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Part I Experimental Part

1. General information

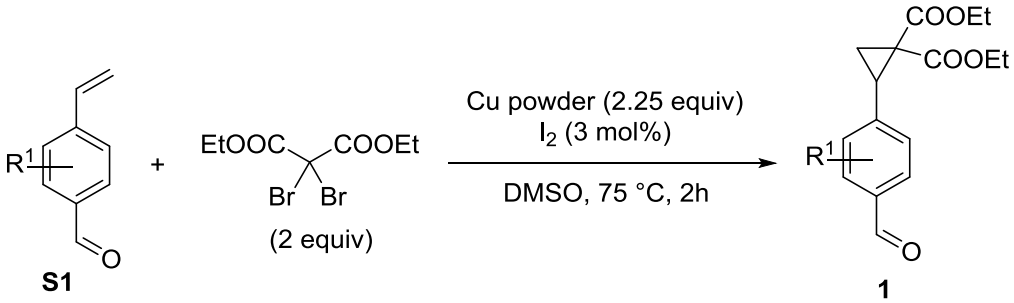
Unless otherwise indicated, all reactions were carried out under N_2 protection with magnetic stirring. Anhydrous THF, toluene and 1,4-dioxane were distilled from sodium and benzophenone. Anhydrous CH_3CN and CH_2Cl_2 were distilled from CaH_2. Analytical thin layer chromatography was carried out with silica gel pre-coated glass plates (TLC-Silica gel GF254, coating thickness: 0.25 mm) purchased from Xinnuo Chemical (Yantai, China). Visualization was accomplished with short wave UV light (254 nm, 365 nm) and/or 10% phosphomolybdic acid in ethanol or $KMnO_4$ staining solutions followed by heating. Column chromatograph was performed on silica gel (200~300 mesh). All ^{1}H NMR (400 MHz), ^{13}C NMR (101 MHz) ;^{1}H NMR (500 MHz), ^{13}C NMR (126 MHz) spectra were recorded on a Bruker-DMX 400 and 500 spectrometers in $CDCl_3$, with tetramethylsilane as an internal standard and reported in parts per million (ppm, δ). ^{1}H NMR

spectroscopy splitting patterns were designated as singlet (s), doublet (d), triplet (t), quartet (q). Splitting patterns that could not be interpreted or easily visualized were designated as multiplet (m) or broad (br). High-resolution mass spectra (HRMS) were obtained with the mass analyzer of an orbitrap. Infrared spectra were recorded on a JASCO FT/IR-480 spectrophotometer and reported as wave number (cm-1).

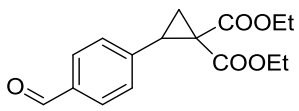
The amount of incorporated deuterium in a sample was quantified by the decrease of ^{1}H NMR integral intensities at the specified positions compared to the non-deuterated samples. Integral intensities were calibrated against hydrogen signals that do not undergo H/D-exchange.

2. Substrate Preparation.

General procedure A for synthesis of 1a-1i



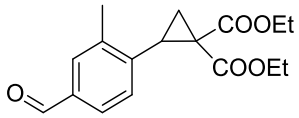
This procedure was performed according to known literature[1]. To a 50 mL Schlenk tube were added Cu powder (2.25 equiv) and I_2 (3 mol%), the reaction tube was sealed with septum, and was evacuated and backfilled with nitrogen three times, vinyl substituted aryl aldehyde **S1** (1 equiv) and diethyl dibromomalonate (2 equiv) and DMSO (1 mL/mmol) were added with syringe. The reaction mixture was stirred at 75 ^{o}C under nitrogen atmosphere for 2h. After the reaction was complete, the reaction solution was then diluted with water, and extracted with EtOAc for three times. The combined organic extracts were washed with water, then with brine, dried over anhydrous $MgSO_4$ and concentrated under reduced pressure. The residual was purified by flash column chromatography and then recrystallization from petroleum ether/Et_2O afforded the desired product **1**.



1a (QY-536)

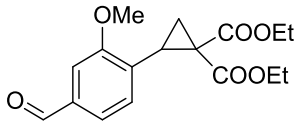
Diethyl 2-(4-formylphenyl)cyclopropane-1,1-dicarboxylate

2.05 g, 42% yield. White solid, m.p. 62-63 ^{o}C. R_f = 0.21 (petroleum ether/ethyl acetate, 7:1).
^{1}H NMR (500 MHz, $CDCl_3$) δ 9.98 (s, 1H), 7.80 (d, *J* = 8.1 Hz, 2H), 7.38 (d, *J* = 8.1 Hz, 2H), 4.32 – 4.20 (m, 2H), 3.92 – 3.80 (m, 2H), 3.26 (t, *J* = 8.5 Hz, 1H), 2.21 (dd, *J* = 7.9, 5.4 Hz, 1H), 1.77 (dd, *J* = 9.1, 5.3 Hz, 1H), 1.31 (t, *J* = 7.1 Hz, 3H), 0.89 (t, *J* = 7.1 Hz, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.8, 169.4, 166.3, 142.0, 135.5, 129.5, 129.2, 62.0, 61.4, 37.9, 31.8, 18.9, 14.1, 13.7.
IR (KBr) v 2983, 1725, 1608, 1372, 1277, 1212, 1133, 1026, 836.
HRMS (APCI) *m/z*: Calcd for $C_{16}H_{17}O_5$ ([M-H]$^-$) 289.1082, found 289.1076.



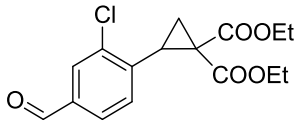
1b (QY-671)

Diethyl 2-(4-formyl-2-methylphenyl)cyclopropane-1,1-dicarboxylate
1.09 g, 89% yield. Colorless oil. R_f = 0.29 (petroleum ether/ethyl acetate, 5:1).
^{1}H NMR (500 MHz, $CDCl_3$) δ 9.95 (s, 1H), 7.67 (s, 1H), 7.63 (d, *J* = 7.8 Hz, 1H), 7.22 (d, *J* = 7.8 Hz, 1H), 4.34 – 4.23 (m, 2H), 3.80 (q, *J* = 7.1 Hz, 2H), 3.18 (t, *J* = 8.6 Hz, 1H), 2.46 (s, 3H), 2.31 (dd, *J* = 8.1, 5.2 Hz, 1H), 1.75 (dd, *J* = 9.0, 5.2 Hz, 1H), 1.31 (t, *J* = 7.1, 3H), 0.83 (t, *J* = 7.1 Hz, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.1, 169.5, 166.3, 140.30, 140.26, 135.5, 130.3, 128.1, 127.5, 61.9, 61.3, 36.7, 30.8, 19.5, 18.3, 14.1, 13.6.
IR (KBr) v 2983, 1725, 1696, 1374, 1321, 1281, 1210, 1132, 1027.
HRMS (APCI) *m/z*: Calcd for $C_{17}H_{19}O_5$ ([M-H]$^-$) 303.1238, found 303.1233.



1c (QY-666)

Diethyl 2-(4-formyl-2-methoxyphenyl)cyclopropane-1,1-dicarboxylate
0.98 g, 78% yield. White solid, m.p. 52-54 ^{o}C. R_f = 0.17 (petroleum ether/ethyl acetate, 5:1).
^{1}H NMR (500 MHz, $CDCl_3$) δ 9.94 (s, 1H), 7.37 – 7.34 (m, 2H), 7.17 (d, *J* = 7.6 Hz, 1H), 4.30 – 4.23 (m, 2H), 3.91 (s, 3H), 3.83 (q, *J* = 7.1 Hz, 2H), 3.33 (t, *J* = 8.7 Hz, 1H), 2.19 (dd, *J* = 8.2, 5.2 Hz, 1H), 1.75 (dd, *J* = 9.0, 5.2 Hz, 1H), 1.31 (t, *J* = 7.0 Hz, 3H), 0.85 (t, *J* = 7.1 Hz, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.8, 169.6, 166.6, 159.8, 136.8, 131.2, 128.4, 123.9, 108.0, 61.7, 61.1, 55.8, 36.8, 27.8, 18.4, 14.1, 13.7.
IR (KBr) v 2982, 1722, 1692, 1388, 1267, 1207, 1128, 1032.
HRMS (APCI) *m/z*: Calcd for $C_{17}H_{19}O_6$ ([M-H]$^-$) 319.1187, found 319.1181.



1d (QY-670)

Diethyl 2-(2-chloro-4-formylphenyl)cyclopropane-1,1-dicarboxylate

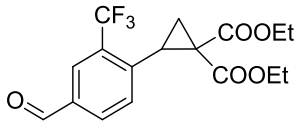
1.04 g, 76% yield. Yellow oil. R_f = 0.26 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.95 (s, 1H), 7.88 (s, 1H), 7.70 (d, *J* = 7.9, 1H), 7.29 (d, *J* = 7.9 Hz, 1H), 4.33 – 4.25 (m, 2H), 3.86 (q, *J* = 7.1 Hz, 2H), 3.37 (t, *J* = 8.6 Hz, 1H), 2.25 (dd, *J* = 8.1, 5.5 Hz, 1H), 1.83 (dd, *J* = 8.9, 5.3 Hz, 1H), 1.32 (t, *J* = 7.1 Hz, 3H), 0.89 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 190.4, 169.0, 166.3, 139.8, 137.8, 136.6, 129.6, 127.7, 61.9, 61.4, 36.9, 30.7, 18.6, 14.1, 13.7.

IR (KBr) v 2982, 1702, 1600, 1373, 1278, 1218, 1132, 835.

HRMS (APCI) *m/z*: Calcd for $C_{16}H_{16}ClO_5$ ($[M-H]^-$) 323.0692, found 323.0685.



1e (QY-713)

Diethyl 2-(4-formyl-2-(trifluoromethyl)phenyl)cyclopropane-1,1-dicarboxylate

1.93 g, 87% yield. Yellow oil. R_f = 0.26 (petroleum ether/ethyl acetate, 5:1).

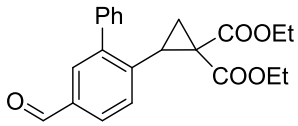
^{1}H NMR (500 MHz, $CDCl_3$) δ 10.03 (s, 1H), 8.16 (s, 1H), 7.97 (d, *J* = 7.9, 1H), 7.38 (d, *J* = 8.0 Hz, 1H), 4.32 – 4.23 (m, 2H), 3.88 – 3.81 (m, 2H), 3.48 (t, *J* = 8.5 Hz, 1H), 2.33 (dd, *J* = 7.6, 5.9 Hz, 1H), 1.87 (dd, *J* = 8.9, 5.5 Hz, 1H), 1.31 (t, *J* = 7.1 Hz, 3H), 0.86 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 190.3, 168.6, 166.2, 139.9, 135.2, 132.3, 131.9 (q, $^2J_{CF}$ = 30.9 Hz), 129.5, 127.1 (q, $^3J_{CF}$ = 5.4 Hz), 123.6 (q, $^1J_{CF}$ = 274.4 Hz), 62.0, 61.4, 38.3, 29.3, 18.5, 14.1, 13.7.

^{19}F NMR (376 MHz, $CDCl_3$) δ -61.0 (s).

IR (KBr) v 2921, 1708, 1319, 1289, 1222, 1191, 1167, 1132.

HRMS (APCI) *m/z*: Calcd for $C_{17}H_{16}O_5F_3$ ($[M-H]^-$) 357.0955, found 357.0947.



1f (QY-701)

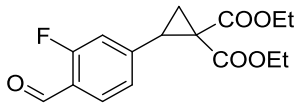
Diethyl 2-(5-formyl-[1,1'-biphenyl]-2-yl)cyclopropane-1,1-dicarboxylate

1.74 g, 90% yield. Yellow oil. R_f = 0.31 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 10.02 (s, 1H), 7.77 – 7.79 (m, 2H), 7.47 – 7.38 (m, 5H), 7.22 (d, *J* = 8.3 Hz, 1H), 4.21 – 4.10 (m, 2H), 3.92 (q, *J* = 7.1 Hz, 2H), 3.03 (t, *J* = 8.7 Hz, 1H), 2.22 (dd, *J* = 8.2, 5.6 Hz, 1H), 1.72 (dd, *J* = 9.1, 5.5 Hz, 1H), 1.22 (t, *J* = 7.1 Hz, 3H), 0.90 (t, *J* = 7.1 Hz, 3H).

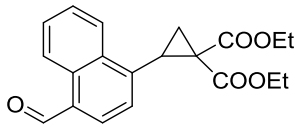
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.8, 168.7, 166.3, 144.9, 139.6, 139.3, 135.3, 131.1, 129.3, 128.3, 128.0, 127.8, 126.9, 61.7, 61.4, 39.1, 31.7, 19.2, 14.1, 13.8.

IR (KBr) v 2980, 1727, 1701, 1373, 1324, 1274, 1211, 1132, 1025, 703.
HRMS (APCI) *m/z*: Calcd for $C_{22}H_{21}O_6$ ($[M-H]^-$) 365.1395, found 365.1386.



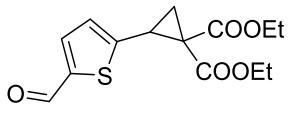
1g (QY-658')

Diethyl 2-(3-fluoro-4-formylphenyl)cyclopropane-1,1-dicarboxylate
2.34 g, 48% yield. White solid, m.p. 76-77 °C. R_f = 0.17 (petroleum ether/ethyl acetate, 10:1).
^{1}H NMR (500 MHz, $CDCl_3$) δ 10.30 (s, 1H), 7.78 (t, *J* = 7.6 Hz, 1H), 7.13 (d, *J* = 8.0 Hz, 1H), 7.03 (d, *J* = 11.2 Hz, 1H), 4.32 – 4.20 (m, 2H), 3.98 – 3.87 (m, 2H), 3.21 (t, *J* = 8.5 Hz, 1H), 2.16 (dd, *J* = 7.6, 5.6 Hz, 1H), 1.78 (dd, *J* = 9.0, 5.5 Hz, 1H), 1.31 (t, *J* = 7.1 Hz, 3H), 0.96 (t, *J* = 7.1 Hz, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 186.7 (d, $^3J_{CF}$ = 6.1 Hz), 169.1, 166.0, 164.3 (d, $^1J_{CF}$ = 258.9 Hz), 144.9 (d, $^3J_{CF}$ = 8.9 Hz), 128.4 (d, $^3J_{CF}$ = 2.0 Hz), 125.0 (d, $^4J_{CF}$ = 2.9 Hz), 123.1 (d, $^2J_{CF}$ = 8.2 Hz), 116.5 (d, $^2J_{CF}$ = 21.3 Hz), 62.1, 61.5, 38.0, 31.3, 19.0, 14.1, 13.8.
^{19}F NMR (376 MHz, $CDCl_3$) δ -122.1 (s)
IR (KBr) v 2985, 1726, 1696, 1621, 1323, 1280, 1207, 1133.
HRMS (APCI) *m/z*: Calcd for $C_{16}H_{16}FO_5$ ($[M-H]^-$) 307.0987, found 307.0984.



1h (QY-688)

Diethyl 2-(4-formylnaphthalen-1-yl)cyclopropane-1,1-dicarboxylate
0.36 g, 26% yield. White solid, m.p. 82-84 °C. R_f = 0.19 (petroleum ether/ethyl acetate, 10:1).
^{1}H NMR (500 MHz, $CDCl_3$) δ 10.35 (s, 1H), 9.27 (d, *J* = 8.2, 1H), 8.31 (dd, *J* = 8.4, 1H), 7.91 (d, *J* = 7.3 Hz, 1H), 7.71 – 7.64 (m, 2H), 7.48 (d, *J* = 7.3 Hz, 1H), 4.42 – 4.30 (m, 2H), 3.70 (t, *J* = 8.6 Hz, 1H), 3.62 – 3.51 (m, 2H), 2.44 (dd, *J* = 8.0, 5.2 Hz, 1H), 1.86 (dd, *J* = 8.9, 5.2 Hz, 1H), 1.36 (t, *J* = 7.1 Hz, 3H), 0.41 (t, *J* = 7.1 Hz, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 193.3, 169.5, 166.4, 139.0, 136.0, 133.4, 131.1, 130.4, 128.9, 127.2, 125.2, 125.00, 124.96, 62.1, 61.1, 37.3, 30.0, 18.4, 14.1, 13.2.
IR (KBr) v 2985, 1723, 1690, 1316, 1288, 1202, 1132, 760.
HRMS (APCI) *m/z*: Calcd for $C_{20}H_{19}O_5$ ($[M-H]^-$) 339.1238, found 339.1231.



1i (QY-699)

Diethyl 2-(5-formylthiophen-2-yl)cyclopropane-1,1-dicarboxylate

0.74 g, 50% yield. Yellow oil. R_f = 0.27 (petroleum ether/ethyl acetate, 4:1).

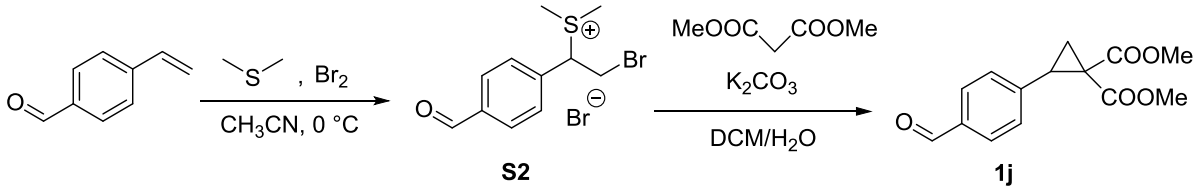
^{1}H NMR (500 MHz, $CDCl_3$) δ 9.81 (s, 1H), 7.59 (d, *J* = 3.8 Hz, 1H), 6.94 (d, *J* = 3.8 Hz, 1H), 4.32 – 4.19 (m, 2H), 4.04 – 3.93 (m, 2H), 3.29 (t, *J* = 8.3 Hz, 1H), 2.13 (dd, *J* = 7.6, 5.4 Hz, 1H), 1.86 (dd, *J* = 9.1, 5.4 Hz, 1H), 1.30 (t, *J* = 7.1 Hz, 3H), 1.02 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 182.5, 168.8, 165.9, 149.5, 142.9, 136.1, 127.3, 62.2, 61.7, 38.6, 26.9, 20.8, 14.1, 13.8.

IR (KBr) v 2980, 2912, 1720, 1665, 1319, 1272, 1200, 1132, 670.

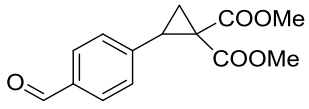
HRMS (APCI) *m/z*: Calcd for $C_{14}H_{15}O_5$ ([M-H]$^-$) 295.0646, found 295.0640.

Synthesis of 1j.



To a solution of dimethyl sulfide (3.4 mL, 46 mmol) in CH_3CN (20 mL) kept at 0 °C was added bromine (0.67mL, 13 mmol) to give a yellow precipitate. 4-vinylbenzaldehyde (2.60 g, 19.7 mmol) was then added and stirring was continued for 30 min at the same temperature. The solution was then brought to room temperature and stirred further for 1 h, and diethyl ether (30 mL) was added to it to give a white precipitate that was then filtered and washed with diethyl ether to give the corresponding bromosulfonium bromide **S2** as a white solid (2.30 g, 50% yield), which was directly used in the next step.

Potassium carbonate (2.07 g, 15 mmol) was added to a solution containing **S2** (1.77 g, 5 mmol) in CH_2Cl_2:H_2O (1:1) mixture (50 mL). Dimethyl malonate (0.63 ml, 5.5 mmol) was added to it and the reaction mixture was stirred for 48 h at room temperature. The CH_2Cl_2 layer was then separated and the aqueous layer was washed three times with dichloromethane (20 mL) and added to the organic layer. The combined organic layers were dried over anhydrous Na_2SO_4 and then evaporated. The residue was then purified by column chromatography on silica gel (petroleum ether/ethyl acetate, 5:1 - 3:1) to give product **1j**.



1j (QY-604)

Dimethyl 2-(4-formylphenyl)cyclopropane-1,1-dicarboxylate

0.39 g, 30% yield. Colorless crystalline solid (0.39g, 30%), m.p. 44-46 ^{o}C. R_f = 0.21 (petroleum ether/ethyl acetate, 5:1).

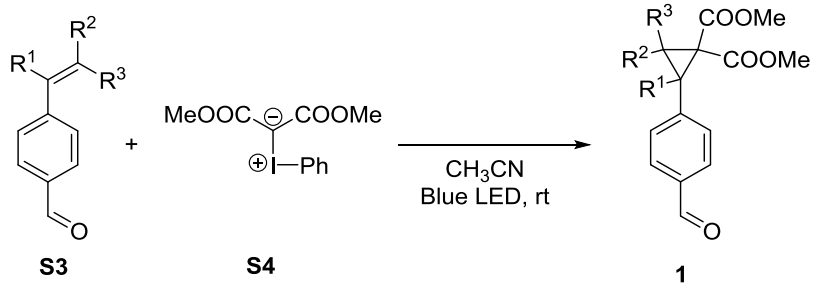
^{1}H NMR (500 MHz, $CDCl_3$) δ 9.98 (s, 1H), 7.80 (d, *J* = 8.2 Hz, 2H), 7.36 (d, *J* = 8.1 Hz, 2H), 3.81 (s, 3H), 3.39 (s, 3H), 3.27 (t, *J* = 8.6 Hz, 1H), 2.24 (dd, *J* = 8.0, 5.4 Hz, 1H), 1.81 (dd, *J* = 9.1, 5.4 Hz, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.8, 169.8, 166.7, 141.9, 135.5, 129.6, 129.1, 53.1, 52.50, 37.7, 32.2, 19.3.

IR (KBr) v 2955, 1730, 1702, 1608, 1439, 1334, 1280, 1175, 1132, 839.

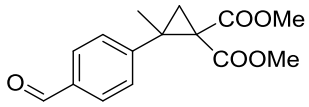
HRMS (APCI) *m/z*: Calcd for $C_{14}H_{13}O_5$ ($[M-H]^-$) 261.0768, found 261.0763.

General procedure B for synthesis of 1k-1o



S3 **S4** **1**

This procedure was performed according to the known literature[2]. Into a suspension of iodonium ylide (1 equiv) in CH_3CN (10 mL/mmol) was added **S4** (2 equiv) in one portion under nitrogen atmosphere. The reaction mixture was irradiated with blue LED and stirred at room temperature for 24h. The mixture was then evaporated to dryness and diluted with EtOAc and washed with saturated aq. $Na_2S_2O_3$. The aqueous layer was washed with EtOAc once, and the combined organic layere were dried over anhydrous $MgSO_4$ and then evaporated. The residue was then purified by column chromatography on silica gel to afforded the desired product **1**.



1k (QY-602)

Dimethyl 2-(4-formylphenyl)-2-methylcyclopropane-1,1-dicarboxylate

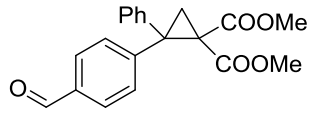
0.59 g, 27% yield. Yellow oil. R_f = 0.19 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.98 (s, 1H), 7.83 (d, *J* = 7.6 Hz, 2H), 7.47 (d, *J* = 7.6 Hz, 2H), 3.86 (s, 3H), 3.39 (s, 3H), 2.21 (d, *J* = 5.0 Hz, 1H), 1.77 (d, *J* = 4.9 Hz, 1H), 1.51 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.9, 168.3, 167.9, 148.2, 135.2, 129.8, 129.0, 52.9, 52.46, 40.4, 37.6, 25.0, 24.2.

IR (KBr) v 2952, 1732, 1702, 1608, 1436, 1307, 1269, 1128, 1103, 835.

HRMS (APCI) *m/z*: Calcd for $C_{15}H_{15}O_5$ ($[M-H]^-$) 275.0925, found 275.0921.



1l (QY-633)

Dimethyl 2-(4-formylphenyl)-2-phenylcyclopropane-1,1-dicarboxylate

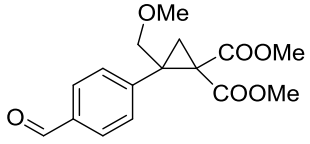
0.43 g, 18% yield. Yellow oil. R_f = 0.16 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.94 (s, 1H), 7.78 (d, *J* = 8.2 Hz, 2H), 7.60 (d, *J* = 8.1 Hz, 2H), 7.42 (d, *J* = 7.4 Hz, 2H), 7.29 – 7.25 (m, 2H), 7.21 – 7.19 (m, 1H), 3.49 (s, 3H), 3.46 (s, 3H), 2.57 (d, *J* = 5.4 Hz, 1H), 2.48 (d, *J* = 5.4 Hz, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.6, 167.5, 167.1, 147.2, 139.1, 135.2, 129.8, 129.5, 128.9, 128.6, 127.8, 52.6, 52.5, 46.9, 41.3, 23.8.

IR (KBr) v 2954, 1734, 1701, 1605, 1436, 1338, 1248, 1118, 756, 701.

HRMS (APCI) *m/z*: Calcd for $C_{20}H_{17}O_5$ ($[M-H]^-$) 337.1081, found 337.1078.



1m (QY-611)

Dimethyl 2-(4-formylphenyl)-2-(methoxymethyl)cyclopropane-1,1-dicarboxylate

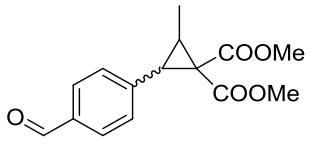
0.45 g, 24% yield. Yellow oil. R_f = 0.19 (petroleum ether/ethyl acetate, 3:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.99 (s, 1H), 7.83 (d, *J* = 8.0, 2H), 7.50 (d, *J* = 8.0, 2H), 3.82 (s, 3H), 3.73 (d, *J* = 10.0, 1H), 3.59 (d, *J* = 10.0, 1H), 3.41 (s, 3H), 3.23 (s, 3H), 2.16 (d, *J* = 5.3 Hz, 1H), 2.04 (d, *J* = 5.2, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.8, 167.8, 167.7, 144.9, 135.6, 129.9, 129.6, 74.7, 58.8, 52.8, 52.6, 40.7, 38.4, 21.3.

IR (KBr) v 2952, 1735, 1702, 1608, 1436, 1231, 1134, 1110, 837.

HRMS (APCI) *m/z*: Calcd for $C_{16}H_{19}O_6$ ($[M-H]^-$) 307.1176, found 307.1182.



1n (QY-617)

Dimethyl 2-(4-formylphenyl)-3-methylcyclopropane-1,1-dicarboxylate

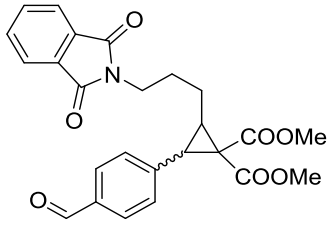
0.64 g, 29% yield. Colorless oil. R_f = 0.26 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.97 (s, 1H), 7.79 (d, *J* = 7.9 Hz, 2H), 7.37 (d, *J* = 7.9 Hz, 2H), 3.82 (s, 3H), 3.41 (s, 3H), 3.10 (d, *J* = 8.0 Hz, 1H), 2.64 – 2.58 (m, 1H), 1.30 (d, *J* = 6.3 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.8, 167.9, 167.2, 142.4, 135.3, 129.5, 129.2, 52.8, 52.4, 43.6, 37.6, 25.5, 12.5.

IR (KBr) v 2954, 1730, 1702, 1437, 1297, 1215, 1142, 841.

HRMS (APCI) *m/z*: Calcd for $C_{15}H_{17}O_5$ ($[M-H]^-$) 277.1071, found 277.1077.



1o (QY-635)

dimethyl 2-(3-(1,3-dioxoisoindolin-2-yl)propyl)-3-(4-formylphenyl)cyclopropane-1,1-dicarboxylate

0.60 g, 22% yield. Colorless wax. R_f = 0.24 (petroleum ether/dichloromethane/ethyl acetate/, 5:3:1).

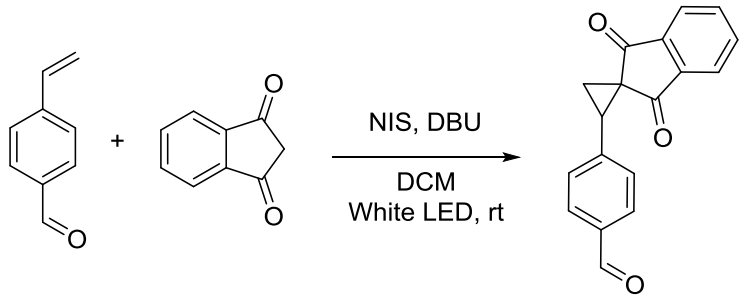
^{1}H NMR (400 MHz, $CDCl_3$) δ 9.97 (s, 1H), 7.85 – 7.83 (m, 2H), 7.78 (d, *J* = 8.0 Hz, 2H), 7.73 – 7.71 (m, 2H), 7.37 (d, *J* = 8.0 Hz, 2H), 3.80 (s, 3H), 3.77 – 3.73 (m, 2H), 3.39 (s, 3H), 3.14 (d, *J* = 8.1 Hz, 1H), 2.63 (q, *J* = 7.6 Hz, 1H), 1.90 – 1.84 (m, 2H), 1.62 (q, *J* = 7.5 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 191.8, 168.3, 167.9, 167.0, 142.1, 135.4, 134.0, 132.1, 129.6, 129.2, 123.2, 53.0, 52.5, 43.1, 37.4, 36.8, 30.5, 27.8, 24.8.

IR (KBr) v 2946, 2845, 1711, 1608, 1437, 1397, 1297, 1211, 721.

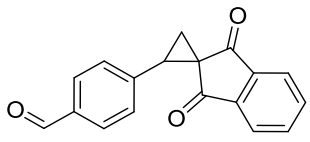
HRMS (APCI) *m/z*: Calcd for $C_{25}H_{22}O_7N$ ([M-H]$^-$) 448.1402, found 448.1401.

Synthesis of 1p.



S5 **1p**

This procedure was performed according to the known literature[3]. Into an oven-dried reaction flask flushed with nitrogen was added **S5** (0.58g, 4 mmol), 4-vinylbenzaldehyde (1.0 mL, 8 mmol) , NIS (1.80 g, 8 mmol), DBU (0.6 mL, 4 mmol), and DCM (40 mL). Then the reaction mixture was stirred for 2 h at room temperature under nitrogen atmosphere in the presence of white LED light. After the reaction was complete, the mixture was washed with aq. $Na_2S_2O_3$ (30 mL) and extracted with DCM three times. The combined organic layers were dried with anhydrous $MgSO_4$ and evaporated under vacuum. The crude mixture was purified by column chromatography on silica gel (petroleum ether/ethyl acetate, 5:1 – pure ethyl acetate) and then recrystallization from dichloromethane/petroleum ether to give product **1p**.



1p (QY-538)

4-(1',3'-dioxo-1',3'-dihydrospiro[cyclopropane-1,2'-inden]-2-yl)benzaldehyde

0.81 g, 74% yield. White solid, m.p. 176-178 ^{o}C. R_f = 0.17 (petroleum ether/ethyl acetate, 5:1).

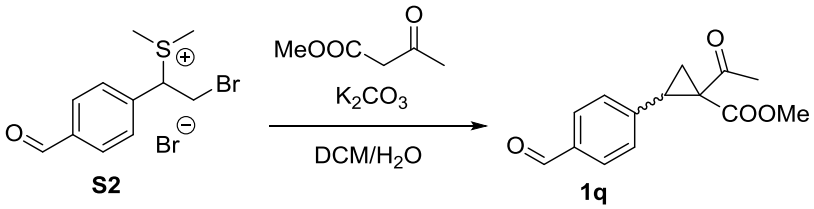
^{1}H NMR (500 MHz, $CDCl_3$) δ 9.99 (s, 1H), 8.00 (d, *J* = 8.0 Hz, 1H), 7.84 – 7.77 (m, 5H), 7.48 (d, *J* = 7.9 Hz, 2H), 3.47 (t, *J* = 8.8 Hz, 1H), 2.51 (dd, *J* = 8.6, 4.4 Hz, 1H), 2.35 (dd, *J* = 8.9, 4.3 Hz, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 197.6, 195.6, 191.7, 142.5, 141.6, 140.7, 135.7, 135.1, 135.0, 129.9, 129.5, 122.7, 122.6, 42.5, 39.9, 22.2.

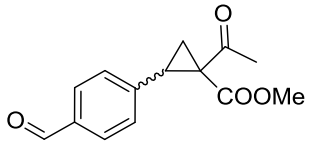
IR (KBr) v 2923, 1702, 1605, 1334, 1313, 1221, 1039, 768.

HRMS (APCI) *m/z*: Calcd for $C_{18}H_{11}O_3$ ($[M-H]^-$) 275.0714, found 275.0711.

Synthesis of 1q.



Prepared from procedure similar with **1q**.



1q (QY-574)

Methyl 1-acetyl-2-(4-formylphenyl)cyclopropane-1-carboxylate

0.53 g, 72% yield, 2:1 dr. Colorless oil. R_f = 0.26 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ Major 9.99 (s, 1H), 7.81 – 7.79 (m, 2H), 7.36 (d, *J* = 7.8 Hz, 2H), 3.39 (d, *J* = 19.3 Hz, 3H), 3.36 (m, 1H), 2.46 (s, 3H), 2.28 (dd, *J* = 7.7, 4.8 Hz, 1H), 1.81 – 1.74 (m, 1H).

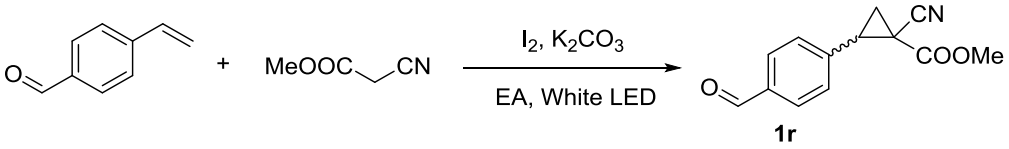
Minor δ 9.97 (s, 1H), 7.83 – 7.77 (m, 2H), 7.30 (d, *J* = 7.8 Hz, 2H), 3.83 (s, 3H), 3.35 (m, 1H), 2.38 (dd, *J* = 7.7, 5.4 Hz, 1H), 1.97 (s, 3H), 1.81 – 1.74 (m, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 201.6, 199.3, 191.8, 191.7, 170.5, 168.3, 142.1, 141.0, 135.5, 135.4, 129.7, 129.5, 129.4, 129.1, 52.9, 52.2, 44.8, 44.6, 34.6, 34.3, 30.3, 29.6, 21.7, 18.3.

IR (KBr) v 2954, 1701, 1608, 1437, 1324, 1210, 1170, 1119, 838.

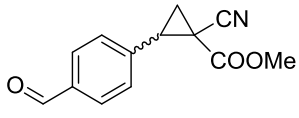
HRMS (APCI) *m/z*: Calcd for $C_{14}H_{13}O_4$ ($[M-H]^-$) 245.0819, found 245.0813.

Synthesis of 1r.



1r

This procedure was performed according to the known literature[4]. A solution of 4-vinylbenzaldehyde (0.51 mL, 4 mmol), methyl 2-cyanoacetate (0.35 mL, 4 mmol), I_2 (1.02 g, 4 mmol) and K_2CO_3 (0.55 g, 4 mmol) in EtOAc (40 mL) was irradiated with White LED under an nitrogen atmosphere and stirred for 20 h. The reaction mixture was washed with aq. $Na_2S_2O_3$, extracted with EtOAc, and then the organic layer was dried over $MgSO_4$ and concentrated in vacuo. Purification of the crude product by flash chromatography on silica gel (petroleum ether/acetone, 4:1) provided desired product **1r**.



1r (QY-575)

Methyl 1-cyano-2-(4-formylphenyl)cyclopropane-1-carboxylate

0.49 g, 54% yield, 6:1 dr. White solid, m.p. 96-98 ^{o}C. R_f = 0.28 (petroleum ether/acetone, 4:1).

^{1}H NMR (500 MHz, $CDCl_3$) Major δ 10.03 (s, 1H), 7.91 (d, *J* = 8.0 Hz, 2H), 7.46 (d, *J* = 7.7 Hz, 2H), 3.89 (s, 3H), 3.24 (t, *J* = 8.7 Hz, 1H), 2.25 (dd, *J* = 9.0, 5.5 Hz, 1H), 2.17 (dd, *J* = 8.3, 5.5 Hz, 1H).

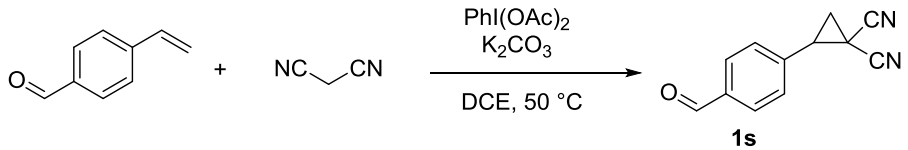
Minor δ 10.00 (s, 1H), 7.85 (d, *J* = 8.0 Hz, 2H), 7.46 (d, *J* = 7.7 Hz, 2H), 3.59 (s, 3H), 3.34 (t, *J* = 9.1 Hz, 1H), 2.42 (dd, *J* = 8.8, 5.8 Hz, 1H), 2.17 (m, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.5, 191.5, 167.4, 164.4, 139.5, 138.7, 136.4, 136.2, 130.1, 130.0, 129.7, 129.0, 118.4, 115.8, 53.9, 53.5, 36.1, 34.9, 23.0, 23.0, 21.0, 20.5.

IR (KBr) v 2242, 1738, 1699, 1608, 1443, 1299, 1267, 1207, 1158.

HRMS (APCI) *m/z*: Calcd for $C_{13}H_{10}O_3N$ ([M-H]$^-$) 228.0666, found 228.0660.

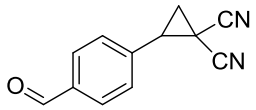
Synthesis of 1s.



1s

This procedure was performed according to the known literature[5]. $PhI(OAc)_2$ (4.25 g, 13.2 mmol), K_2CO_3 (1.82 g, 13.2 mmol), malononitrile (0.48 g, 7.2 mmol) and 4-vinylbenzaldehyde (0.76 mL, 6 mmol) were dissolved in DCE (30 mL). The mixture was stirred at 50 ℃ for 2 h (monitored by TLC). Then the reaction mixture was cooled to room temperature. The undissolved solid was removed by filtration through a pad of Celite. The filtrate was concentrated under reduced pressure, and the residue was purified by flash silica gel column chromatography (petroleum

ether/acetone, 4:1) to give **1s**.



1s (QY-519)

2-(4-formylphenyl)cyclopropane-1,1-dicarbonitrile

0.69 g, 58% yield. White solid, m.p. 82-84 ^{o}C. R_f = 0.31 (petroleum ether/acetone, 4:1).

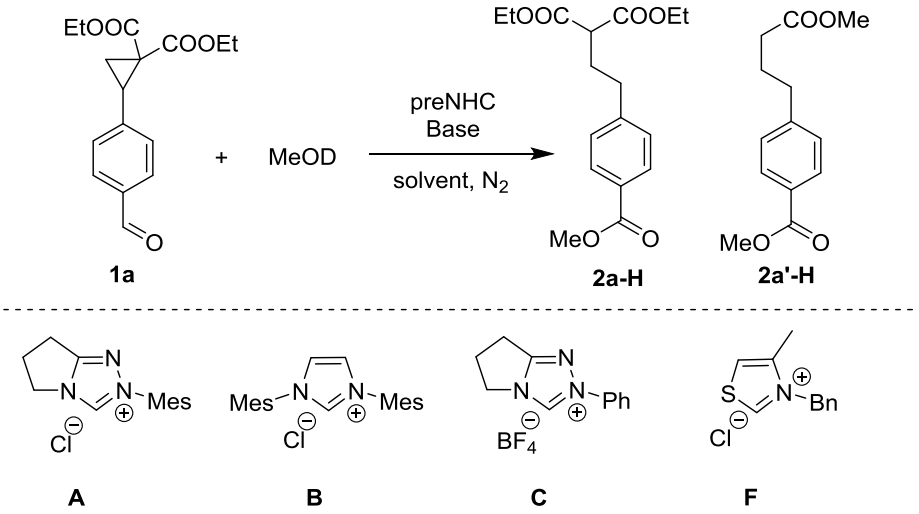
^{1}H NMR (500 MHz, $CDCl_3$) δ 10.05 (s, 1H), 7.95 (d, *J* = 8.0 Hz, 2H), 7.49 (d, *J* = 7.9 Hz, 2H), 3.36 (t, *J* = 9.0 Hz, 1H), 2.34 (d, *J* = 8.9 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.2, 137.0, 136.9, 130.3, 129.1, 114.8, 112.6, 34.5, 22.5, 7.6.

IR (KBr) v 2248, 1700, 1609, 1574, 1312, 1211, 1172, 987, 836.

HRMS (APCI) *m/z*: Calcd for $C_{12}H_7ON_2$ ([M-H]$^-$) 195.0564, found 195.0555.

3. Preliminary reaction optimization using MeOH.

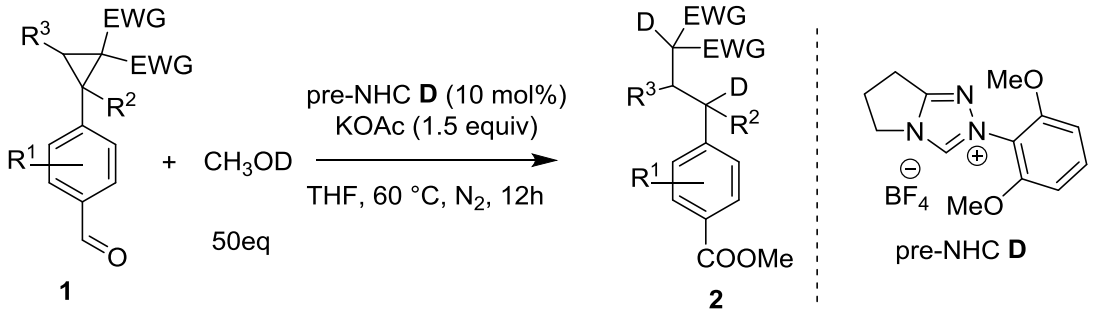


Entry	PreNHC (20 mol%)	Base (1.5 equiv)	T (°C)	Solvent	Yield/3a (%)	Yield/3a' (%)
1	**A**	Cs_2CO_3	rt	THF	0	0
2	**A**	Cs_2CO_3	70	THF	trace	0
3	**A**	Cs_2CO_3	100	THF	0	30
4	**A**	KOAc	100	THF	74	0
5	**B**	KOAc	100	THF	16	0
6	**C**	KOAc	100	THF	60	0
7	**F**	KOAc	100	THF	7	0
8	**A**	Cs_2CO_3 (0.2 eq)	100	THF	51	0

9	**A**	K_3PO_4	100	THF	0	trace
10	**A**	DIPEA	100	THF	trace	0
11	**A**	KOAc	100	CH_3CN	66	0
12	**A**	KOAc	100	PhMe	28	0
13	**A**	KOAc	100	DCE	34	0

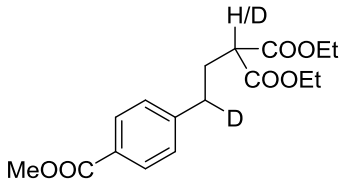
Reaction conditions: **1a** (0.3 mmol), **preNHC** (20 mol%), Base (1.5 equiv), and MeOH (50 equiv) in solvent (4 mL) at indicated temperature for 12 h. Isolated yields reported.

4. General procedure for 1,3-deuteration via ring opening of DA cyclopropanes.



Typical procedure: To an oven-dried 25 mL Schlenk tube equipped with a stir bar was charged with donor-acceptor cyclopropane **1a** (R^1, R^2, R^3 = H, EWG = COOEt, 58.0 mg, 0.2 mmol), pre-NHC **D** (6.7 mg, 0.02 mmol) and KOAc (29.4 mg, 0.3 mmol). This tube was closed with a septum, evacuated, backfilled with nitrogen three times. To this mixture was added CH_3OD (0.4 mL, 10 mmol) freshly distilled dry THF (4 mL). The reaction mixture was stirred at 60 °C until the full consumption of **1a** (Typically within 12 h). The reaction mixture was concentrated under reduced pressure, and the residue was purified by column chromatography on silica gel (petroleum ether/EtOAc, 5:1 as the eluent) to give the product **2a** (45.7 mg, 71% yield).

The non-deuterated samples for NMR Spectroscopy analysis were prepared using MeOH under the same conditions.



2a (QY-565-1)

Diethyl 2-(2-(4-(methoxycarbonyl)phenyl)ethyl-2-*d*)malonate-*d*

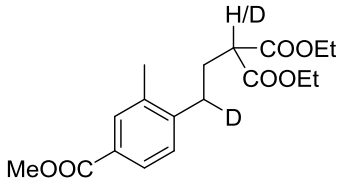
46 mg, 71% yield. Colorless oil. R_f = 0.42 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.96 (d, *J* = 8.2 Hz, 2H), 7.26 (d, *J* = 8.2 Hz, 2H), 4.23 – 4.17 (m, 4H), 3.90 (s, 3H), 3.32 (t, *J* = 7.4 Hz, 0.91H, 9% D), 2.74 – 2.68 (m, 1.16H, 84% D), 2.22 (t, *J* = 7.6 Hz, 2H), 1.27 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 169.1, 167.0, 146.1, 129.8, 128.6, 128.3, 61.4, 52.0, 51.2, 33.3, 33.2, 33.0, 32.8, 29.9, 14.1.

IR (KBr) v 2983, 1725, 1612, 1436, 1279, 1179, 1108.

HRMS (ESI) *m/z*: Calcd for $C_{17}H_{21}DNaO_6$ ($[M+Na]^+$) 346.1377, found 346.1386.



2b (QY-697')

Diethyl 2-(2-(4-(methoxycarbonyl)-2-methylphenyl)ethyl-2-*d*)malonate-*d*

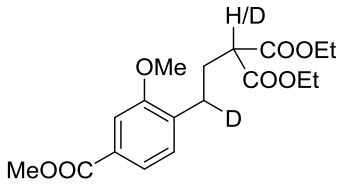
55 mg, 81% yield. Colorless oil. R_f = 0.40 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (400 MHz, $CDCl_3$)δ 7.82 – 7.78 (m, 2H), 7.20 (d, *J* = 7.9 Hz, 1H), 4.24 – 4.18 (m, 4H), 3.89 (s, 3H), 3.38 (t, *J* = 7.3 Hz, 1H, <5% D), 2.72 – 2.66 (m, 1.22H, 78% D), 2.36 (s, 3H), 2.15 (t, *J* = 7.8 Hz, 2H), 1.28 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 169.2, 167.2, 144.5, 136.3, 131.4, 129.1, 128.2, 127.3, 61.5, 52.0, 51.6, 31.0, 30.8, 30.6, 30.5, 28.8, 28.7, 19.1, 14.1.

IR (KBr) v 2981, 1725, 1438, 1370. 1294, 1268, 1195, 1025.

HRMS (ESI) *m/z*: Calcd for $C_{18}H_{23}DNaO_6$ ($[M+Na]^+$) 360.1533, found 360.1525.

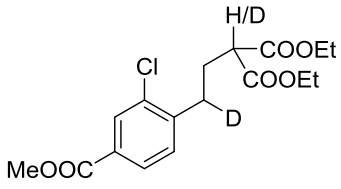


2c (QY-680)

Diethyl 2-(2-(2-methoxy-4-(methoxycarbonyl)phenyl)ethyl-2-*d*)malonate-*d*

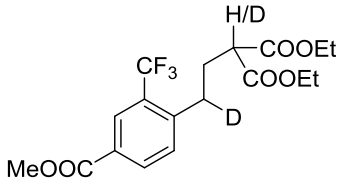
50 mg , 71% yield. Colorless oil. R_f = 0.29 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.59 – 7.57 (m, 1H), 7.49 (s, 1H), 7.18 (d, *J* = 7.7 Hz, 1H), 4.22 – 4.17 (m, 4H), 3.91 (s, 3H), 3.87 (s, 3H), 3.32 (t, *J* = 7.5 Hz, 0.99H, <5% D), 2.73 – 2.68 (m, 1.20H, 80% D), 2.19 (q, *J* = 7.5 Hz, 2H), 1.27 (t, *J* = 7.1 Hz, 6H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 169.4, 167.1, 157.4, 134.7, 129.9, 129.5, 122.0, 110.9, 61.3, 55.4, 52.1, 51.5, 28.4, 28.3, 28.0, 27.8, 27.7, 27.5, 14.1.
IR (KBr) v 2982, 1722, 1436, 1410, 1289, 1272, 1036, 760.
HRMS (ESI) *m/z*: Calcd for $C_{18}H_{23}DNaO_7$ ($[M+Na]^+$) 376.1482, found 376.1475.



2d (QY-690)

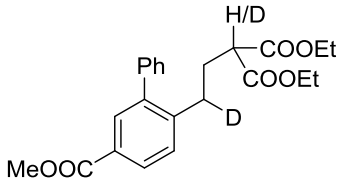
Diethyl 2-(2-(2-chloro-4-(methoxycarbonyl)phenyl)ethyl-2-*d*)malonate-*d*
41 mg, 57% yield. Colorless oil. R_f = 0.39 (petroleum ether/ethyl acetate, 5:1).
^{1}H NMR (400 MHz, $CDCl_3$) δ 8.02 (d, *J* = 1.5 Hz, 1H), 7.86 (dd, *J* = 8.0, 1.6 Hz, 1H), 7.31 (d, *J* = 8.0 Hz, 1H), 4.24 – 4.18 (m, 4H), 3.91 (s, 3H), 3.36 (t, *J* = 7.4 Hz, 1H, <5% D), 2.86 – 2.80 (m, 1.17H, 83% D), 2.22 (q, *J* = 7.7 Hz, 2H), 1.28 (t, *J* = 7.1 Hz, 6H).
^{13}C NMR (101 MHz, $CDCl_3$) δ 169.05, 165.9, 143.6, 134.2, 130.7, 130.5, 129.9, 128.0, 61.5, 52.3, 51.4, 31.2, 31.1, 30.9, 30.8, 28.1, 14.1.
IR (KBr) v 2983, 1729, 1438, 1290, 1258, 1154, 1045, 763.
HRMS (ESI) *m/z*: Calcd for $C_{17}H_{20}DClNaO_6$ ($[M+Na]^+$) 380.0987, found 380.0979.



2e (QY-717)

Diethyl 2-(2-(4-(methoxycarbonyl)-2-(trifluoromethyl)phenyl)ethyl-2-*d*)malonate-*d*
50 mg, 64% yield. Colorless oil. R_f = 0.35 (petroleum ether/ethyl acetate, 10:1).
^{1}H NMR (500 MHz, $CDCl_3$) δ 8.30 (s, 1H), 8.14 (d, *J* = 8.0, 1H), 7.47 (d, *J* = 8.0 Hz, 1H), 4.24 – 4.20 (m, 4H), 3.94 (s, 3H), 3.42 (t, *J* = 7.3 Hz, 0.97H, <5% D), 2.91 – 2.85 (m, 1.17H, 83% D), 2.21 (t, *J* = 7.8 Hz, 2H), 1.29 (t, *J* = 7.1 Hz, 6H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 169.0, 165.8, 144.9, 132.8, 131.5, 128.9 (q, $^2J_{CF}$ = 30.6 Hz), 128.6, 127.5 (q, $^3J_{CF}$ = 5.6 Hz), 124.0 (q, $^1J_{CF}$ = 274.2 Hz), 61.6, 52.4, 51.6, 30.2, 30.1, 30.0, 29.9, 29.8, 14.1.
^{19}F NMR (376 MHz, $CDCl_3$) δ -60.0 (s)
IR (KBr) v 2985, 1731, 1620, 1442, 1327, 1257, 1123, 1054, 761.

HRMS (ESI) *m/z*: Calcd for $C_{18}H_{20}DF_3NaO_6$ ([M+Na]$^+$) 414.1251, found 414.1248.



2f (QY-705)

Diethyl 2-(2-(5-(methoxycarbonyl)-[1,1'-biphenyl]-2-yl)ethyl-2-*d*)malonate-*d*

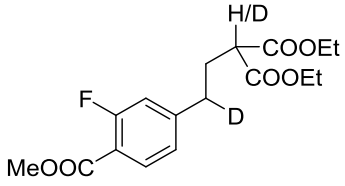
64 mg (0.2mmol scale), 80% yield. Colorless oil. R_f = 0.33 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.96 (dd, *J* = 7.9, 1.6 Hz, 1H), 7.89 (d, *J* = 1.5 Hz, 1H), 7.44 – 7.35 (m, 4H), 7.29 – 7.26 (m, 2H), 4.10 (q, *J* = 7.1 Hz, 4H), 3.90 (s, 3H), 3.18 (t, *J* = 7.4 Hz, 0.94H, 6% D), 2.70 – 2.65 (m, 1.18H, 82% D), 2.05 (t, *J* = 7.8 Hz, 2H), 1.20 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.0, 167.0, 143.6, 142.2, 140.5, 131.4, 129.5, 129.1, 128.6, 128.3, 128.1, 127.3, 61.4, 52.1, 51.5, 30.7, 30.5, 30.4, 30.2, 29.7, 29.6, 14.0.

IR (KBr) v 2924, 1724, 1439, 1306, 1240, 1153, 1109, 1025.

HRMS (ESI) *m/z*: Calcd for $C_{23}H_{25}DNaO_6$ ([M+Na]$^+$) 422.1690, found 422.1686.



2g (QY-661)

Diethyl 2-(2-(3-fluoro-4-(methoxycarbonyl)phenyl)ethyl-2-*d*)malonate-*d*

27 mg, 39% yield. Colorless oil. R_f = 0.34 (petroleum ether/ethyl acetate, 10:1).

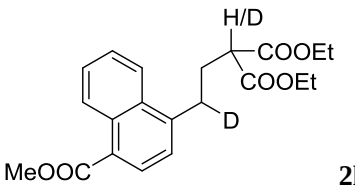
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.86 (t, *J* = 7.8 Hz, 1H), 7.04 – 7.02 (m, 1H), 6.98 (d, *J* = 11.5 Hz, 1H), 4.23 – 4.18 (m, 4H), 3.92 (s, 3H), 3.31 (t, *J* = 7.4 Hz, 0.90H, 10% D), 2.72 – 2.67 (m, 1.15H, 85% D), 2.24 – 2.20 (m, 2H), 1.28 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.0, 164.8 (d, $^3J_{CF}$ = 3.6 Hz), 162.0 (d, $^1J_{CF}$ = 206.2 Hz), 148.6, 132.3, 124.2 (d, $^4J_{CF}$ = 3.0 Hz), 116.9 (d, $^2J_{CF}$ = 22.4 Hz), 116.5 (d, $^2J_{CF}$ = 10.0 Hz), 61.6, 52.2, 51.1, 33.0, 29.7, 29.6, 29.5, 14.1.

^{19}F NMR (376 MHz, $CDCl_3$) δ -109.6 (s)

IR (KBr) v 2921, 1730, 1623, 1432, 1296, 1152, 1021.

HRMS (ESI) *m/z*: Calcd for $C_{17}H_{20}DFNaO_6$ ([M+Na]$^+$) 364.1283, found 364.1278.



2h (QY-696)

Diethyl 2-(2-(4-(methoxycarbonyl)naphthalen-1-yl)ethyl-2-*d*)malonate-*d*

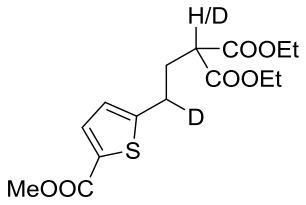
51 mg, 68% yield. Colorless oil. R_f = 0.33 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.96 – 8.94 (m, 1H), 8.15 – 8.13 (m, 1H), 8.09 (d, *J* = 7.4 Hz, 1H), 7.62 – 7.57 (m, 2H), 7.36 (d, *J* = 7.4 Hz, 1H), 4.25 – 4.19 (m, 4H), 3.99 (s, 3H), 3.45 (t, *J* = 7.3 Hz, 0.82H, 18% D), 3.19 – 3.13 (m, 1.17H, 83% D), 2.34 (t, *J* = 7.7 Hz, 2H), 1.28 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.2, 168.0, 142.7, 132.1, 131.7, 129.9, 127.4, 126.5, 126.4, 126.1, 125.2, 124.1, 61.5, 52.1, 51.6, 31.2, 31.0, 30.9, 30.7, 29.6, 29.5, 29.4, 14.1.

IR (KBr) v 2983, 1725, 1588, 1516, 1437, 1250, 1129, 1037, 777.

HRMS (ESI) *m/z*: Calcd for $C_{21}H_{23}DNaO_6$ ($[M+Na]^+$) 396.1533, found 396.1528.



2i (QY-704)

Diethyl 2-(2-(5-(methoxycarbonyl)thiophen-2-yl)ethyl-2-*d*)malonate-*d*

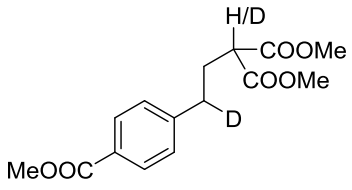
28 mg, 42% yield. Yellow oil. R_f = 0.31 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.64 (d, *J* = 3.6 Hz, 1H), 6.82 (d, *J* = 3.6 Hz, 1H), 4.23 – 4.19 (m, 4H), 3.86 (s, 3H), 3.38 (t, *J* = 7.4 Hz, 0.99H, <5% D), 2.92 – 2.87 (m, 1.21H, 79% D), 2.27 (t, *J* = 7.6 Hz, 2H), 1.28 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 168.9, 162.6, 151.2, 133.7, 131.4, 125.9, 61.6, 52.0, 50.83, 50.81, 30.14, 30.06, 27.9, 27.7, 27.5, 27.4, 14.1.

IR (KBr) v 2982, 1715, 1460, 1290, 1260, 1154, 1094, 1025, 750.

HRMS (ESI) *m/z*: Calcd for $C_{15}H_{19}DNaO_6S$ ($[M+Na]^+$) 352.0941, found 352.0937.



2j (QY-614)

Dimethyl 2-(2-(4-(methoxycarbonyl)phenyl)ethyl-2-*d*)malonate-*d*

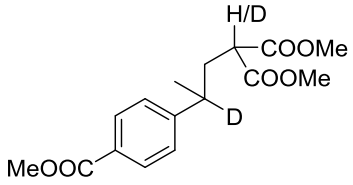
36 mg, 60% yield. Colorless oil. R_f = 0.29 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.97 (d, *J* = 7.9 Hz, 2H), 7.26 (d, *J* = 7.9 Hz, 2H), 3.91 (s, 3H), 3.74 (s, 6H), 3.37 (t, *J* = 7.4 Hz, 0.99H, <5% D), 2.73 – 2.68 (m, 1.16H, 84% D), 2.24 (t, *J* = 7.5 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.5, 167.0, 145.9, 129.8, 128.6, 128.3, 52.6, 52.1, 50.8, 33.3, 33.1, 33.0, 32.8, 30.0, 29.9.

IR (KBr) v 2955, 1732, 1649, 1613, 1435, 1280, 1108, 760.

HRMS (APCI) *m/z*: Calcd for $C_{15}H_{18}DO_6$ ($[M+H]^+$) 296.1239, found 296.1236.



2k (QY-615)

Dimethyl 2-(2-(4-(methoxycarbonyl)phenyl)propyl-2-*d*)malonate-*d*

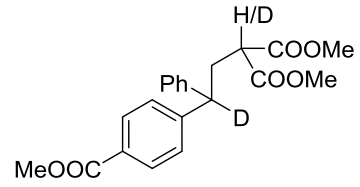
32 mg, 52% yield. Colorless oil. R_f = 0.33 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.98 (d, *J* = 8.0 Hz, 2H), 7.24 (d, *J* = 8.0 Hz, 2H), 3.91 (d, *J* = 1.8 Hz, 3H), 3.74 (s, 3H), 3.64 (s, 3H), 3.18 (dd, *J* = 8.7, 6.4 Hz, 0.99H, <5% D), 2.81 – 2.77 (m, 0.32H, 68% D), 2.27 – 2.15 (m, 2H), 1.29 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.73, 169.64, 167.0, 150.72, 150.68, 130.0, 128.5, 127.18, 127.16, 52.59, 52.57, 52.1, 49.9, 49.8, 37.9, 37.6, 37.5, 37.3, 36.7, 36.6, 22.2, 22.1.

IR (KBr) v 2956, 1731, 1611, 1436, 1281, 1155, 1113, 776, 709.

HRMS (ESI) *m/z*: Calcd for $C_{16}H_{20}DO_6$ ($[M+H]^+$) 310.1395, found 310.1400.



2l (QY-645)

Dimethyl 2-(2-(4-(methoxycarbonyl)phenyl)-2-phenylethyl-2-*d*)malonate-*d*

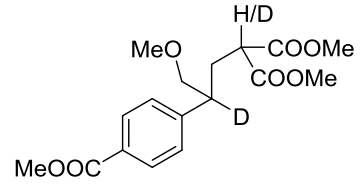
58 mg , 78% yield. Yellow oil. R_f = 0.31 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.96 (d, *J* = 8.0 Hz, 2H), 7.32 – 7.21 (m, 7H), 4.03 – 4.00 (m, 0.17H, 83% D), 3.88 (s, 3H), 3.70 (s, 3H), 3.69 (s, 3H), 3.26 (t, *J* = 7.3 Hz, 0.73H, 27% D), 2.68 (d, *J* = 7.2 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.5, 166.9, 148.6, 142.3, 130.0, 128.8, 128.6, 127.89, 127.86, 126.9, 52.6, 52.1, 49.8, 48.7, 48.2, 48.1, 34.1.

IR (KBr) v 2954, 1725, 1611, 1435, 1280, 1155, 1110, 707.

HRMS (ESI) *m/z*: Calcd for $C_{21}H_{21}DNaO_6$ ($[M+Na]^+$) 394.1377, found 394.1372.



2m (QY-622)

Dimethyl 2-(3-methoxy-2-(4-(methoxycarbonyl)phenyl)propyl-2-*d*)malonate-*d*

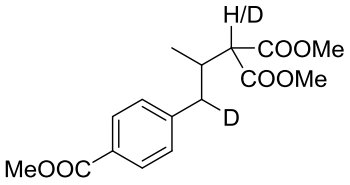
35 mg, 52% yield. Colorless oil. R_f = 0.30 (petroleum ether/ethyl acetate, 3:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.99 (d, *J* = 8.2 Hz, 2H), 7.27 – 7.26 (m, 2H), 3.91 (s, 3H), 3.73 (s, 3H), 3.61 (s, 3H), 3.53 – 3.52 (m, 2H), 3.29 (s, 3H), 3.23 (dd, *J* = 9.2, 5.6 Hz, 1H, <5% D), 2.99 – 2.93 (m, 0.19H, 81% D), 2.45 (dd, *J* = 14.1, 9.4 Hz, 1H), 2.17 (dd, *J* = 14.1, 5.6 Hz, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.6, 169.5, 166.9, 146.6, 129.9, 129.0, 128.0, 58.9, 52.6, 52.5, 52.1, 49.6, 31.6.

IR (KBr) v 2921, 2850, 1731, 1718, 1435, 1279, 1106, 1018.

HRMS (ESI) *m/z*: Calcd for $C_{17}H_{22}DO_7$ ($[M+H]^+$) 340.1501, found 340.1502.



2n (QY-623')

Dimethyl 2-(1-(4-(methoxycarbonyl)phenyl)propan-2-yl-1-*d*)malonate-*d*

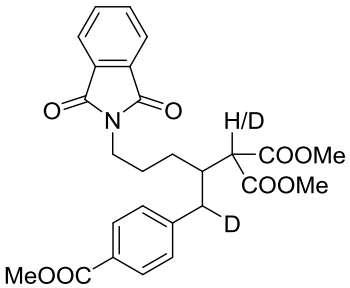
44 mg, 72% yield. Temperature: 100 °C. Reaction time: 60 h. Colorless oil. R_f = 0.23 (petroleum ether/ethyl acetate, 7:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.96 (d, *J* = 8.1 Hz, 2H), 7.26 (d, *J* = 8.0 Hz, 2H), 3.91 (s, 3H), 3.75 (s, 3H), 3.74 (s, 3H), 3.32 (d, *J* = 7.4, 0.81H, 19% D), 2.90 – 2.86 (m, 0.72H, 28% D), 2.60 – 2.55 (m, 1H), 2.50 – 2.45 (m, 0.43H, 57% D), 0.94 – 0.93 (m, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.2, 168.9, 167.1, 145.3, 129.7, 129.3, 128.3, 56.5, 52.45, 52.38, 52.0, 40.6, 40.4, 40.2, 40.1, 35.3, 35.2, 35.1, 16.8.

IR (KBr) v 2954, 1722, 1645, 1435, 1384, 1279, 688, 560.

HRMS (ESI) *m/z*: Calcd for $C_{16}H_{18}D_2NaO_6$ ($[M+Na]^+$) 333.1278, found 333.1276.



2o (QY-651)

Dimethyl 2-(1-(4-(methoxycarbonyl)phenyl)propan-2-yl-1-*d*)malonate-*d*

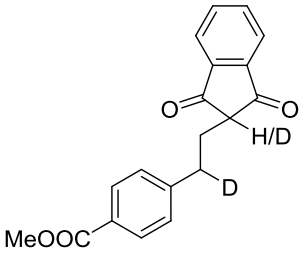
25 mg (0.1 mmol scale), 52% yield. Temperature: 100 °C. Reaction time: 24 h.Colorless wax. R_f = 0.19 (petroleum ether/ethyl acetate, 3:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.88 (d, *J* = 8.1 Hz, 2H), 7.82 (dd, *J* = 5.4, 3.0 Hz, 2H), 7.71 (dd, *J* = 5.5, 3.0 Hz, 2H), 7.23 (d, *J* = 8.1 Hz, 2H), 3.89 (s, 3H), 3.72 (s, 3H), 3.68 (s, 3H), 3.61 (t, *J* = 7.1 Hz, 2H), 3.43 – 3.41 (m, 0.93H, 7% D), 2.82 – 2.78 (m, 0.63H, 37% D), 2.67 – 2.63 (m, 0.55H, 45% D), 2.52 – 2.48 (m, 1H), 1.76 – 1.66 (m, 2H), 1.47 – 1.36 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.0, 168.9, 168.3, 166.9, 145.1, 133.9, 132.0, 129.7, 129.2, 128.3, 123.2, 53.8, 52.44, 52.40, 52.0, 39.7, 37.7, 37.5, 37.0, 29.7, 27.8, 25.5.

IR (KBr) v 2953, 2924, 1711, 1436, 1397, 1280, 1108, 1021, 721.

HRMS (ESI) *m/z*: Calcd for $C_{26}H_{26}DNNaO_8$ ($[M+Na]^+$) 505.1697, found 505.1691.



2p (QY-583)

Methyl 4-(2-(1,3-dioxo-2,3-dihydro-1H-inden-2-yl-2-*d*)ethyl-1-*d*)benzoate

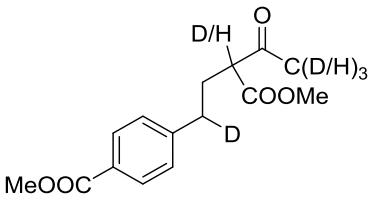
29 mg (0.2 mmol scale), 47% yield. White solid, m.p. 114-116 ^oC. R_f = 0.33 (petroleum ether/dichloromethane/ethyl acetate, 9:3:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.98 – 7.92 (m, 4H), 7.86 – 7.84 (m, 2H), 7.29 (d, *J* = 8.1 Hz, 2H), 3.89 (s, 3H), 3.00 (t, *J* = 6.4 Hz, 0.95 H, <5% D), 2.88 (t, *J* = 7.9 Hz, 1.06H, 94% D), 2.24 (t, *J* = 6.9 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 199.5, 166.0, 145.2, 141.2, 134.7, 128.8, 127.7, 127.2, 122.2, 51.2, 51.0, 31.4, 31.2, 31.0, 30.9, 27.2.

IR (KBr) v 1702, 1593, 1281, 1179, 1110, 753, 709.

HRMS (ESI) *m/z*: Calcd for $C_{19}H_{14}DO_4$ ($[M-H]^-$) 308.1039, found 308.1047.



2q (QY-597)

Methyl 4-(3-(methoxycarbonyl)-4-oxopentyl-1,3,5,5,5-*d5*)benzoate

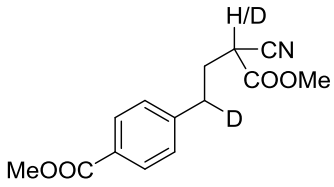
39 mg, 70% yield. Colorless oil. R_f = 0.22 (petroleum ether/ethyl acetate, 5:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.96 (d, *J* = 7.5 Hz, 2H), 7.24 (d, *J* = 7.7 Hz, 2H), 3.90 (s, 3H), 3.74 (s, 3H), 3.43 (t, *J* = 7.1 Hz, 0.92H, 8% D), 2.69 – 2.62 (m, 1.07H, 93% D), 2.21 – 2.16 (m, 3.71H, 43% D($C(D/H)_3$)).

^{13}C NMR (126 MHz, $CDCl_3$) δ 202.59, 202.54, 202.49, 170.0, 167.0, 146.0, 129.9, 128.5, 128.3, 58.5, 52.5, 52.0, 33.3, 33.1, 33.0, 32.8, 29.1, 29.0, 28.9, 28.8, 28.6.

IR (KBr) v 2954, 1717, 1612, 1436, 1281, 1179, 1109.

HRMS (ESI) *m/z*: Calcd for $C_{15}H_{15}D_2O_5$ ($[M-H]^-$) 279.1207, found 279.1214.



2r (QY-598)

Methyl 4-(3-cyano-4-methoxy-4-oxobutyl-1,3-*d2*)benzoate

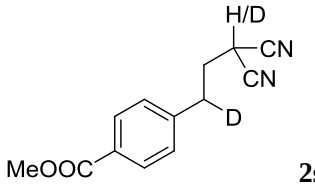
20 mg, 38% yield. Colorless oil. R_f = 0.26 (petroleum ether/ethyl acetate, 4:1).

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.9 Hz, 2H), 7.29 (d, *J* = 7.7 Hz, 2H), 3.91 (s, 3H), 3.80 (s, 3H), 3.47 (t, *J* = 7.1 Hz, 0.98H, <5% D), 2.94 – 2.84 (m, 1.16H, 84% D), 2.28 (t, *J* = 6.8 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 166.8, 166.2, 144.3, 130.1, 128.8, 128.6, 116.0, 53.6, 52.1, 36.5, 32.6, 32.5, 32.3, 32.1, 30.9, 30.8.

IR (KBr) v 2955, 1747, 1716, 1612, 1436, 1279, 1108, 758, 706.

HRMS (ESI) *m/z*: Calcd for $C_{14}H_{13}DNO_4$ ([M-H]$^-$) 261.0991, found 261.0997.



2s (QY-568)

Methyl 4-(3,3-dicyanopropyl-1,3-d2)benzoate

17 mg, 25% yield. Colorless oil. R_f = 0.26 (petroleum ether/acetone, 4:1).

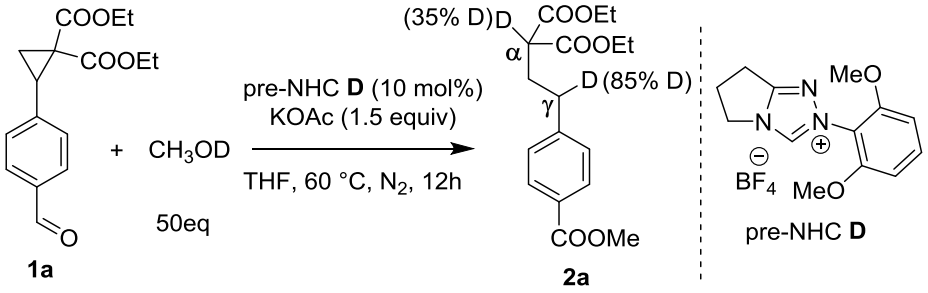
^{1}H NMR (500 MHz, $CDCl_3$) δ 8.02 (d, *J* = 7.9 Hz, 2H), 7.29 (d, *J* = 7.9 Hz, 2H), 3.92 (s, 3H), 3.63 (t, *J* = 7.0 Hz, 0.95H, 5% D), 3.02 – 2.98 (m, 1.10H, 90% D), 2.38 (t, *J* = 7.2 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 166.6, 142.5, 130.4, 129.4, 128.5, 112.2, 52.2, 32.2, 32.1, 32.03, 31.96, 31.9, 31.8, 21.7.

IR (KBr) v 2953, 2919, 1715, 1648, 1613, 1435, 1280, 1108, 757.

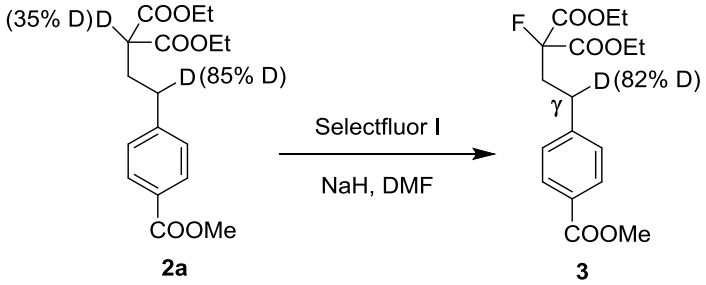
HRMS (ESI) *m/z*: Calcd for $C_{13}H_{10}DN_2O_2$ ([M-H]$^-$) 228.0889, found 228.0892.

5. Gram-scale synthesis.

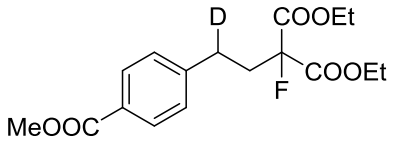


To an oven-dried 250 mL flask equipped with a stir bar was charged with pre-NHC **D** (0.17 g, 0.5 mmol) and KOAc (0.77 g, 7.8 mmol). This tube was closed with a septum, evacuated, backfilled with nitrogen three times. To this mixture was added **1a** (1.51 g, 5.2 mmol), MeOD (10.4 mL, 260 mmol), freshly distilled dry THF (100 mL). The reaction was complete after stirring at 60 °C for 12 h, as indicated by TLC. The reaction mixture was concentrated under reduced pressure, and the residue was purified by column chromatography on silica gel (petroleum ether/ethyl acetate, 5:1) to give the product **2a** (1.03 g, 61% yield, α: 35% D, γ: 85% D).

6. Chemical transformations of 2a.



To a 10 mL Schlenk tube was added NaH (60% w/w in mineral oil) (14.4 mg, 0.36 mmol), 0.5mL dry DMF and then **2a** (87 μL, 0.3 mmol) under N_2 atmosphere. The reaction mixture was stirred at room temperature for 1 h, then Selectfluor I (127.5 mg, 0.36 mmol) was added, and 1 mL dry DMF was added to rinse the tube. The mixture was stirred at room temperature overnight, then diluted with water (15 mL), and extracted with EtOAc for three times (3×10 mL). The combined organic extracts were washed with water, then with brine, dried over anhydrous $MgSO_4$ and concentrated under reduced pressure. The residual was purified by flash column chromatography on silica gel (petroleum ether/ethyl acetate, 5:1) to give the product **3** colorless oil (92 mg, 90% yield, γ: 82% D).



3 (QY-733)

Diethyl 2-fluoro-2-(2-(4-(methoxycarbonyl)phenyl)ethyl-2-*d*)malonate

92 mg, 90% yield. Colorless oil. R_f = 0.35 (petroleum ether/ethyl acetate, 5:1).

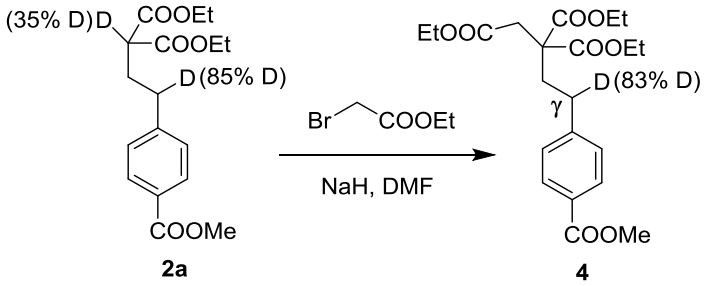
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.97 (d, *J* = 8.2 Hz, 2H), 7.27 (d, *J* = 8.2 Hz, 2H), 4.28 (q, *J* = 7.1 Hz, 4H), 3.90 (s, 3H), 2.81 – 2.75 (m, 1.18H, 82% D), 2.53 – 2.44 (m, 2H), 2.48 – 2.42 (m, 1H), 1.31 (t, *J* = 7.1 Hz, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 166.9, 166.1, 165.8, 145.5, 129.9, 128.49, 128.43, 94.2 (d, $^1J_{CF}$ = 199.4 Hz), 62.7, 52.0, 35.5 (d, $^2J_{CF}$ = 21.2 Hz), 14.0.

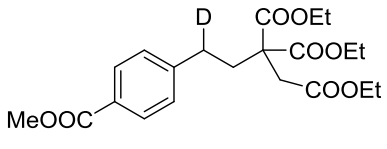
^{19}F NMR (376 MHz, $CDCl_3$) δ -167.4 (s)

IR (KBr) v 2982, 1749, 1720, 1279, 1195, 1097, 1063, 1020.

HRMS (ESI) *m/z*: Calcd for $C_{17}H_{21}FNaO_6$ ($[M+Na]^+$) 364.1283, found 364.1293.



To a 10 mL Schlenk tube was added NaH (60% w/w in mineral oil) (9.6 mg, 0.24 mmol), 0.5 mL dry DMF and then **2a** (58 μL, 0.2 mmol) under N_2 atmosphere. The reaction mixture was stirred at room temperature for 1 h, then ethyl 2-bromoacetate (27 μL, 0.24 mmol) was added, and 1 mL dry DMF was added to rinse the tube. The mixture was stirred at room temperature overnight, then diluted with water (15 mL), and extracted with EtOAc for three times (3×10 mL). The combined organic extracts were washed with water, then with brine, dried over anhydrous $MgSO_4$ and concentrated under reduced pressure. The residual was purified by flash column chromatography on silica gel (petroleum ether/ethyl acetate, 5:1) to give the product **4** colorless oil (73 mg, 89% yield, γ: 83% D).



4 (QY-747)

Triethyl 4-(4-(methoxycarbonyl)phenyl)butane-1,2,2-tricarboxylate-4-*d*

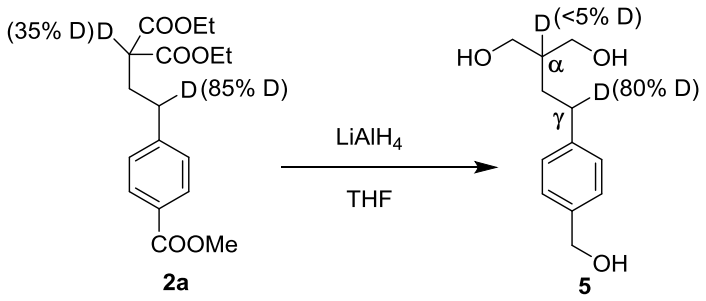
73 mg, 89% yield. Colorless oil. R_f = 0.31 (petroleum ether/acetone, 5:1).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.95 (d, *J* = 8.2 Hz, 2H), 7.24 (d, *J* = 8.1 Hz, 2H), 4.22 (q, *J* = 7.1 Hz, 4H), 4.13 (q, *J* = 7.1 Hz, 1H), 3.90 (s, 3H), 3.04 (s, 2H), 2.66 – 2.58 (m, 1.16H, 84% D), 2.33 – 2.28 (m, 2H), 1.30 – 1.23 (m, 9H).

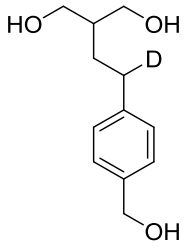
^{13}C NMR (101 MHz, $CDCl_3$) δ 170.17, 170.14, 167.0, 146.5, 129.8, 128.4, 128.2, 61.7, 60.8, 55.5, 52.0, 37.8, 34.6, 31.0, 30.9, 30.7, 30.5, 14.1, 14.0.

IR (KBr) v 2982, 1725, 1612, 1438, 1370, 1280, 1181, 1106, 760.

HRMS (ESI) *m/z*: Calcd for $C_{21}H_{27}DNaO_8$ ($[M+Na]^+$) 432.1739, found 432.1752.



To a solution of **2a** (58 μL, 0.2 mmol) in dry THF (0.1 M) was added $LiAlH_4$ (0.6 mL, 1 M solution in THF) dropwise under N_2 atmosphere at 0 ℃. Then, the reaction mixture was stirred at room temperature for 5 h. TLC showed that the reduction reaction was complete. The reaction mixture was quenched with water, and the 0.5 M HCl was added to adjust the pH to 5~7. The solvents were evaporated under reduced pressure, then diluted with EtOAc, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by column chromatography (dichloromethane/methanol, 15:1 – 10:1) to give **5** as white solid (35 mg, 83% yield, γ: 80% D).



5 (QY-753)

2-(2-(4-(hydroxymethyl)phenyl)ethyl-2-*d*)propane-1,3-diol

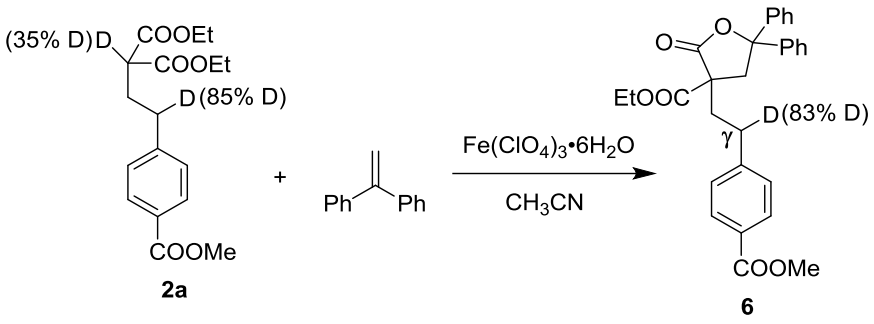
35 mg, 83% yield. White solid, m.p. 67-68 °C. R_f = 0.11 (dichloromethane/methanol, 20:1).

^{1}H NMR (400 MHz, Acetone-d_6) δ 7.25 (d, *J* = 8.0 Hz, 2H), 7.17 (d, *J* = 8.0 Hz, 2H), 4.58 (d, *J* = 3.5 Hz, 2H), 4.24 – 4.21 (m, 1H), 3.78 (br, 2H), 3.63 (br, 4H), 2.68 – 2.62 (m, 1.20H, 80% D), 1.68 – 1.60 (m, 3H).

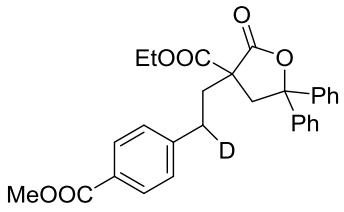
^{13}C NMR (101 MHz, Acetone-d_6) δ 141.4, 139.7, 128.1, 126.7, 63.7, 63.4, 63.3, 42.6, 32.9, 32.7, 32.5, 32.3.

IR (KBr) v 3356, 2920, 2852, 1657, 1632, 1468, 1420, 1033.

HRMS (APCI) *m/z*: Calcd for $C_{12}H_{17}DNaO_3$ ([M+Na]$^+$) 234.1211, found 234.1222.



To a 10 mL Schlenk tube was added $Fe(ClO_4)_3$•$6H_2O$ (192.0 mg, 0.4 mmol), **2a** (58 μL, 0.2 mmol) and ethene-1,1-diyldibenzene (192.0 mg, 0.22 mmol), 3mL dry CH_3CN under N_2 atmosphere. The reaction mixture was stirred at room temperature for 6 h. The solvent was evaporated under reduced pressure, the residual was then diluted with water, and extracted with DCM for three times. The combined organic extracts were dried over anhydrous $MgSO_4$ and concentrated under reduced pressure. The residual was purified by flash column chromatography on silica gel (petroleum ether/ethyl acetate, 5:1) to give the product **6** colorless oil (72 mg, 76% yield, γ: 83% D).



6 (QY-757)

2-(2-(4-(hydroxymethyl)phenyl)ethyl-2-*d*)propane-1,3-diol

72 mg, 76% yield. Colorless wax. R_f = 0.26 (petroleum ether/acetone, 5:1).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.91 (d, *J* = 8.2 Hz, 2H), 7.48 – 7.46 (m, 2H), 7.42 – 7.40 (m, 2H), 7.36 – 7.31 (m, 4H), 7.28 – 7.25 (m, 2H), 7.16 (d, *J* = 8.1 Hz, 2H), 3.91 – 3.83 (m, 4H), 3.77 – 3.68 (m, 2H), 2.91 – 2.85 (m, 1.59H, 41% D), 2.64 – 2.57 (m, 0.60H, 40% D), 2.24 – 2.17 (m, 1H), 2.10 – 2.04 (m, 1H), 1.00 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 173.2, 169.5, 167.0, 146.0, 143.9, 142.3, 129.8, 128.7, 128.46, 128.41, 128.3, 128.0, 127.9, 125.6, 124.9, 87.2, 62.2, 55.5, 52.0, 45.0, 36.5, 36.4, 31.0, 30.8, 30.6, 30.4, 13.6.

IR (KBr) v 2954, 1781, 1718, 1612, 1450, 1281, 1110, 1022 974, 757, 702.

HRMS (APCI) *m/z*: Calcd for $C_{29}H_{27}DNaO_6$ ($[M+Na]^+$) 496.1846, found 496.1856.

7. References

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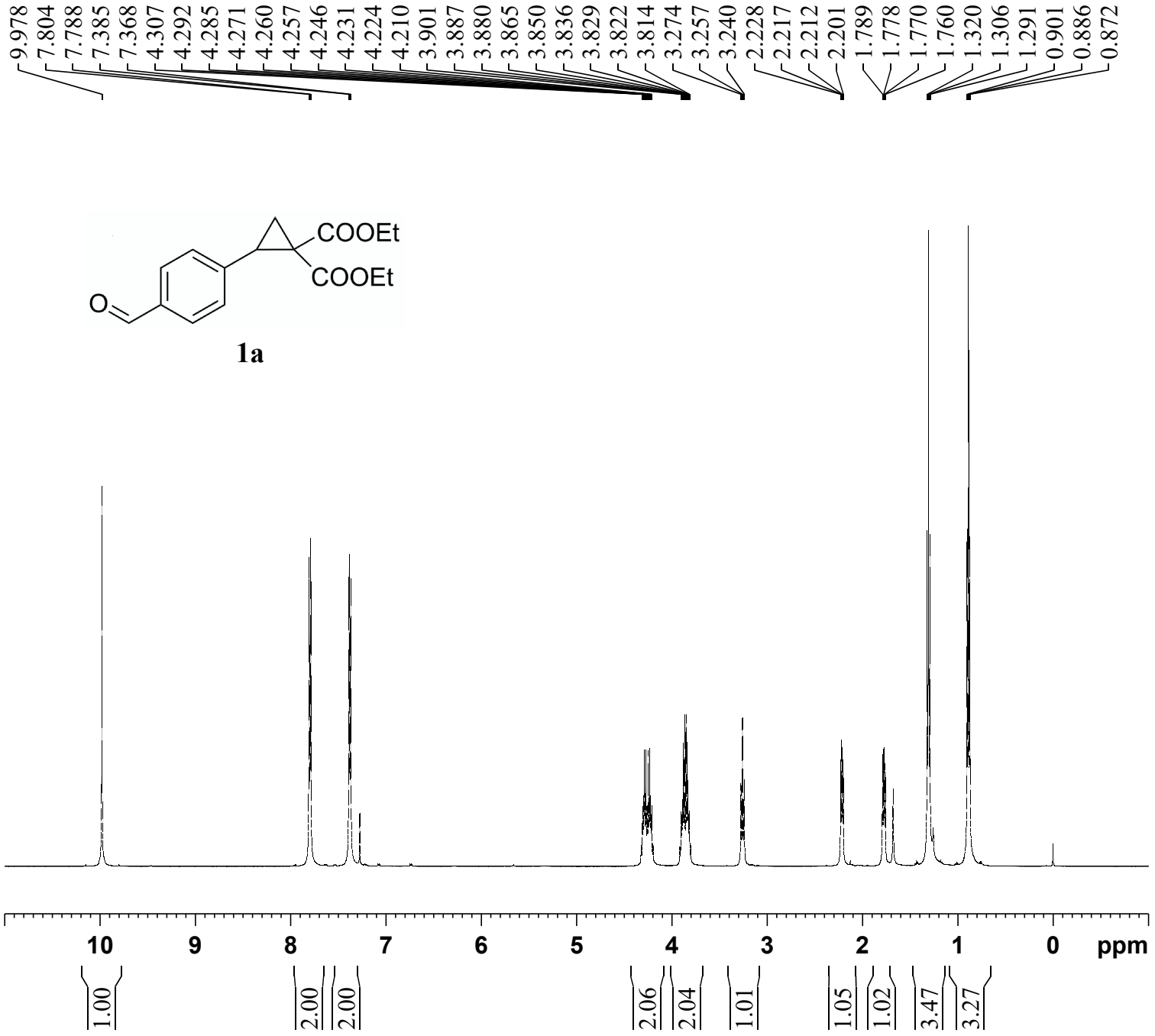


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PROCNO                1

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NS                    16
DS                     2
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FIDRES         0.152588 Hz
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RG                31.72
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DE                 6.50 usec
TE                298.2 K
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D11      0 sec
TD0                    1

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P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
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NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
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GB        0
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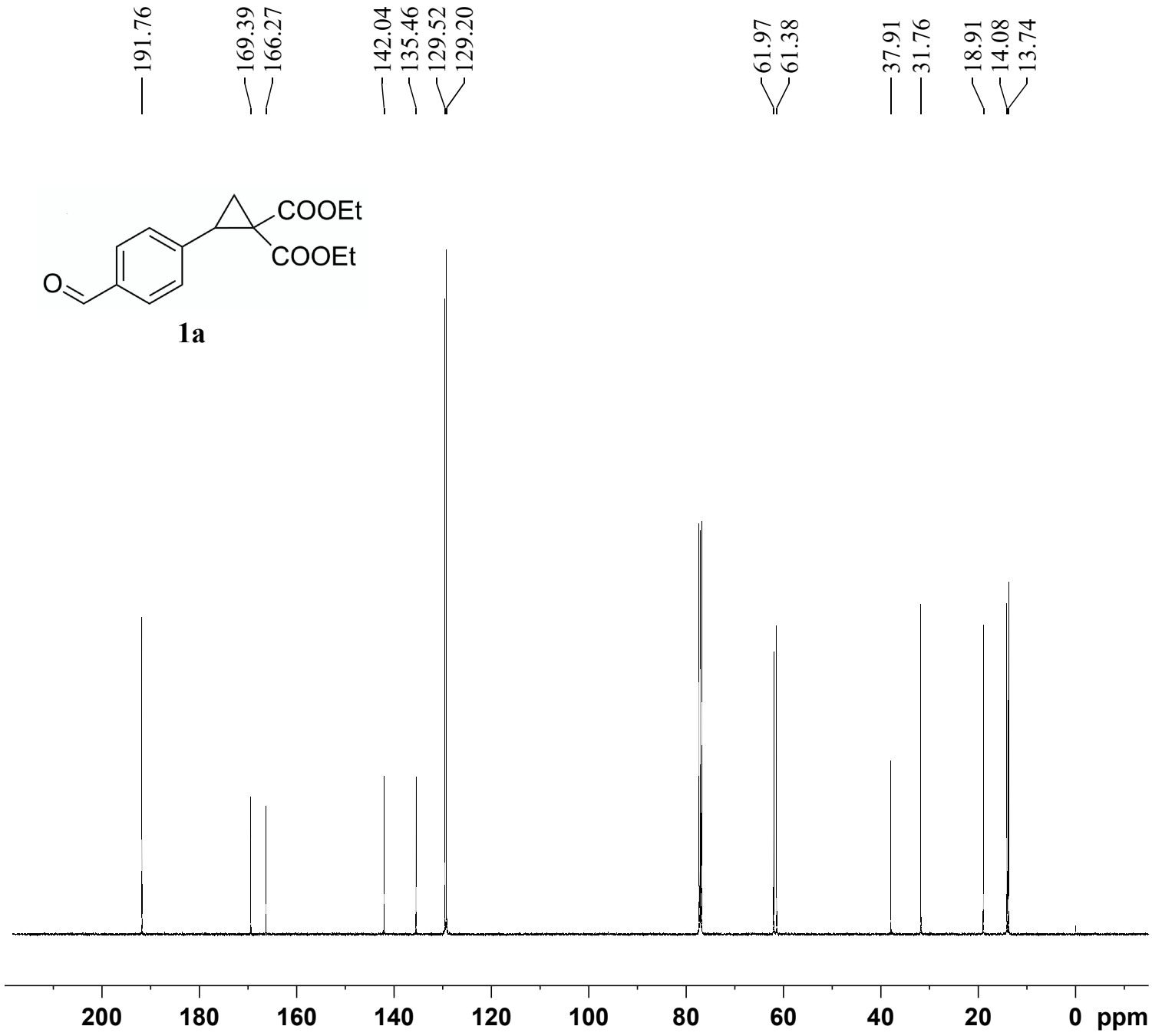


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TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
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RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
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NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
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NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
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F2 - Processing parameters
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WDW                   EM
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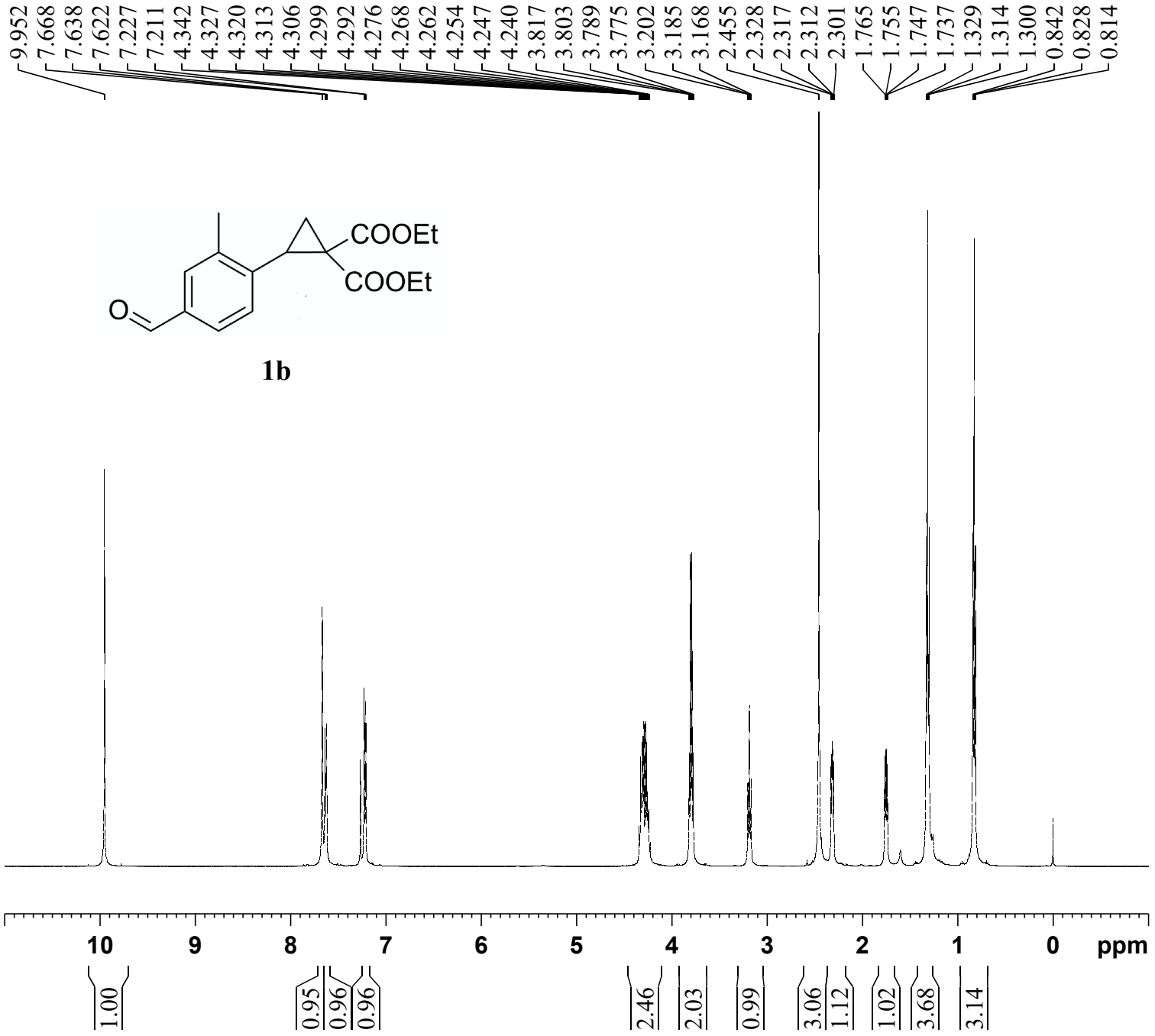


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EXPNO                17
PROCNO                1

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Date_          20220226
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INSTRUM           spect
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PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 55.37
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
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NUC1                   1H
P1                 11.25 usec
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======== CHANNEL f2 ========
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NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
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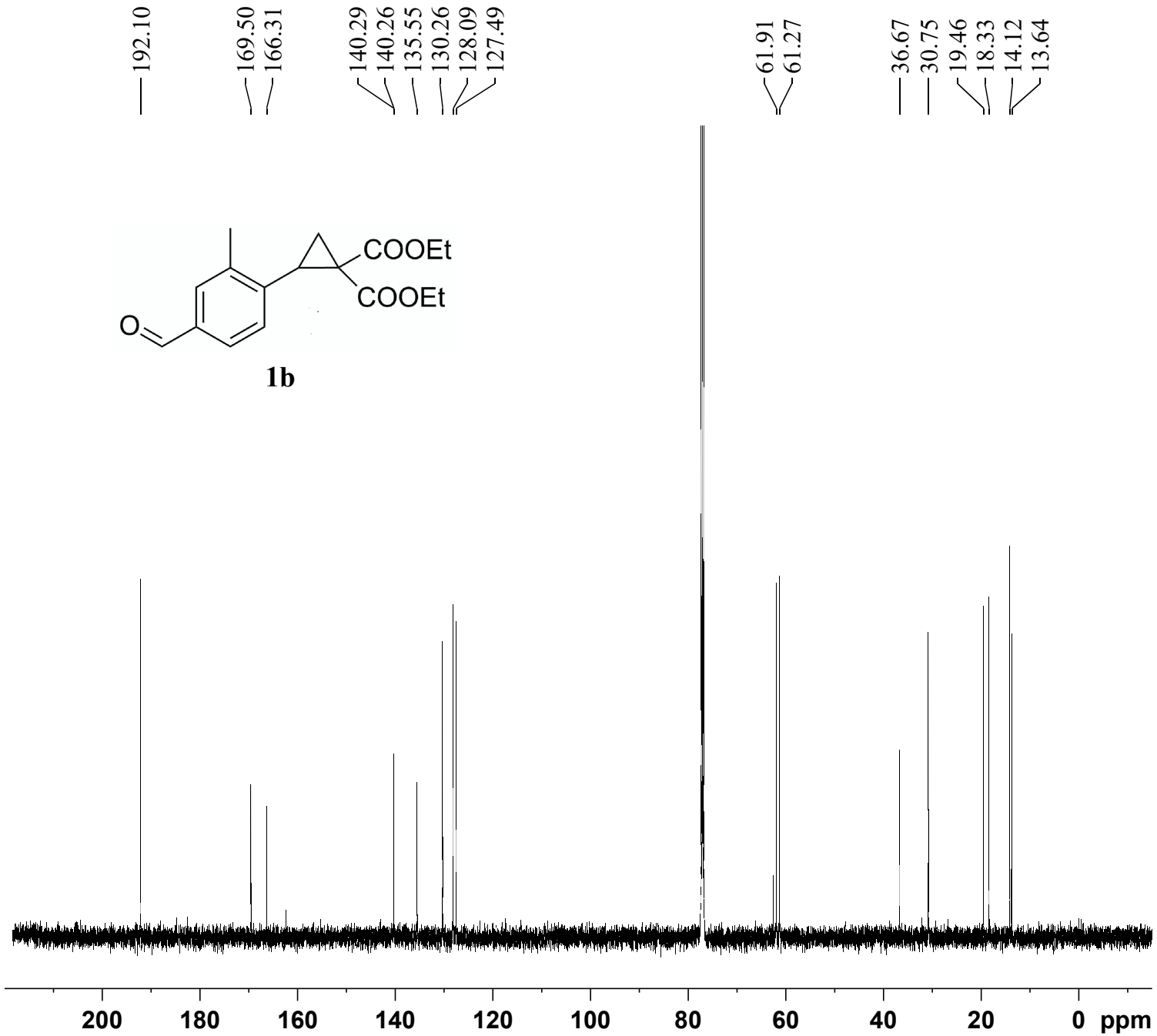

1b

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Current Data Parameters
NAME          500M-2022
EXPNO                18
PROCNO                1

F2 - Acquisition Parameters
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Time               6.22
INSTRUM           spect
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PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                   50
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE                18.00 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
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NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
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NUC2                1H
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PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
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WDW                  EM
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LB                1.00 Hz
GB        0
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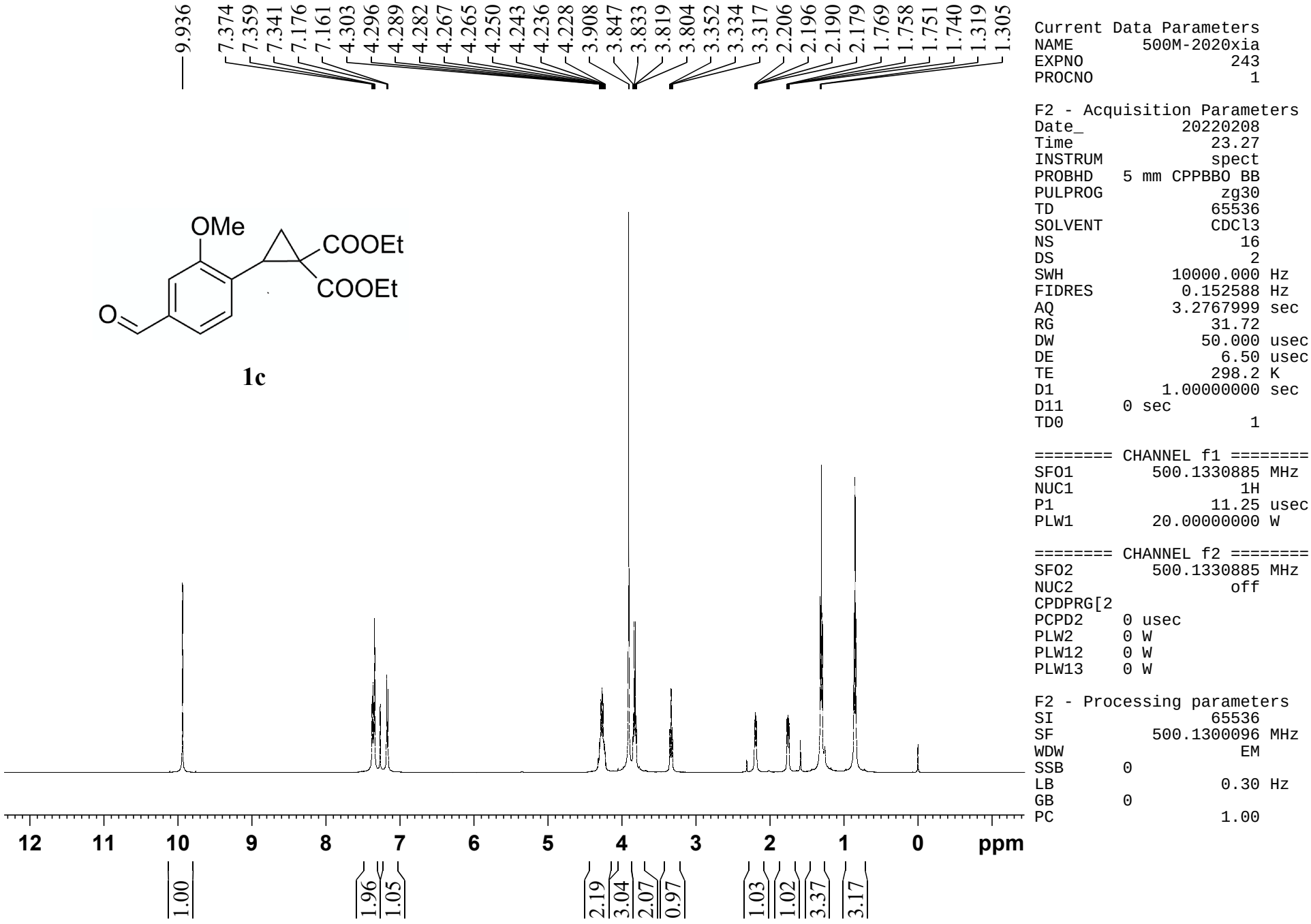


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EXPNO                243
PROCNO                 1

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PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
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NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
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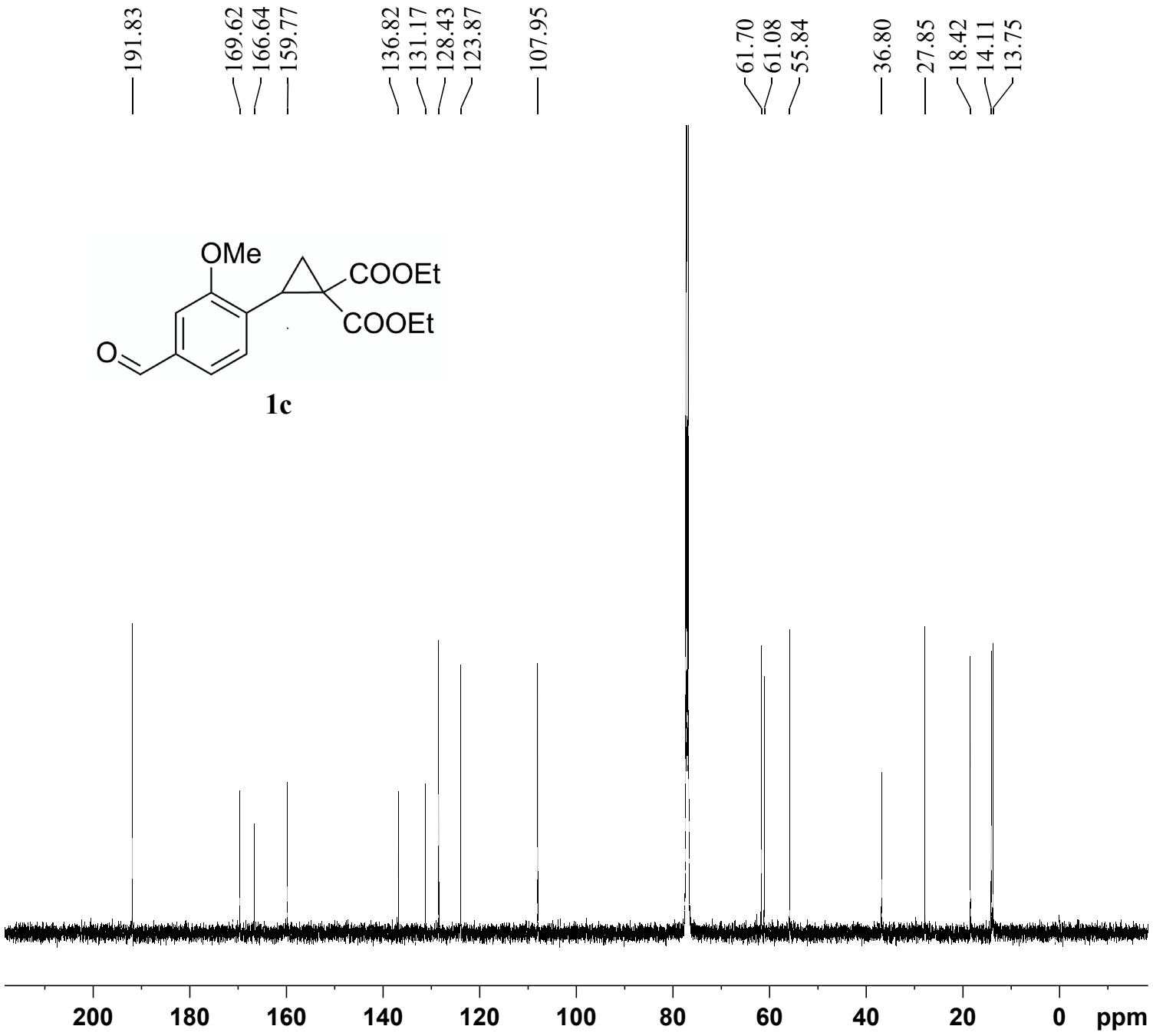


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Current Data Parameters
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EXPNO               244
PROCNO                1

F2 - Acquisition Parameters
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INSTRUM           spect
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PULPROG          zgpg30
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SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

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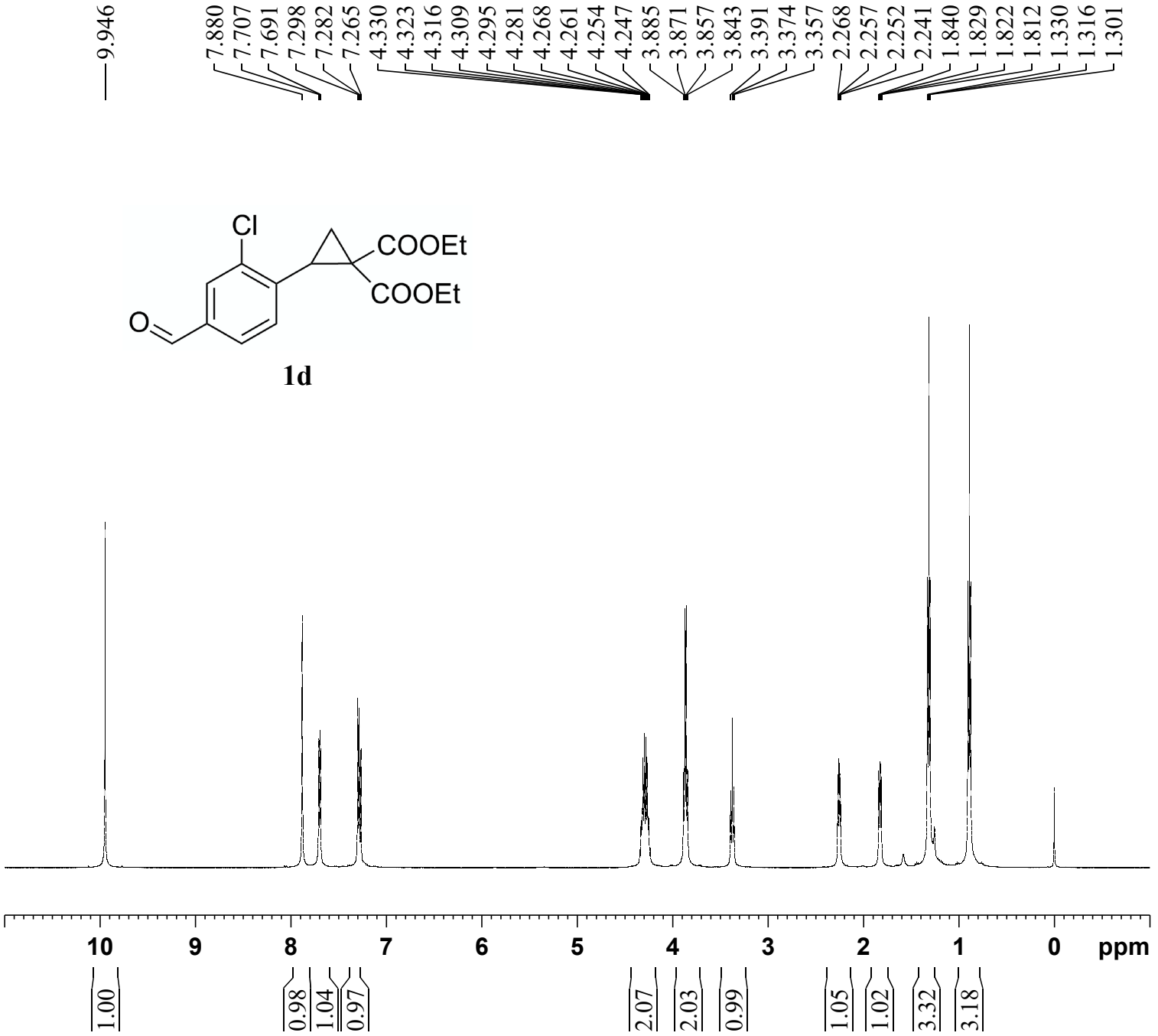

1d

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RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
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NUC1                   1H
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PLW1         20.00000000 W

======== CHANNEL f2 ========
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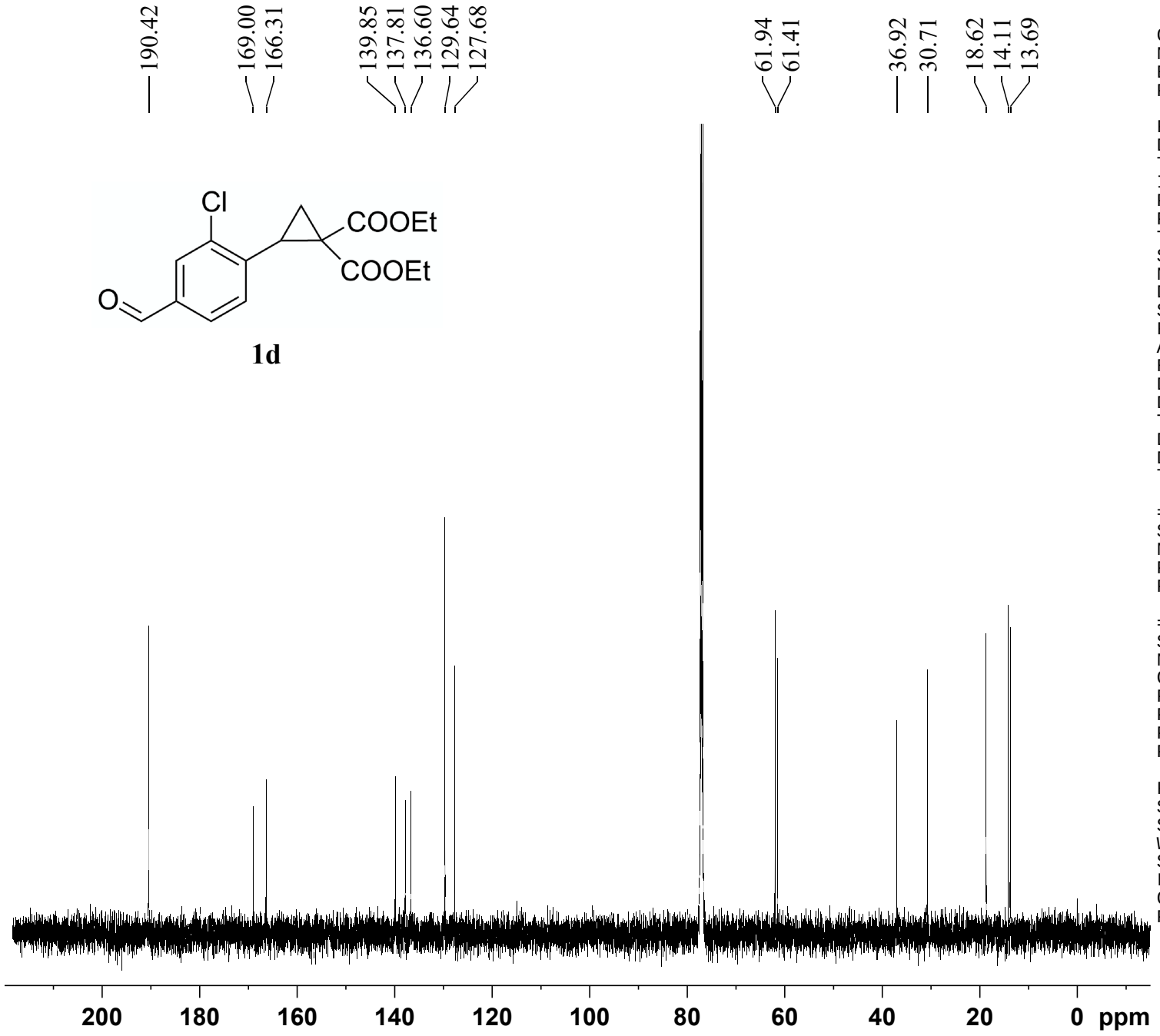
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300100 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1d

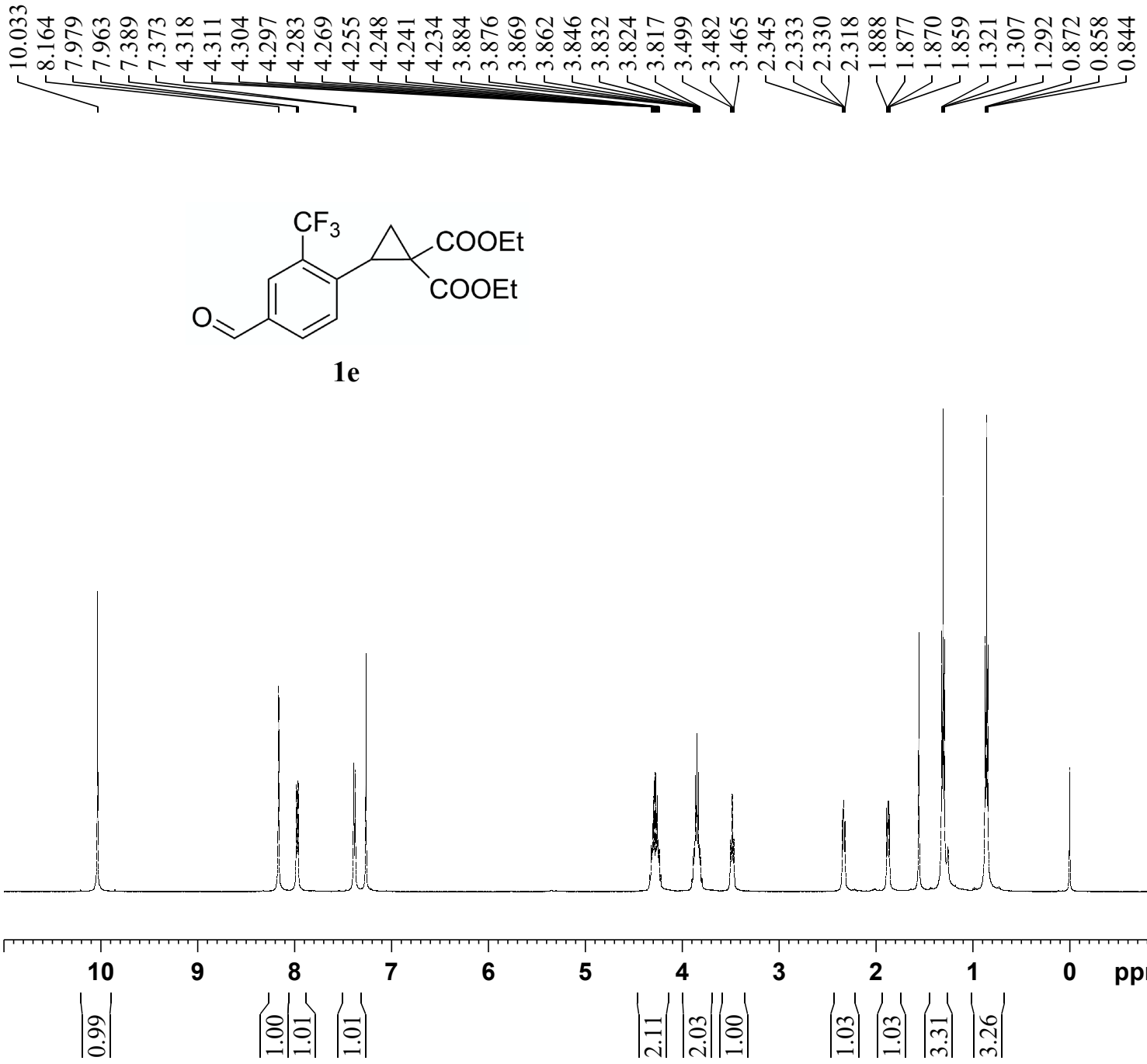
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               237
PROCNO                1

F2 - Acquisition Parameters
Date_          20220207
Time              22.04
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  100
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



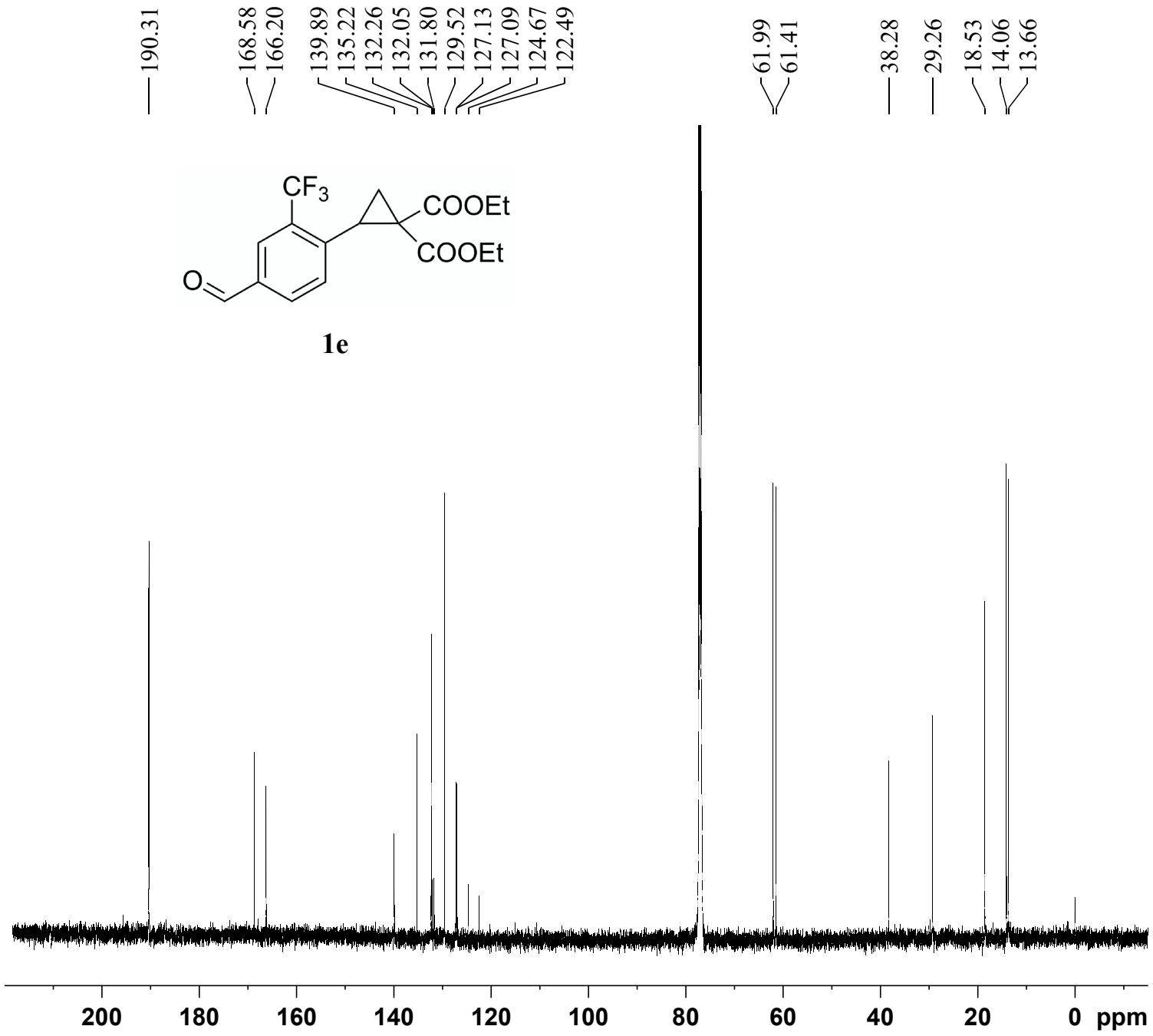

```
Current Data Parameters
NAME          500M-2022
EXPNO                55
PROCNO                1

F2 - Acquisition Parameters
Date_          20220321
Time               4.35
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 62.06
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300112 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1e

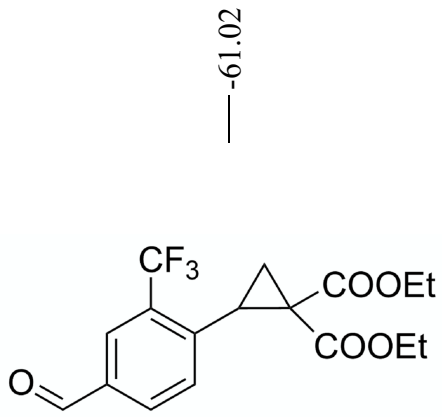
```
Current Data Parameters
NAME          500M-2022
EXPNO                56
PROCNO                1

F2 - Acquisition Parameters
Date_          20220321
Time               5.30
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



1e

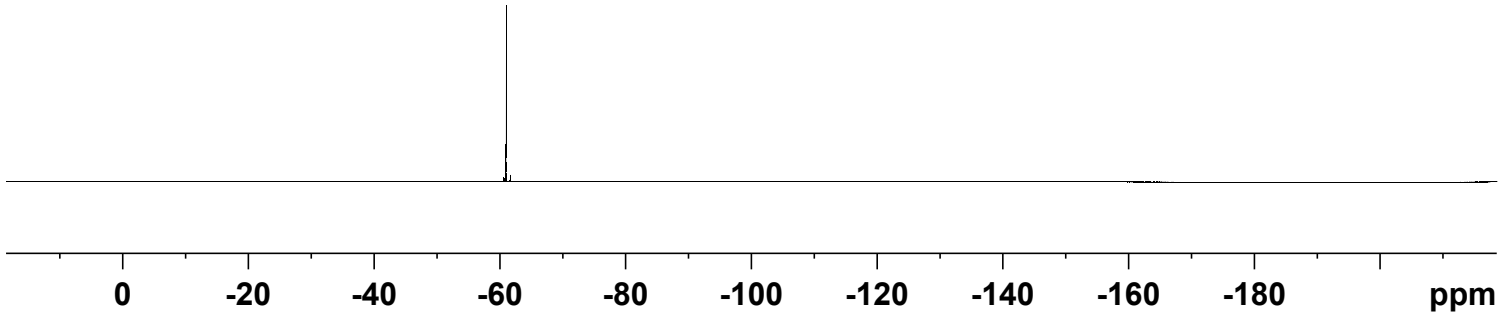
```
Current Data Parameters
NAME        400M-2023-F
EXPNO                 8
PROCNO                1

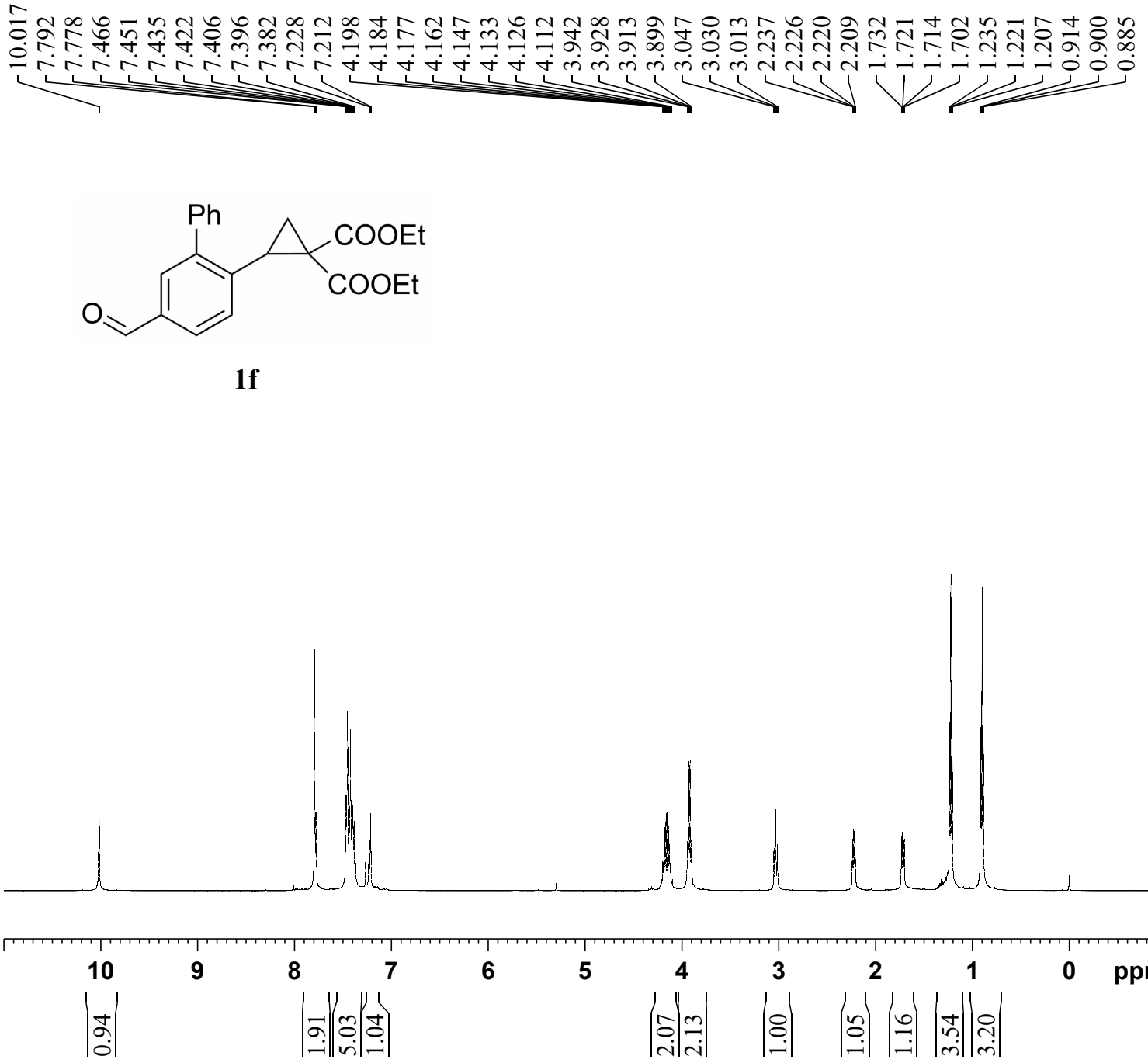
F2 - Acquisition Parameters
Date_          20230506
Time              19.09
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                19F
P1                14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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





1f

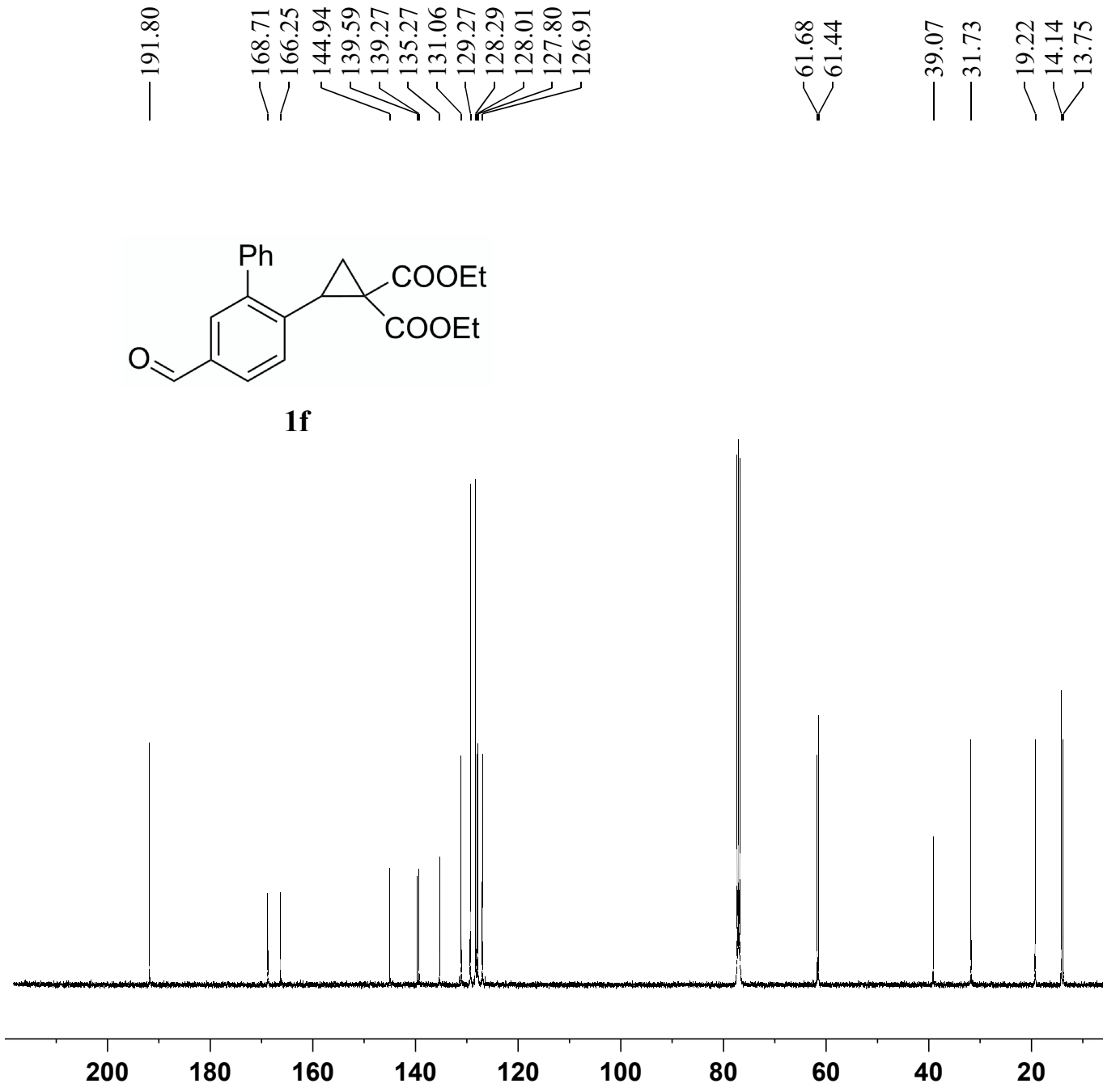
```
Current Data Parameters
NAME          500M-2022
EXPNO                50
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time              10.29
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300099 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1f

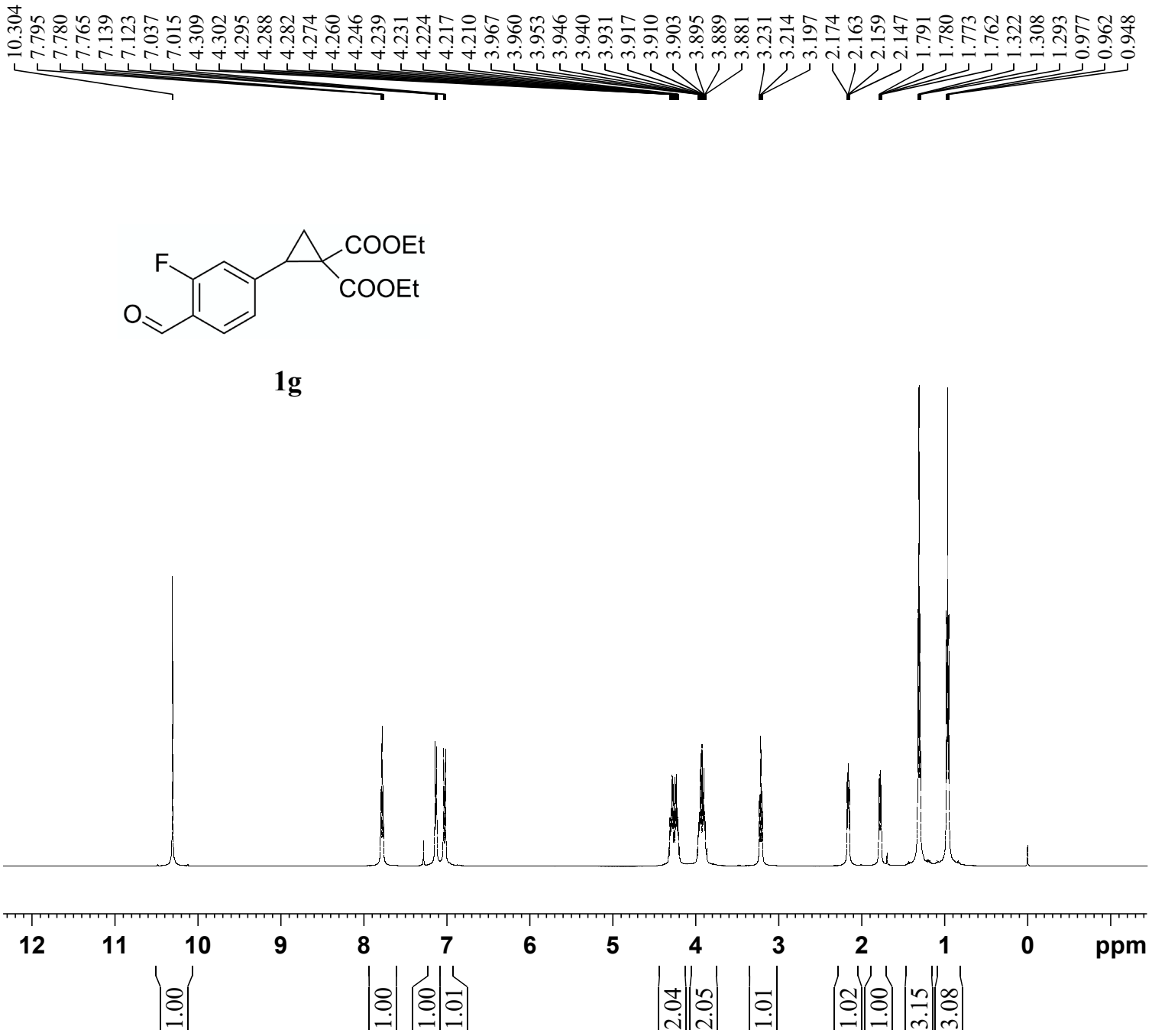
```
Current Data Parameters
NAME          500M-2022
EXPNO                37
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               5.50
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  300
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



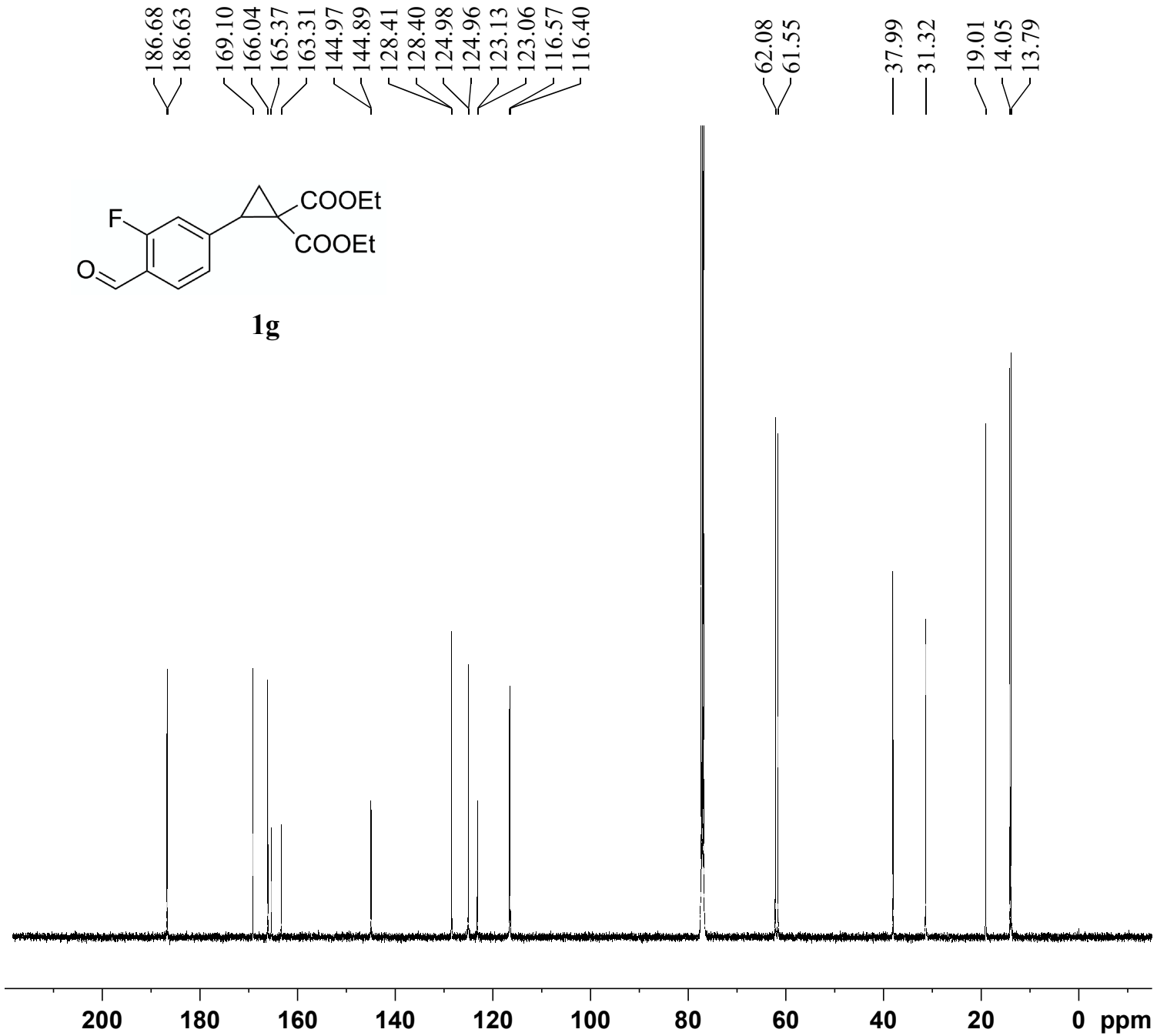

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                239
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220208
Time               22.23
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300022 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1g

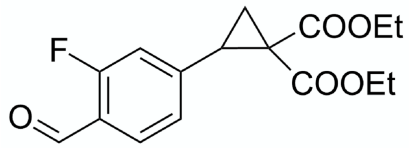
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               240
PROCNO                1

F2 - Acquisition Parameters
Date_          20220208
Time              22.51
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

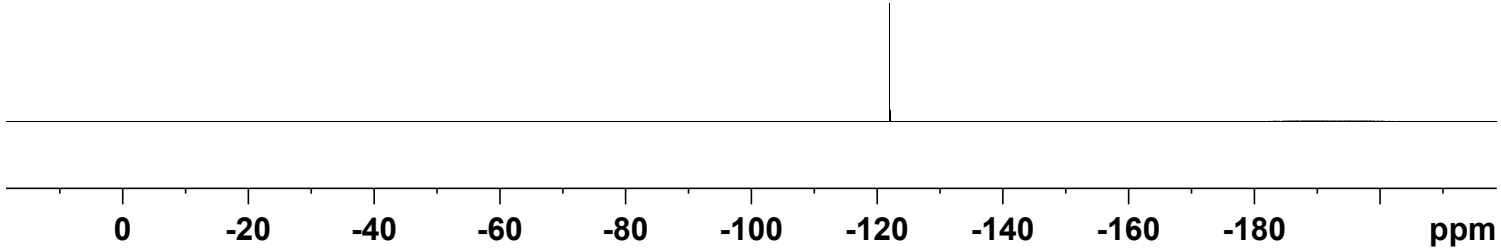
======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



1g

-122.06



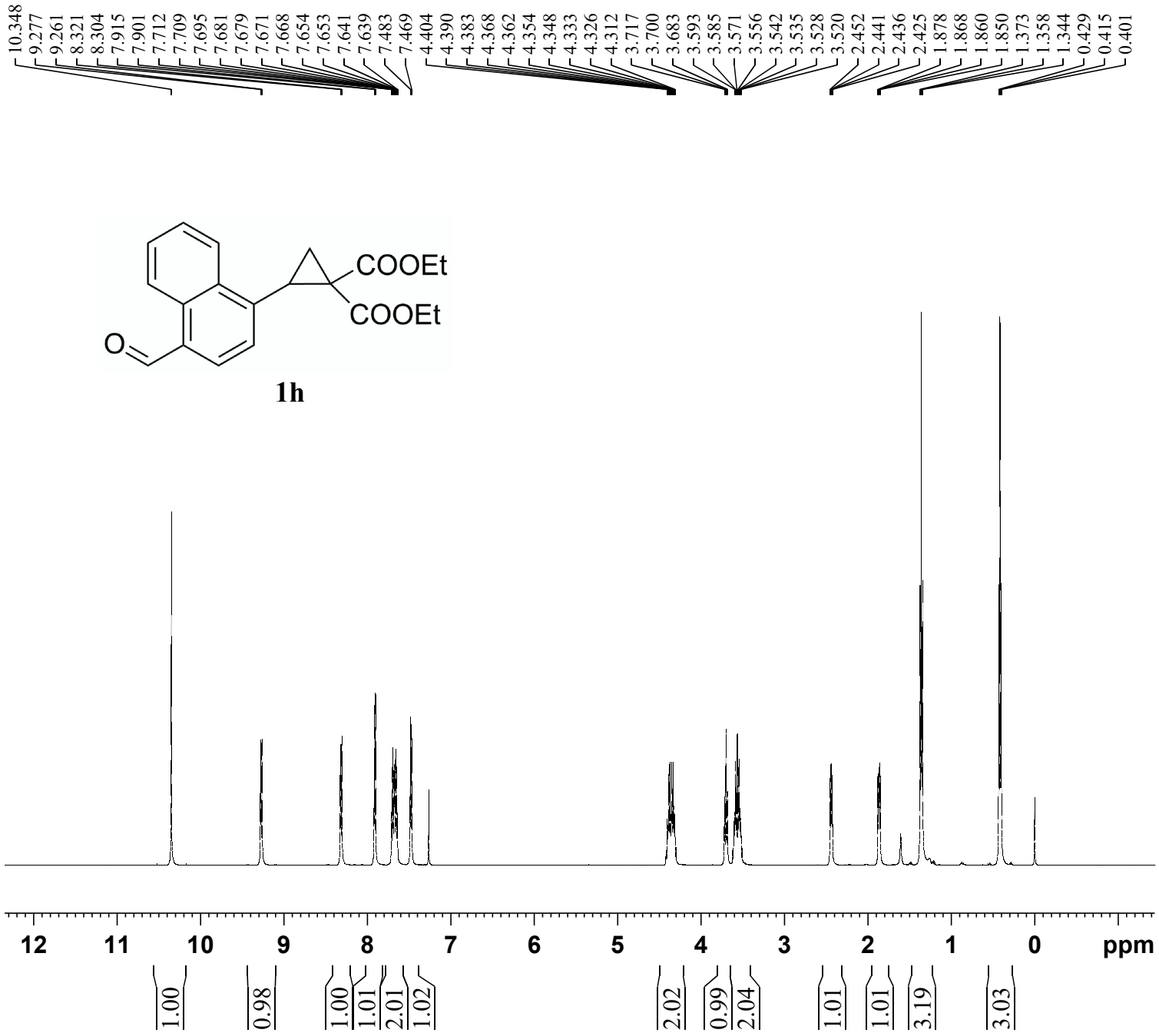

```
Current Data Parameters
NAME        400M-2023-F
EXPNO                 9
PROCNO                1

F2 - Acquisition Parameters
Date_          20230506
Time              19.12
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                19F
P1                14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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



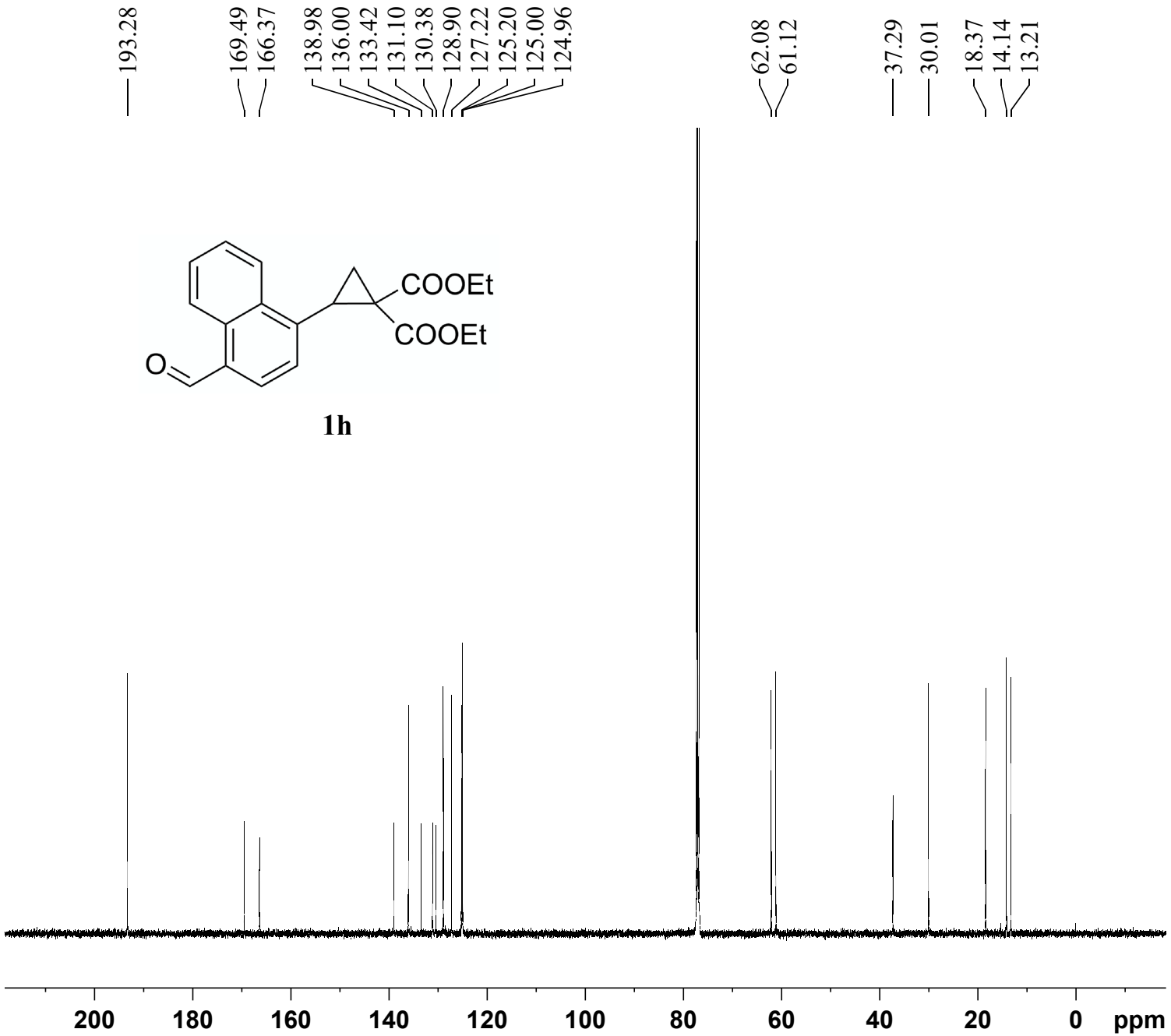

```
Current Data Parameters
NAME          500M-2022
EXPNO               101
PROCNO                1

F2 - Acquisition Parameters
Date_          20220608
Time              20.47
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300116 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1h

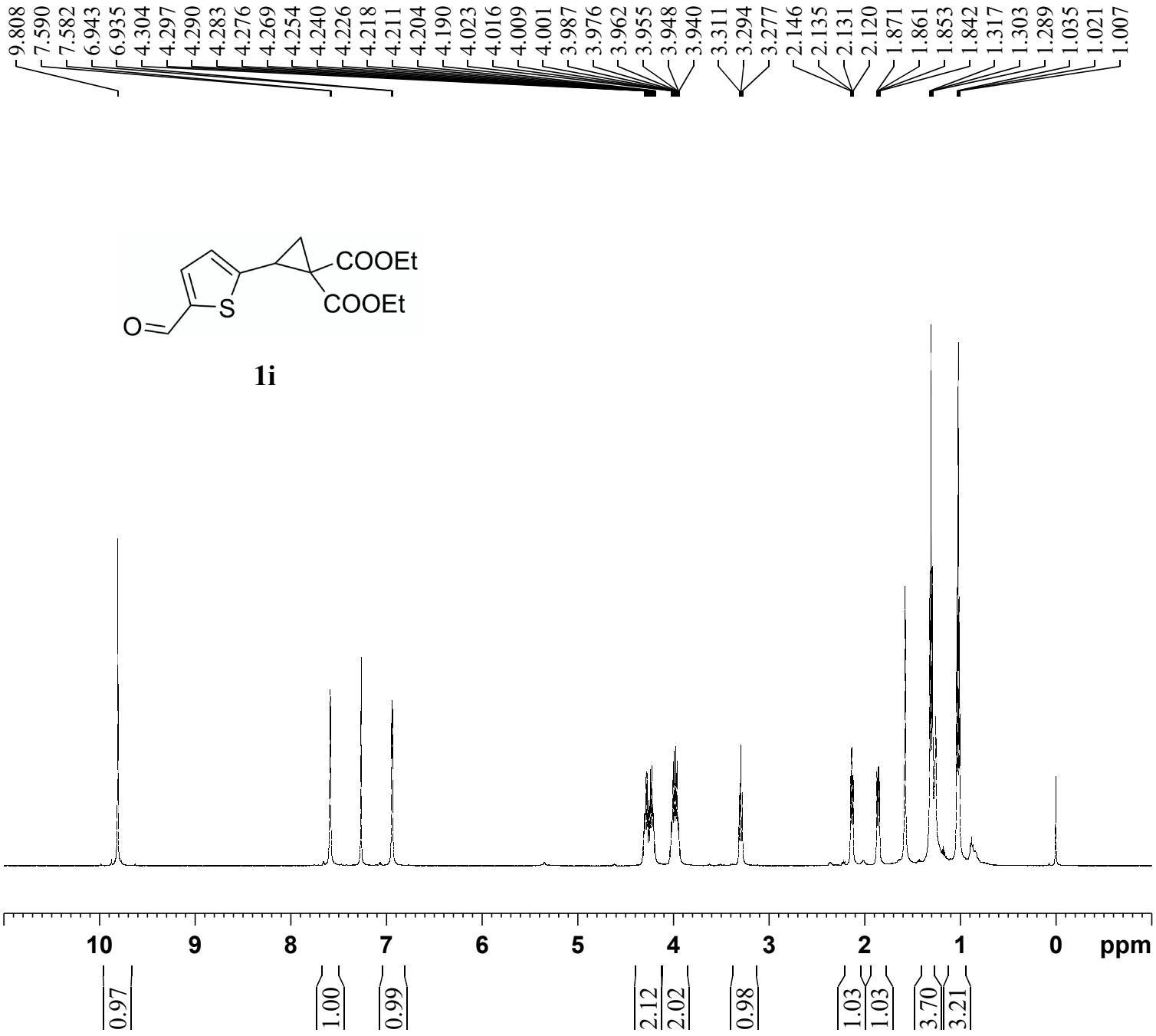
```
Current Data Parameters
NAME          500M-2022
EXPNO                20
PROCNO                1

F2 - Acquisition Parameters
Date_          20220226
Time               6.41
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



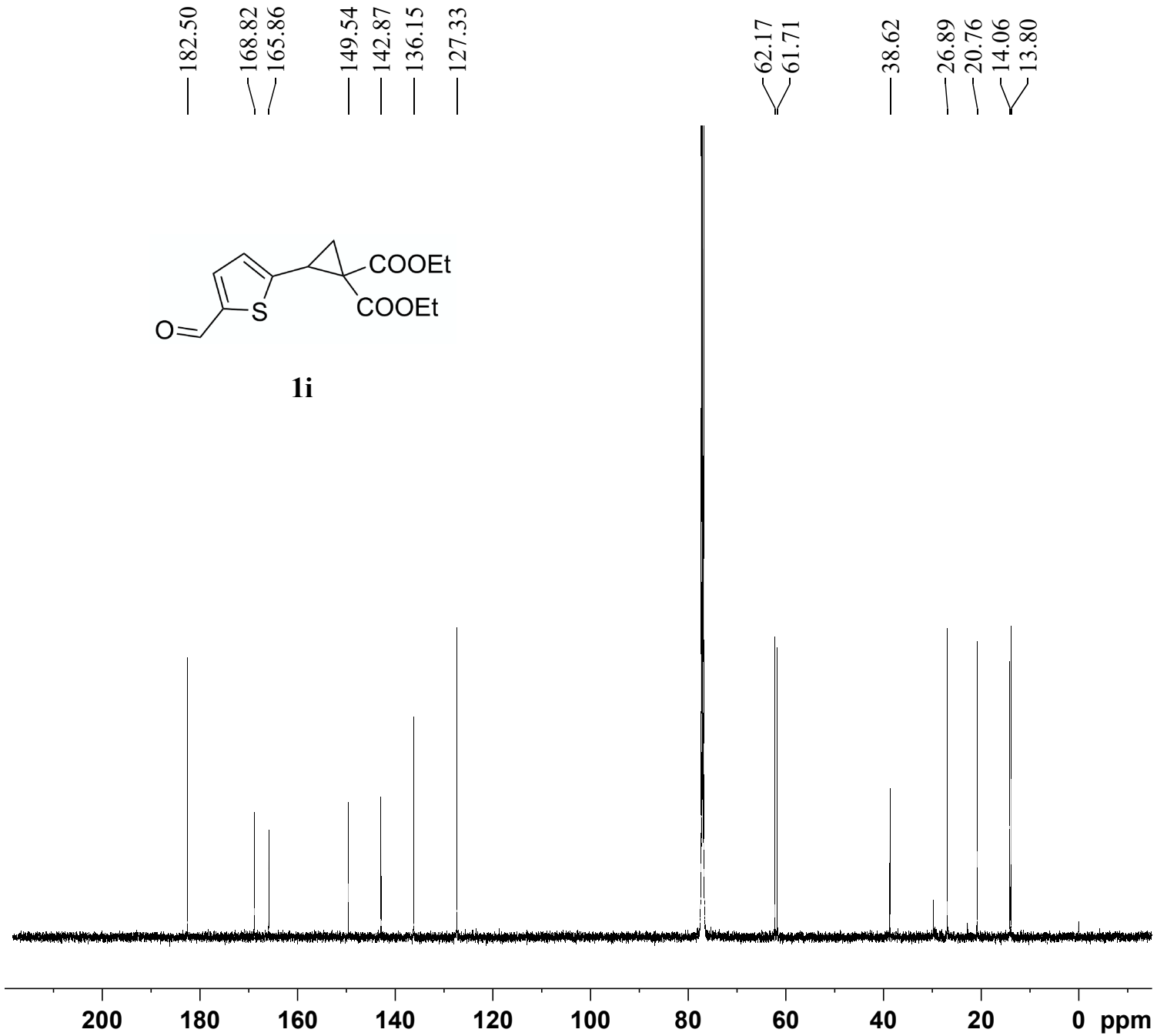

```
Current Data Parameters
NAME          500M-2022
EXPNO               102
PROCNO                1

F2 - Acquisition Parameters
Date_          20220608
Time              20.52
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300113 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1i

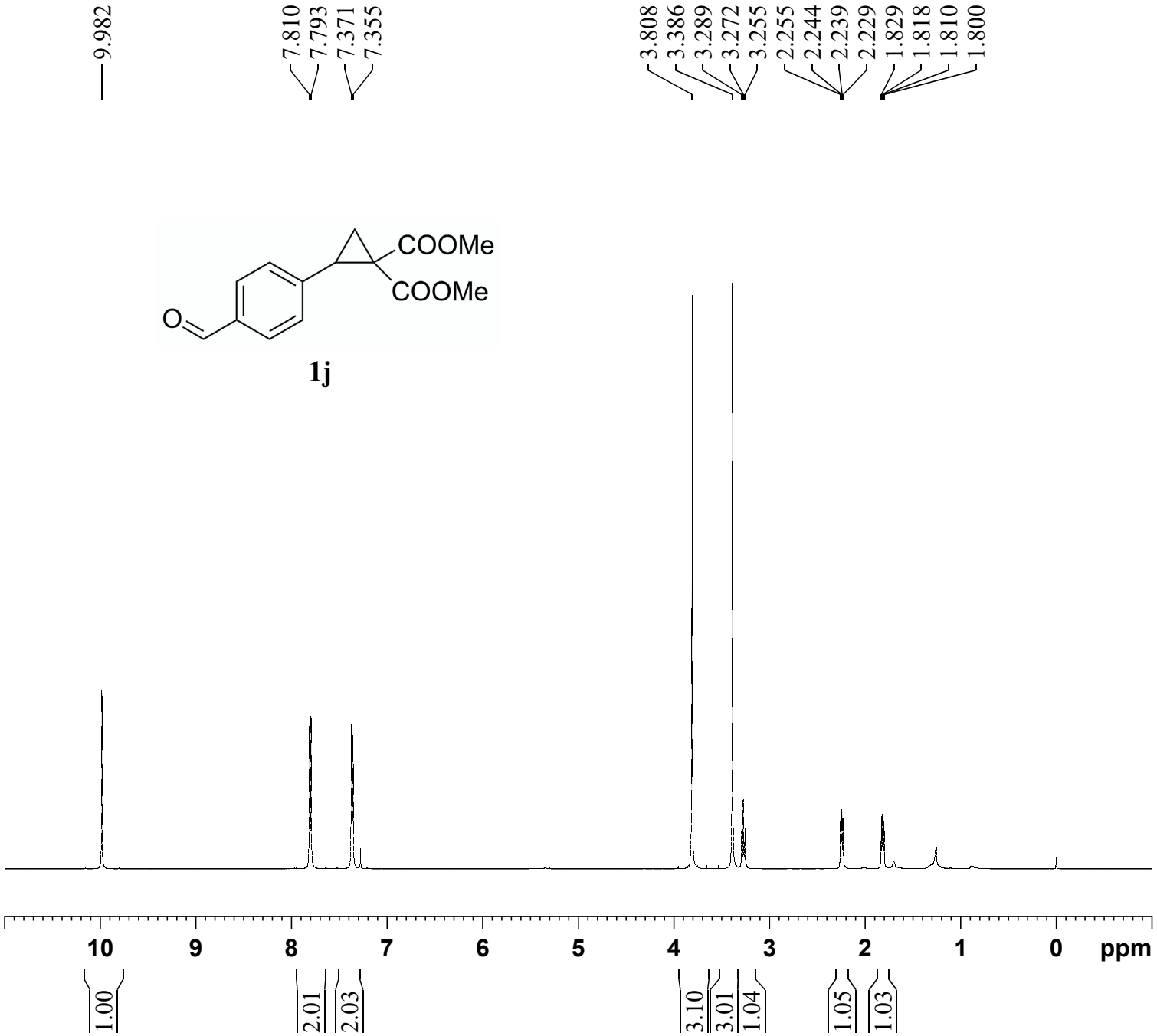
```
Current Data Parameters
NAME          500M-2022
EXPNO               103
PROCNO                1

F2 - Acquisition Parameters
Date_          20220608
Time              21.46
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1               13C
P1               10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2            80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



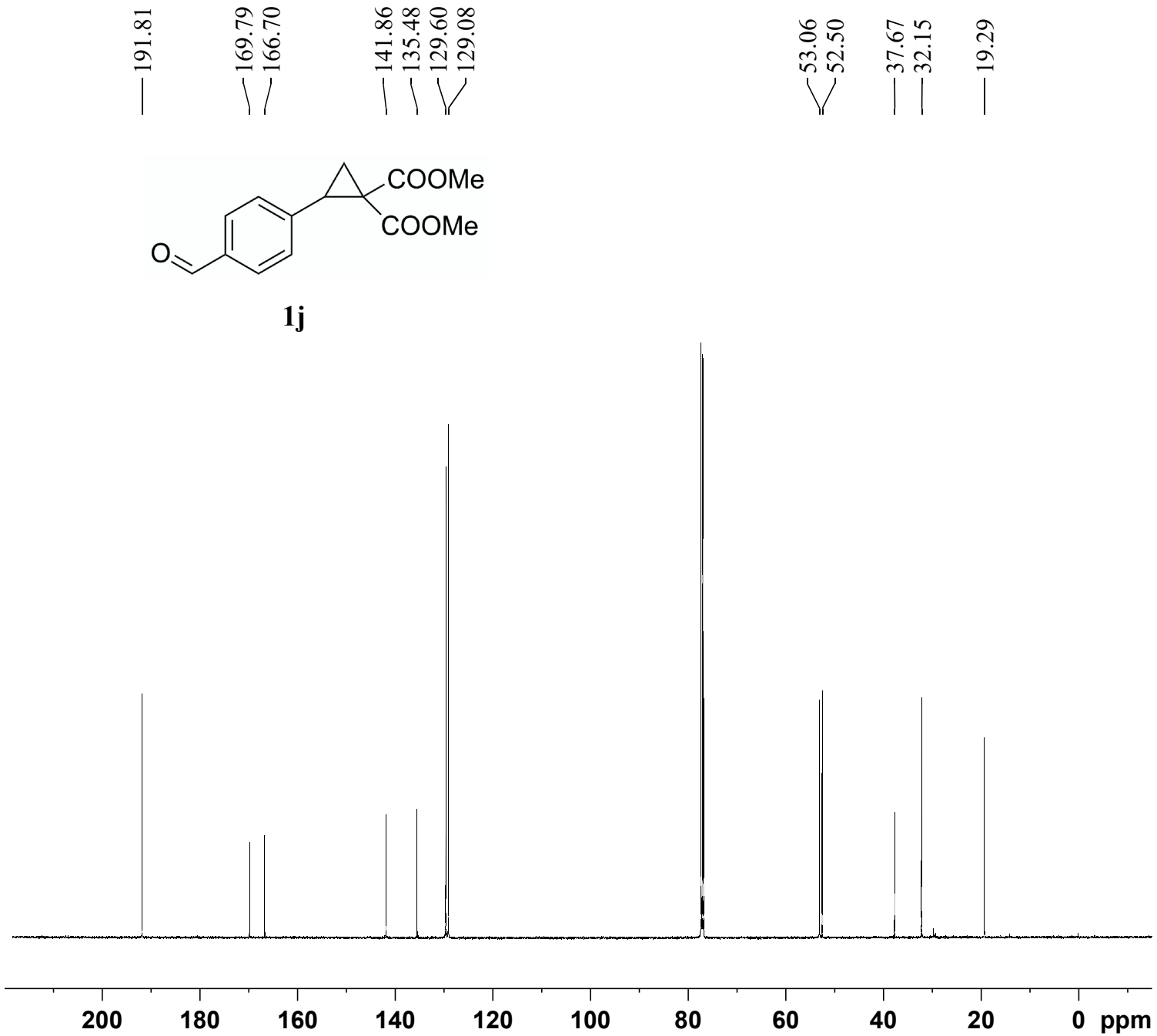

```
Current Data Parameters
NAME          500M-2022
EXPNO                98
PROCNO                1

F2 - Acquisition Parameters
Date_          20220608
Time              20.25
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300052 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1j

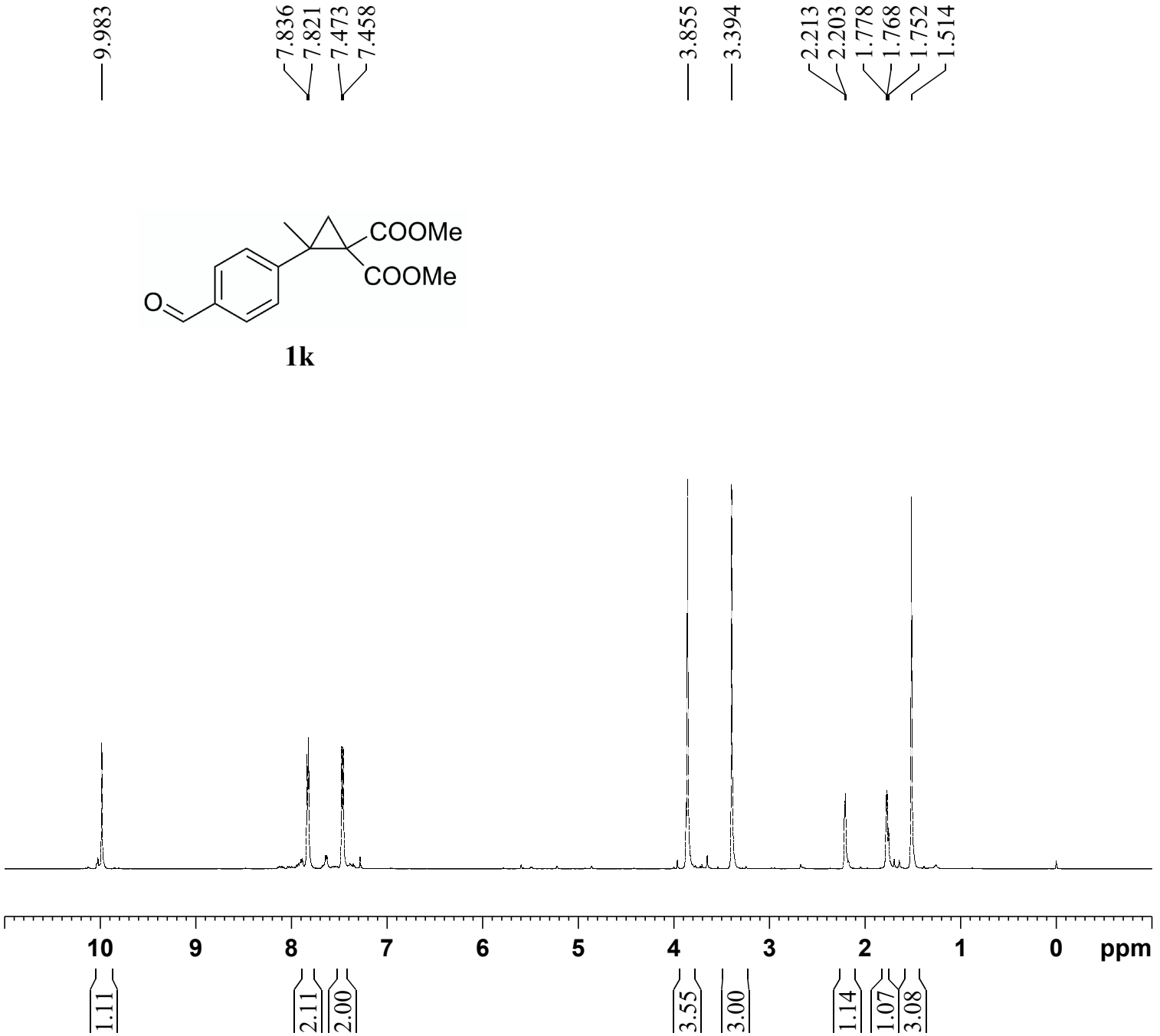
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               174
PROCNO                1

F2 - Acquisition Parameters
Date_          20211121
Time              21.32
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE       0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



1k

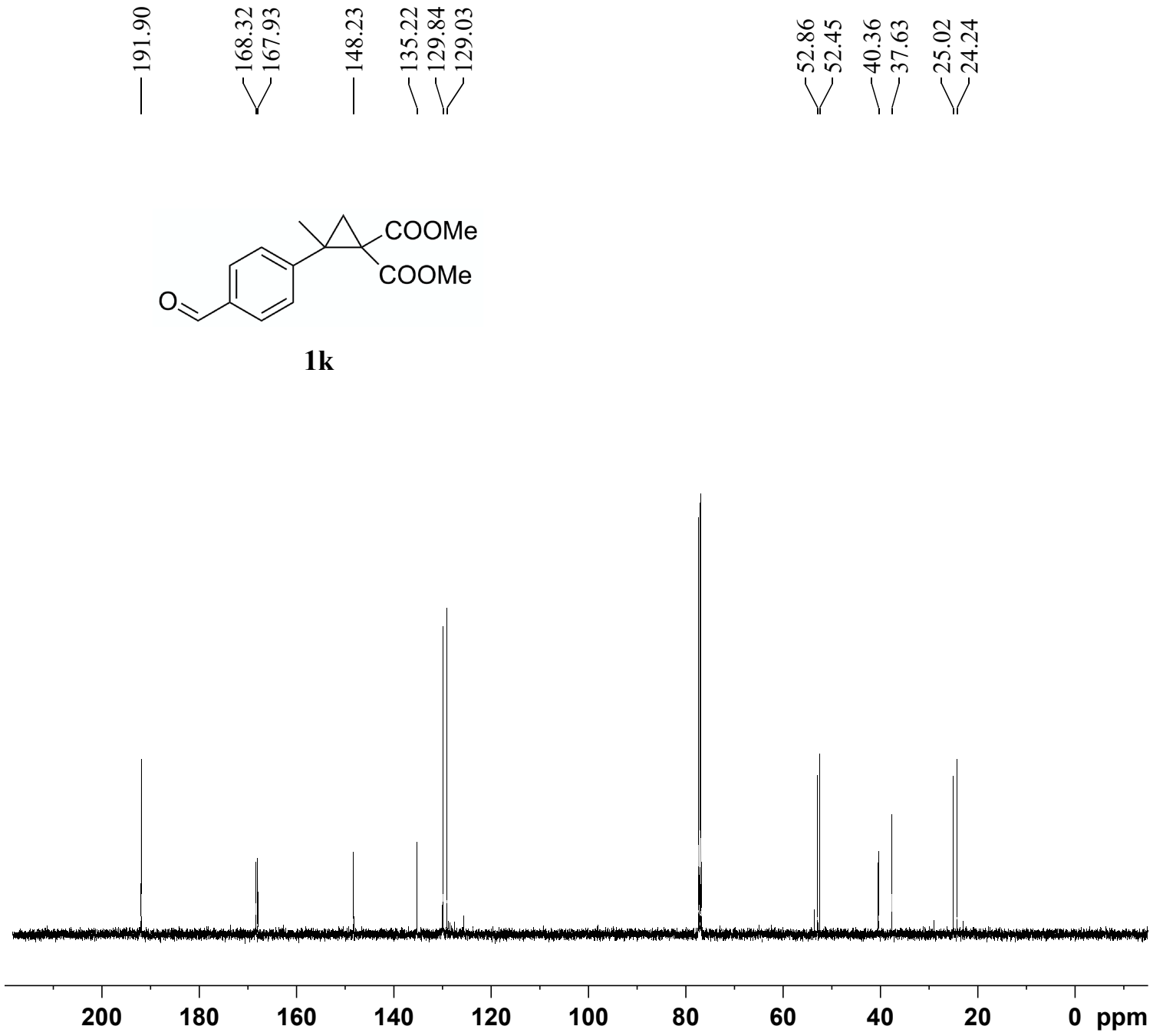
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               171
PROCNO                1

F2 - Acquisition Parameters
Date_          20211121
Time              20.33
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE        0 K
D1           1.00000000 sec
D11       0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                 1H
P1                10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300006 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1k

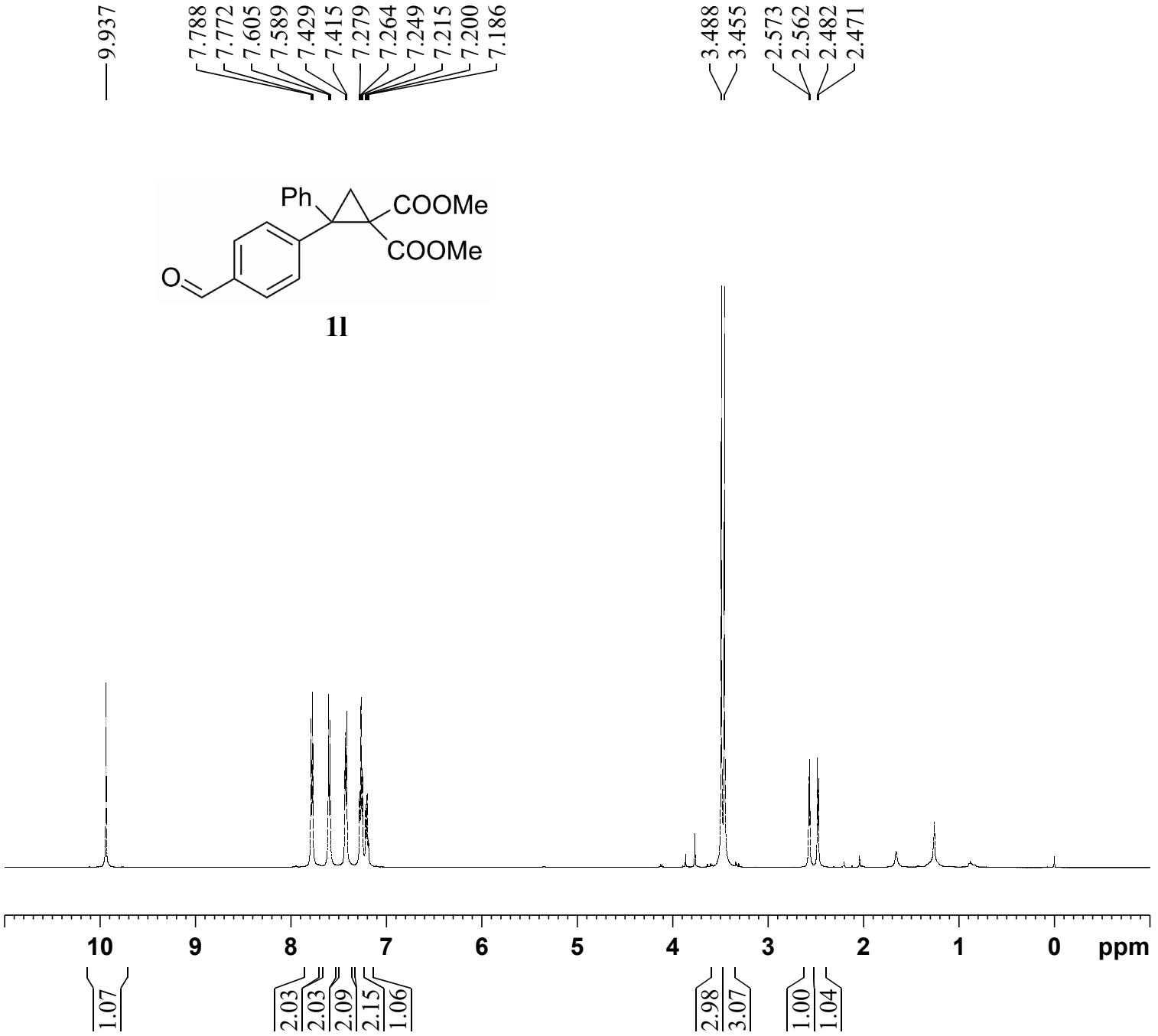
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               182
PROCNO                1

F2 - Acquisition Parameters
Date_          20211122
Time               9.58
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                    9
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE       0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



1l

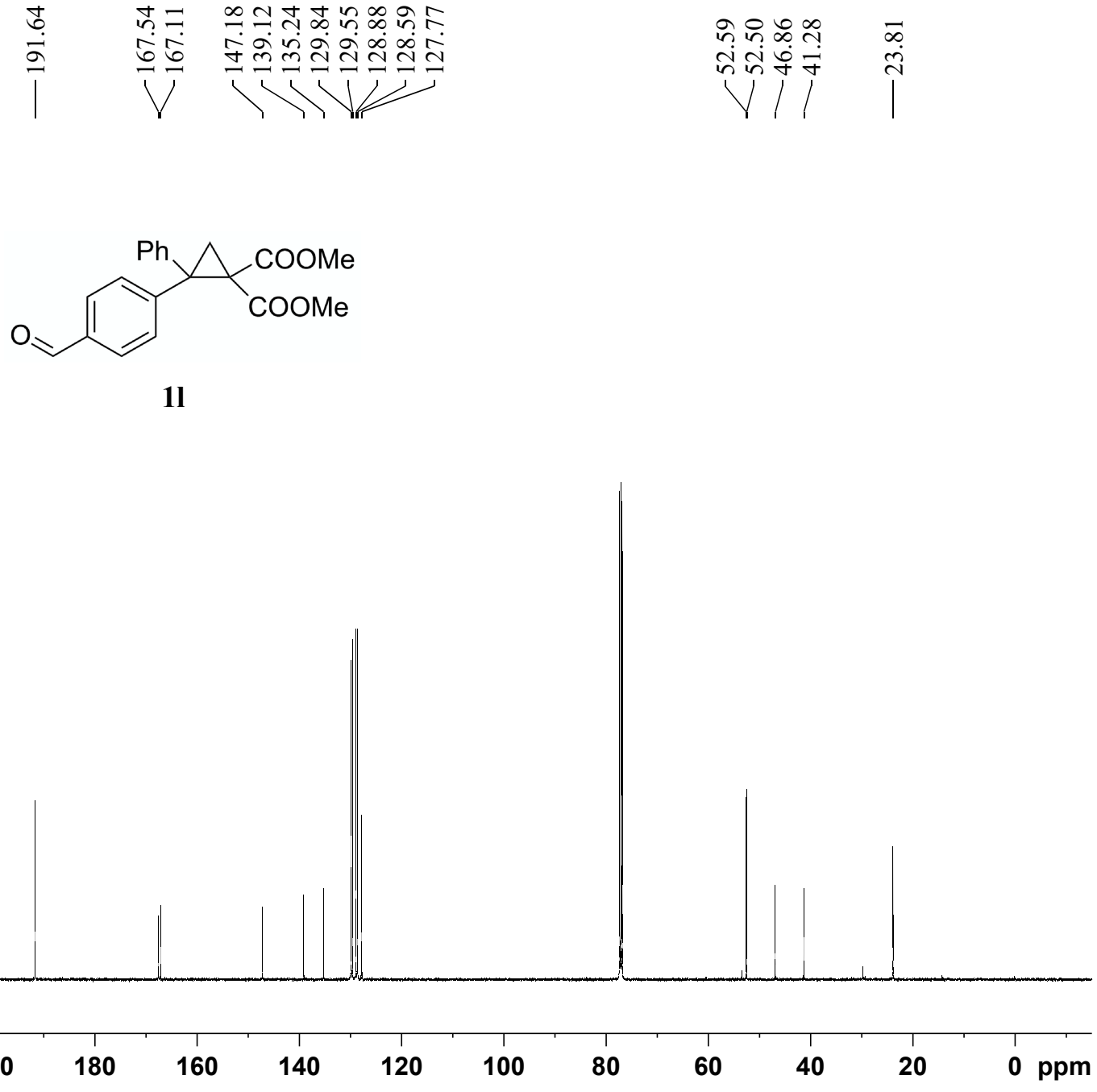
```
Current Data Parameters
NAME          500M-2022
EXPNO                99
PROCNO                1

F2 - Acquisition Parameters
Date_          20220608
Time              20.29
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1          1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300117 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1l

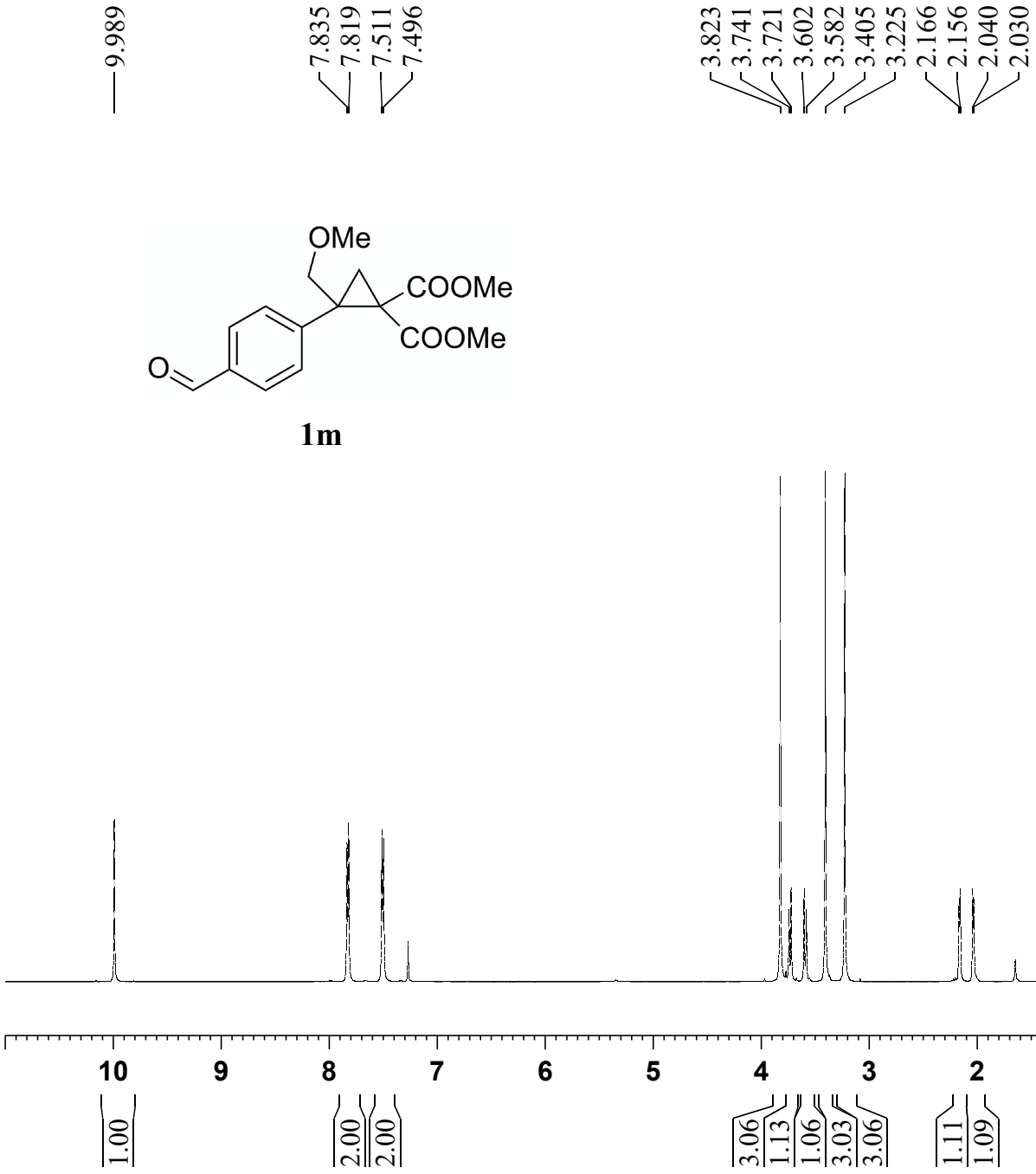
```
Current Data Parameters
NAME          500M-2022
EXPNO               100
PROCNO                1

F2 - Acquisition Parameters
Date_          20220608
Time              20.43
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



1m

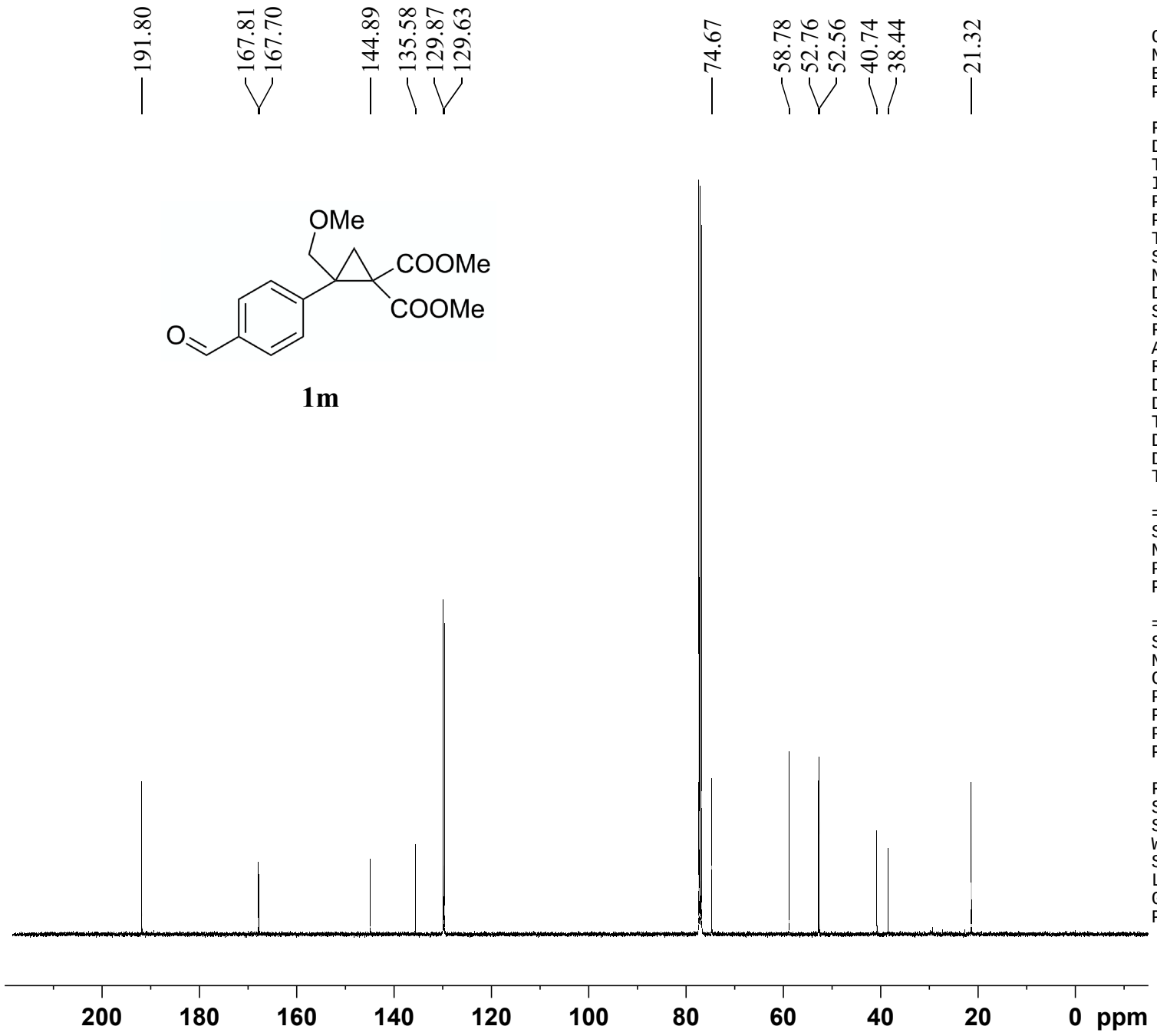
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                206
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211214
Time                9.23
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.1 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300049 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



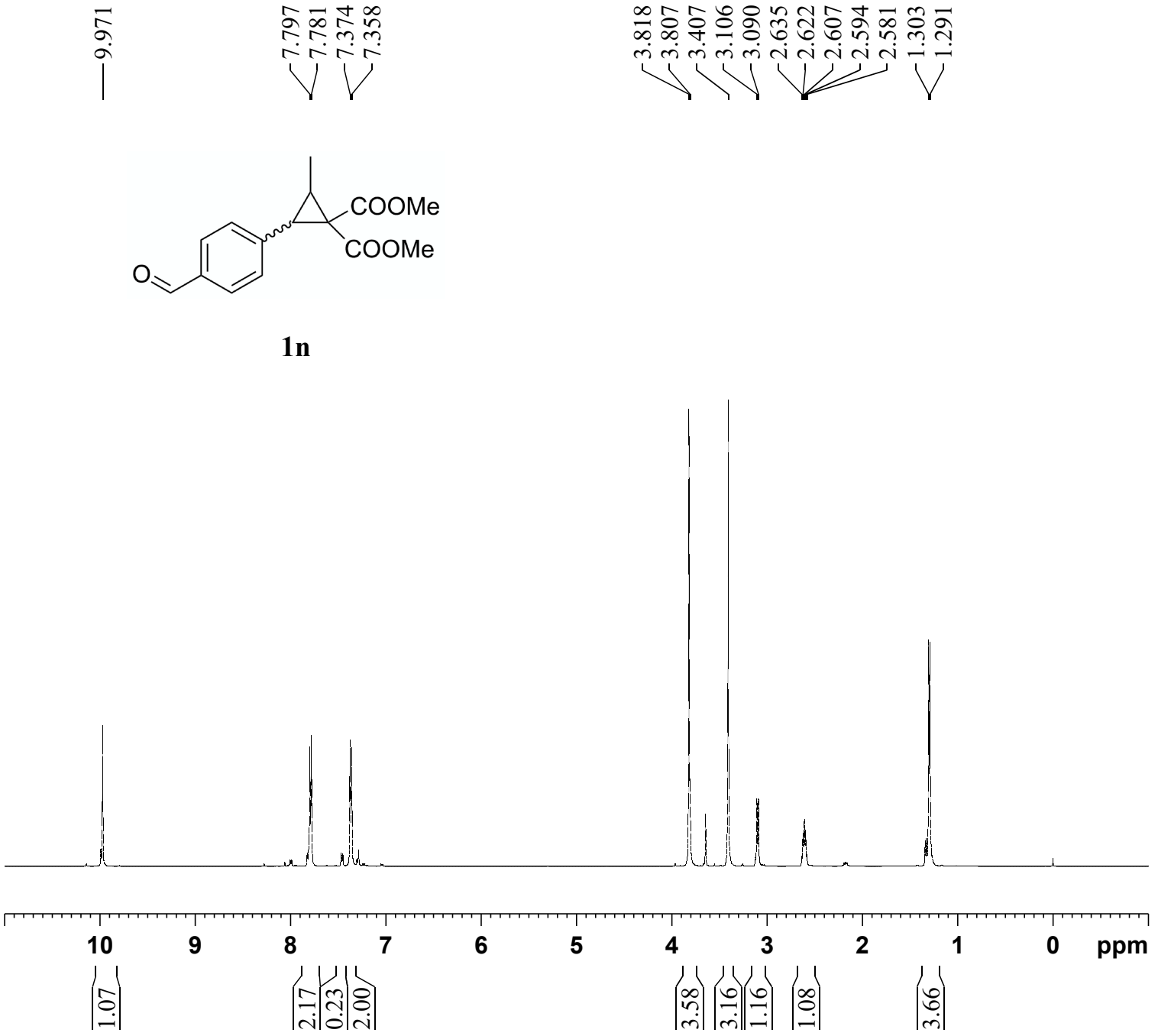

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               207
PROCNO                1

F2 - Acquisition Parameters
Date_          20211214
Time               9.30
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  133
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



1n

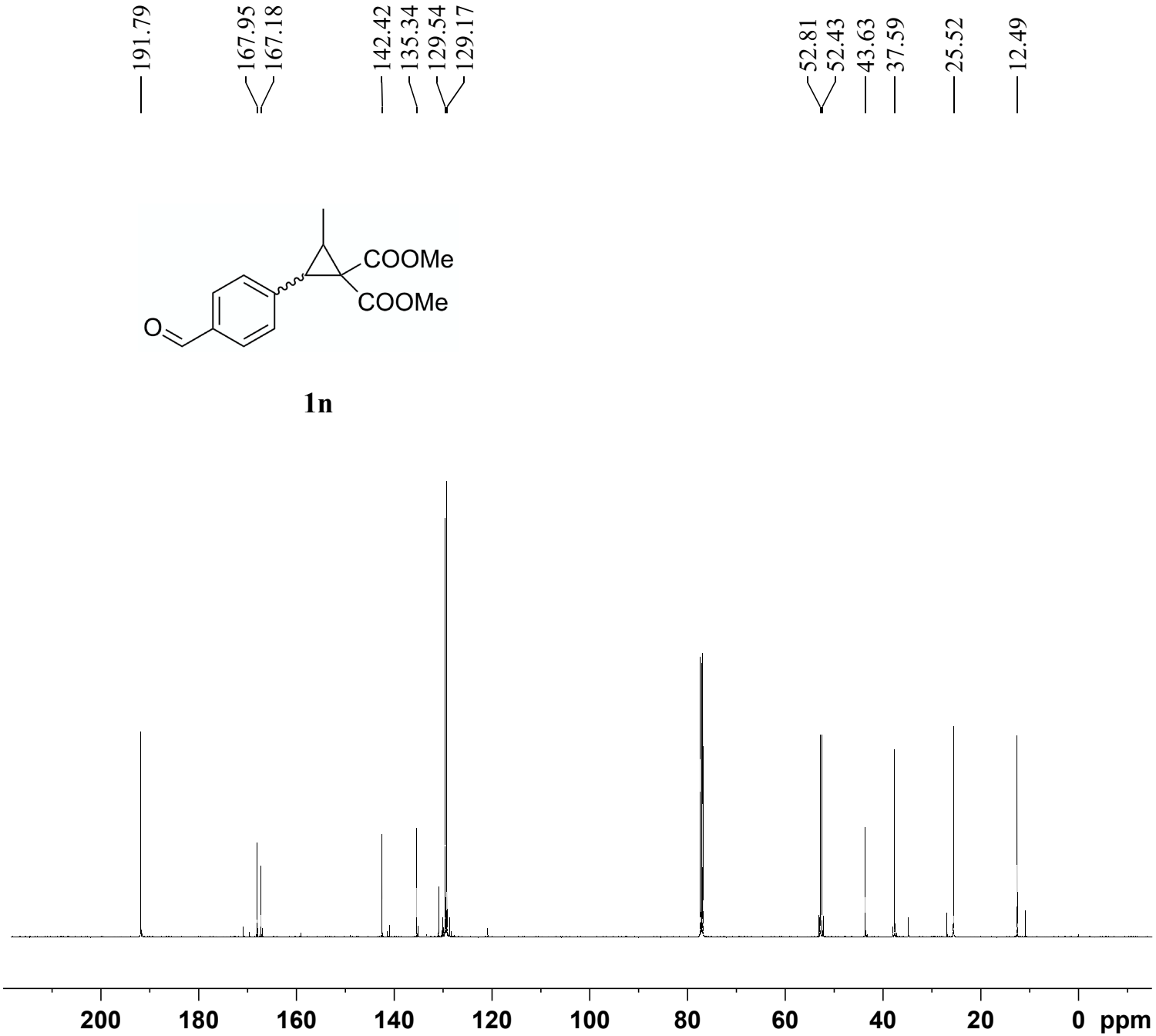
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                202
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211214
Time                4.33
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1          1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1299981 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1n

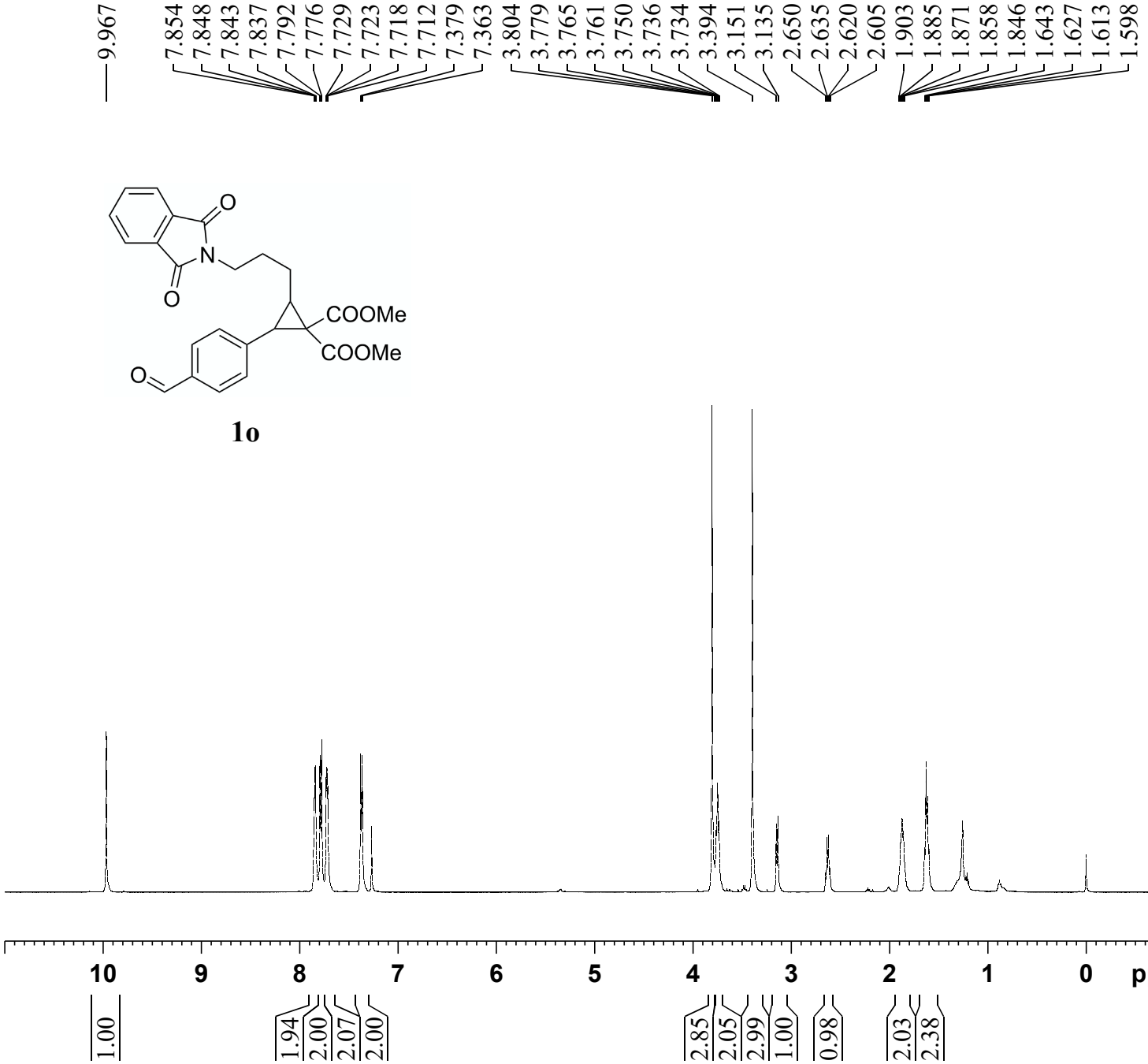
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               203
PROCNO                1

F2 - Acquisition Parameters
Date_          20211214
Time               5.27
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



1o

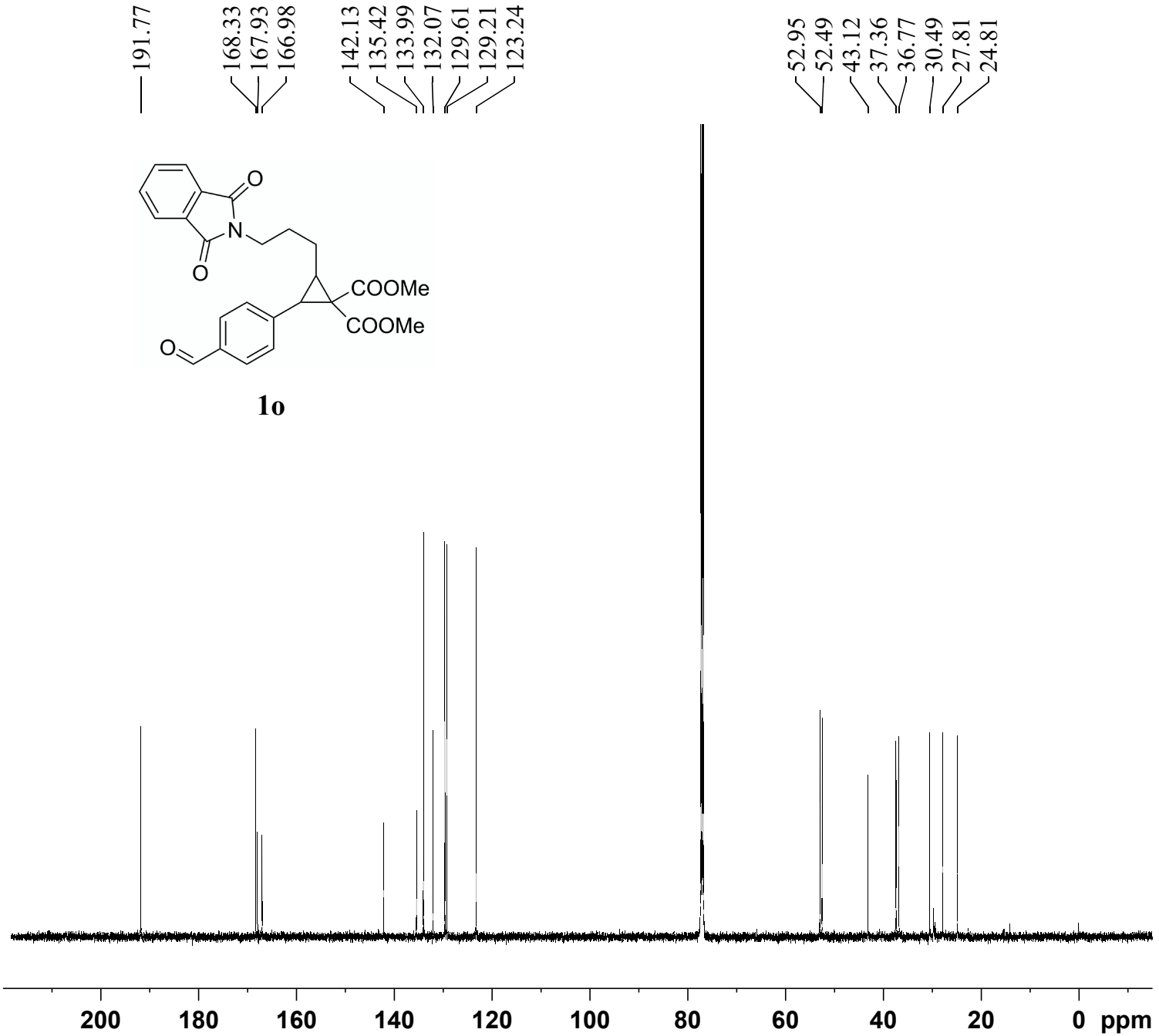
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                214
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211228
Time               15.25
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 69.95
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300037 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1o

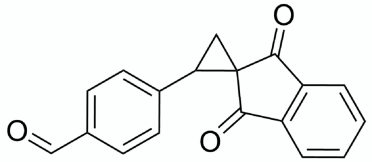
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               215
PROCNO                1

F2 - Acquisition Parameters
Date_          20211228
Time              15.52
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

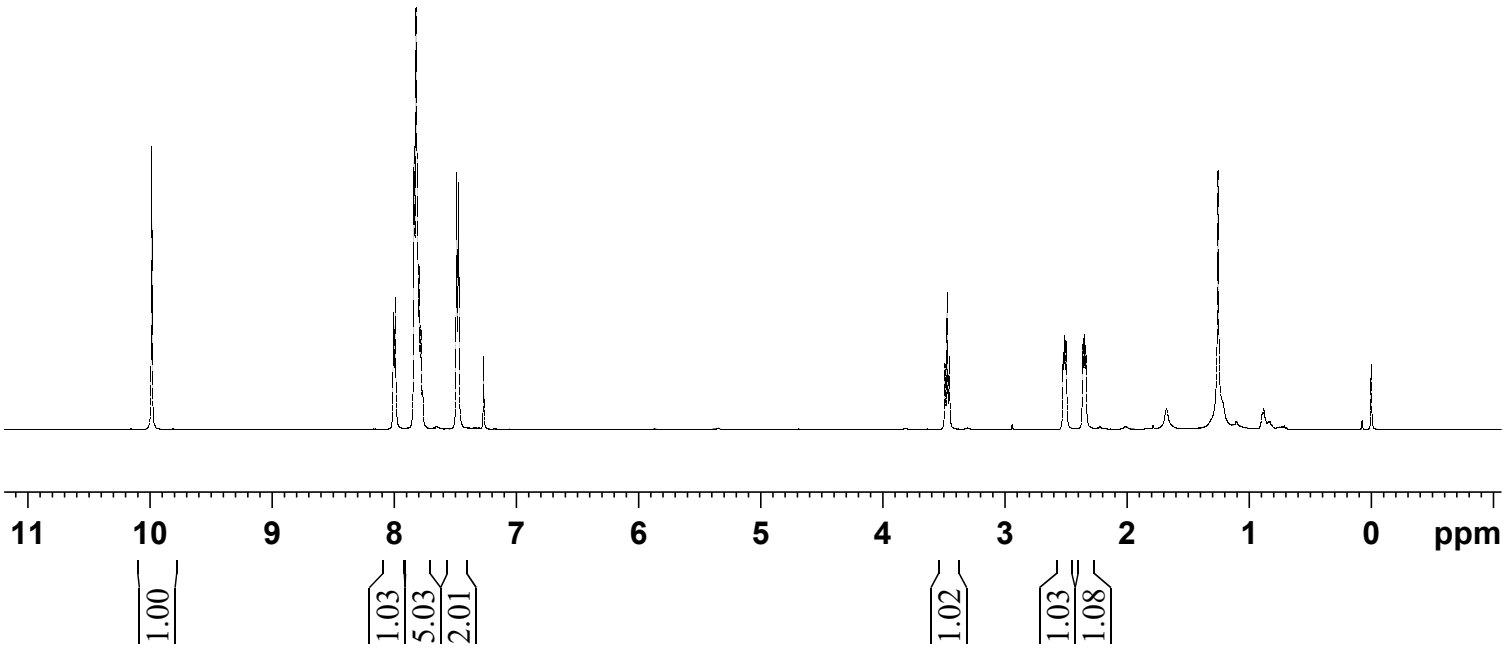
F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

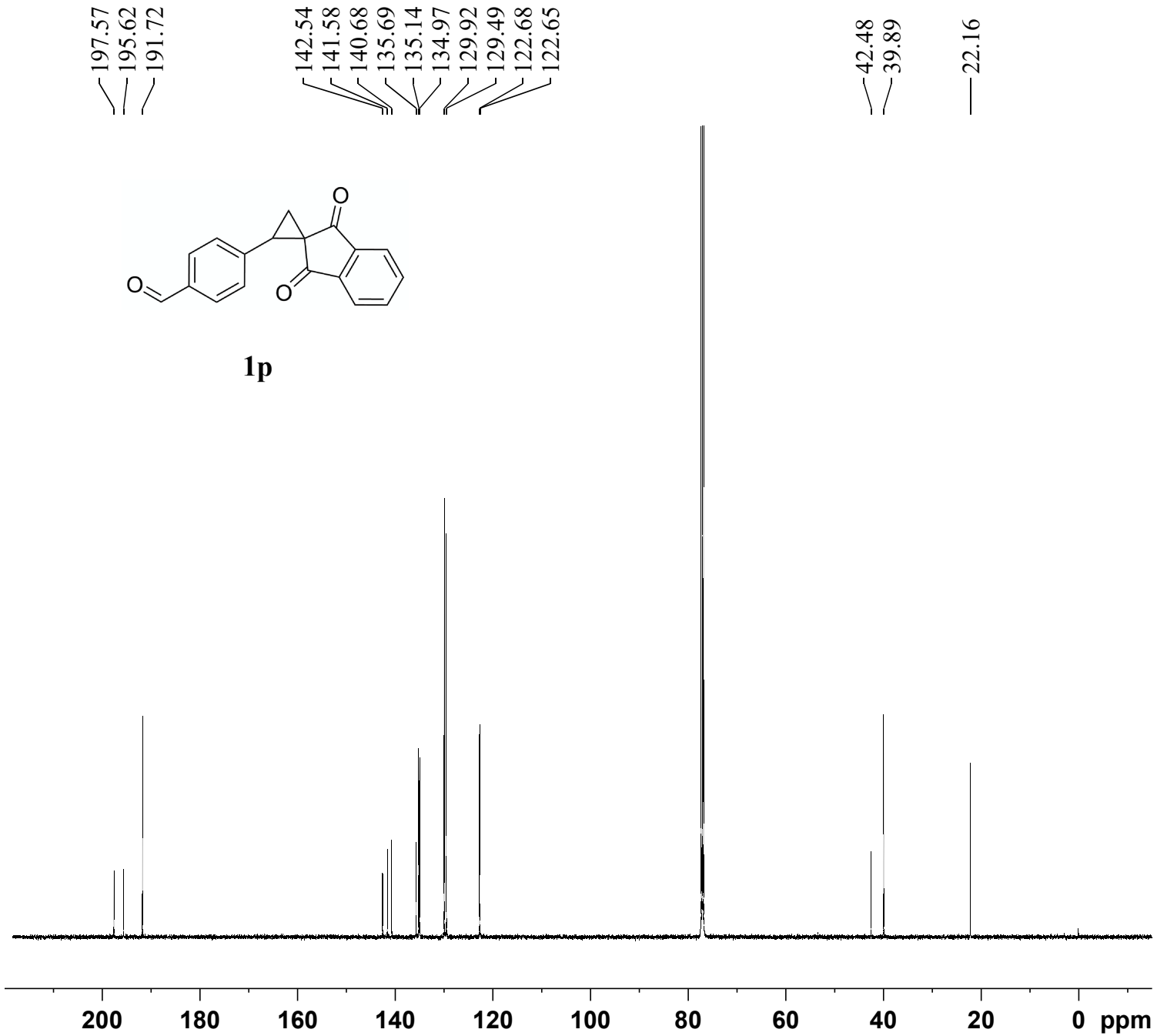


1p

```
Current Data Parameters
NAME          qy-538-new
EXPNO                  1
PROCNO                 1

F2 - Processing parameters
SI                 65536
SF          500.1300063 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





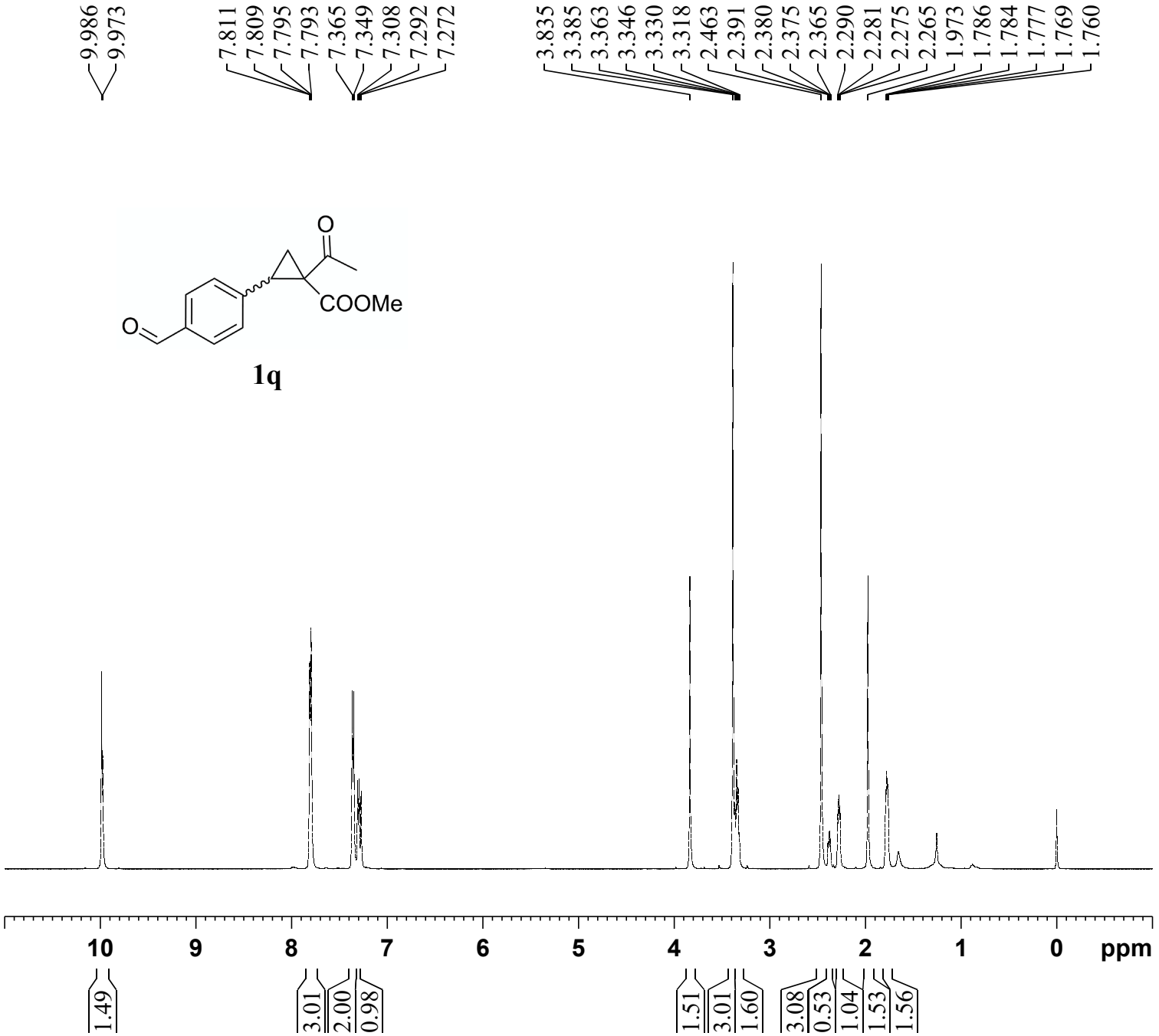

```
Current Data Parameters
NAME          500M-2022
EXPNO               105
PROCNO                1

F2 - Acquisition Parameters
Date_          20220613
Time              22.40
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



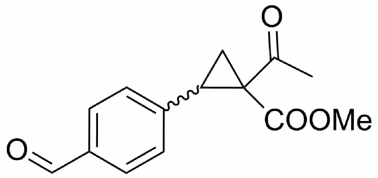

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                169
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211120
Time               10.58
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ             3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE        0 K
D1             1.00000000 sec
D11       0 sec
TD0                    1

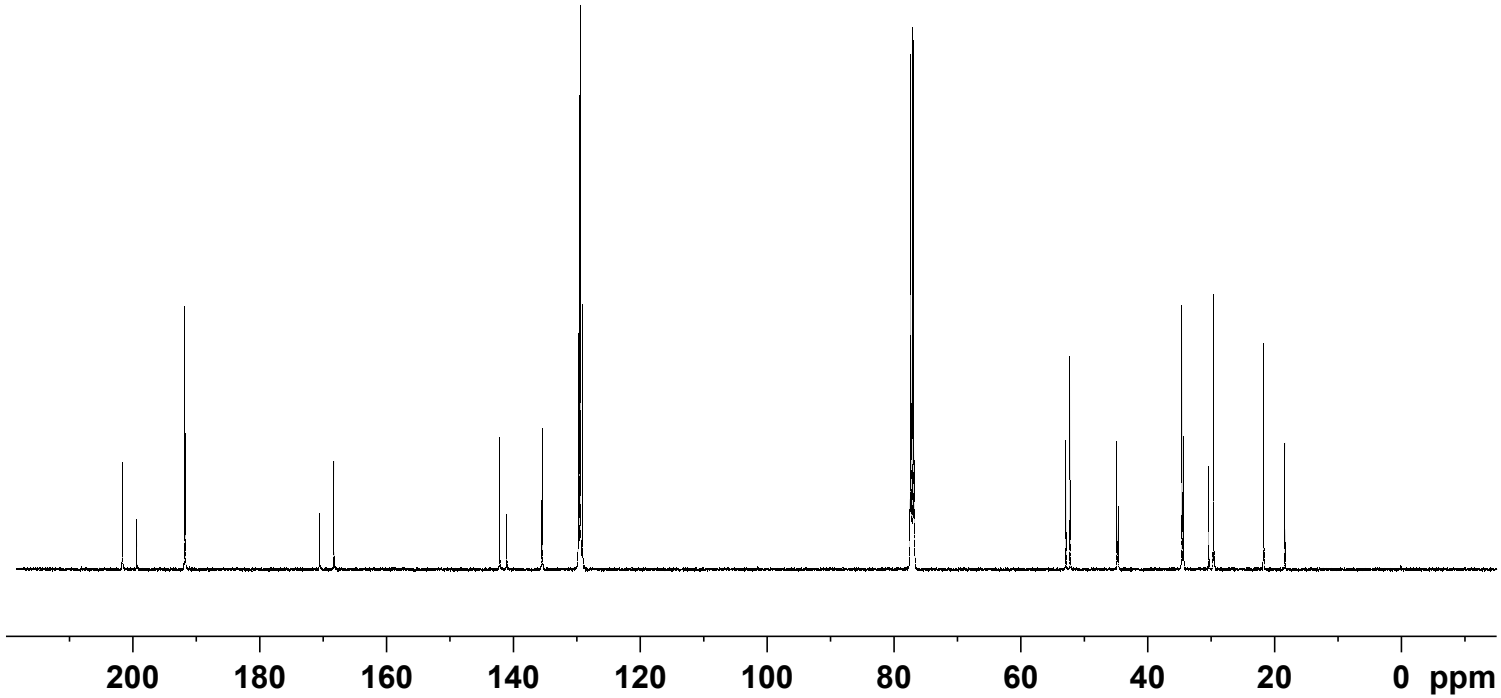
======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300044 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



1q



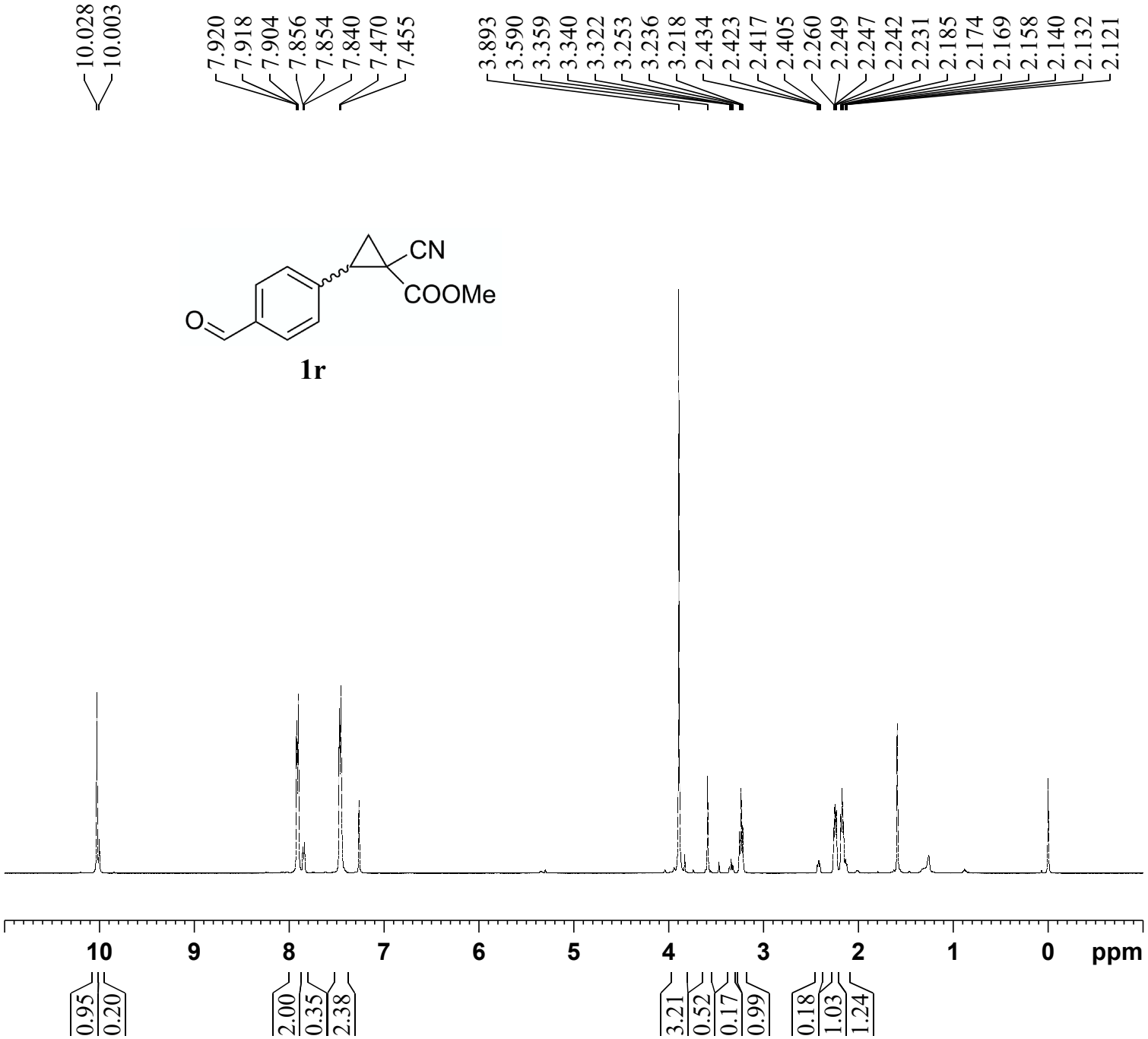

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               150
PROCNO                1

F2 - Acquisition Parameters
Date_          20211120
Time               5.25
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE       0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



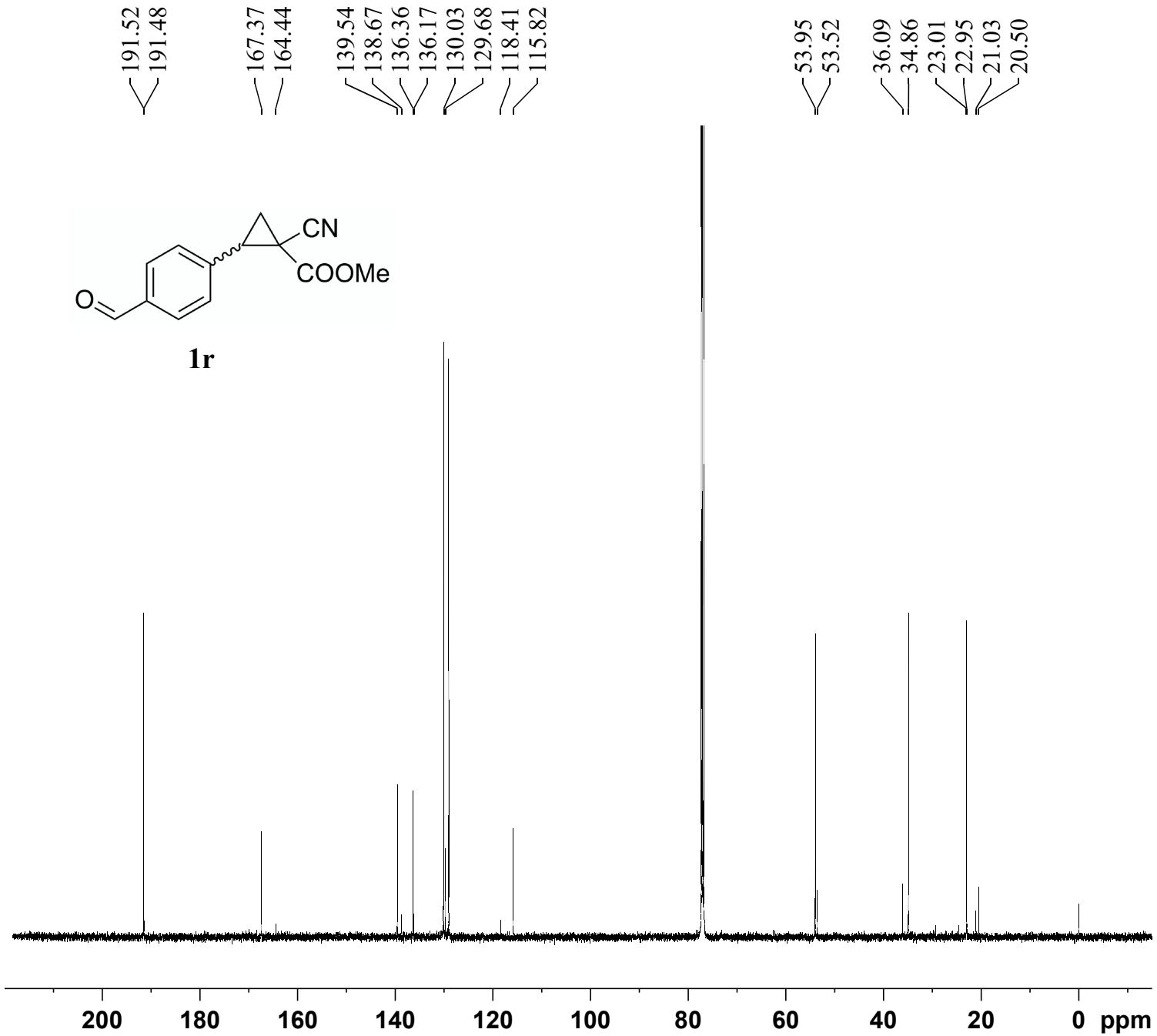

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                131
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211101
Time                9.53
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 55.37
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300091 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



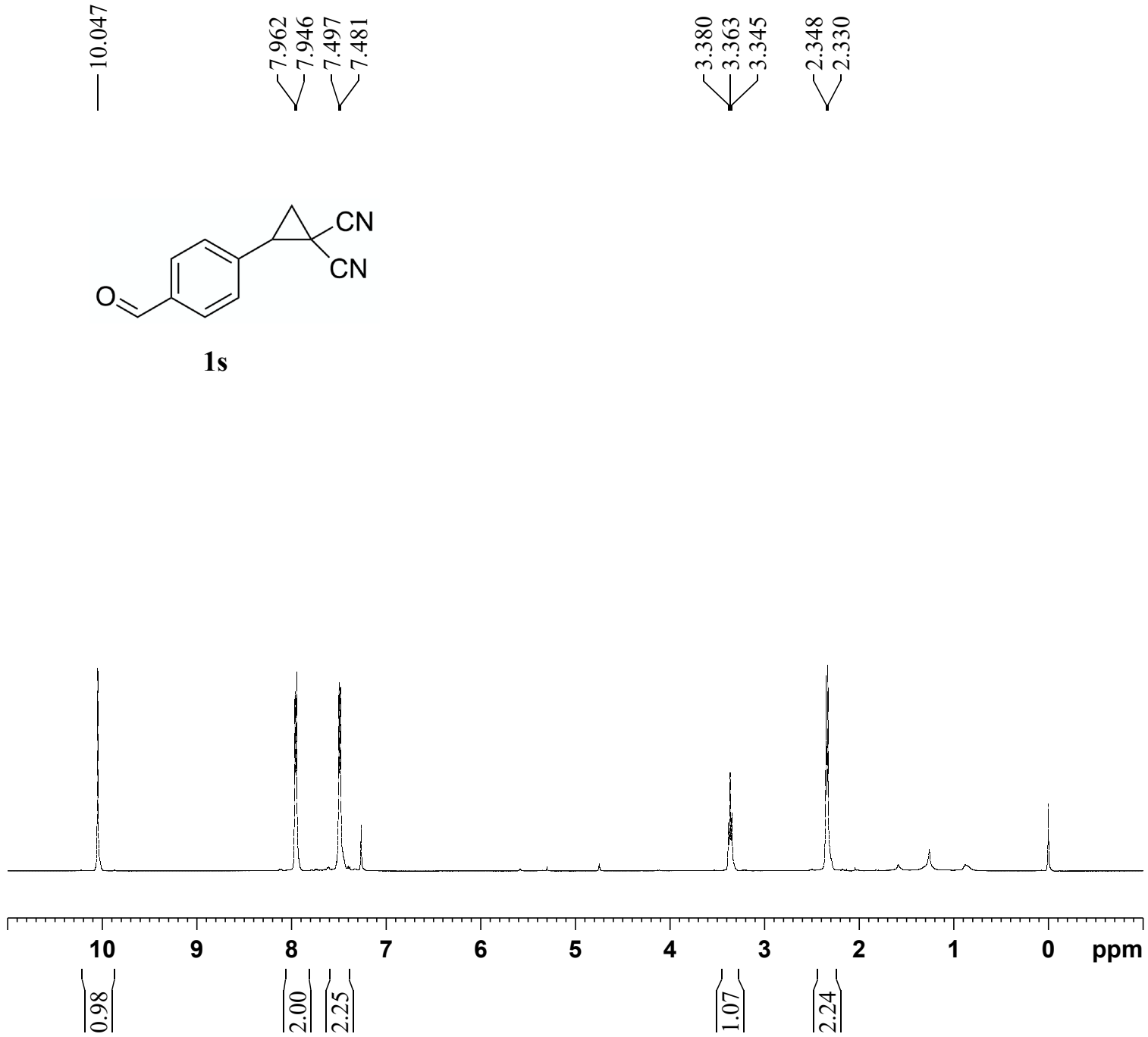

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               135
PROCNO                1

F2 - Acquisition Parameters
Date_          20211102
Time               9.54
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577890 MHz
WDW                   EM
SSB      0
LB                1.00 Hz
GB       0
PC                1.40
```



1s

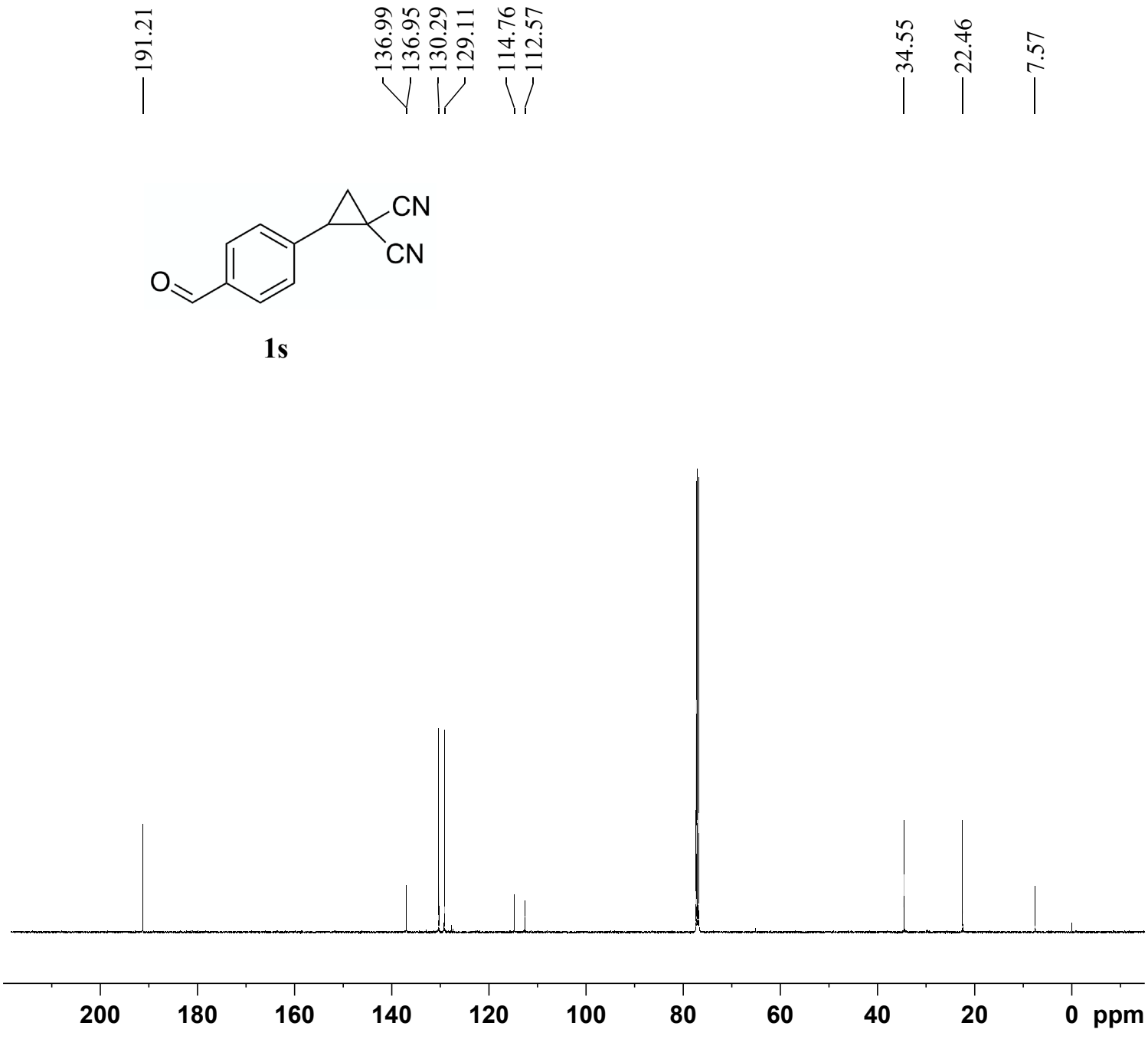
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                137
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211113
Time                0.57
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 62.06
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2    0 usec
PLW2     0 W
PLW12    0 W
PLW13    0 W

F2 - Processing parameters
SI                 65536
SF          500.1300088 MHz
WDW                   EM
SSB      0
LB                 0.30 Hz
GB       0
PC                 1.00
```



1s

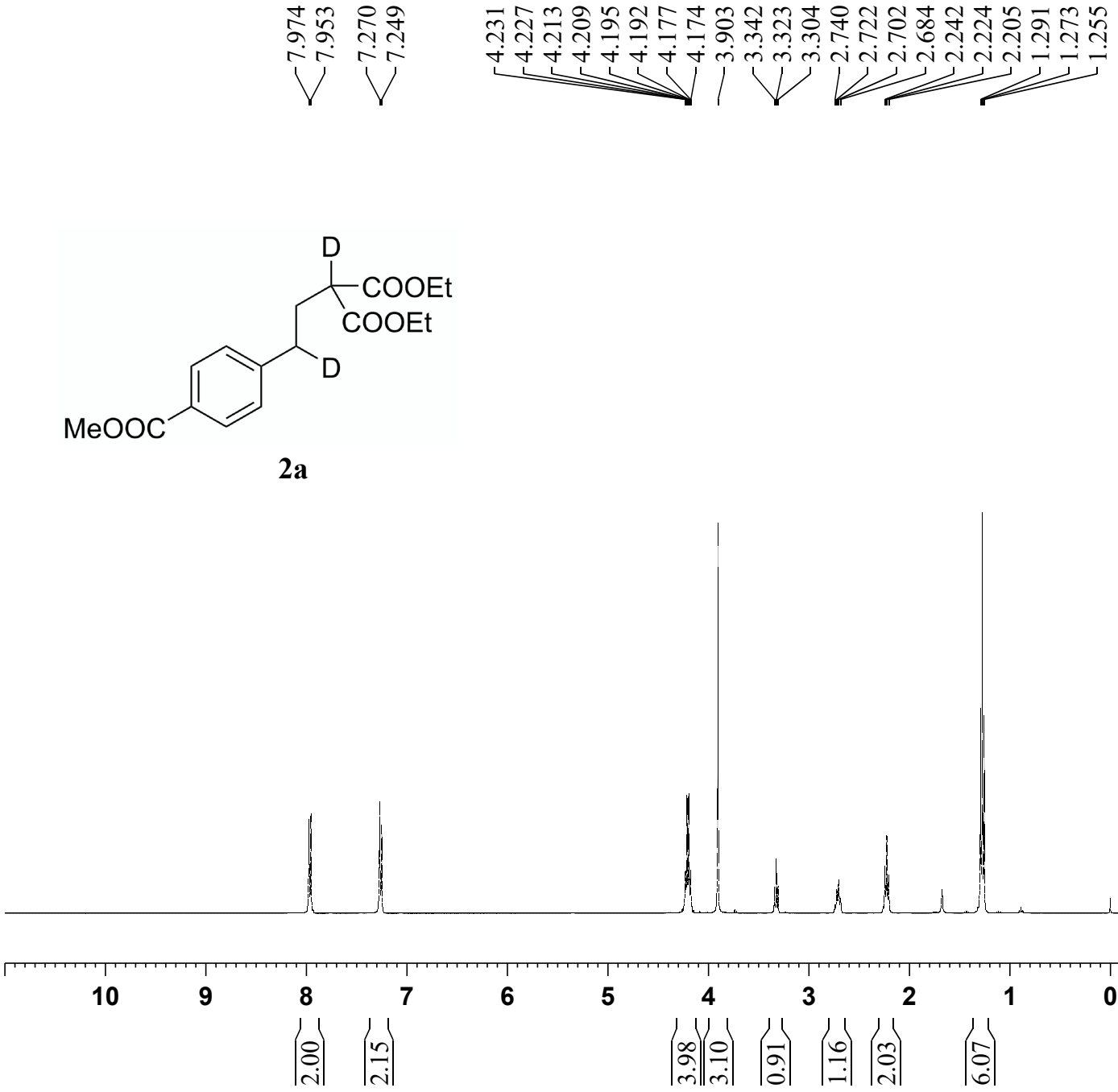
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               138
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               1.24
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577898 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2a

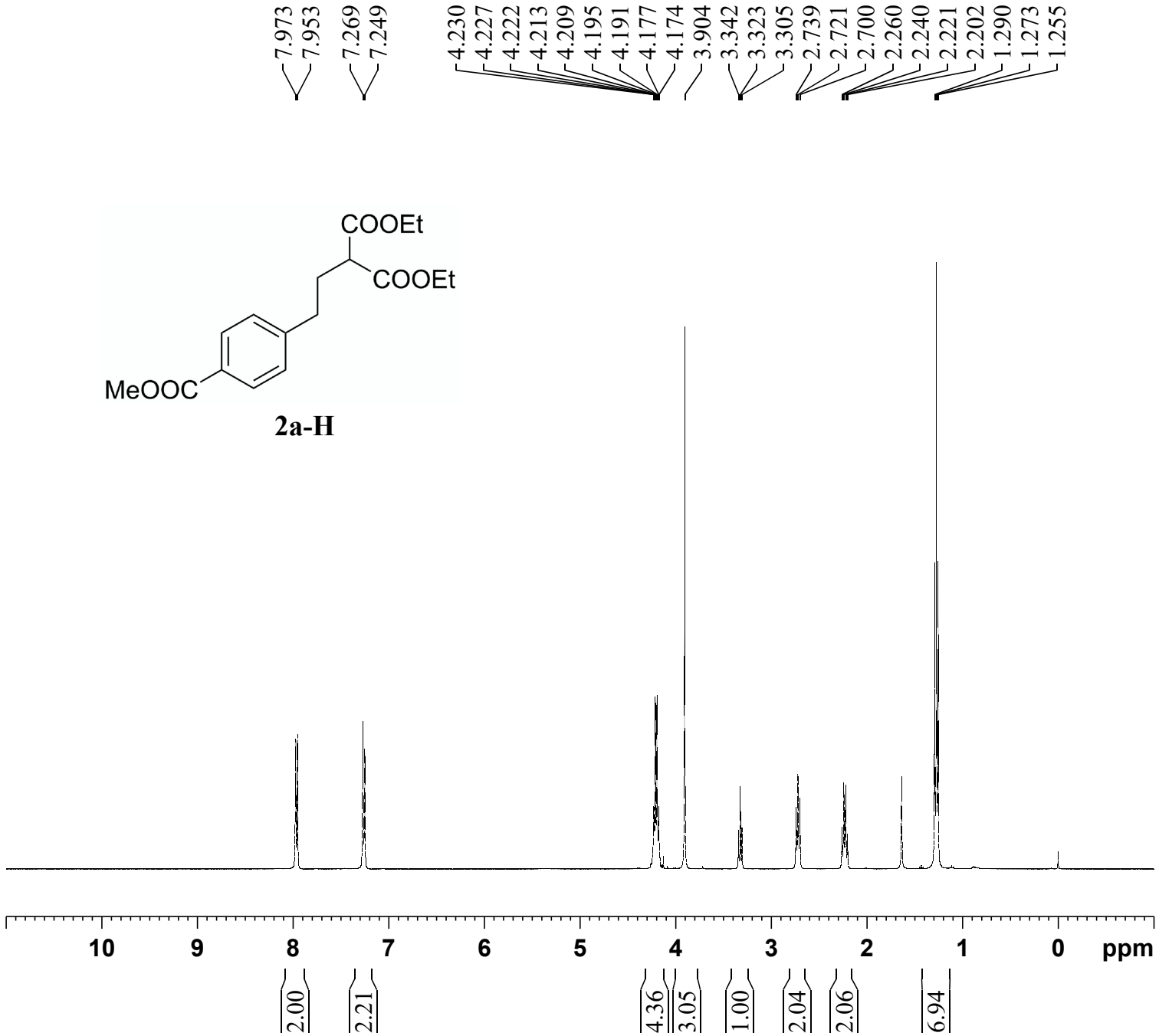
```
Current Data Parameters
NAME          400M-2022
EXPNO                 3
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               3.55
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG                92.09
DW               62.400 usec
DE                6.50 usec
TE               300.7 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400053 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



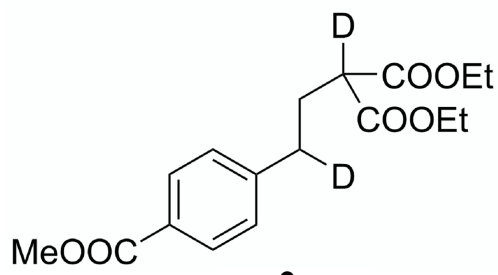

```
Current Data Parameters
NAME          400M-2022
EXPNO                 5
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               4.28
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               206.33
DW                62.400 usec
DE                 6.50 usec
TE                300.9 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

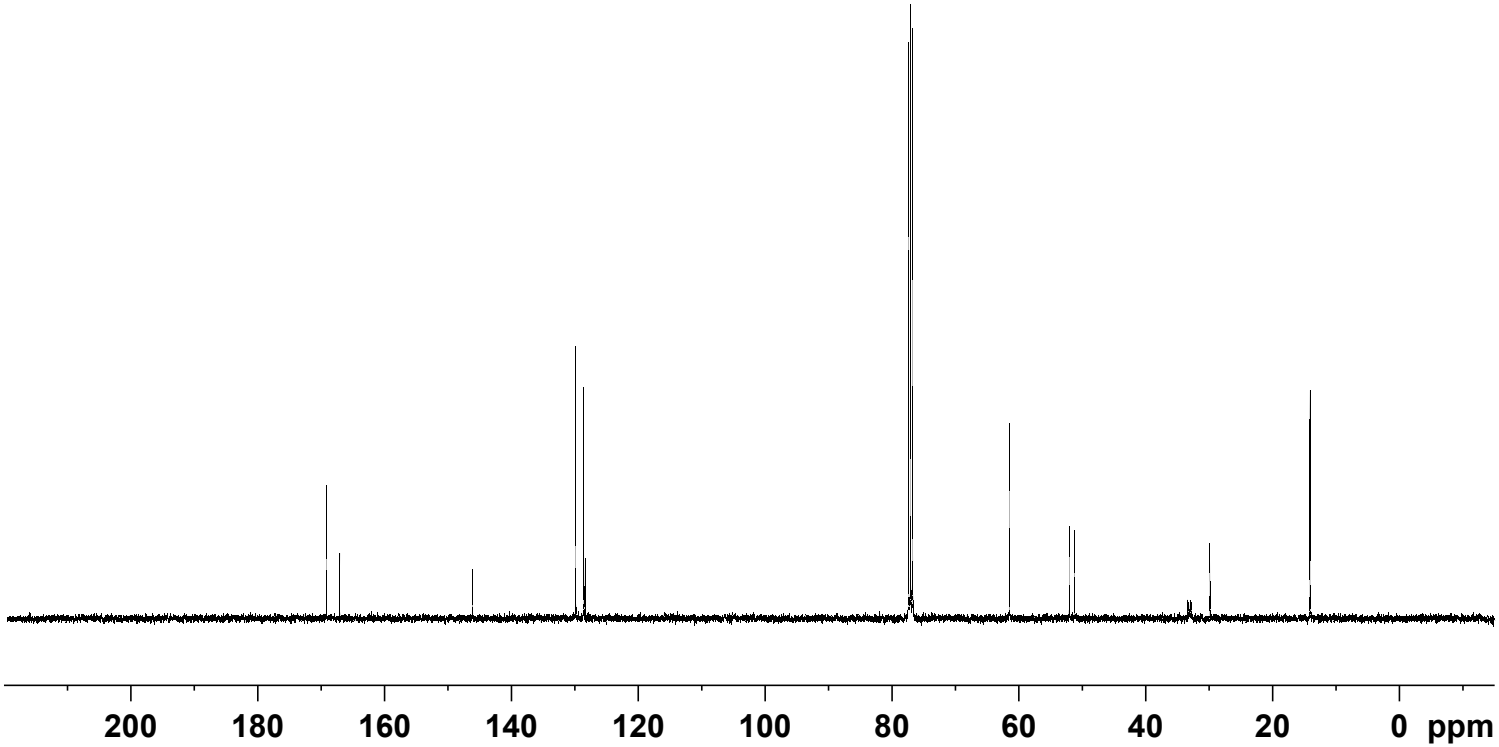
======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400066 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2a



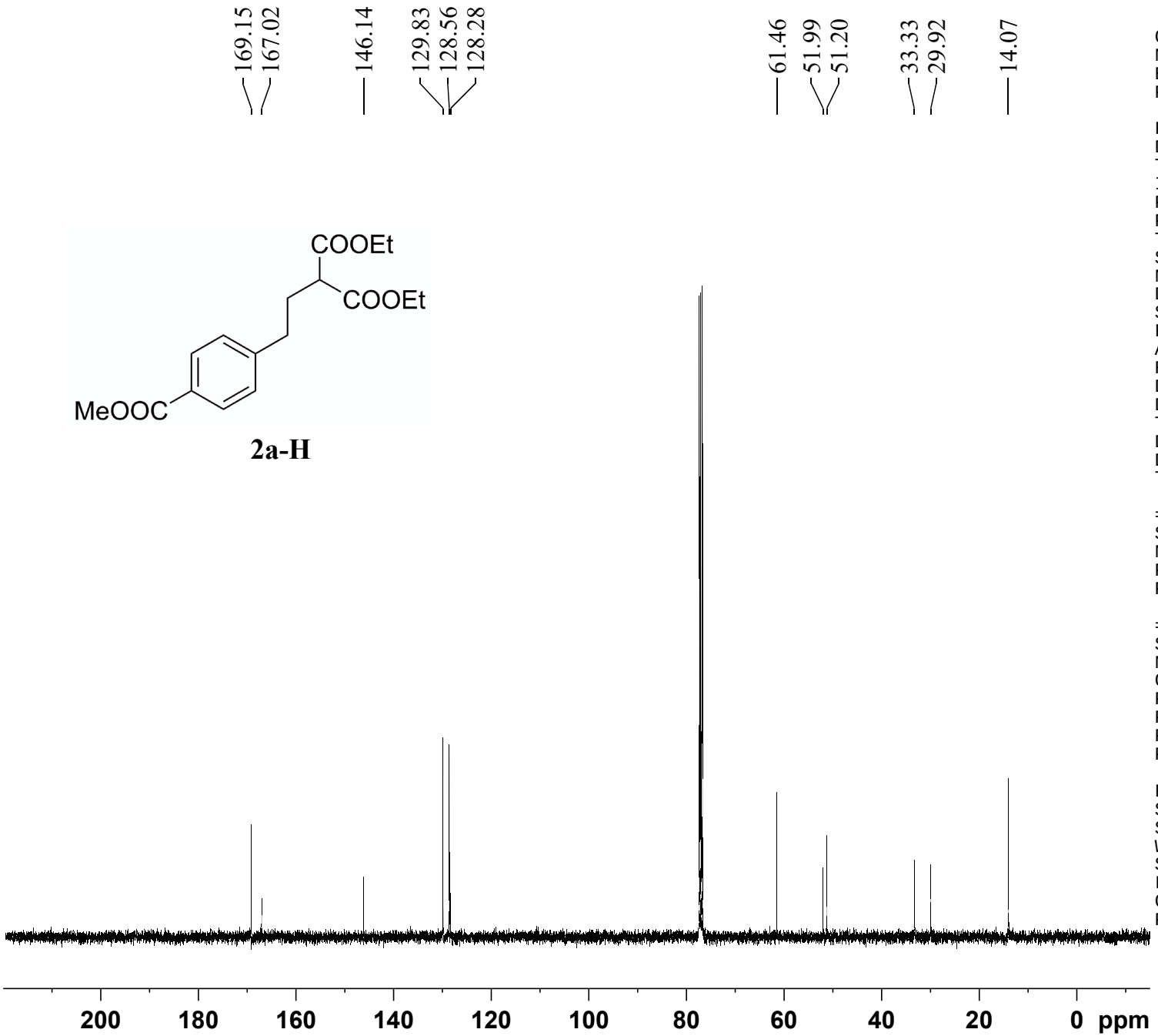

```
Current Data Parameters
NAME          400M-2022
EXPNO                 4
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               4.25
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               301.6 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



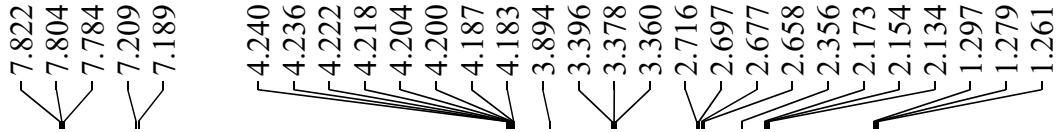

```
Current Data Parameters
NAME          400M-2022
EXPNO                 6
PROCNO                1

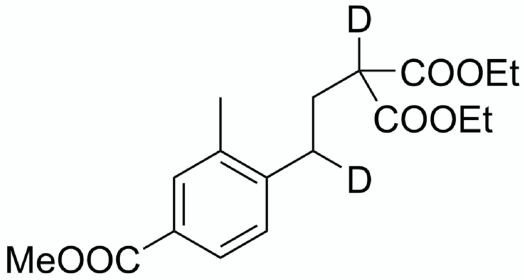
F2 - Acquisition Parameters
Date_          20220701
Time               4.43
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.6 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

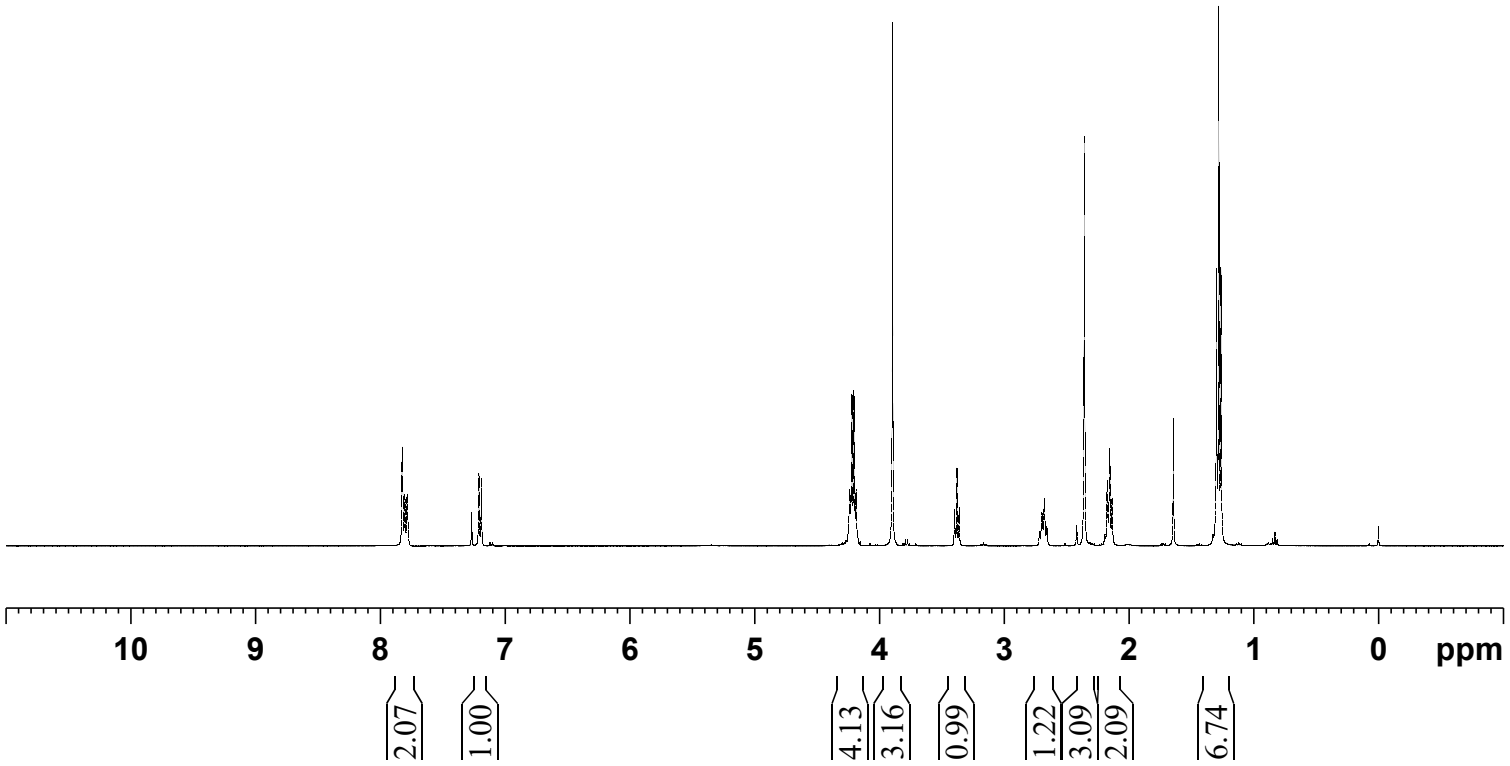
======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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





2b



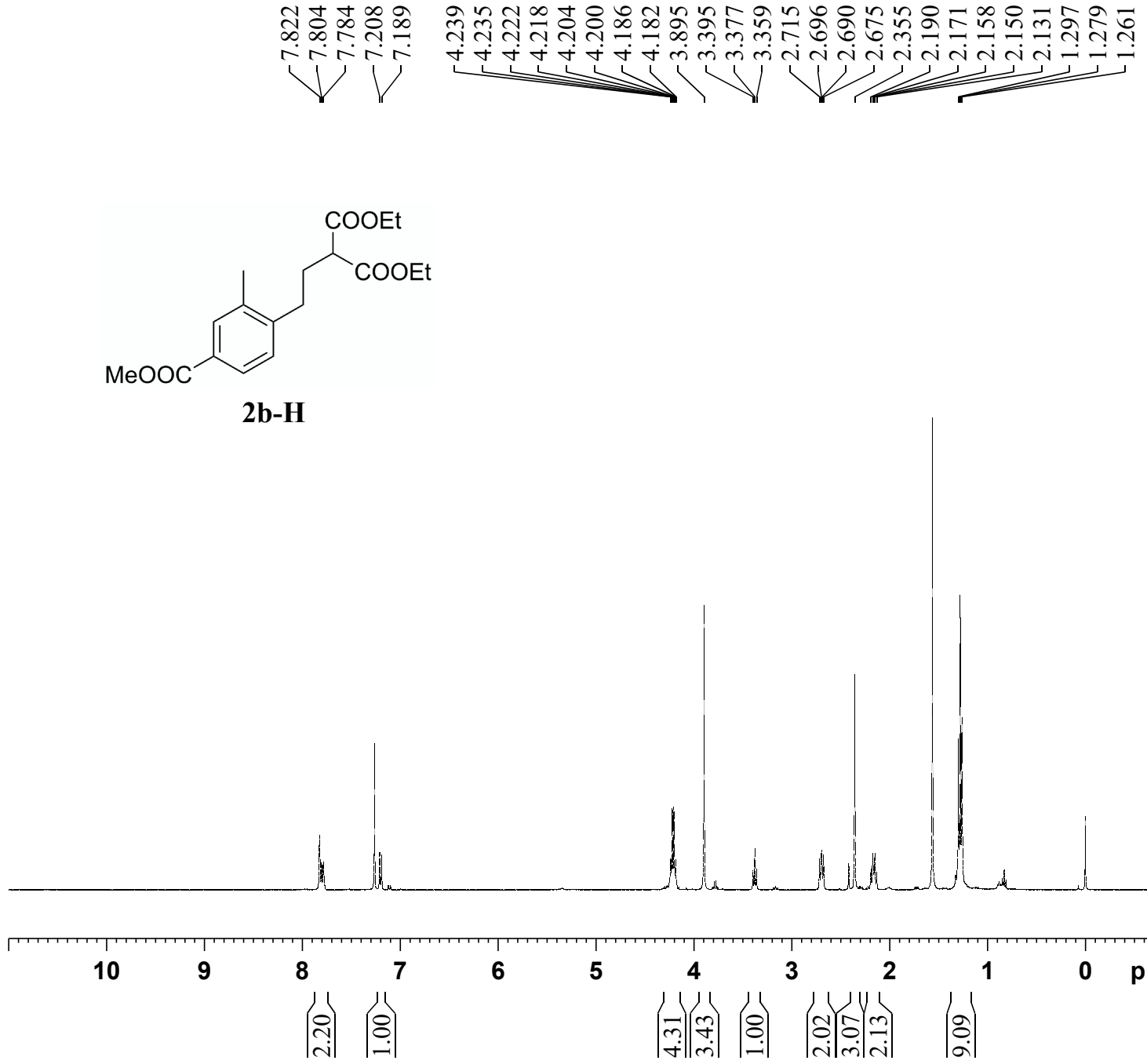

```
Current Data Parameters
NAME          400M-2022
EXPNO                11
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               5.39
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               102.73
DW               62.400 usec
DE                6.50 usec
TE               300.9 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                65536
SF          400.2400067 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



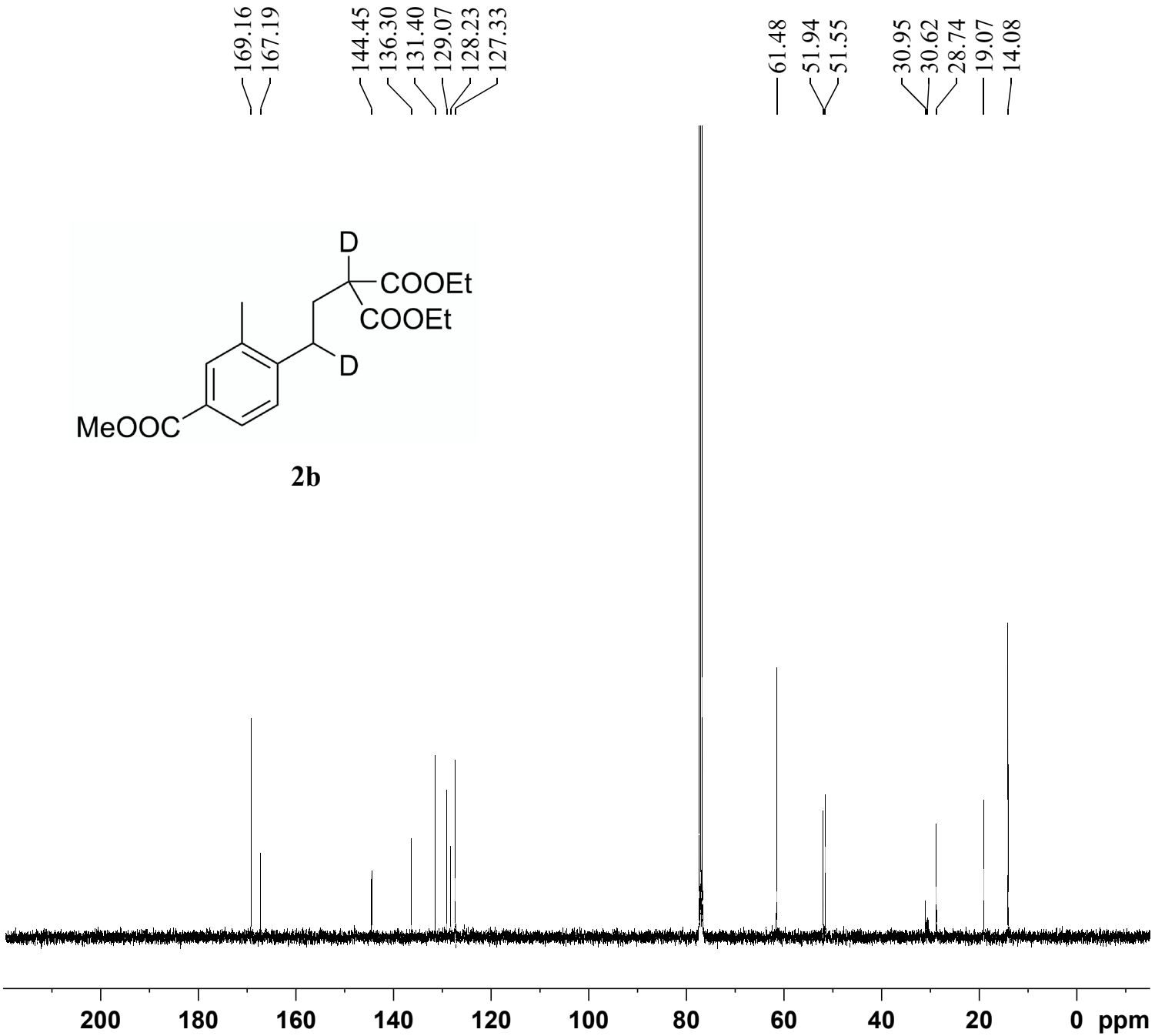

```
Current Data Parameters
NAME          400M-2022
EXPNO                13
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               6.12
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               206.33
DW               62.400 usec
DE                6.50 usec
TE               300.9 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                65536
SF          400.2400092 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



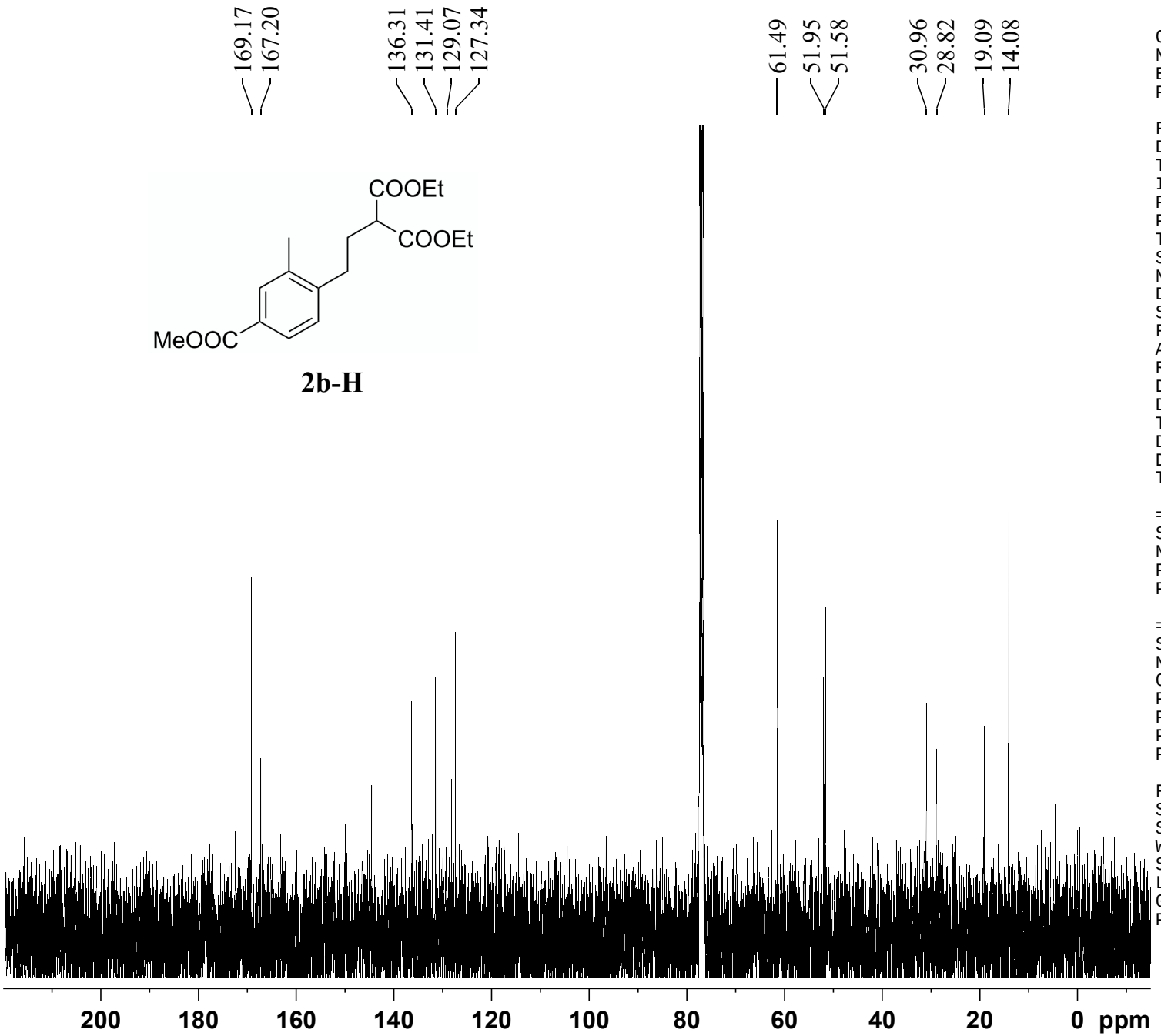

```
Current Data Parameters
NAME          400M-2022
EXPNO                12
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               6.09
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.7 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



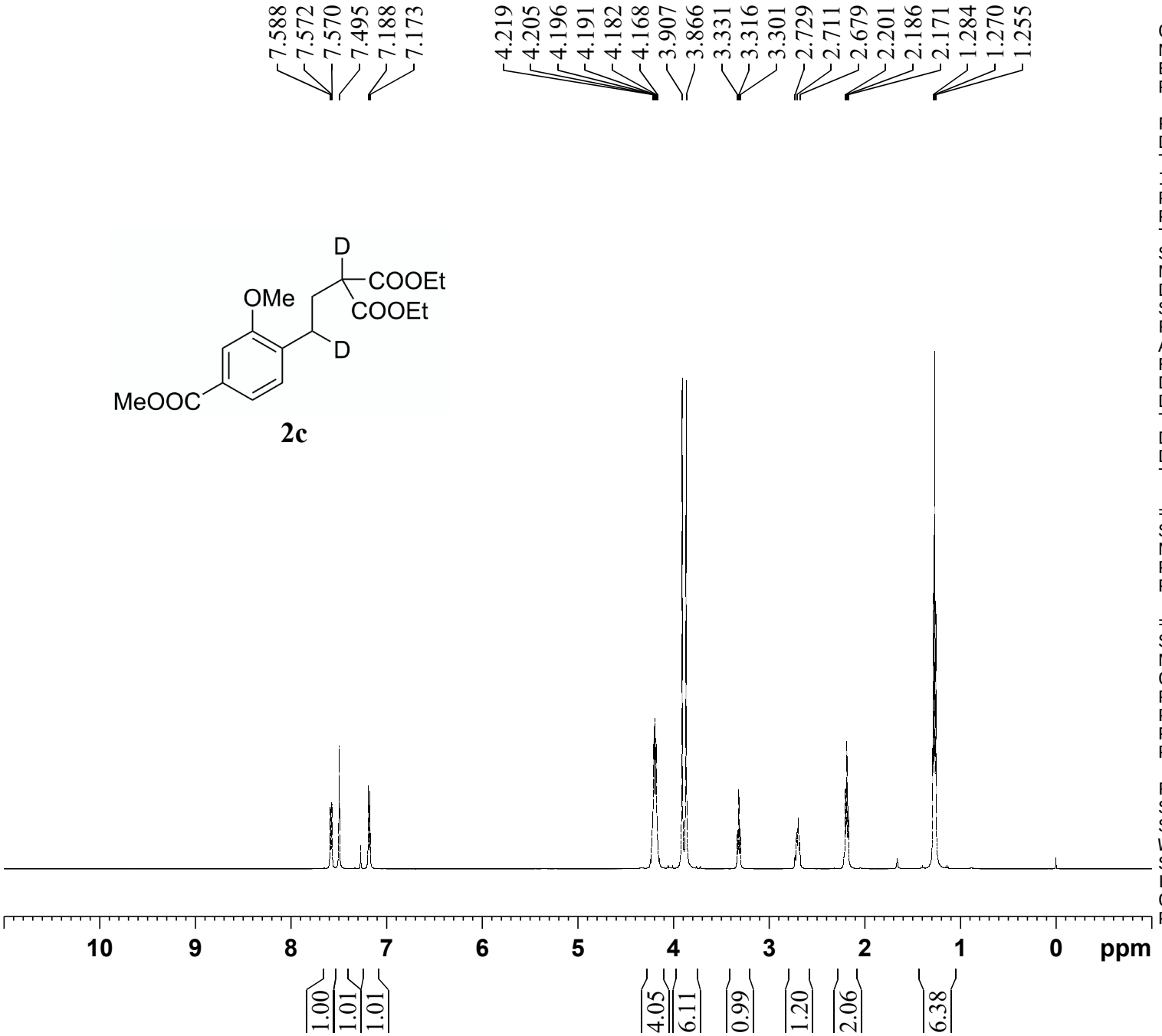

```
Current Data Parameters
NAME          400M-2022
EXPNO                14
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               7.11
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE                301.6 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



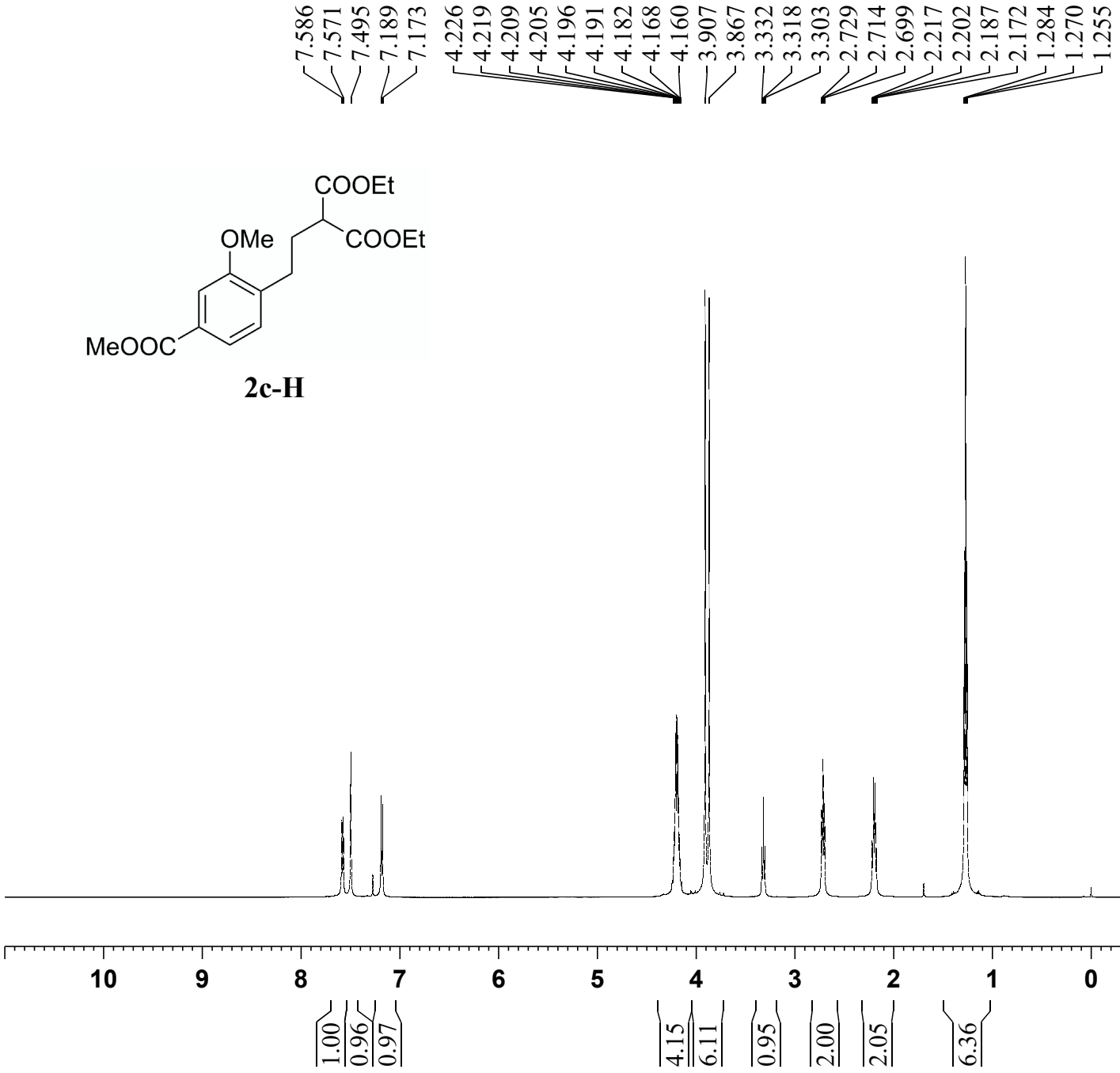

```
Current Data Parameters
NAME          500M-2022
EXPNO                11
PROCNO                1

F2 - Acquisition Parameters
Date_          20220218
Time              21.46
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300070 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



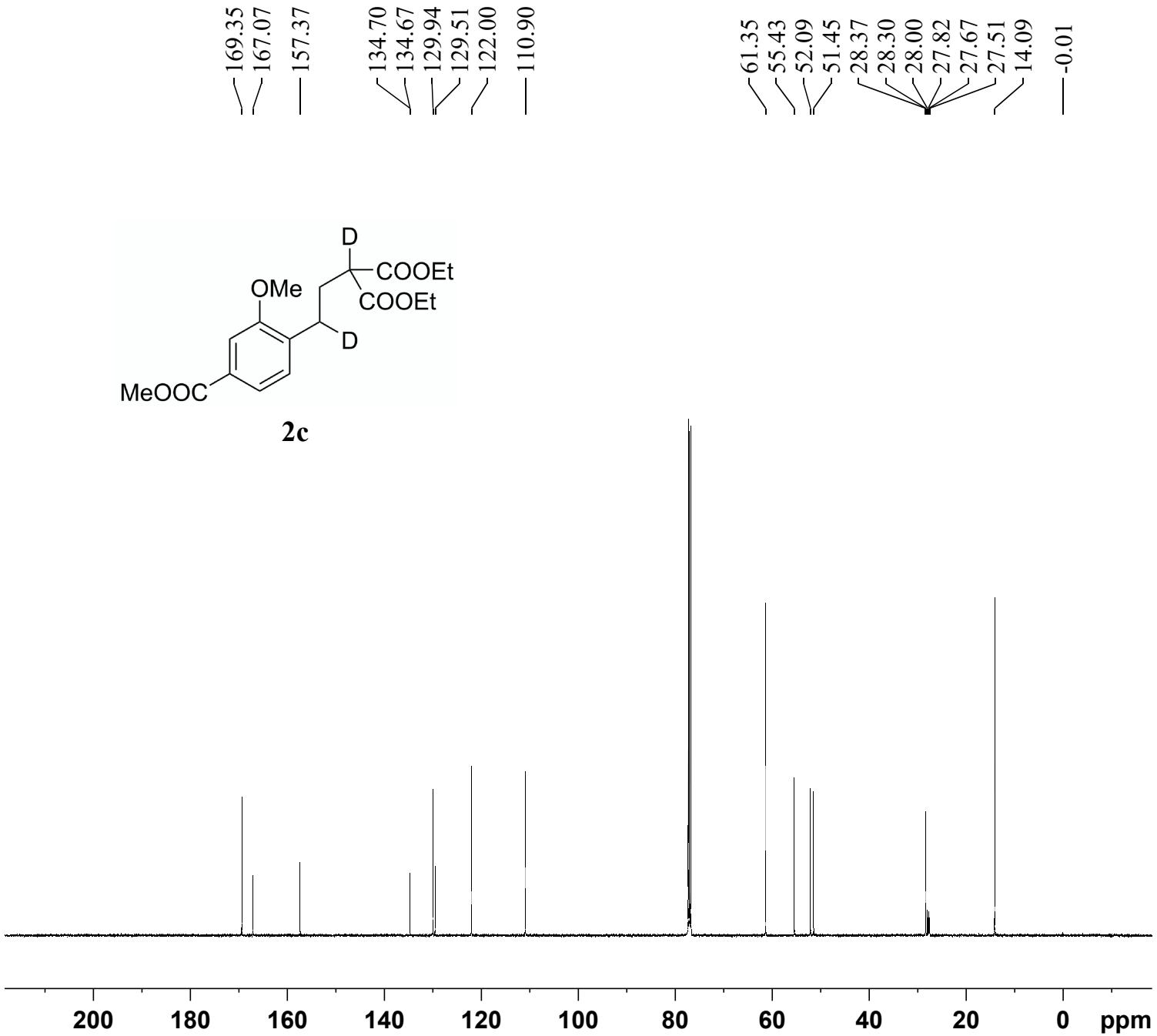

```
Current Data Parameters
NAME          500M-2022
EXPNO                 9
PROCNO                1

F2 - Acquisition Parameters
Date_          20220218
Time              21.28
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE               298.2 K
D1          1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300056 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2c

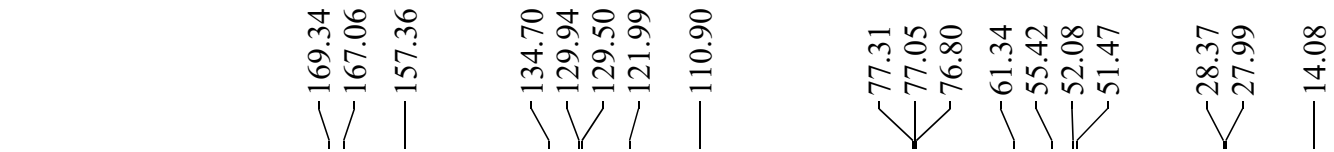
```
Current Data Parameters
NAME          500M-2022
EXPNO                12
PROCNO                1

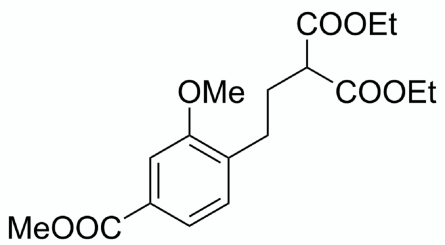
F2 - Acquisition Parameters
Date_          20220218
Time              22.01
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

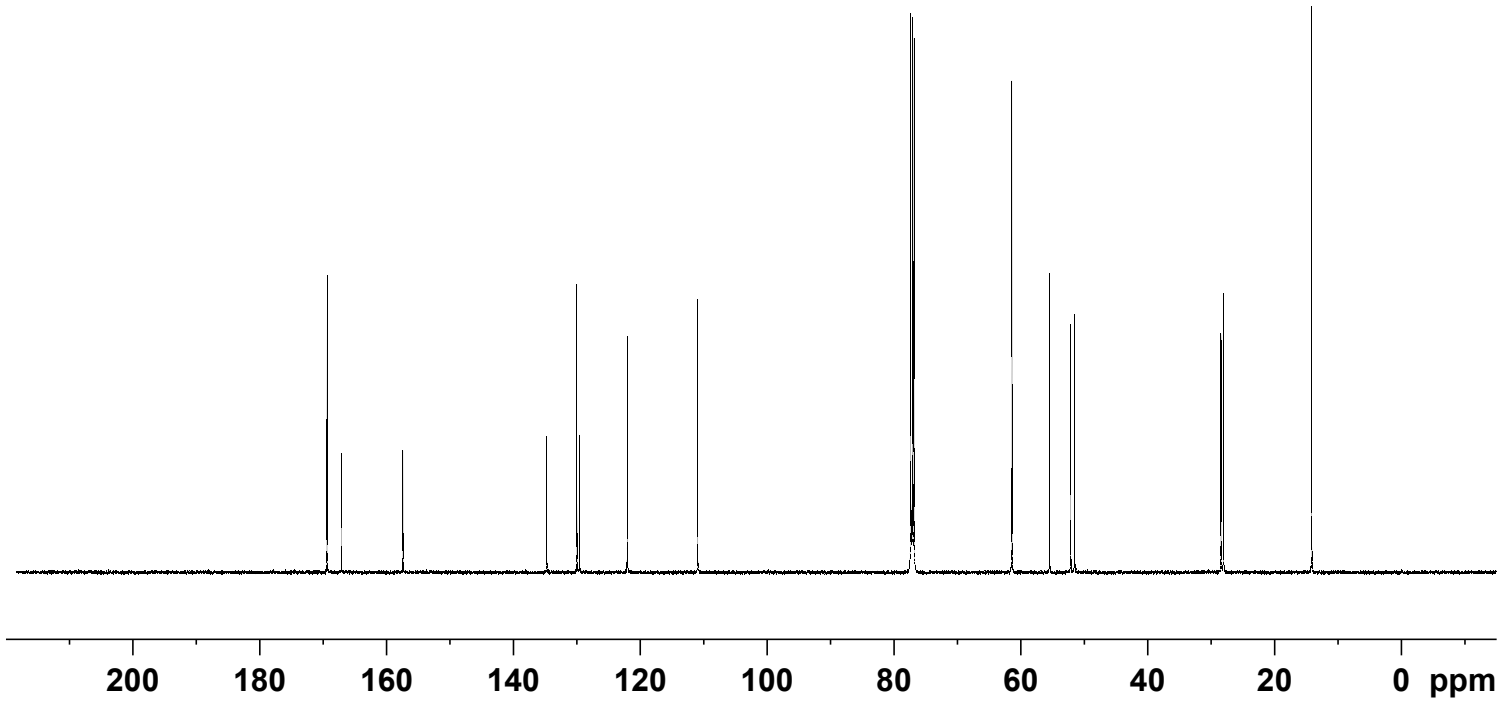
======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```





2c-H



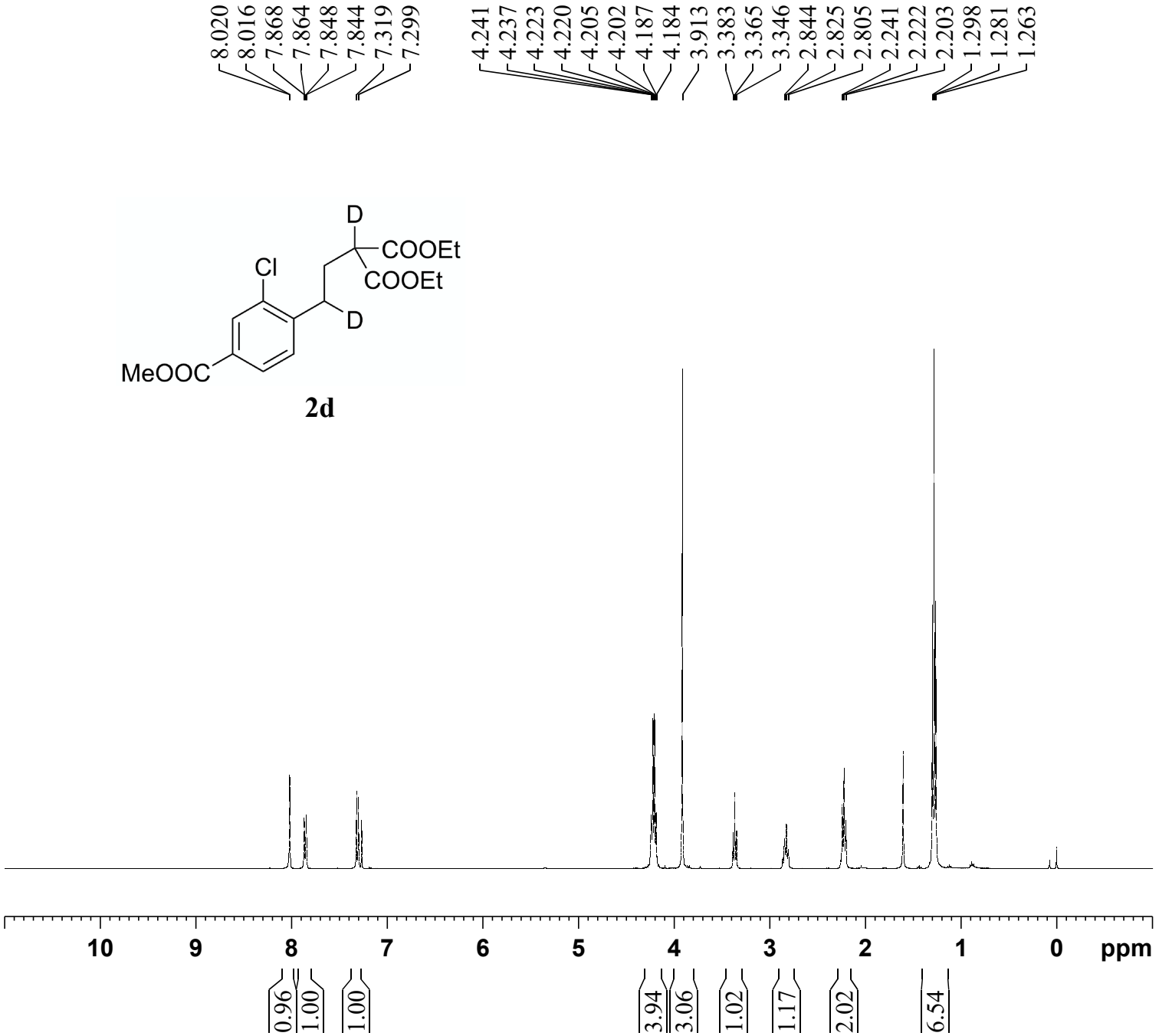

```
Current Data Parameters
NAME          500M-2022
EXPNO                10
PROCNO                1

F2 - Acquisition Parameters
Date_          20220218
Time              21.43
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



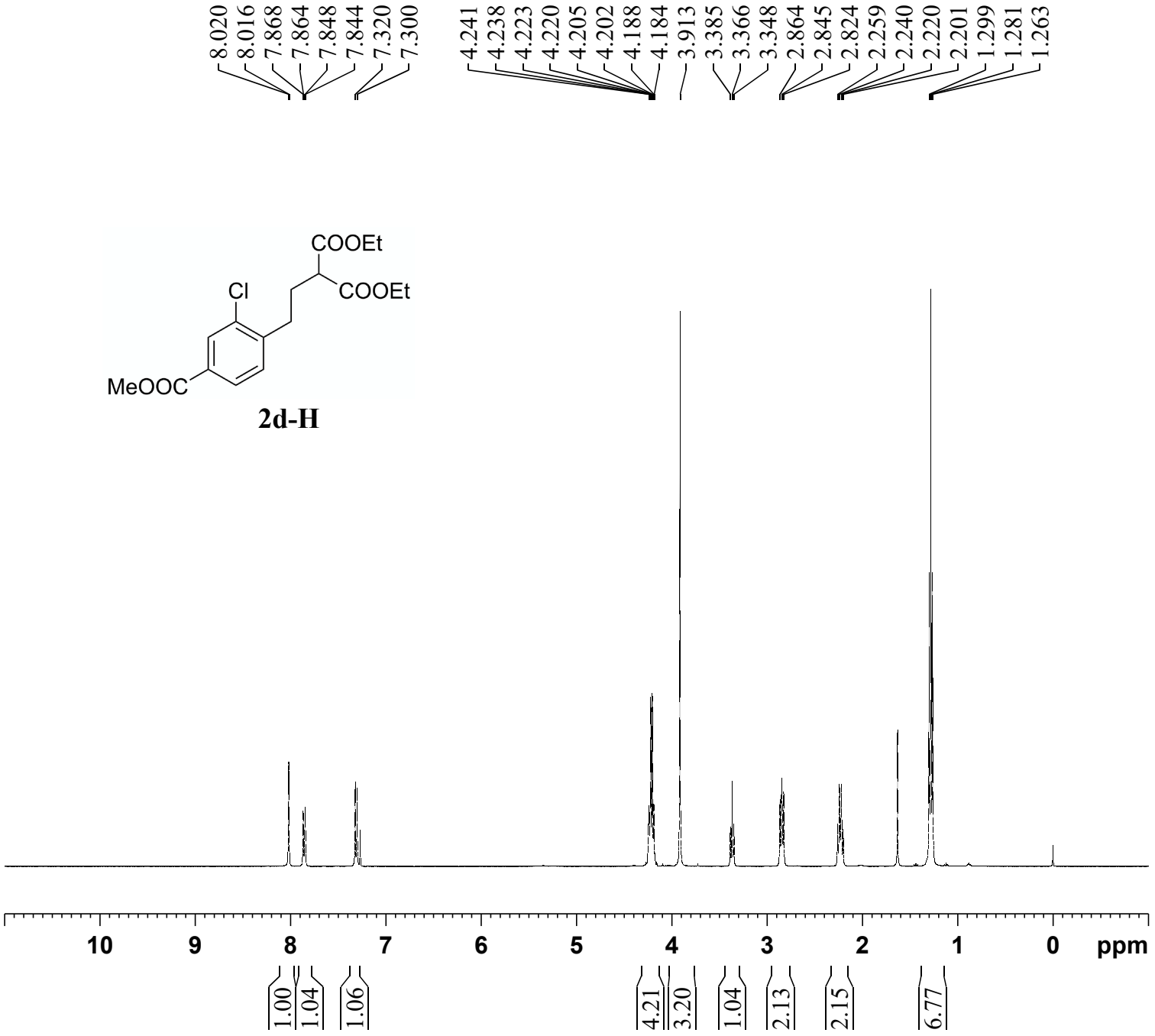

```
Current Data Parameters
NAME          400M-2022
EXPNO                 7
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               4.47
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               206.33
DW               62.400 usec
DE                6.50 usec
TE               300.9 K
D1          2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400072 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



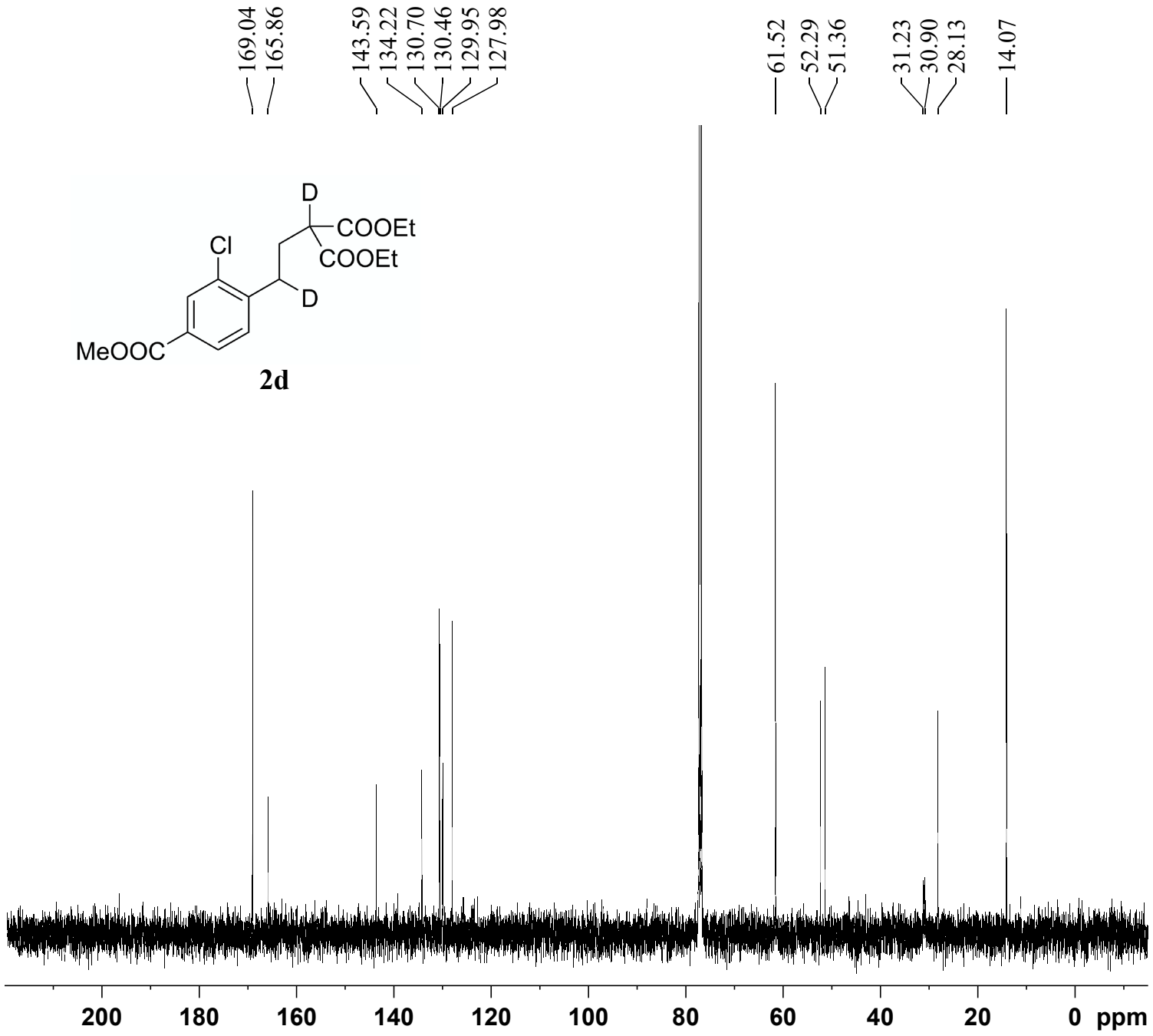

```
Current Data Parameters
NAME          400M-2022
EXPNO                 9
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               5.20
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               206.33
DW               62.400 usec
DE                6.50 usec
TE               300.9 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400061 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



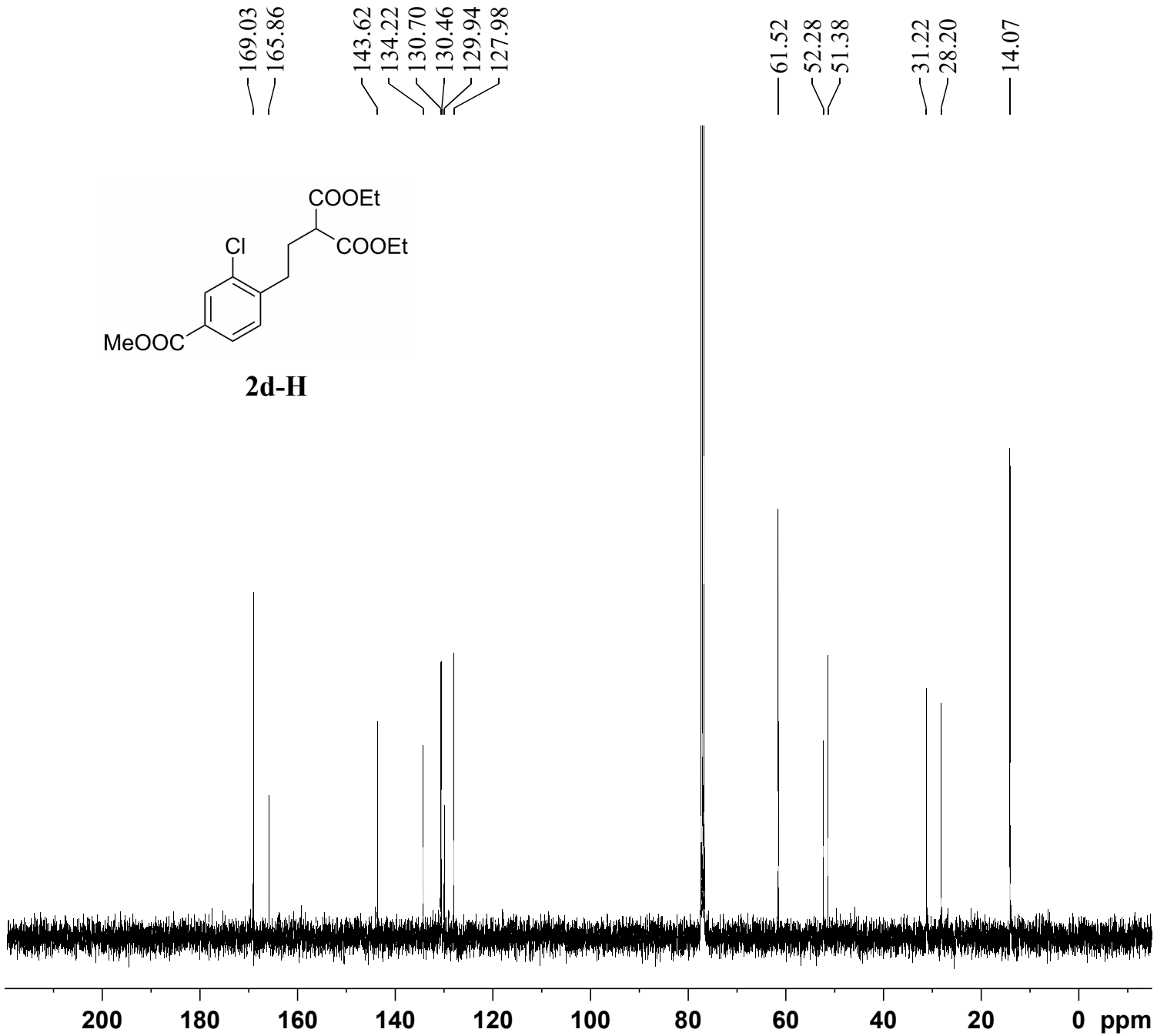

```
Current Data Parameters
NAME          400M-2022
EXPNO                 8
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               5.17
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.7 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



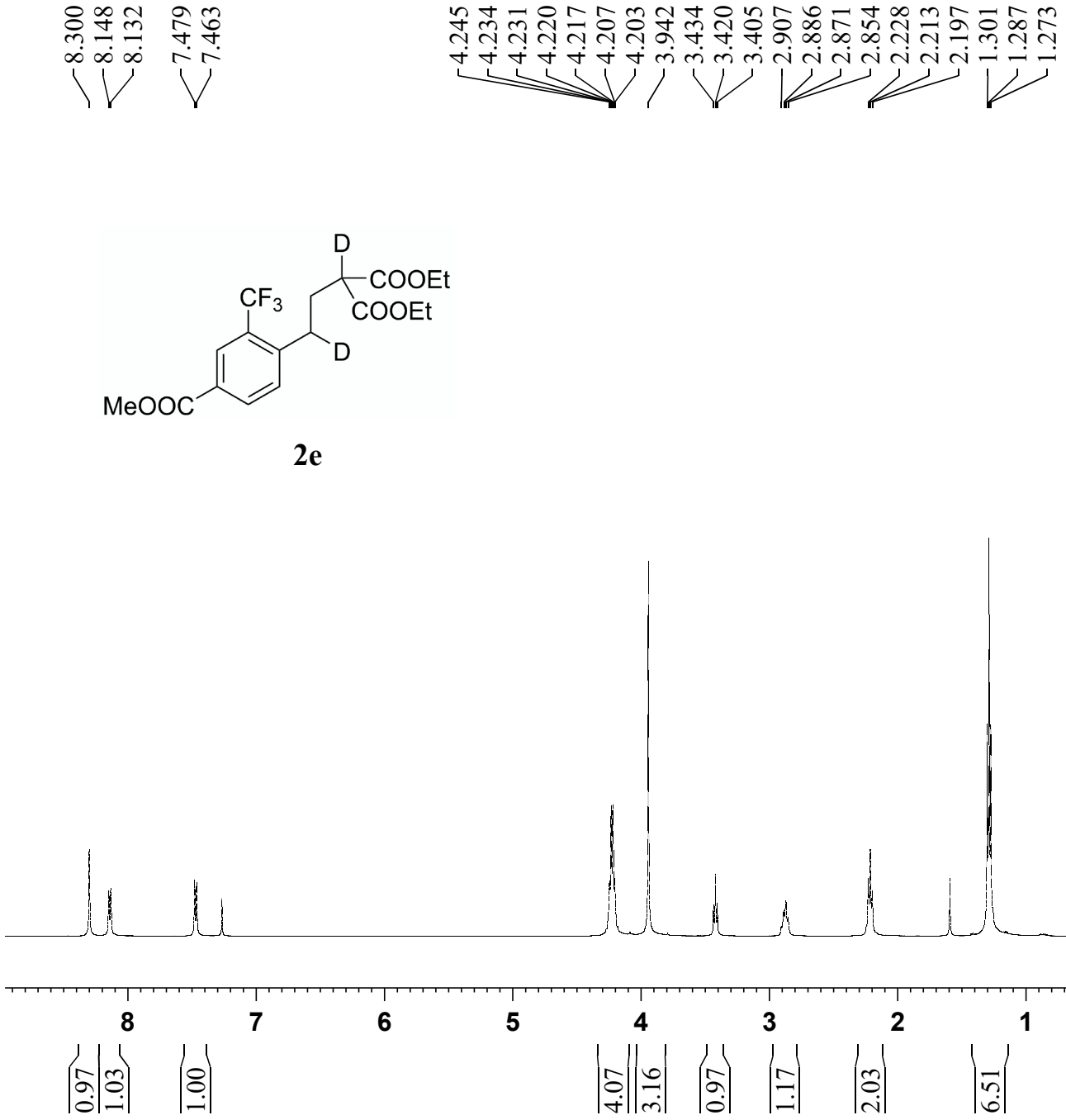

```
Current Data Parameters
NAME          400M-2022
EXPNO                10
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               5.35
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.7 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



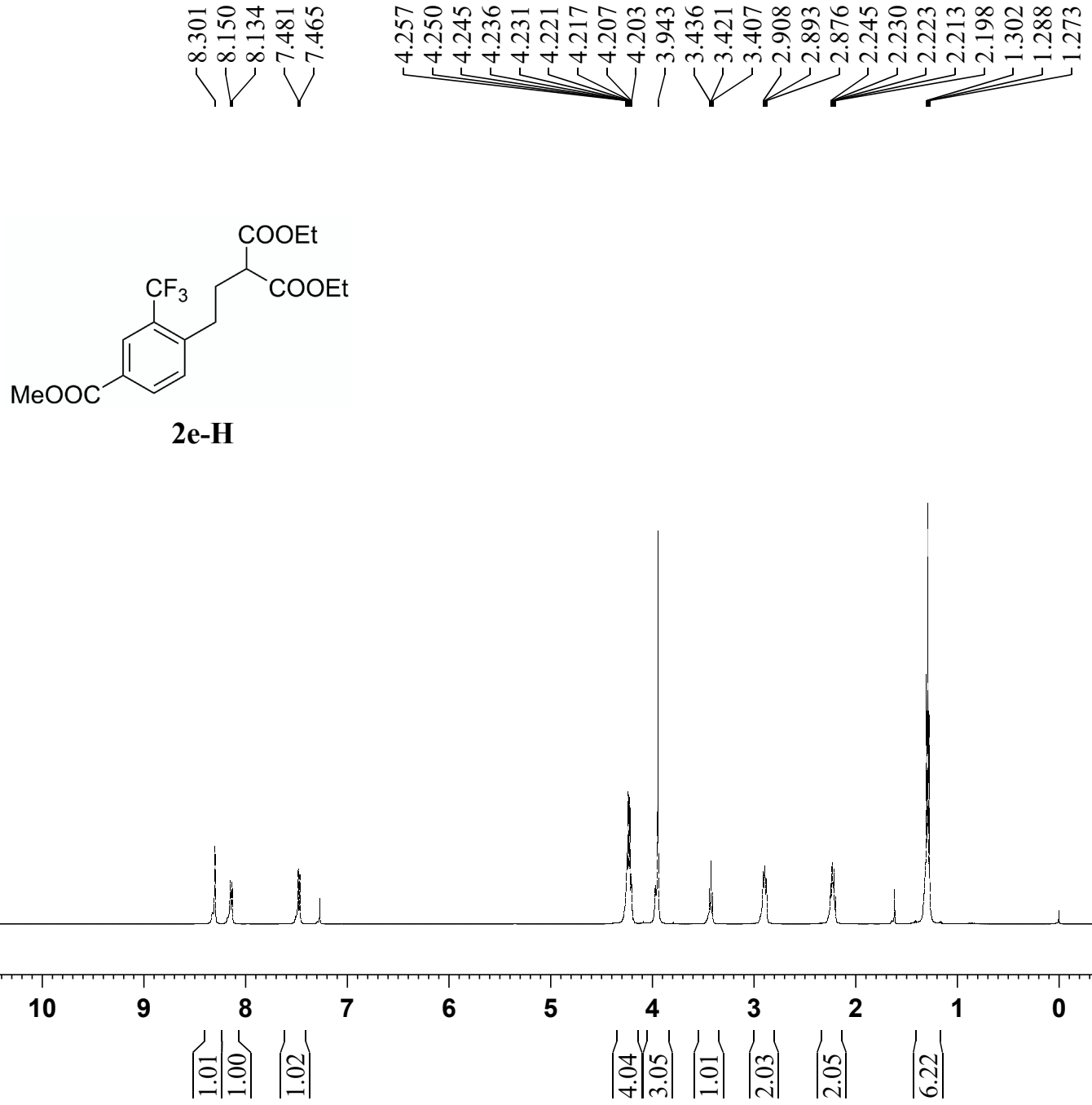

```
Current Data Parameters
NAME          500M-2022
EXPNO                59
PROCNO                1

F2 - Acquisition Parameters
Date_          20220324
Time              22.19
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300096 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



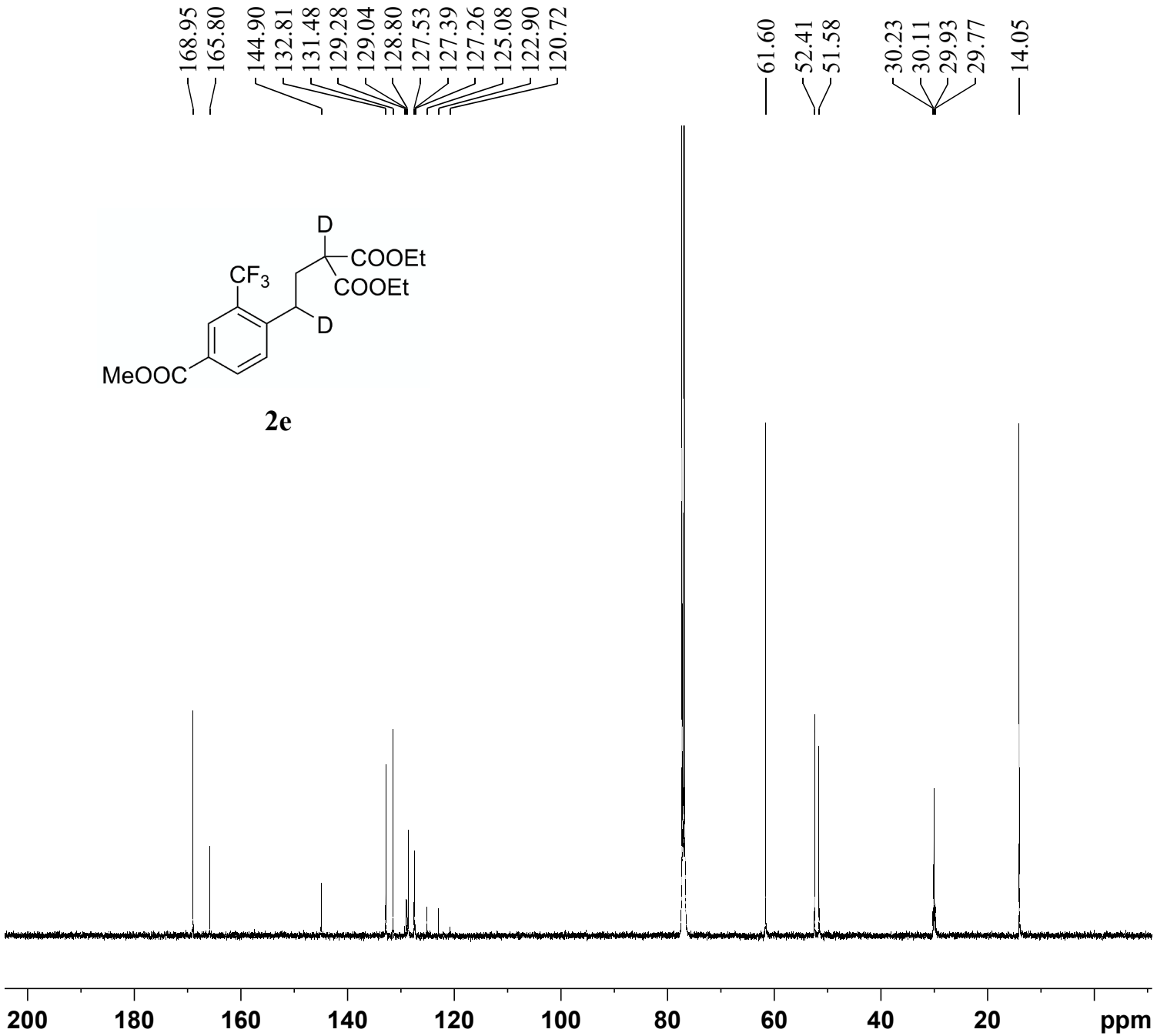

```
Current Data Parameters
NAME          500M-2022
EXPNO                57
PROCNO                1

F2 - Acquisition Parameters
Date_          20220324
Time              21.47
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300075 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



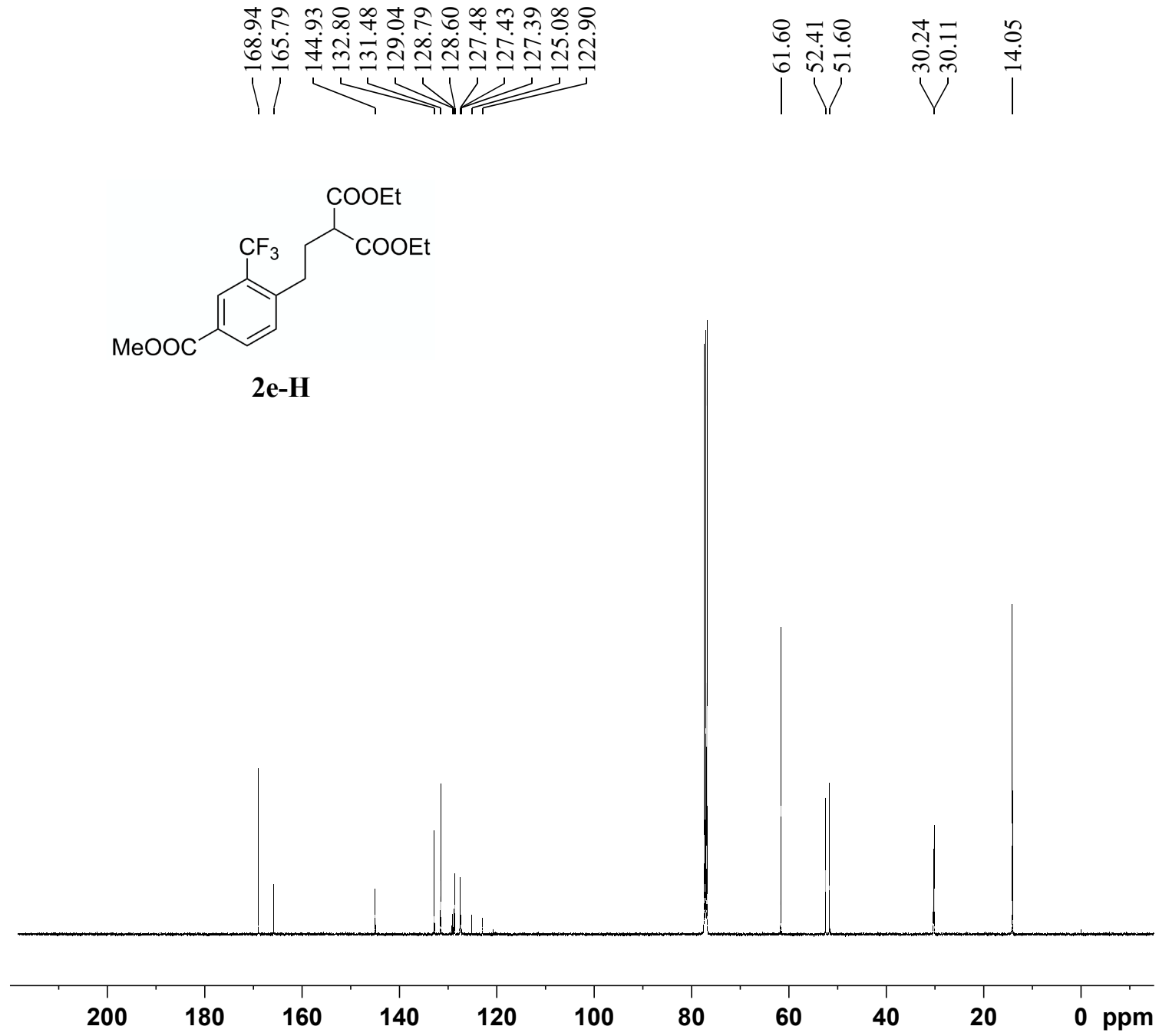

```
Current Data Parameters
NAME          500M-2022
EXPNO                60
PROCNO                1

F2 - Acquisition Parameters
Date_          20220324
Time              22.46
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  500
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```




```
Current Data Parameters
NAME          500M-2022
EXPNO                58
PROCNO                1

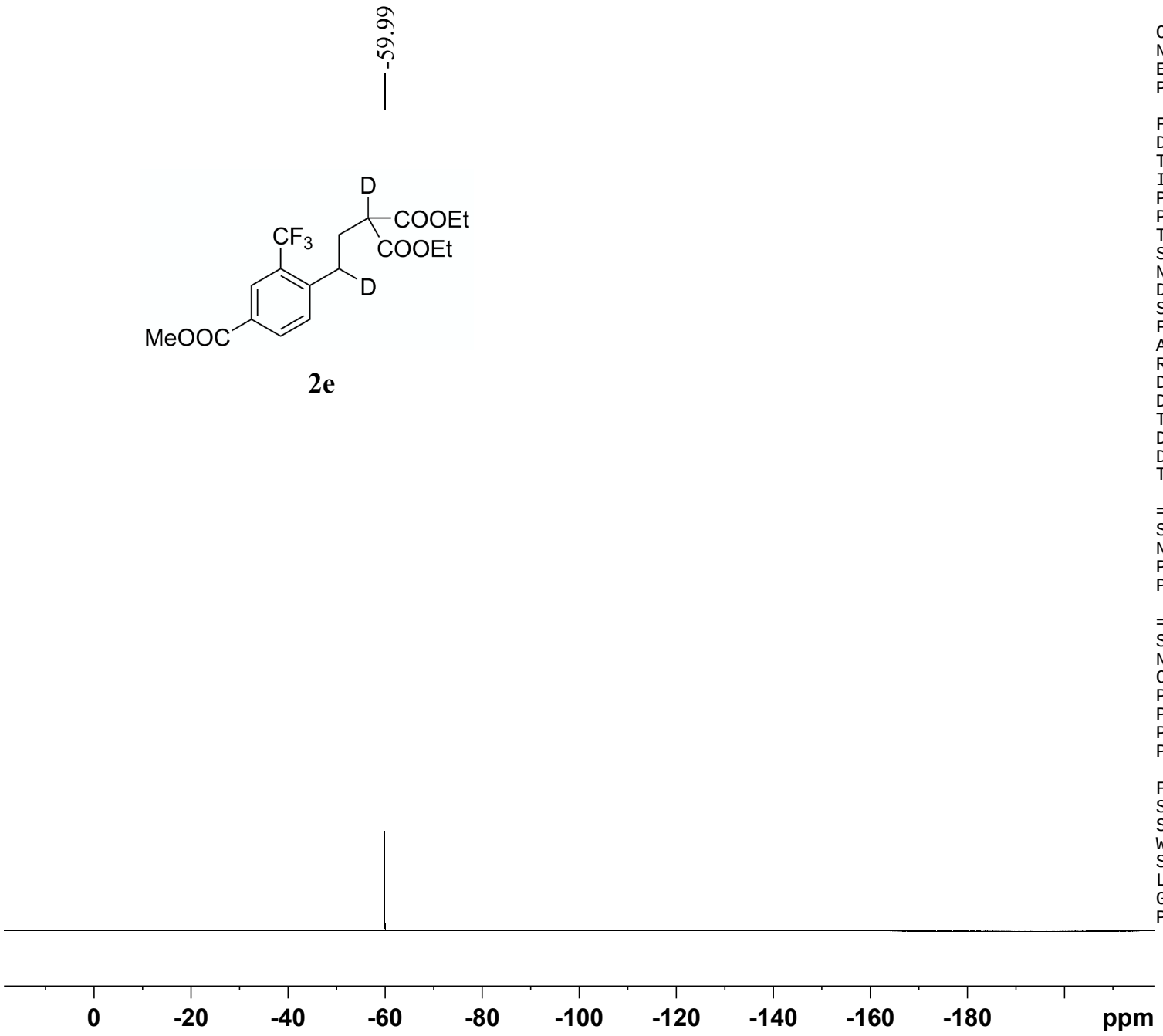
F2 - Acquisition Parameters
Date_          20220324
Time              22.14
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  500
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

2e



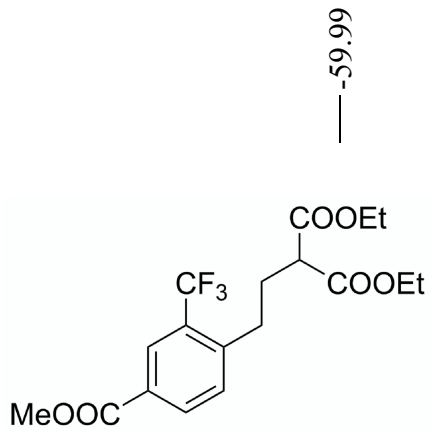

```
Current Data Parameters
NAME        400M-2023-F
EXPNO                 5
PROCNO                1

F2 - Acquisition Parameters
Date_          20230506
Time              19.01
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                19F
P1                14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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



2e-H

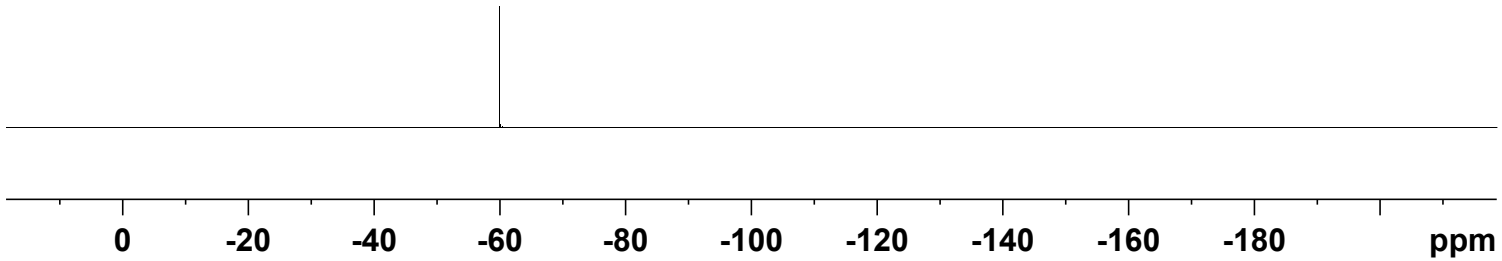
```
Current Data Parameters
NAME        400M-2023-F
EXPNO                 4
PROCNO                1

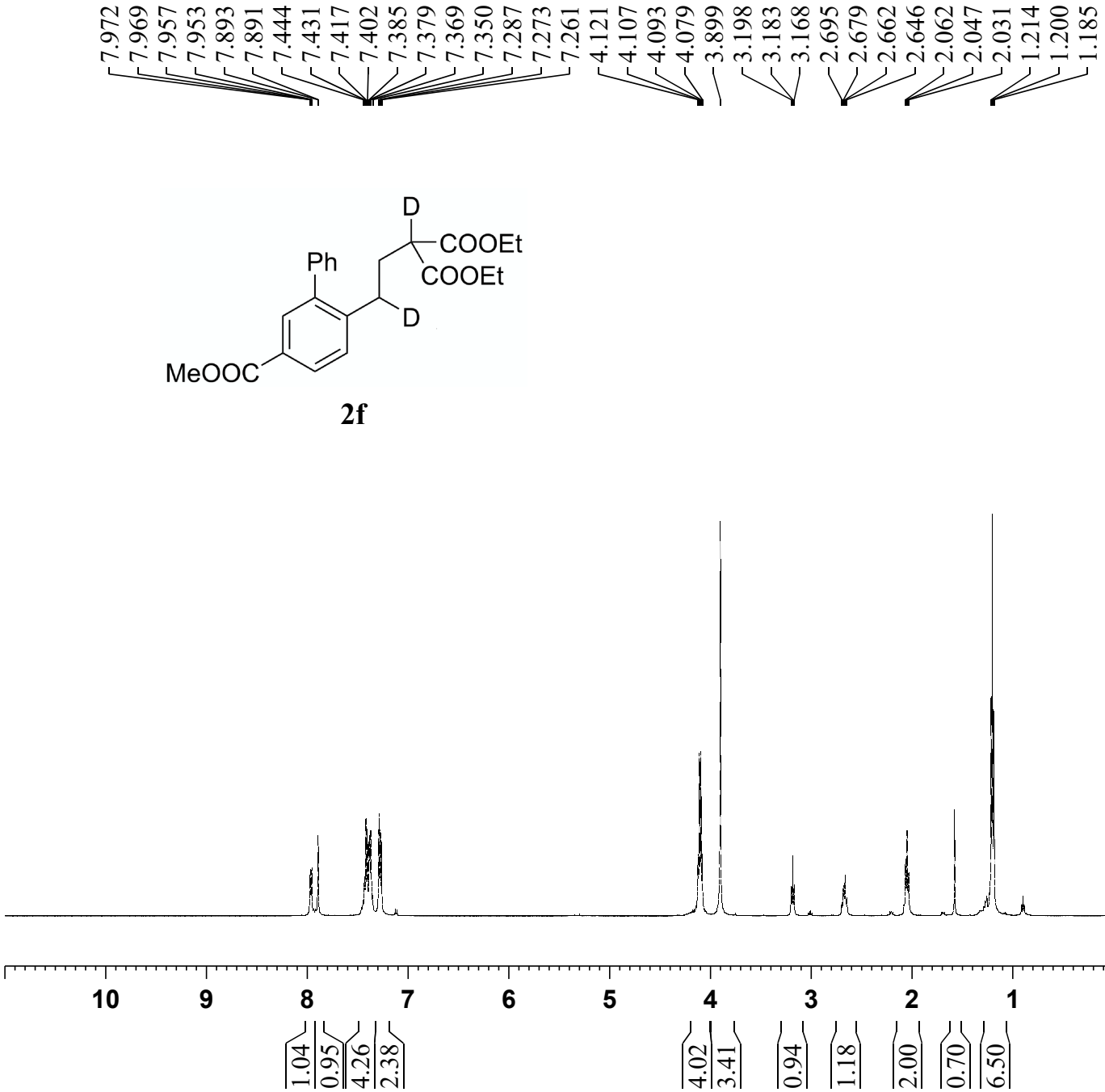
F2 - Acquisition Parameters
Date_          20230506
Time              18.58
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                19F
P1                14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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





2f

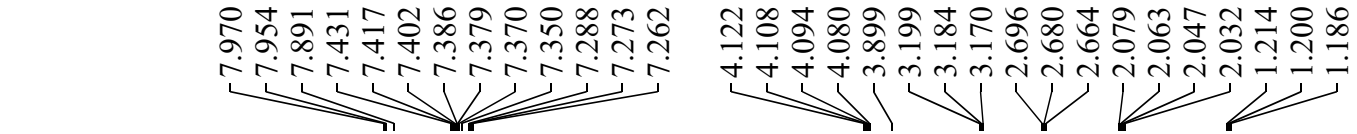
```
Current Data Parameters
NAME          500M-2022
EXPNO                51
PROCNO                1

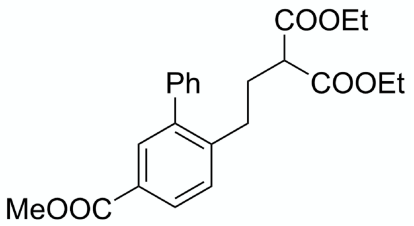
F2 - Acquisition Parameters
Date_          20220315
Time              10.33
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1          1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

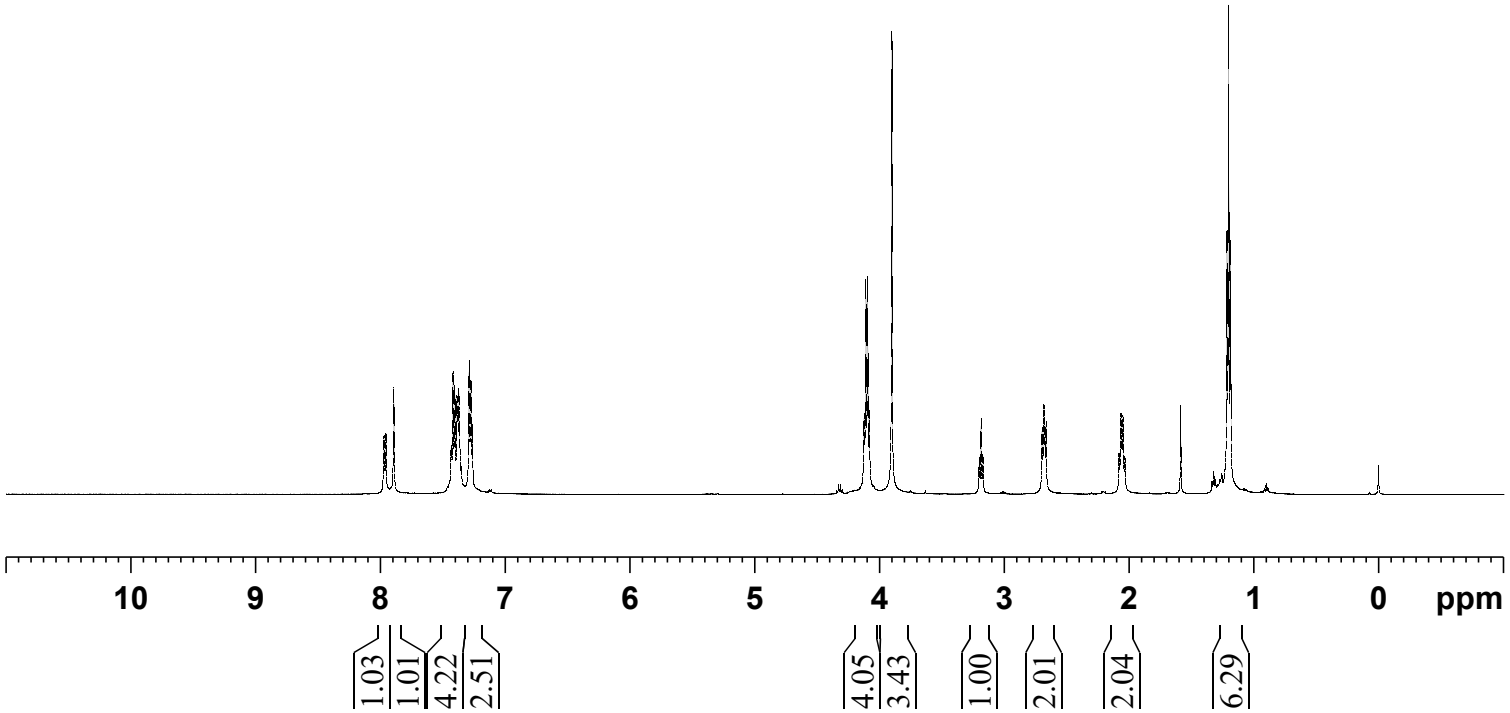
======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300117 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





2f-H



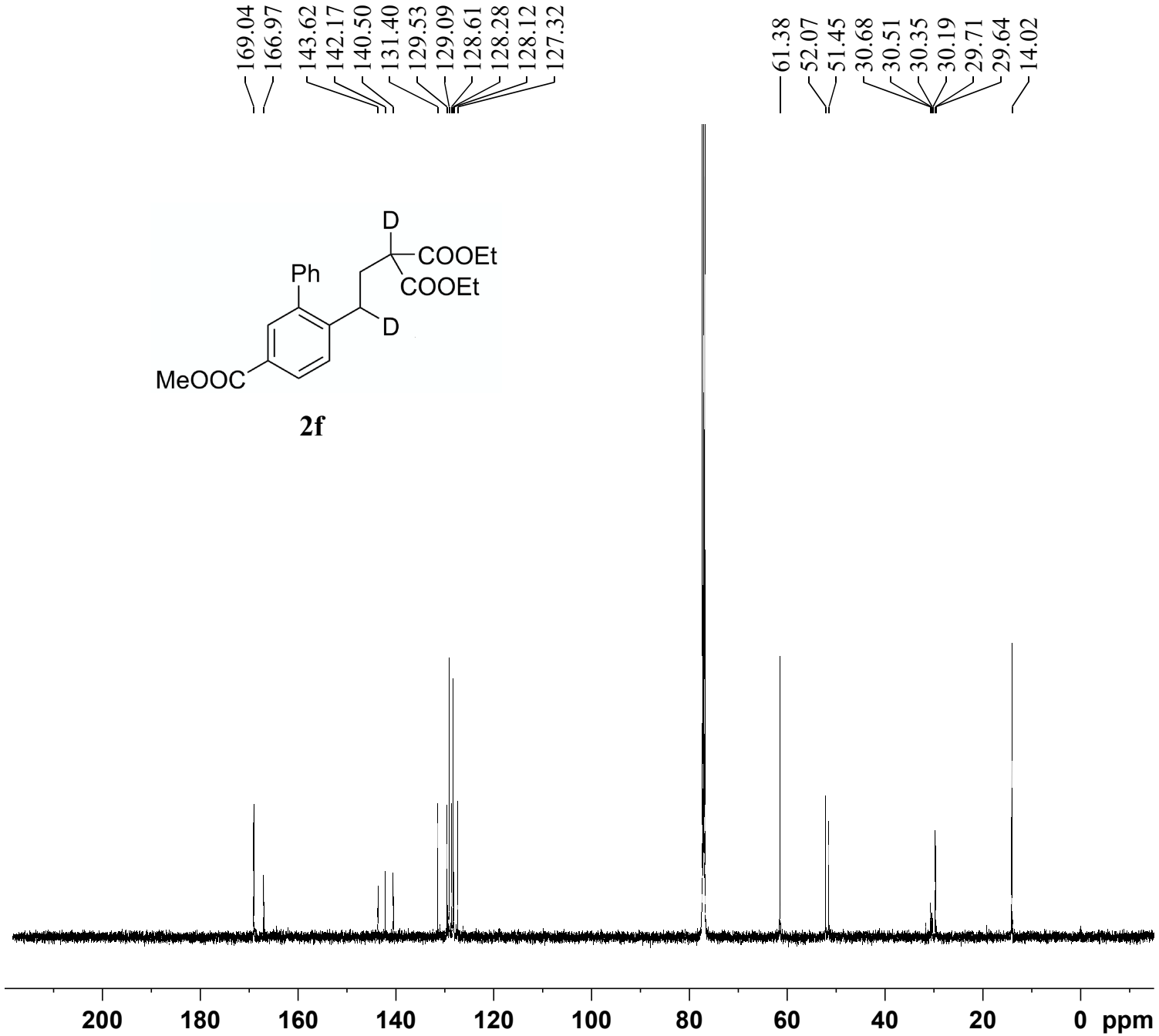

```
Current Data Parameters
NAME          500M-2022
EXPNO                44
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               6.46
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300115 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



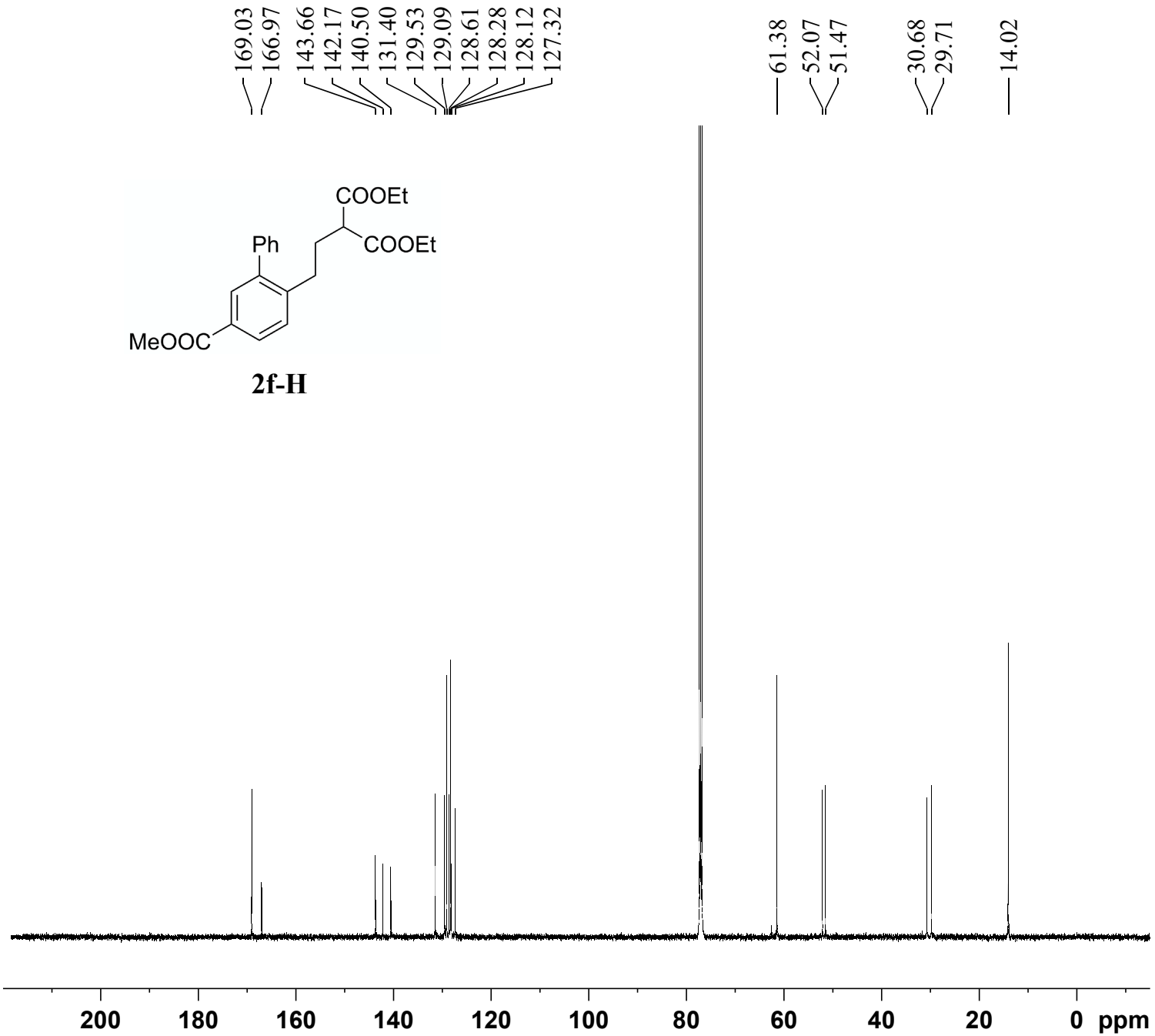

```
Current Data Parameters
NAME          500M-2022
EXPNO                49
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               7.33
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  300
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2f-H

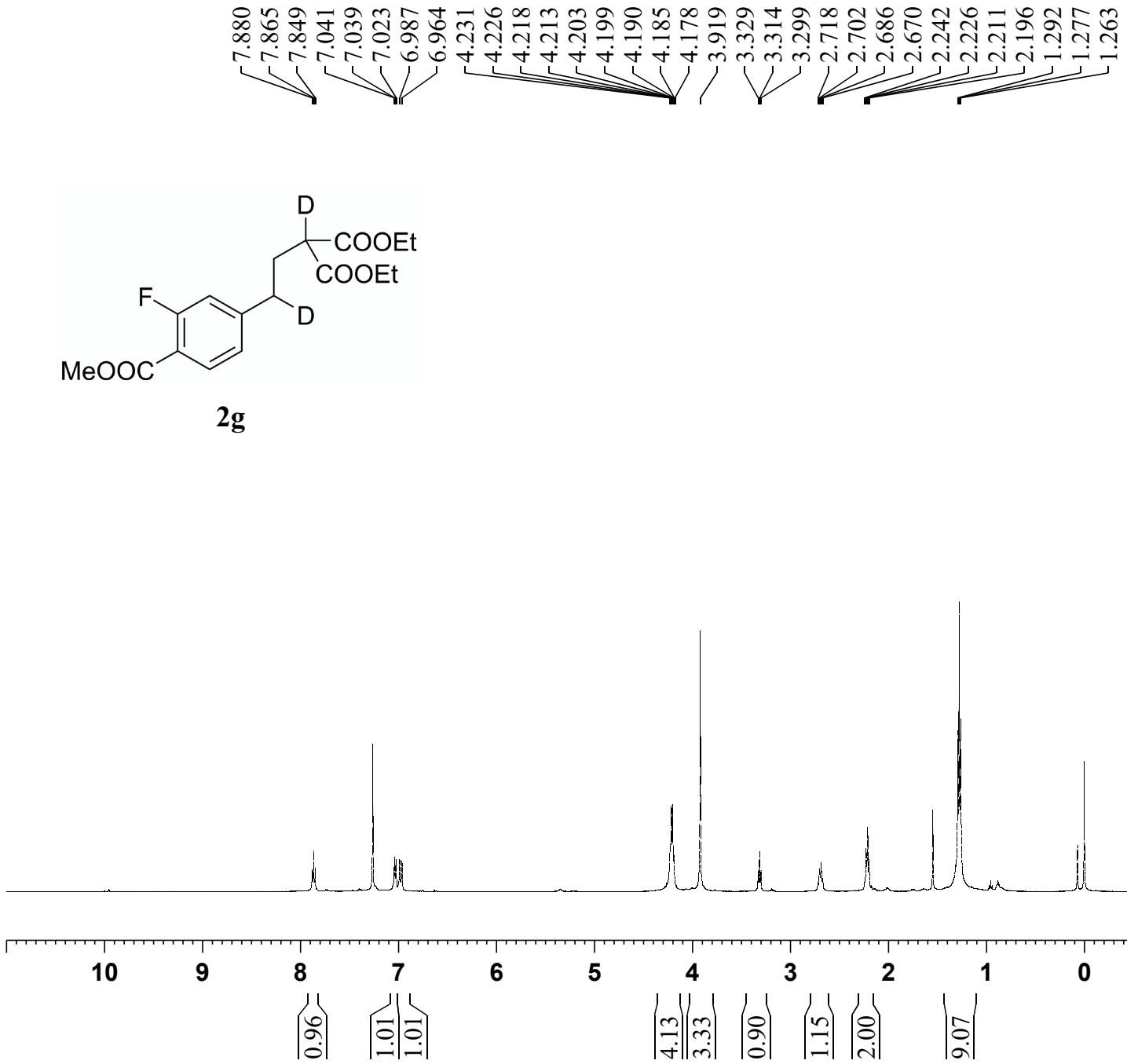
```
Current Data Parameters
NAME          500M-2022
EXPNO                46
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               7.07
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  300
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



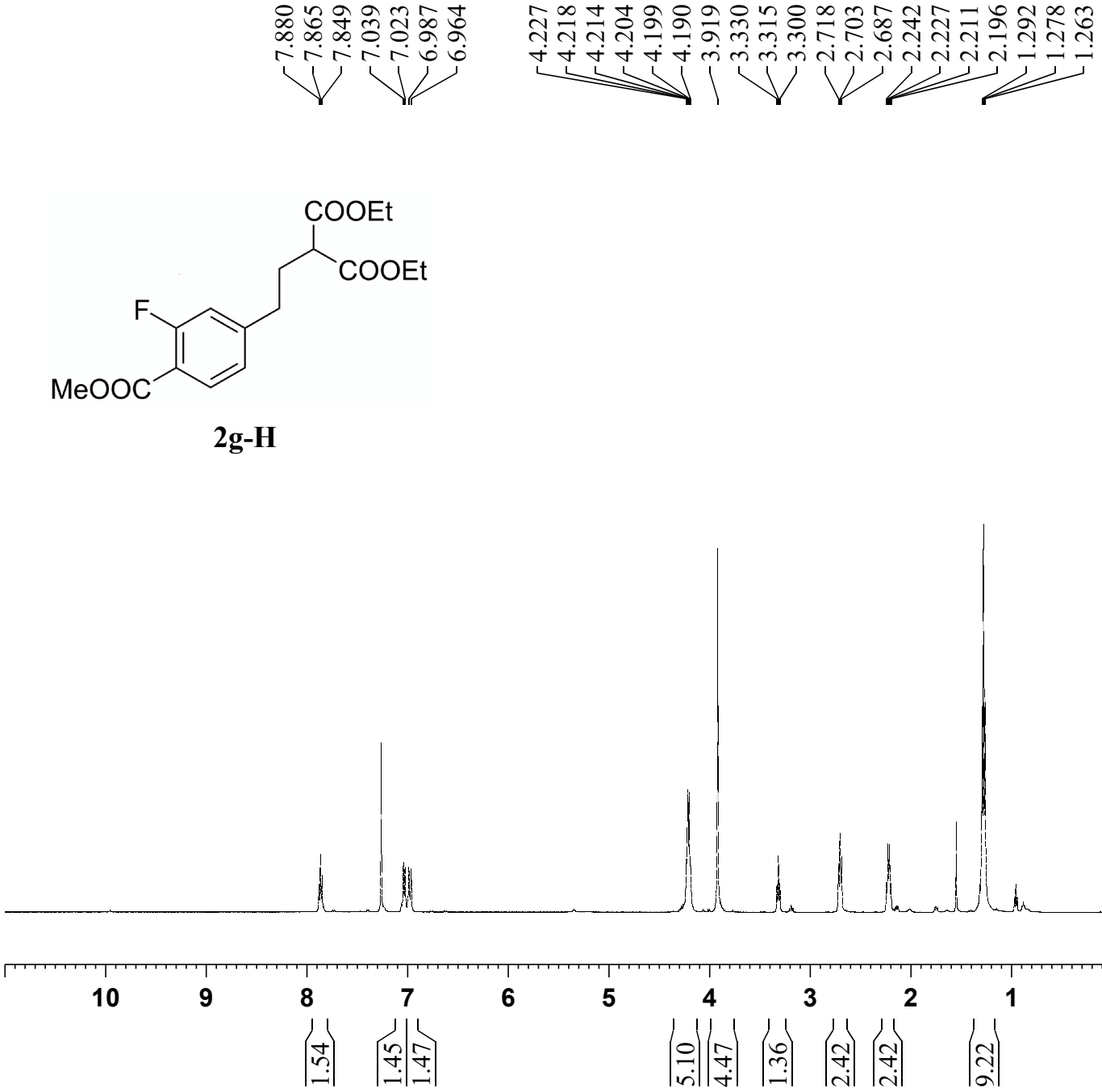

```
Current Data Parameters
NAME          500M-2022
EXPNO                 5
PROCNO                1

F2 - Acquisition Parameters
Date_          20220216
Time              23.37
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                62.06
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300117 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



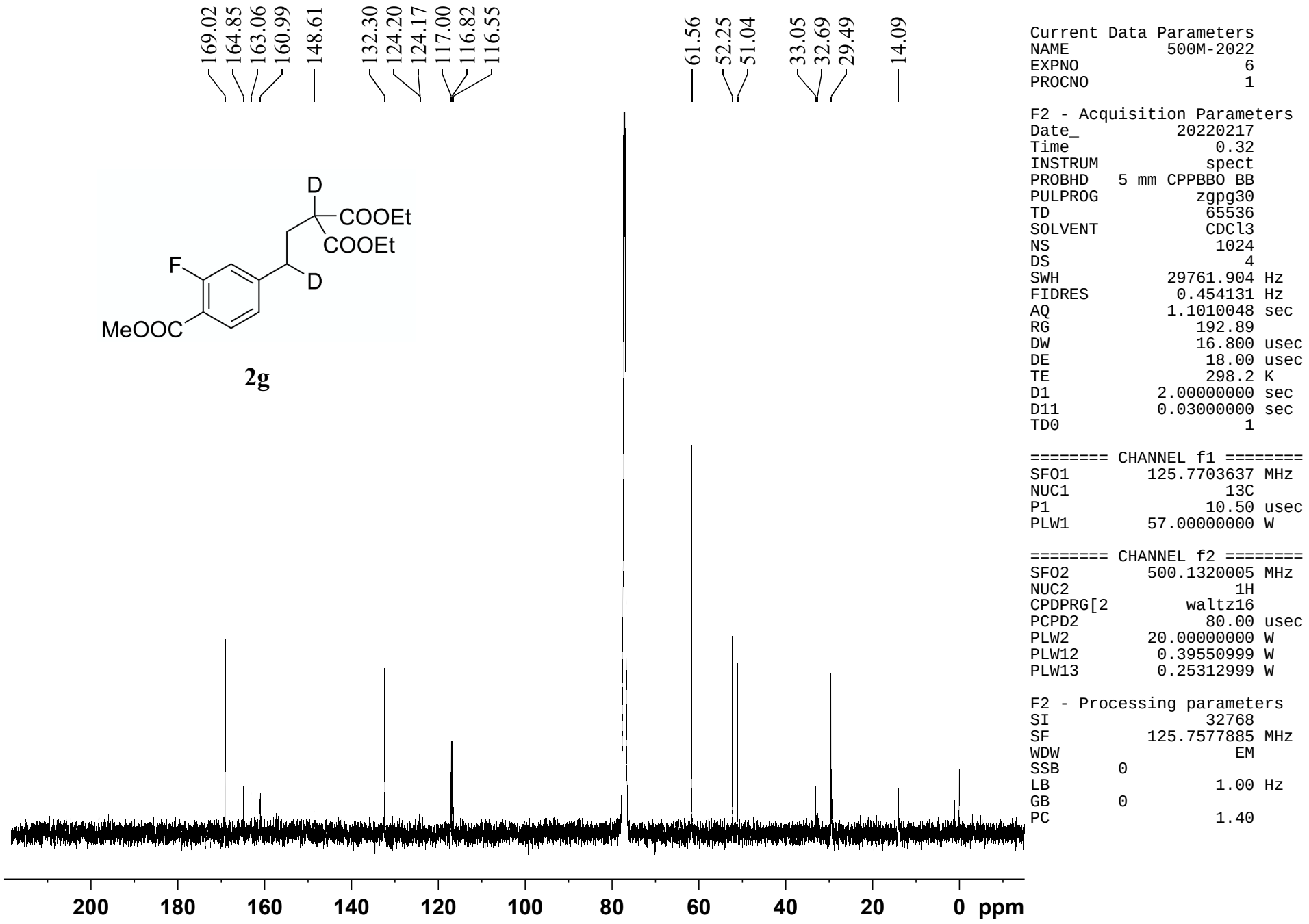

```
Current Data Parameters
NAME          500M-2022
EXPNO                 3
PROCNO                1

F2 - Acquisition Parameters
Date_          20220216
Time              22.38
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                62.06
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1          1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300118 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



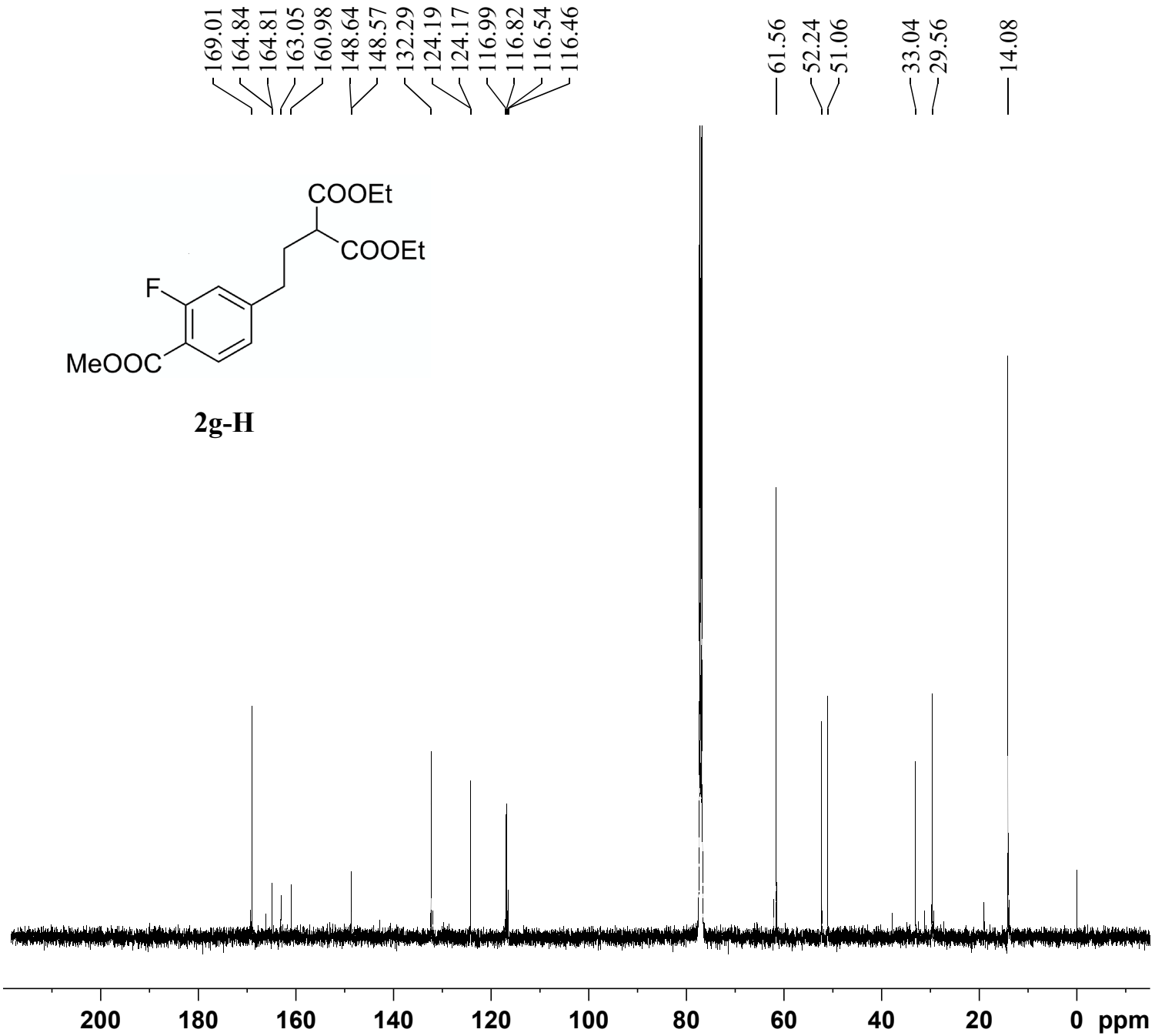

```
Current Data Parameters
NAME          500M-2022
EXPNO                 6
PROCNO                1

F2 - Acquisition Parameters
Date_          20220217
Time               0.32
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



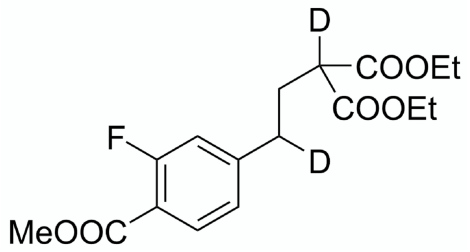

```
Current Data Parameters
NAME          500M-2022
EXPNO                 4
PROCNO                1

F2 - Acquisition Parameters
Date_          20220216
Time              23.32
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577891 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2g

-109.60

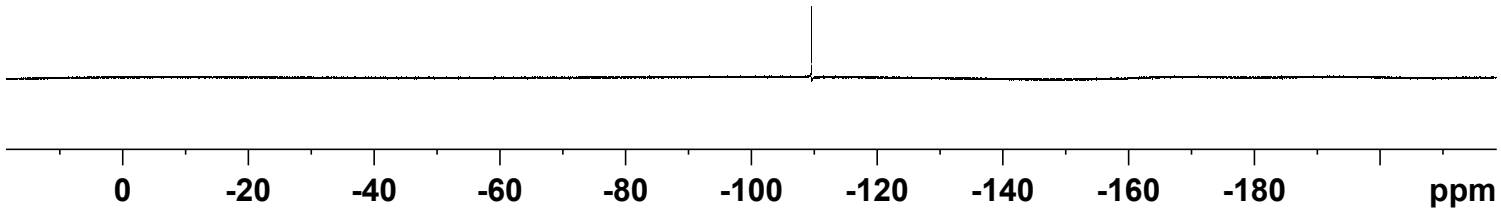
```
Current Data Parameters
NAME         400M-2023-F
EXPNO                  3
PROCNO                 1

F2 - Acquisition Parameters
Date_           20230506
Time               18.54
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD                131072
SOLVENT             CDCl3
NS                     16
DS                      4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

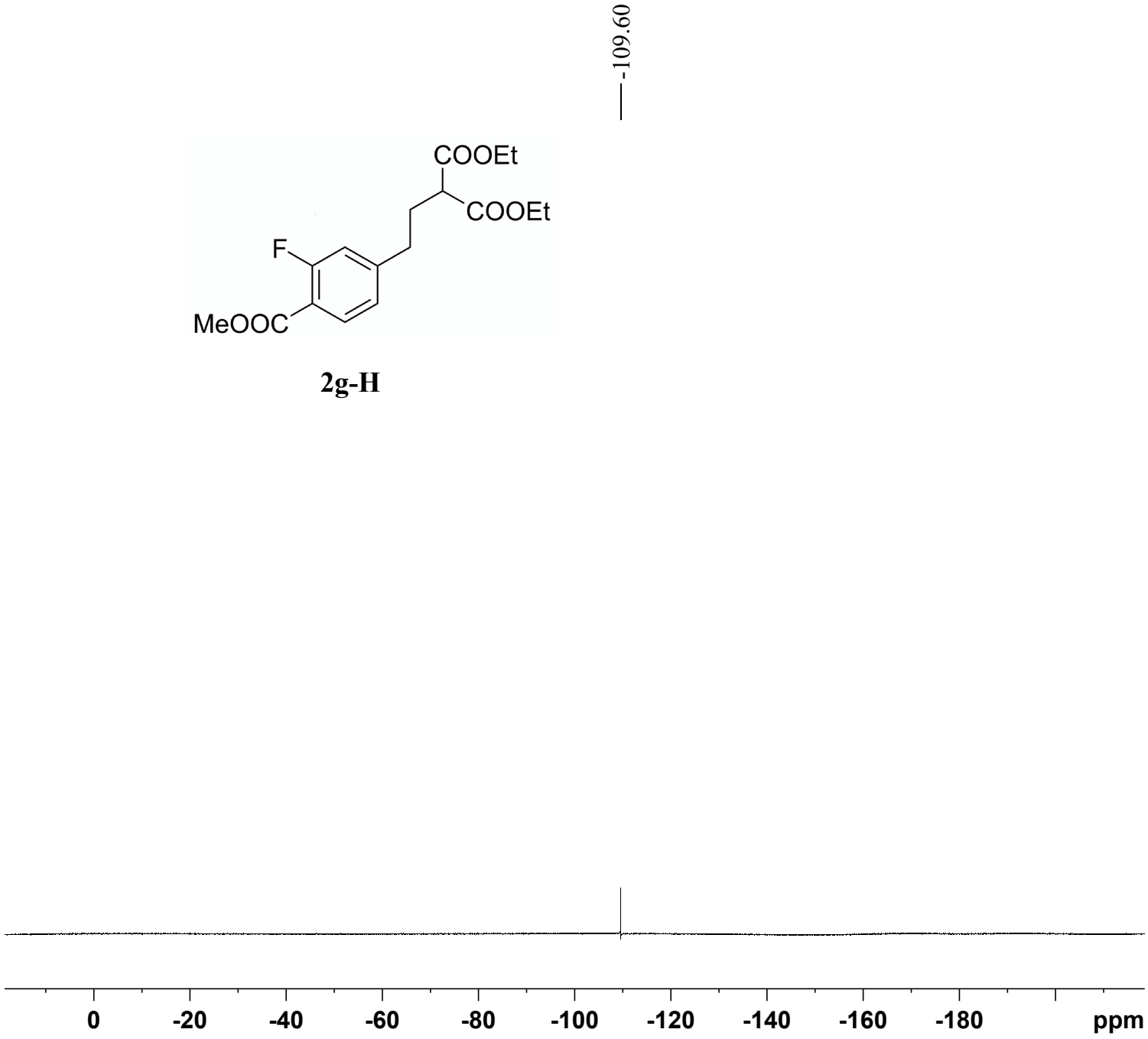
======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                19F
P1                14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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



2g-H



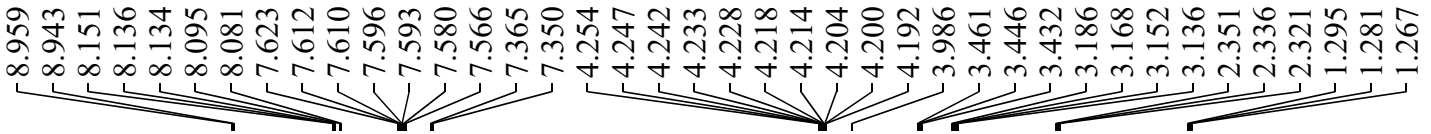

```
Current Data Parameters
NAME        400M-2023-F
EXPNO                 2
PROCNO                1

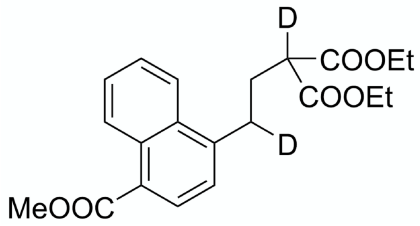
F2 - Acquisition Parameters
Date_          20230506
Time              18.51
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG      zgfhigqn.2
TD               131072
SOLVENT            CDCl3
NS                    16
DS                     4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        376.5642094 MHz
NUC1                19F
P1                14.50 usec
PLW1        17.98900032 W

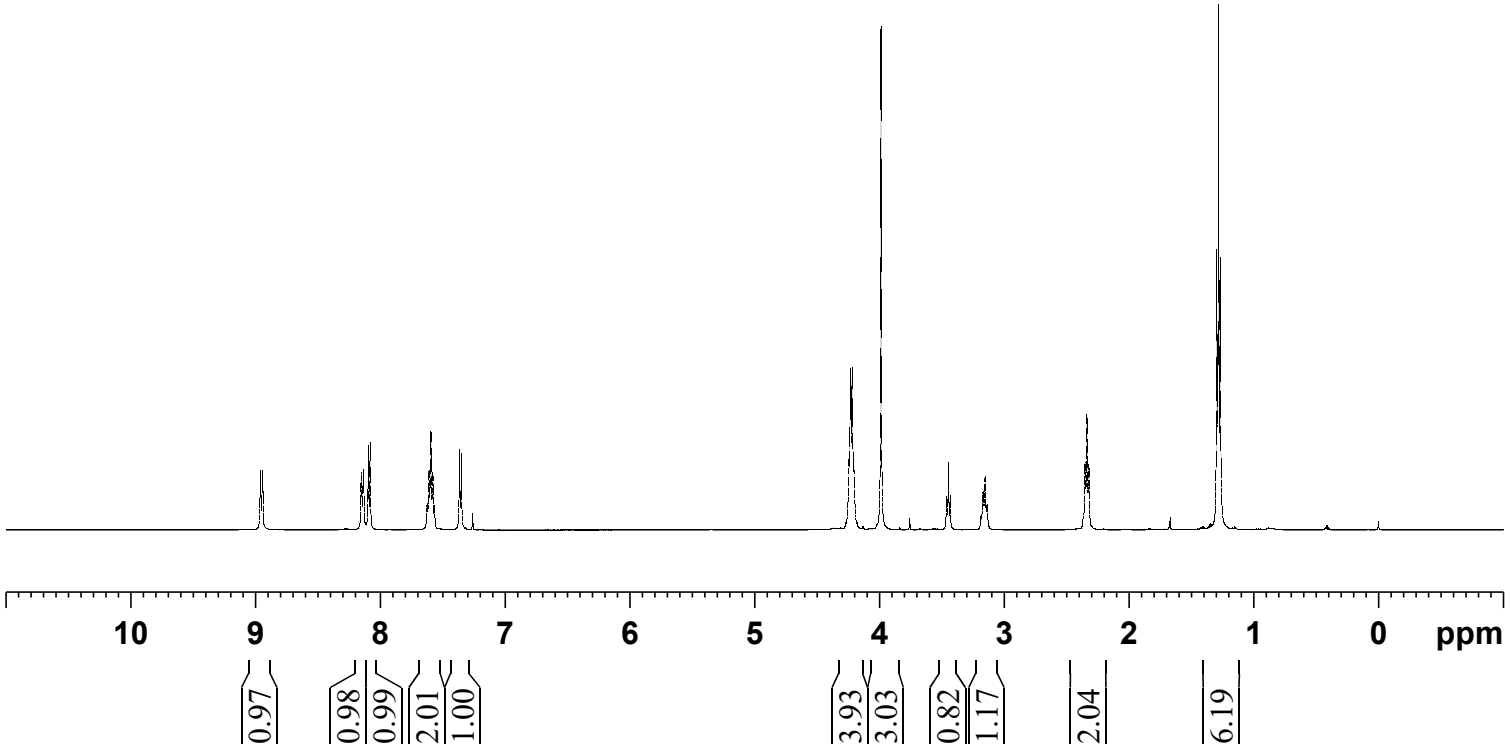
======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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





2h



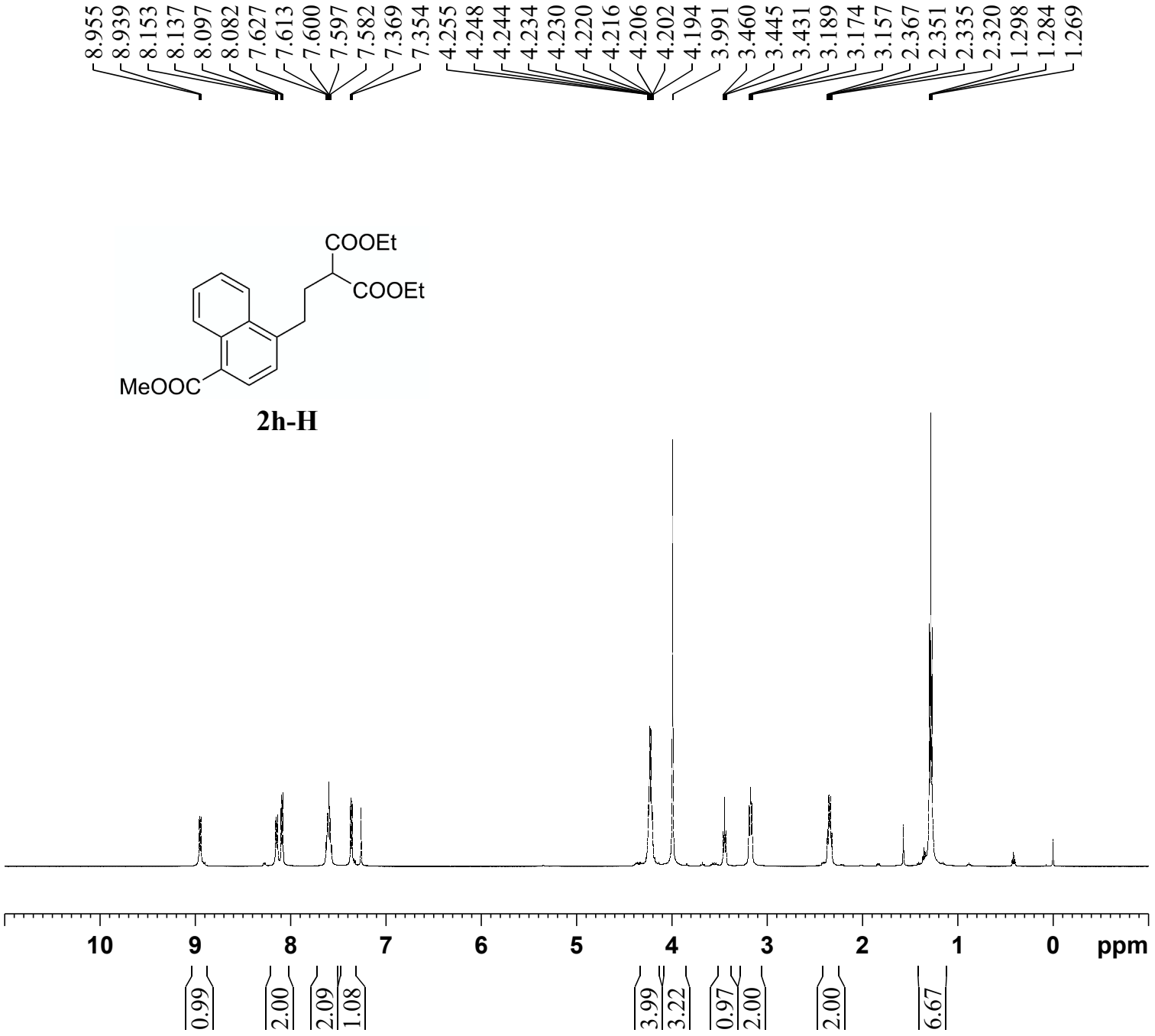

```
Current Data Parameters
NAME          500M-2022
EXPNO                31
PROCNO                1

F2 - Acquisition Parameters
Date_          20220304
Time               2.40
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300121 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



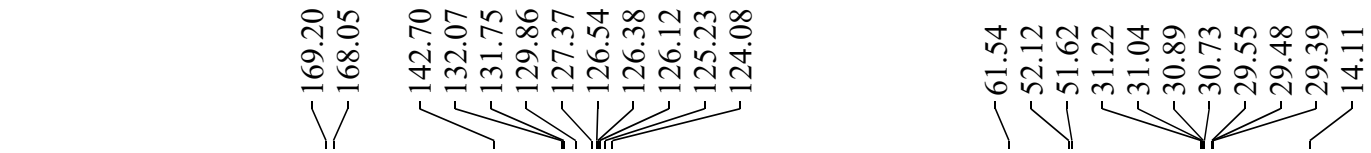

```
Current Data Parameters
NAME          500M-2022
EXPNO                28
PROCNO                1

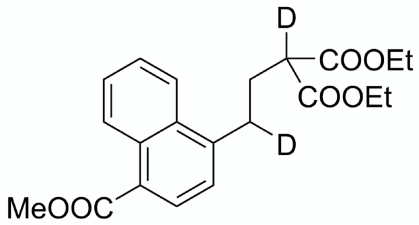
F2 - Acquisition Parameters
Date_          20220304
Time               2.09
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                55.37
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

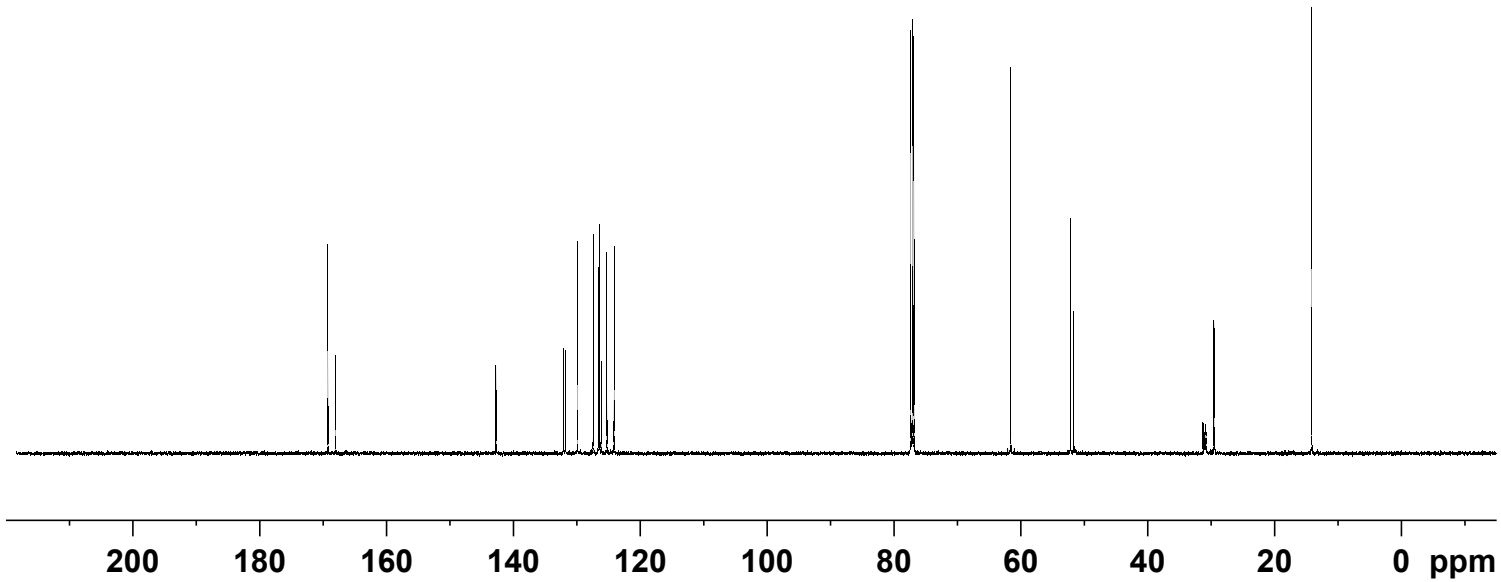
======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300124 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





2h



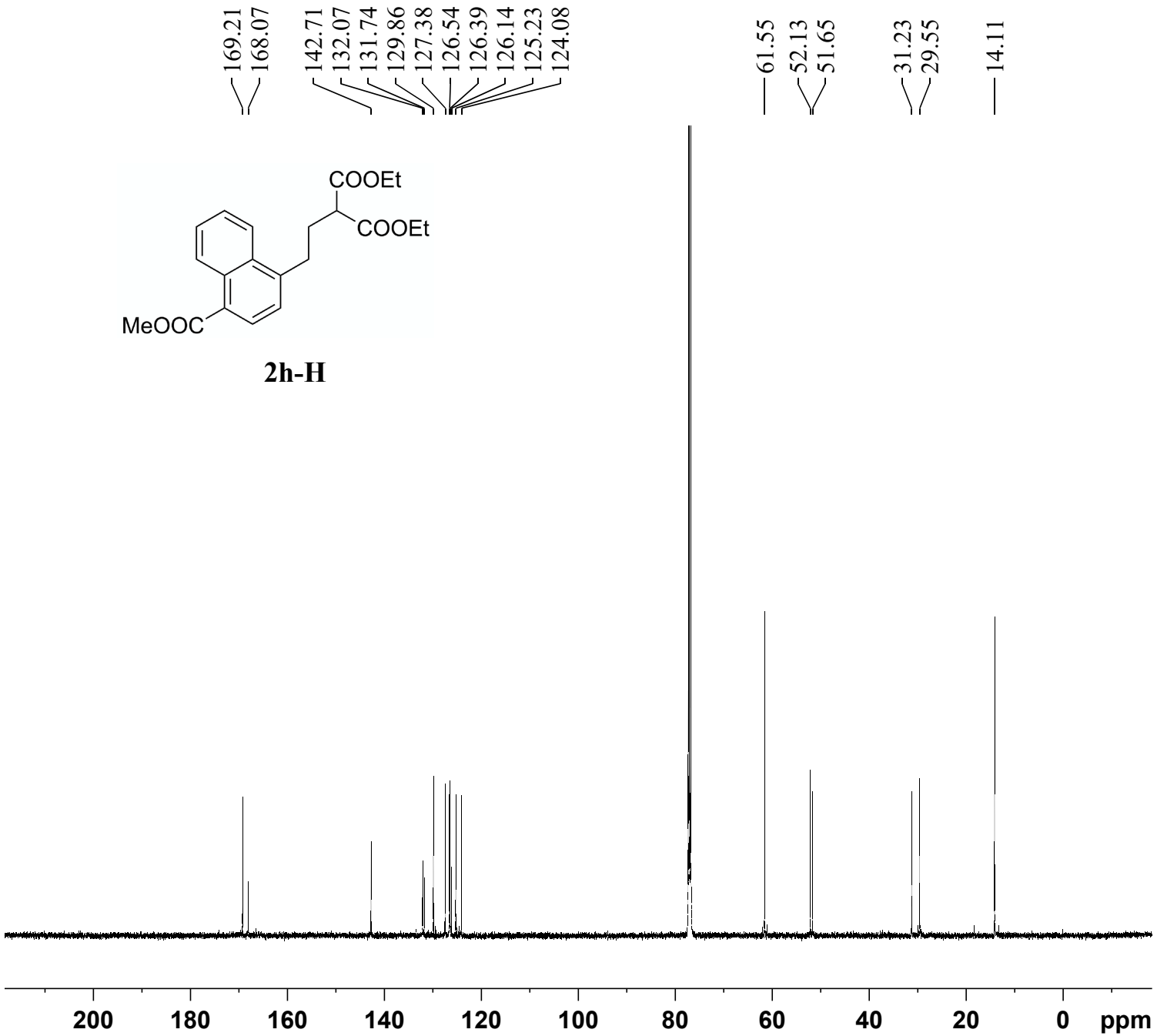

```
Current Data Parameters
NAME          500M-2022
EXPNO                32
PROCNO                1

F2 - Acquisition Parameters
Date_          20220304
Time               2.46
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  100
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



2h-H

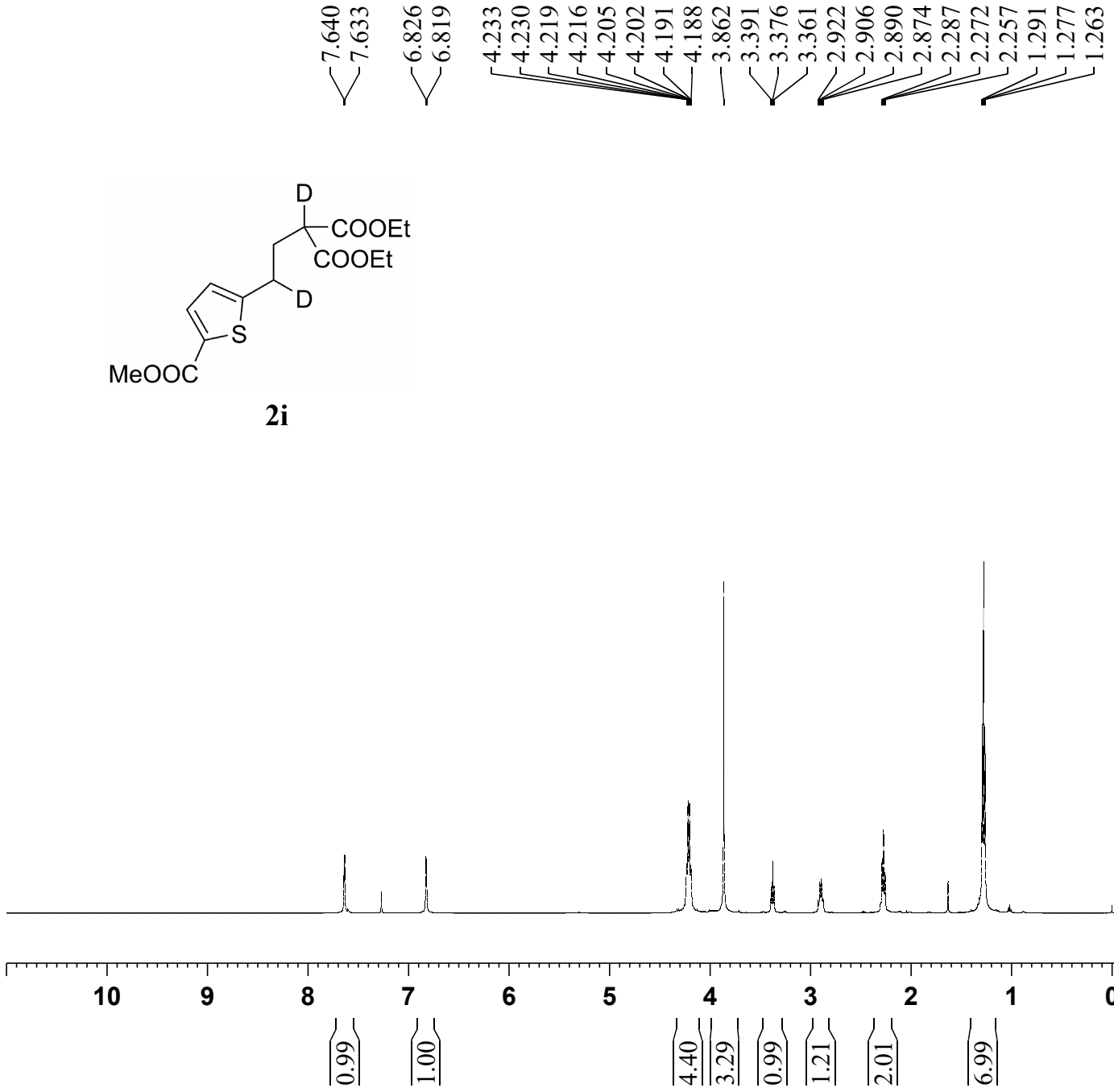
```
Current Data Parameters
NAME          500M-2022
EXPNO                30
PROCNO                1

F2 - Acquisition Parameters
Date_          20220304
Time               2.36
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  400
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



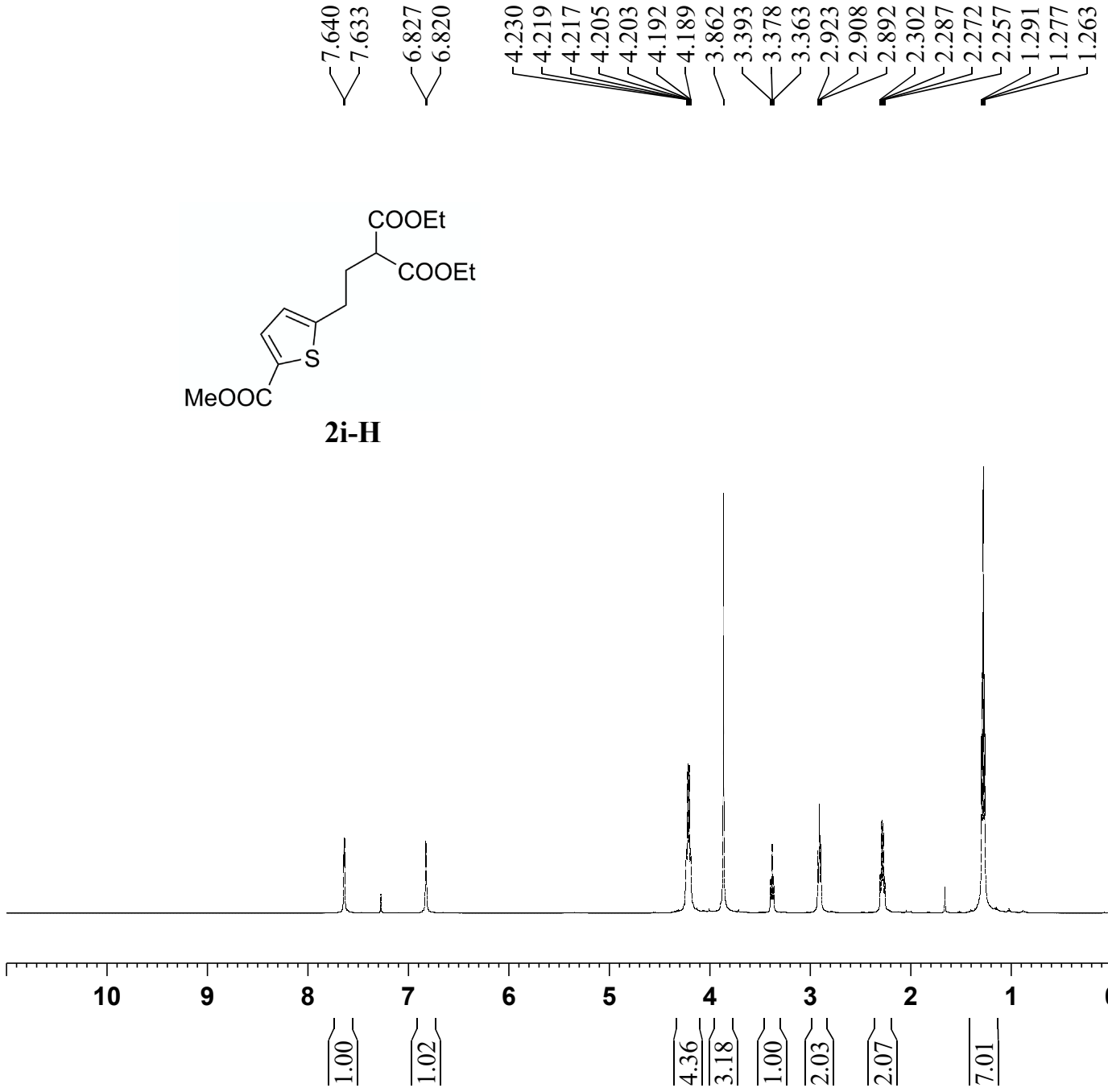

```
Current Data Parameters
NAME          500M-2022
EXPNO                41
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               6.20
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300078 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



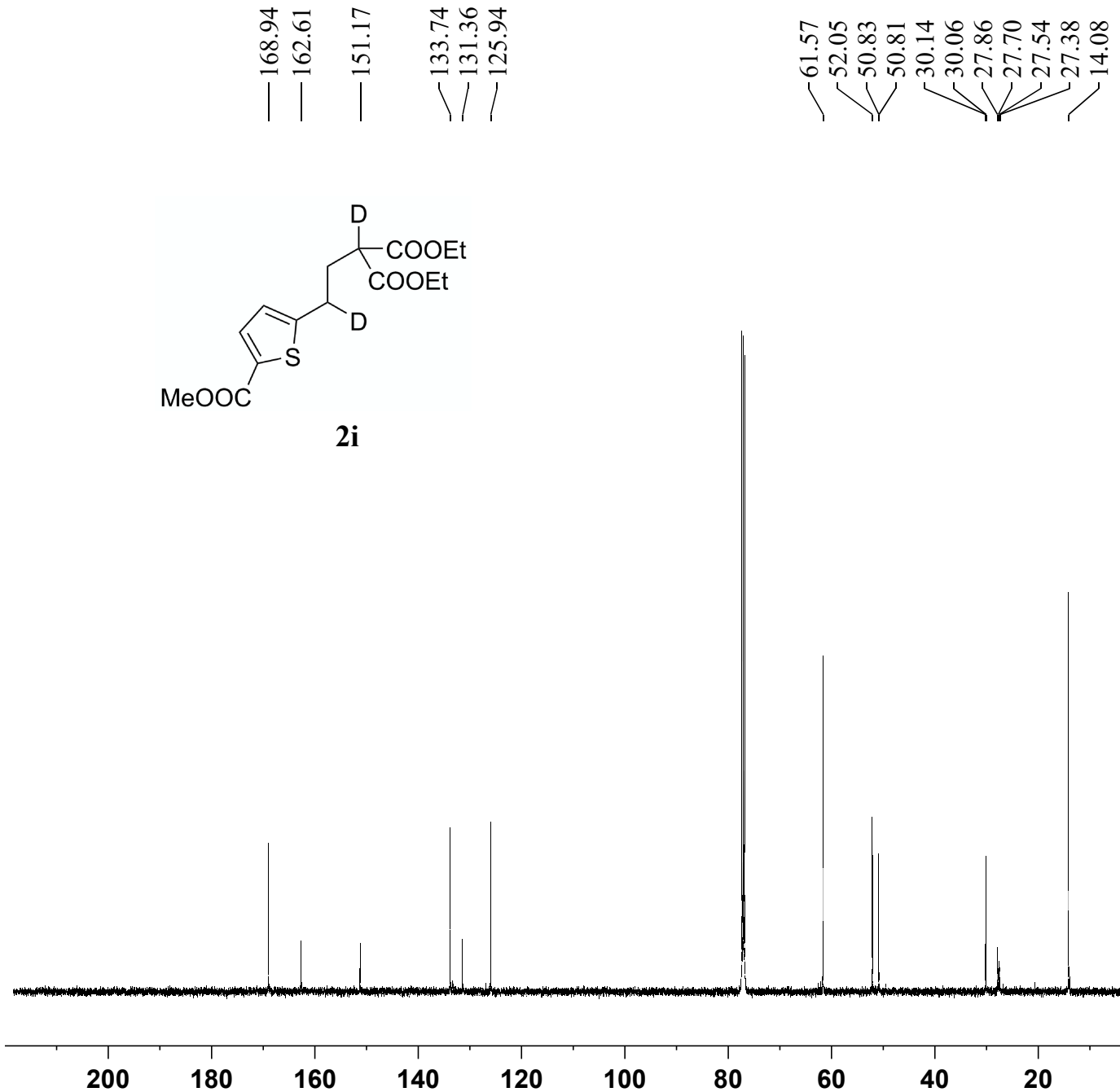

```
Current Data Parameters
NAME          500M-2022
EXPNO                38
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               5.54
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300060 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2i

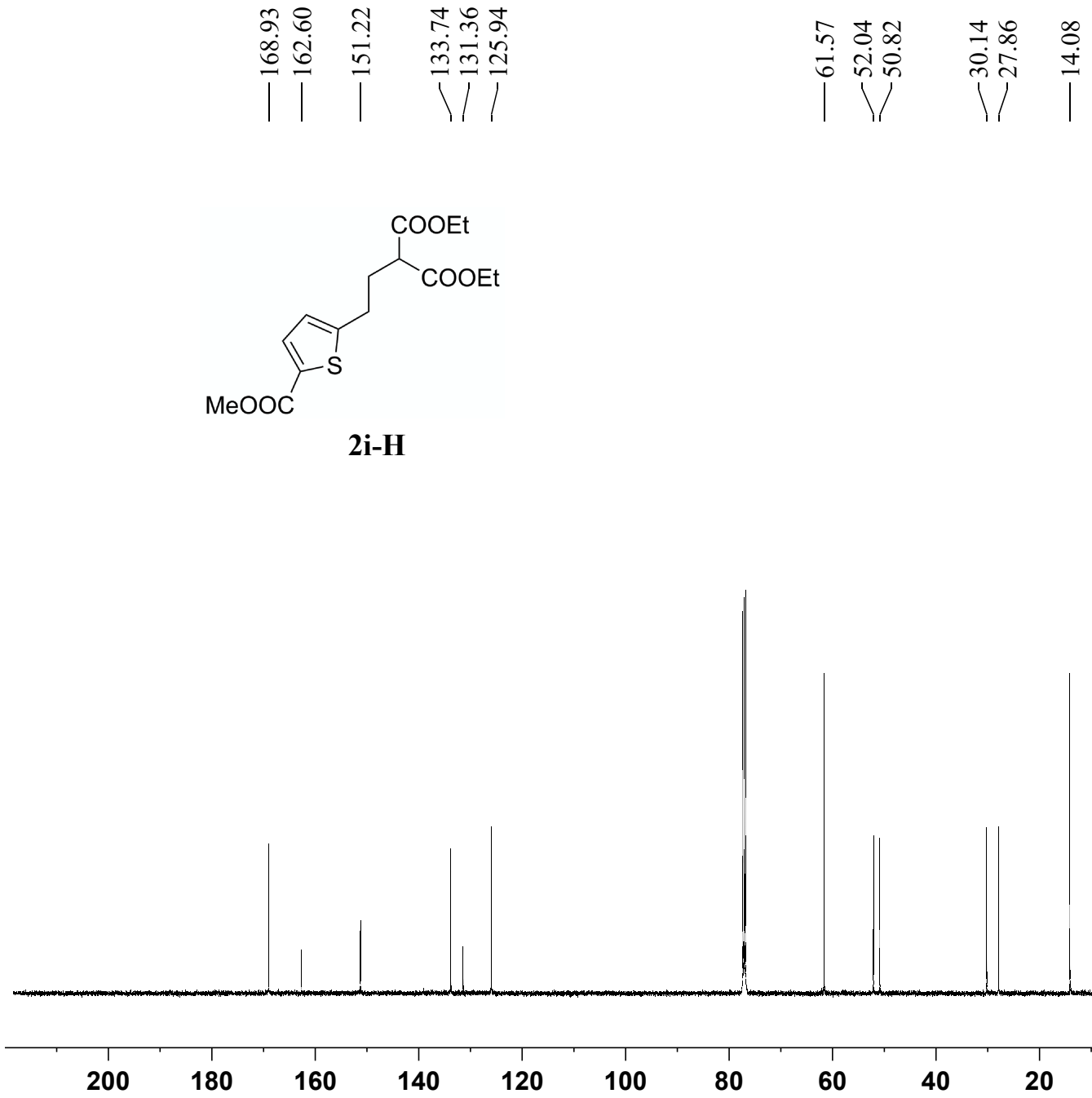
```
Current Data Parameters
NAME          500M-2022
EXPNO                42
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               6.24
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                   80
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



2i-H

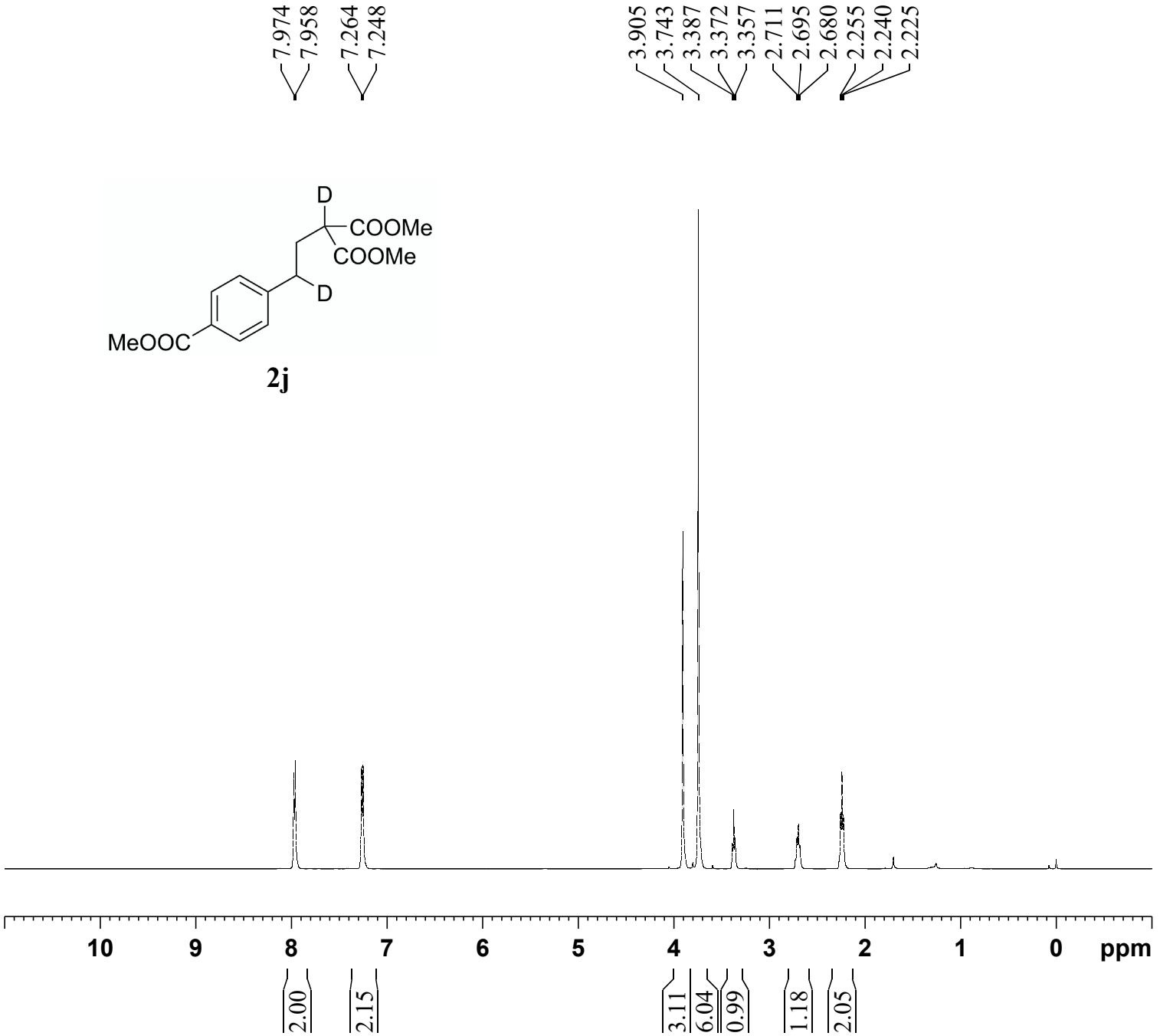
```
Current Data Parameters
NAME          500M-2022
EXPNO                39
PROCNO                1

F2 - Acquisition Parameters
Date_          20220315
Time               5.59
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                   80
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



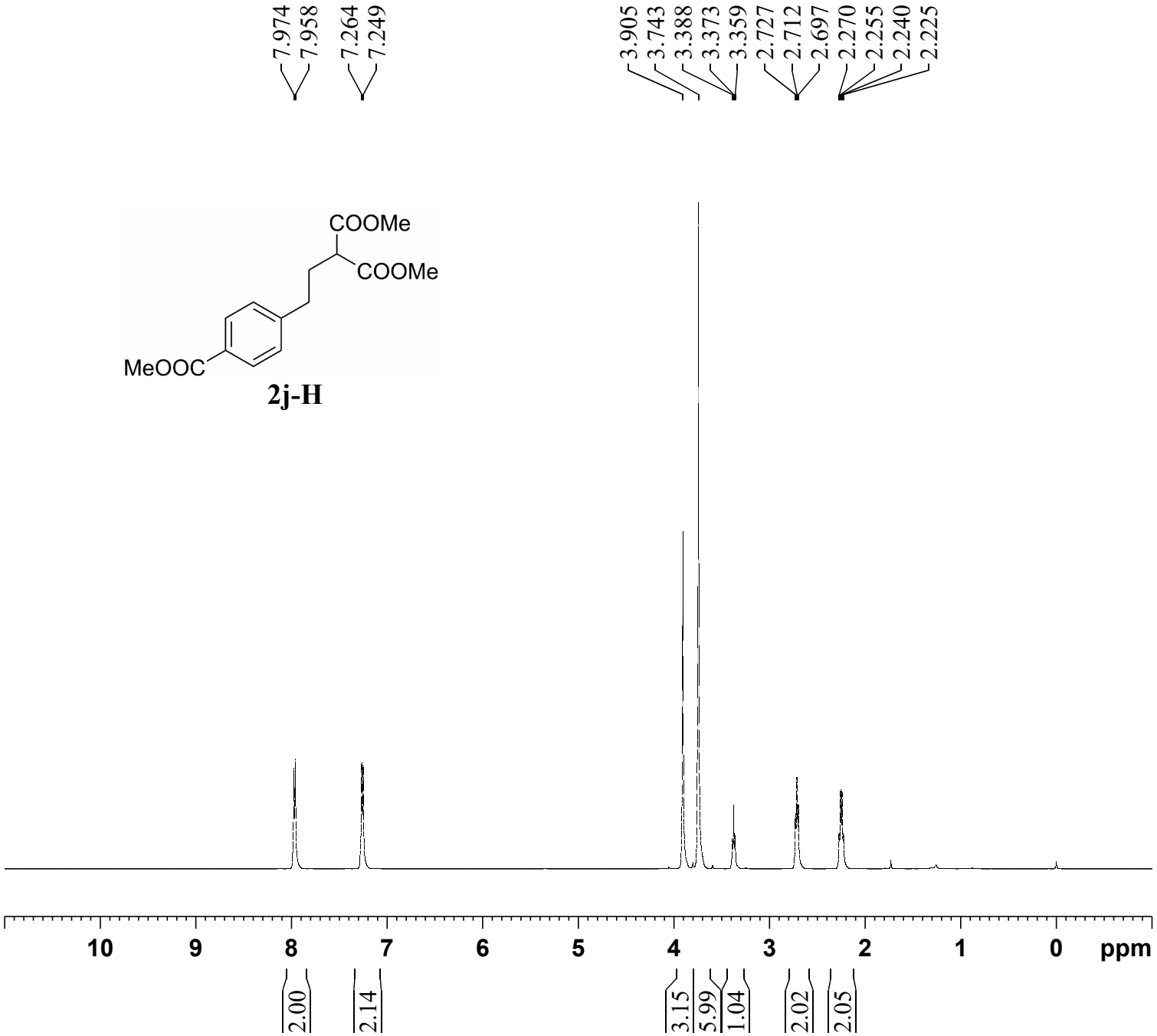

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                187
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211124
Time               18.45
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE        0 K
D1           1.00000000 sec
D11       0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300028 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



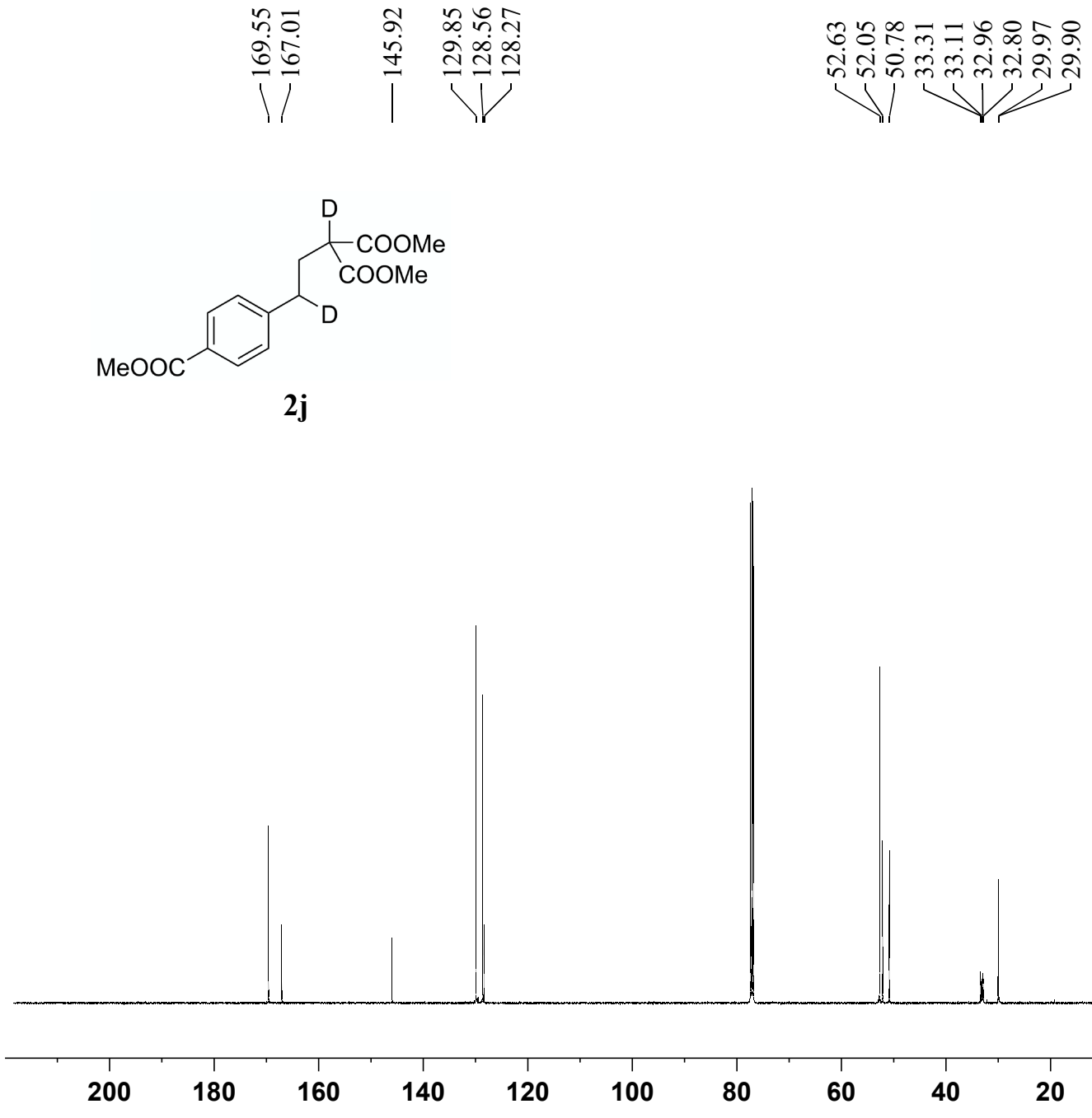

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                185
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211124
Time               18.26
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE        0 K
D1           1.00000000 sec
D11       0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300013 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2j

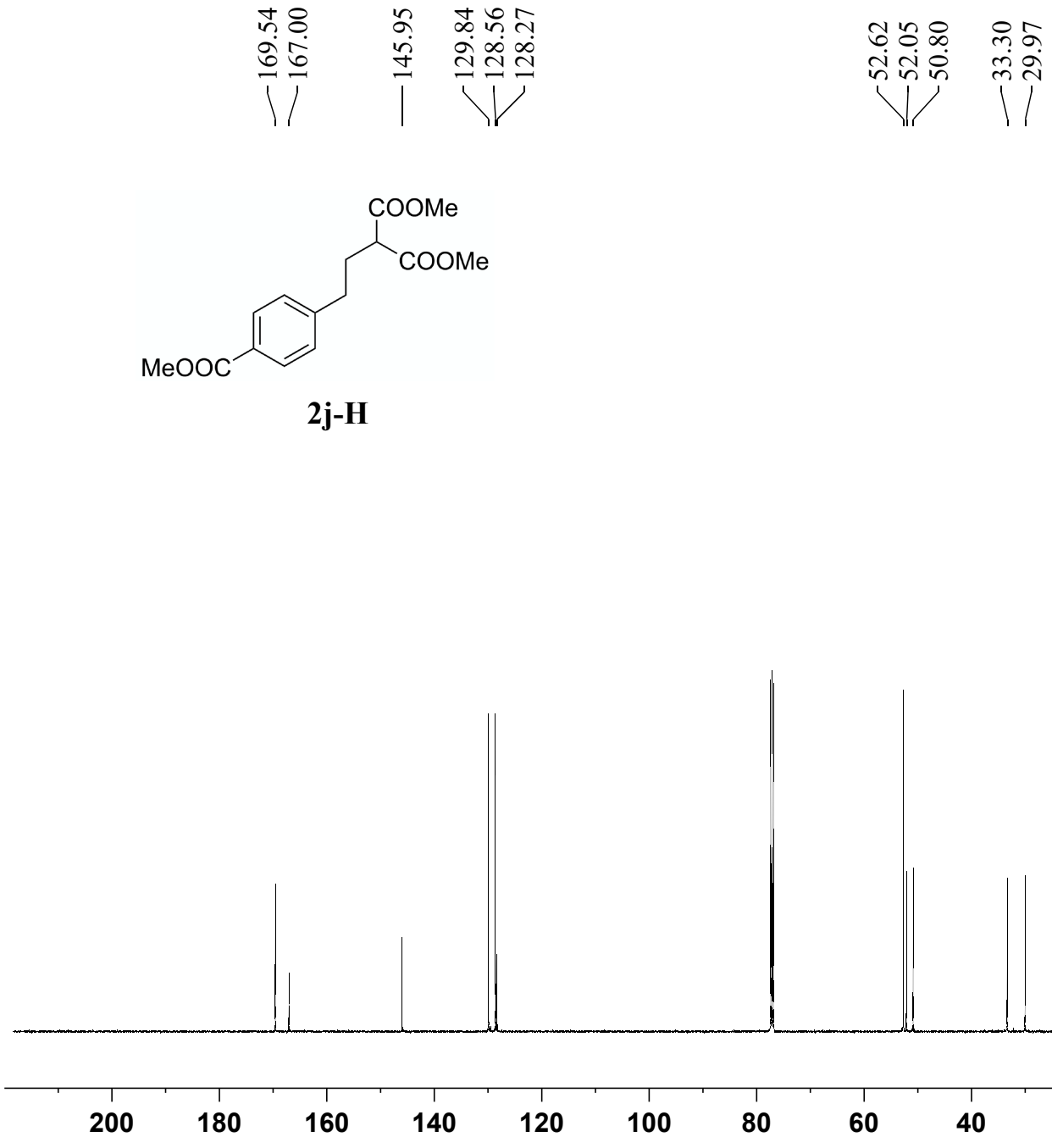
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               188
PROCNO                1

F2 - Acquisition Parameters
Date_          20211124
Time              19.13
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE       0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



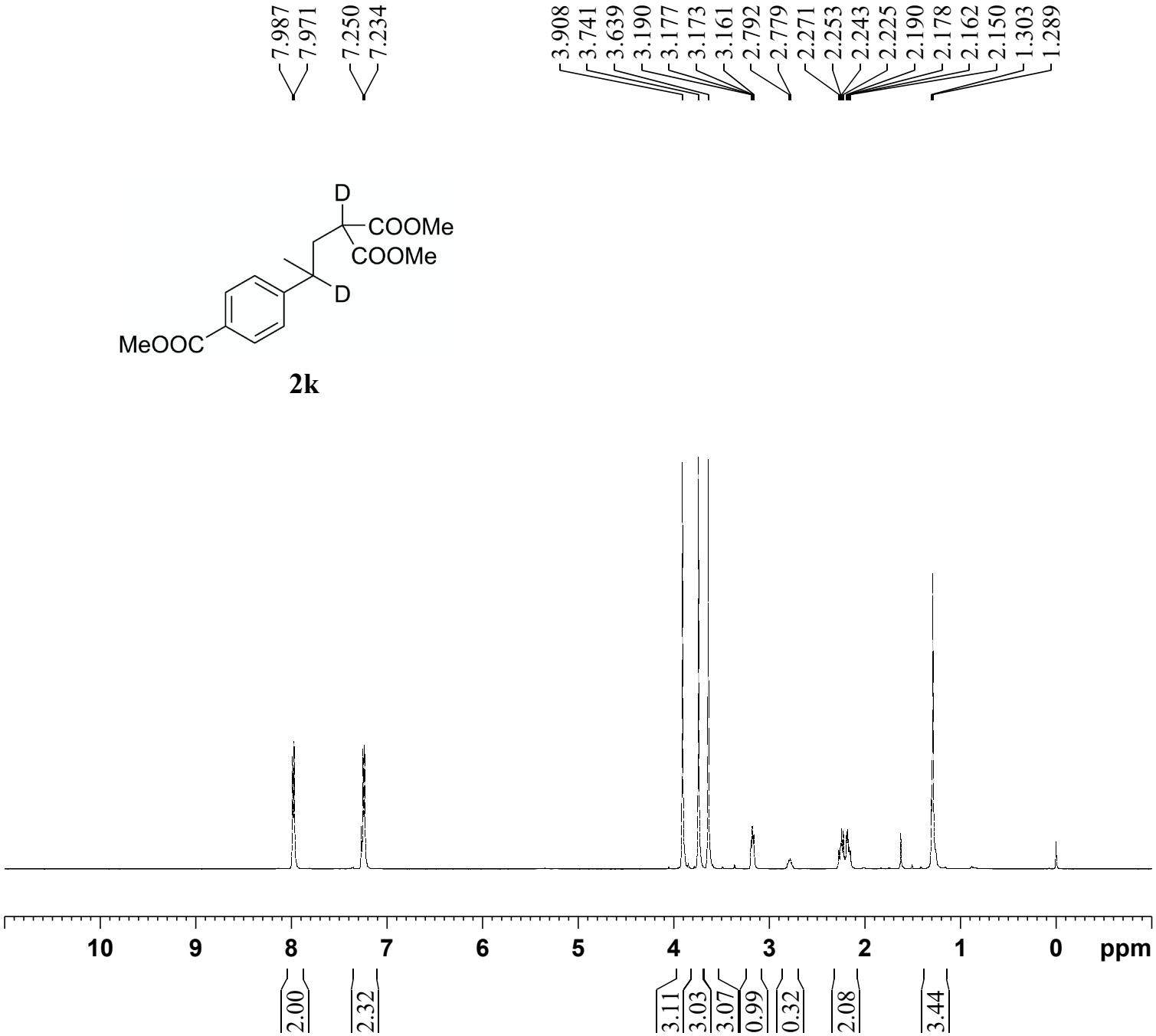

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               186
PROCNO                1

F2 - Acquisition Parameters
Date_          20211124
Time              18.41
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  293
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE       0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



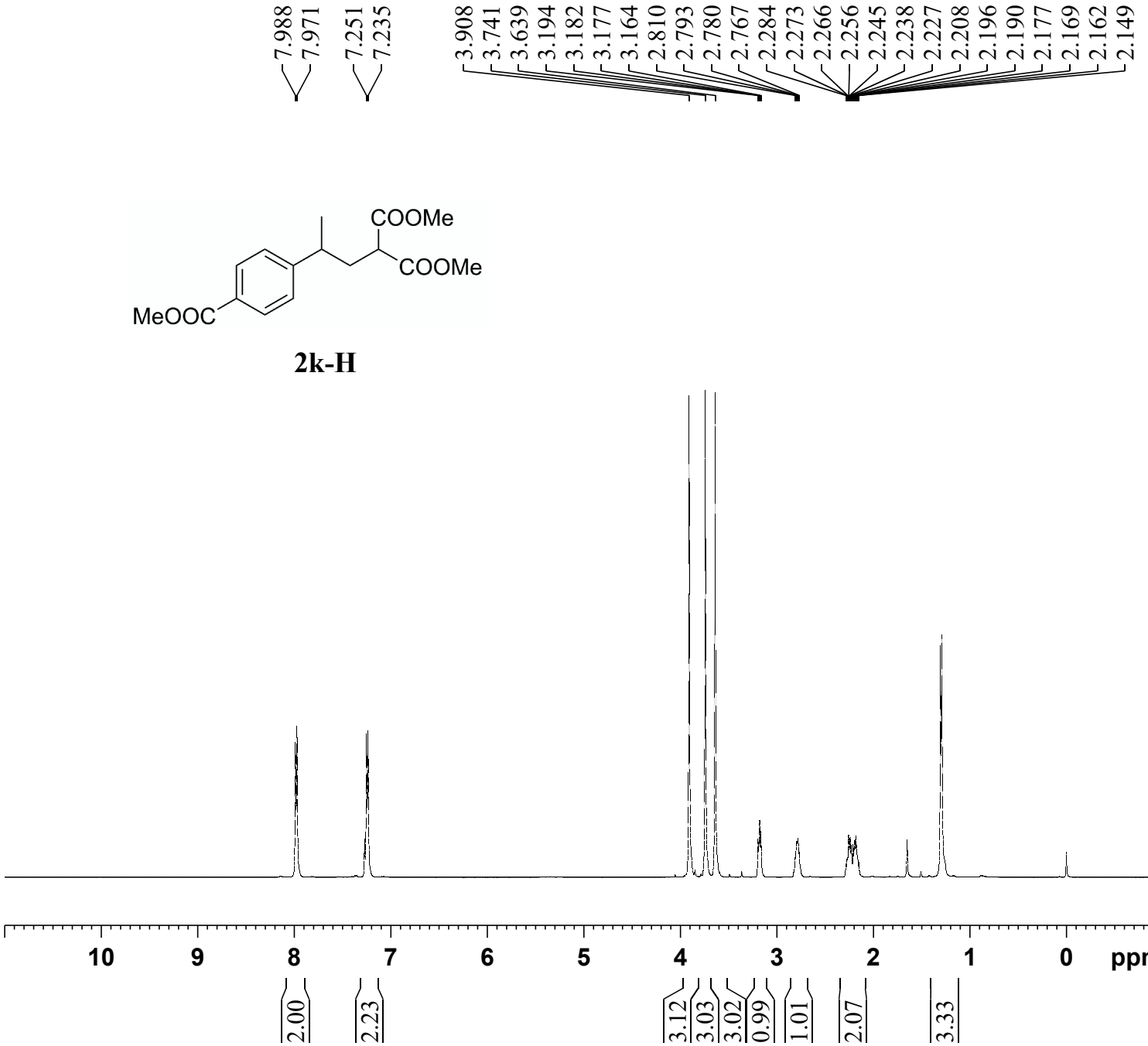

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               193
PROCNO                1

F2 - Acquisition Parameters
Date_          20211125
Time               9.08
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE        0 K
D1           1.00000000 sec
D11       0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                10.59 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300067 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



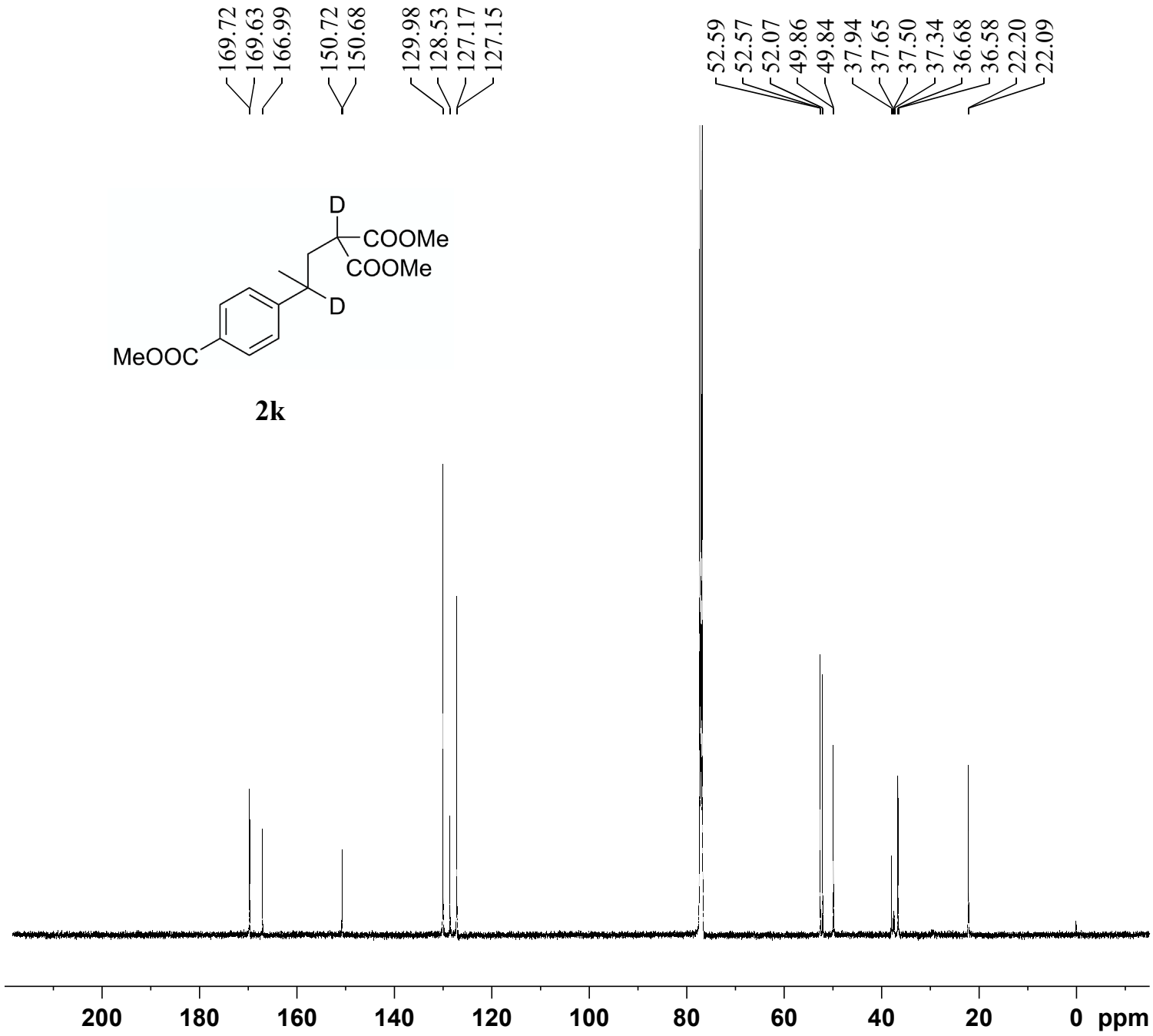

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                194
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211125
Time               10.39
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 49.27
DW                50.000 usec
DE                 6.50 usec
TE        0 K
D1           1.00000000 sec
D11       0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300053 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



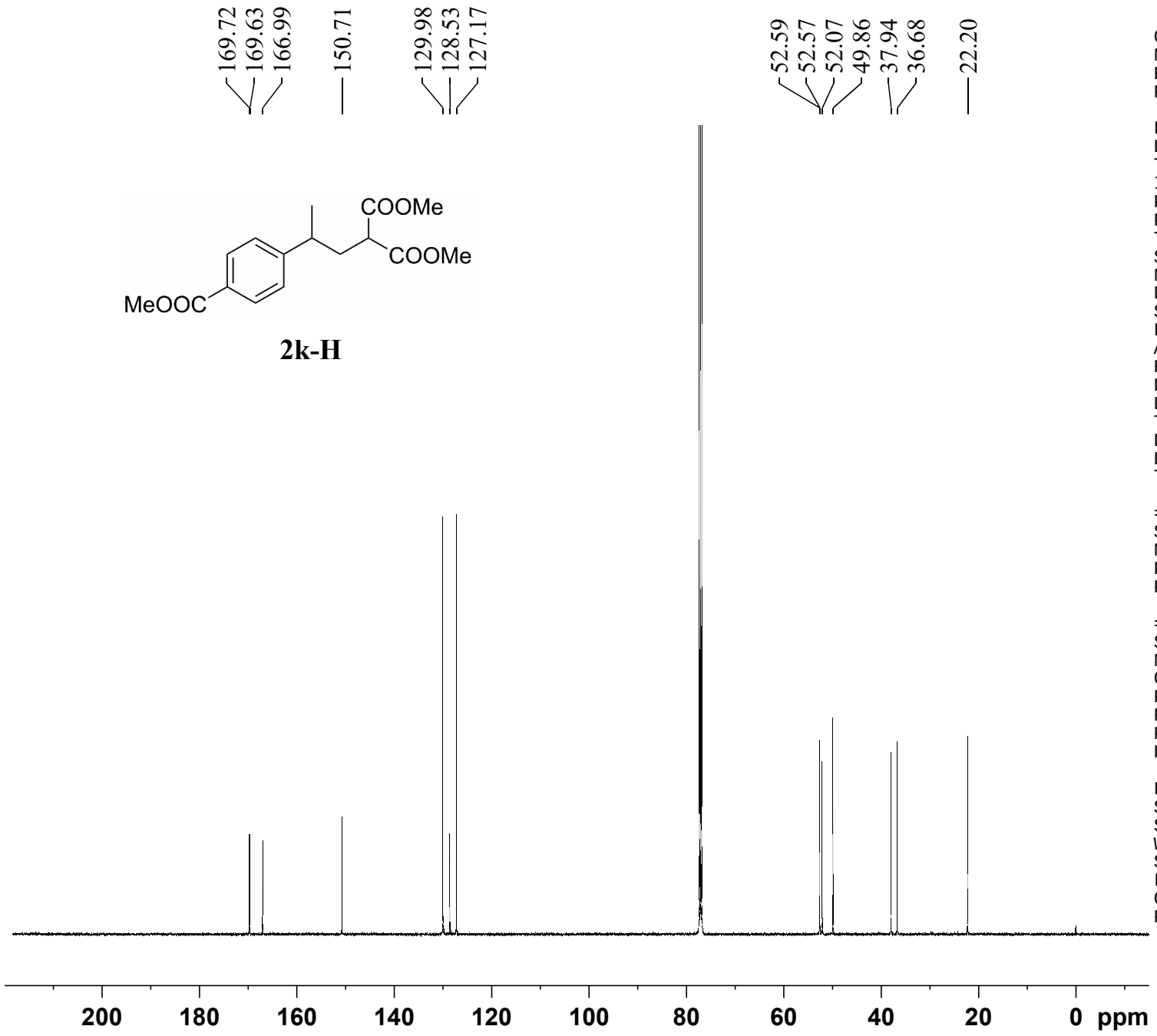

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               192
PROCNO                1

F2 - Acquisition Parameters
Date_          20211124
Time              21.11
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE       0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



2k-H

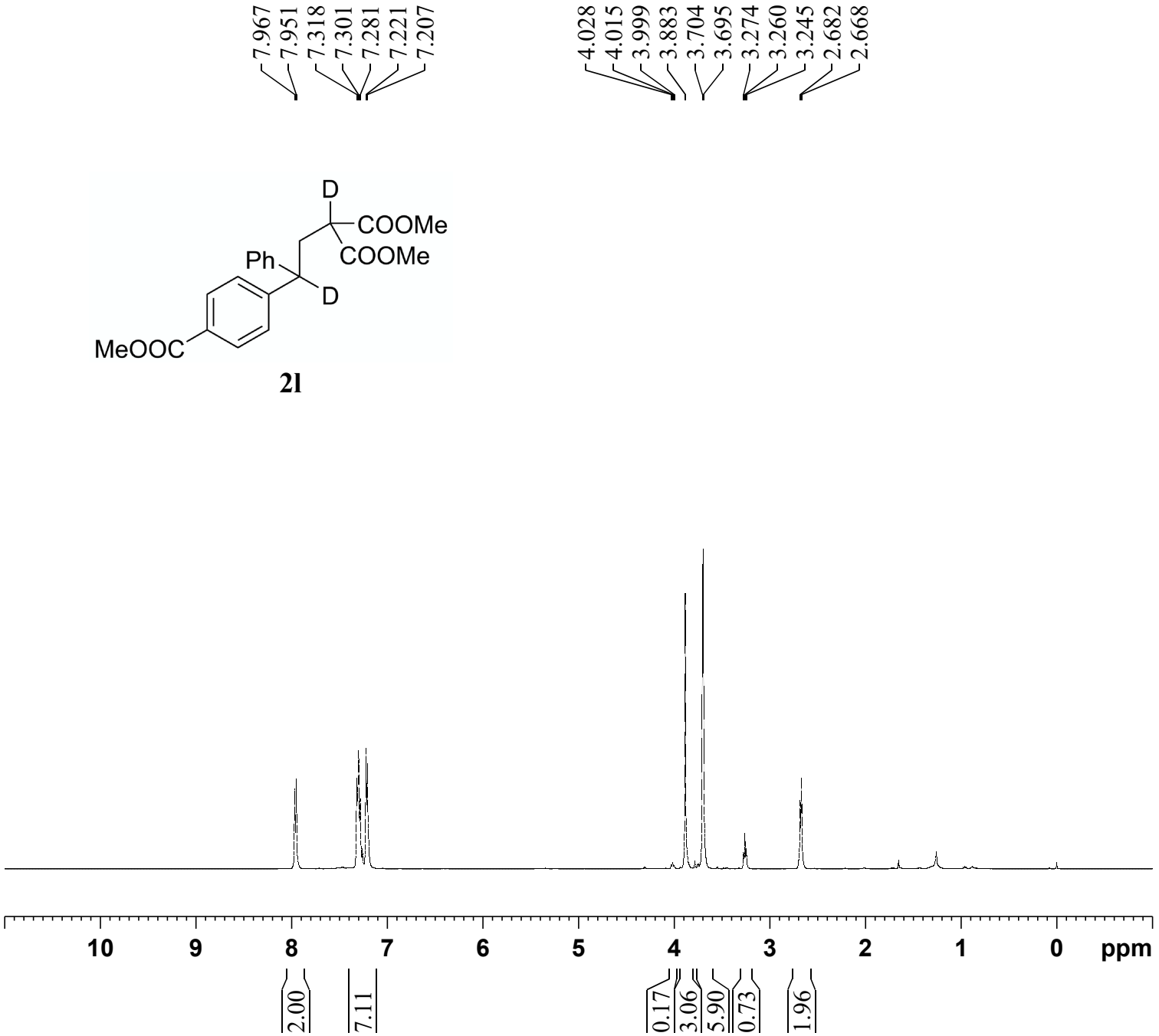
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               190
PROCNO                1

F2 - Acquisition Parameters
Date_          20211124
Time              20.12
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE       0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2        waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



2l

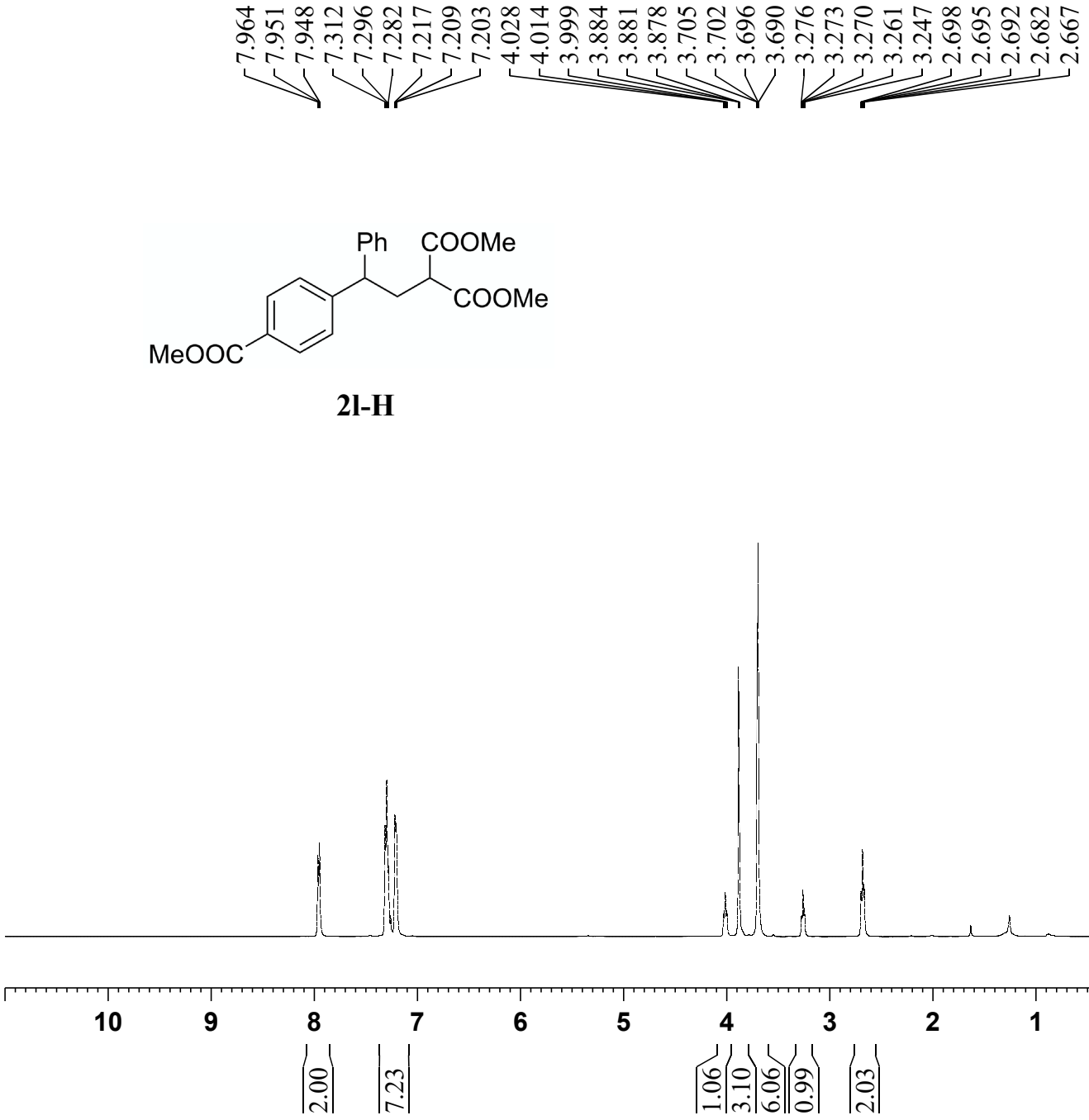
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                212
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211221
Time                3.08
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300112 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2l-H

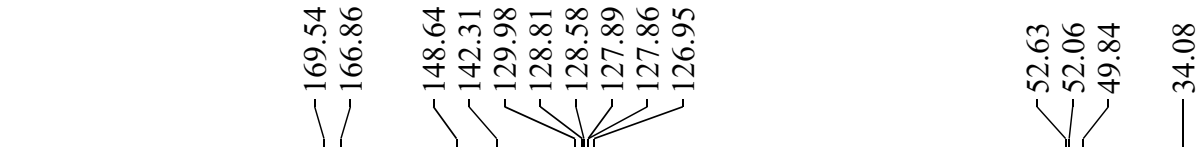
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                210
PROCNO                 1

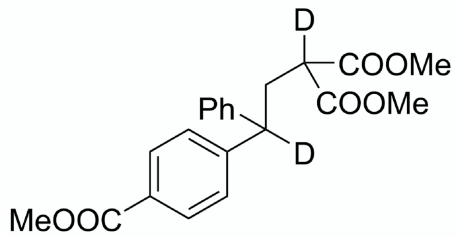
F2 - Acquisition Parameters
Date_           20211221
Time                2.36
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

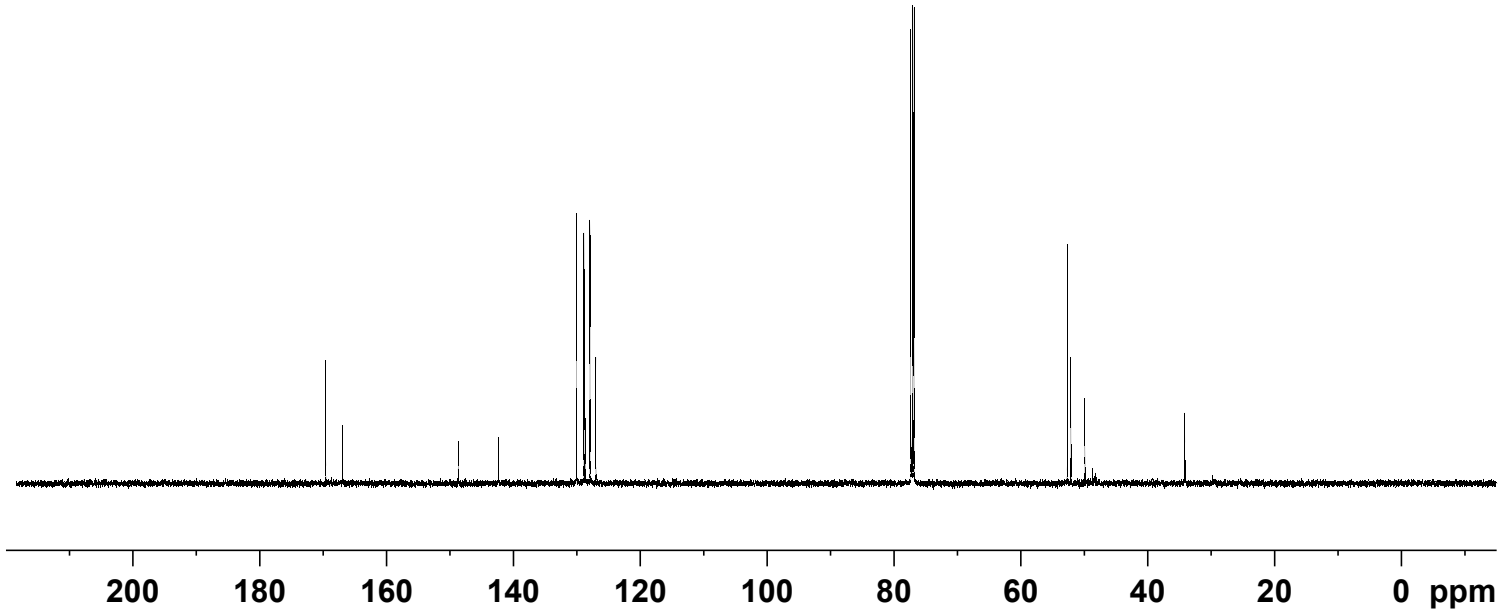
======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300120 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





2l



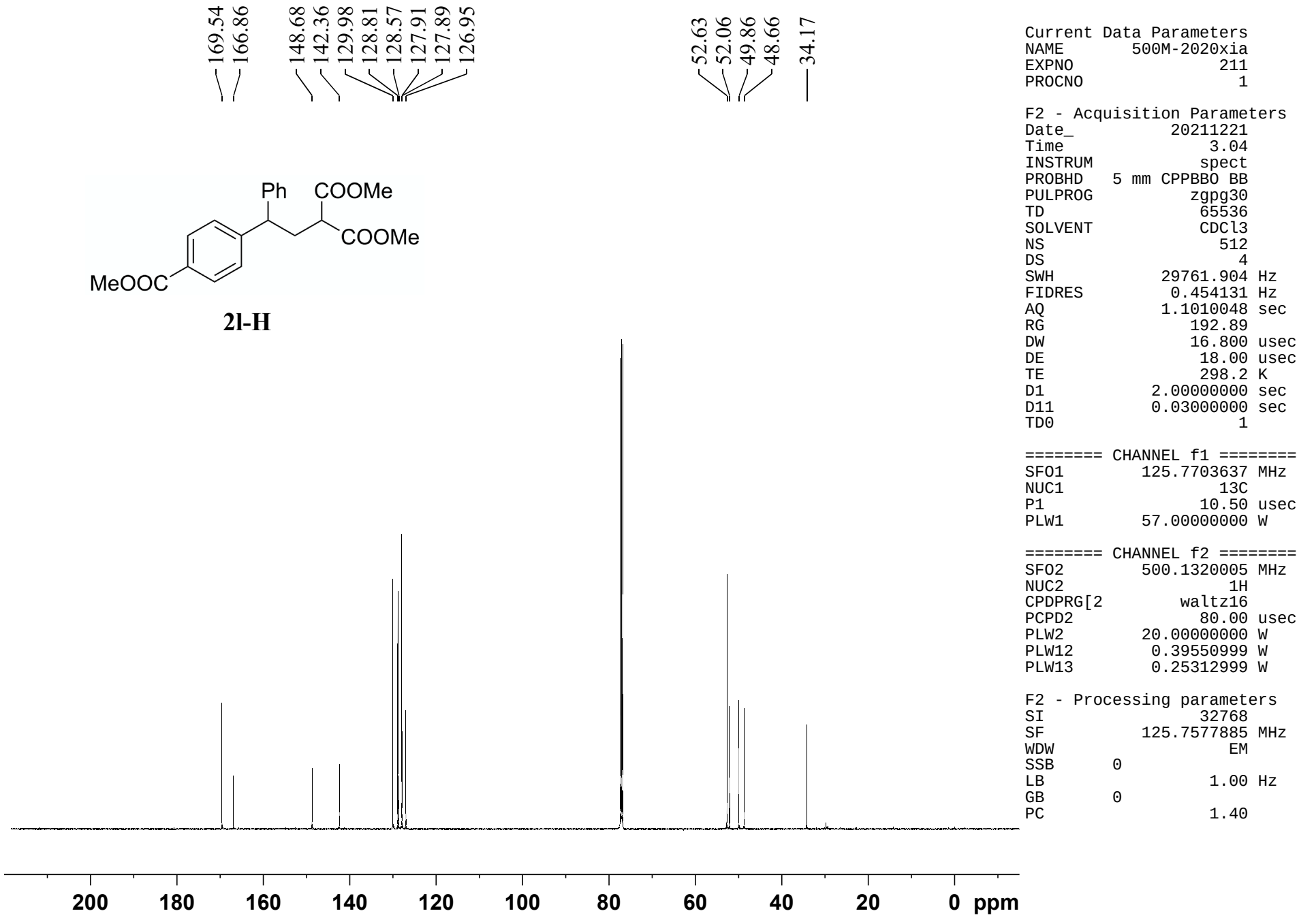

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               213
PROCNO                1

F2 - Acquisition Parameters
Date_          20211221
Time               3.10
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                   20
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



2l-H

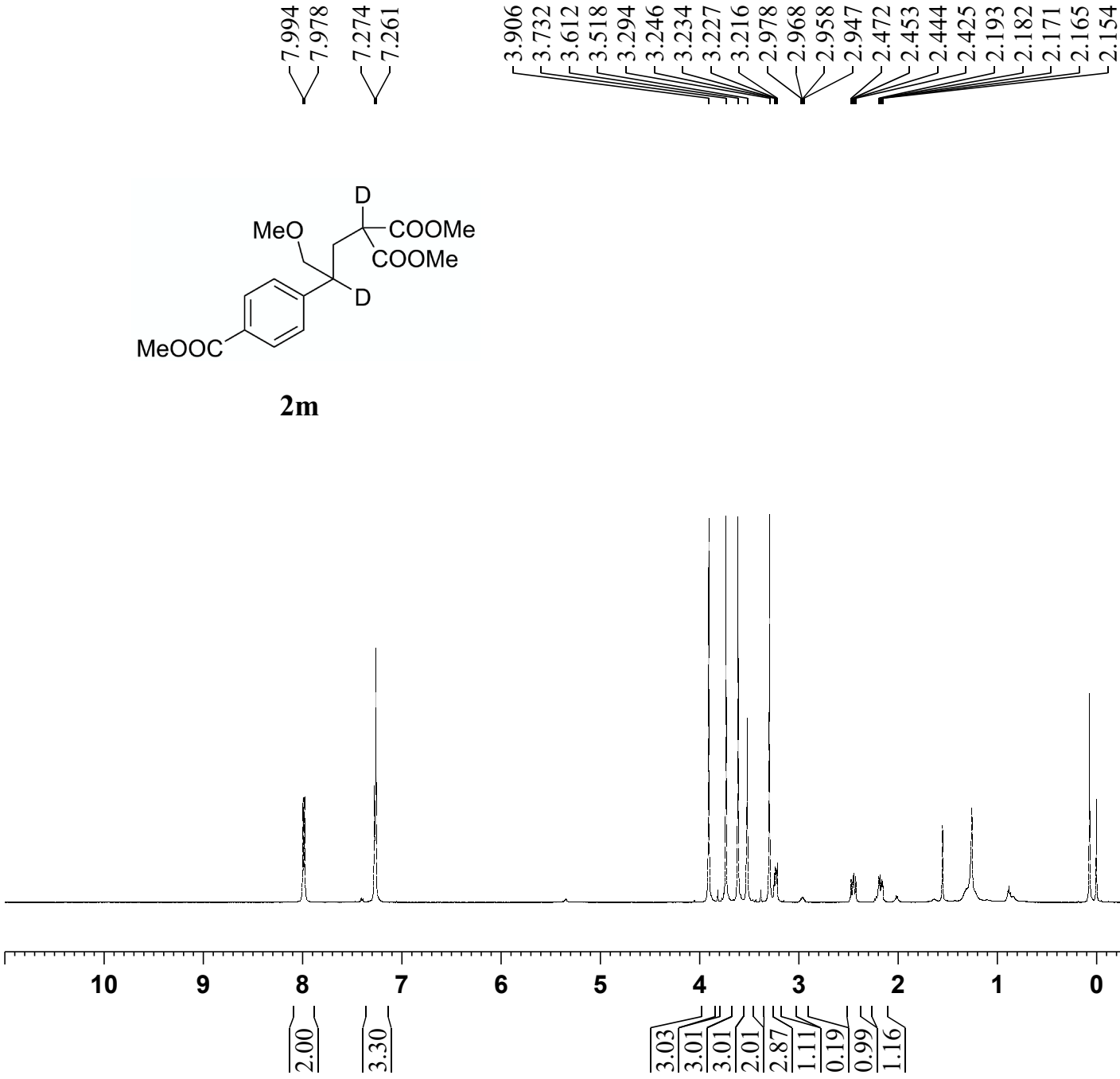
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               211
PROCNO                1

F2 - Acquisition Parameters
Date_          20211221
Time               3.04
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



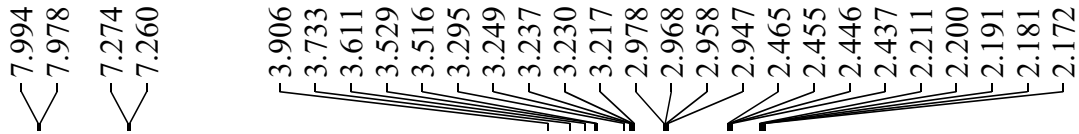

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                230
PROCNO                 1

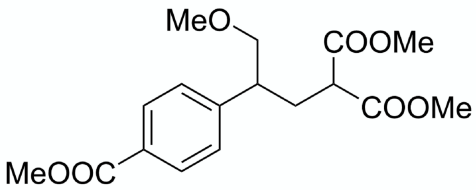
F2 - Acquisition Parameters
Date_           20220207
Time               21.08
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF            500.1300114 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





2m-H

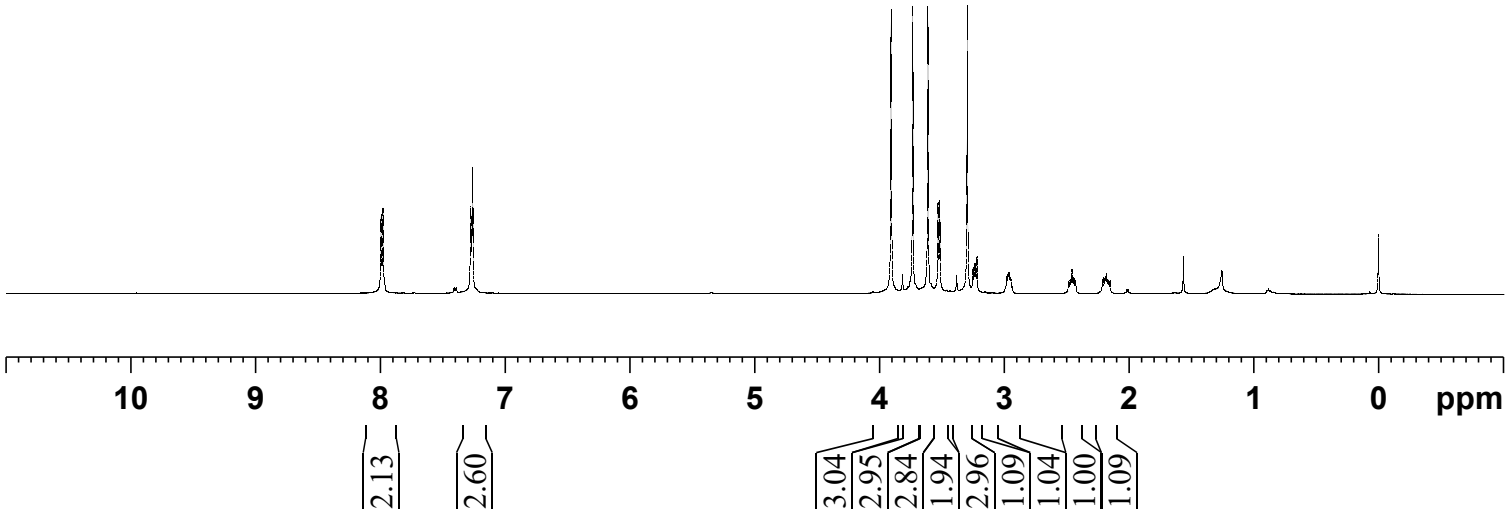
```
Current Data Parameters
NAME          500M-2022
EXPNO                 1
PROCNO                1

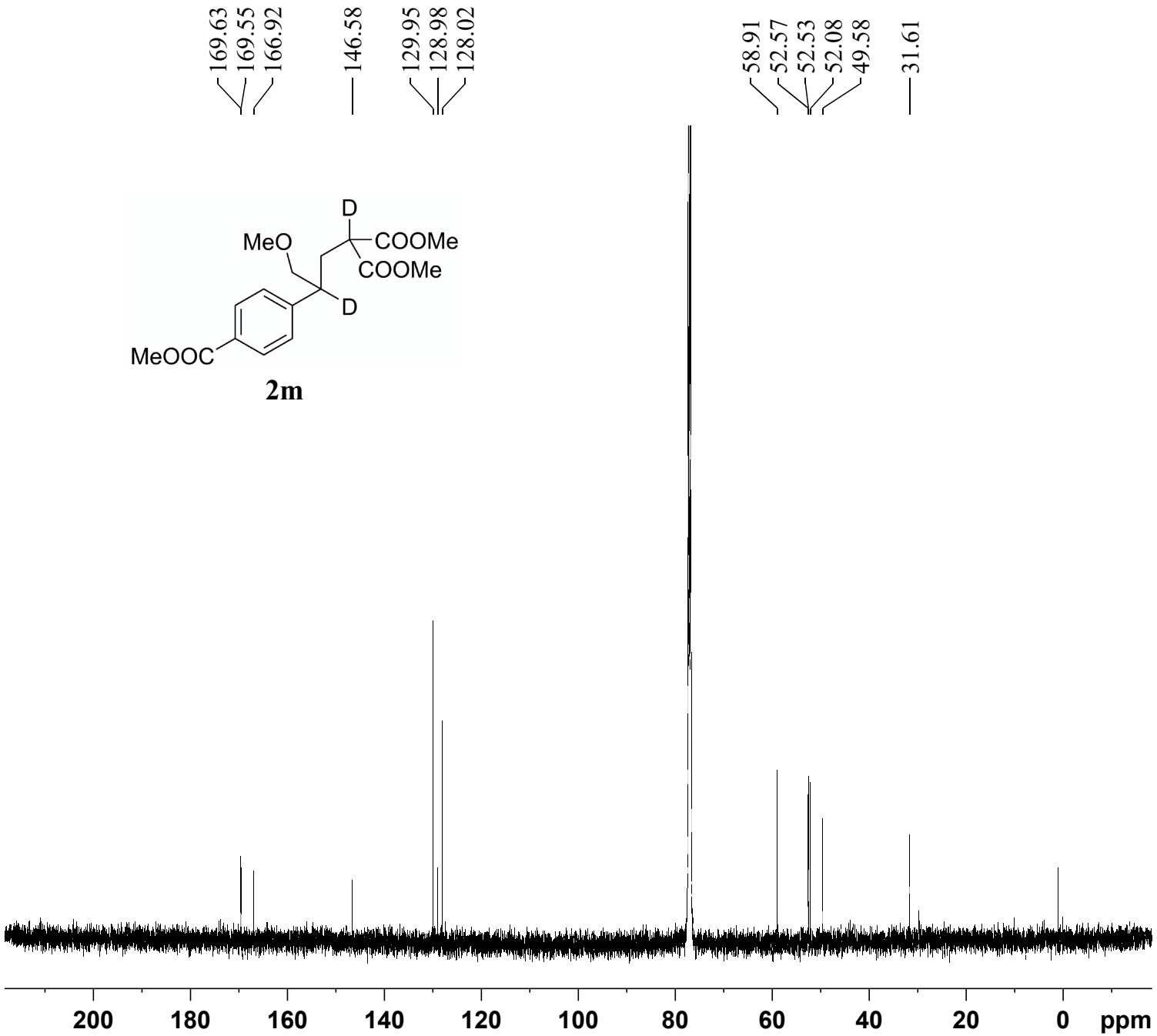
F2 - Acquisition Parameters
Date_          20220216
Time              21.39
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                55.37
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                11.25 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300114 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





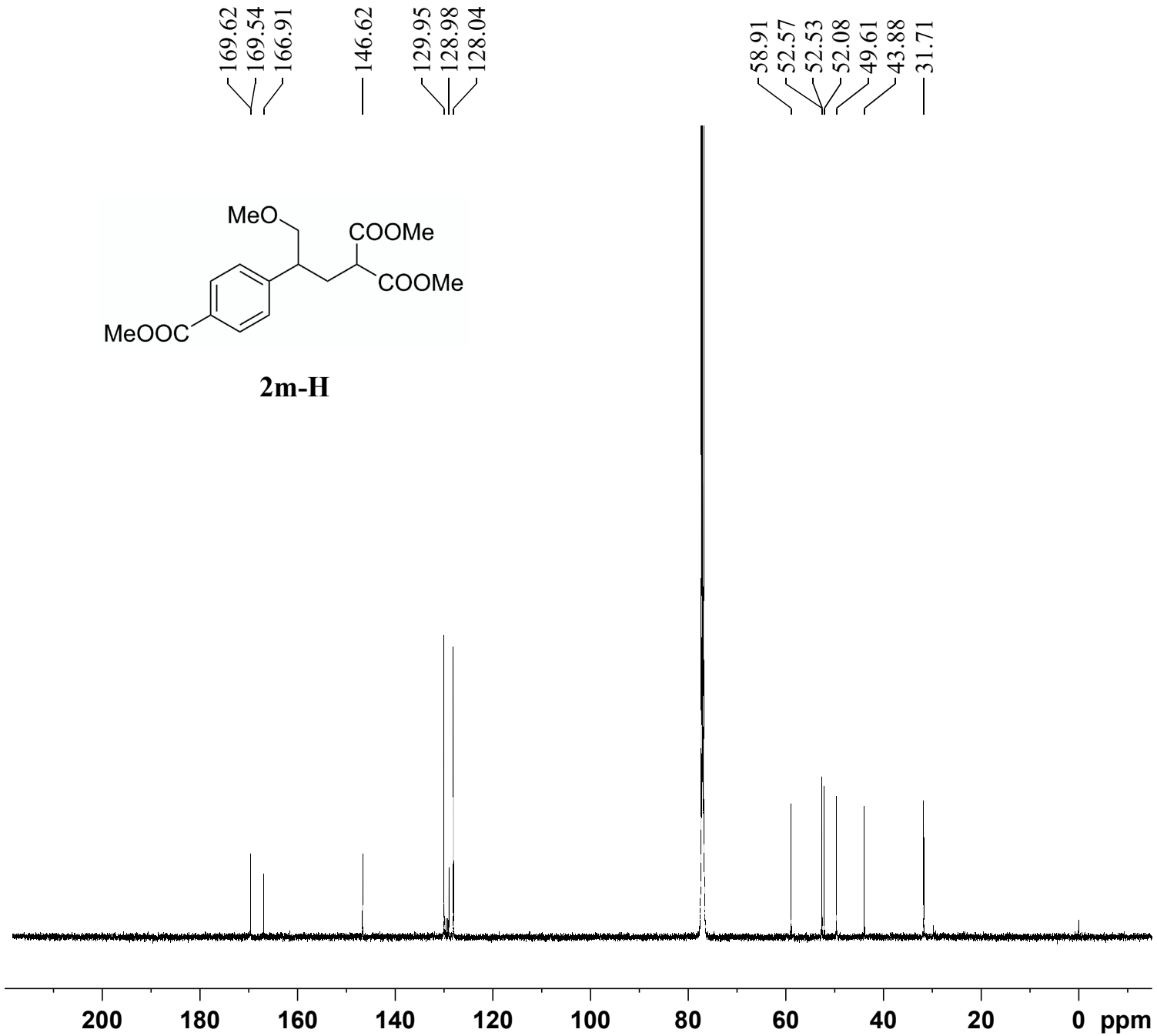

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               238
PROCNO                1

F2 - Acquisition Parameters
Date_          20220208
Time              14.51
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```



2m-H

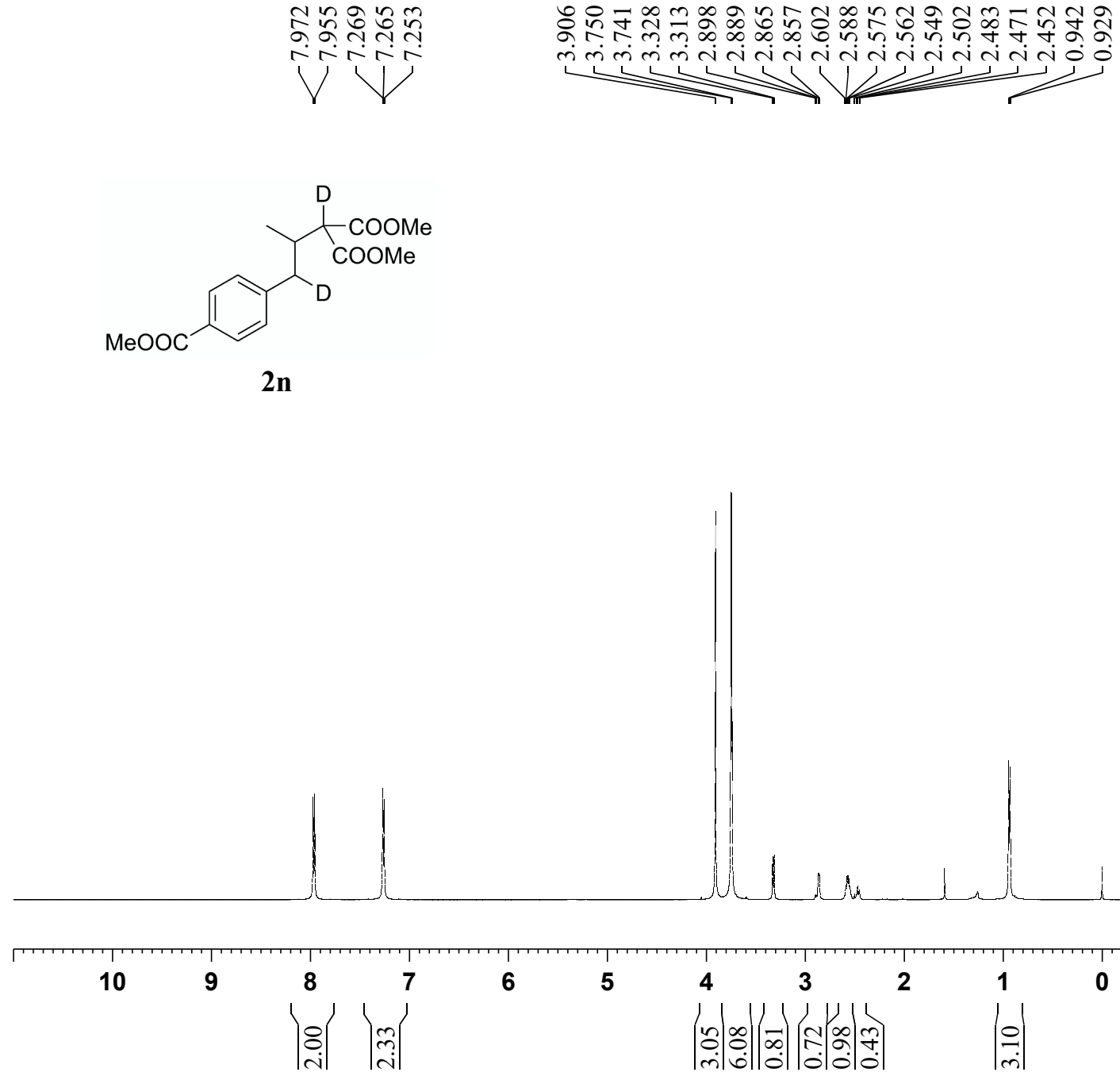
```
Current Data Parameters
NAME          500M-2022
EXPNO                 2
PROCNO                1

F2 - Acquisition Parameters
Date_          20220216
Time              22.33
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



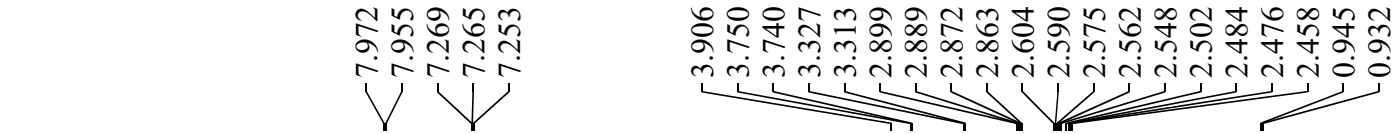

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                220
PROCNO                 1

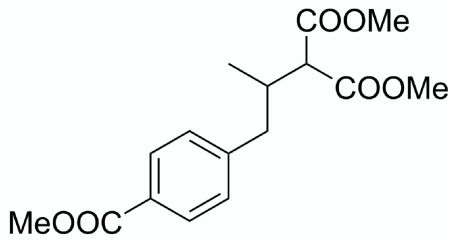
F2 - Acquisition Parameters
Date_           20220105
Time               17.04
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

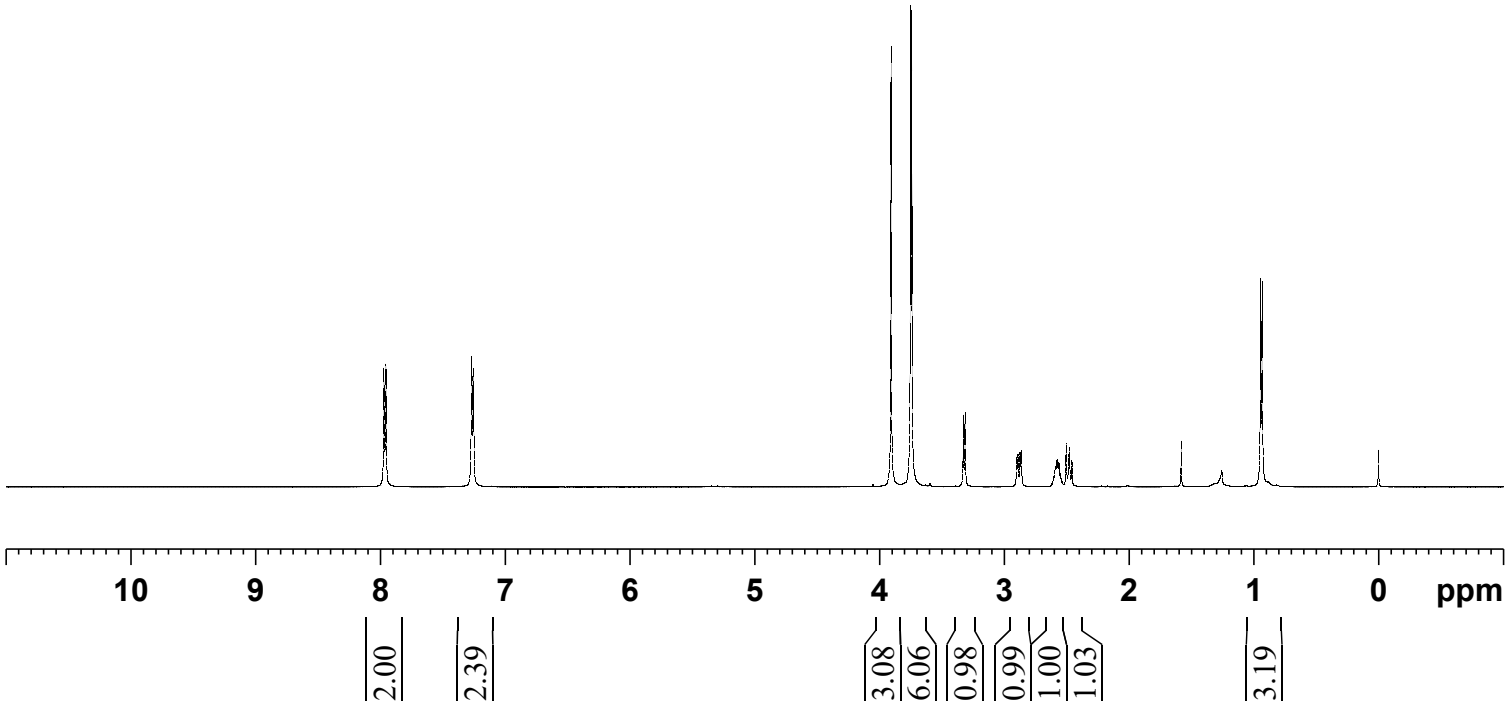
======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF           500.1300098 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





2n-H



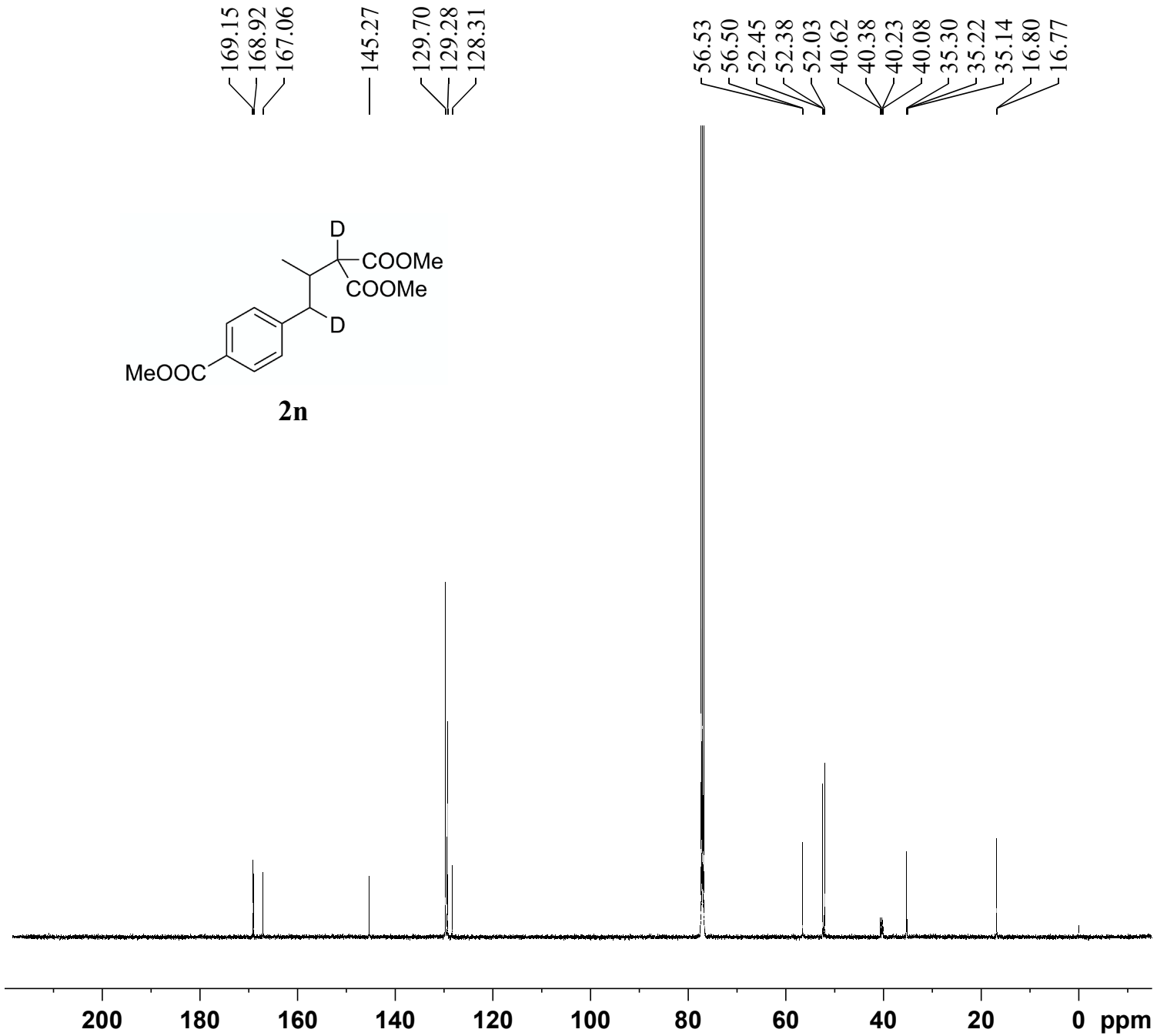

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                218
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220105
Time               16.32
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF            500.1300103 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



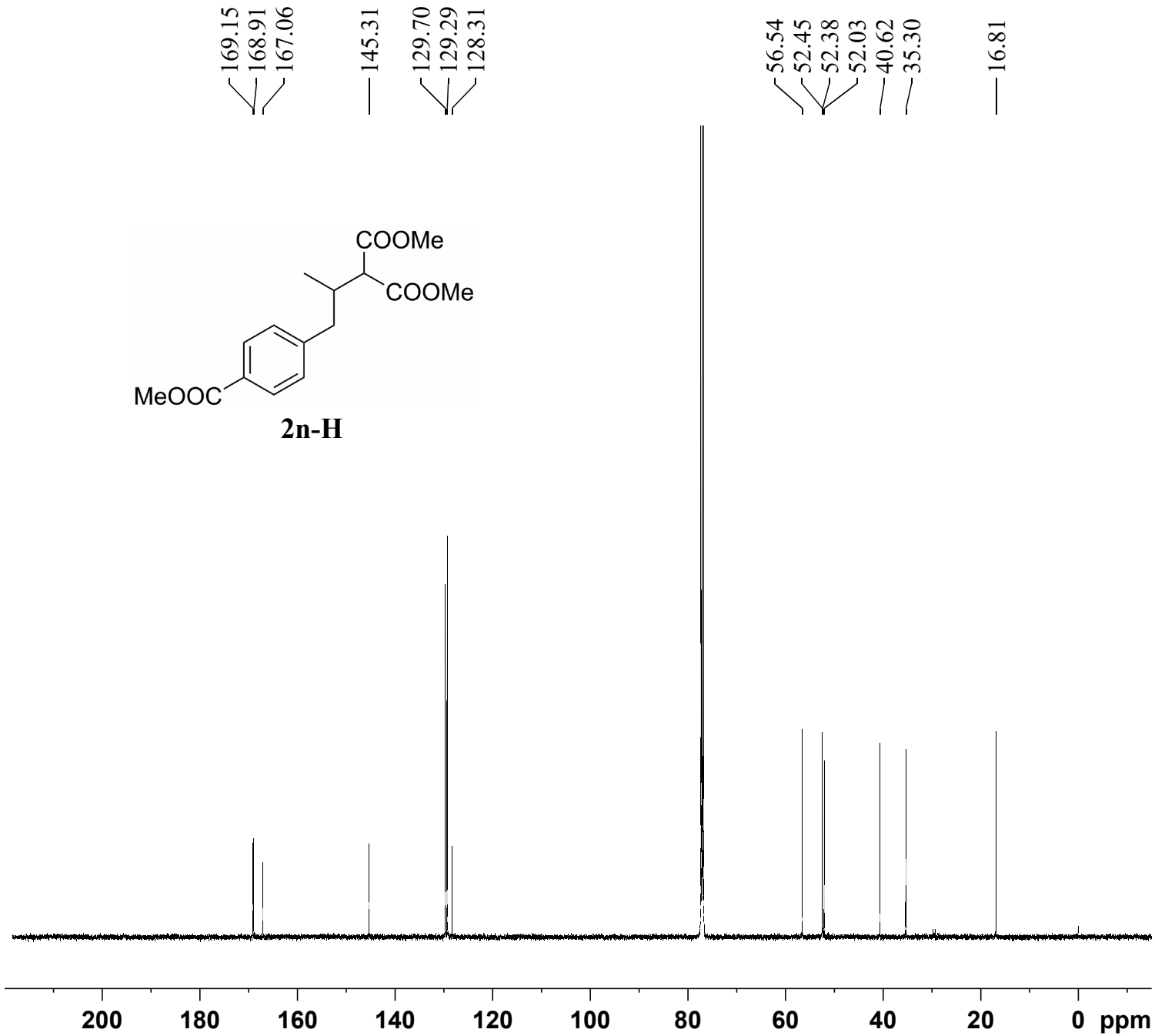

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               221
PROCNO                1

F2 - Acquisition Parameters
Date_          20220105
Time              17.32
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



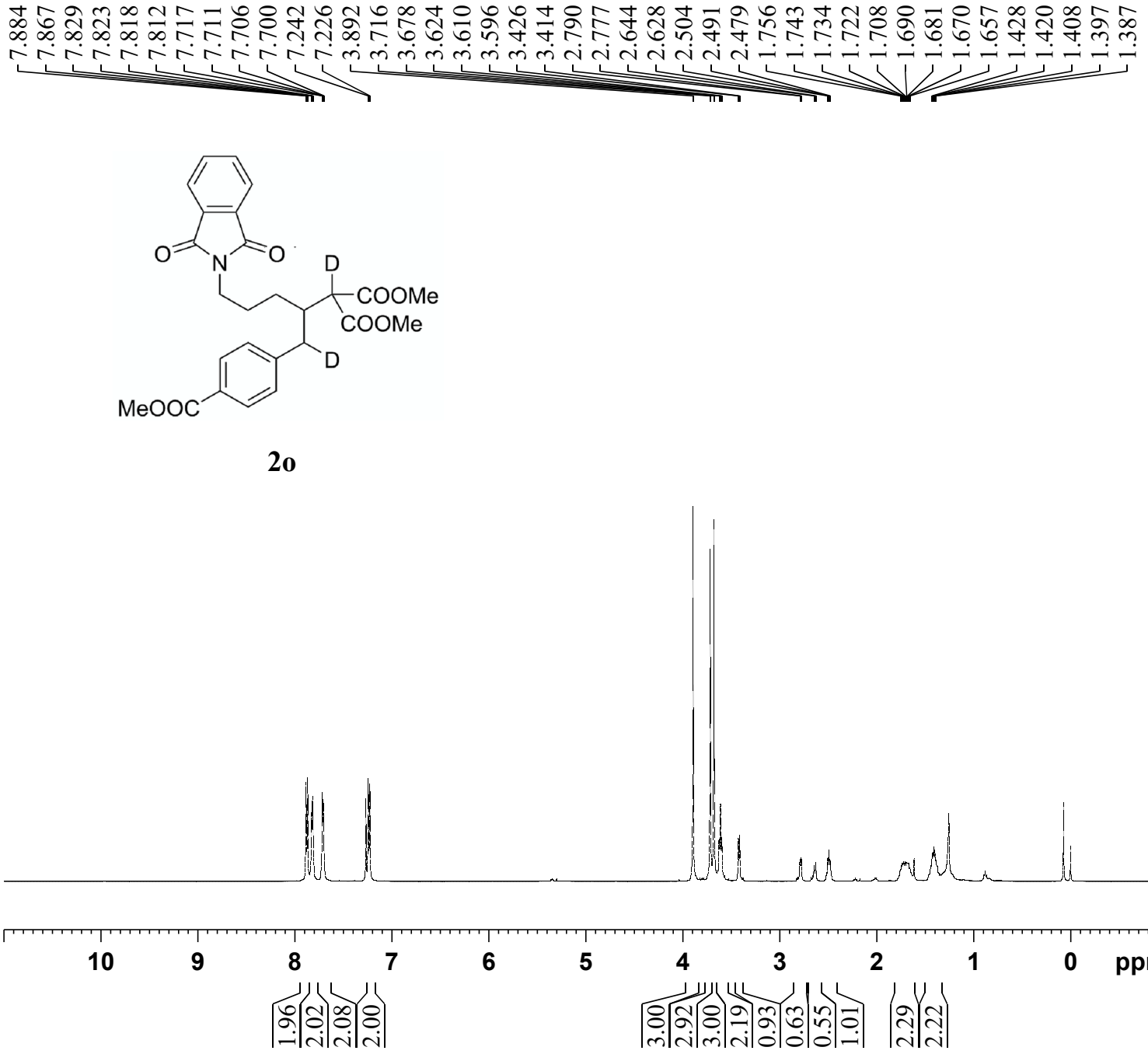

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               219
PROCNO                1

F2 - Acquisition Parameters
Date_          20220105
Time              17.00
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



2o

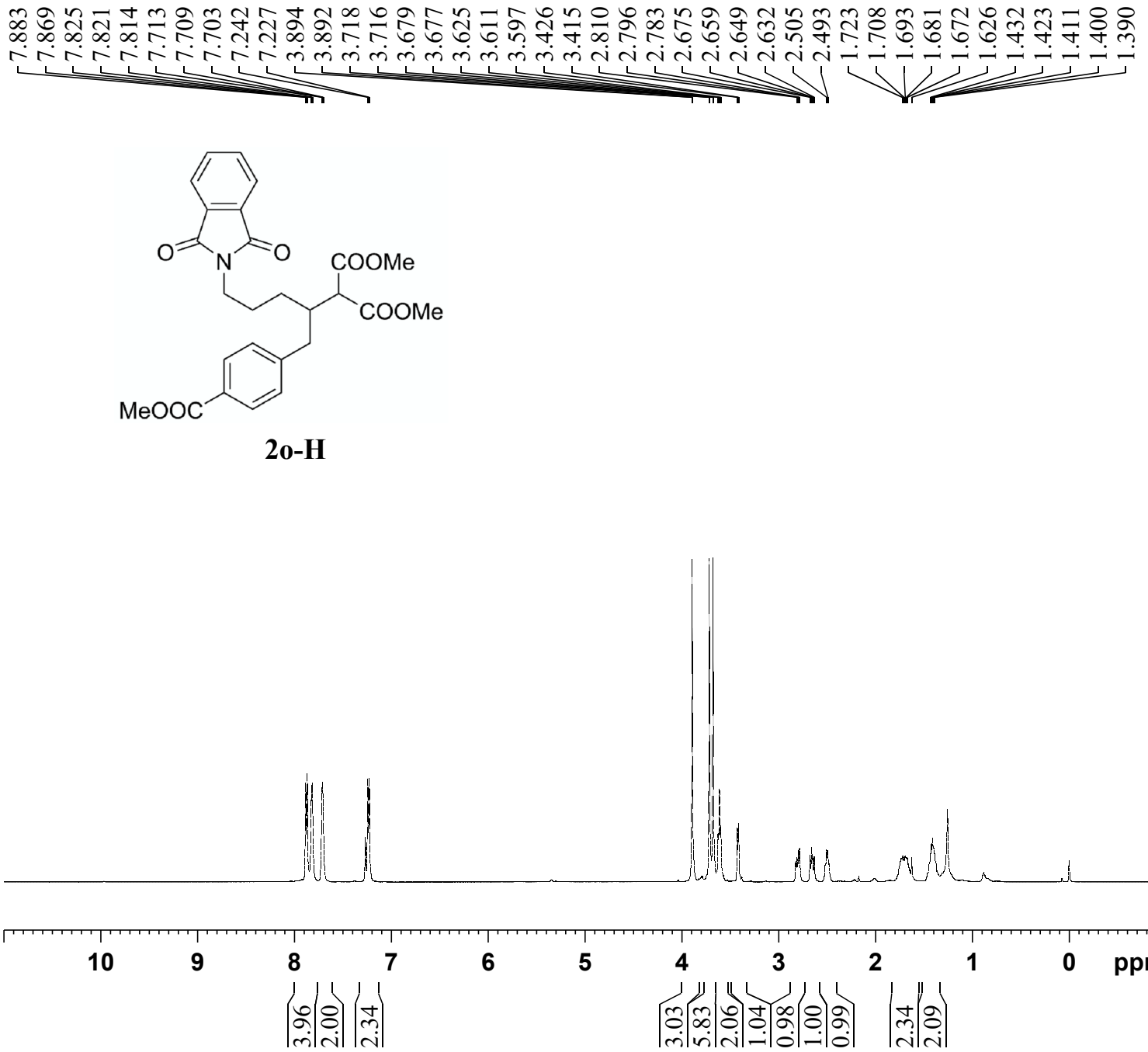
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                229
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220112
Time               13.30
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300090 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2o-H

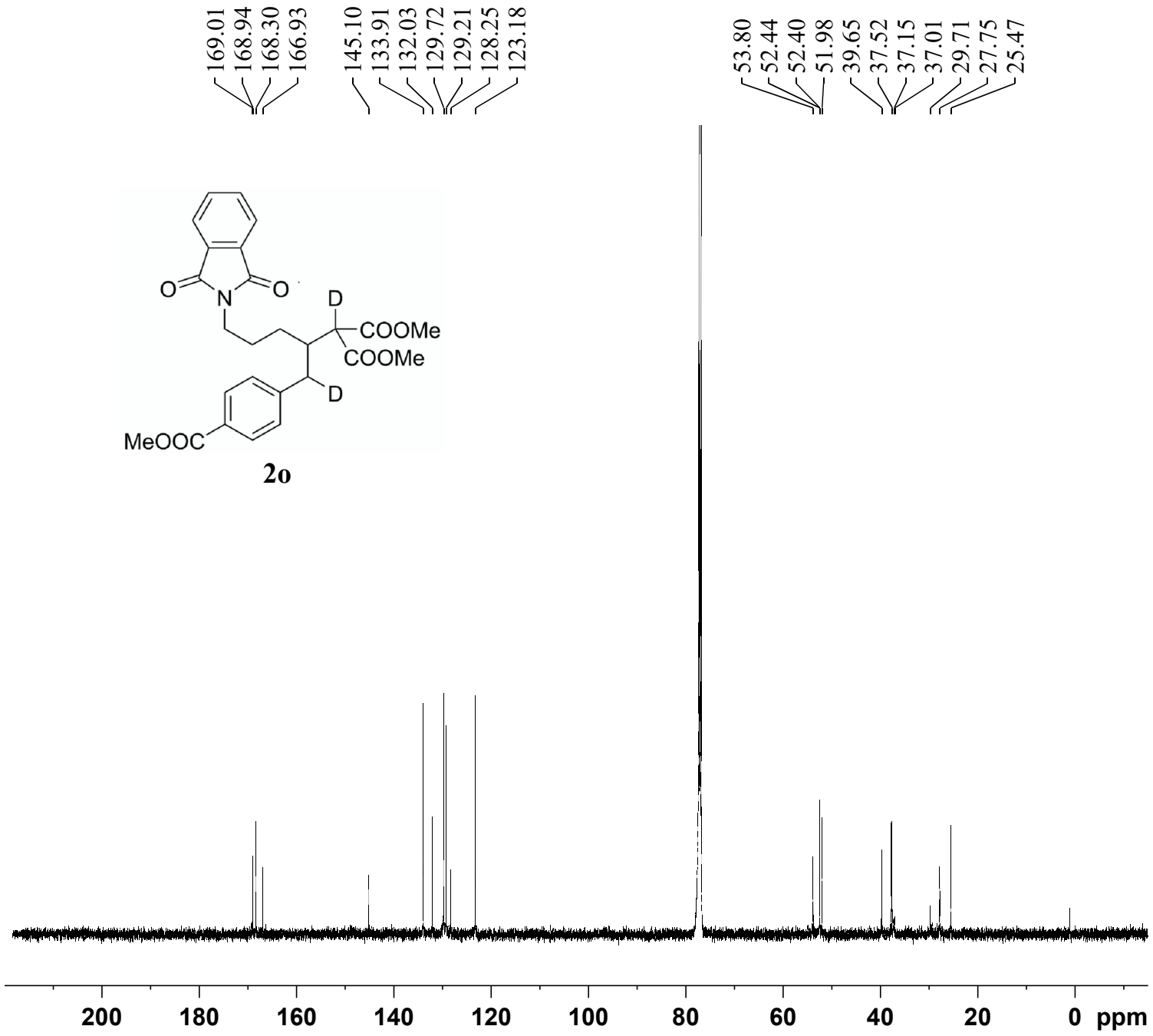
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                216
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211228
Time               15.56
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 49.27
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 11.25 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF            500.1300046 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2o

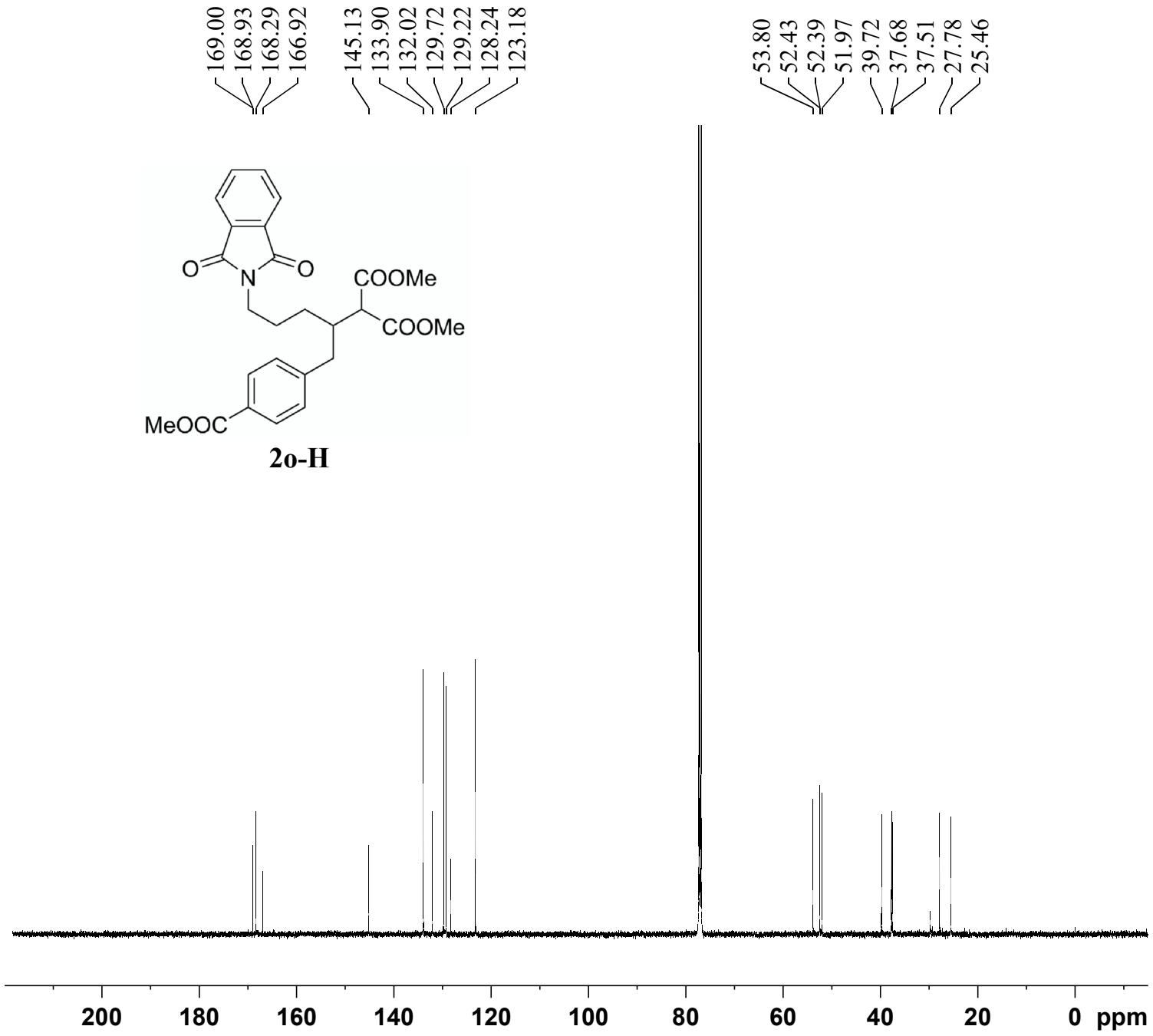
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                226
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220111
Time               12.31
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG                192.89
DW                16.800 usec
DE                18.00 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         125.7703637 MHz
NUC1                13C
P1                10.50 usec
PLW1         57.00000000 W

======== CHANNEL f2 ========
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         20.00000000 W
PLW12         0.39550999 W
PLW13         0.25312999 W

F2 - Processing parameters
SI                 32768
SF           125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2o-H

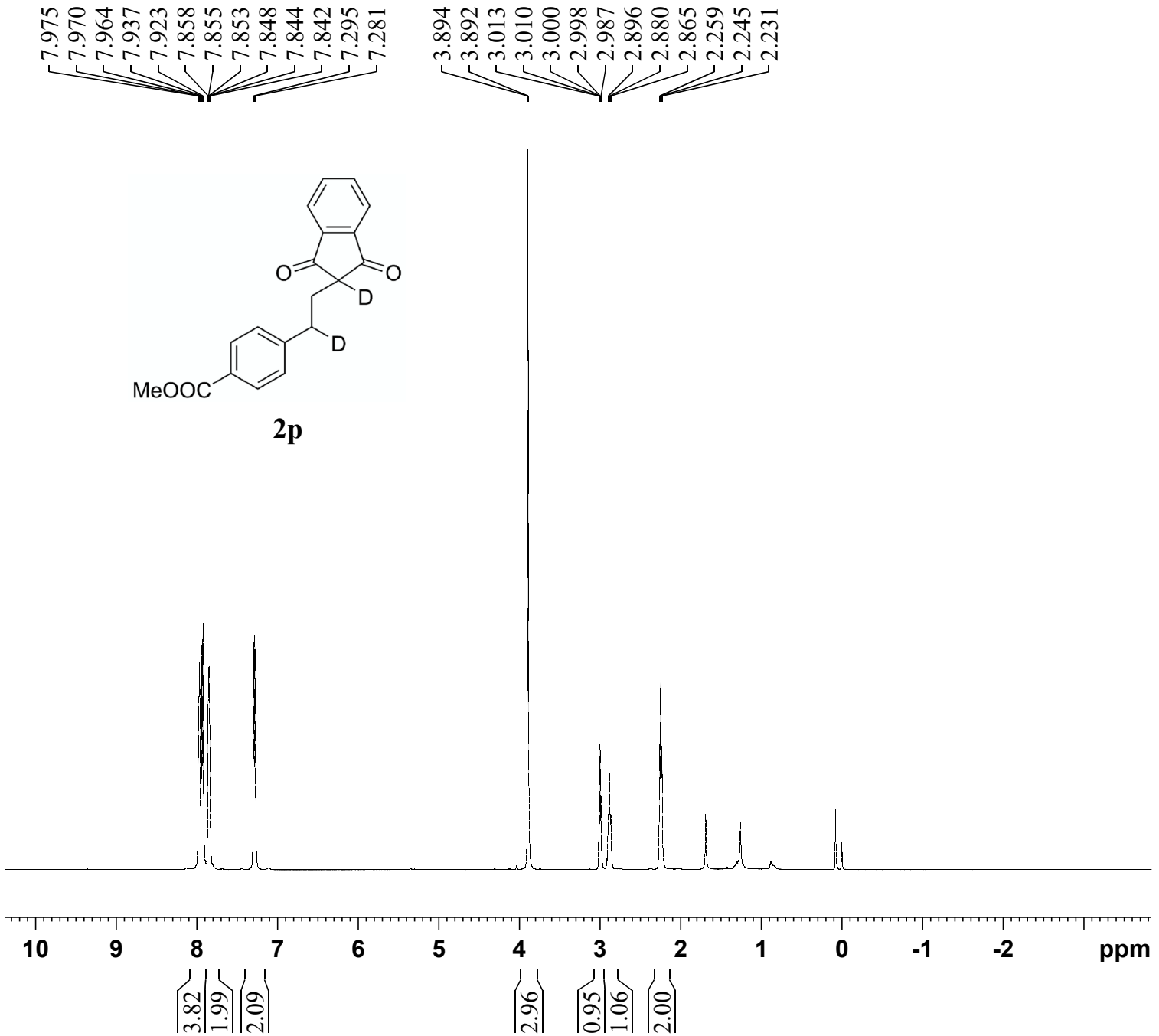
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               217
PROCNO                1

F2 - Acquisition Parameters
Date_          20211228
Time              16.24
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1               13C
P1               10.50 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2            80.00 usec
PLW2        20.00000000 W
PLW12        0.39550999 W
PLW13        0.25312999 W

F2 - Processing parameters
SI                32768
SF          125.7577885 MHz
WDW                EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



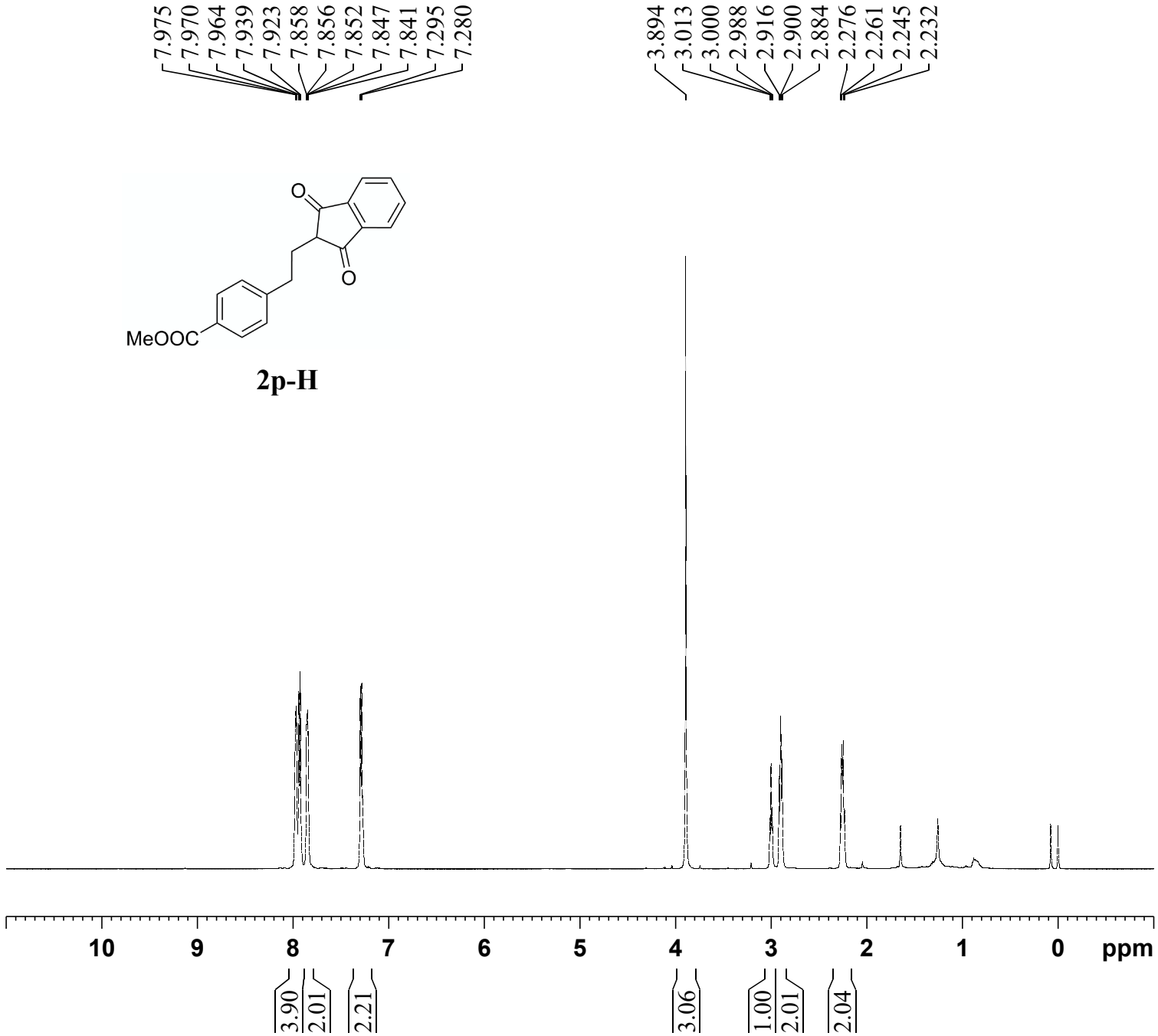

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                133
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211101
Time               10.00
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ             3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300046 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



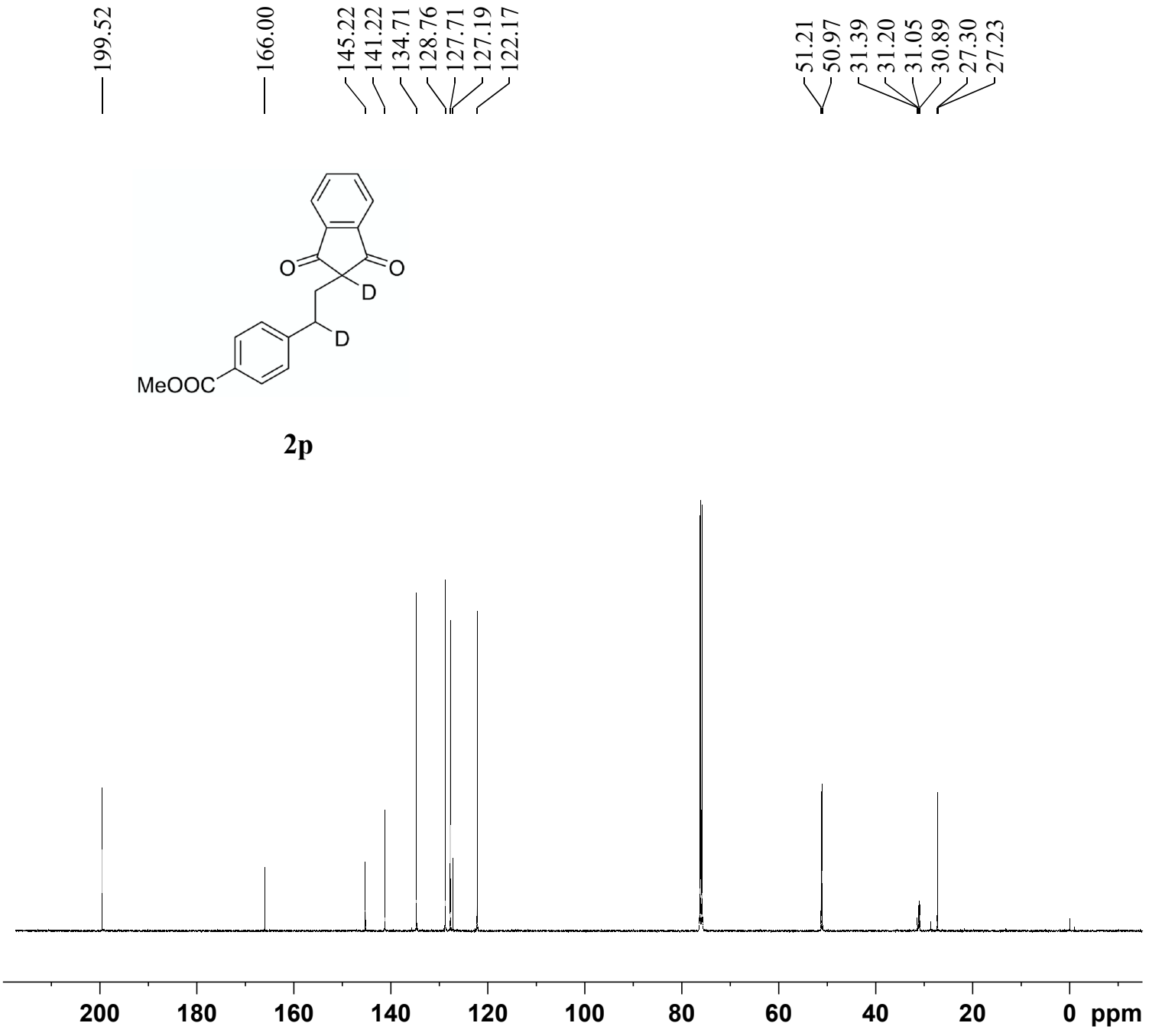

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                163
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211113
Time               15.47
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 49.27
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300064 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2p

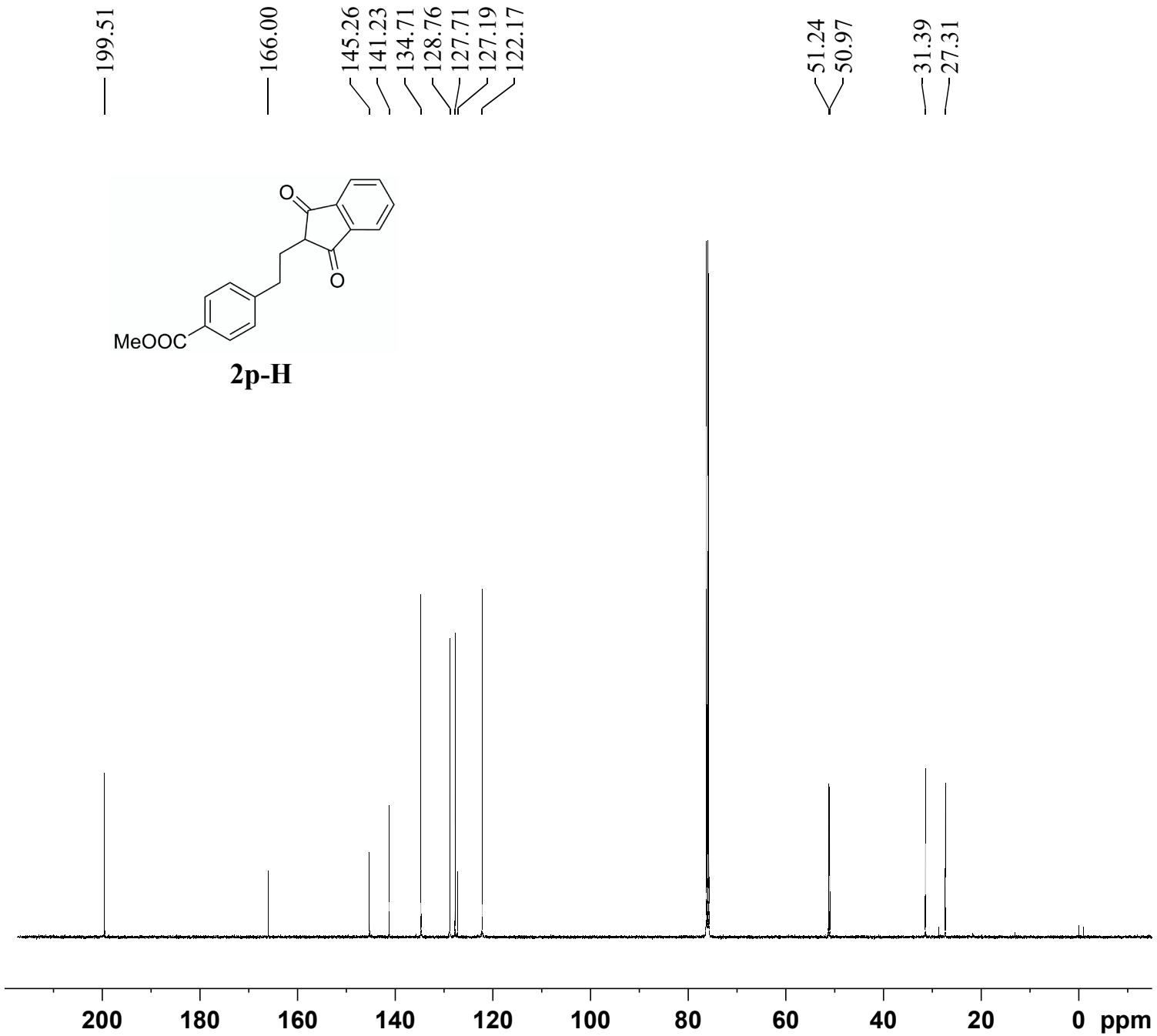
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               136
PROCNO                1

F2 - Acquisition Parameters
Date_          20211102
Time              10.24
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7579178 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



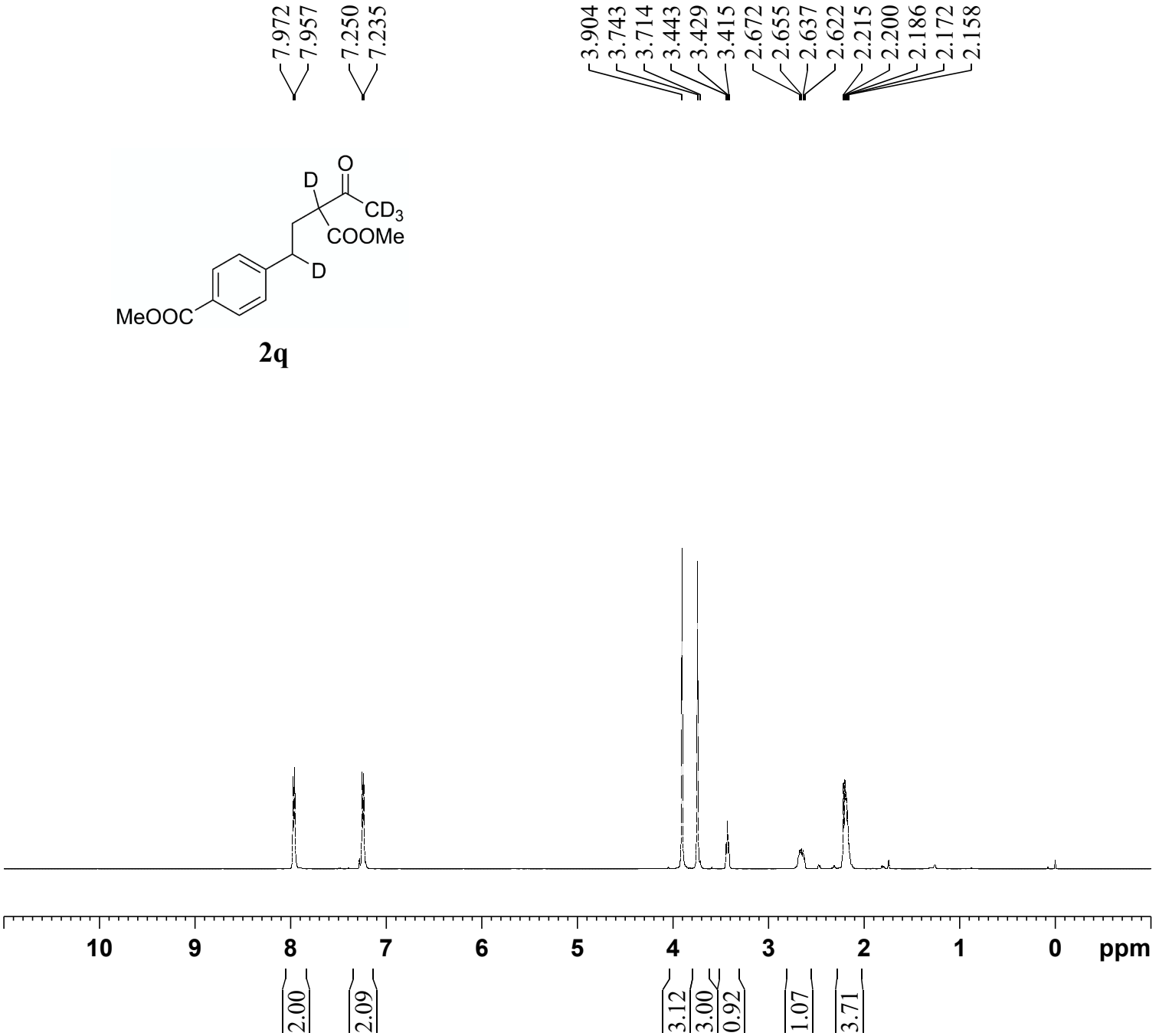

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               164
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time              16.14
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7579178 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2q

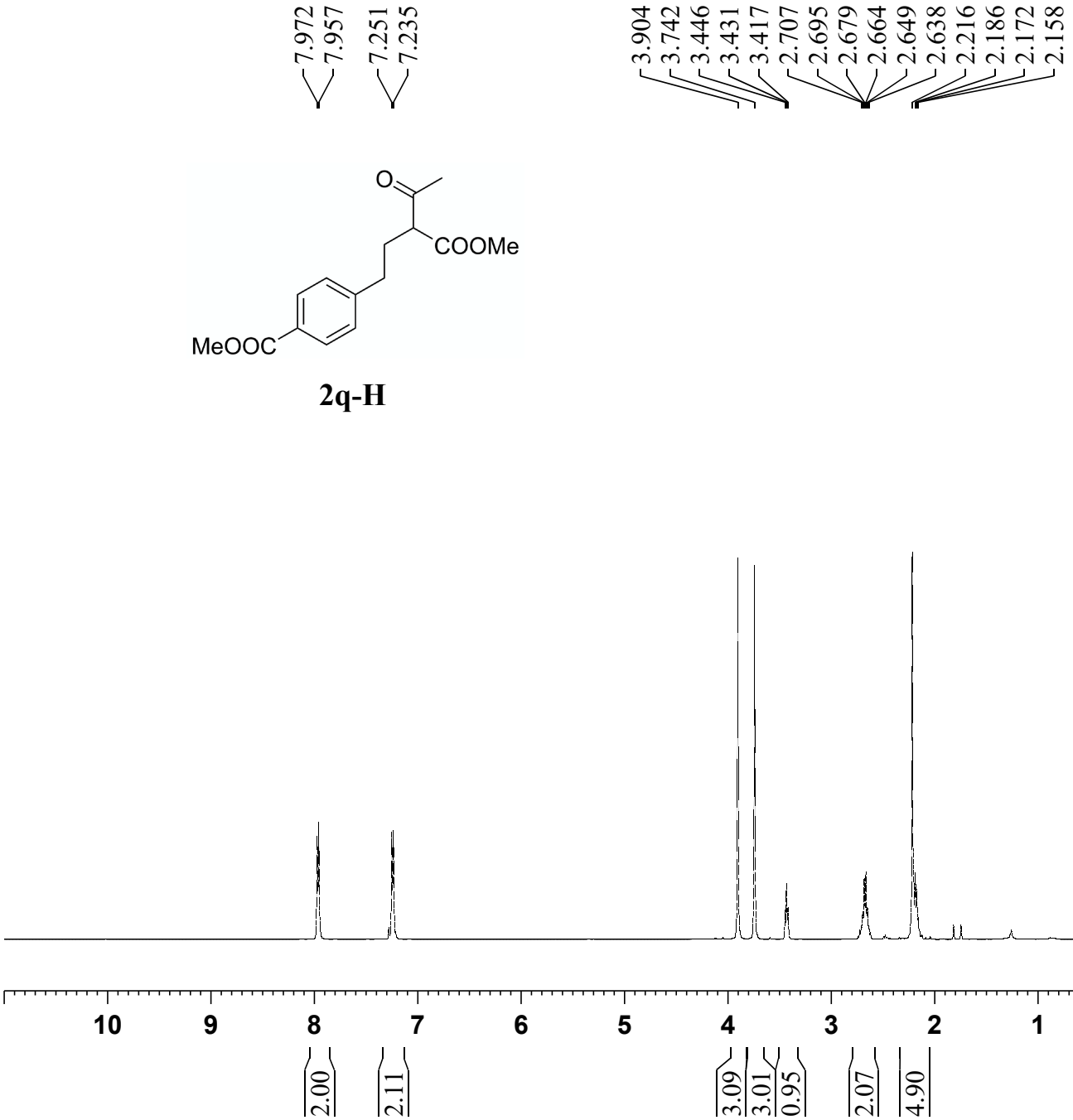
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               157
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               7.02
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1          1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300012 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



2q-H

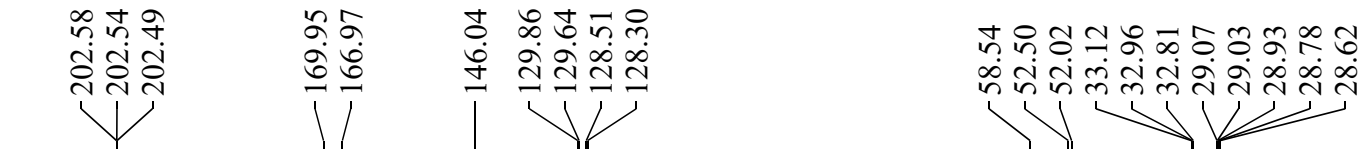
```
Current Data Parameters
NAME        500M-2020xia
EXPNO                153
PROCNO                 1

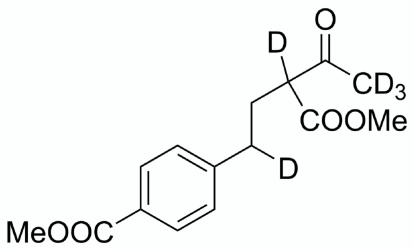
F2 - Acquisition Parameters
Date_           20211113
Time                5.32
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

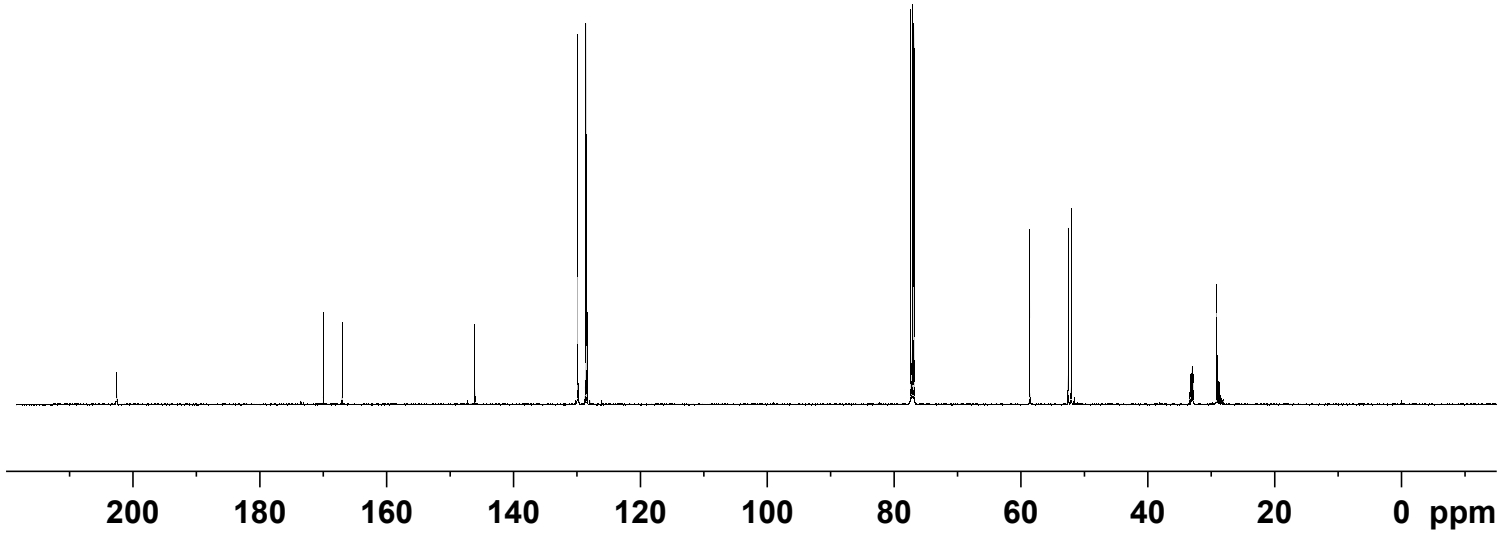
======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300010 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```





2q



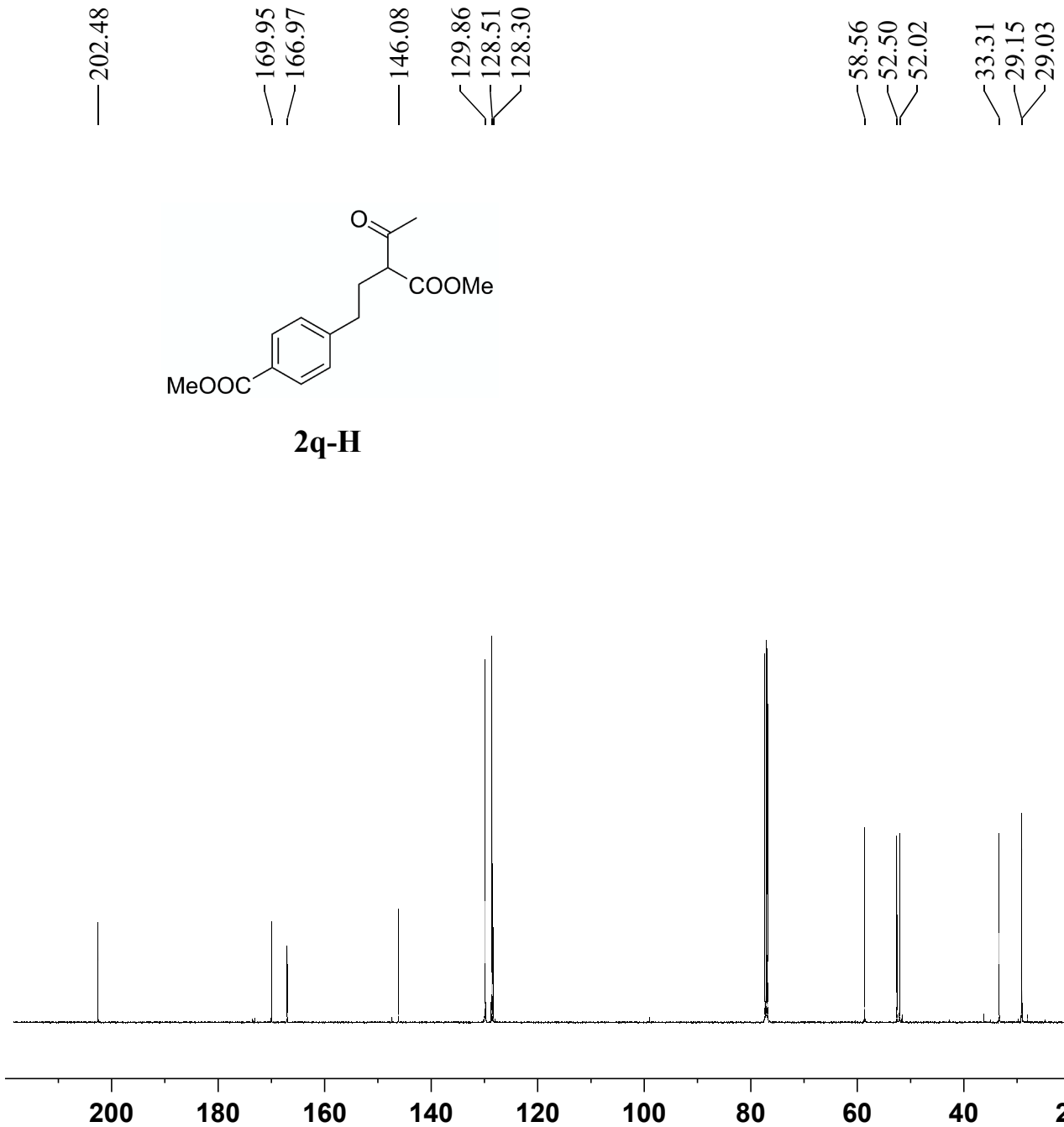

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               158
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               7.29
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2q-H

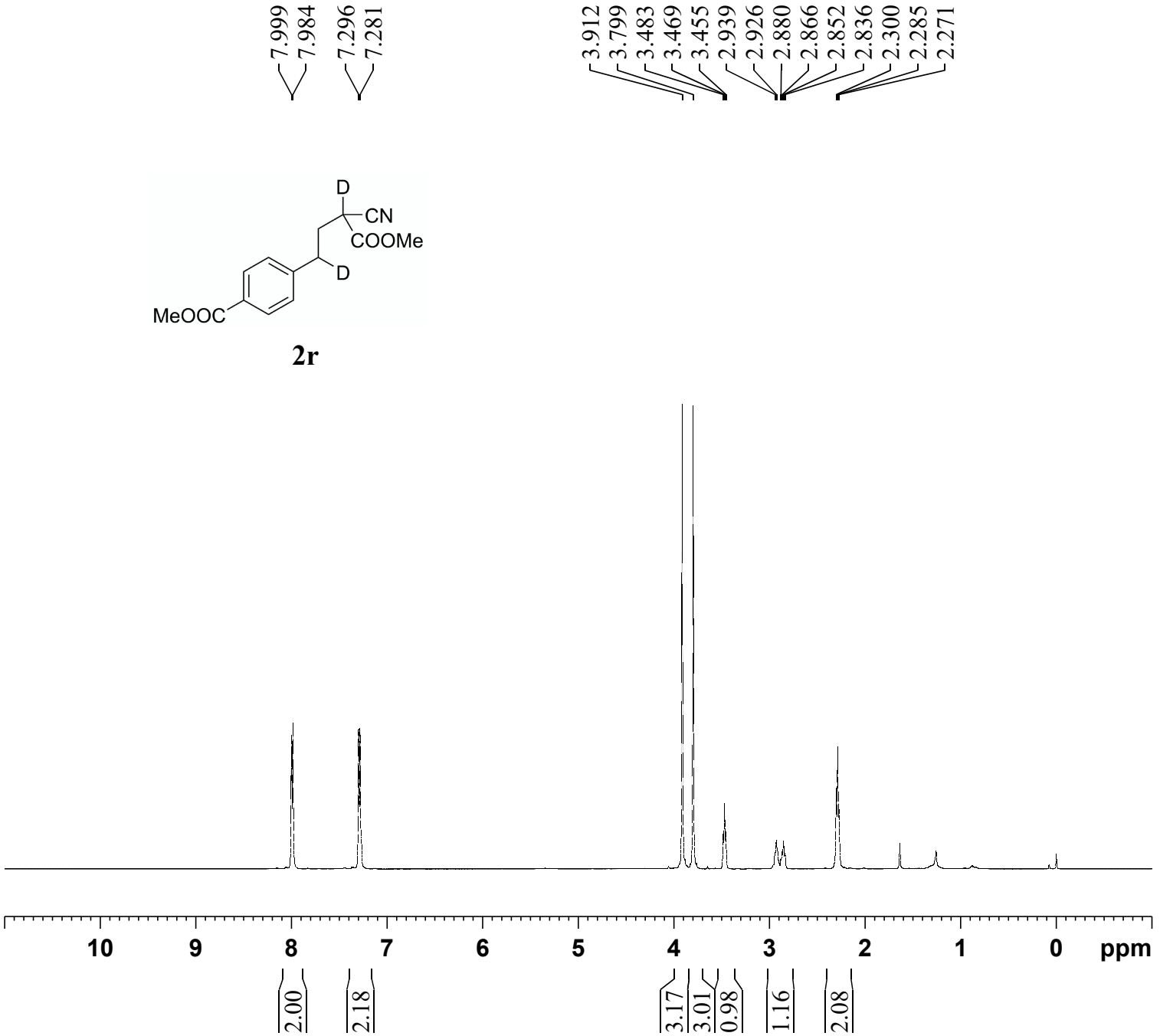
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               154
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               5.59
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2              80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



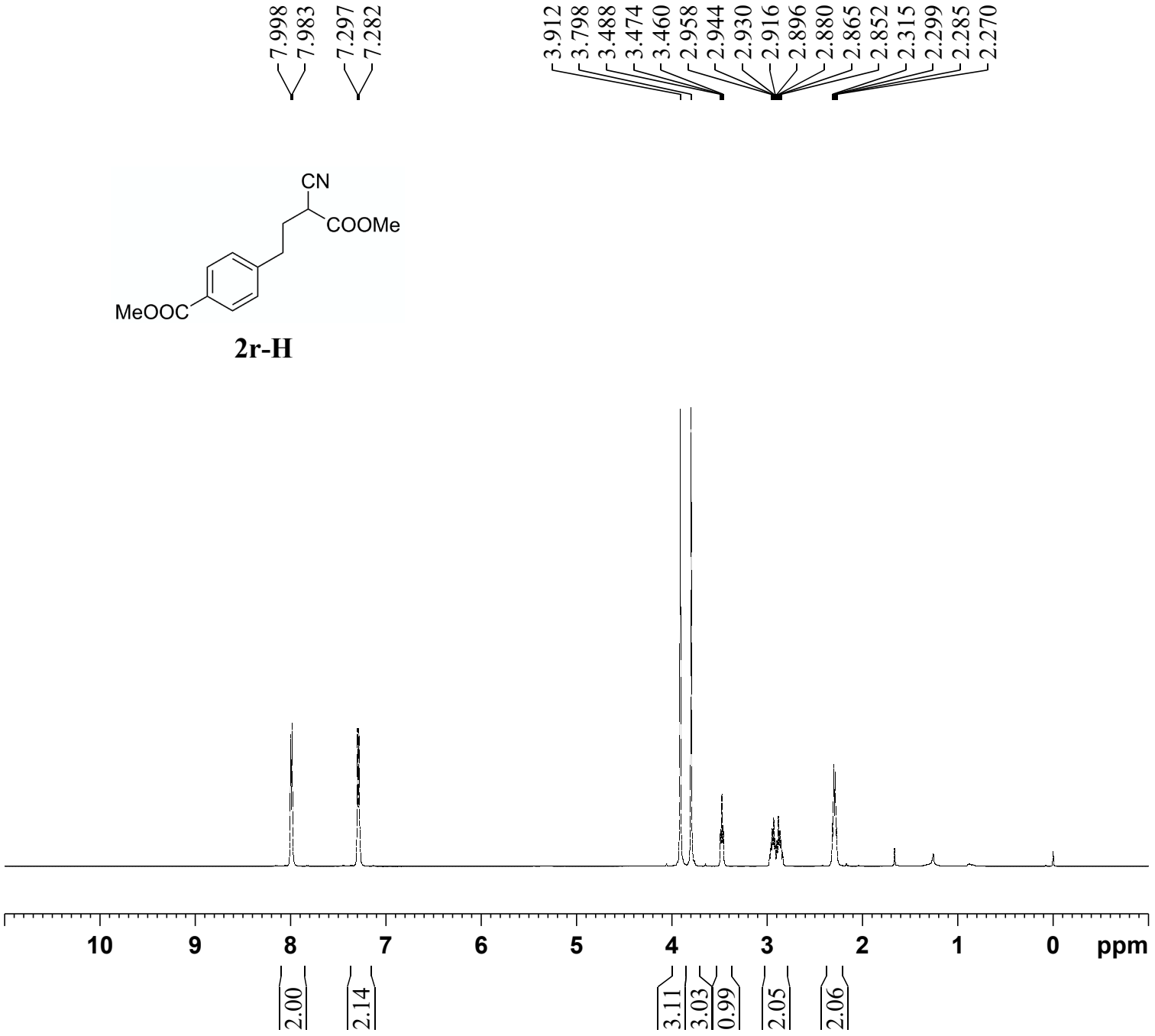

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               161
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               8.04
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                49.27
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                10.59 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300065 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



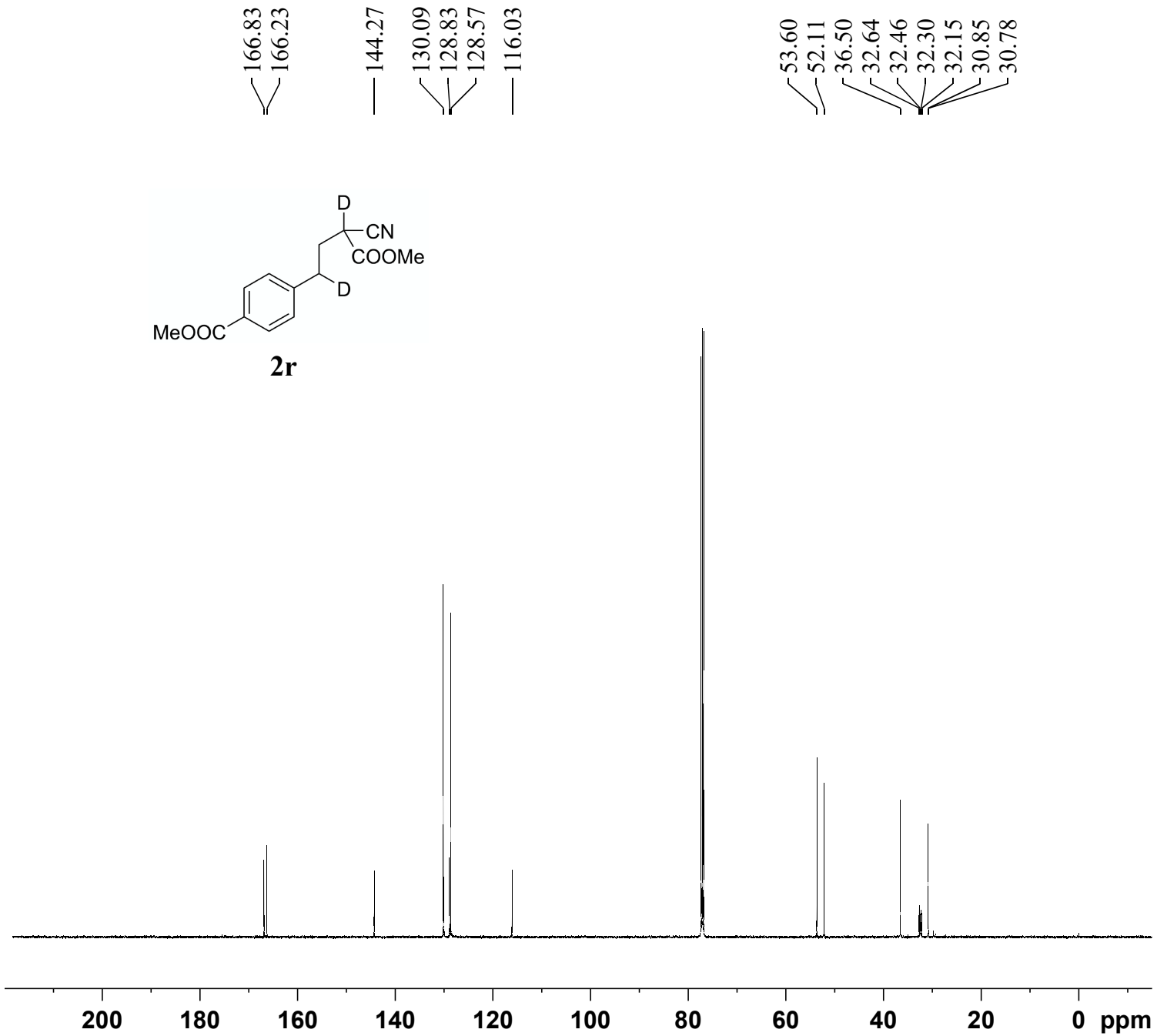

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               159
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               7.33
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                31.72
DW               50.000 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                  1H
P1                10.59 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                  65536
SF          500.1300054 MHz
WDW                    EM
SSB       0
LB                  0.30 Hz
GB        0
PC                  1.00
```



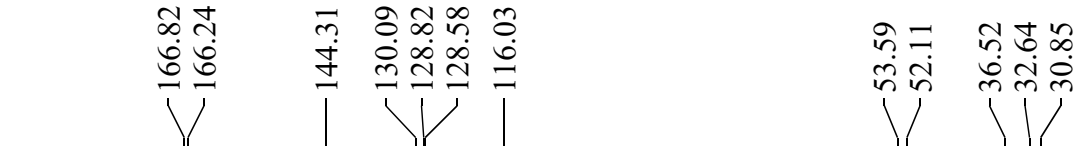

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               162
PROCNO                1

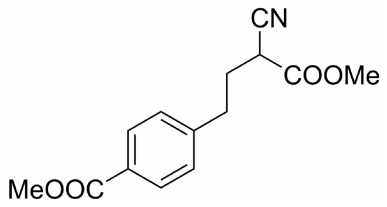
F2 - Acquisition Parameters
Date_          20211113
Time               8.32
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```





2r-H

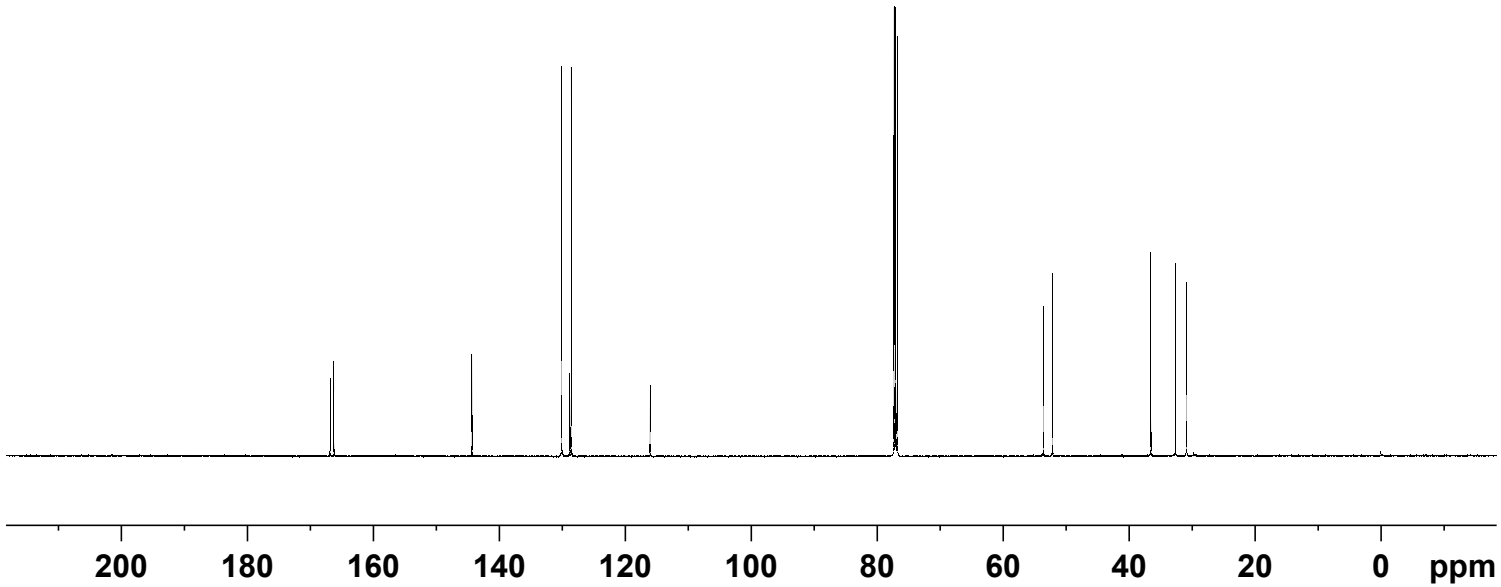
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               160
PROCNO                1

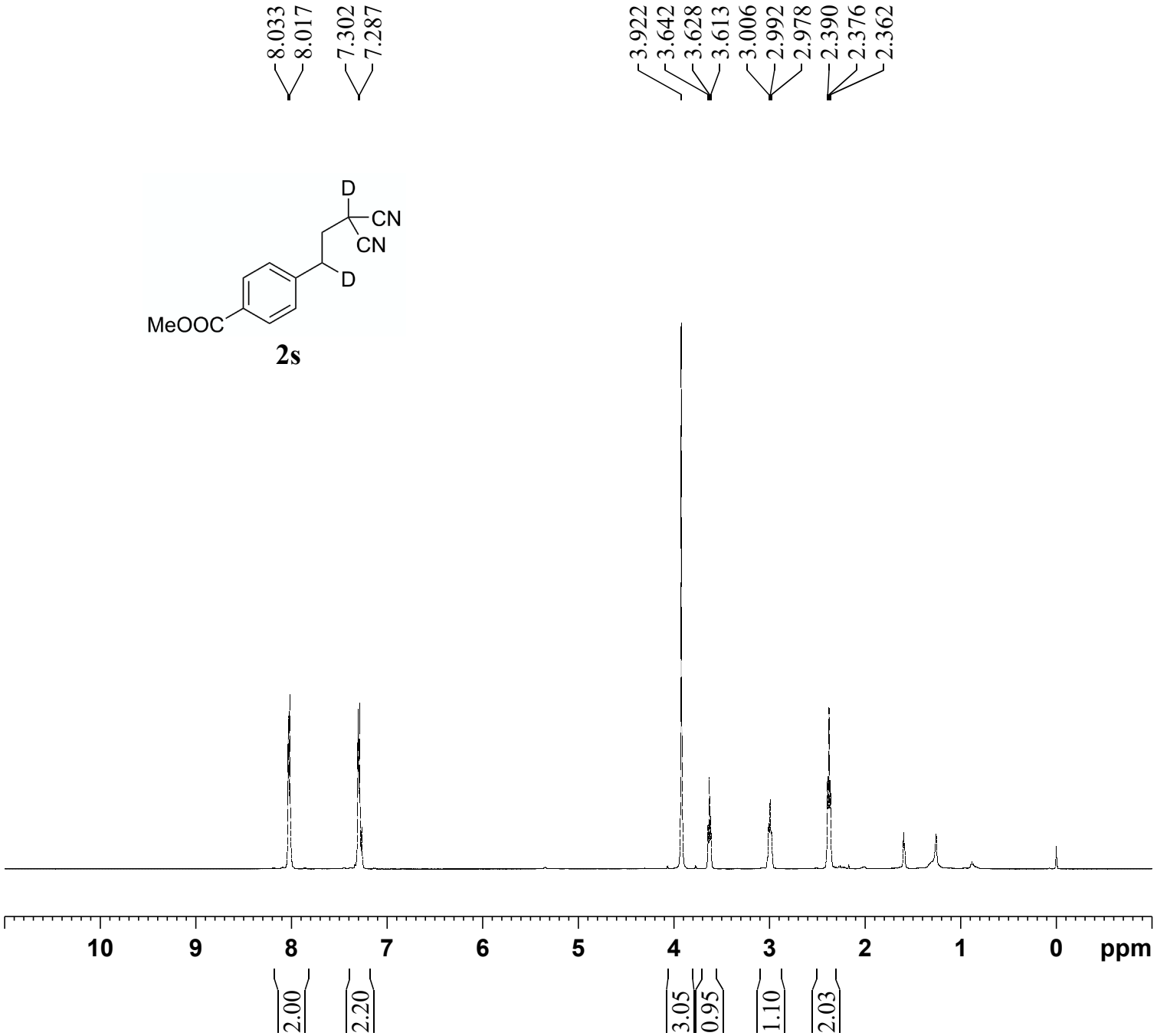
F2 - Acquisition Parameters
Date_          20211113
Time               8.01
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB      0
LB                 1.00 Hz
GB       0
PC                 1.40
```





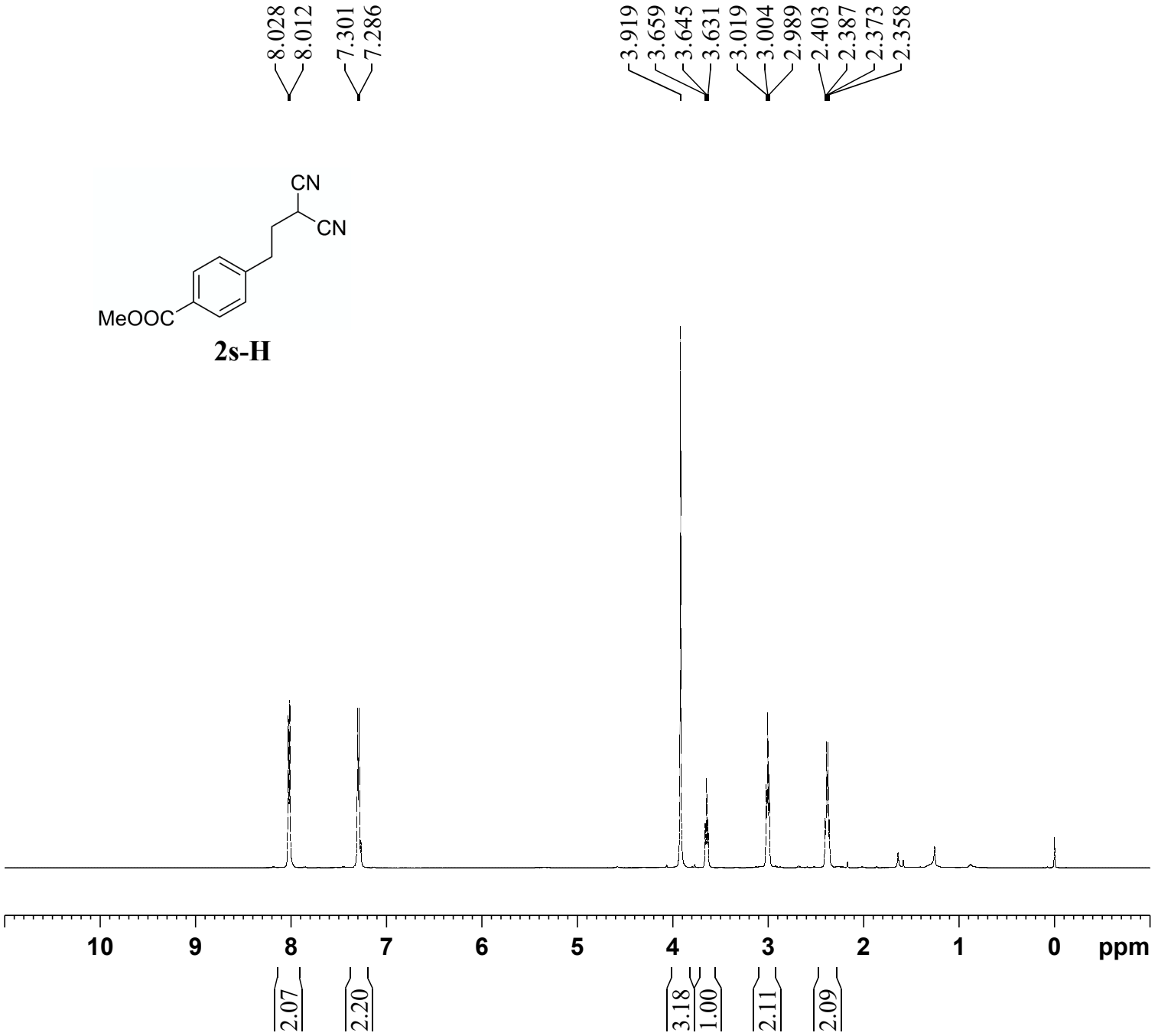

```
Current Data Parameters
NAME        500M-2020xia
EXPNO                145
PROCNO                 1

F2 - Acquisition Parameters
Date_           20211113
Time                3.30
INSTRUM            spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 62.06
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1         20.00000000 W

======== CHANNEL f2 ========
SFO2         500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF         500.1300088 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



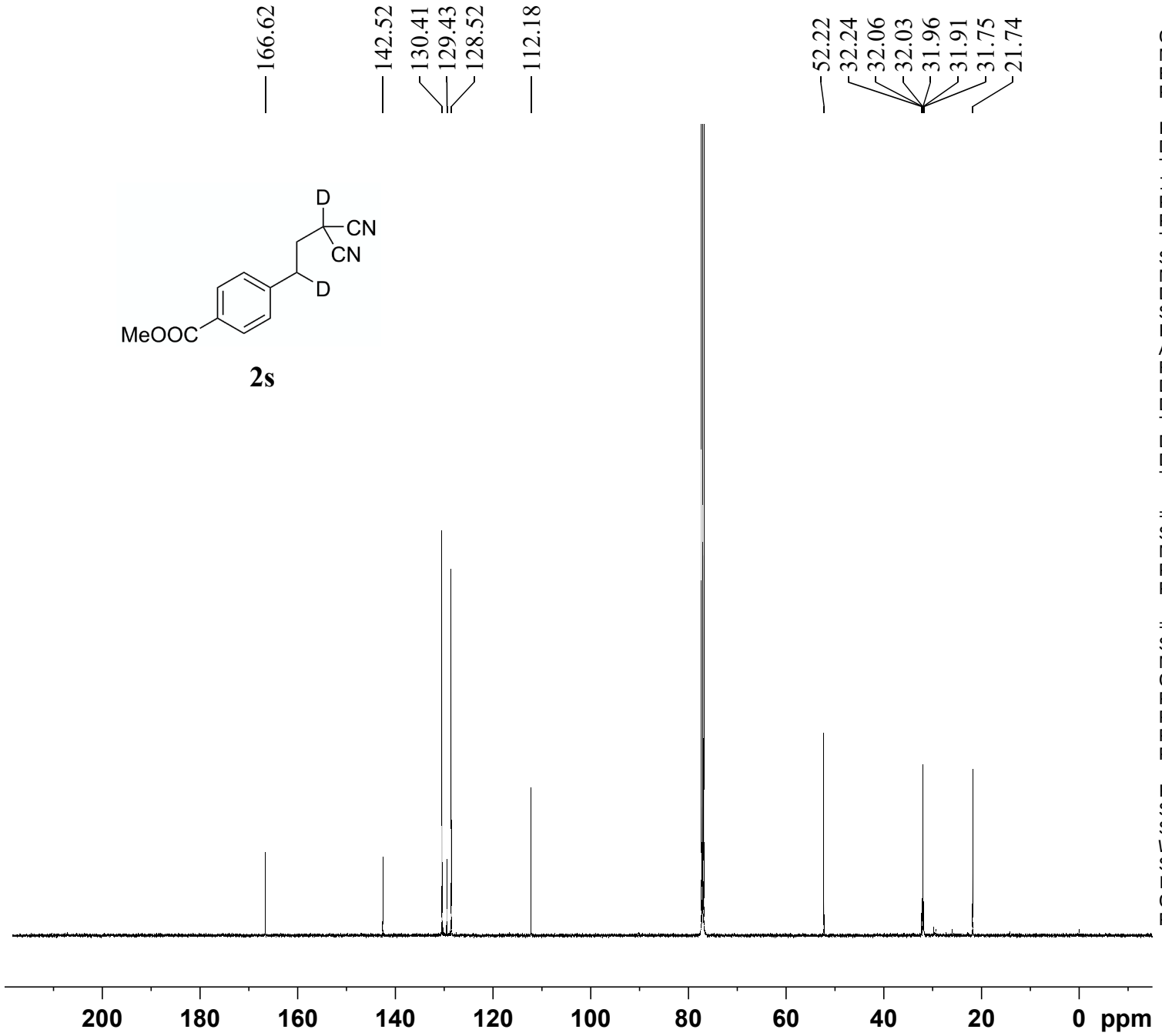

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               143
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               2.59
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES         0.152588 Hz
AQ            3.2767999 sec
RG                 31.72
DW                50.000 usec
DE                 6.50 usec
TE                298.2 K
D1           1.00000000 sec
D11      0 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        500.1330885 MHz
NUC1                   1H
P1                 10.59 usec
PLW1        20.00000000 W

======== CHANNEL f2 ========
SFO2        500.1330885 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          500.1300076 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



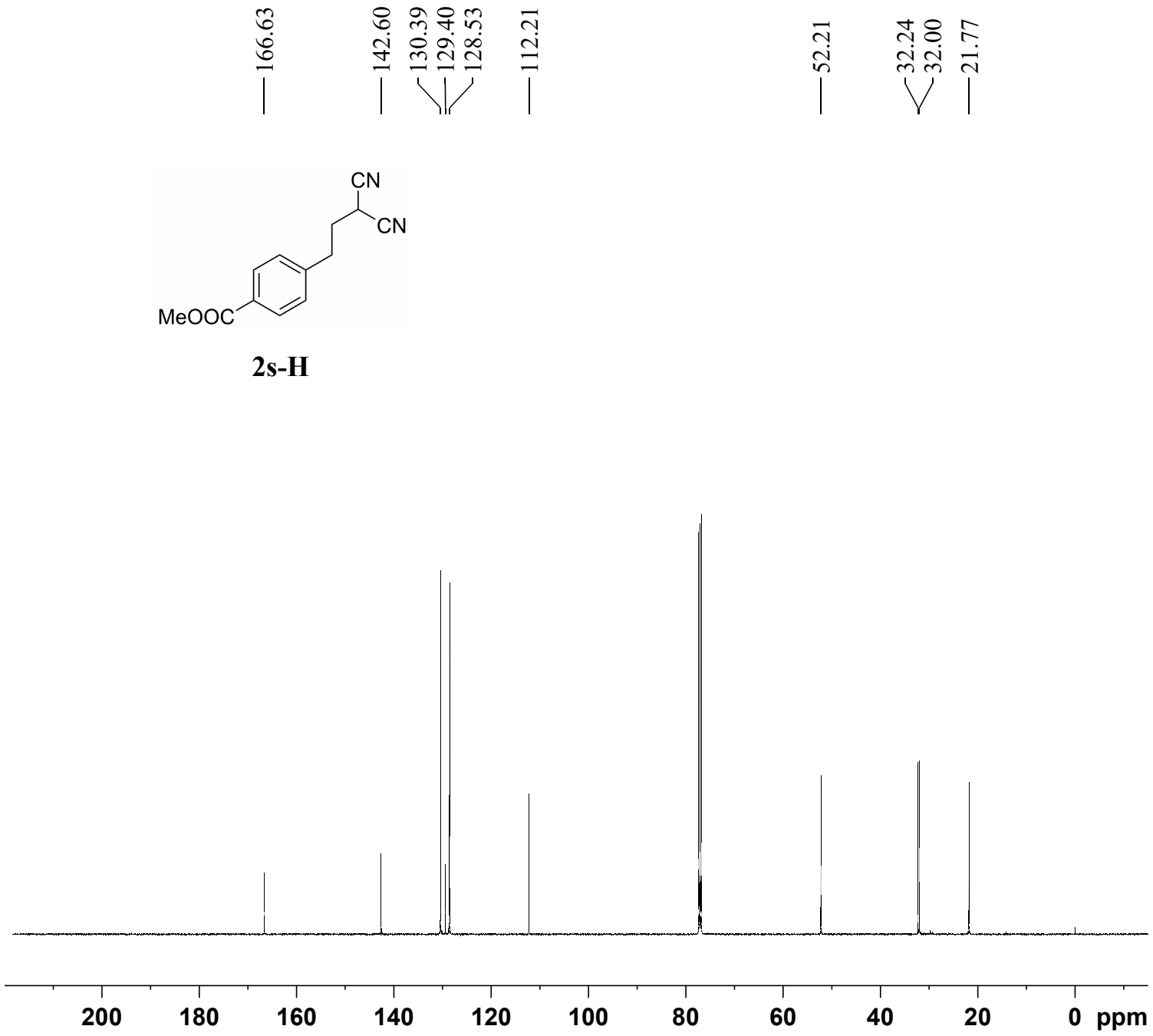

```
Current Data Parameters
NAME       500M-2020xia
EXPNO               146
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               3.58
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577885 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



2s-H

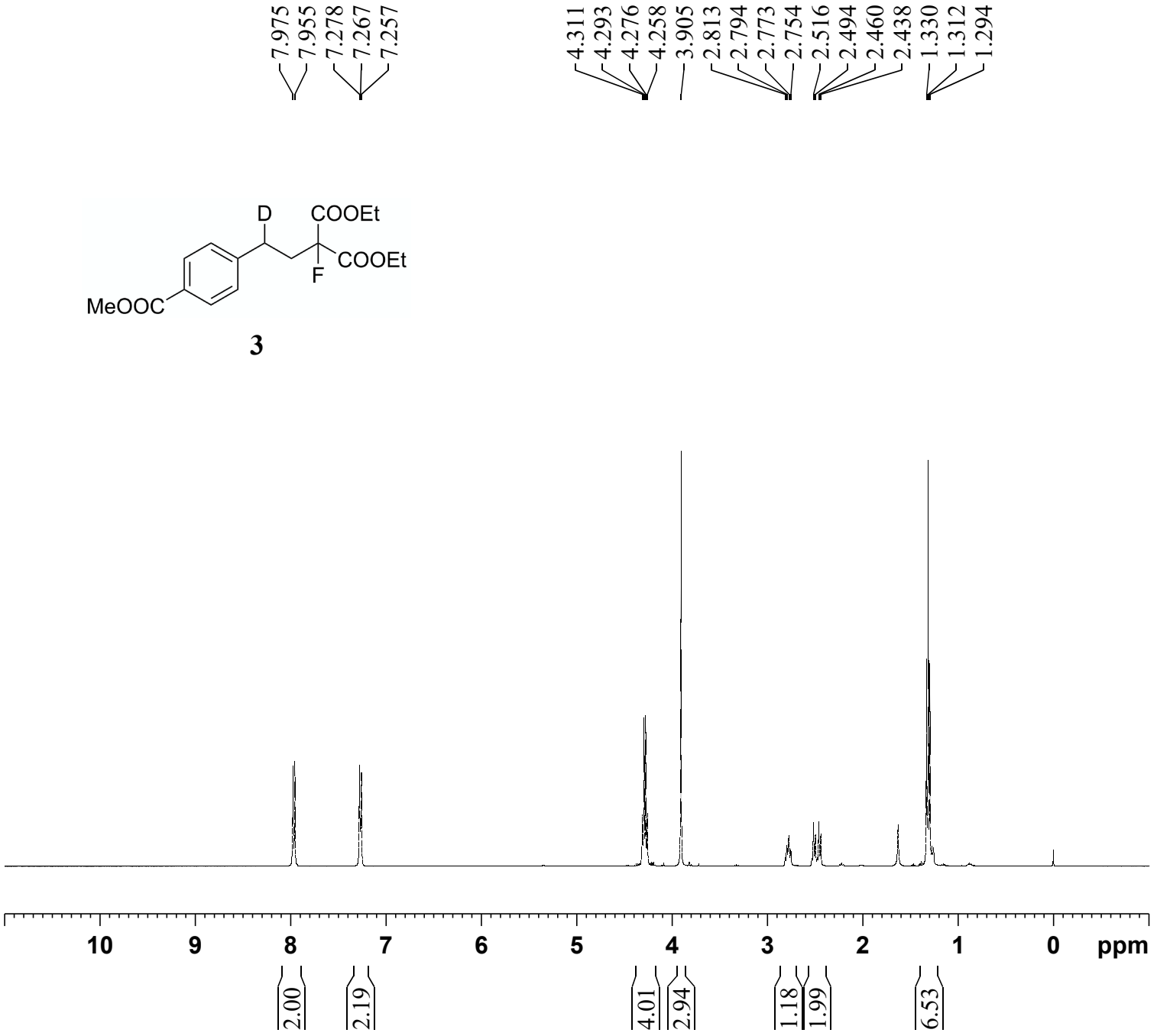
```
Current Data Parameters
NAME       500M-2020xia
EXPNO               144
PROCNO                1

F2 - Acquisition Parameters
Date_          20211113
Time               3.27
INSTRUM           spect
PROBHD   5 mm CPPBBO BB
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG               192.89
DW               16.800 usec
DE               18.00 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        125.7703637 MHz
NUC1                13C
P1                 9.80 usec
PLW1        57.00000000 W

======== CHANNEL f2 ========
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2        20.00000000 W
PLW12        0.35778001 W
PLW13        0.22898000 W

F2 - Processing parameters
SI                 32768
SF          125.7577890 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



3

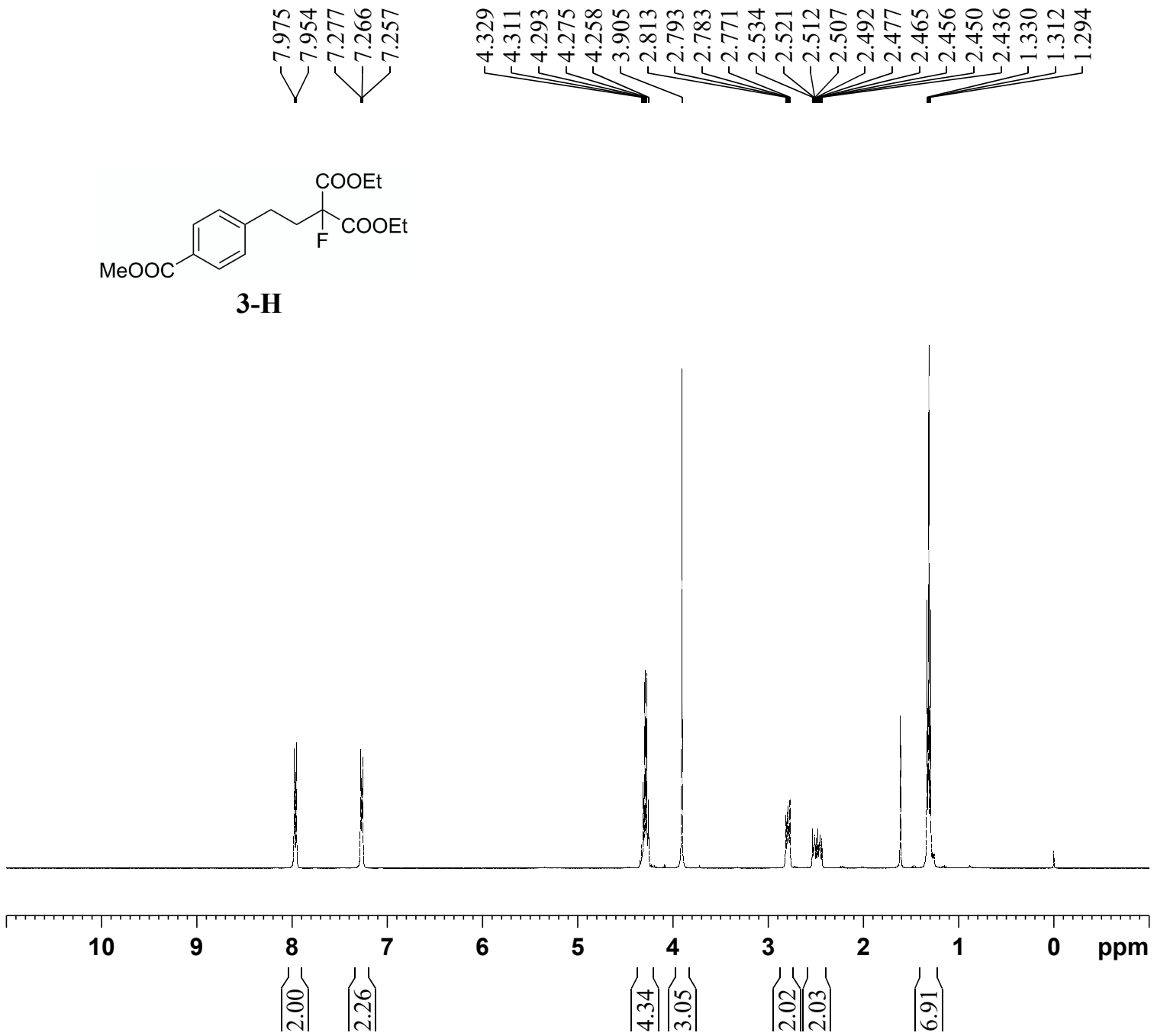
```
Current Data Parameters
NAME          400M-2022
EXPNO                15
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               7.15
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               116.67
DW               62.400 usec
DE                6.50 usec
TE               300.9 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                65536
SF          400.2400066 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



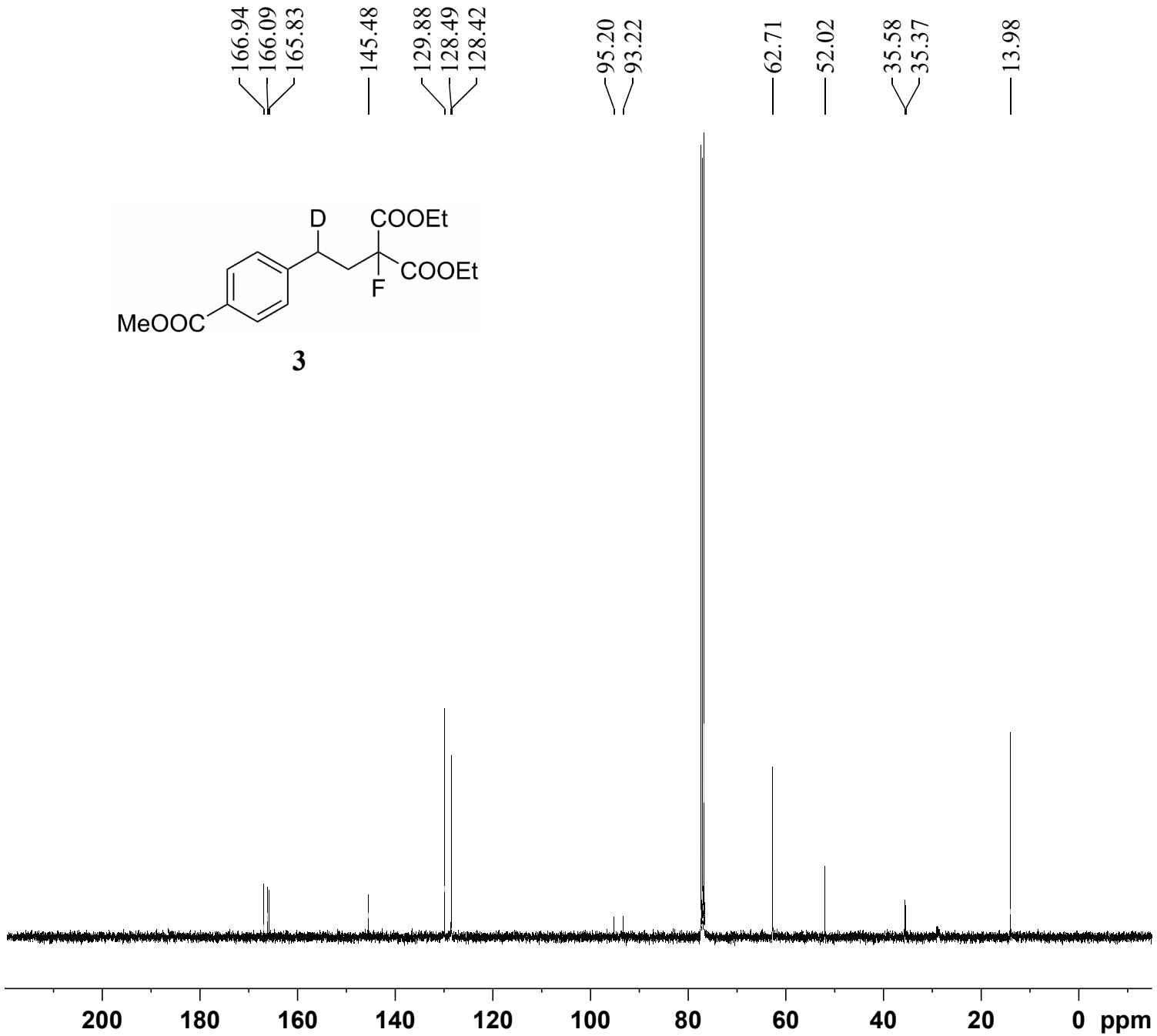

```
Current Data Parameters
NAME          400M-2022
EXPNO                17
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               7.48
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES        0.244532 Hz
AQ            2.0447233 sec
RG               206.33
DW               62.400 usec
DE                6.50 usec
TE               301.0 K
D1          2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                65536
SF          400.2400072 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



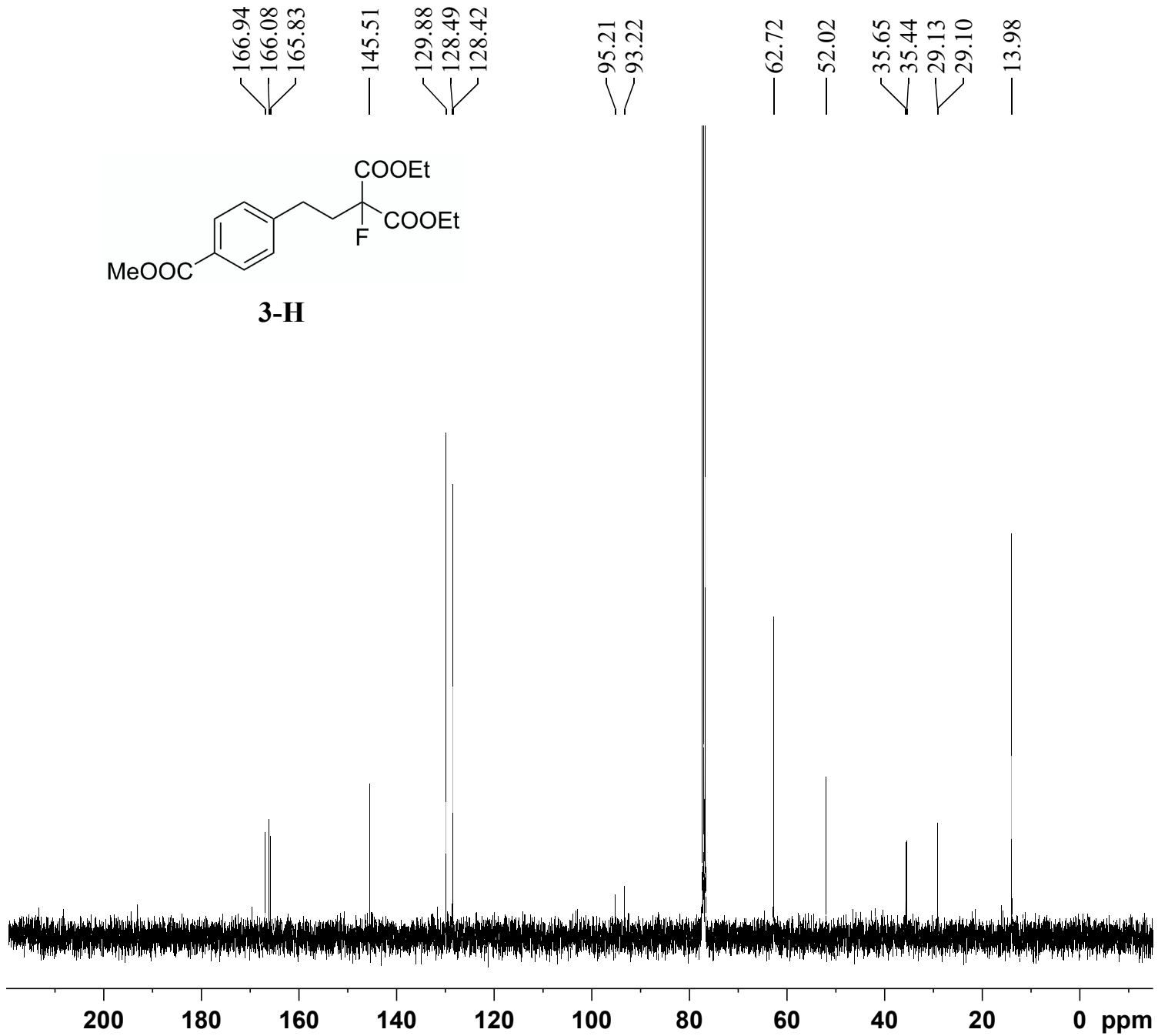

```
Current Data Parameters
NAME          400M-2022
EXPNO                16
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               7.45
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               301.7 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



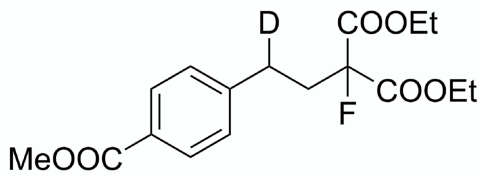

```
Current Data Parameters
NAME          400M-2022
EXPNO                18
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               8.03
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               301.8 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



3

-167.44

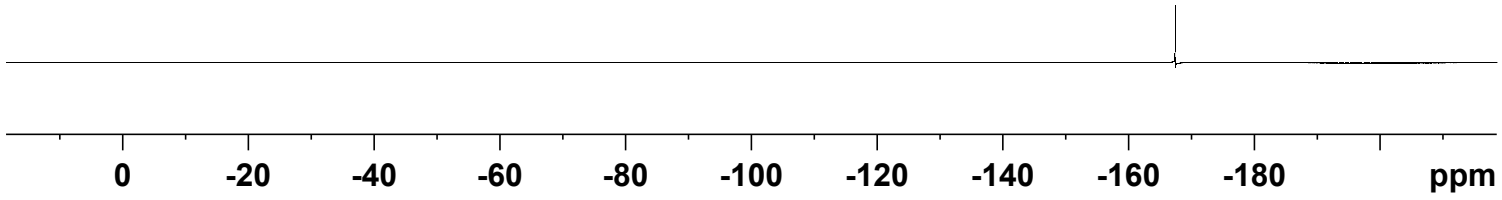
```
Current Data Parameters
NAME         400M-2023-F
EXPNO                  7
PROCNO                 1

F2 - Acquisition Parameters
Date_           20230506
Time               19.07
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD                131072
SOLVENT             CDCl3
NS                     16
DS                      4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                  19F
P1                 14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                  1H
CPDPRG[2         waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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



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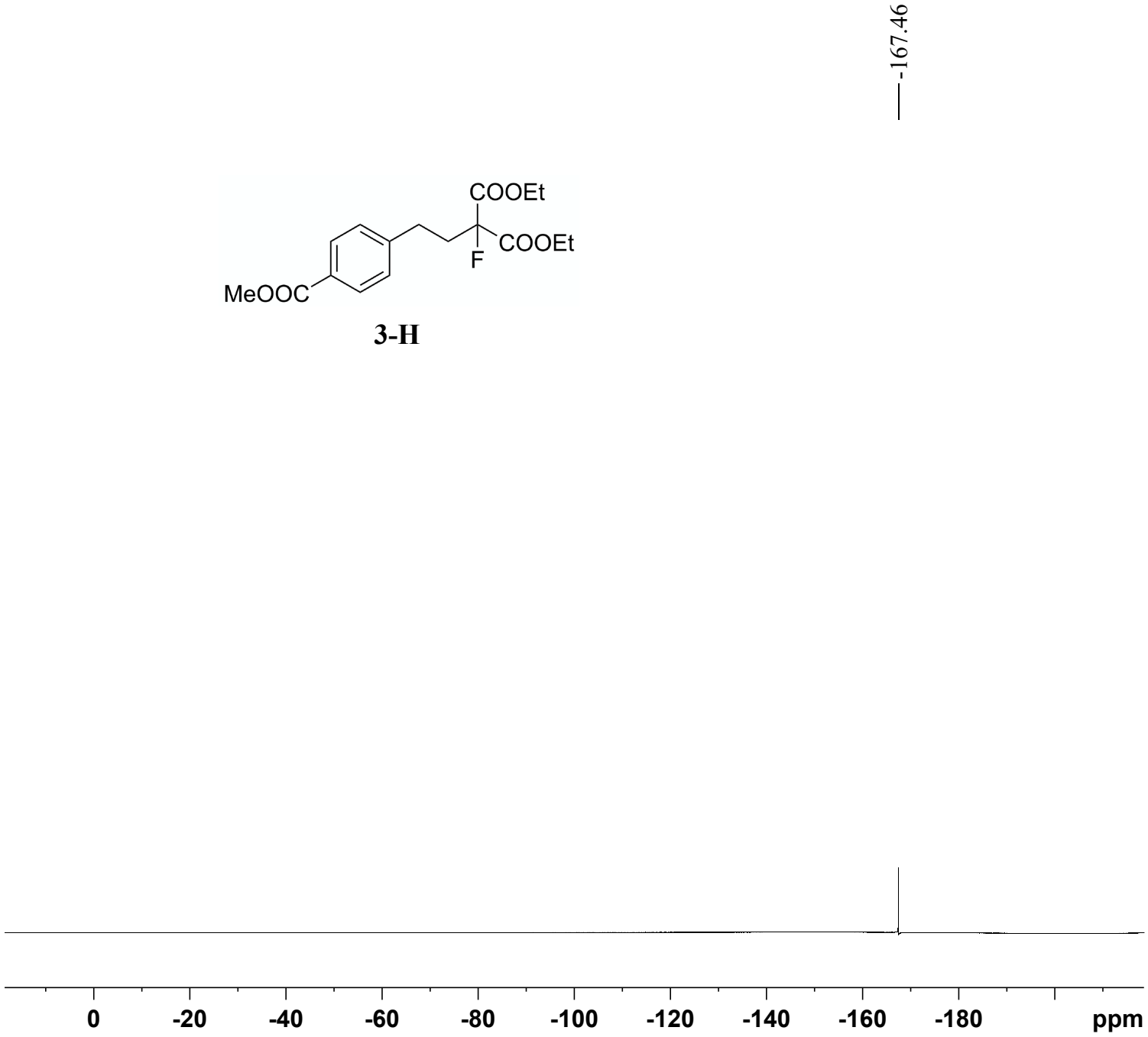


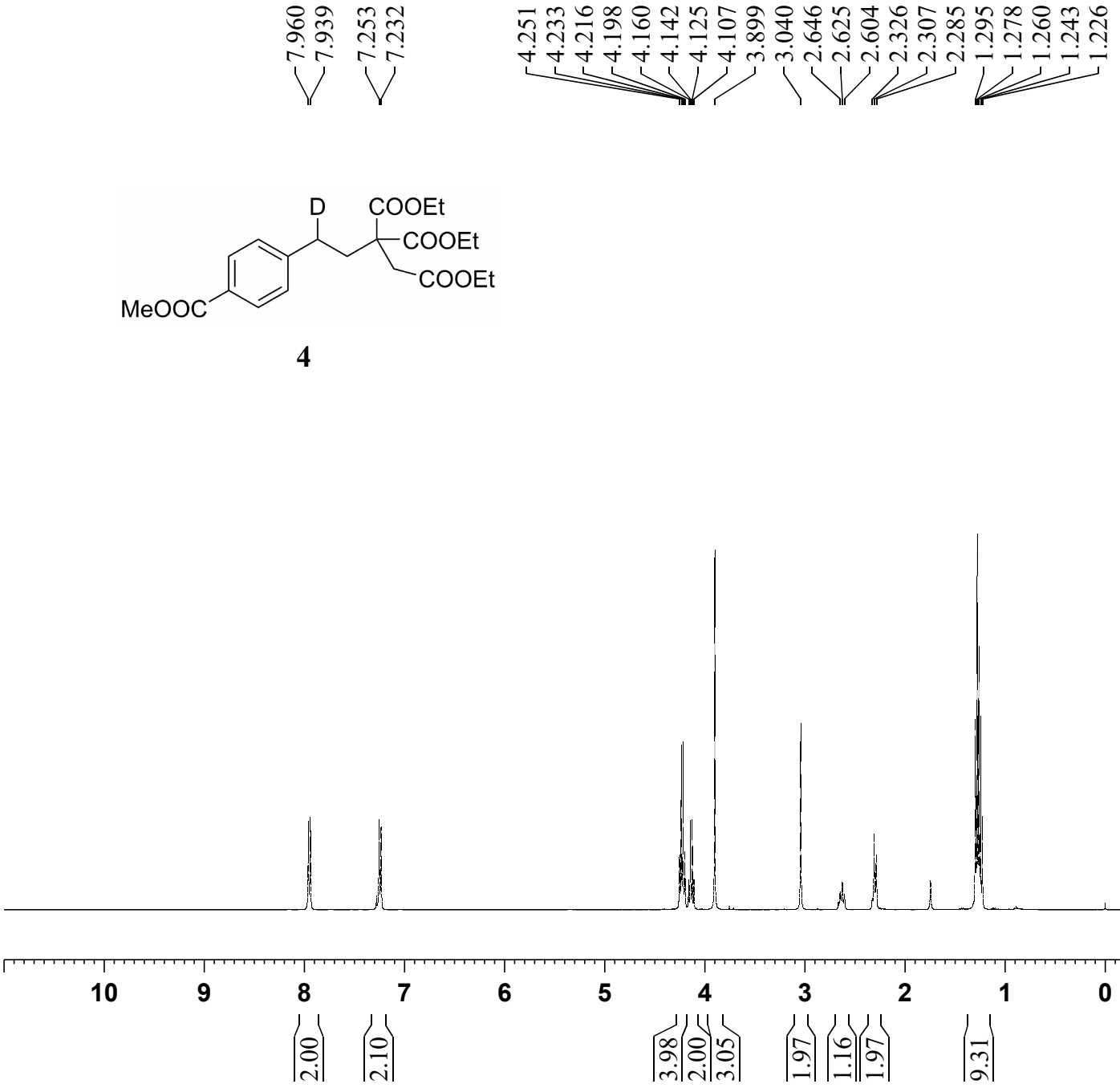

```
Current Data Parameters
NAME         400M-2023-F
EXPNO                  6
PROCNO                 1

F2 - Acquisition Parameters
Date_           20230506
Time               19.05
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG       zgfhigqn.2
TD                131072
SOLVENT             CDCl3
NS                     16
DS                      4
SWH            89285.711 Hz
FIDRES          0.681196 Hz
AQ             0.7340032 sec
RG                206.33
DW                 5.600 usec
DE                 6.50 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         376.5642094 MHz
NUC1                  19F
P1                 14.50 usec
PLW1         17.98900032 W

======== CHANNEL f2 ========
SFO2         400.2416010 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2         12.00000000 W
PLW12         0.30294999 W
PLW13         0.24539000 W

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



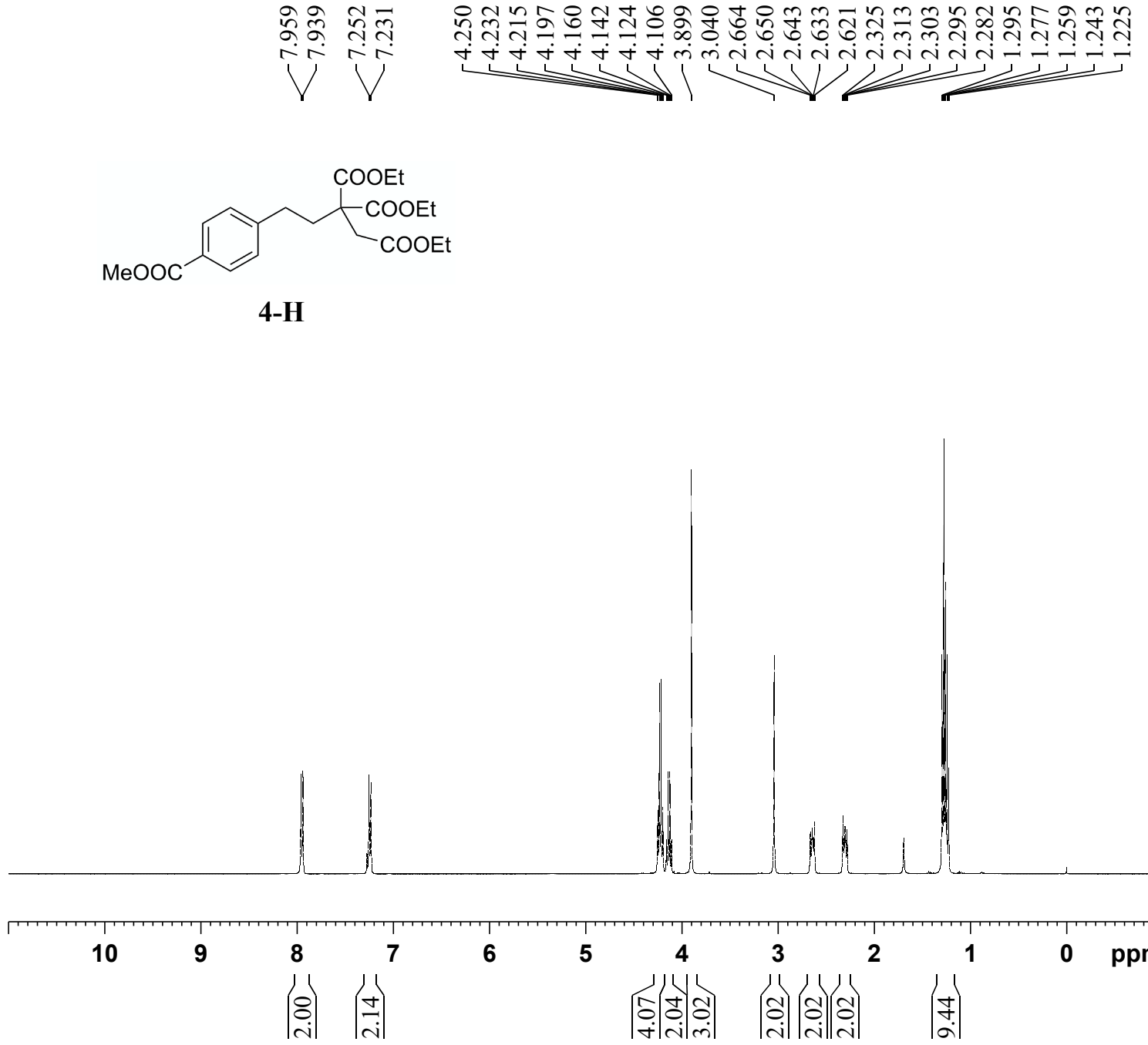

```
Current Data Parameters
NAME          400M-2022
EXPNO                19
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               8.07
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG                73.9
DW               62.400 usec
DE                6.50 usec
TE               301.2 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400021 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



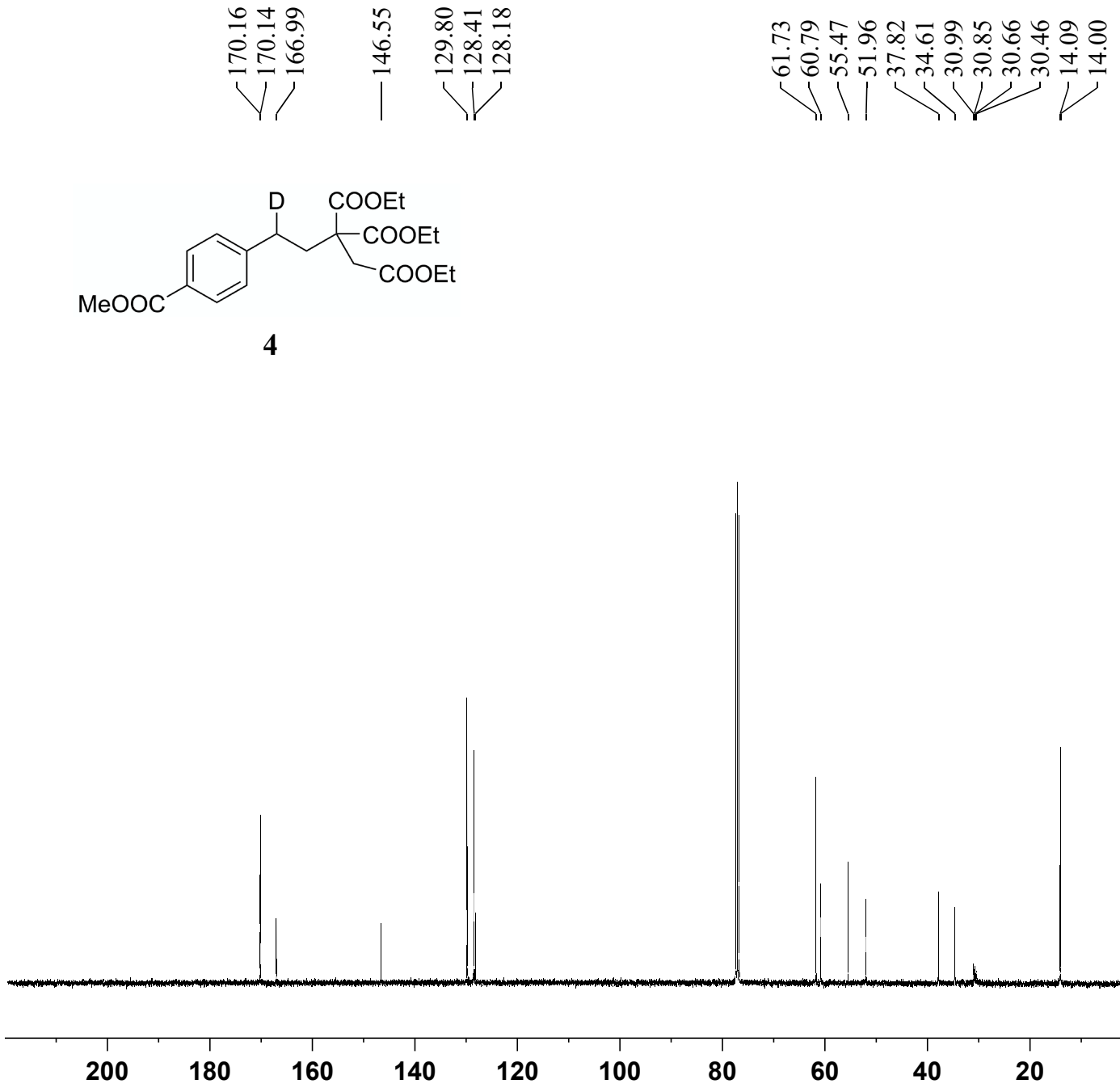

```
Current Data Parameters
NAME          400M-2022
EXPNO                21
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               8.40
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG                80.72
DW               62.400 usec
DE                6.50 usec
TE               301.2 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400042 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



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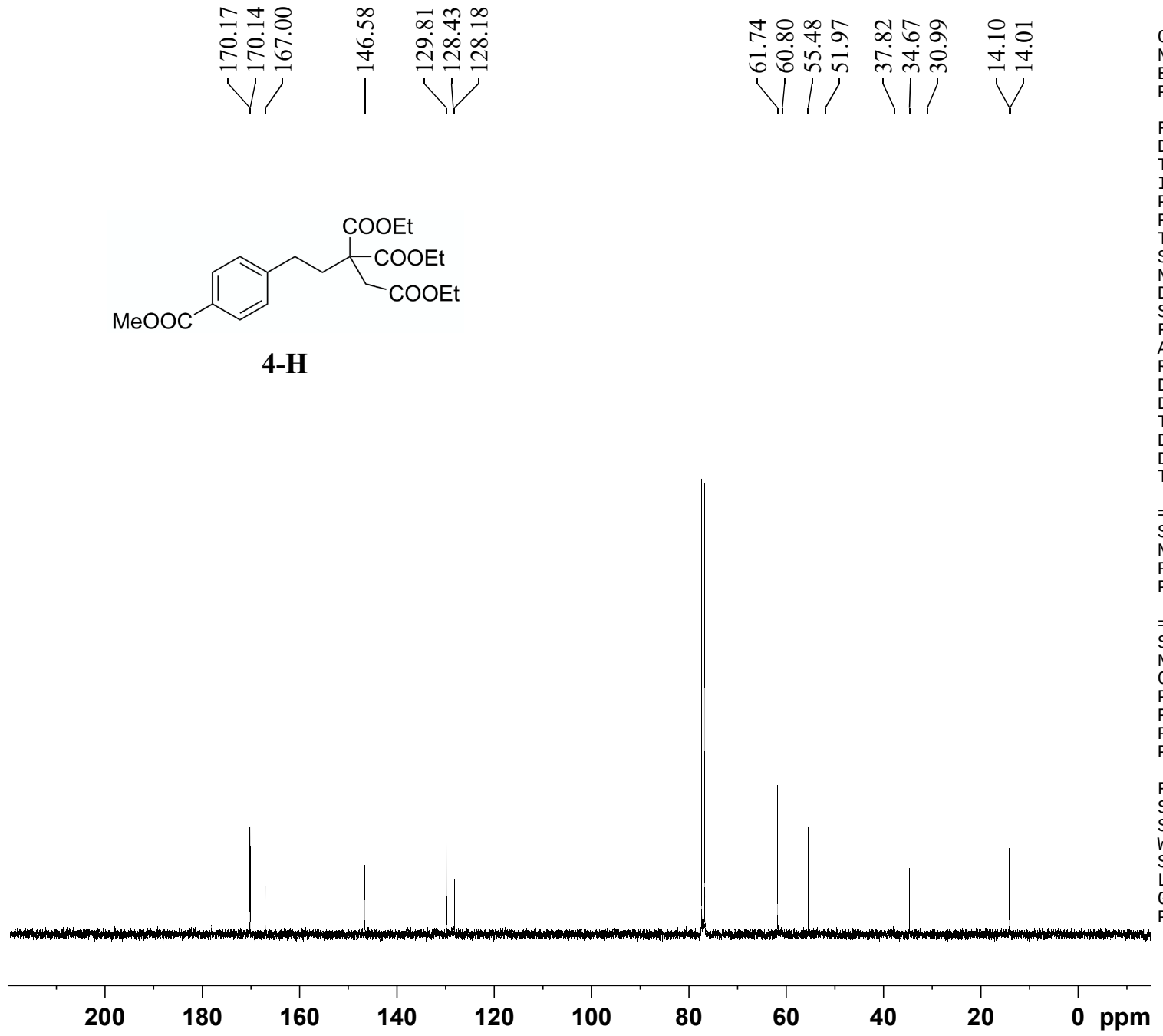
```
Current Data Parameters
NAME          400M-2022
EXPNO                20
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               8.37
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               302.0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



4-H

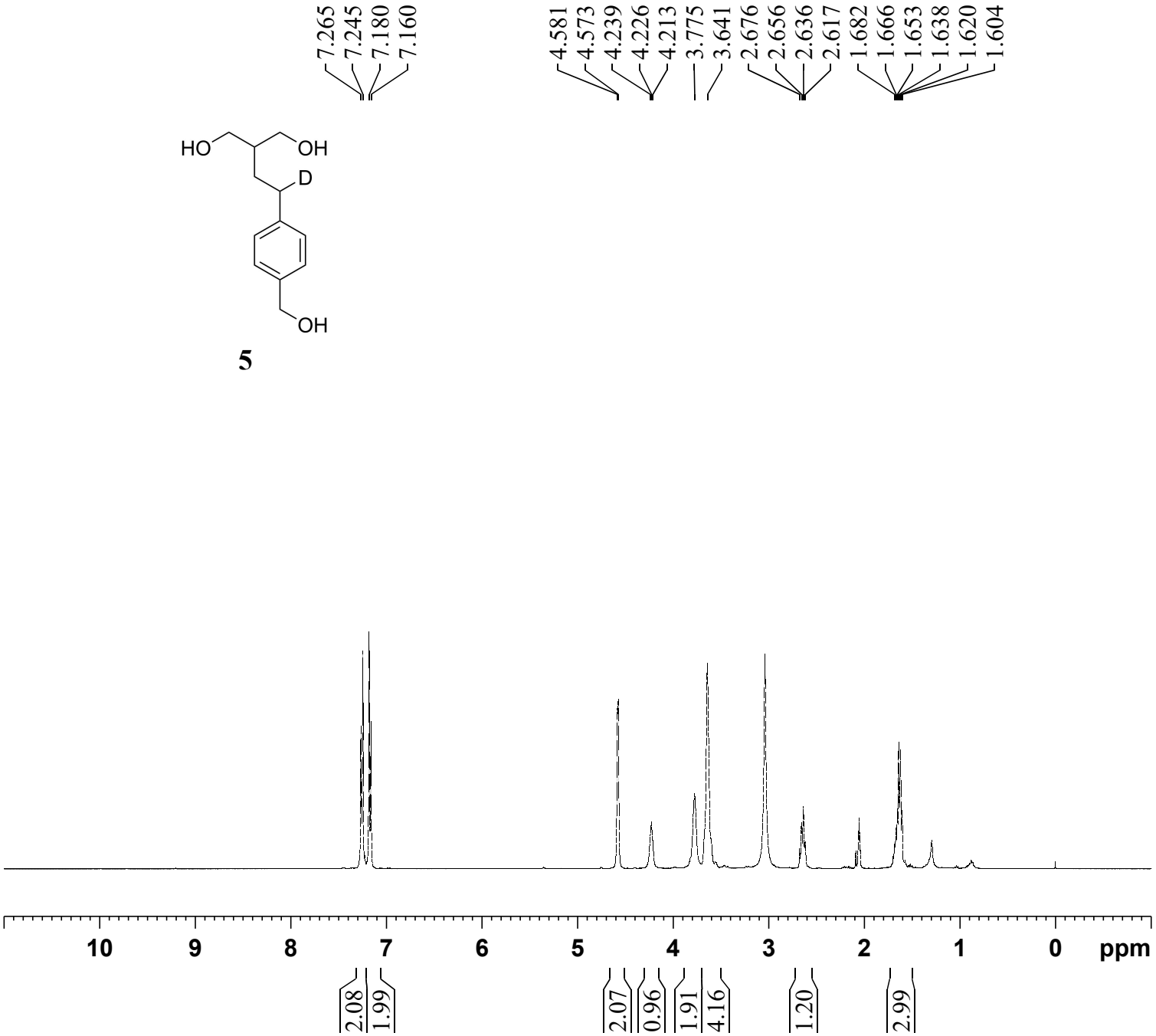
```
Current Data Parameters
NAME          400M-2022
EXPNO                22
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               8.52
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  201
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.8 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



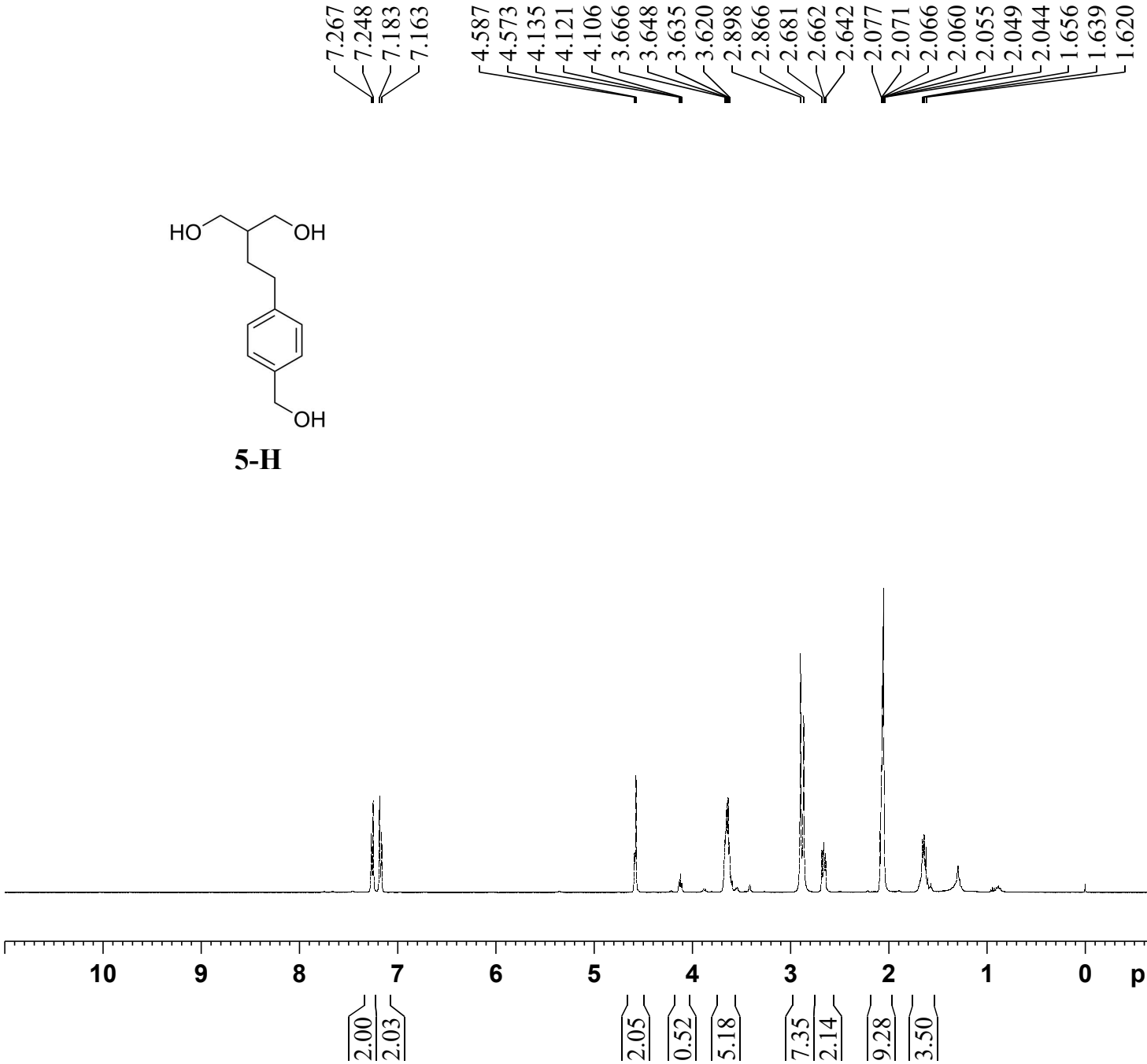

```
Current Data Parameters
NAME          400M-2022
EXPNO                23
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               8.56
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT         Acetone
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG                73.9
DW              62.400 usec
DE               6.50 usec
TE              301.0 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                   1H
P1                 14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                  off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400058 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



5-H

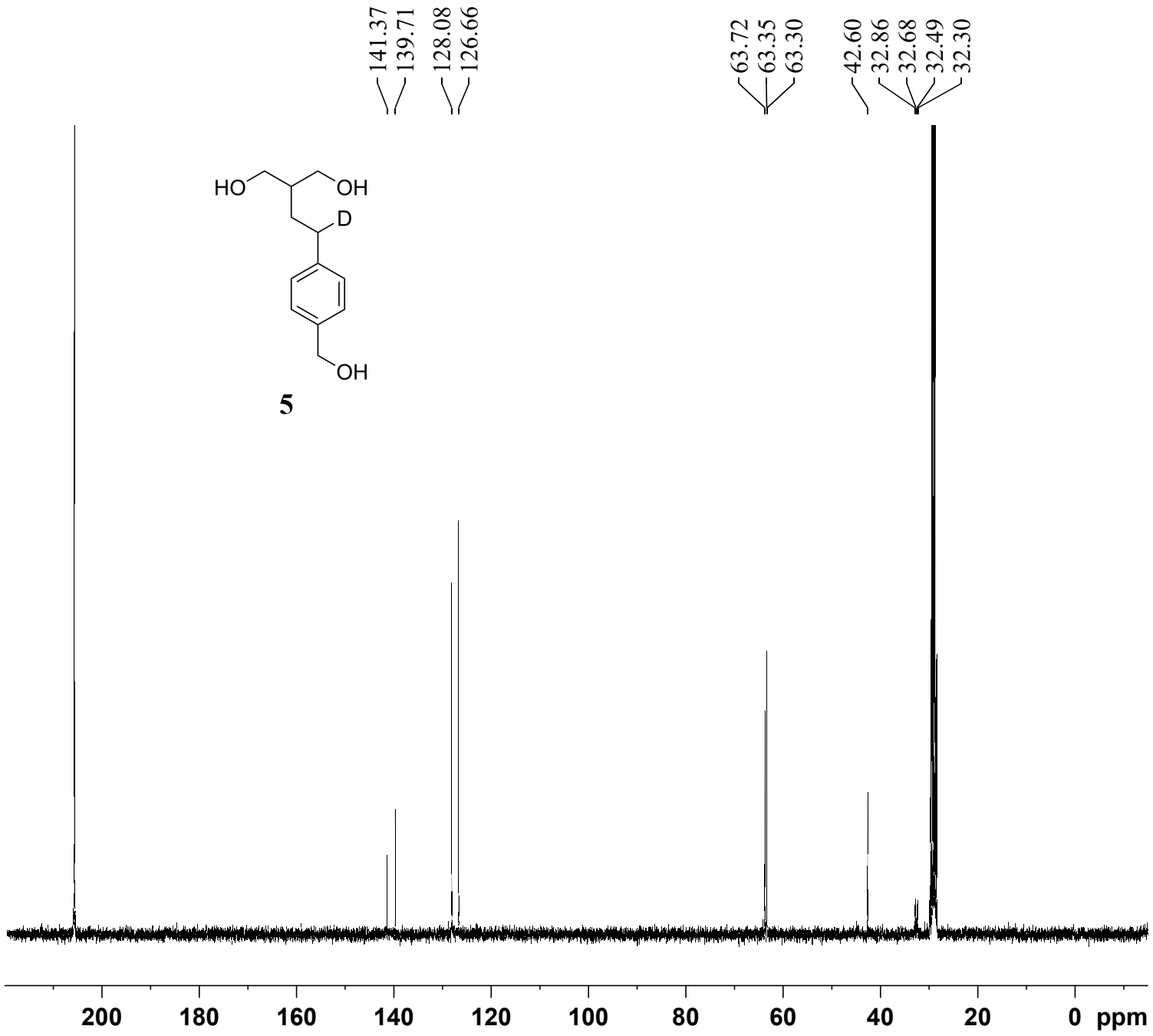
```
Current Data Parameters
NAME          400M-2022
EXPNO                31
PROCNO                1

F2 - Acquisition Parameters
Date_          20220702
Time              23.54
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT         Acetone
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG               206.33
DW                62.400 usec
DE                 6.50 usec
TE                300.4 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400050 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



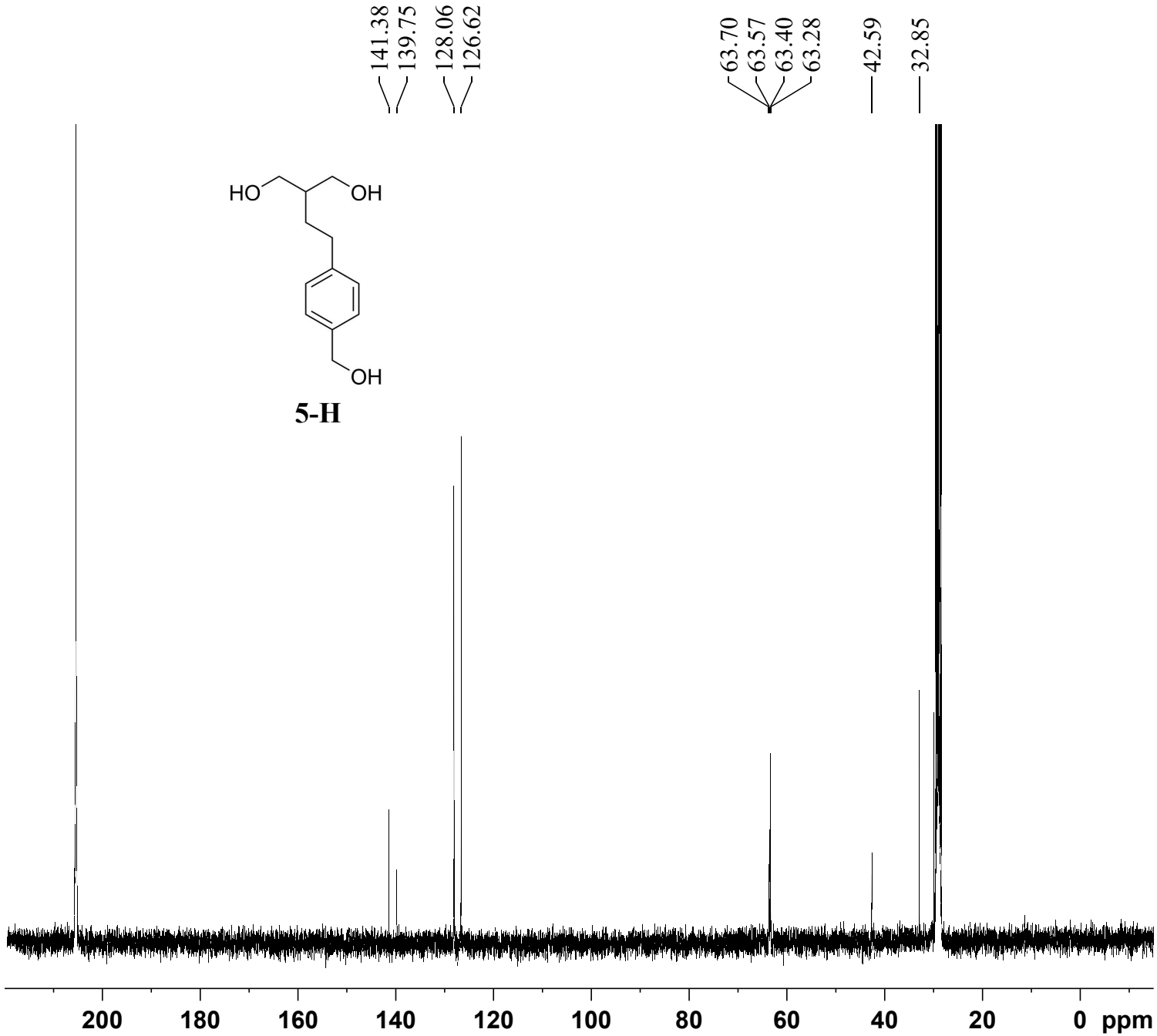

```
Current Data Parameters
NAME          400M-2022
EXPNO                24
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time               9.26
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                  512
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               301.6 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



5-H

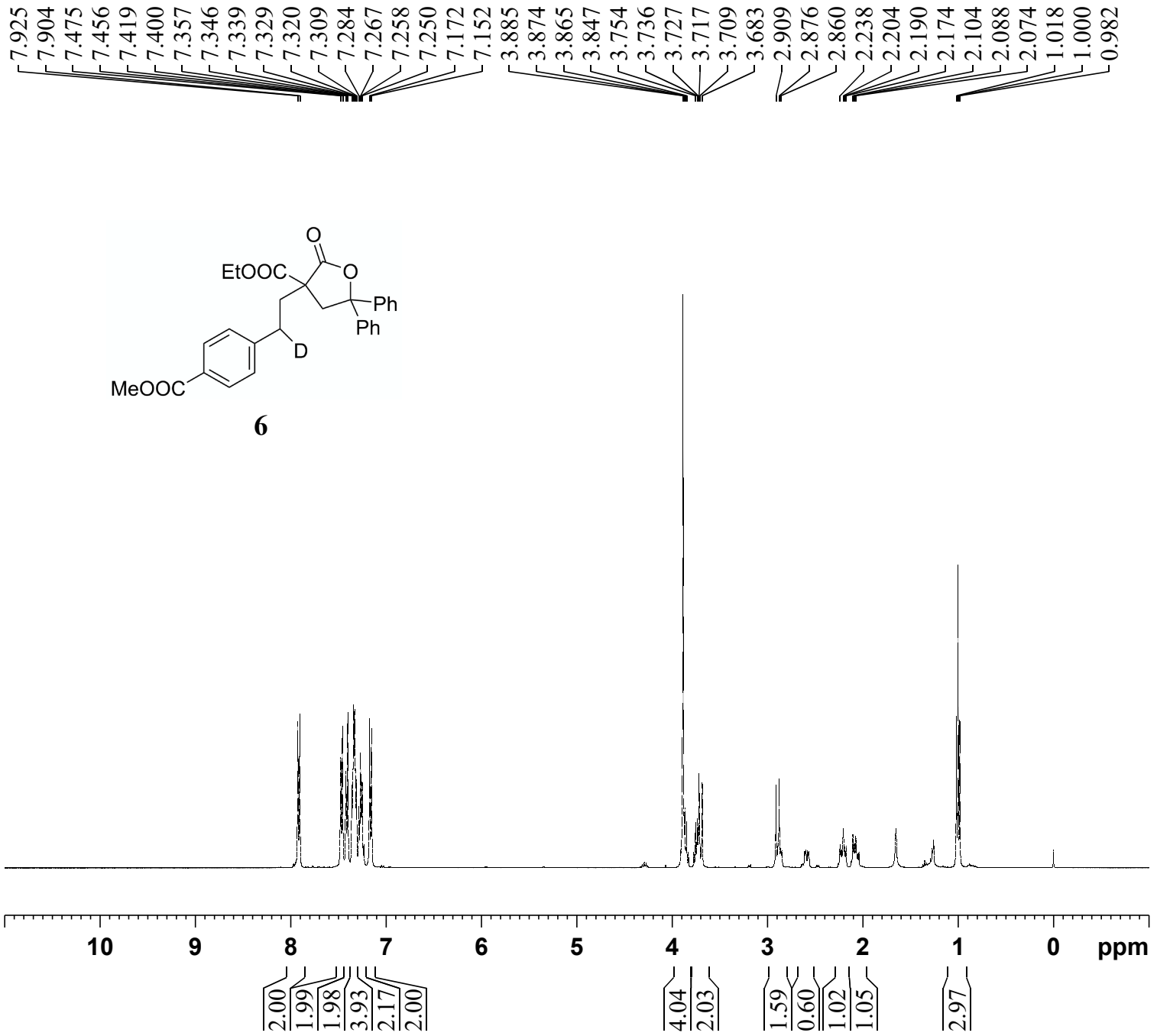
```
Current Data Parameters
NAME          400M-2022
EXPNO                34
PROCNO                1

F2 - Acquisition Parameters
Date_          20220706
Time              13.45
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT         Acetone
NS                 1024
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               206.33
DW               20.800 usec
DE                6.50 usec
TE               301.0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



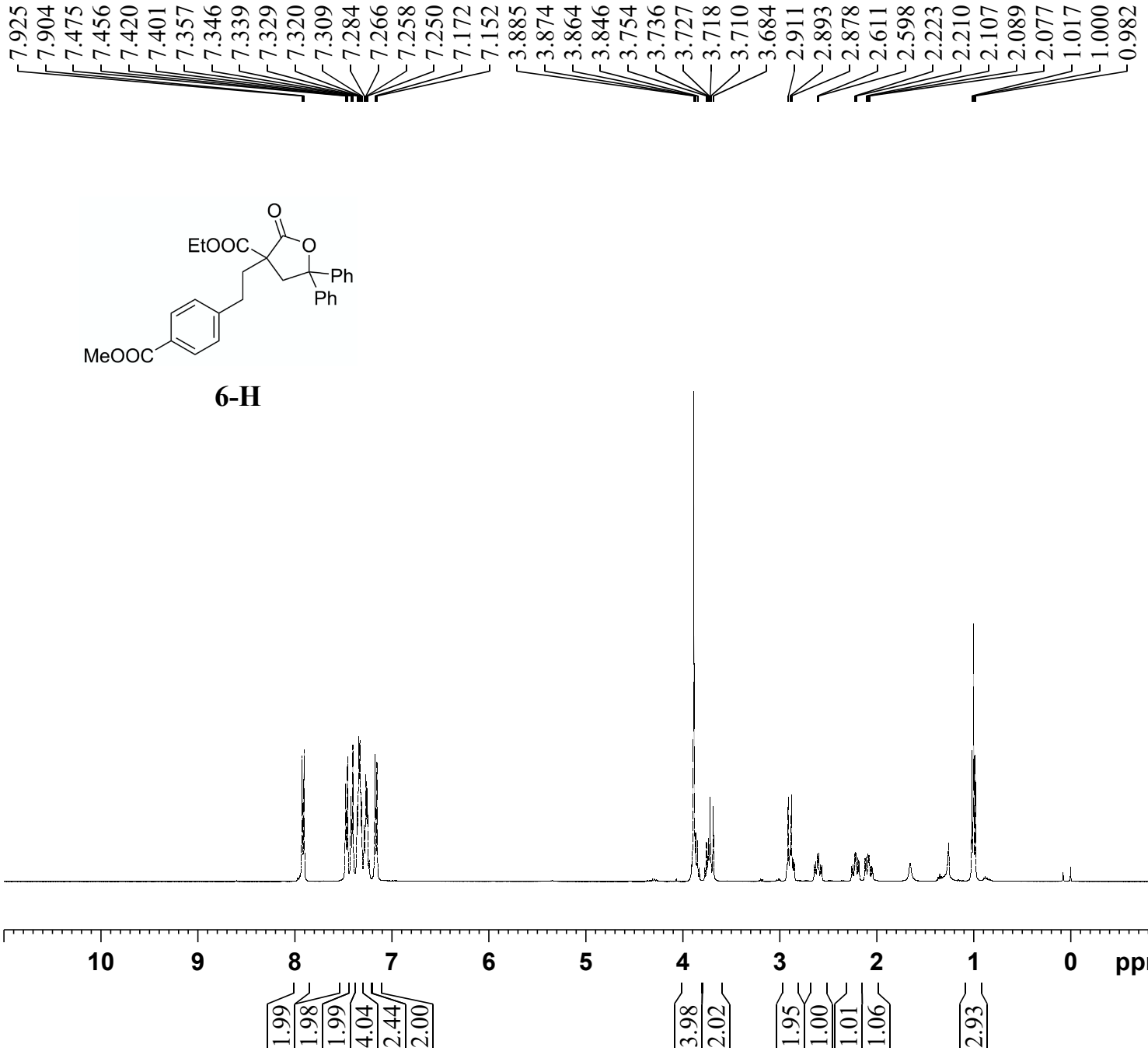

```
Current Data Parameters
NAME          400M-2022
EXPNO                27
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time              11.17
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG                92.09
DW               62.400 usec
DE                6.50 usec
TE               300.5 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400102 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



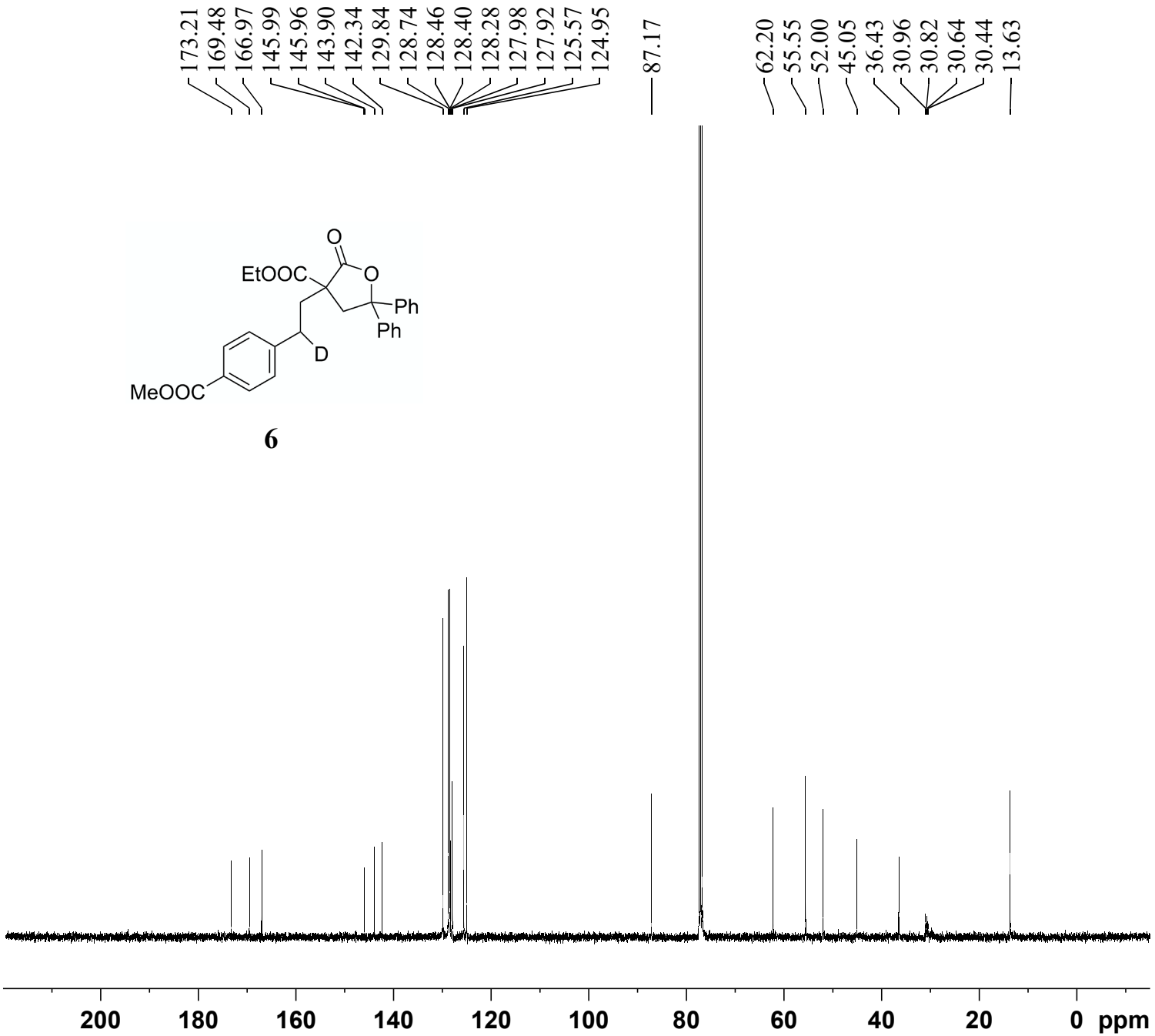

```
Current Data Parameters
NAME          400M-2022
EXPNO                29
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time              13.42
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    0
SWH            8012.820 Hz
FIDRES         0.244532 Hz
AQ            2.0447233 sec
RG                80.72
DW               62.400 usec
DE                6.50 usec
TE               300.4 K
D1           2.00000000 sec
D11      0 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        400.2424716 MHz
NUC1                  1H
P1                14.30 usec
PLW1        12.00000000 W

======== CHANNEL f2 ========
SFO2        400.2424716 MHz
NUC2                 off
CPDPRG[2
PCPD2     0 usec
PLW2      0 W
PLW12     0 W
PLW13     0 W

F2 - Processing parameters
SI                 65536
SF          400.2400102 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



6

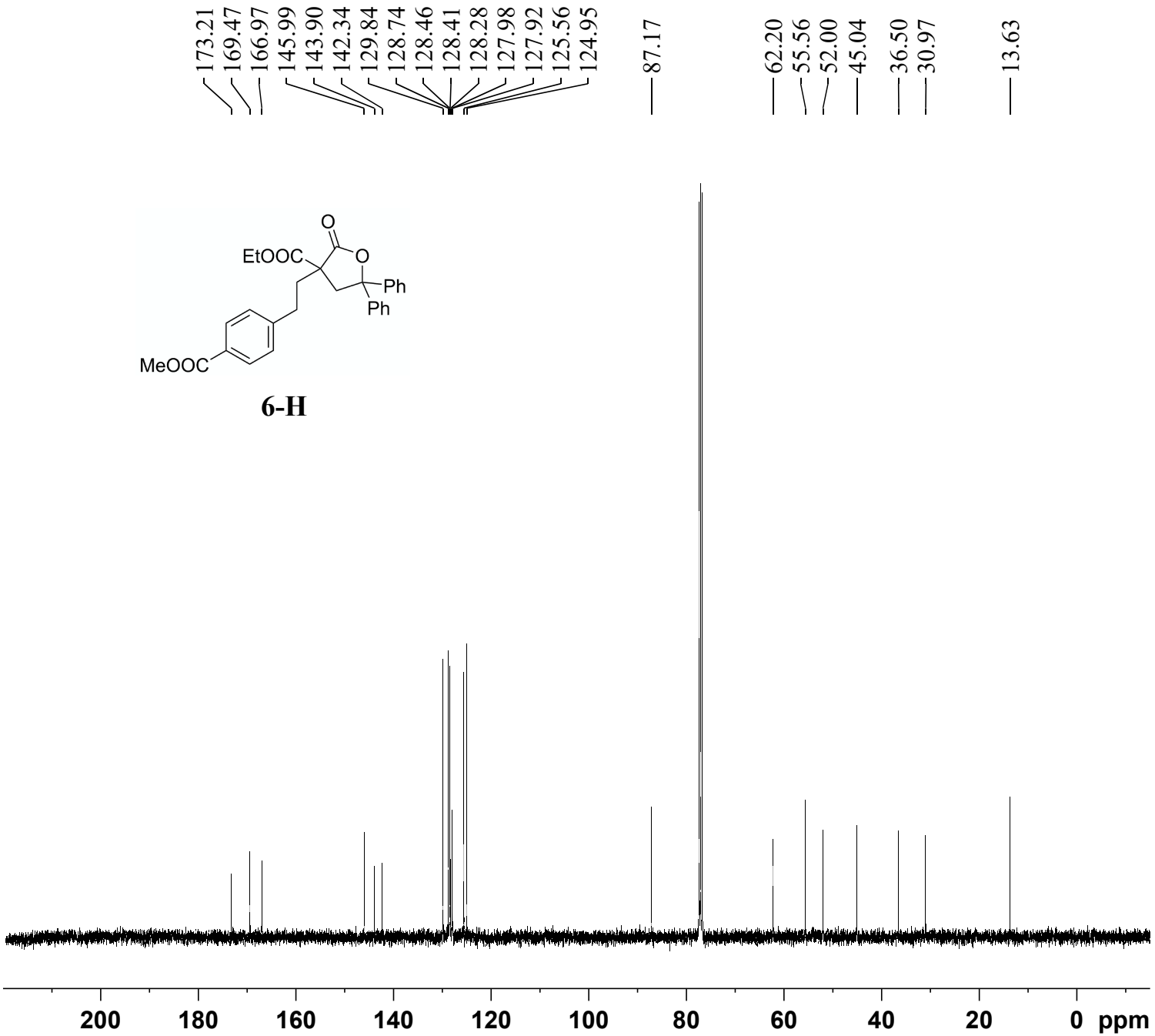
```
Current Data Parameters
NAME          400M-2022
EXPNO                28
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time              12.16
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.4 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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



6-H

```
Current Data Parameters
NAME          400M-2022
EXPNO                30
PROCNO                1

F2 - Acquisition Parameters
Date_          20220701
Time              13.57
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  256
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                206.33
DW                20.800 usec
DE                 6.50 usec
TE                301.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        100.6504916 MHz
NUC1                13C
P1                10.00 usec
PLW1        54.00000000 W

======== CHANNEL f2 ========
SFO2        400.2416010 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        12.00000000 W
PLW12        0.30294999 W
PLW13        0.24539000 W

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