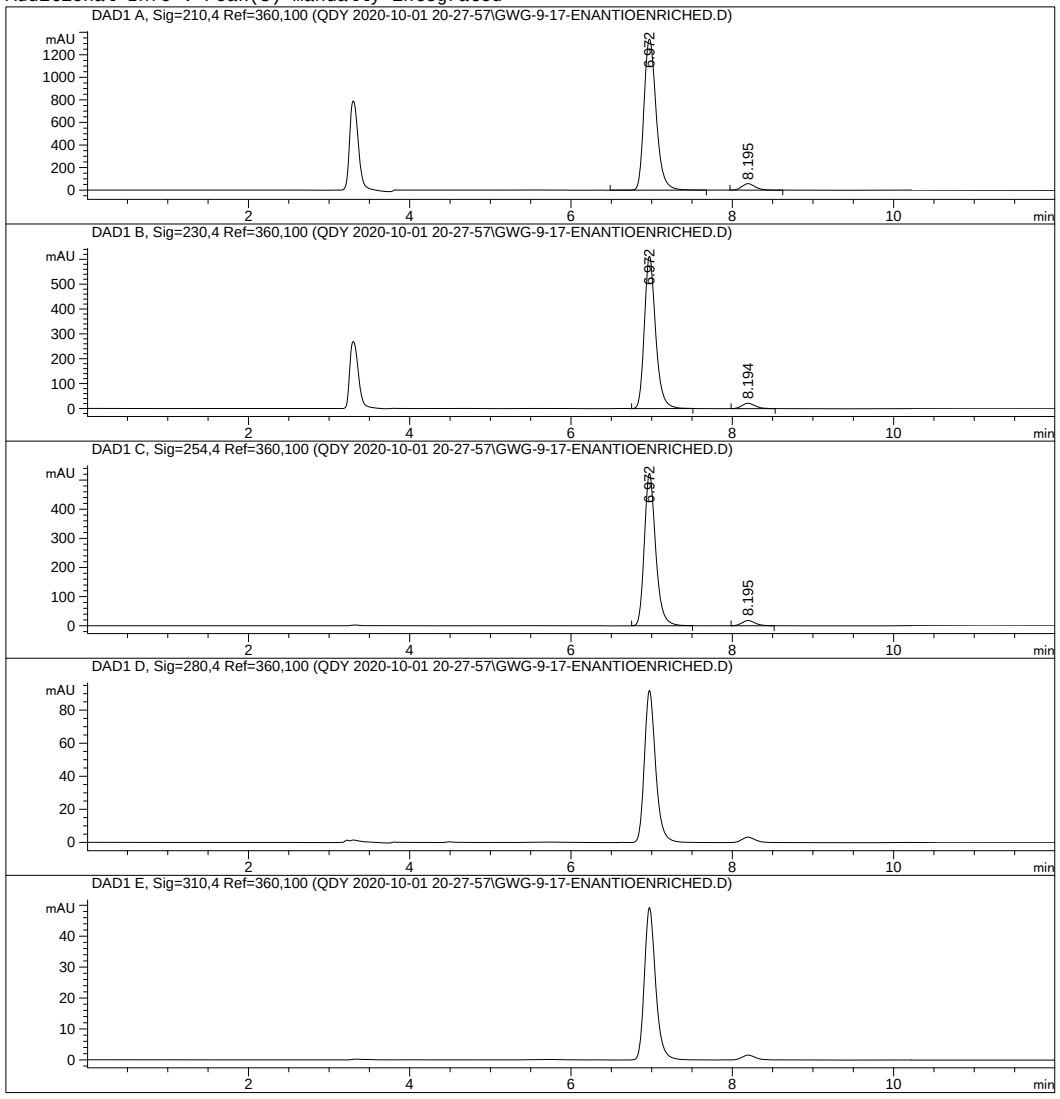
```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.963 BB    0.1600 1.24612e4  1211.26855  49.2895
   2   8.180 BB    0.1873 1.28205e4  1058.64917  50.7105

Totals :                  2.52817e4  2269.91772



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.964 BB    0.1488 5157.12793  533.17487  49.8173
   2   8.180 BB    0.1767 5194.95508  449.78061  50.1827

Totals :                  1.03521e4   982.95547



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.963 BB    0.1494 4438.32910  456.49121  49.7822
   2   8.180 BB    0.1774 4477.17041  385.66653  50.2178

Totals :                  8915.49951  842.15775



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

====================================
                          *** End of R
```

4c

racemic

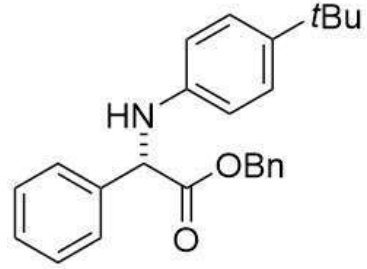
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-17-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  11
Acq. Instrument : Instrument 1                  Location : Vial 58
Injection Date  : 10/1/2020 11:12:01 PM              Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 11:07:50 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-17-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.972 VB    0.1642 1.40315e4  1340.08923  95.5149
   2   8.195 BB    0.1761  658.88342   57.33081   4.4851

Totals :                  1.46904e4  1397.42004



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.972 BB    0.1468 5927.17725  612.96295  96.0053
   2   8.194 BB    0.1745  246.62689   21.70793   3.9947

Totals :                  6173.80414  634.67088



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.972 BB    0.1476 5094.22949  523.39740  96.1209
   2   8.195 BB    0.1746  205.58678   18.08955   3.8791

Totals :                  5299.81627  541.48695



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

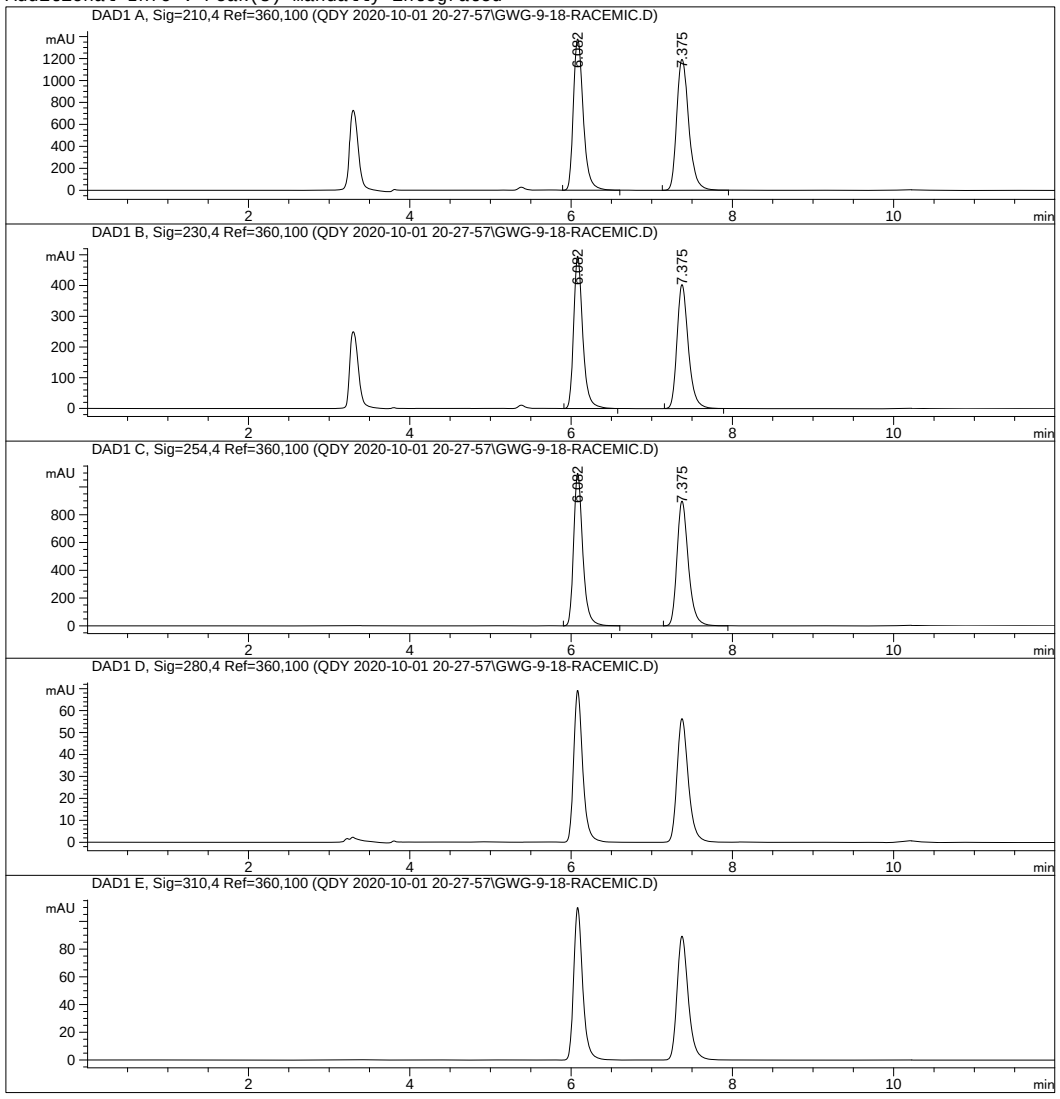


4c

enantioenriched

Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-18-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :  12
Acq. Instrument : Instrument 1                    Location : Vial 59
Injection Date  : 10/1/2020 11:25:00 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\IC-05-30.M
Last changed    : 10/1/2020 11:07:50 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 20-27-57\GWG-9-18-RACEMIC.D
Sample Name:

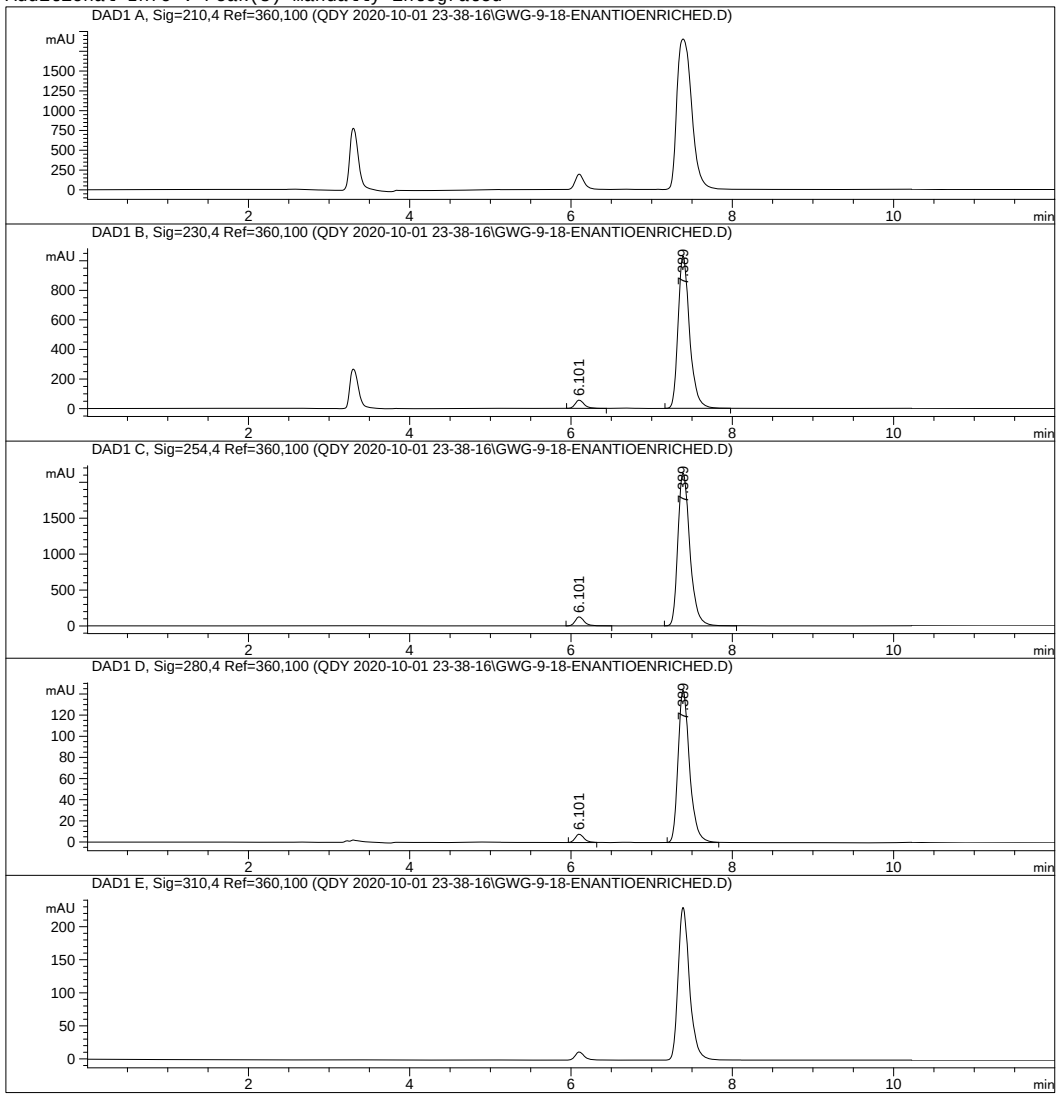

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.082 VB    0.1311 1.17102e4  1378.48584  48.5830
   2   7.375 BB    0.1613 1.23933e4  1192.46826  51.4170

Totals :                  2.41036e4  2570.95410



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.082 BB    0.1191 3877.08325  496.49344  49.5671
   2   7.375 BB    0.1500 3944.80884  403.79990  50.4329

Totals :                  7821.89209  900.29333



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.082 BB    0.1193 8601.14258 1099.64771  49.4164
   2   7.375 BB    0.1504 8804.28418  898.14313  50.5836

Totals :                  1.74054e4  1997.79083



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Re
```

4d

racemic

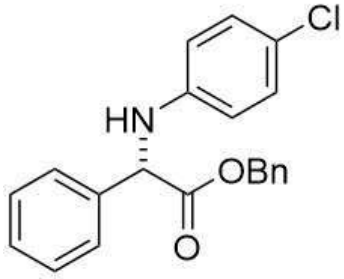
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-18-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   1
Acq. Instrument : Instrument 1                    Location : Vial 60
Injection Date  : 10/1/2020 11:40:01 PM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\IC-05-30.M
Last changed    : 10/1/2020 11:51:25 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-18-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.101 BB    0.1183  433.94809   56.05241   4.0848
   2   7.389 BB    0.1514 1.01895e4  1030.00378  95.9152

Totals :                  1.06235e4  1086.05620



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.101 BB    0.1185  975.40234  125.68806   4.2615
   2   7.389 BB    0.1603 2.19135e4  2125.99561  95.7385

Totals :                  2.28889e4  2251.68366



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.101 BB    0.1171   60.14719    7.87868   4.0573
   2   7.389 BB    0.1512 1422.28430  144.01433  95.9427

Totals :                  1482.43150  151.89301



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                          *** End of Report ***
```



4d

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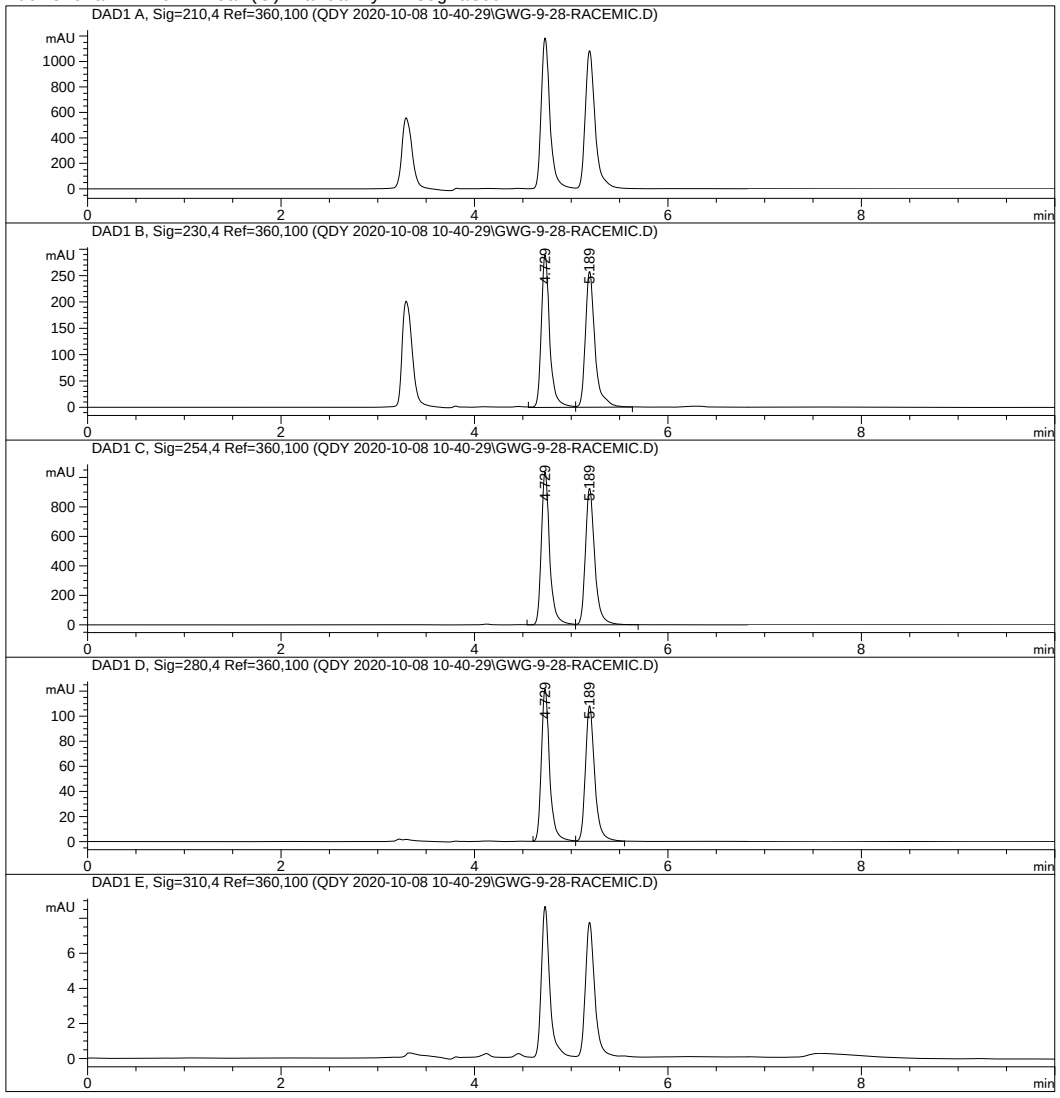
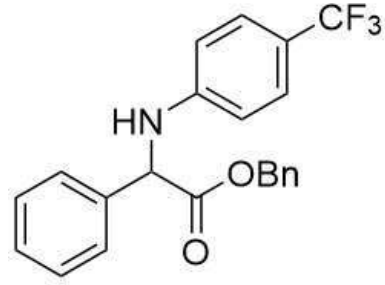
Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-28-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :  34
Acq. Instrument : Instrument 1                    Location : Vial 59
Injection Date  : 10/8/2020 10:48:11 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\IC-05-30.M
Last changed    : 10/8/2020 10:58:55 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/8/2020 11:20:53 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-28-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   4.729 VV    0.0901 1744.07788  290.20261  49.6506
   2   5.189 VB    0.1039 1768.62781  258.12665  50.3494

Totals :                   3512.70569  548.32925



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   4.729 VV    0.0896 6196.54443 1038.50464  50.0116
   2   5.189 VB    0.1020 6193.66455  926.55438  49.9884

Totals :                   1.23902e4  1965.05902



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   4.729 BV    0.0892  721.46814  121.59039  50.0470
   2   5.189 VB    0.1016  720.11432  108.26495  49.9530

Totals :                   1441.58246  229.85534



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

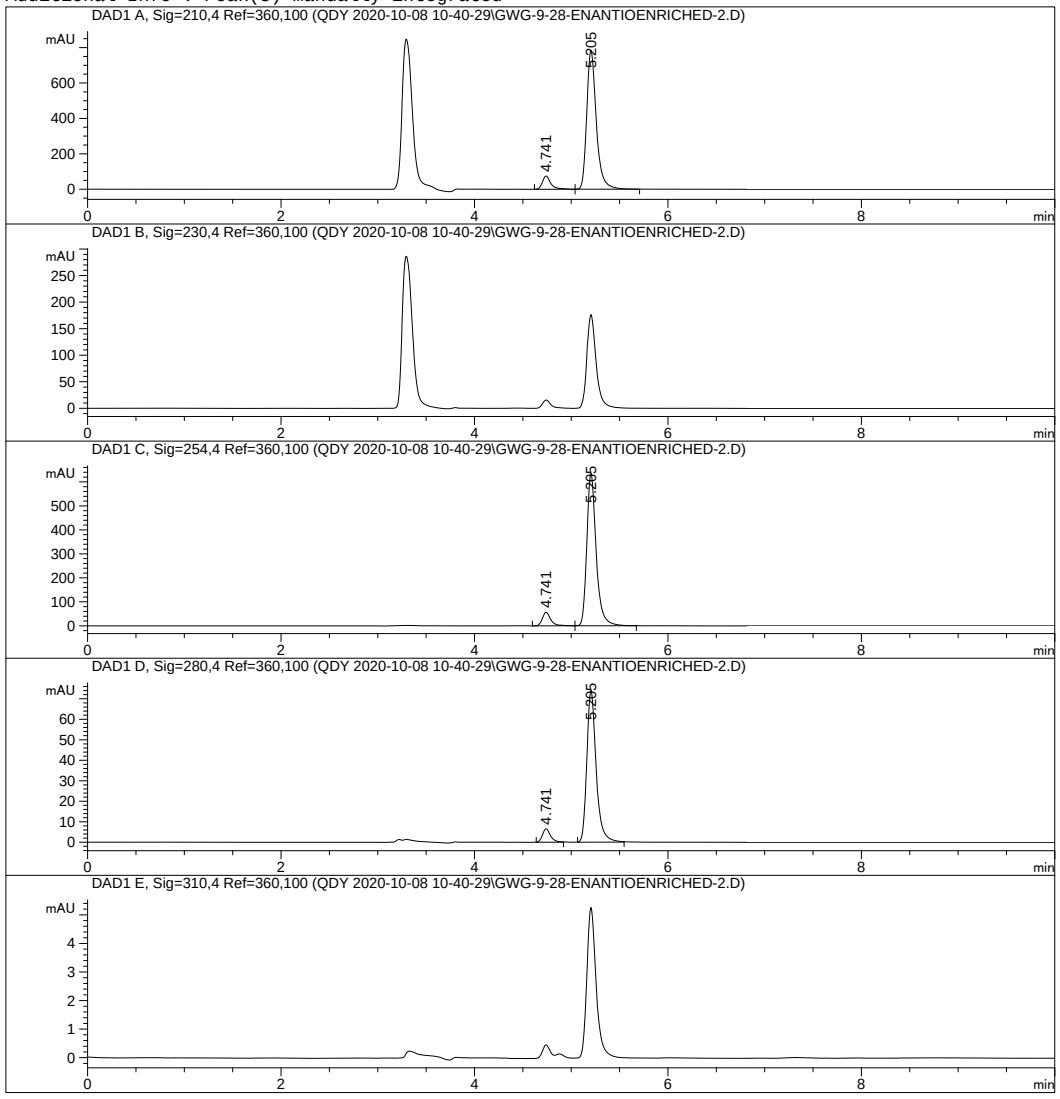


4e

racemic

Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-28-ENANTIOENRICHED-2.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :  36
Acq. Instrument : Instrument 1                    Location : Vial 60
Injection Date  : 10/8/2020 11:13:11 PM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\IC-05-10.M
Last changed    : 11/7/2016 7:56:52 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/8/2020 11:20:53 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-28-ENANTIOENRICHED-2.D
Sample Name:

```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   4.741 BV    0.0926  452.51440   74.78878   7.7596
   2   5.205 VB    0.1040 5379.14209  784.04279  92.2404

Totals :                   5831.65649  858.83157



Signal 2: DAD1 B, Sig=230,4 Ref=360,100


Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   4.741 VV    0.0918  338.96918   56.67956   7.3739
   2   5.205 VB    0.1020 4257.90576  636.47284  92.6261

Totals :                   4596.87494  693.15240



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   4.741 BB    0.0899   38.19249    6.56289   7.1650
   2   5.205 BB    0.1019  494.84897   74.13846  92.8350

Totals :                    533.04146   80.70135



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                          *** End of Repo
```

4e

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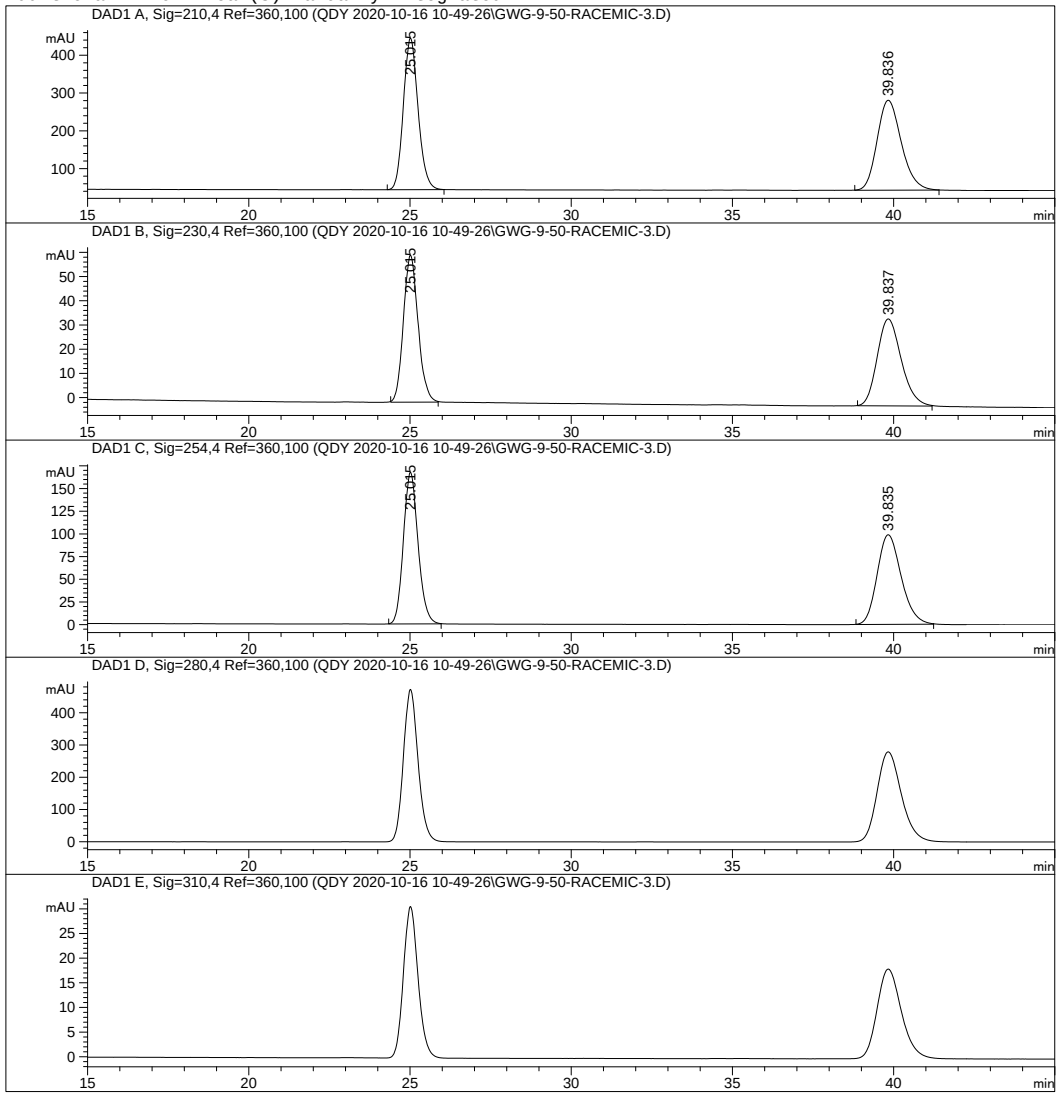
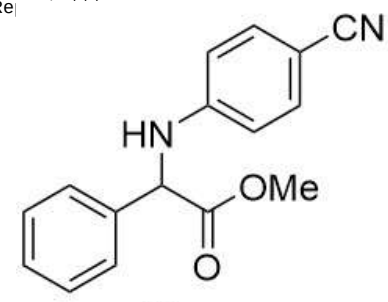
Data File C:\CHEM32\1\DATA\QDY 2020-10-16 10-49-26\GWG-9-50-RACEMIC-3.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   6
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 10/16/2020 1:05:22 PM              Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-16 10-49-26\AD-10-40.M
Last changed    : 10/16/2020 1:45:49 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/16/2020 2:40:18 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-16 10-49-26\GWG-9-50-RACEMIC-3.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  25.015 BB    0.4883 1.27346e4   401.24127  50.6222
   2  39.836 BB    0.8091 1.24215e4   237.90660  49.3778

Totals :                  2.51561e4   639.14787



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  25.015 BB    0.4871 1921.54822   60.73598  50.7475
   2  39.837 BB    0.8056 1864.94275   35.92773  49.2525

Totals :                  3786.49097   96.66372



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  25.015 BB    0.4869 5284.96729  167.14244  50.7601
   2  39.835 BB    0.8037 5126.69922   98.75027  49.2399

Totals :                  1.04117e4   265.89272



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Re
```

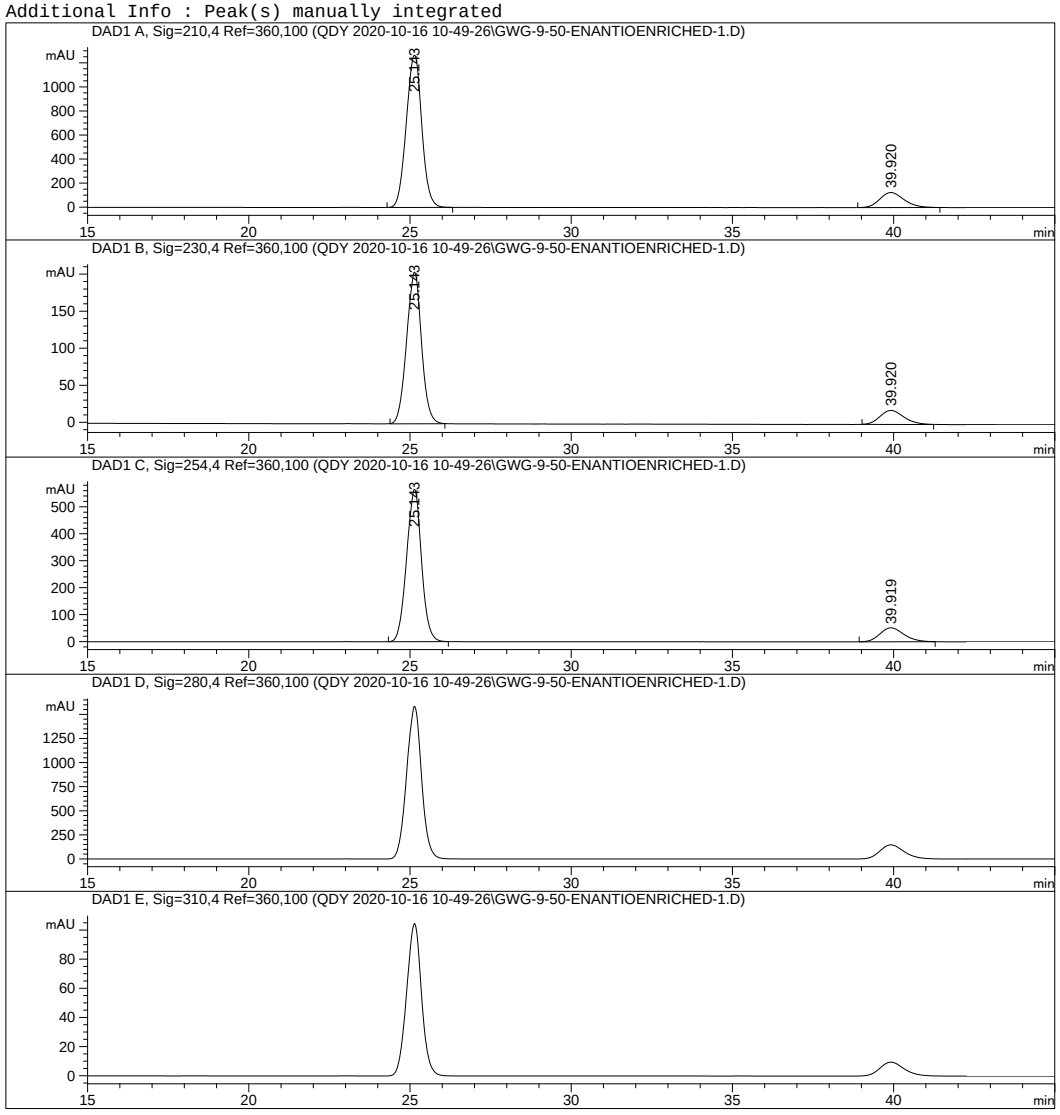


4f

racemic

Data File C:\CHEM32\1\DATA\QDY 2020-10-16 10-49-26\GWG-9-50-ENANTIOENRICHED-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   7
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 10/16/2020 1:51:21 PM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-16 10-49-26\AD-10-40.M
Last changed    : 10/16/2020 1:45:49 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/16/2020 2:40:18 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-16 10-49-26\GWG-9-50-ENANTIOENRICHED-1.D
Sample Name:

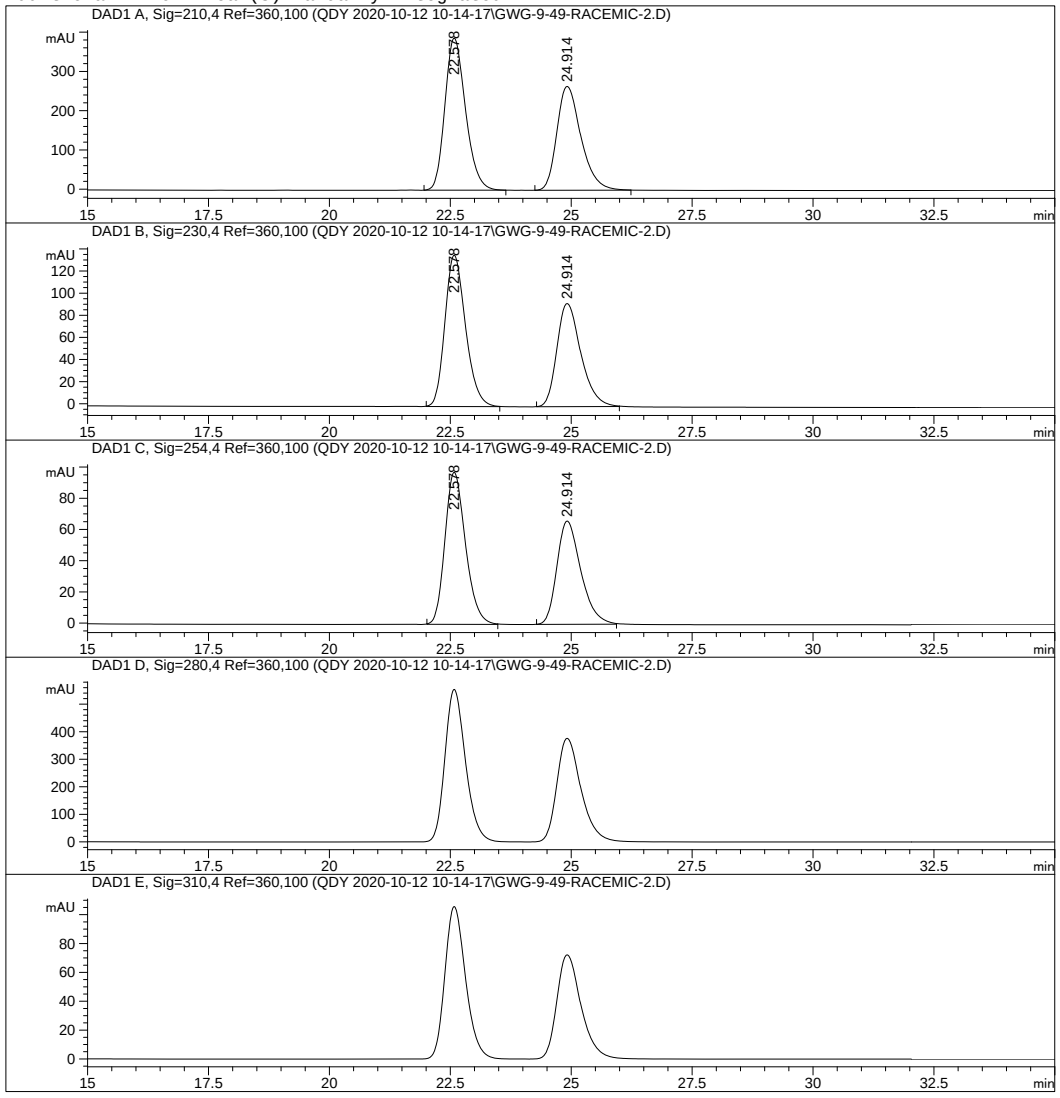
```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  25.143 BB    0.5213 4.22752e4  1266.79663  86.5899
   2  39.920 BB    0.8041 6547.10840  125.20229  13.4101

Totals :                  4.88223e4  1391.99892



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  25.143 BB    0.4979 6590.59668  204.57591  87.1296
   2  39.920 BB    0.7873  973.53345   18.82525  12.8704

Totals :                  7564.13013  223.40117



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  25.143 BB    0.4976 1.81984e4   565.31354  87.1024
   2  39.919 BB    0.8030 2694.72119   51.79638  12.8976

Totals :                  2.08931e4   617.10992



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Rep
```

4f

enantioenriched

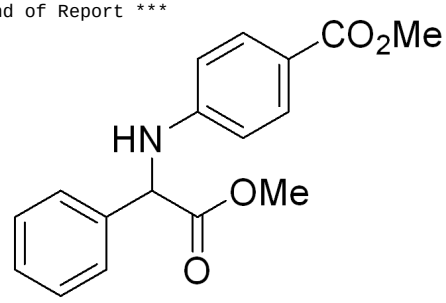
Data File C:\CHEM32\1\DATA\QDY 2020-10-12 10-14-17\GWG-9-49-RACEMIC-2.D
Sample Name:

```
==================================================================
Acq. Operator   :                          Seq. Line :  10
Acq. Instrument : Instrument 1              Location : Vial 53
Injection Date  : 10/12/2020 12:45:22 PM         Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-12 10-14-17\AD-10-40.M
Last changed    : 10/12/2020 12:44:30 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/12/2020 6:50:23 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-12 10-14-17\GWG-9-49-RACEMIC-2.D
Sample Name:

```
==================================================================
                      Area Percent Report
==================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  22.578 BB    0.4582 1.14975e4   387.41354  55.6122
   2  24.914 BB    0.5303 9176.86816  264.80151  44.3878

Totals :                  2.06743e4   652.21506



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  22.578 BB    0.4598 4057.88281  136.88879  55.7477
   2  24.914 BB    0.5283 3221.13623   93.42260  44.2523

Totals :                  7279.01904  230.31139



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  22.578 BB    0.4545 2877.55908   97.44232  55.8395
   2  24.914 BB    0.5270 2275.71240   66.20918  44.1605

Totals :                  5153.27148  163.65150



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==================================================================
                      *** End of Report ***
```

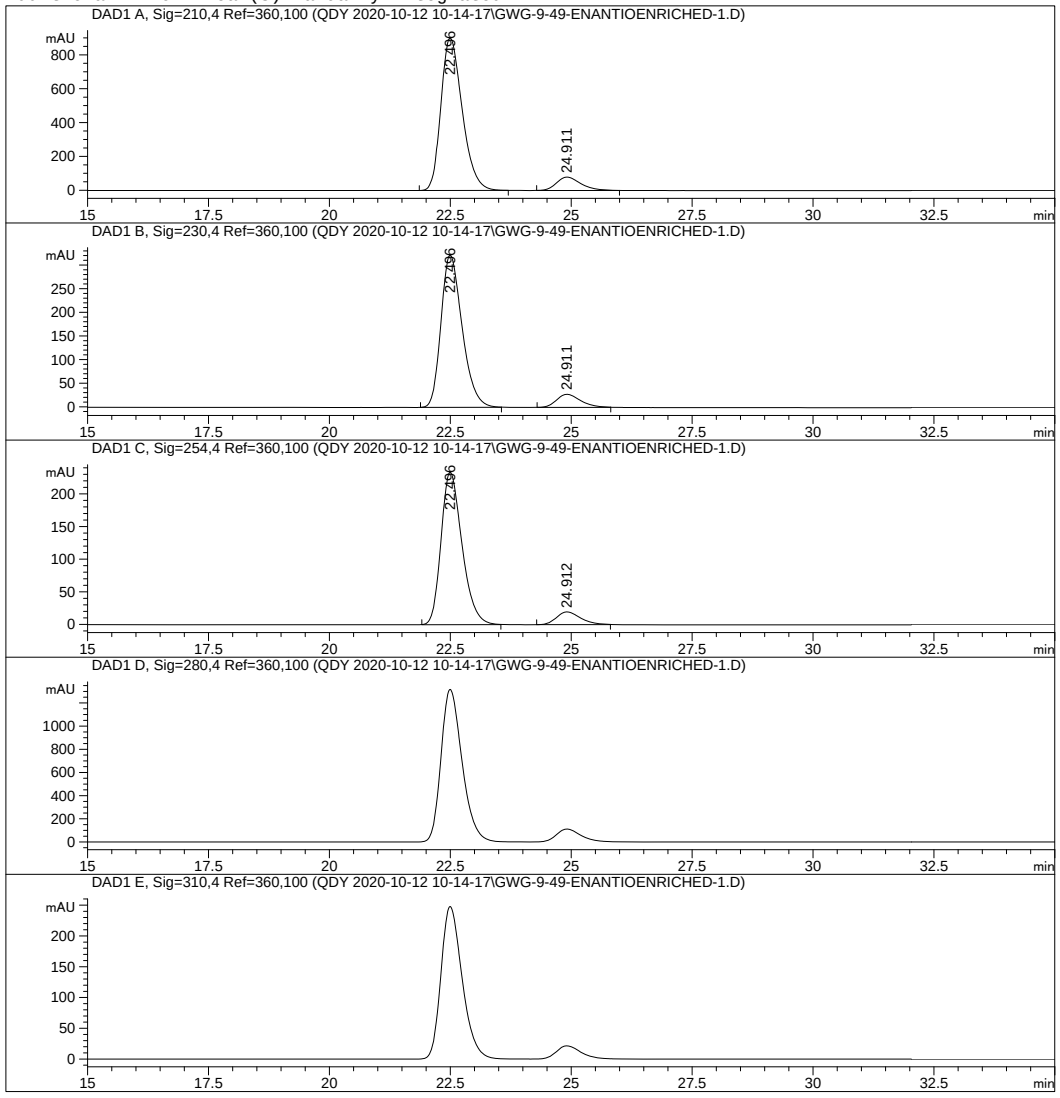


4g

racemic

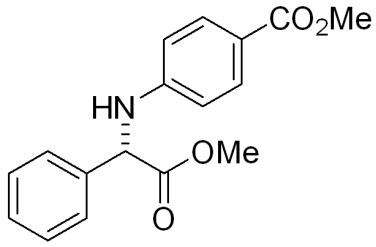
Data File C:\CHEM32\1\DATA\QDY 2020-10-12 10-14-17\GWG-9-49-ENANTIOENRICHED-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  11
Acq. Instrument : Instrument 1                  Location : Vial 54
Injection Date  : 10/12/2020 1:26:23 PM              Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-12 10-14-17\AD-10-40.M
Last changed    : 10/12/2020 12:44:30 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/12/2020 6:50:23 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-12 10-14-17\GWG-9-49-ENANTIOENRICHED-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  22.496 BB    0.4754 2.75897e4   900.68878  90.9044
   2  24.911 BB    0.5303 2760.54858   78.87841   9.0956

Totals :                  3.03503e4   979.56719



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  22.496 BB    0.4686 9791.88379  322.19498  91.0701
   2  24.911 BB    0.5295  960.14453   27.75984   8.9299

Totals :                  1.07520e4   349.95481



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  22.496 BB    0.4633 7030.71533  233.49910  91.2297
   2  24.912 BB    0.5332  675.89557   19.55760   8.7703

Totals :                  7706.61090  253.05670



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



4g

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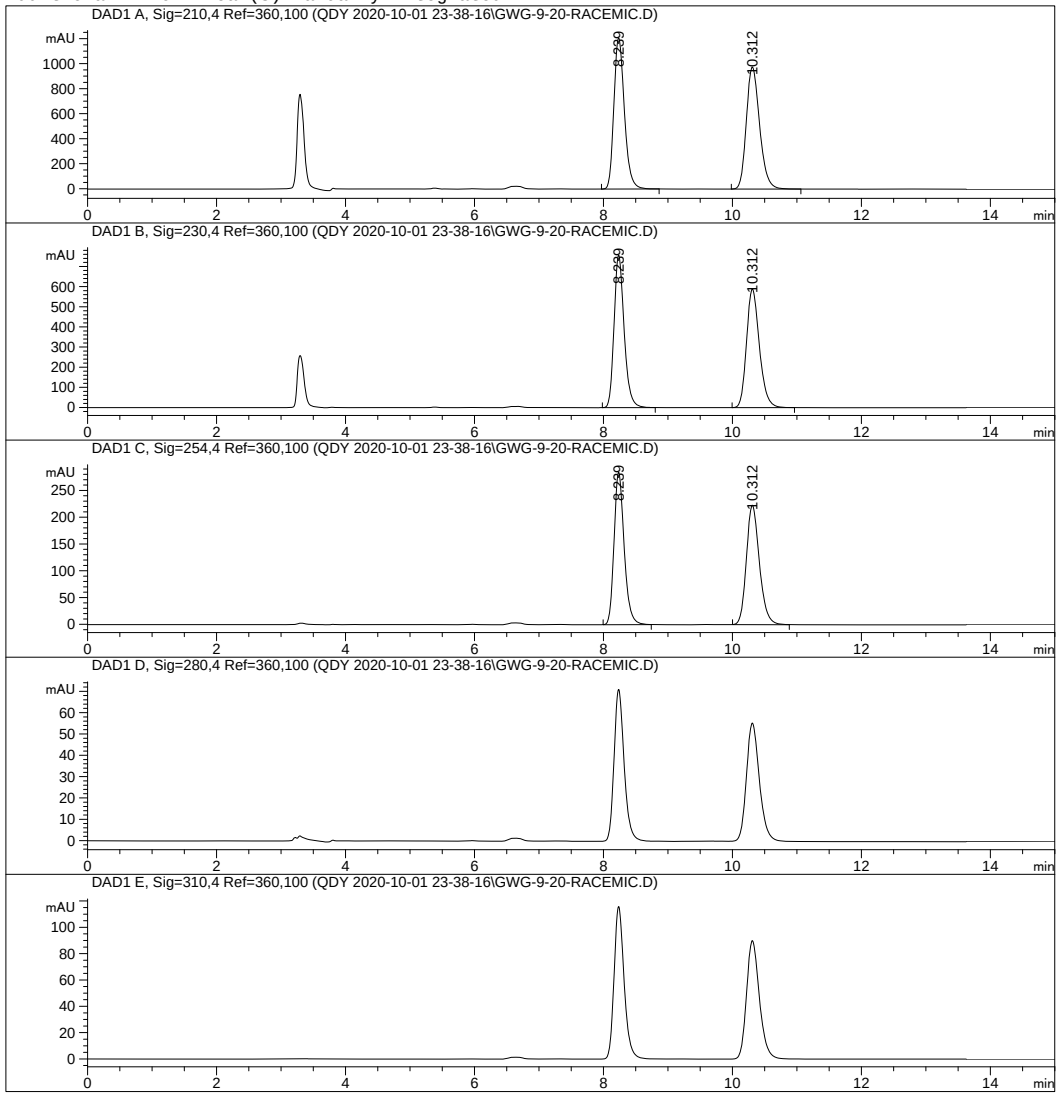
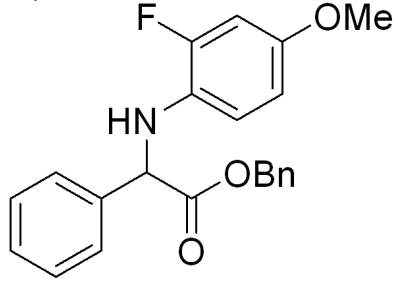
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-20-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   5
Acq. Instrument : Instrument 1                    Location : Vial 53
Injection Date  : 10/2/2020 12:31:59 AM              Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\IC-05-30.M
Last changed    : 10/2/2020 12:34:21 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/2/2020 12:28:20 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-20-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.239 BB    0.1761 1.36750e4  1207.74634  49.5051
   2  10.312 BB    0.2227 1.39485e4   976.15674  50.4949

Totals :                  2.76235e4  2183.90308



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.239 BB    0.1664 8206.73047  757.46893  50.0969
   2  10.312 BB    0.2137 8174.97217  589.74353  49.9031

Totals :                  1.63817e4  1347.21246



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.239 BB    0.1668 3095.15210  284.72644  49.7490
   2  10.312 BB    0.2155 3126.38110  223.12772  50.2510

Totals :                  6221.53320  507.85416



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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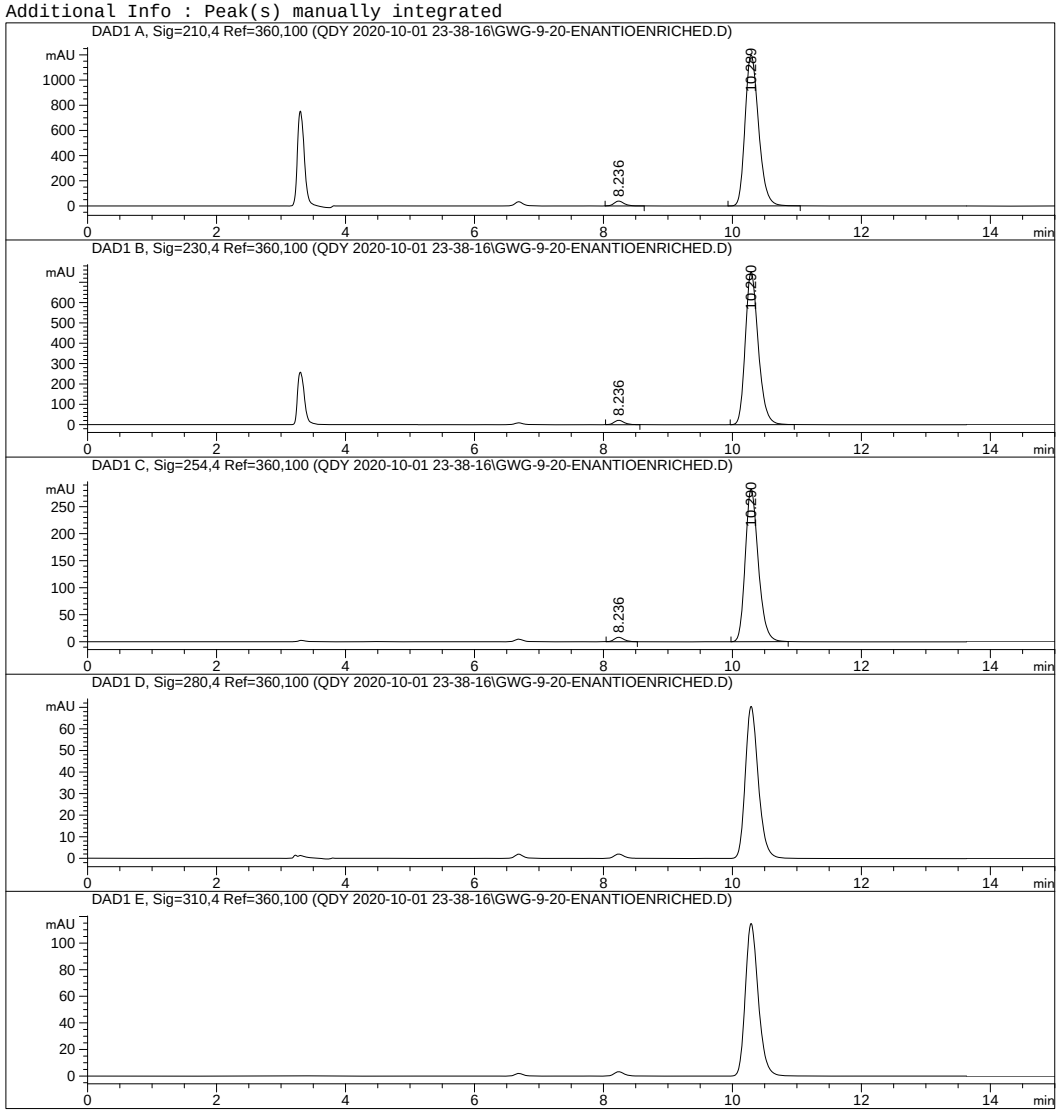
racemic

Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-20-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   6
Acq. Instrument : Instrument 1                  Location : Vial 54
Injection Date  : 10/2/2020 1:02:59 AM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\IC-05-30.M
Last changed    : 10/2/2020 12:34:21 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/2/2020 12:28:20 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-20-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.236 BB    0.1671  422.43765   38.78504   2.3595
   2  10.289 BB    0.2261 1.74811e4  1198.86145  97.6405

Totals :                  1.79035e4  1237.64649



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.236 BB    0.1657  232.87108   21.61278   2.1774
   2  10.290 BB    0.2147 1.04619e4   750.01025  97.8226

Totals :                  1.06948e4   771.62303



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.236 BB    0.1653   88.54564    8.24537   2.1872
   2  10.290 BB    0.2156 3959.88013  282.36038  97.8128

Totals :                  4048.42577  290.60575



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```

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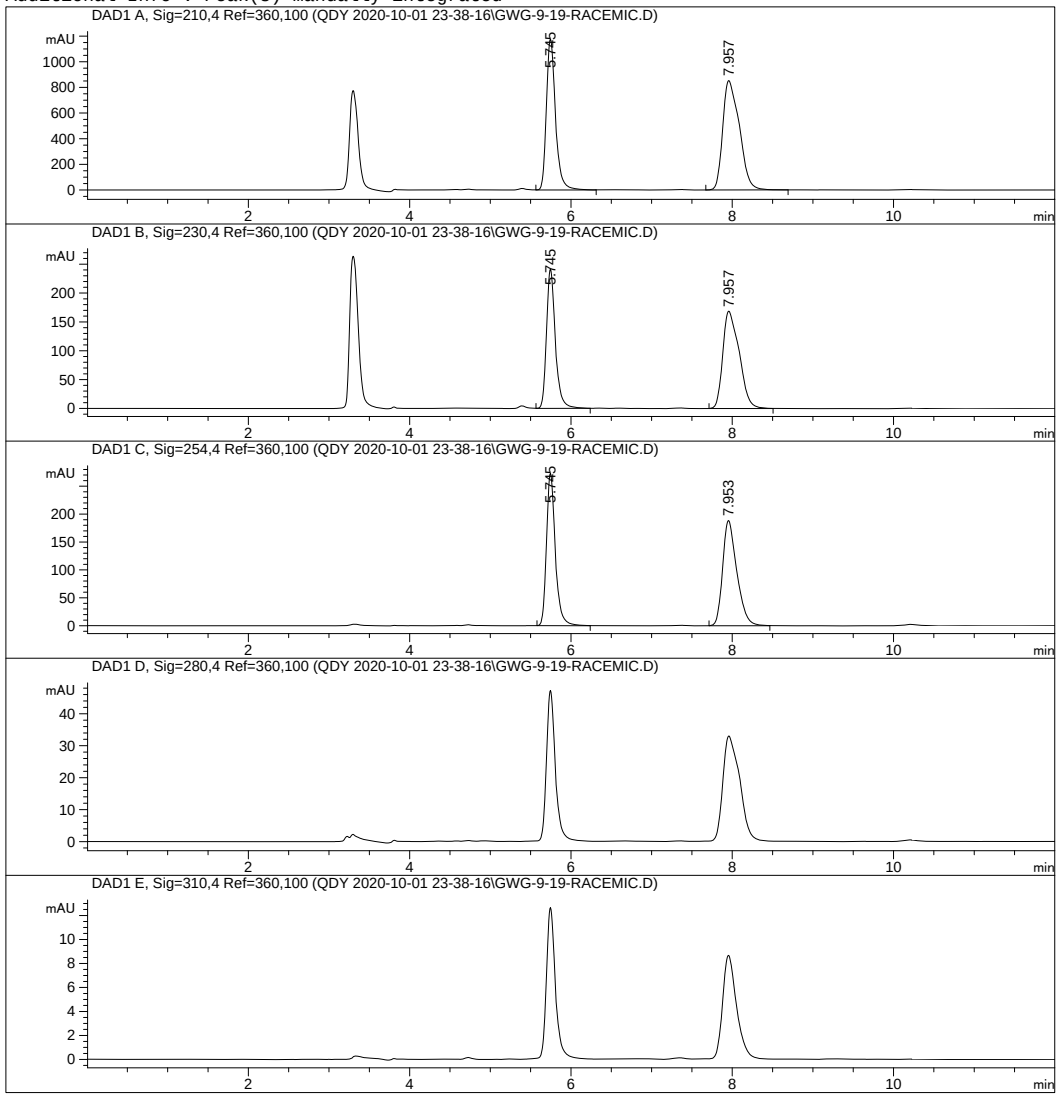
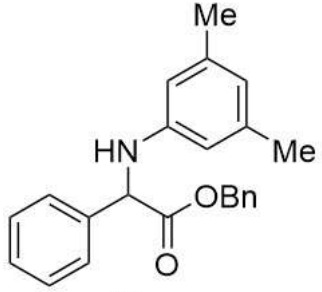
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-19-RACEMIC.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   3
Acq. Instrument : Instrument 1                  Location : Vial 51
Injection Date  : 10/2/2020 12:05:59 AM              Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\IC-05-30.M
Last changed    : 10/1/2020 11:51:25 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-19-RACEMIC.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.745 VB    0.1192 9196.11426 1176.98865  43.0290
   2   7.957 BB    0.2025 1.21758e4   853.03387  56.9710

Totals :                  2.13719e4  2030.02252



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.745 VB    0.1147 1835.49182  241.52768  43.5927
   2   7.957 BB    0.2001 2375.05396  168.86989  56.4073

Totals :                  4210.54578  410.39757



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.745 BB    0.1143 2067.83765  273.14676  47.3651
   2   7.953 BB    0.1822 2297.90552  188.54533  52.6349

Totals :                  4365.74316  461.69209



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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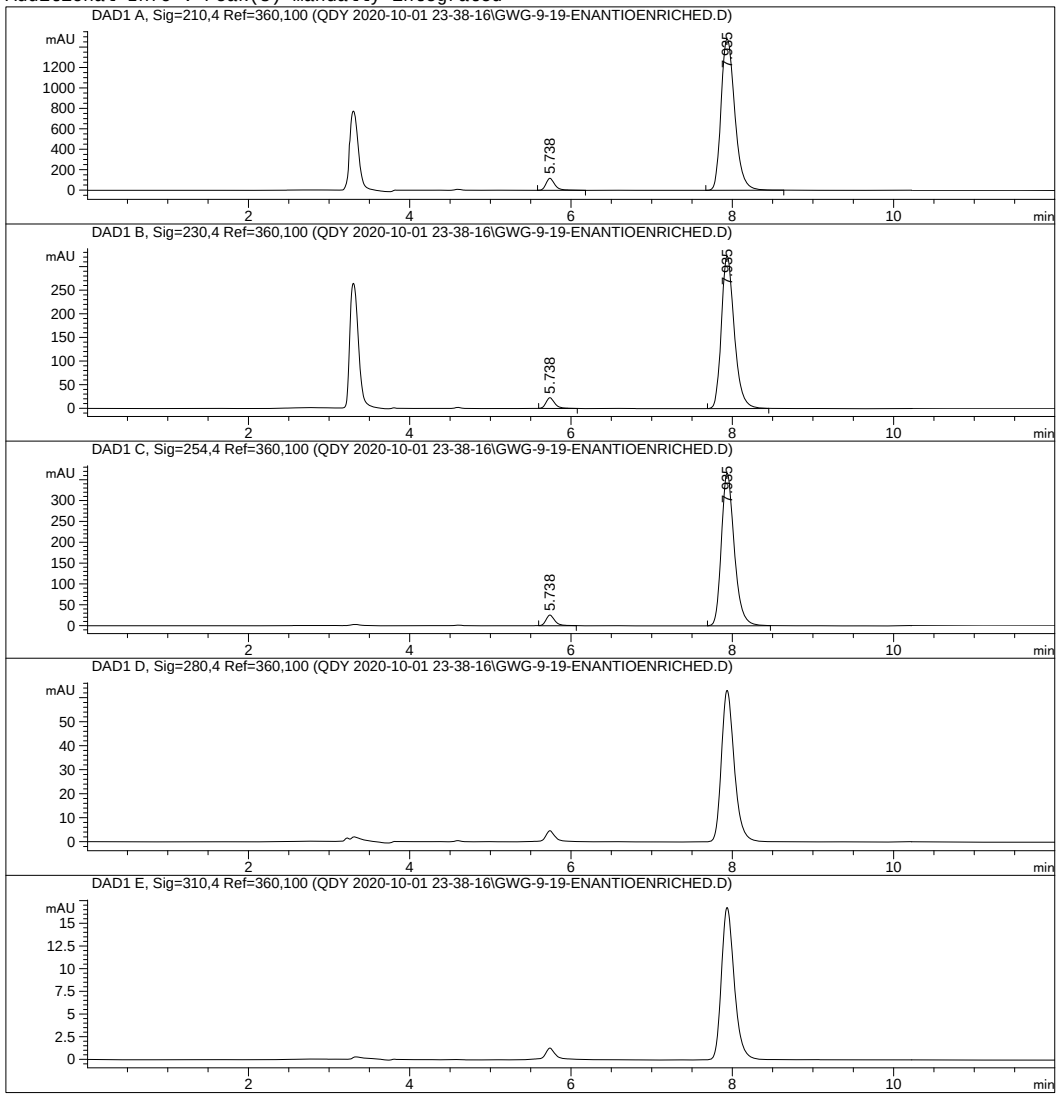
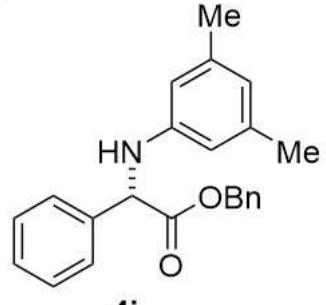
Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-19-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   4
Acq. Instrument : Instrument 1                  Location : Vial 52
Injection Date  : 10/2/2020 12:19:00 AM              Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\IC-05-30.M
Last changed    : 10/1/2020 11:51:25 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 6/25/2018 2:48:18 PM
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-01 23-38-16\GWG-9-19-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.738 BB    0.1149  893.60193  117.22620   4.8829
   2   7.935 BB    0.1832 1.74071e4  1480.24902  95.1171

Totals :                  1.83007e4  1597.47523



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.738 BB    0.1161  175.81993   22.76503   4.6841
   2   7.935 BB    0.1692 3577.70264  322.95239  95.3159

Totals :                  3753.52257  345.71743



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.738 BB    0.1153  196.16367   25.61747   4.6184
   2   7.935 BB    0.1691 4051.29224  366.08670  95.3816

Totals :                  4247.45590  391.70417



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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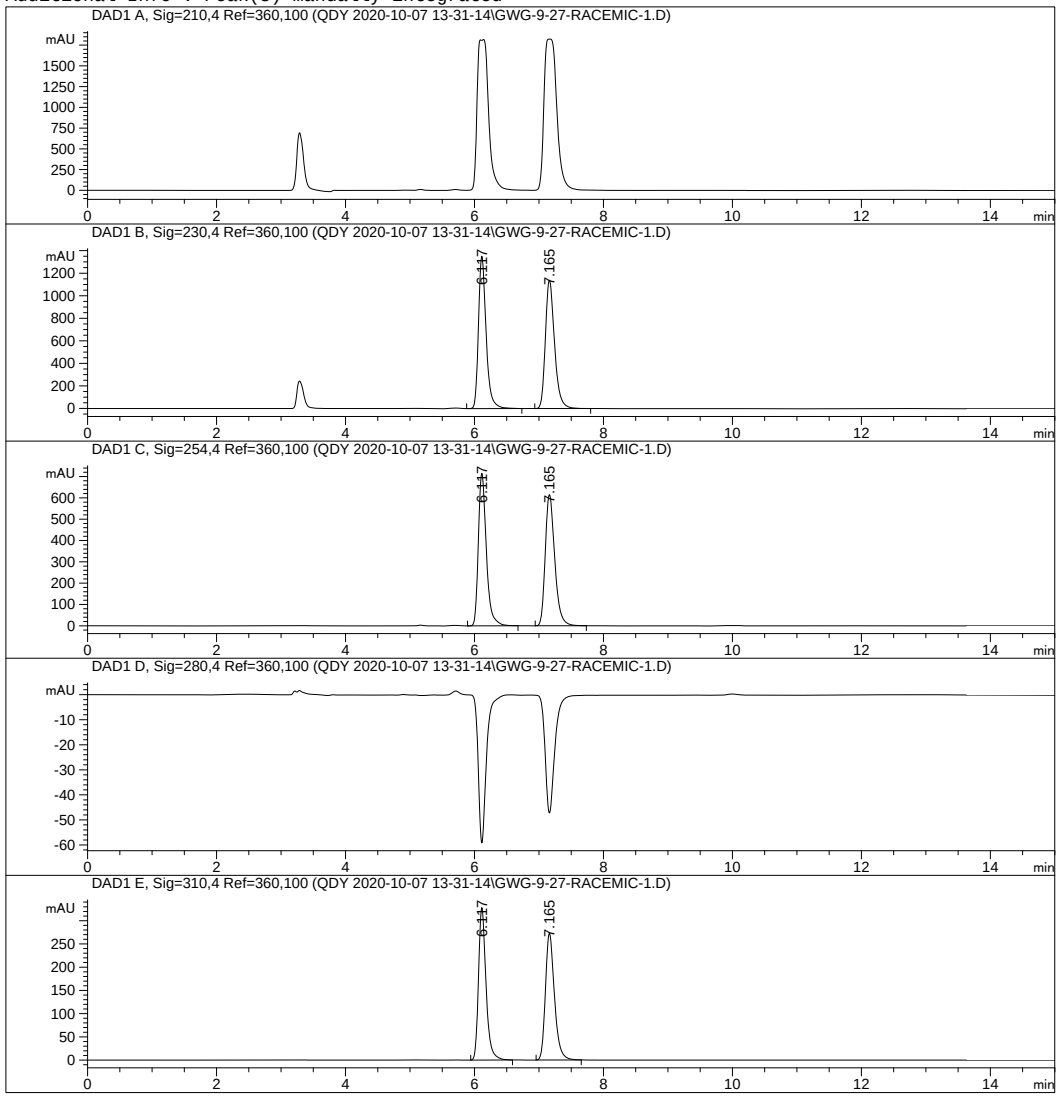
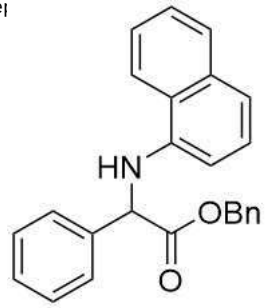
Data File C:\CHEM32\1\DATA\QDY 2020-10-07 13-31-14\GWG-9-27-RACEMIC-1.D
Sample Name:

```
======================================================================
Acq. Operator   :                          Seq. Line :   4
Acq. Instrument : Instrument 1              Location : Vial 52
Injection Date  : 10/7/2020 2:36:03 PM           Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-07 13-31-14\IC-05-30.M
Last changed    : 8/23/2012 1:59:23 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/7/2020 3:15:59 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-07 13-31-14\GWG-9-27-RACEMIC-1.D
Sample Name:

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.117 VB    0.1259 1.11176e4  1352.33630  49.7529
   2   7.165 BB    0.1509 1.12280e4  1139.78918  50.2471

Totals :                  2.23456e4  2492.12549



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.117 VB    0.1321 6139.44727  715.44751  49.4387
   2   7.165 BB    0.1570 6278.86475  615.34839  50.5613

Totals :                  1.24183e4  1330.79590



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.117 BB    0.1240 2645.59888  328.34546  49.9186
   2   7.165 BB    0.1495 2654.22241  272.84219  50.0814

Totals :                  5299.82129  601.18765


======================================================================
                        *** End of Re
```



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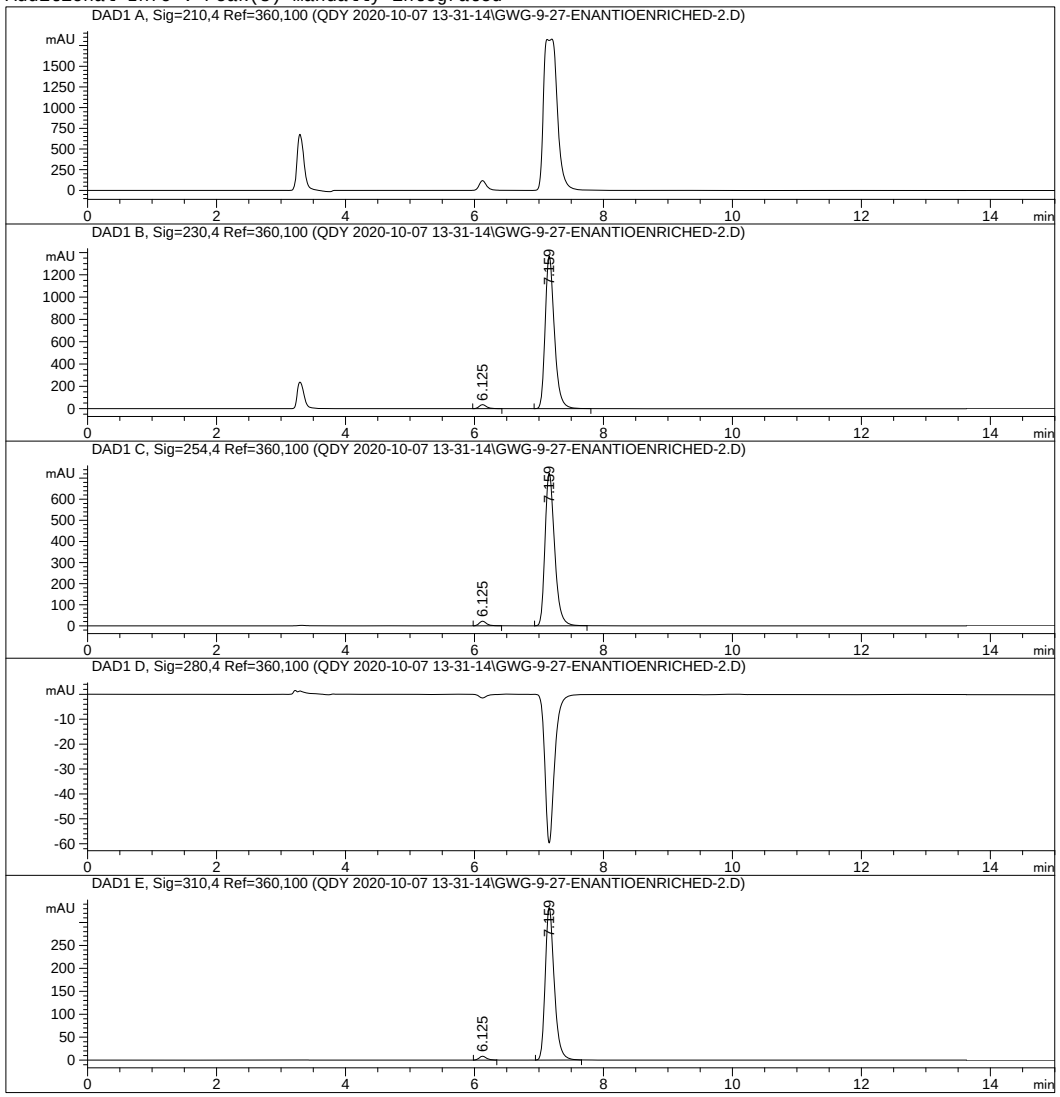
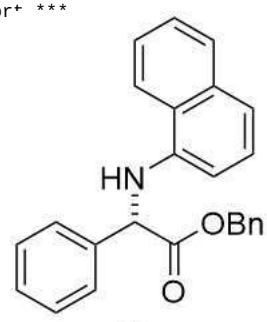
Data File C:\CHEM32\1\DATA\QDY 2020-10-07 13-31-14\GWG-9-27-ENANTIOENRICHED-2.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   7
Acq. Instrument : Instrument 1                    Location : Vial 53
Injection Date  : 10/7/2020 3:42:22 PM                 Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-07 13-31-14\IC-05-10.M
Last changed    : 11/7/2016 7:56:52 PM
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/7/2020 3:15:59 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-07 13-31-14\GWG-9-27-ENANTIOENRICHED-2.D
Sample Name:

```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.125 BB    0.1212  290.68652   36.37012   2.1018
   2   7.159 BB    0.1515 1.35396e4  1367.80579  97.8982

Totals :                   1.38303e4  1404.17590



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.125 BB    0.1205  173.70937   21.91705   2.2736
   2   7.159 BB    0.1585 7466.68164  722.99261  97.7264

Totals :                   7640.39101  744.90967



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.125 BB    0.1201   67.05098    8.48922   2.0295
   2   7.159 BB    0.1476 3236.80176  332.52371  97.9705

Totals :                   3303.85274  341.01294


==========================================================================
                          *** End of Repor+ ***
```



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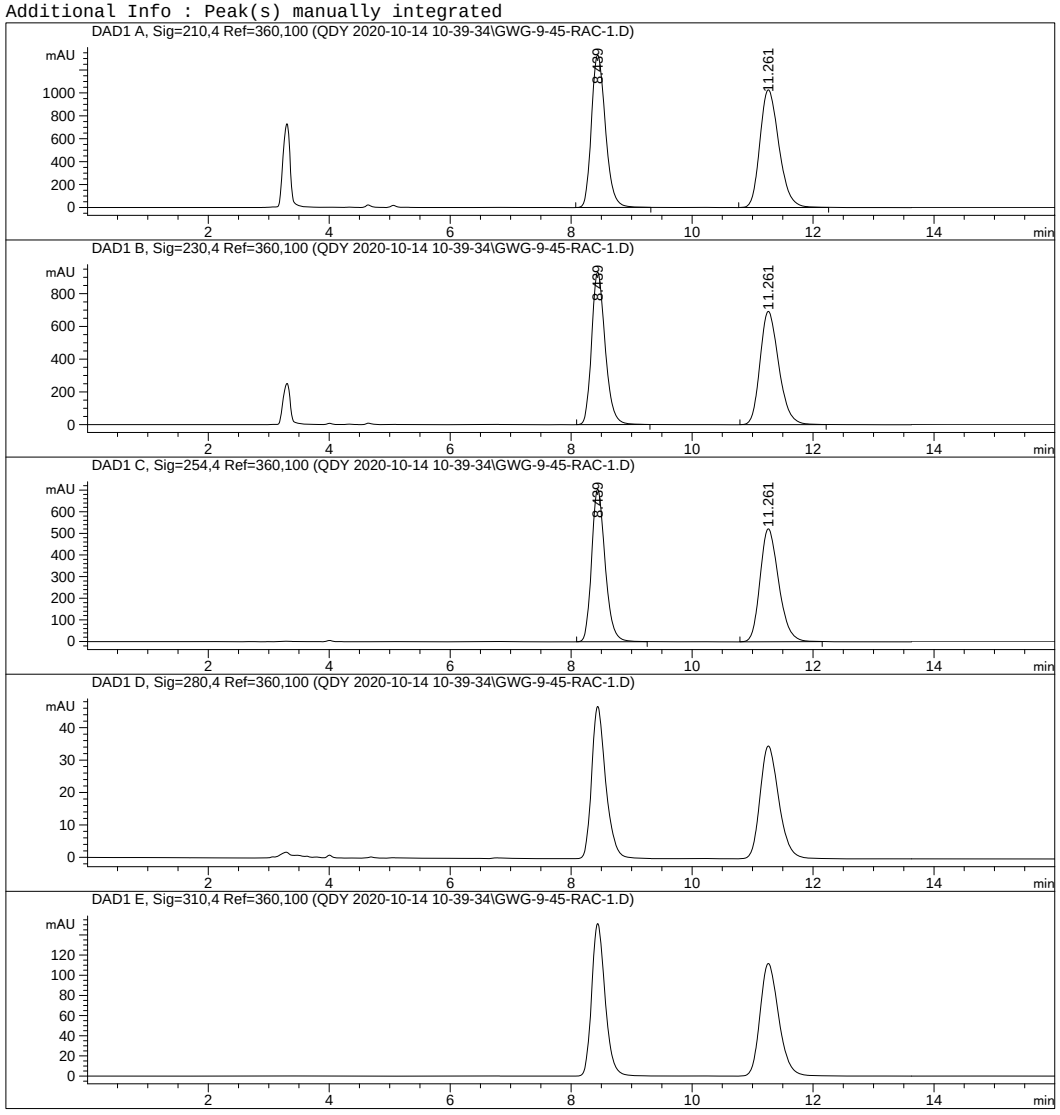
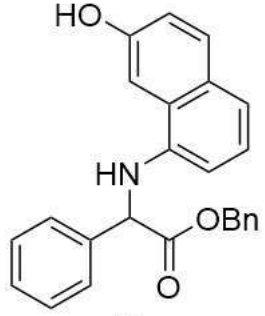
Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-45-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :   2
Acq. Instrument : Instrument 1                  Location : Vial 57
Injection Date  : 10/14/2020 10:52:26 AM             Inj :   1
                                               Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\IC-15-30.M
Last changed    : 10/14/2020 11:07:54 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/13/2020 3:09:05 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-45-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.439 BB    0.2515 2.13805e4  1330.68018  48.8228
   2  11.261 BB    0.3386 2.24116e4  1026.86865  51.1772

Totals :                  4.37922e4  2357.54883



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.439 BB    0.2392 1.44721e4   931.64526  49.3388
   2  11.261 BB    0.3325 1.48600e4   692.00183  50.6612

Totals :                  2.93321e4  1623.64709



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.439 BB    0.2382 1.08844e4   704.60242  49.3548
   2  11.261 BB    0.3297 1.11689e4   521.76050  50.6452

Totals :                  2.20533e4  1226.36292



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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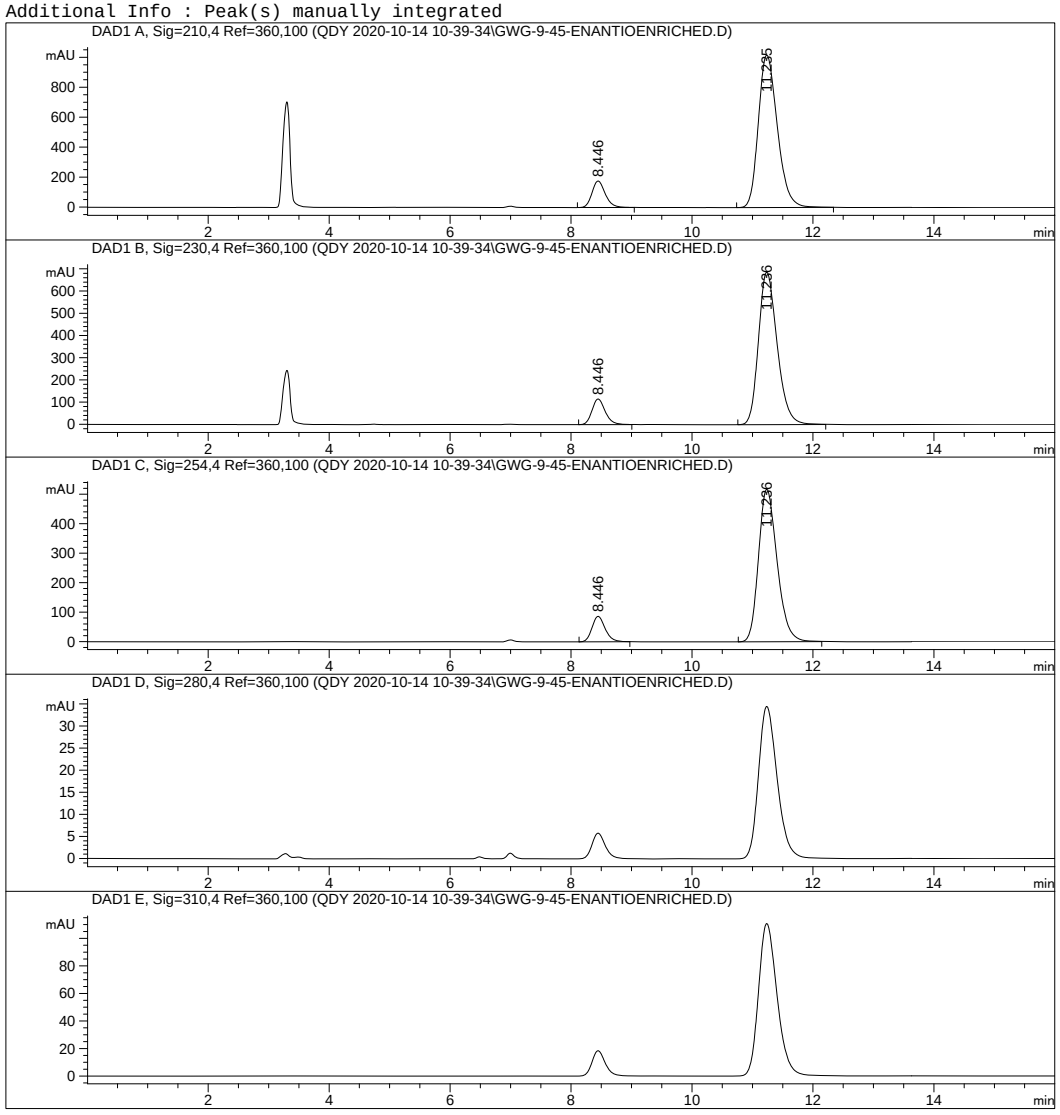
Instrument 1 10/14/2020 11:09:25 AM

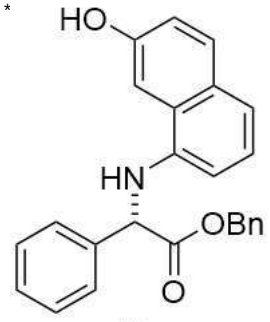
Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-45-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   3
Acq. Instrument : Instrument 1                    Location : Vial 58
Injection Date  : 10/14/2020 11:09:26 AM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\IC-15-30.M
Last changed    : 10/14/2020 11:07:54 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/14/2020 1:01:38 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-45-ENANTIOENRICHED.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.446 BB    0.2358 2702.72705  177.31659  10.8500
   2  11.235 BB    0.3364 2.22072e4  1018.38885  89.1500

Totals :                  2.49099e4  1195.70544



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.446 BB    0.2352 1753.85803  115.46138  10.6558
   2  11.236 BB    0.3319 1.47054e4   686.47485  89.3442

Totals :                  1.64592e4   801.93623



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.446 BB    0.2349 1311.83582   86.53835  10.6102
   2  11.236 BB    0.3292 1.10520e4   517.47736  89.3898

Totals :                  1.23639e4   604.01570



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report **
```



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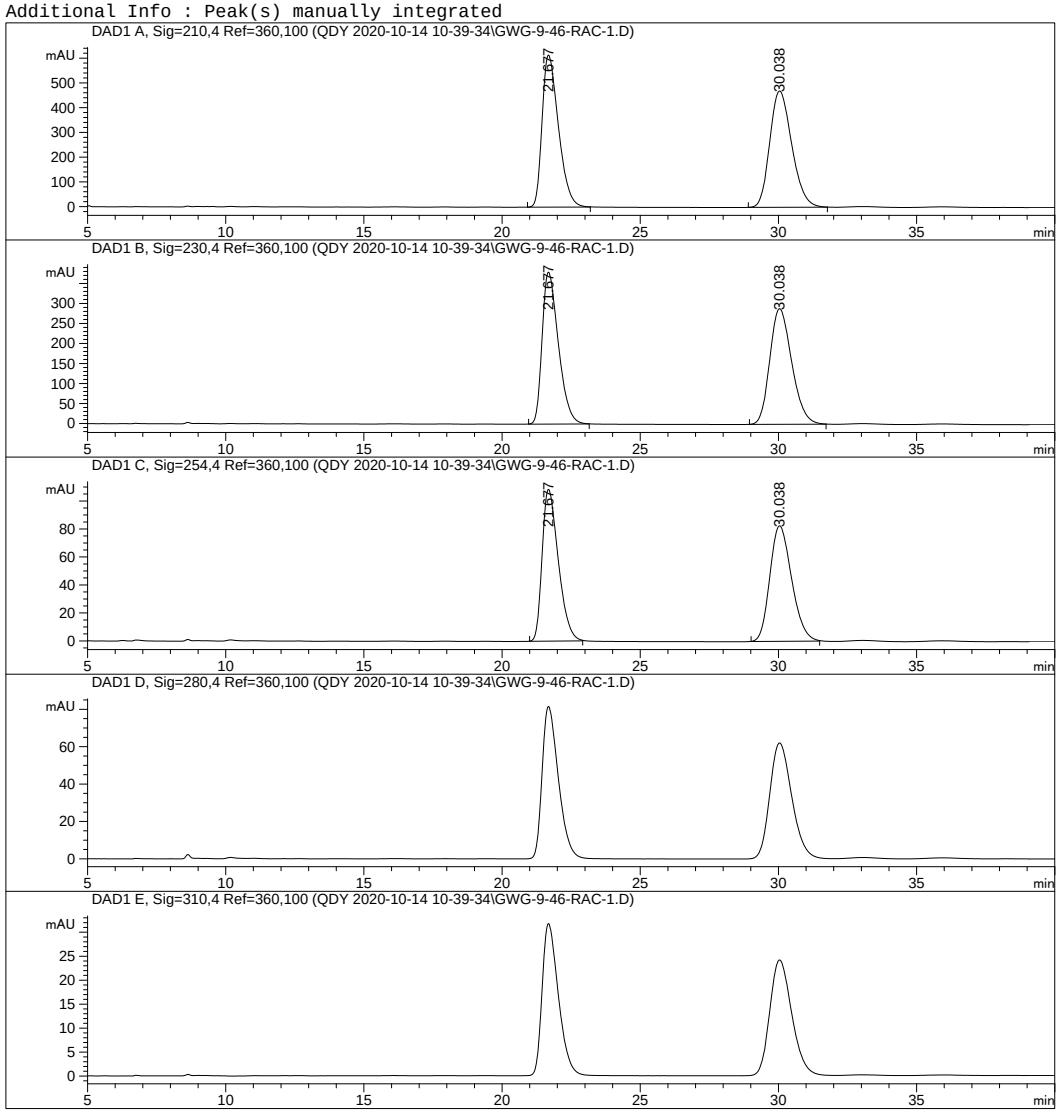
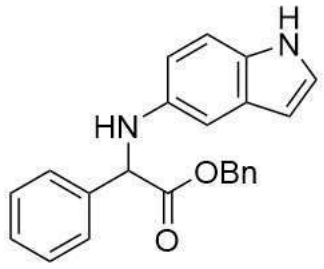
Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-46-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                                Seq. Line :   5
Acq. Instrument : Instrument 1                    Location : Vial 59
Injection Date  : 10/14/2020 11:37:31 AM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\IC-15-40.M
Last changed    : 10/14/2020 12:15:39 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/14/2020 12:31:17 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-46-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  21.677 BB    0.6281 2.51847e4   614.54395  49.1836
   2  30.038 BB    0.8638 2.60207e4   470.05878  50.8164

Totals :                  5.12054e4  1084.60272



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  21.677 BB    0.6271 1.54567e4   379.52521  49.2456
   2  30.038 BB    0.8592 1.59302e4   288.94968  50.7544

Totals :                  3.13870e4   668.47488



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  21.677 BB    0.6270 4400.36768  108.52980  49.2967
   2  30.038 BB    0.8558 4525.93311   82.52726  50.7033

Totals :                  8926.30078  191.05706



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of Report ***
```



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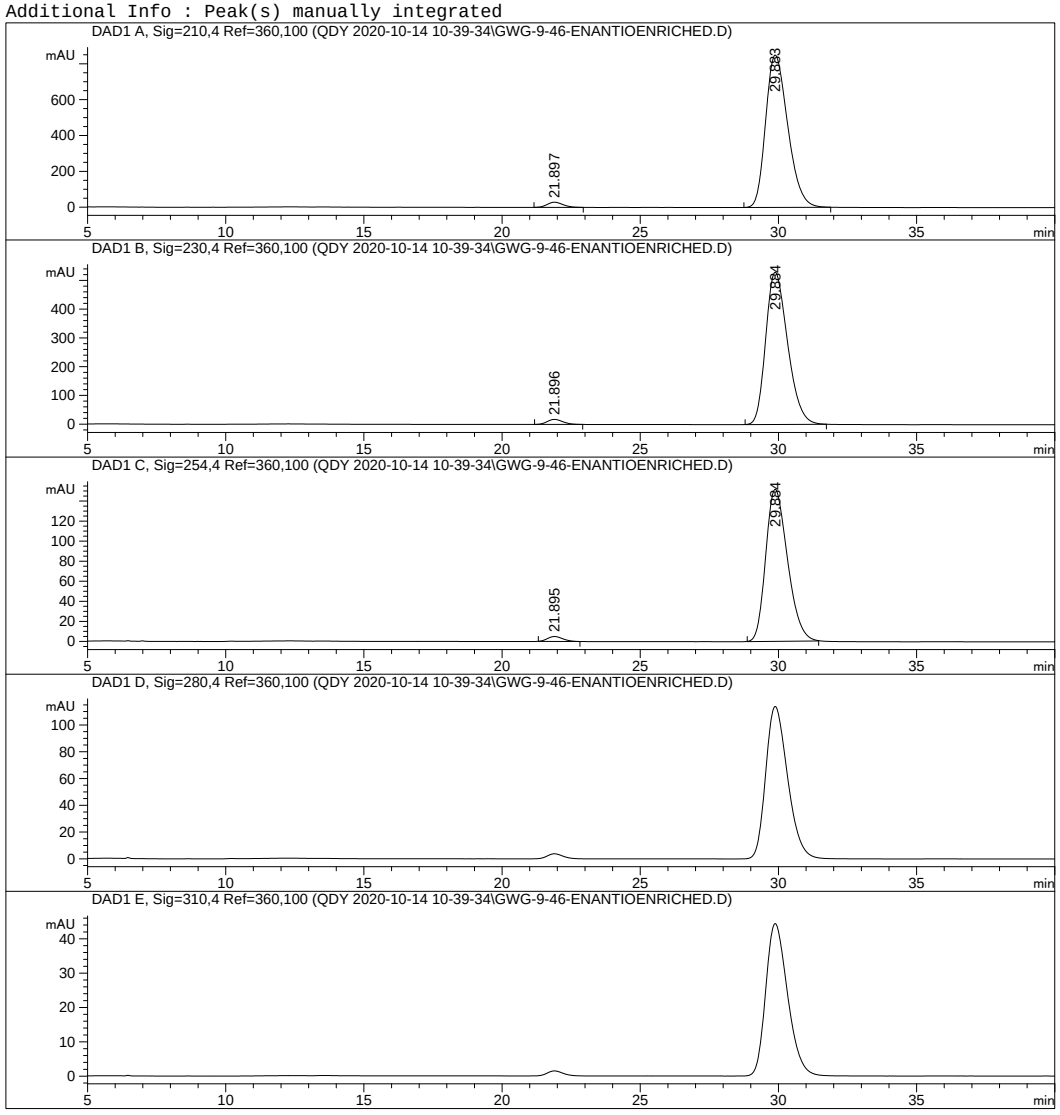
racemic

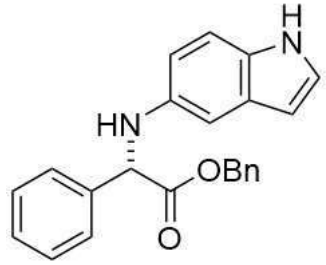
Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-46-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
Acq. Operator   :                                Seq. Line :   6
Acq. Instrument : Instrument 1                    Location : Vial 60
Injection Date  : 10/14/2020 12:18:30 PM               Inj :   1
                                                 Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\IC-15-40.M
Last changed    : 10/14/2020 12:15:39 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/14/2020 12:31:17 PM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-14 10-39-34\GWG-9-46-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  21.897 BB    0.6095 1146.09558   28.84826   2.3669
   2  29.883 BB    0.8670 4.72760e4   849.81744  97.6331

Totals :                  4.84221e4   878.66570



Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  21.896 BB    0.6131  693.52252   17.54854   2.3242
   2  29.884 BB    0.8558 2.91458e4   529.84003  97.6758

Totals :                  2.98393e4   547.38856



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  21.895 BB    0.5738  189.12512    4.90505   2.2269
   2  29.884 BB    0.8487 8303.75391  151.67230  97.7731

Totals :                  8492.87903  156.57735



Signal 4: DAD1 D, Sig=280,4 Ref=360,100


Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```



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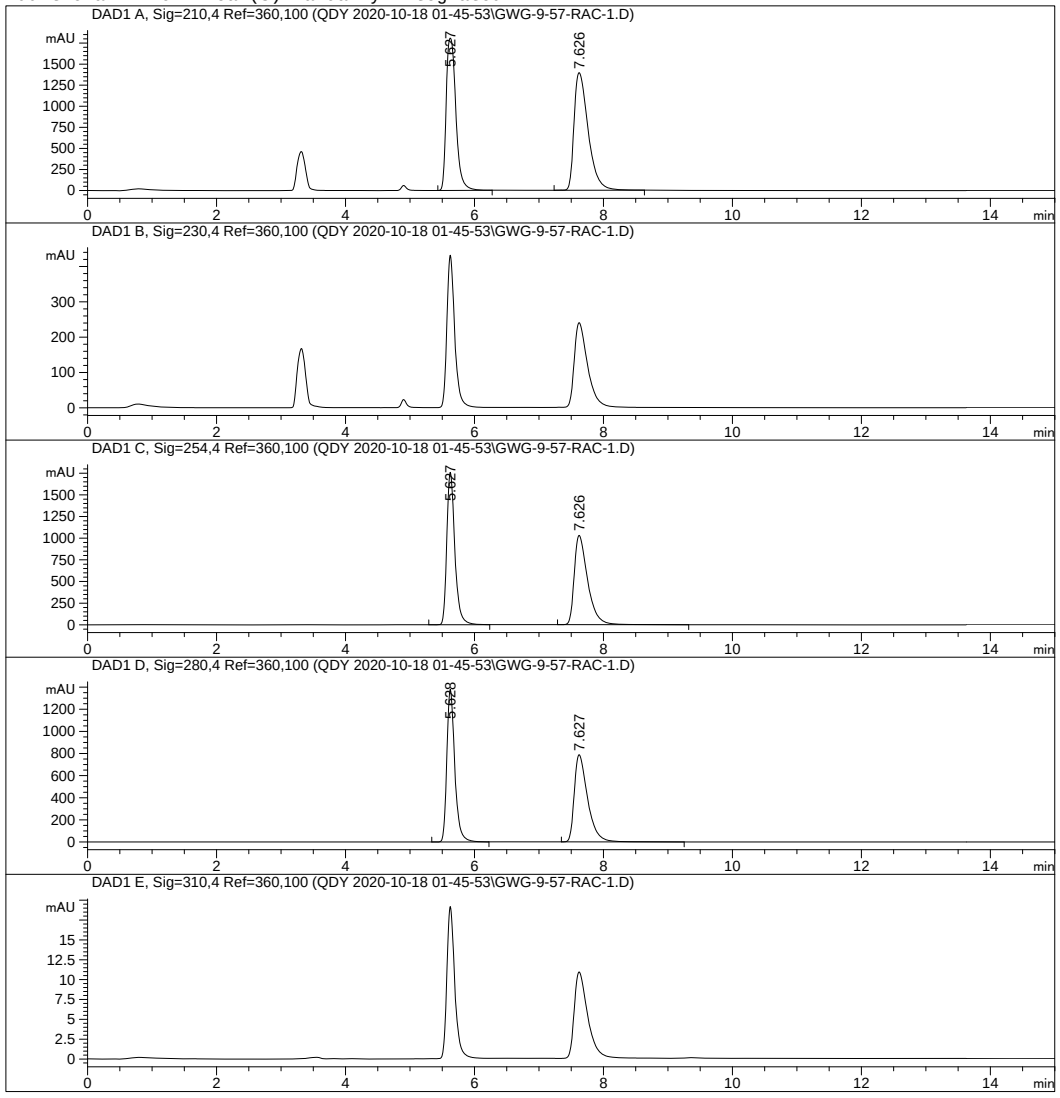
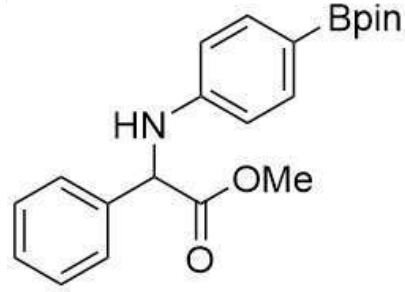
Data File C:\CHEM32\1\DATA\QDY 2020-10-18 01-45-53\GWG-9-57-RAC-1.D
Sample Name:

```
======================================================================
Acq. Operator   :                          Seq. Line :   2
Acq. Instrument : Instrument 1              Location : Vial 55
Injection Date  : 10/18/2020 1:58:42 AM          Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-18 01-45-53\IC-10-40.M
Last changed    : 10/18/2020 1:57:50 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/18/2020 3:08:48 AM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-18 01-45-53\GWG-9-57-RAC-1.D
Sample Name:


```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.627 BB    0.1646 1.86868e4  1807.71313  46.9298
   2   7.626 BB    0.2327 2.11318e4  1395.13196  53.0702

Totals :                  3.98186e4  3202.84509



Signal 2: DAD1 B, Sig=230,4 Ref=360,100


Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.627 VV    0.1327 1.52001e4  1760.59485  50.5955
   2   7.626 BB    0.2180 1.48423e4  1030.91711  49.4045

Totals :                  3.00425e4  2791.51196



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.628 VV    0.1313 1.17439e4  1379.55884  50.9761
   2   7.627 BV    0.2172 1.12941e4   788.16711  49.0239

Totals :                  2.30380e4  2167.72595



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of
```



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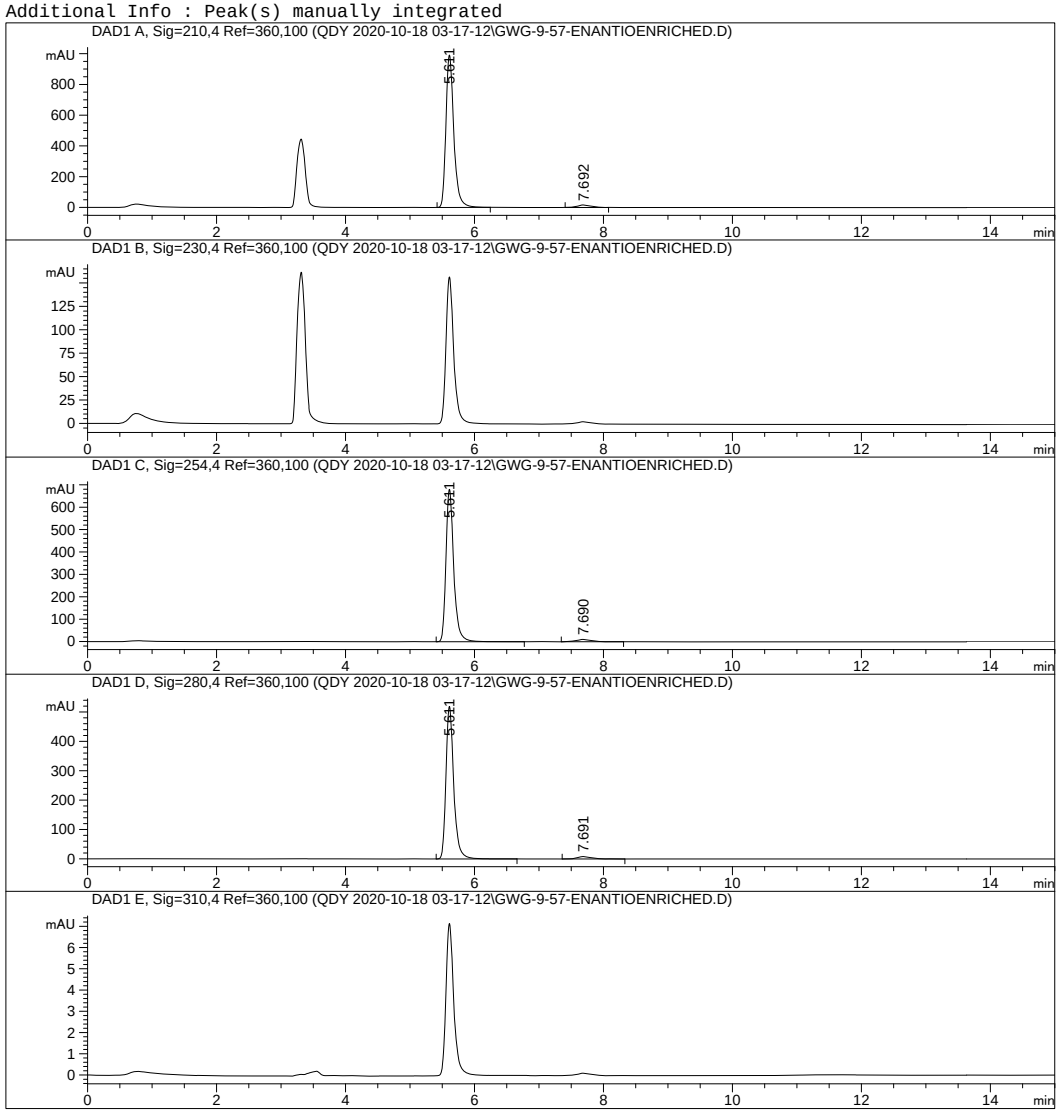
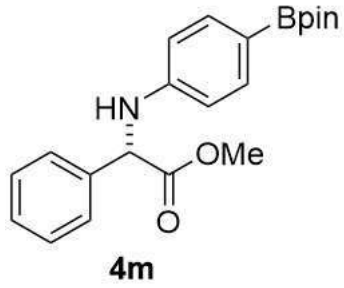
Data File C:\CHEM32\1\DATA\QDY 2020-10-18 03-17-12\GWG-9-57-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
Acq. Operator   :                          Seq. Line :   2
Acq. Instrument : Instrument 1              Location : Vial 56
Injection Date  : 10/18/2020 3:30:01 AM          Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-18 03-17-12\IC-10-40.M
Last changed    : 10/18/2020 3:49:22 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/18/2020 3:08:48 AM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-18 03-17-12\GWG-9-57-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.611 BB    0.1312 8434.75781  991.91016  97.1912
   2   7.692 BB    0.2250  243.76651   16.43718   2.8088

Totals :                  8678.52432 1008.34734



Signal 2: DAD1 B, Sig=230,4 Ref=360,100


Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.611 BB    0.1276 5695.63525  681.08655  97.1358
   2   7.690 BB    0.2358  167.94266   10.65893   2.8642

Totals :                  5863.57791  691.74548



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.611 BB    0.1275 4344.18848  519.63623  97.2627
   2   7.691 BB    0.2275  122.25819    8.12929   2.7373

Totals :                  4466.44666  527.76552



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```



4m

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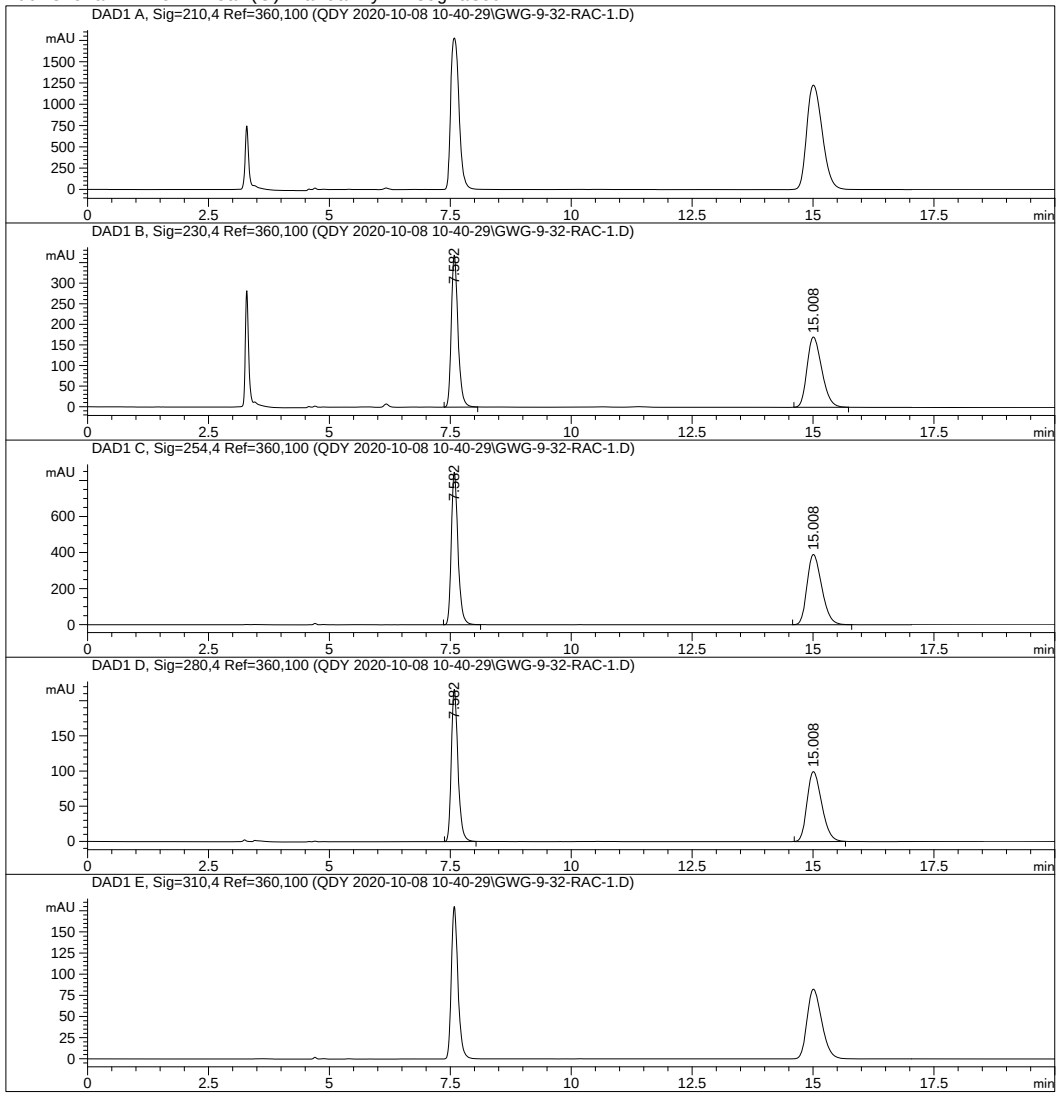
Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-32-RAC-1.D
Sample Name:

```
==========================================================================
Acq. Operator   :                              Seq. Line :  31
Acq. Instrument : Instrument 1                  Location : Vial 55
Injection Date  : 10/8/2020 9:53:07 PM               Inj :   1
                                              Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\IC-01-30.M
Last changed    : 10/8/2020 10:13:24 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 9:16:59 AM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-32-RAC-1.D
Sample Name:

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100


Signal 2: DAD1 B, Sig=230,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.582 BB    0.1454 3527.45117  369.34955  49.3506
   2  15.008 BB    0.3291 3620.28809  170.92700  50.6494

Totals :                  7147.73926  540.27655



Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.582 BB    0.1451 8058.27930  846.47894  49.4369
   2  15.008 BB    0.3284 8241.85156  390.29160  50.5631

Totals :                  1.63001e4  1236.77054



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.582 BB    0.1449 2058.31763  216.52385  49.5131
   2  15.008 BB    0.3280 2098.79883   99.53104  50.4869

Totals :                  4157.11646  316.05489



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

==========================================================================
                        *** End of R
```

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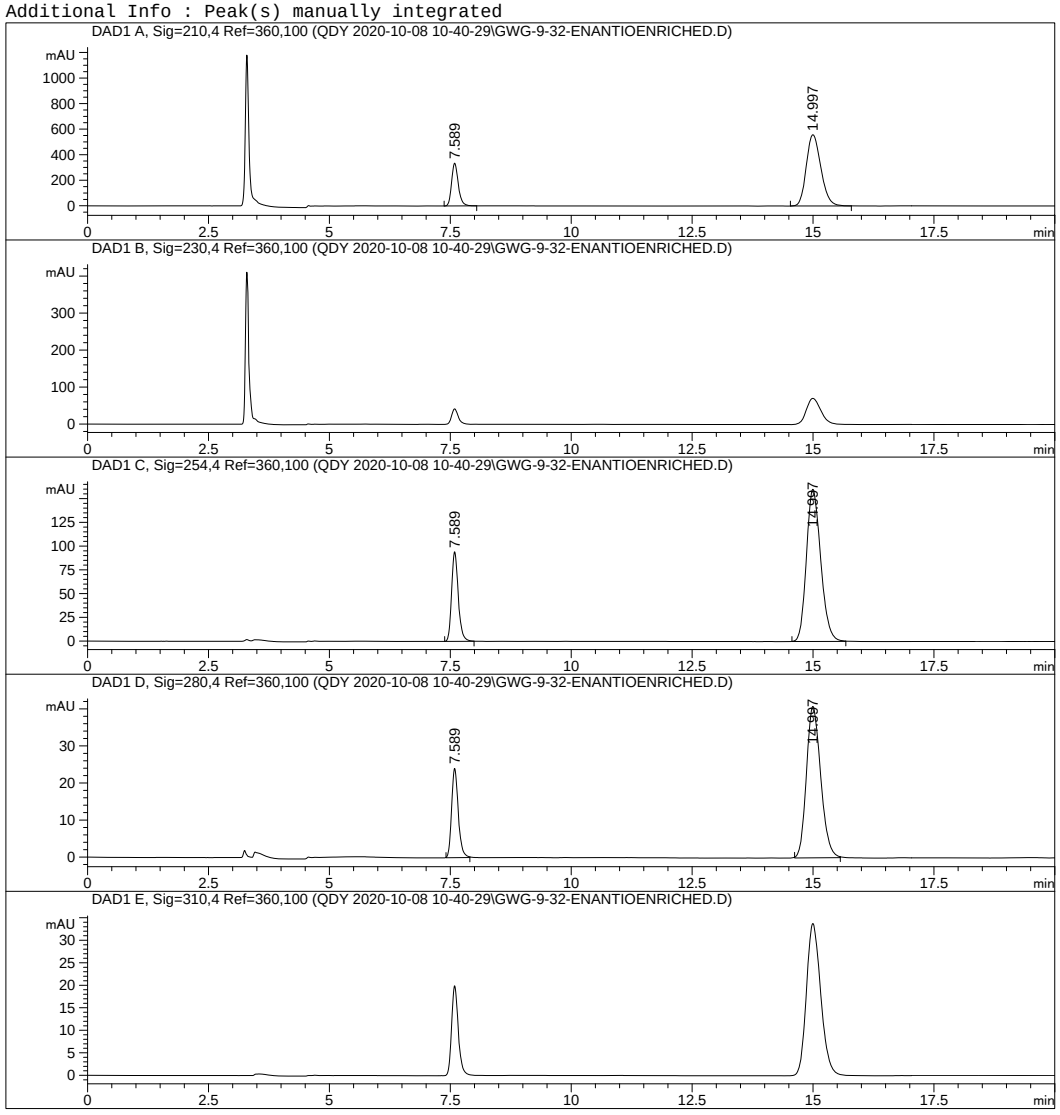
Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-32-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
Acq. Operator   :                          Seq. Line :  32
Acq. Instrument : Instrument 1              Location : Vial 56
Injection Date  : 10/8/2020 10:15:06 PM          Inj :   1
                                          Inj Volume : 5.000 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 3.000 µl
Acq. Method     : C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\IC-01-30.M
Last changed    : 10/8/2020 10:13:24 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\IC-10-10.M
Last changed    : 10/9/2020 9:16:59 AM
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```



Data File C:\CHEM32\1\DATA\QDY 2020-10-08 10-40-29\GWG-9-32-ENANTIOENRICHED.D
Sample Name:

```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=210,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.589 BB    0.1482 3222.64893  334.94791  21.6830
   2  14.997 BB    0.3254 1.16399e4   558.03113  78.3170

Totals :                  1.48626e4   892.97903



Signal 2: DAD1 B, Sig=230,4 Ref=360,100


Signal 3: DAD1 C, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.589 BB    0.1475  901.81421   94.37266  21.4680
   2  14.997 BB    0.3183 3298.93115  160.18419  78.5320

Totals :                  4200.74536  254.55685



Signal 4: DAD1 D, Sig=280,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.589 BB    0.1472  229.86629   24.12297  21.5039
   2  14.997 BB    0.3176  839.08405   40.85781  78.4961

Totals :                  1068.95033   64.98078



Signal 5: DAD1 E, Sig=310,4 Ref=360,100

======================================================================
                        *** End of Report ***
```

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