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Electronic Supplementary Information

Solvent and Catalyst-Free Bromofunctionalization of Olefins Using a Mechanochemical Approach

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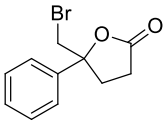
(A) General Information

Unless otherwise specified, commercially available reagents were used directly without further purification. All reactions requiring anhydrous conditions were conducted by standard procedures under nitrogen atmosphere. The solvents were dried over a solvent purification system from Innovative Technology. Melting points were determined on a Buchi B-540b melting point apparatus. ^{1}H NMR and $^{13}C\{^{1}H\}$ NMR spectra were recorded on a Bruker AMX500 (500 MHz) spectrometer or a Bruker AMX400 (400 MHz) spectrometer. Proton and carbon chemical shifts are reported in parts per million (ppm) values downfield from TMS (δ 0.00) and referenced to residual protons in NMR solvents ($CDCl_3$ at δ 7.26, CD_2Cl_2 at δ 5.36) or carbon signals in NMR solvent ($CDCl_3$ at δ 77.16, CD_2Cl_2 at δ 55.42). ^{1}H NMR data were reported as follows: chemical shift, multiplicity, coupling constants (Hz), and integration. High resolution mass spectra were obtained on a Thermo Finnigan MAT95XL Magnetic Sector mass spectrometer (ionization mode: EI) or a Thermo Q Exactive Hybrid Quadrupole-Orbitrap mass spectrometer (ESI). Analytical thin layer chromatography (TLC) was performed with Merck precoated TLC plates, silica gel 60F-254, layer thickness 0.25 mm. Flash chromatography separations were performed on Merck 60 (0.040−0.063 mm) mesh silica gel.

(B) Mechanochemical Bromolactonization Reactions

General Procedure. Alkenoic acid **1** (0.2 mmol) and NBS (39.2 mg, 0.22 mmol) were added into a 10 mL zirconium oxide chamber. The milling chamber was then securely fastened into a Retsch mixer mill (MM 400) and set to oscillate at 30 Hz for 1 hour. On completion of reaction, the mill chamber was extracted with hexane or cyclohexane and the solution was filtered through a thin plug of celite. The filtrate was concentrated under reduced pressure to give the desired product **2** with high purity. No column chromatography was necessary.

5-(bromomethyl)-5-phenyldihydrofuran-2(3H)-one (**2a**)



Yield: 97% (49.5 mg, colorless oil)

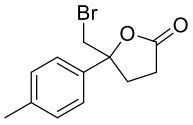
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.41 (d, *J* = 4.3 Hz, 4H), 7.33-7.39 (m, 1H), 3.74 (d, *J* = 11.4 Hz, 1H), 3.69 (d, *J* = 11.4, 1H), 2.77-2.86 (m, 2H), 2.49-2.61 (m, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 175.7, 140.8, 129.0, 128.8, 125.0, 86.6, 41.2, 32.5, 29.2.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{11}H_{11}BrO_2$ 276.98346, found 276.98365.

The data are in full accordance with the literature (Chen, T.; Foo, T. J. Y.; Yeung, Y.-Y. *ACS Catal.* **2015**, *5* (8), 4751–4755).

5-(bromomethyl)-5-(p-tolyl)dihydrofuran-2(3H)-one (**2b**)



Yield: 98% (52.7 mg, colorless oil)

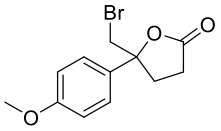
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.29 (d, *J* = 7.5 Hz, 2H), 7.21 (d, *J* = 7.5 Hz, 2H), 3.73 (d, *J* = 11.1 Hz, 1H), 3.67 (d, *J* = 11.1, 1H), 2.74-2.84 (m, 2H), 2.48-2.58 (m, 2H), 2.36 (s, 3H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 175.8, 138.7, 137.8, 129.6, 125.0, 86.6, 41.2, 32.4, 29.2, 21.2.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{12}H_{13}BrO_2$ 290.99911, found 290.99917.

The data are in full accordance with the literature (Chen, T.; Foo, T. J. Y.; Yeung, Y.-Y. *ACS Catal.* **2015**, *5* (8), 4751–4755).

5-(bromomethyl)-5-(4-methoxyphenyl)dihydrofuran-2(3H)-one (**2c**)



Yield: 87% (49.6 mg, colorless oil)

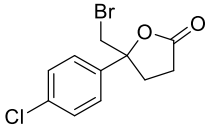
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.33 (d, *J* = 8.9 Hz, 2H), 6.91 (d, *J* = 8.9 Hz, 2H), 3.81 (s, 3H), 3.71 (d, *J* = 11.3 Hz, 1H), 3.65 (d, *J* = 11.3 Hz, 1H), 2.75-2.83 (m, 2H), 2.50-2.58 (m, 2H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 175.8, 159.8, 132.6, 126.4, 114.3, 86.5, 55.5, 41.3, 32.3, 29.3.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{12}H_{13}BrO_3$ 306.99403, found 306.99378.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

5-(bromomethyl)-5-(4-chlorophenyl)dihydrofuran-2(3H)-one (**2d**)



Yield: 98% (56.7 mg, colorless oil)

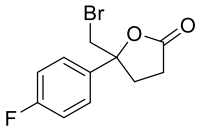
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.39 (d, *J* = 8.6 Hz, 2H), 7.35 (d, *J* = 8.6 Hz, 2H), 3.70 (d, *J* = 11.3 Hz, 1H), 3.65 (d, *J* = 11.3 Hz, 1H), 2.75-2.86 (m, 2H), 2.48-2.59 (m, 2H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 175.3, 139.4, 134.9, 129.2, 126.6, 86.1, 40.7, 32.5, 29.1.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{11}H_{10}BrClO_2$ 312.94236, found 312.94231.

The data are in full accordance with the literature (Chen, T.; Foo, T. J. Y.; Yeung, Y.-Y. *ACS Catal.* **2015**, *5* (8), 4751–4755).

5-(bromomethyl)-5-(4-fluorophenyl)dihydrofuran-2(3H)-one (**2e**)



Yield: 90% (49.2 mg, colorless oil)

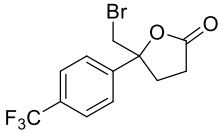
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.40 (d, *J* = 8.7 Hz, 1H), 7.39 (d, *J* = 8.7 Hz, 1H), 7.10 (t, *J* = 8.7 Hz, 2 H), 3.70 (d, *J* = 11.3 Hz, 1H), 3.65 (d, *J* = 11.3 Hz, 1H), 2.76-2.87 (m, 2H), 2.49-2.60 (m, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 175.4, 163.8, 161.8, 136.7, 136.6, 127.1, 127.0, 116.0, 115.9, 86.2, 41.0, 32.5, 29.2.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{11}H_{10}BrFO_2$ 294.97404, found 294.97435.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

5-(bromomethyl)-5-(4-(trifluoromethyl)phenyl)dihydrofuran-2(3H)-one (**2f**)



Yield: 98% (63.3 mg, colorless oil)

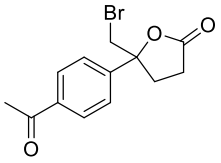
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.67 (d, *J* = 8.2 Hz, 2H), 7.55 (d, *J* = 8.2 Hz, 2H), 3.72 (d, *J* = 11.5 Hz, 1H), 3.70 (d, *J* = 11.5 Hz, 1H), 2.78-2.88 (m, 2H), 2.50-2.60 (m, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 175.1, 144.8, 131.0 (q, *J* = 33 Hz), 126.0 (q, *J* = 4 Hz), 125.6, 123.9 (q, *J* = 272 Hz), 86.0, 40.4, 32.6, 29.0.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{12}H_{10}BrF_3O_2$ 344.97085, found 344.97095.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

5-(4-acetylphenyl)-5-(bromomethyl)dihydrofuran-2(3H)-one (**2g**)



Yield: 81% (48.1 mg, white solid).

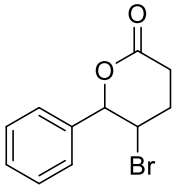
IR (KBr): 3020, 1785, 1737, 1685, 1270, 1216, 1162, 760, 668 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 8.00 (d, *J* = 8.6 Hz, 2H), 7.52 (d, *J* = 8.6 Hz, 2H), 3.73 (d, *J* = 11.4 Hz, 1H), 3.70 (d, *J* = 11.4 Hz, 1H), 2.76-2.89 (m, 2H), 2.62 (s, 3H), 2.50-2.60 (m, 2H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 197.4, 175.2, 145.8, 137.4, 129.0, 125.4, 86.3, 40.5, 32.6, 29.1, 26.8.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{13}H_{13}BrO_3$ 318.99403, found 318.99413.

5-bromo-6-phenyltetrahydro-*2H*-pyran-2-one **2h**



Yield: 78%, d.r. > 99:1 (39.7 mg, white solid)

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.36-7.43 (m, 3H), 7.32 (d, *J* = 6.9 Hz, 2H), 5.56 (d, *J* = 6.4 Hz, 1H), 4.39 (dd, *J* = 11.0, 6.4 Hz, 1H), 2.95 (dt, *J* = 18.2, 8.2 Hz, 1H), 2.72 (dt, *J* = 18.2, 6.2 Hz, 1H), 2.38-2.46 (m, 1H), 2.23-2.31 (m, 1H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 169.2, 137.4, 129.2, 128.9, 126.5, 85.7, 47.3, 28.5, 27.7.

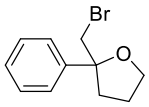
HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{11}H_{11}BrO_2$ 276.98346, found 276.98327.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

(C) Mechanochemical Bromocycloetherification Reactions

General Procedure. Olefinic mono-alcohol **5** (0.2 mmol) and NBS (39.2 mg, 0.22 mmol) were added into a 10 mL zirconium oxide chamber. The milling chamber was then securely fastened into a Retsch mixer mill (MM 400) and set to oscillate at 30 Hz, for 1 hour. On completion of reaction, the ball mill chamber was extracted with hexane and the solution was filtered through a thin plug of celite. The filtrate was concentrated under reduced pressure to give the desired product **6** in high purity. No column chromatography was necessary.

2-(bromomethyl)-2-phenyltetrahydrofuran (**6a**)



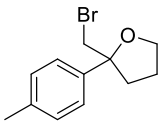
Yield: 98% (47.2 mg, colorless oil).

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.40-7.44 (m, 2H), 7.38-7.38 (m, 2H), 7.26-7.30 (m, 1H), 4.06-4.12 (m, 1H), 3.92-3.97 (m, 1H), 3.66 (s, 2H), 2.40-2.46 (m, 1H), 2.23-2.30 (m, 1H), 2.02-2.10 (m, 1H), 1.80-1.89 (m, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 144.1, 128.4, 127.5, 125.7, 85.4, 68.8, 42.3, 36.6, 26.3.

The data are in full accordance with the literature (Greb, M.; Hartung, J.; Köhler, F.; Špehar, K.; Kluge, R.; Csuk, R. *European J. Org. Chem.* **2004**, *2004* (18), 3799–3812.).

2-(bromomethyl)-2-(p-tolyl)tetrahydrofuran (**6b**)



Yield: 99% (50.5 mg, colorless oil).

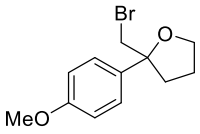
IR (KBr): 3017, 1216, 750 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.31 (d, *J* = 7.5 Hz, 2H), 7.17 (d, *J* = 7.5 Hz, 2H), 4.08 (dd, *J* = 14.5, 7.3 Hz, 1H), 3.93 (dd, *J* = 14.5, 7.3 Hz, 1H), 3.64 (s, 2H), 2.37-2.44 (m, 1H), 2.35 (s, 3H), 2.21-2.28 (m, 1H), 2.00-2.09 (m, 1H), 1.80-1.89 (m, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 141.1, 137.2, 129.1, 125.6, 85.3, 68.7, 42.4, 36.5, 26.3, 21.2.

HRMS (ESI-Q-orbitrap) m/z: $[M-H_2O+H]^+$ calcd for $C_{12}H_{15}BrO$ 237.02734, found 237.02724.

2-(bromomethyl)-2-(4-methoxyphenyl)tetrahydrofuran (**6c**)



Yield: 76% (41.2 mg, colorless oil).

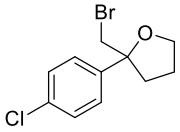
IR (KBr): 3019, 1510, 1249, 1216, 763, 669 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.33 (d, *J* = 8.7 Hz, 2H), 6.88 (d, *J* = 8.7 Hz, 2H), 4.07 (dd, *J* = 14.7, 7.4 Hz, 1H), 3.92 (dd, *J* = 14.7, 7.4 Hz, 1H), 3.81 (s, 3H), 3.62 (s, 2H), 2.36-2.43 (m, 1H), 2.20-2.67 (m, 1H), 2.00-2.09 (m, 1H), 1.809-1.89 (m, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 159.0, 136.0, 126.9, 113.7, 85.1, 68.7, 55.4, 42.5, 36.4, 26.3.

HRMS (ESI-Q-orbitrap) m/z: $[M-H_2O+H]^+$ calcd for $C_{12}H_{15}BrO_2$ 253.02225, found 253.02216.

2-(bromomethyl)-2-(4-chlorophenyl)tetrahydrofuran (**6d**)



Yield: 90% (49.6 mg, colorless oil).

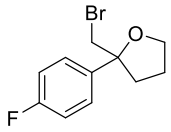
IR (KBr): 3018, 1490, 1216, 1052, 752 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.35 (d, *J* = 8.0 Hz, 2H), 7.32 (d, *J* = 8.0 Hz, 2H), 4.08 (dd, *J* = 14.5, 7.2 Hz, 1H), 3.92 (dd, *J* = 14.5, 7.2 Hz, 1H), 3.60 (s, 2H), 2.36-2.43 (m, 1H), 2.16-2.25 (m, 1H), 2.01-2.10 (m, 1H), 1.79-1.89 (m, 1H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 142.6, 133.4, 128.5, 127.2, 85.1, 68.9, 41.9, 36.7, 26.2.

HRMS (ESI-Q-orbitrap) m/z: $[M+H]^+$ calcd for $C_{11}H_{12}BrClO$ 276.98107, found 276.98107.

2-(bromomethyl)-2-(4-fluorophenyl)tetrahydrofuran (**6e**)



Yield: 93% (48.2 mg, colorless oil).

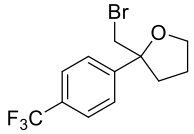
IR (KBr): 3017, 2981, 1604, 1508, 1210, 1052, 838, 756 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.38 (m, 2H), 7.03 (t, *J* = 8.3 Hz, 2H), 4.08 (dd, *J* = 14.5, 7.4 Hz, 1H), 3.92 (dd, *J* = 14.5, 7.4 Hz, 1H), 3.61 (s, 2H), 2.37-2.44 (m, 1H), 2.19-2.26 (m, 1H), 2.01-2.10 (m, 1H), 1.80-1.89 (m, 1H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 163.2, 161.2, 139.8, 139.7, 127.5, 127.4, 115.3, 115.1, 85.1, 68.8, 42.1, 36.7, 26.2.

HRMS (ESI-Q-orbitrap) m/z: $[M+H]^+$ calcd for $C_{11}H_{12}BrFO$ 259.01283, found 259.01287.

2-(bromomethyl)-2-(4-(trifluoromethyl)phenyl)tetrahydrofuran (**6f**)



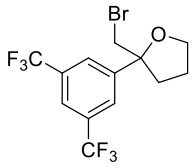
Yield: 98% (60.6 mg, colorless oil).

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.61 (d, *J* = 8.3 Hz, 2H), 7.54 (d, *J* = 8.3 Hz, 2H), 4.08-4.13 (m, 1H), 3.92-3.97 (m, 1H), 3.63 (d, *J* = 0.9 Hz, 2H), 2.41-2.47 (m, 1H), 2.21-2.28 (m, 1H), 2.04-2.12 (m, 1H), 1.80-1.90 (m, 1H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 148.2, 129.8 (q, *J* = 32 Hz), 126.2, 125.4 (q, *J* = 4 Hz), 124.4 (q, *J* = 271 Hz), 85.3, 69.0, 41.6, 36.9, 26.2.

The data are in full accordance with the literature (Greb, M.; Hartung, J.; Köhler, F.; Špehar, K.; Kluge, R.; Csuk, R. *European J. Org. Chem.* **2004**, *2004* (18), 3799–3812.).

2-(3,5-bis(trifluoromethyl)phenyl)-2-(bromomethyl)tetrahydrofuran (**6g**)



Yield: 98% (73.9 mg, colorless oil).

IR (KBr): 3019, 1377, 1280, 1216, 1180, 1139, 1055, 900, 844, 757, 669 cm^{-1}.

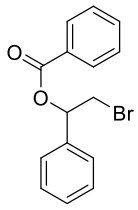
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.89 (s, 2H), 7.81 (s, 1H), 4.11-4.16 (m, 1H), 3.95-4.00 (m, 1H), 3.63 (d, *J* = 10.8 Hz, 1 H), 3.59 (d, *J* = 10.8, 1H), 2.47-2.54 (m, 1H), 2.24-2.30 (m, 1H), 2.08-2.17 (m, 1H), 1.84-1.93 (m, 1H).

$^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 147.0, 131.7 (q, *J* = 33 Hz), 126.2, 123.4 (q, *J* = 273 Hz), 121.6-121.8 (m), 85.0, 69.2, 41.0, 37.1, 26.3.

(D) Mechanochemical Intermolecular Bromoesterification Reactions

General Procedure. Carboxylic acid **7** (0.2 mmol), alkene **8** (0.22 mmol) and DBDMH (62.9 mg, 0.22 mmol) were added into a 10 mL zirconium oxide chamber. The milling chamber was then securely fastened into a Retsch mixer mill (MM 400) and set to oscillate at 30 Hz, for 1 hour. On completion of reaction, the ball mill chamber was extracted with hexane and the solution was filtered through a thin plug of celite. The filtrate was concentrated under reduced pressure to give the desired product **9**. Purification using flash chromatography through silica gel (hexane/ethyl acetate 40:1) was used to obtain the final product.

2-bromo-1-phenylethyl benzoate (**9aa**)



Yield: 92% (56.2 mg, colorless oil, R_f = 0.47, hexane/ethyl acetate = 10:1).

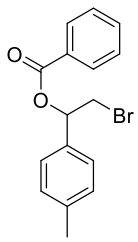
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.12-8.16 (m, 2H), 7.60 (tt, *J* = 7.4, 1.2 Hz, 1H), 7.44-7.51 (m, 4H), 7.34-7.43 (m, 3H), 6.24 (dd, *J* = 8.0, 4.5 Hz, 1H), 3.83 (dd, *J* = 10.9, 8.0 Hz, 1H), 3.75 (dd, *J* = 10.9, 4.5 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.5, 137.9, 133.4, 129.9, 129.8, 128.6, 126.6, 75.4, 34.6.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{13}BrO_2$ 326.99911, found 326.99884.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-(p-tolyl)ethyl benzoate (**9ab**)



Yield: 93% (59.3 mg, colorless oil, R_f = 0.30, hexane/dichloromethane = 2:1).

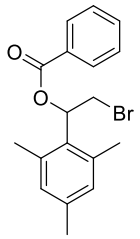
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.11 (d, *J* = 7.5 Hz, 2H), 7.58 (t, *J* = 7.6 Hz, 1H), 7.46 (t, *J* = 7.6 Hz, 2H), 7.34 (d, *J* = 7.8 Hz, 2H), 7.20 (d, *J* = 7.8 Hz, 2H), 6.18 (dd, *J* = 8.0, 4.5 Hz, 1H), 3.81 (dd, *J* = 10.8, 8.3 Hz, 1H), 3.71 (dd, *J* = 10.8, 4.5 Hz, 1H), 2.35 (s, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.6, 138.9, 134.9, 133.4, 130.0, 129.6, 128.6, 126.6, 75.5, 34.6, 21.4.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{16}H_{15}BrO_2$ 341.01476, found 341.01511.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-mesitylethyl benzoate (**9ac**)



Yield: 99% (68.5 mg, colorless oil, R_f = 0.40, hexane/ethyl acetate = 20:1).

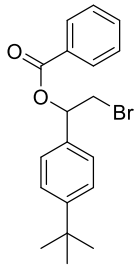
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.11-8.14 (m, 2H), 7.57-7.61 (m, 1H), 7.46-7.50 (m, 2H), 6.87 (s, 2H), 6.62 (dd, *J* = 10.1, 4.6 Hz, 1H), 4.07 (dd, *J* = 11.0, 10.1 Hz, 1H), 3.69 (dd, *J* = 11.0, 4.6 Hz, 1H), 2.55 (s, 6H), 2.27 (s, 3H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.6, 138.4, 136.8, 133.2, 130.6, 130.4, 129.9, 129.8, 128.6, 73.5, 32.0, 21.0, 20.8.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{18}H_{19}BrO_2$ 369.04606, found 369.04625.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-(4-(tert-butyl)phenyl)ethyl benzoate (**9ad**)



Yield: 90% (65.0 mg, colorless oil, R_f = 0.37, hexane/dichloromethane = 2:1).

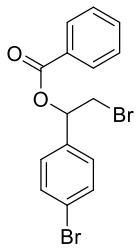
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.13 (d, *J* = 7.6 Hz, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.47 (t, *J* = 7.6 Hz, 2H), 7.36-7.43 (m, 4H), 6.21 (dd, *J* = 8.3, 4.3 Hz, 1H), 3.82 (dd, *J* = 10.9, 8.6 Hz, 1H), 3.73 (dd, *J* = 10.9, 4.4 Hz, 1H), 1.31 (s, 9H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.6, 152.0, 134.8, 133.4, 130.0, 128.6, 126.4, 125.8, 75.4, 34.8, 34.6, 31.4.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{19}H_{21}BrO_2$ 383.06171, found 383.06263.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-(4-bromophenyl)ethyl benzoate (**9ae**)



Yield: 89% (68.3 mg, colorless oil, R_f = 0.30, hexane/dichloromethane = 2:1).

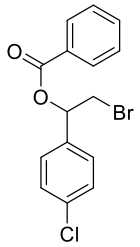
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.09-8.13 (m, 2H), 7.58-7.62 (m, 1H), 7.51-7.54 (m, 2H), 7.46-7.50 (m, 2H), 7.31-7.35 (m, 2H), 6.16 (dd, *J* = 7.5, 4.9 Hz, 1H), 3.78 (dd, *J* = 10.9, 7.5 Hz, 1H), 3.71 (dd, *J* = 10.9, 4.9 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.4, 136.9, 133.6, 132.1, 129.9, 129.6, 128.7, 128.4, 123.0, 74.7, 34.1.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{12}Br_2O_2$ 406.90765, found 406.90751.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-(4-chlorophenyl)ethyl benzoate (**9af**)



Yield: 88% (59.8 mg, colorless oil, R_f = 0.27, hexane/dichloromethane = 2:1).

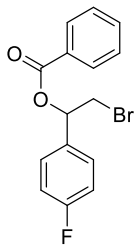
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.10-8.14 (m, 2H), 7.58-7.62 (m, 1H), 7.46-7.50 (m, 2H), 7.35-7.41 (m, 4H), 6.19 (dd, *J* = 7.5, 4.9 Hz, 1H), 3.79 (dd, *J* = 10.9, 7.5 Hz, 1H), 3.72 (dd, *J* = 10.9, 4.9 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.4, 136.3, 134.8, 133.6, 129.9, 129.6, 129.1, 128.6, 128.1, 74.7, 34.2.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{12}BrClO_2$ 362.95798, found 362.95726.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-(4-fluorophenyl)ethyl benzoate (**9ag**)



Yield: 93% (60.1 mg, colorless oil, R_f = 0.24, hexane/dichloromethane = 2:1).

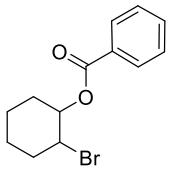
IR (KBr): 3020, 1722, 1511, 1268, 1216, 1109, 757, 669 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 8.09-8.12 (m, 2H), 7.58-7.62 (m, 1H), 7.41-7.50 (m, 4H), 7.05-7.11 (m, 2H), 6.19 (dd, *J* = 7.6, 4.8 Hz, 1H), 3.79 (dd, *J* = 10.9, 7.6 Hz, 1H), 3.71 (dd, *J* = 10.9, 4.8 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.5, 164.0, 162.0, 133.8, 133.7, 133.6, 130.0, 129.7, 128.7, 128.6, 128.5, 116.0, 115.8, 74.8, 34.4.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{12}BrFO_2$ 344.98969, found 344.98986.

2-bromocyclohexyl benzoate (**9ah**)



Yield: 86% (48.6 mg, colorless oil, R_f = 0.17, pure hexane).

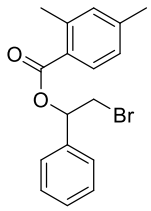
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.07 (d, *J* = 7.5 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.45 (t, *J* = 7.7 Hz, 2H), 5.10-5.16 (m, 1H), 4.13-4.19 (m, 1H), 2.38-2.45 (m, 1H), 2.24-2.33 (m, 1H), 1.90-2.00 (m, 1H), 1.74-1.87 (m, 2H), 1.47-1.57 (m, 2H), 1.35-1.45 (m, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 165.7, 133.2, 130.3, 129.9, 128.5, 76.5, 52.8, 35.7, 31.2, 25.6, 23.4.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{13}H_{15}BrO_2$ 305.01476, found 305.01457.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-phenylethyl 2,4-dimethylbenzoate (**9ba**)



Yield: 82% (54.6 mg, colorless oil, R_f = 0.57, hexane/dichloromethane = 1:1).

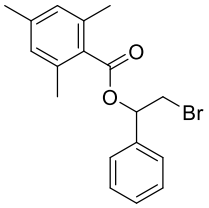
IR (KBr): 3019, 1717, 1615, 1256, 1216, 756 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.99 (d, *J* = 7.8 Hz, 1H), 7.33-7.47 (m, 5H), 7.10 (d, *J* = 8.8 Hz, 2H), 6.20 (dd, *J* = 8.0, 4.6 Hz, 1H), 3.80 (dd, *J* = 10.9, 8.0 Hz, 1H), 3.73 (10.9, 4.6 Hz, 1H), 2.60 (s, 3H), 2.38 (s, 3H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 166.2, 143.1, 141.0, 138.1, 132.7, 131.2, 128.9, 126.7, 126.2, 75.2, 34.8, 22.1, 21.6.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{17}H_{17}BrO_2$ 355.03041, found 355.03042.

2-bromo-1-phenylethyl 2,4,6-trimethylbenzoate (**9ca**)



Yield: 90% (62.5 mg, colorless oil, R_f = 0.43, hexane/ethyl acetate = 20:1).

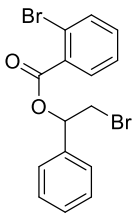
IR (KBr): 3020, 1726, 1612, 1262, 1216, 1167, 1079, 756, 669 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.42-7.46 (m, 2H), 7.35-7.42 (m, 3H), 6.86 (s, 2H), 6.25 (dd, *J* = 8.7, 4.2 Hz, 1H), 3.78 (dd, *J* = 11.0, 8.7 Hz, 1H), 3.67 (dd, *J* = 11.0, 4.2 Hz, 1H), 2.29 (s, 3H), 2.24 (s, 6H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 169.2, 139.6, 137.7, 135.3, 130.6, 129.1, 128.9, 128.5, 127.1, 76.1, 34.0, 21.3, 19.9.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{18}H_{19}BrO_2$ 369.04606, found 369.04633.

2-bromo-1-phenylethyl 2-bromobenzoate (**9da**)



Yield: 90% (69.1 mg, colorless oil, R_f = 0.32, hexane/dichloromethane = 2:1).

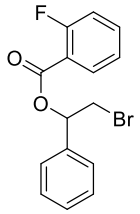
IR (KBr): 3019, 1735, 1249, 1215, 755, 669 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.92 (dd, *J* = 7.6, 1.6 Hz, 1H), 7.68 (d, *J* = 7.9 Hz, 1H), 7.46 (d, *J* = 7.6 Hz, 2H), 7.33-7.43 (m, 5H), 6.23 (dd, *J* = 8.0, 4.6 Hz, 1H), 3.82 (dd, *J* = 11.0, 8.0 Hz, 1H), 3.73 (dd, *J* = 11.0, 4.6 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 164.9, 137.4, 134.7, 133.0, 131.8, 131.6, 129.1, 128.9, 127.4, 126.9, 122.1, 76.3, 34.3.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{12}Br_2O_2$ 406.90765, found 406.90749.

2-bromo-1-phenylethyl 2-fluorobenzoate (**9ea**)



Yield: 99% (63.9 mg, colorless oil, R_f = 0.24, hexane/dichloromethane = 2:1).

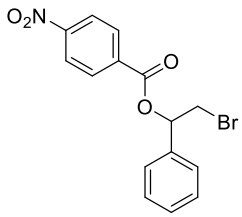
IR (KBr): 3020, 1718, 1615, 1216, 756 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$): δ 8.02 (td, *J* = 7.6, 1.8 Hz, 1H), 7.52-7.57 (m, 1H), 7.45-7.49 (m, 2H), 7.34-7.42 (m, 3H), 7.23 (td, *J* = 7.8, 1.1 Hz, 1H), 7.16 (ddd, *J* = 10.8, 8.4, 0.9 Hz, 1H), 6.25 (dd, *J* = 8.1, 4.5 Hz, 1H), 3.81 (dd, *J* = 10.9, 8.1 Hz, 1H), 3.72 (dd, *J* = 10.9, 4.5 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 163.3, 163.3, 163.2, 161.2, 137.6, 135.0, 134.9, 132.4, 129.0, 128.9, 128.9, 126.8, 124.2, 124.1, 118.4, 118.3, 117.3,117.1, 75.9, 34.5.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{12}BrFO_2$ 344.98969, found 344.98977.

2-bromo-1-phenylethyl 4-nitrobenzoate (**9fa**)



Yield: 69% (48.3 mg, colorless oil, R_f = 0.20, hexane/dichloromethane = 2:1).

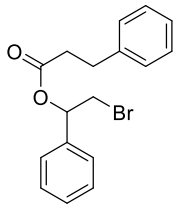
^{1}H NMR (500 MHz, $CDCl_3$): δ 8.26-8.33 (m, 4H), 7.36-7.46 (m, 5H), 6.24 (dd, *J* = 8.4, 4.3 Hz, 1H), 3.84 (dd, *J* = 11.1, 8.4 Hz, 1H), 3.75 (dd, *J* = 11.1, 4.3 Hz, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 163.7, 150.9, 137.2, 135.2, 131.1, 129.4, 129.1, 126.7, 123.8, 76.6, 34.1.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{15}H_{12}BrNO_4$ 371.98419, found 371.98425.

The data are in full accordance with the literature (Ng, W.-H.; Hu, R.-B.; Lam, Y.-P.; Yeung, Y.-Y. *Org. Lett.* **2020**, *22* (14), 5572–5576.).

2-bromo-1-phenylethyl 3-phenylpropanoate (**9ga**)



Yield: 96% (64.0 mg, yellow oil, R_f = 0.33, hexane/ethyl acetate = 20:1).

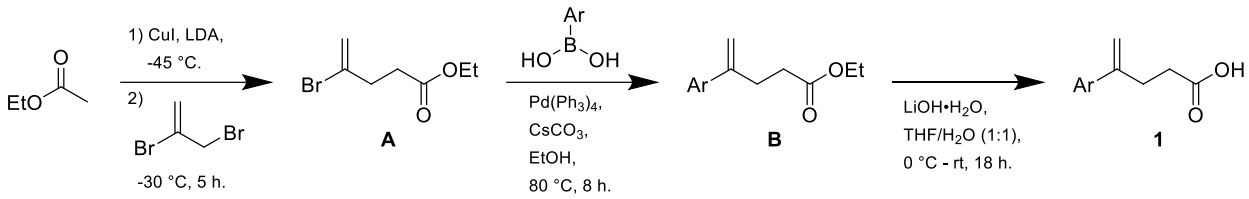
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.36-7.41 (m, 3H), 7.28-7.35 (m, 4H), 7.20-7.25 (m, 3H), 6.03 (dd, *J* = 8.2, 4.7 Hz, 1H), 3.65 (dd, *J* =10.8, 8.2 Hz, 1H), 3.59 (dd, *J* = 10.8, 4.7 Hz, 1H), 2.97-3.07 (m, 2H), 2.70-2.83 (m, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 171.8, 140.3, 137.7, 128.9, 128.8, 128.6, 128.4, 126.6, 126.4, 75.0, 35.9, 34.3, 30.9.

HRMS (ESI-Q-orbitrap) m/z: $[M + Na]^+$ calcd for $C_{17}H_{17}BrO_2$ 355.03041, found 355.03031.

The data are in full accordance with the literature (Shi, Y.; Wong, J.; Ke, Z.; Yeung, Y.-Y. *J. Org. Chem.* **2019**, *84* (7), 4017–4024.).

(E) Synthesis of olefinic acid substrates 1



General procedure.

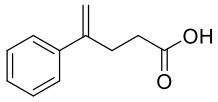
1. Preparation of LDA solution: n-Butyllithium solution 1.58 M in hexanes (47.5 mL, 75.0 mmol) was added to a solution of diisopropylamine (10.5 mL, 75.0 mmol) in THF (25.0 mL) at -78 ˚C. The resultant mixture was allowed to warm to room temperature over 2 hours.

2. Enolate alkylation: The LDA solution was added to a suspension of ethyl acetate (7.3 mL, 75.0 mmol) and copper (I) iodide (28.6 g, 150.0 mmol) in THF (75.0 mL) at -45 ˚C. The resultant solution was warmed to -30 ˚C. A solution of 2,3-dibromopropene (3.7 mL, 37.5 mmol) in THF (37.5 mL) was then added dropwise. The resultant mixture was stirred for an additional 5 hours at -30 ˚C. The reaction was then quenched using a saturated aqueous ammonium chloride solution (20.0 mL), acidified to pH 2 with 1 M aqueous hydrogen chloride solution, and extracted with diethyl ether (3 x 20.0 mL). The organic extracts were then washed with 28% aqueous ammonia solution (3 x 10.0 mL), dried over anhydrous sodium sulfate, filtereted, and concentrated *in vacuo* to give the intermediate **A**; which was used in the next step without further purification.

3. Suzuki coupling: A mixture of intermediate **A** (2.1 g, 10.0 mmol), aryl boronic acid (11.0 mmol), tetrakis(triphenylphosphine)-palladium(0) (0.6 g, 0.5 mmol), cesium carbonate (4.9 g, 15.0 mmol), in ethanol (50 mL) was degassed with nitrogen in a resealable tube. The sealed system was then heated to 80 ˚C for 8 hours. The resultant reaction mixture was filtered, concentrated *in vacuo* and purification by flash column chromatography in silica gel (hexane/ethyl acetate, 20:1) to give the intermediate **B**.

4. Ester hydrolysis: To a suspension of intermediate **B** (6.0 mmol), in a 1:1 mixture of THF and water (60.0 mL) at 0 ˚C, lithium hydroxide monohydrate (1.3 g, 30.0 mmol) was added in portions. The resultant mixture was warmed to room temperature and stirred for 18 hours. The product mixture was then acidified to pH < 4 with a 1 M hydrogen chloride aqueous solution, extracted with diethyl ether (3 x 10.0 mL) and washed with brine (3 x 5.0 mL). The organic fractions were concentrated in vacuo and recrystallized from a mixture of diethyl ether and hexane to give the alkenoic acid **1**.

4-phenylpent-4-enoic acid (**1a**)



White solid.

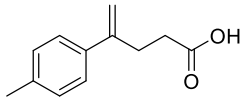
^{1}H NMR (500 MHz, $CDCl_3$): δ 10.50 (br. s, 1H), 7.41 (d, *J* = 7.3 Hz, 2H), 7.34 (t, *J* = 7.3 Hz, 2H), 7.27-7.31 (m, 1H), 5.33 (s, 1H), 5.12 (s, 1H), 2.86 (t, *J* = 7.7 Hz, 2H), 2.54 (t, *J* = 7.7 Hz, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 179.4, 146.6, 140.5, 128.6, 127.8, 126.2, 113.1, 33.1, 30.3.

HRMS (ESI-Q-orbitrap) m/z: $[M - H]^-$ calcd for $C_{11}H_{12}O_2$ 175.07645, found 175.07630.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

4-(p-tolyl)pent-4-enoic acid (**1b**)



White solid.

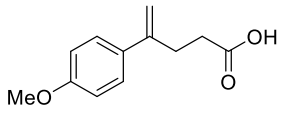
^{1}H NMR (500 MHz, $CDCl_3$): δ 10.91 (br. s, 1H), 7.32 (d, *J* = 7.4 Hz, 2H), 7.16 (d, *J* = 7.4 Hz, 2H), 5.31 (s, 1H), 5.08 (s, 1H), 2.85 (t, *J* = 7.5 Hz, 2H), 2.55 (t, *J* = 7.5 Hz, 2H), 2.36 (s, 3H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 179.8, 146.4, 137.6, 137.5, 129.2, 126.1, 112.3, 33.2, 30.2, 21.2.

HRMS (ESI-Q-orbitrap) m/z: $[M - H]^-$ calcd for $C_{12}H_{14}O_2$ 189.09210, found 189.09202.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

4-(4-methoxyphenyl)pent-4-enoic acid (**1c**)



White solid.

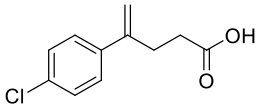
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.34 (d, *J* = 7.6 Hz, 2H), 6.87 (d, *J* = 7.6 Hz, 2H), 5.25 (s, 1H), 5.02 (s, 1H), 3.81 (s, 3H), 2.82 (t, *J* = 7.7 Hz, 2H), 2.52 (t, *J* = 7.7 Hz, 2H).

^{13}C{^{1}H} NMR (125 MHz, $(CD_3)_2SO$): δ 174.1, 159.0, 145.8, 132.4, 127.1, 114.0, 110.8, 55.3, 32.9, 29.8.

HRMS (ESI-Q-orbitrap) m/z: $[M+Na]^+$ calcd for $C_{12}H_{14}O_3$ 229.08352, found 229.08351.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

4-(4-chlorophenyl)pent-4-enoic acid (**1d**)



White solid.

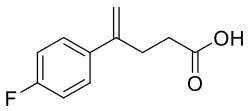
^{1}H NMR (500 MHz, $CDCl_3$): δ 9.25 (br. s, 1H), 7.28-7.35 (m, 4H), 5.31 (s, 1H), 5.12 (m, 1H), 2.81 (t, *J* = 7.5 Hz, 2H), 2.52 (t, *J* = 7.5 Hz, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 179.1, 145.5, 139.0, 133.6, 128.7, 127.5, 113.7, 32.9, 30.1.

HRMS (ESI-Q-orbitrap) m/z: $[M - H]^-$ calcd for $C_{11}H_{11}ClO_2$ 209.03748, found 209.03744.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

4-(4-fluorophenyl)pent-4-enoic acid (**1e**)

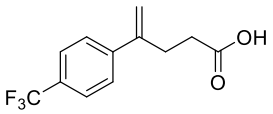


^{1}H NMR (500 MHz, $CDCl_3$): δ 11.02 (br. s, 1H), 7.37 (t, *J* = 6.3 Hz, 2H), 7.03 (t, *J* = 7.9 Hz, 2H), 5.28 (s, 1H), 5.10 (s, 1H), 2.82 (t, *J* = 7.5 Hz, 2H), 2.53 (t, *J* = 7.5 Hz, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 179.8, 163.5, 161.6, 145.6, 136.6, 136.6, 127.9, 127.8, 115.5, 115.3, 113.1, 33.0, 30.3.

HRMS (ESI-Q-orbitrap) m/z: $[M - H]^-$ calcd for $C_{11}H_{11}FO_2$ 193.06703, found 193.06691.

4-(4-(trifluoromethyl)phenyl)pent-4-enoic acid (**1f**)



White solid.

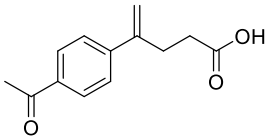
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.59 (d, *J* = 7.9 Hz, 2H), 7.50 (d, *J* = 7.9 Hz, 2H), 5.39 (s, 1H), 5.21 (s, 1H), 2.85 (t, *J* = 7.6 Hz, 2H), 2.53 (t, *J* = 7.6 Hz, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 178.7, 145.6, 144.2, 129.8 (q, *J* = 32 Hz), 126.6, 125.6 (q, *J* = 3.6 Hz), 115.1, 32.8, 30.1.

HRMS (ESI-Q-orbitrap) m/z: $[M - H]^-$ calcd for $C_{12}H_{12}F_3O_2$ 243.06384, found 243.06371.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

4-(4-acetylphenyl)pent-4-enoic acid (**1g**)



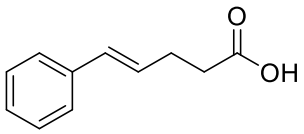
White solid.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.93 (d, *J* = 7.6 Hz, 2H), 7.49 (d, *J* = 7.4 Hz, 2H), 5.43 (s, 1H), 5.23 (s, 1H), 2.87 (t, *J* = 7.6 Hz, 2H), 2.61 (s, 3H), 2.54 (t, *J* = 7.6 Hz, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 197.8, 177.6, 145.8, 145.3, 136.4, 128.7, 126.4, 115.2, 32.7, 30.0, 26.8.

HRMS (ESI-Q-orbitrap) m/z: $[M+Na]^+$ calcd for $C_{13}H_{14}O_3$ 241.08345, found 241.08342.

(*E*)-5-phenylpent-4-enoic acid **1h**



White solid.

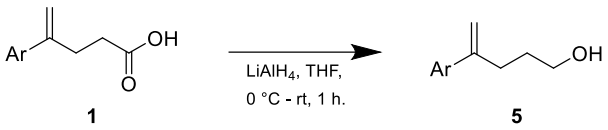
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.35 (d, *J* = 7.7 Hz, 2H), 7.30 (t, *J* = 7.7 Hz, 2H), 7.21 (t, *J* = 7.1 Hz, 1H), 6.45 (d, *J* = 15.9 Hz, 1H), 6.18-6.25 (m, 1H), 2.54-2.57 (m, 4H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 179.1, 137.4, 131.3, 128.7, 128.1, 127.4, 126.2, 33.9, 28.0.

HRMS (ESI-Q-orbitrap) m/z: $[M-H]^-$ calcd for $C_{11}H_{12}O_2$ 175.07645, found 175.07651.

The data are in full accordance with the literature (Zhou, L.; Tan, C. K.; Jiang, X.; Chen, F.; Yeung, Y.-Y. *J. Am. Chem. Soc.* **2010**, *132* (44), 15474–15476.).

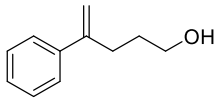
Synthesis of olefinic mono-alcohol 5



1 5

General procedure. To a solution of **1** (3.0 mmol) in anhydrous THF (6.0 mL) at 0 ̊C lithium aluminum hydride (0.2 g, 6.0 mmol) was added in portions. The resultant suspension was warmed to room temperature and stirred for 1 hour. The reaction was then quenched with a 2 M aqueous solution of sodium hydroxide (5.0 mL), filtered through a thin pad of celite, and extracted with diethyl ether (3 x 5 ml). The organic fractions were dried with anhydrous sodium sulfate, filtered, and concentrated *in vacuo*. Purification by flash column chromatography through silica gel yielded the alkenoic alcohol **5**.

4-phenylpent-4-en-1-ol (**5a**)



Colorless oil.

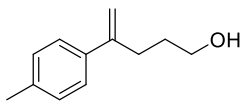
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.42 (d, *J* = 7.8 Hz, 2H), 7.34 (t, *J* = 7.2 Hz, 2H), 7.25-7.30 (m, 1H), 5.31 (s, 1H), 5.11 (s, 1H), 3.65 (t, *J* = 6.5 Hz, 2H), 2.61 (t, *J* = 7.5 Hz, 2H), 1.68-1.77 (m, 3H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 148.02, 141.1, 128.4, 127.5, 126.2, 112.7, 62.4, 31.6, 31.2.

HRMS (ESI-Q-orbitrap) m/z: $[M+Na]^+$ calcd for $C_{11}H_{14}O$ 185.09369, found 185.09375.

The data are in full accordance with the literature (Hornback, J. M.; Proehl, G. S. *J. Am. Chem. Soc.* **1979**, *101* (24), 7367–7373.)

4-(p-tolyl)pent-4-en-1-ol (**5b**)



Yellow oil.

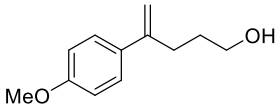
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.33 (d, *J* = 7.5 Hz, 2H), 7.15 (d, *J* = 7.5 Hz, 2H), 5.29 (s, 1H), 5.07 (s, 1H), 3.66 (t, *J* = 6.4 Hz, 2H), 2.60 (t, *J* = 7.5 Hz, 2H), 2.36 (s, 3H), 1.69-1.77 (m, 2H), 1.67 (br. s, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 147.8, 138.1, 137.3, 129.1, 126.1, 111.9, 62.5, 31.6, 31.2, 21.2.

HRMS (ESI-Q-orbitrap) m/z: $[M+Na]^+$ calcd for $C_{12}H_{16}O$ 199.10934, found 199.10952.

The data are in full accordance with the literature (Rösner, C.; Hennecke, U. *Org. Lett.* **2015**, *17* (13), 3226–3229.).

4-(4-methoxyphenyl)pent-4-en-1-ol (**5c**)



Yellow oil.

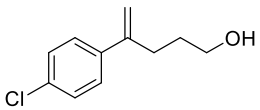
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.36 (d, *J* = 8.7 Hz, 2H), 6.86 (d, *J* = 8.7 Hz, 2H), 5.23 (s, 1H), 5.01 (s, 1H), 3.81 (s, 3H), 3.65 (t, *J* = 6.4 Hz, 2H), 2.57 (t, *J* = 7.5 Hz, 2H), 1.639-1.75 (m, 2H), 1.59 (br. s, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 159.1, 147.29, 133.4, 127.3, 113.8, 111.1, 62.5, 55.4, 31.7, 31.3.

HRMS (ESI-Q-orbitrap) m/z: $[M+H]^+$ calcd for $C_{12}H_{16}O_2$ 193.12231, found 193.12252.

The data are in full accordance with the literature (Rösner, C.; Hennecke, U. *Org. Lett.* **2015**, *17* (13), 3226–3229.).

4-(4-chlorophenyl)pent-4-en-1-ol (**5d**)



Colorless oil.

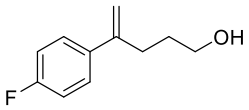
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.34 (d, *J* = 7.7 Hz, 2H), 7.29 (d, *J* = 7.7 Hz, 2H), 5.28 (s, 1H), 5.11 (s, 1H), 3.66 (t, *J* = 6.3 Hz, 2H), 2.58 (t, *J* = 7.5 Hz, 2H), 1.67-1.74 (m, 2H), 1.41 (br. s, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 146.9, 139.5, 133.3, 128.6, 127.5, 113.2, 62.4, 31.6, 31.1.

HRMS (ESI-Q-orbitrap) m/z: $[M+H]^+$ calcd for $C_{12}H_{13}ClO$ 197.07277, found 197.07285.

The data are in full accordance with the literature (Tsuji, N.; Kennemur, J. L.; Buyck, T.; Lee, S.; Prévost, S.; Kaib, P. S. J.; Bykov, D.; Farès, C.; List, B. *Science.* **2018**, *359* (6383), 1501–1505.).

4-(4-fluorophenyl)pent-4-en-1-ol (**5e**)



Yellow oil.

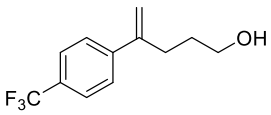
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.34-7.39 (m, 2H), 7.00 (t, *J* = 8.0 Hz, 2H), 5.24 (s, 1H), 5.07 (s, 1H), 3.64 (t, *J* = 6.3, 2H), 2.57 (t, *J* = 7.5 Hz, 2H), 1.80 (br. s, 1H), 1.70 (m, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 163.3, 161.4, 137.1, 137.1, 127.8, 127.7, 115.3, 115.1, 112.6, 62.3, 31.7, 31.1.

HRMS (ESI-Q-orbitrap) m/z: $[M+H]^+$ calcd for $C_{12}H_{13}FO$ 181.10232, found 181.10239.

The data are in full accordance with the literature (Rösner, C.; Hennecke, U. *Org. Lett.* **2015**, *17* (13), 3226–3229.).

4-(4-(trifluoromethyl)phenyl)pent-4-en-1-ol (**5f**)



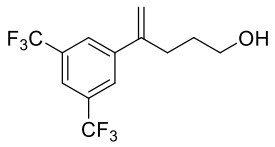
Colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$): δ 7.58 (d, *J* = 8.4 Hz, 2H), 7.50 (d, *J* = 8.4 Hz, 2H), 5.36 (s, 1H), 5.20 (s, 1H), 3.67 (t, *J* = 6.4 Hz, 2H), 2.62 (t, *J* = 7.2 Hz, 2H), 1.68-1.75 (m, 2H), 1.50 (br. s, 1H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 147.0, 144.8, 129.5 (q, *J* = 32 Hz), 126.5, 125.4 (q, *J* = 4 Hz), 114.6, 62.3, 31.5, 31.1.

HRMS (ESI-Q-orbitrap) m/z: $[M-H]^-$ calcd for $C_{12}H_{13}F_3O$ 229.08457, found 229.08467.

4-(3,5-bis(trifluoromethyl)phenyl)pent-4-en-1-ol (**5g**)



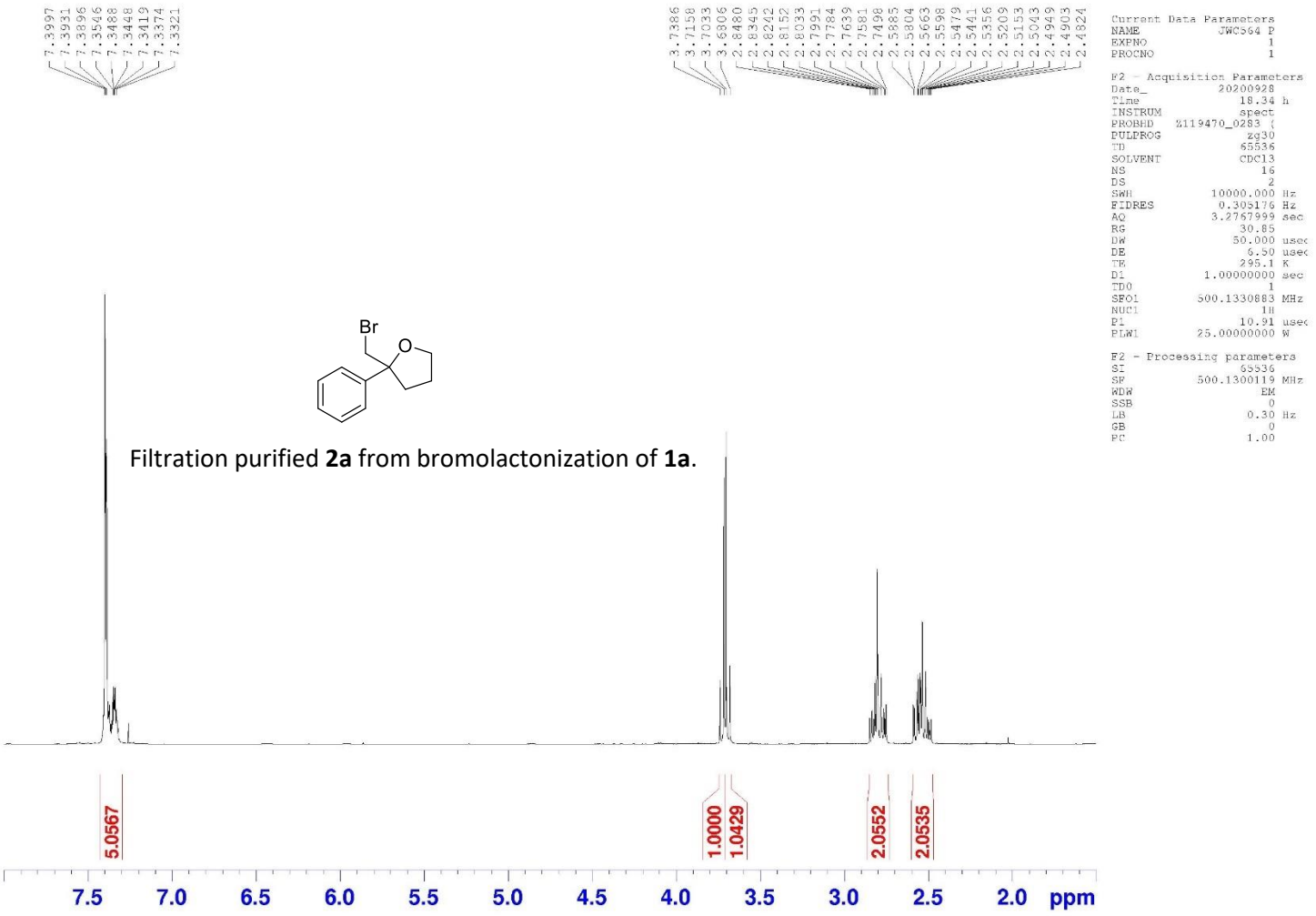
Colorless oil.

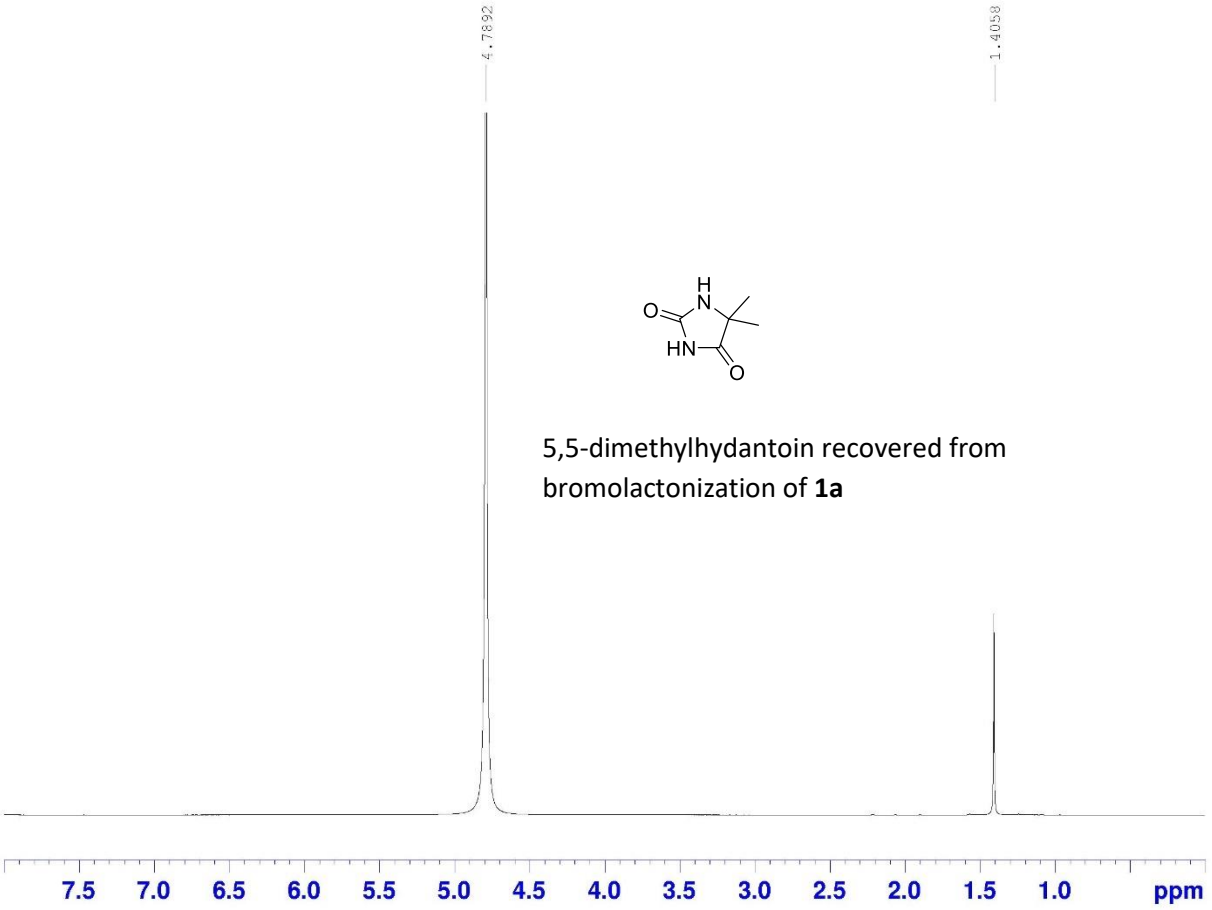
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.83 (s, 2H), 7.77 (s, 1H), 5.42 (s, 1H), 5.28 (s, 1H), 3.69 (t, *J* = 6.4 Hz, 2H), 2.63 (t, *J* = 7.6 Hz, 2H), 1.68-1.78 (m, 3H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 145.7, 134.5, 131.8 (q, *J* = 33 Hz), 126.3, 123.5 (q, *J* = 271 Hz), 121.2 (m), 115.8, 62.1, 31.2, 30.9.

HRMS (ESI-Q-orbitrap) m/z: $[M-H]^-$ calcd for $C_{13}H_{12}F_6O$ 297.07196, found 297.07153.

(F) ^{1}H NMR of filter purified products and recovered imide by-products





5,5-dimethylhydantoin recovered from bromolactonization of **1a**

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PROCNO                  1

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PLW1          13.17700005 W

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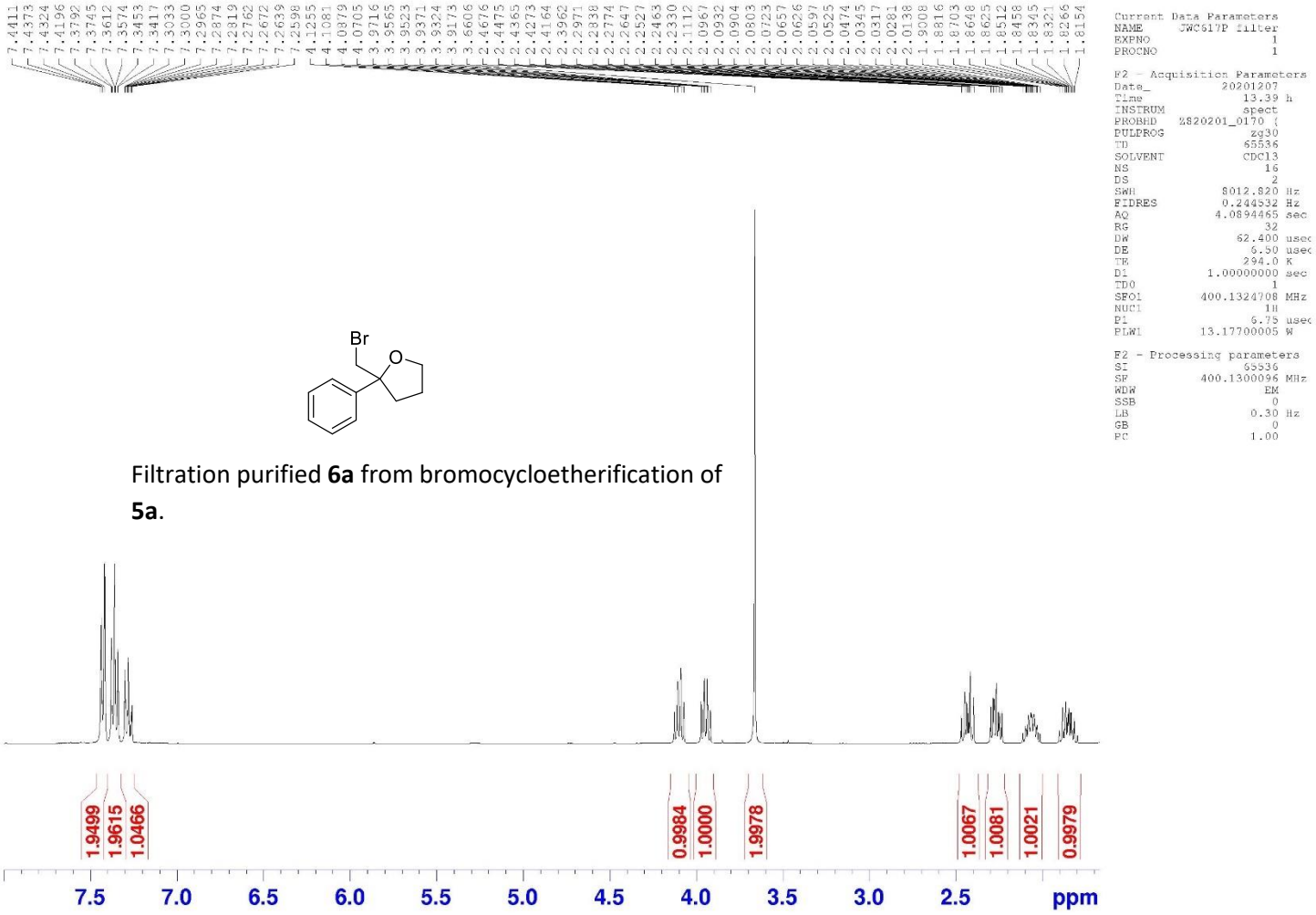


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PLW1          13.17700005 W

F2 - Processing parameters
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WDW                   EM
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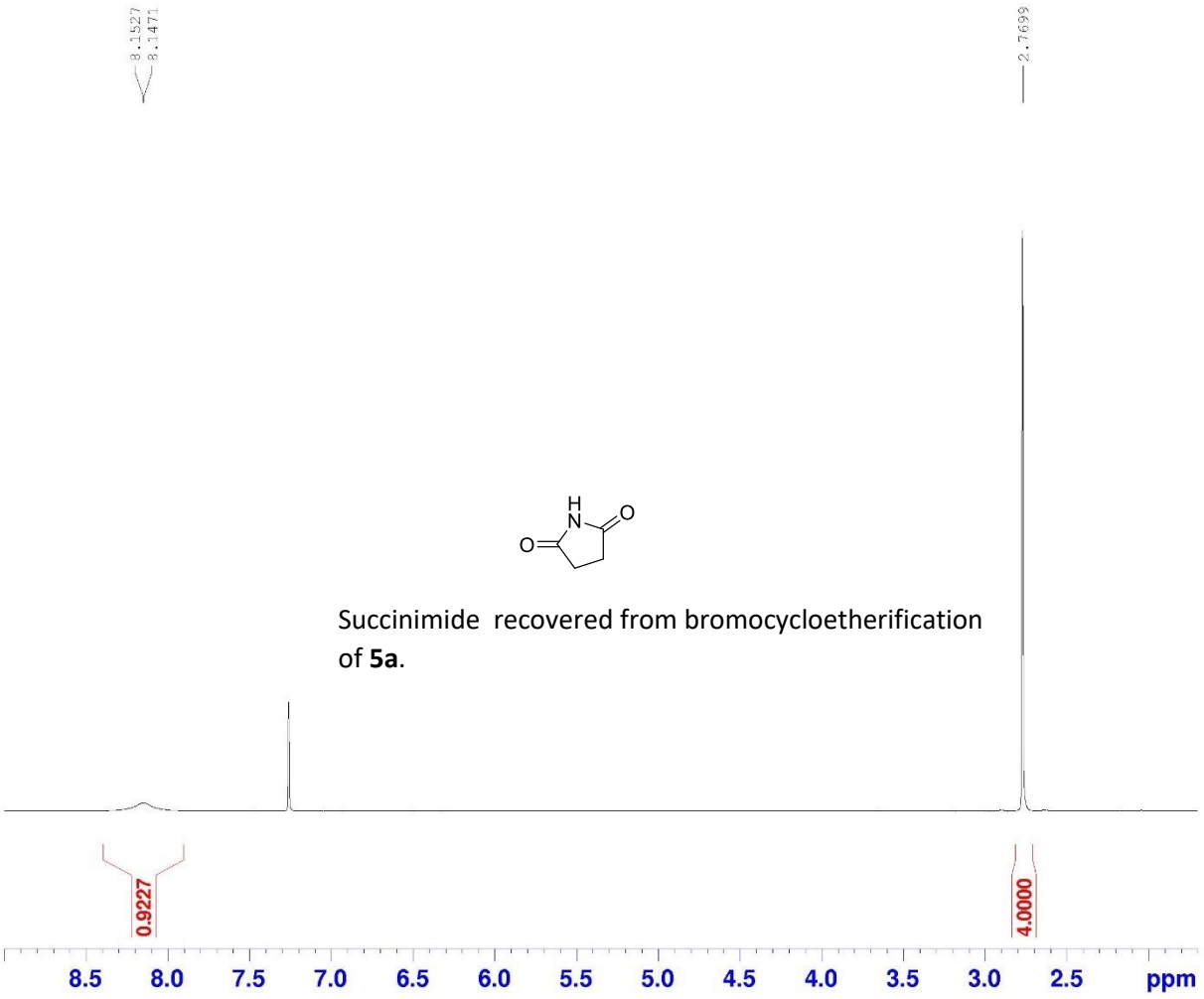
LB                  0.30 Hz
GB                     0
PC                  1.00
```

Filtration purified **6a** from bromocycloetherification of **5a**.

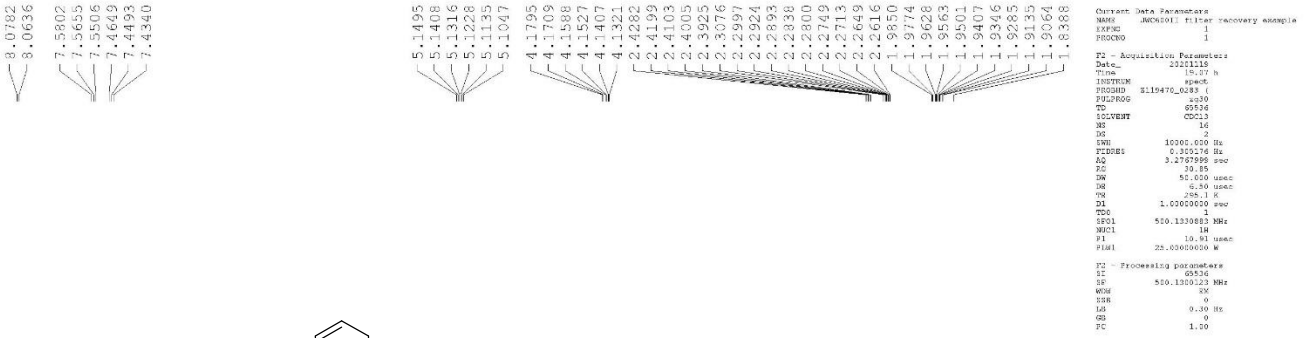


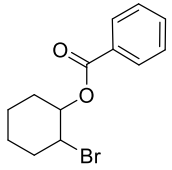

```
Current Data Parameters
NAME            JWC617 Sx
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20201214
Time                18.37 h
INSTRUM              spect
PROBHD    %119470_0283 (
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH             10000.000 Hz
FIDRES              0.305176 Hz
AQ                3.2767999 sec
RG                    142.5
DW                   50.000 usec
DE                    6.50 usec
TE                   295.1 K
D1              1.00000000 sec
TD0                     1
SFO1           500.1330883 MHz
NUC1                   1H
P1                   10.91 usec
PLW1           25.00000000 W

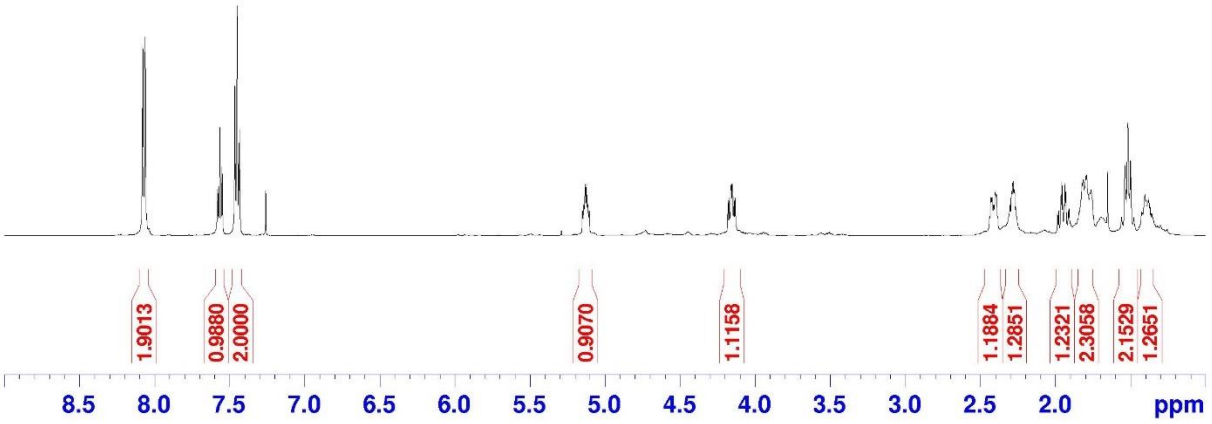
F2 - Processing parameters
SI                  65536
SF             500.1300121 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

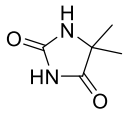

Succinimide recovered from bromocycloetherification of **5a**.





Filtration purified **9ah** from bromoesterification of **7a** and **8h**..





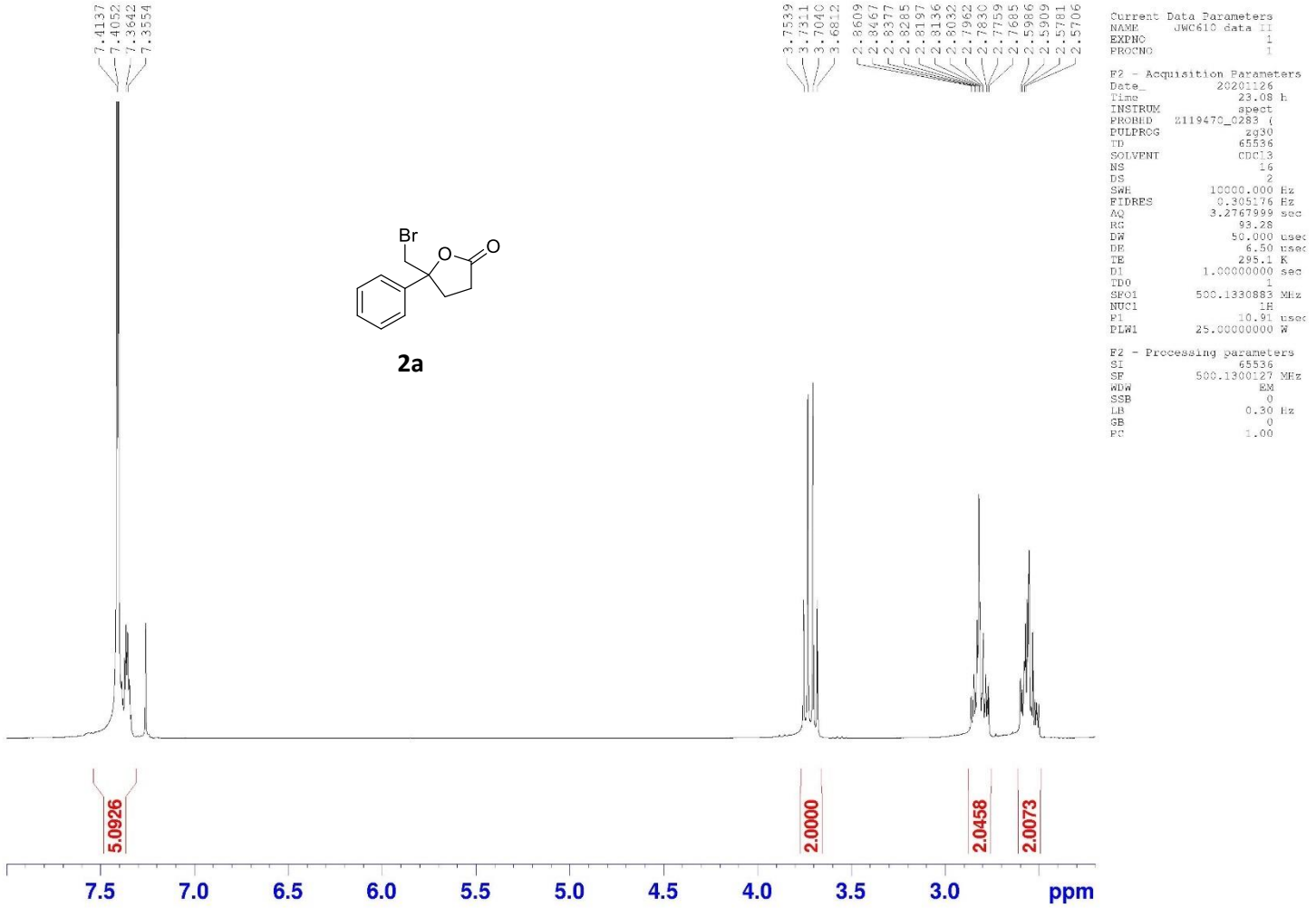
5,5-dimethylhydantoin recovered from bromoesterification of **7a** and **8h**.

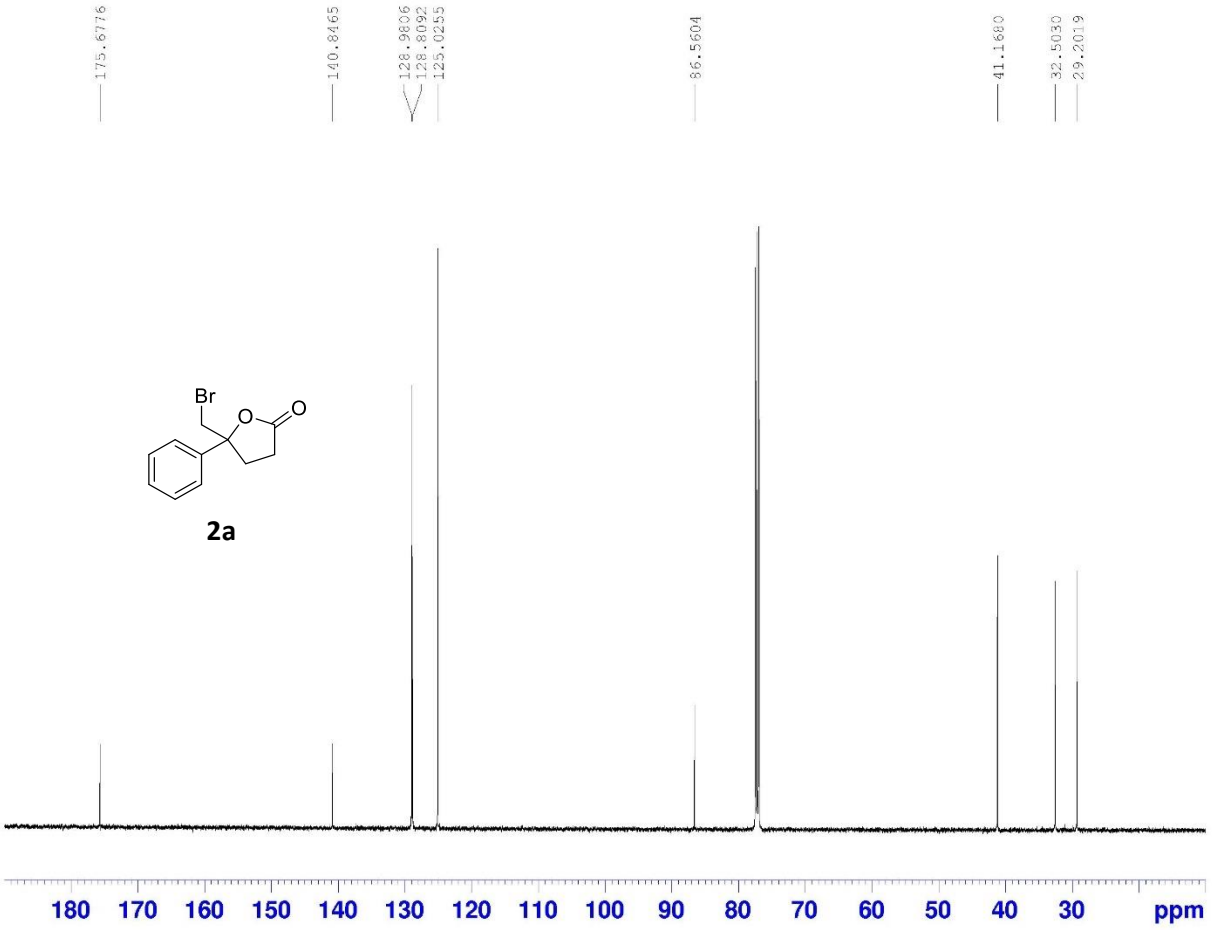

```
Current Data Parameters
NAME      JWC600IIH Q D2O
EXPNO                2
PROCNO               1

F2 - Acquisition Parameters
Date_          20201207
Time              13.50 h
INSTRUM           spect
PROBHD    %S20201_0170 (
PULPROG             zg30
TD                 65536
SOLVENT              D2O
NS                    16
DS                     2
SWH              8012.820 Hz
FIDRES           0.244532 Hz
AQ               4.0894465 sec
RG                    32
DW                62.400 usec
DE                 6.50 usec
TE                294.0 K
D1             1.00000000 sec
TD0                    1
SFO1         400.1324708 MHz
NUC1                  1H
P1                 6.75 usec
PLW1          13.17700005 W

F2 - Processing parameters
SI                 65536
SF           400.1299637 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

(G) ^{1}H and ^{13}C NMR Spectra

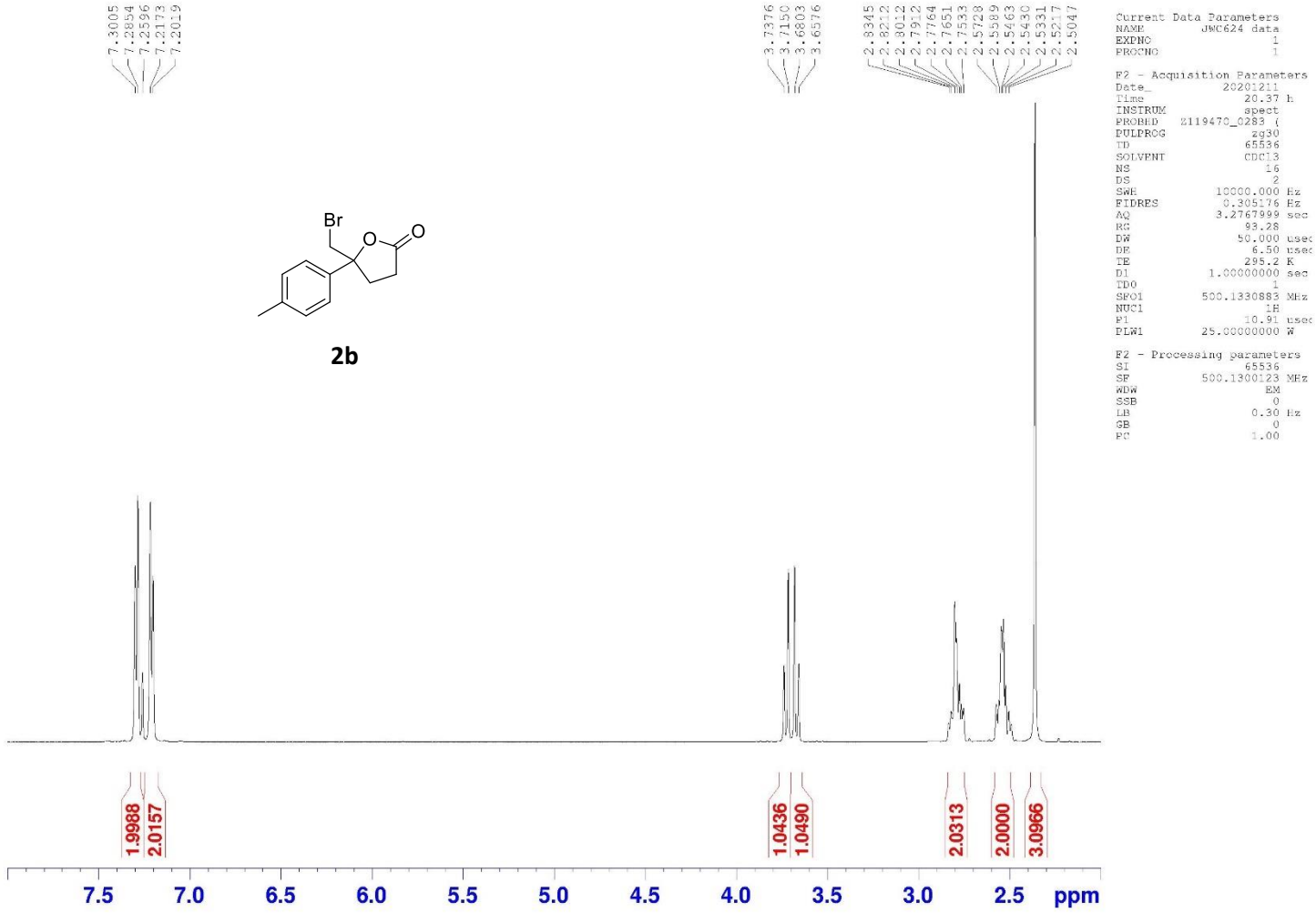





```
Current Data Parameters
NAME      JWC610 data II
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201126
Time              23.51 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

F2 - Processing parameters
SI                32768
SF           125.7577762 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

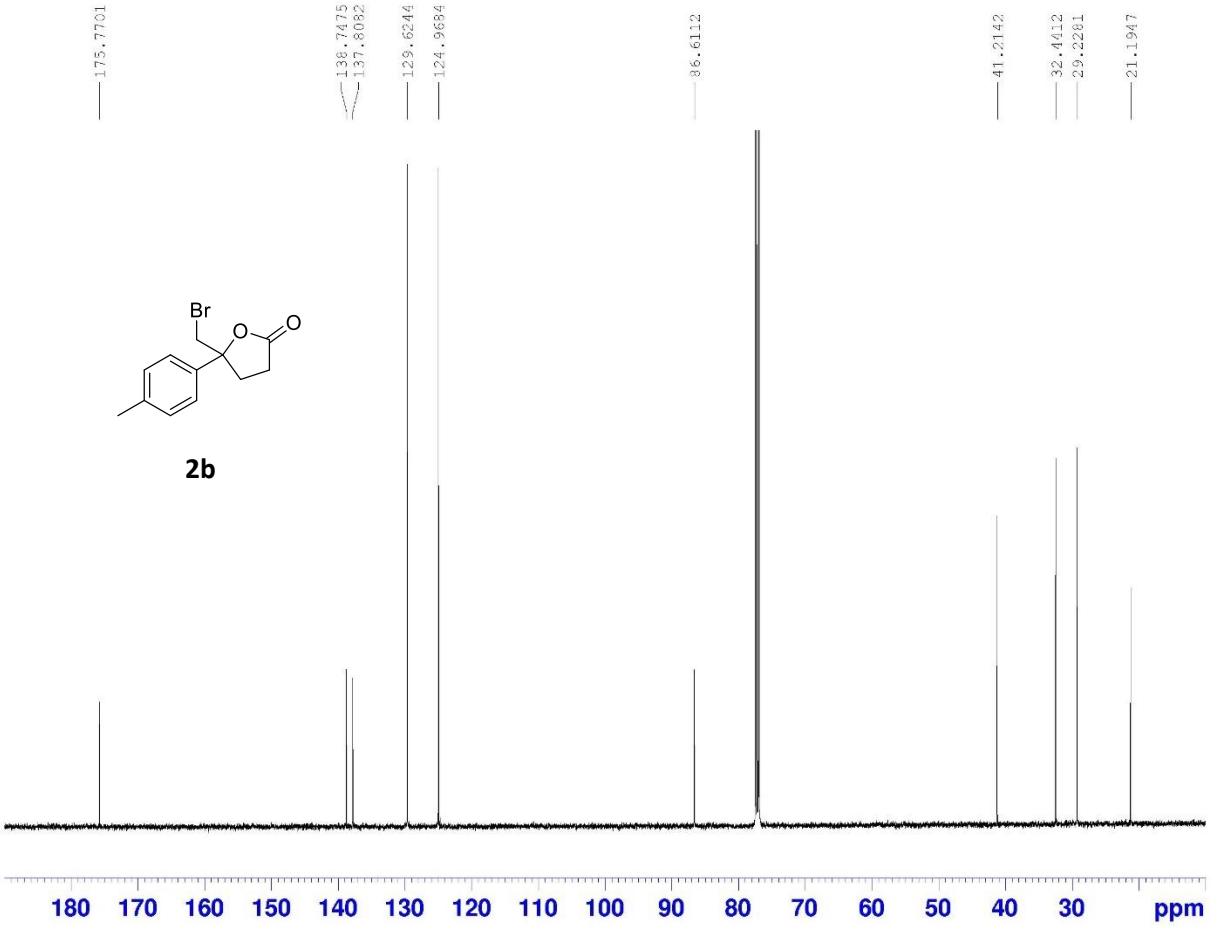


2b

```
Current Data Parameters
NAME          JWC624 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201211
Time              20.37 h
INSTRUM             spect
PROBHD   Z119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 93.28
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1          25.00000000 W

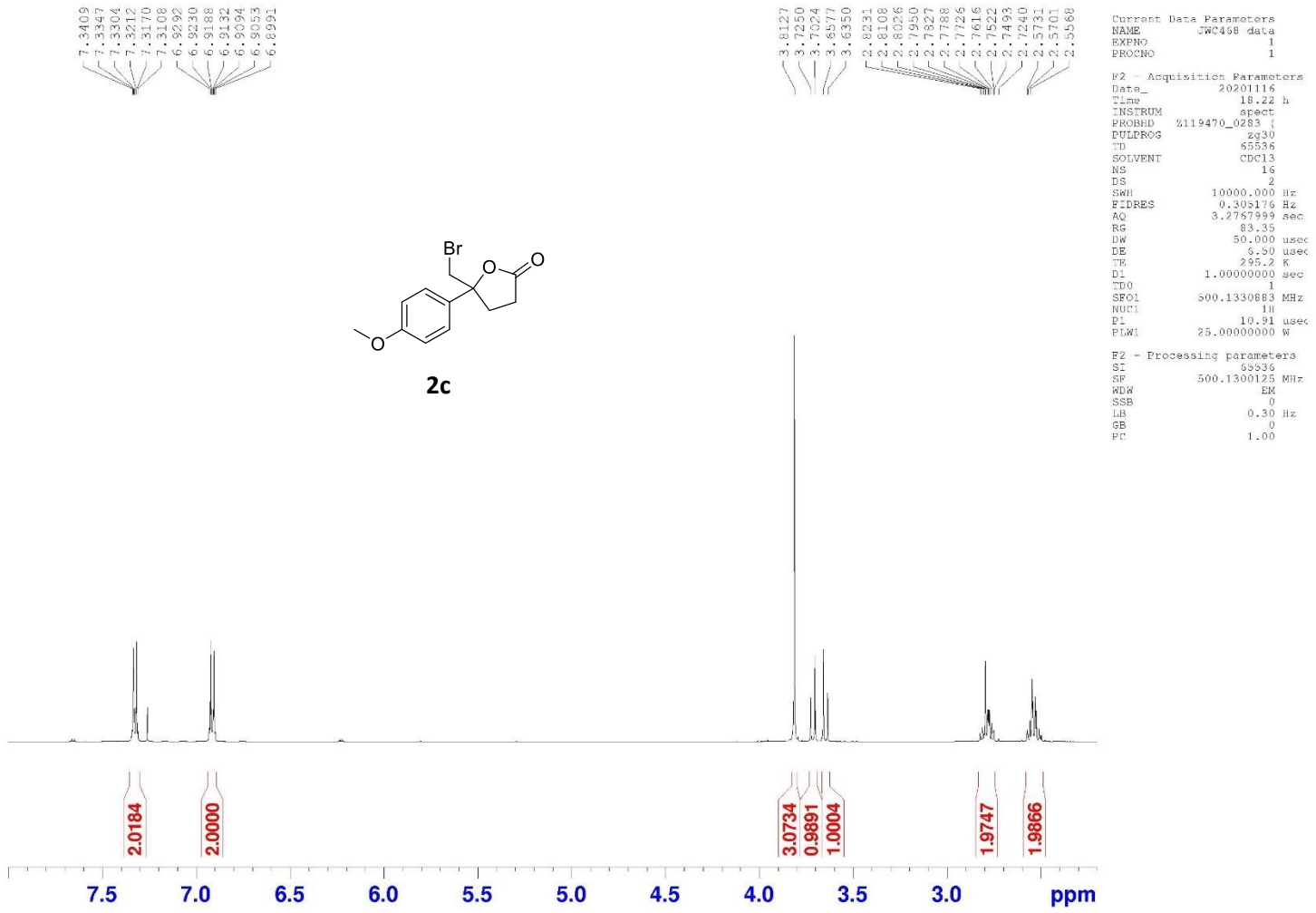
F2 - Processing parameters
SI                 65536
SF            500.1300123 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC624 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201211
Time              21.31 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

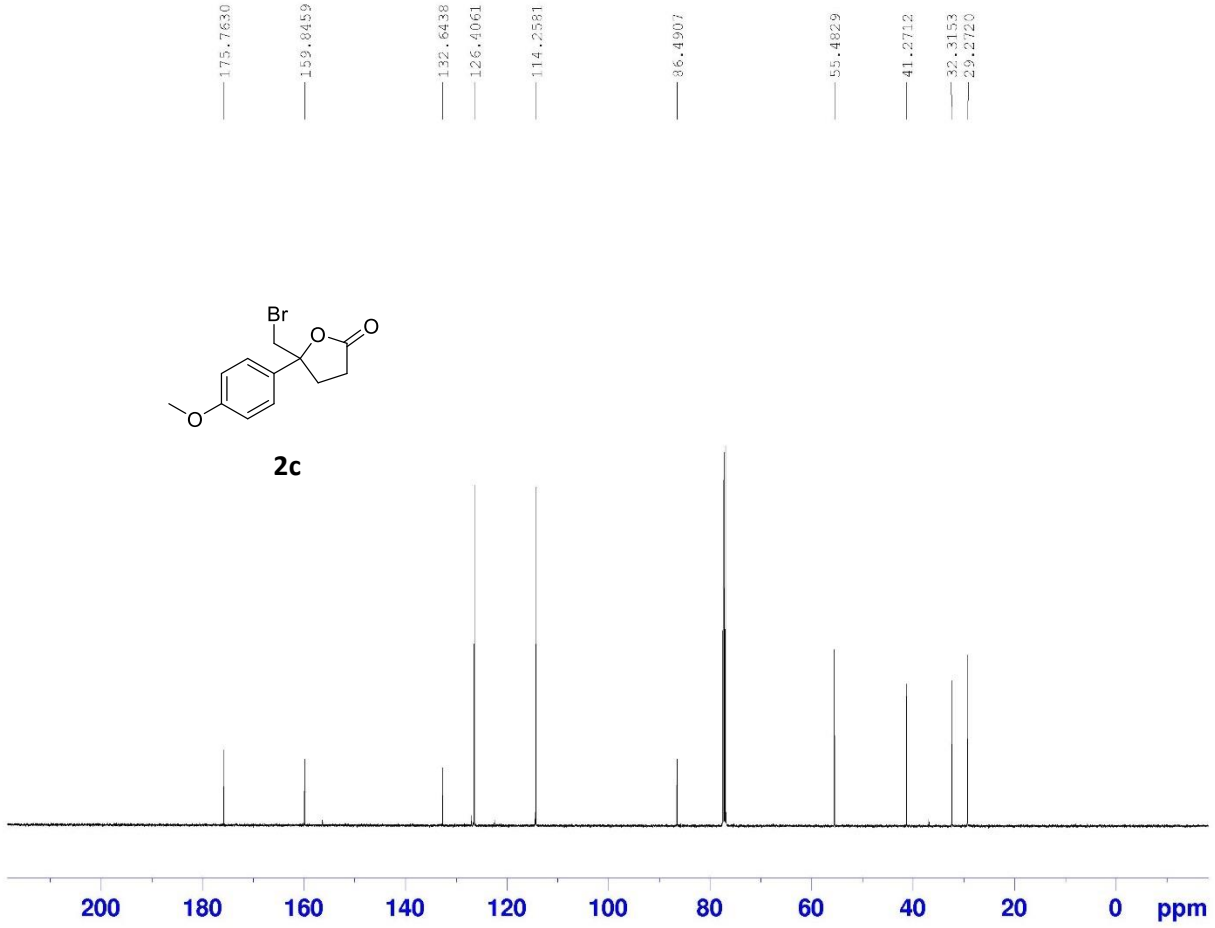
F2 - Processing parameters
SI                32768
SF           125.7565657 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME          JWC468 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201116
Time              18.22 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 83.35
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

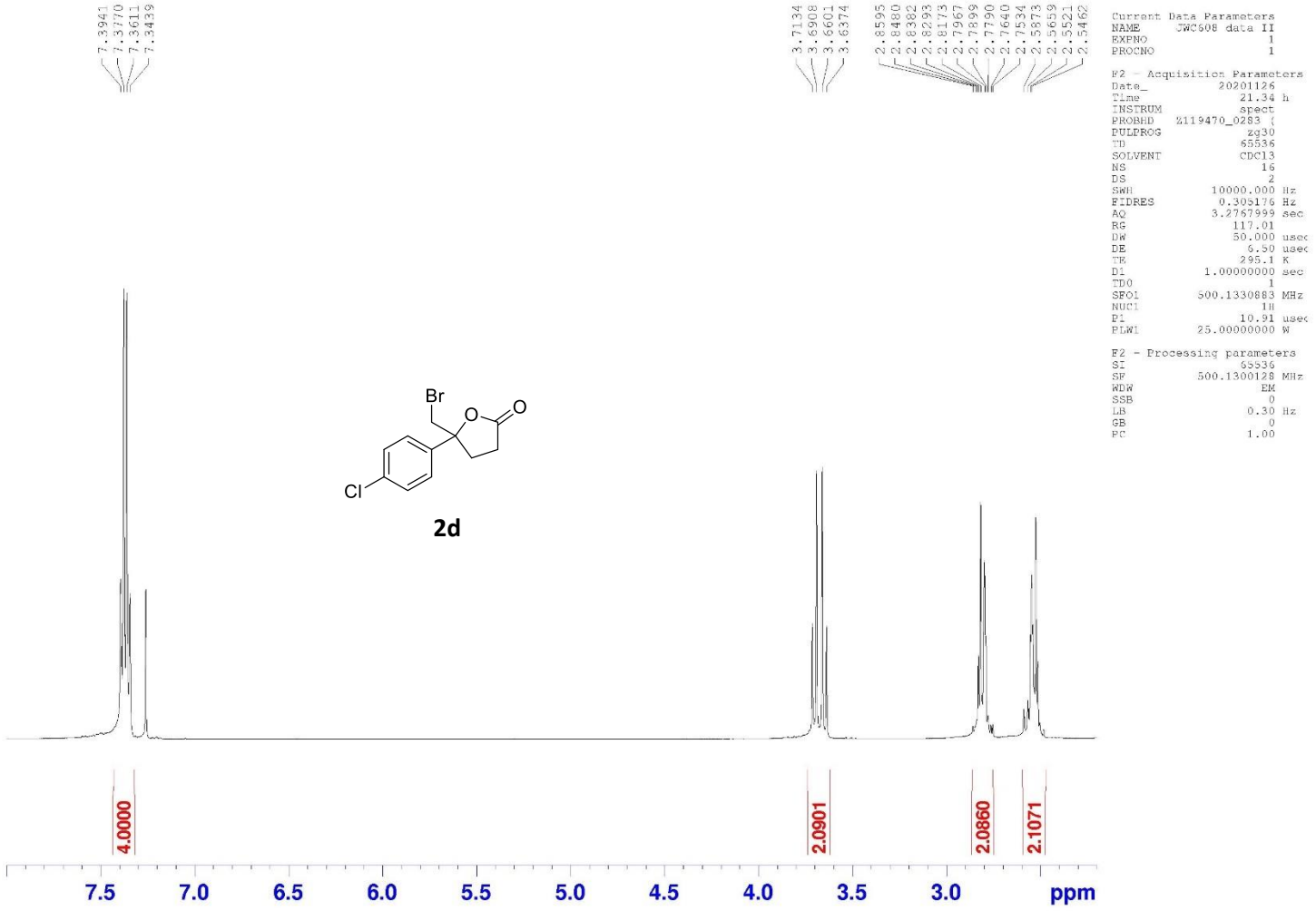
F2 - Processing parameters
SI                 65536
SF            500.1300125 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC468 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201116
Time              21.10 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   700
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

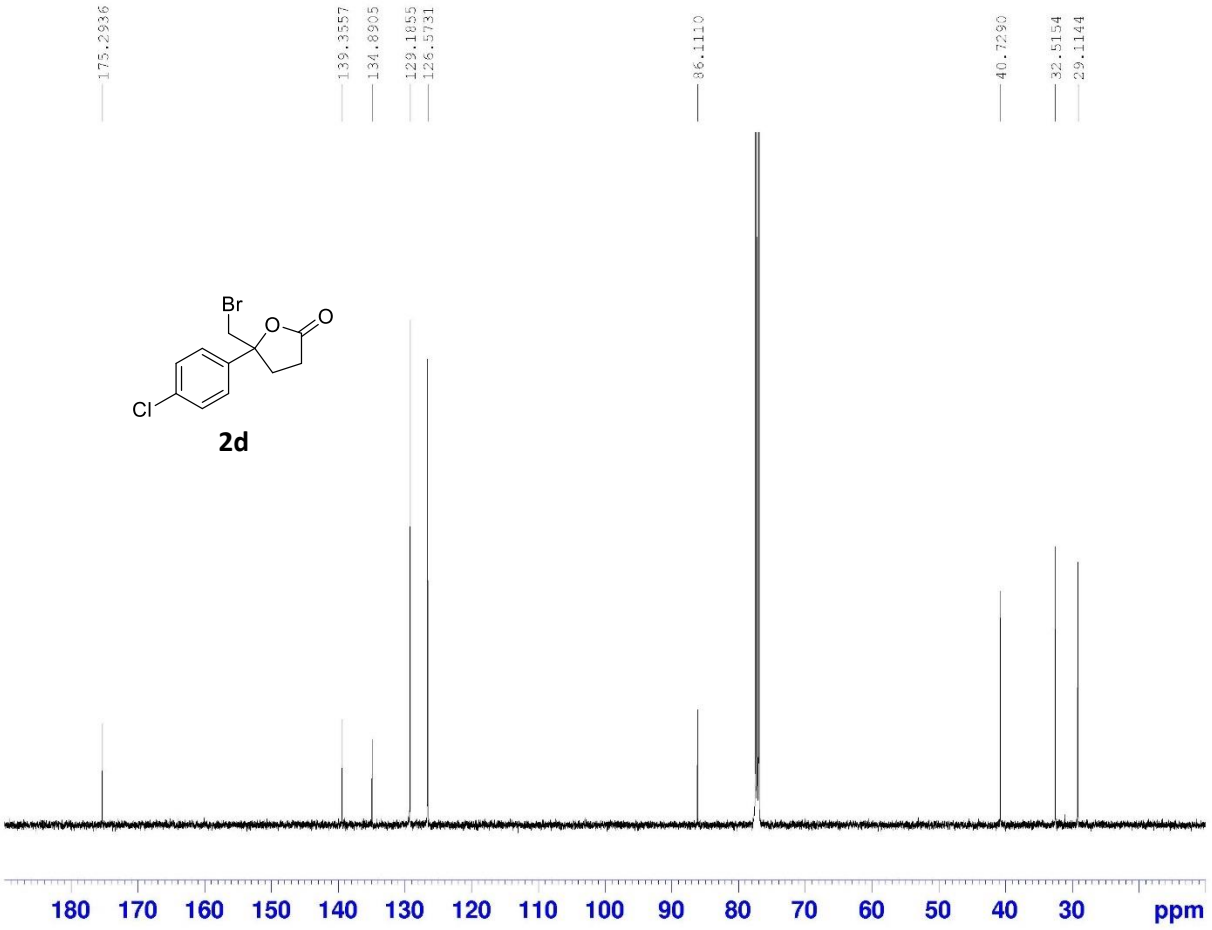
F2 - Processing parameters
SI                 32768
SF           125.7577761 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME      JWC608 data II
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201126
Time              21.34 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 117.01
DW                 50.000 usec
DE                   6.50 usec
TE                 295.1 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

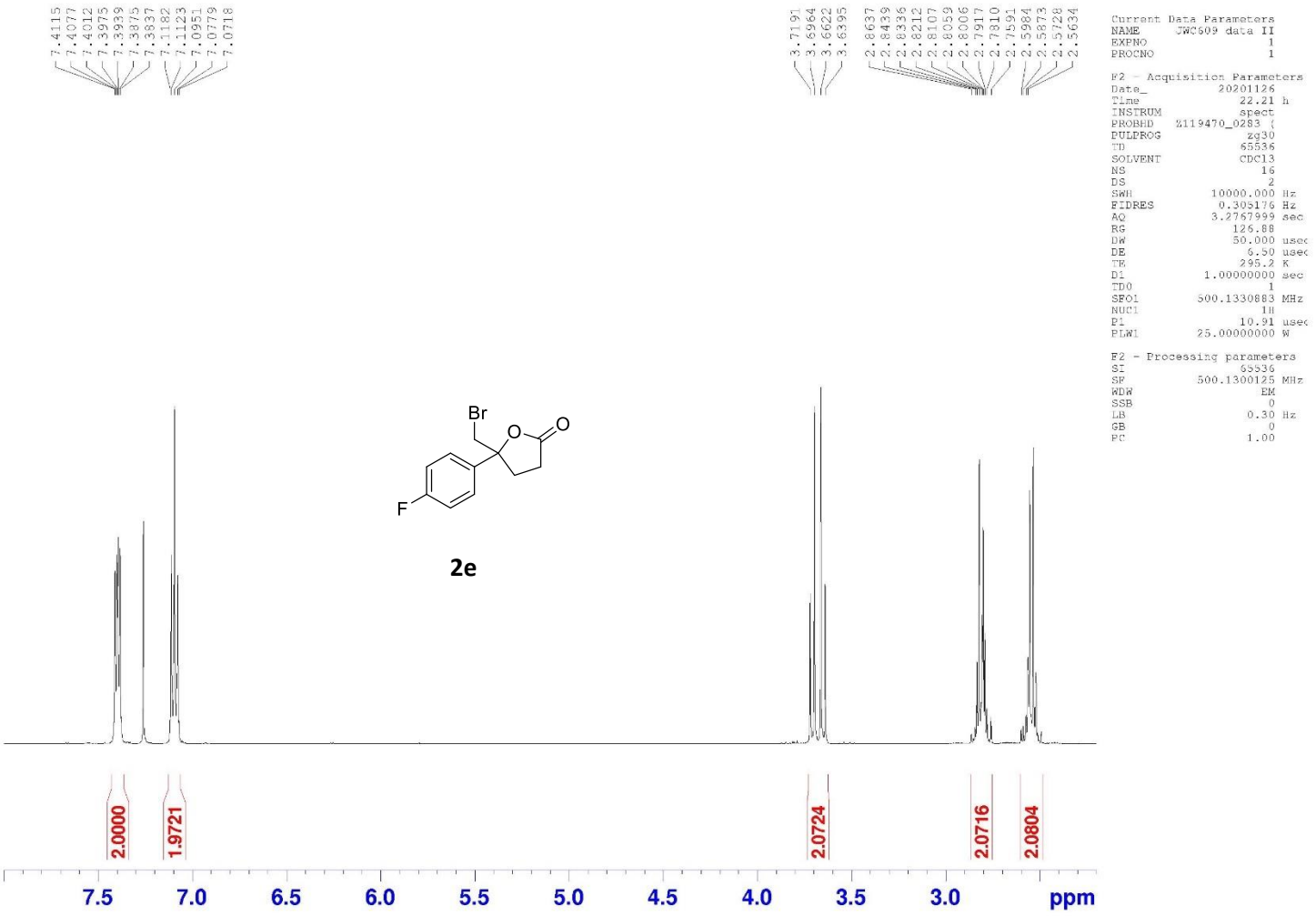
F2 - Processing parameters
SI                 65536
SF            500.1300128 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME      JWC608 data II
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201126
Time              22.17 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1        125.7703643 MHz
NUC1                13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

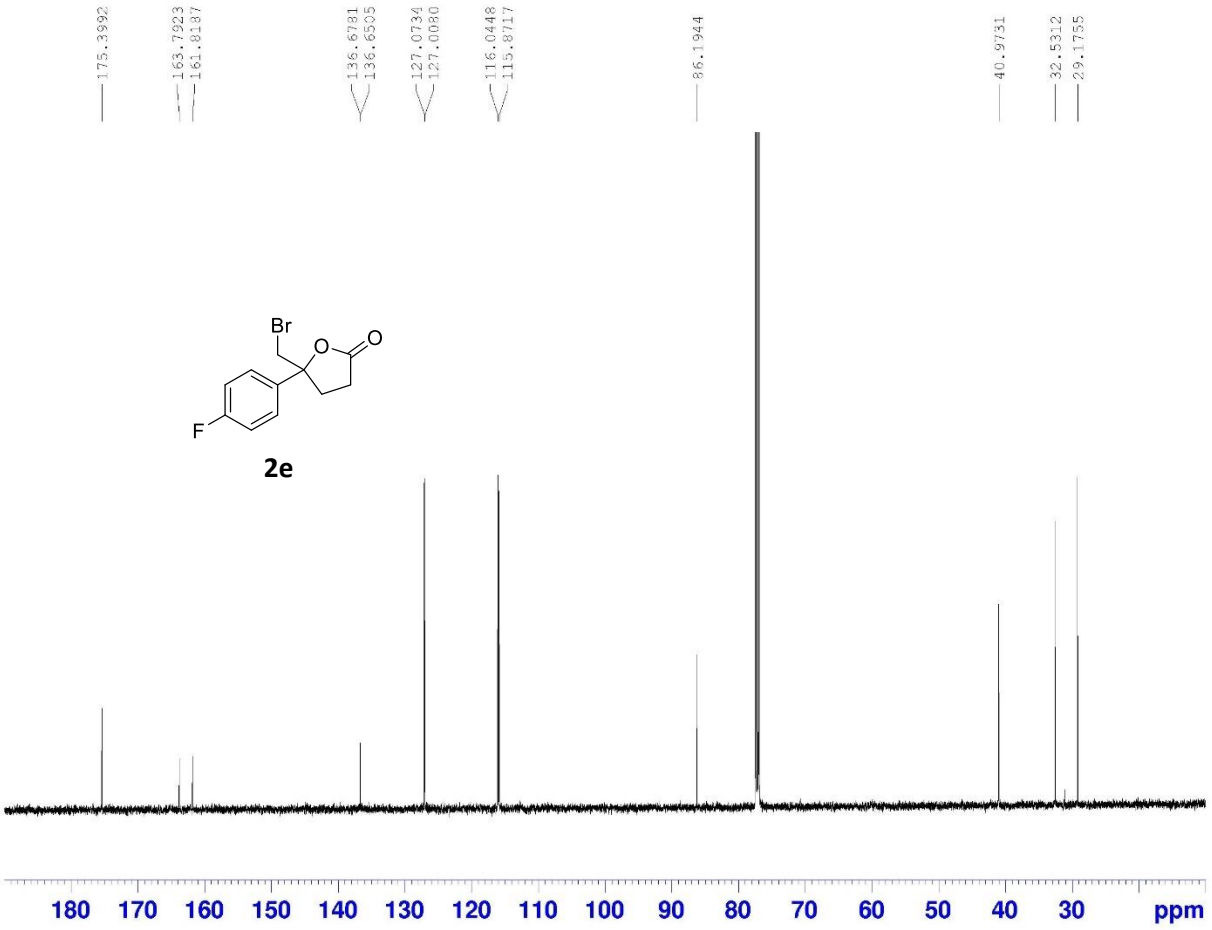
F2 - Processing parameters
SI                32768
SF          125.7577744 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME      JWC609 data II
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201126
Time              22.21 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                126.88
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

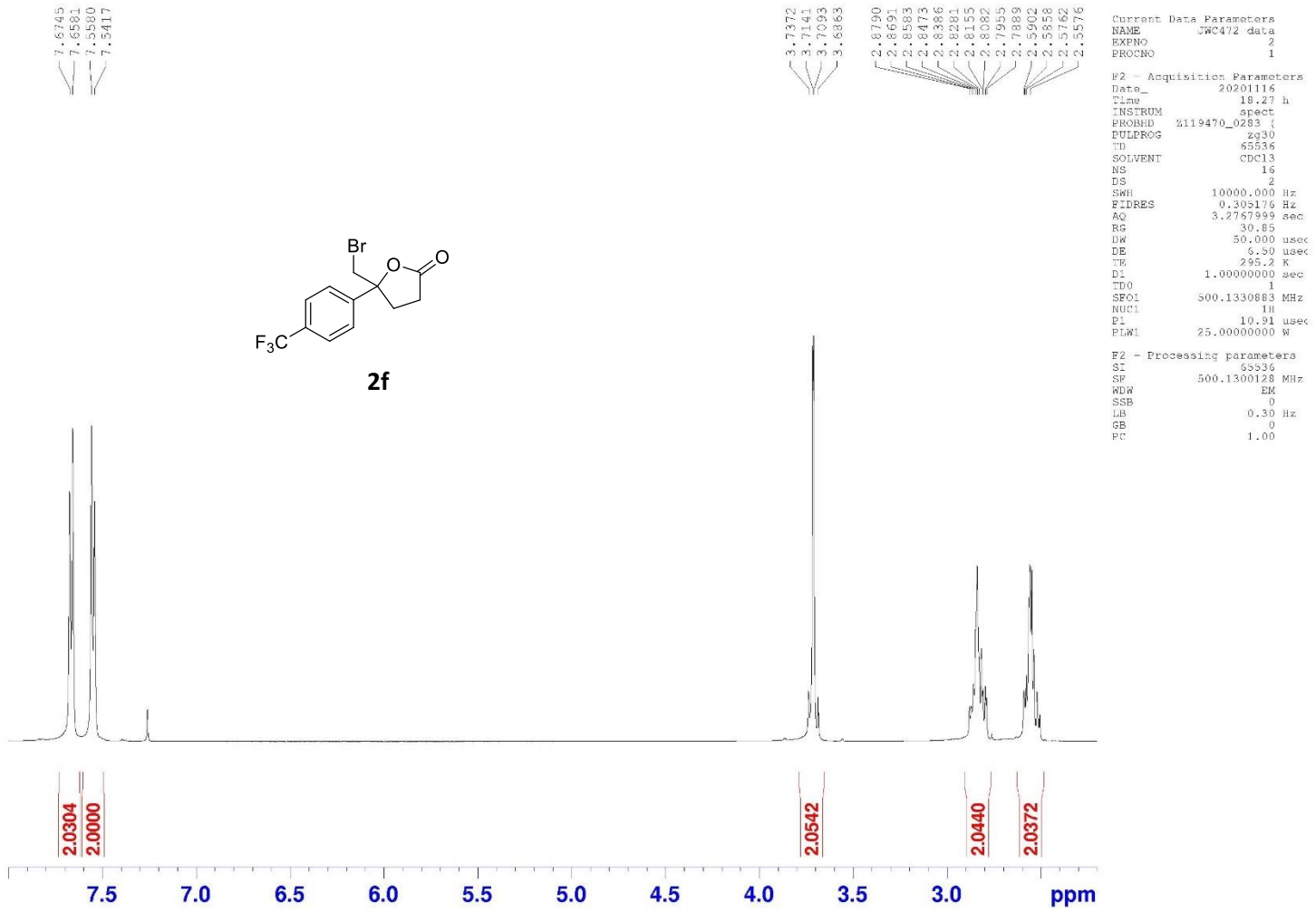
F2 - Processing parameters
SI                 65536
SF            500.1300125 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME      JWC609 data II
EXPNO                2
PROCNO               1

F2 - Acquisition Parameters
Date_          20201126
Time              23.04 h
INSTRUM            spect
PROBHD    %119470_0283 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

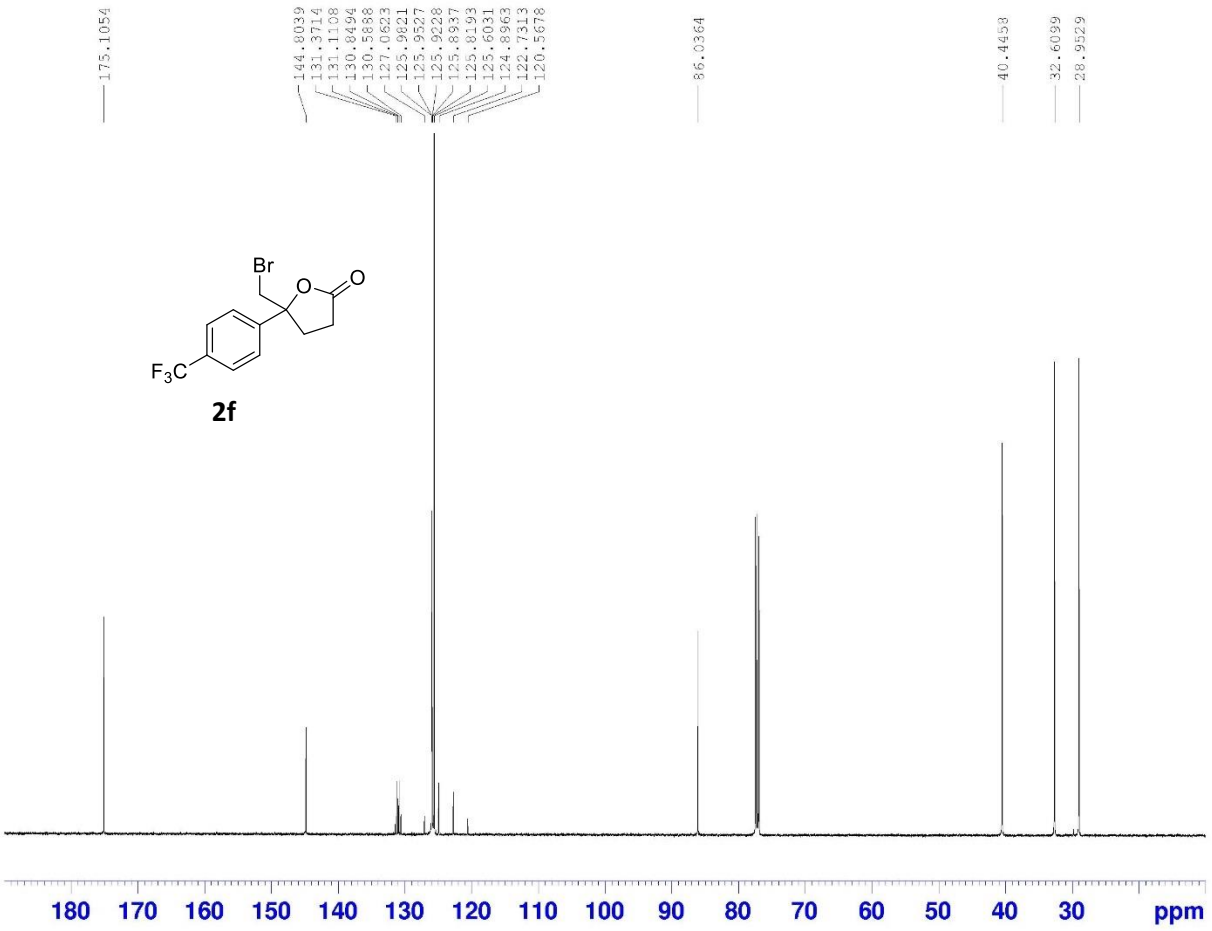
F2 - Processing parameters
SI                32768
SF           125.7577740 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME          JWC472 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201116
Time              18.27 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 30.85
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1          25.00000000 W

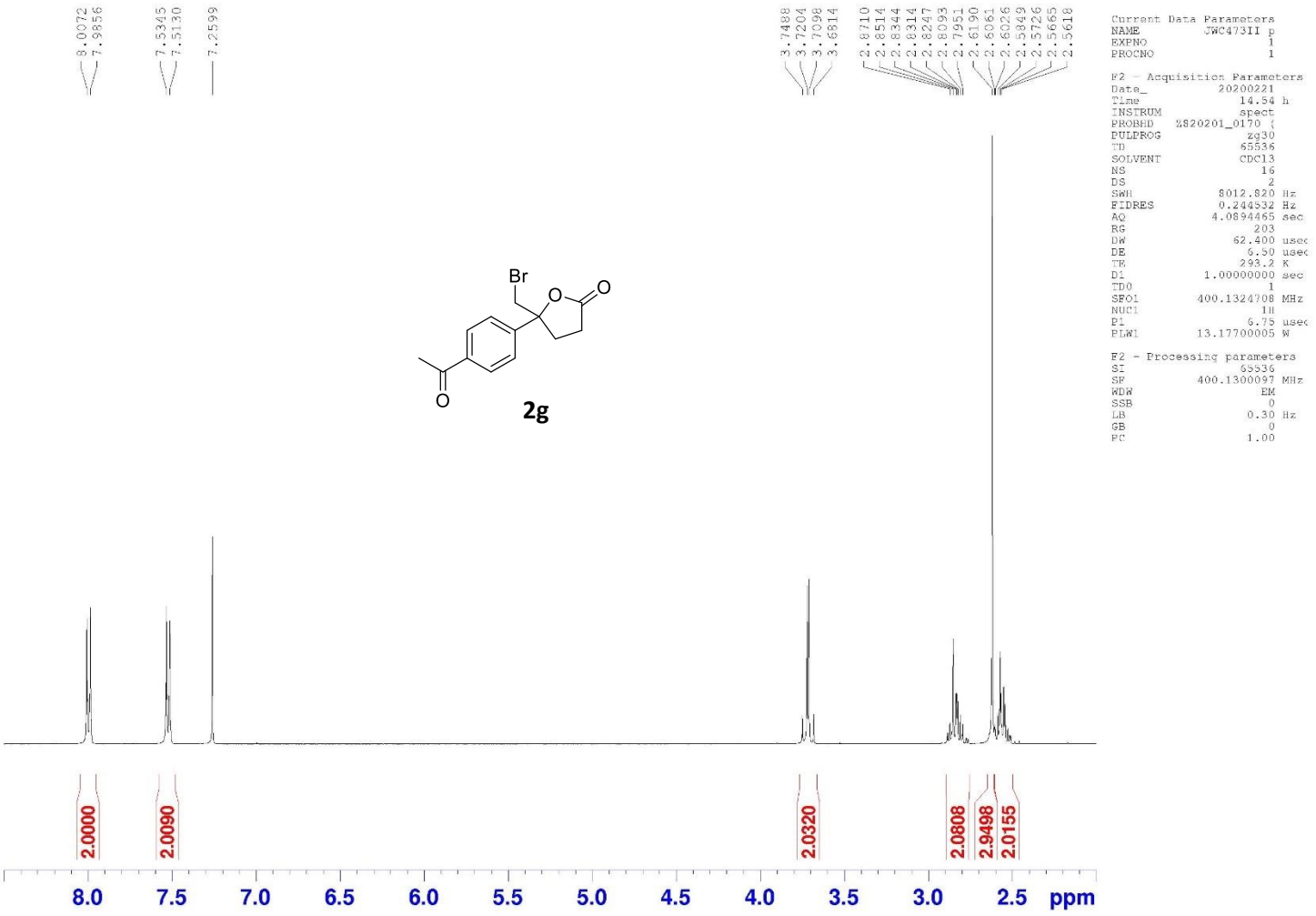
F2 - Processing parameters
SI                 65536
SF            500.1300128 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC472 data
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201116
Time              21.50 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  700
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

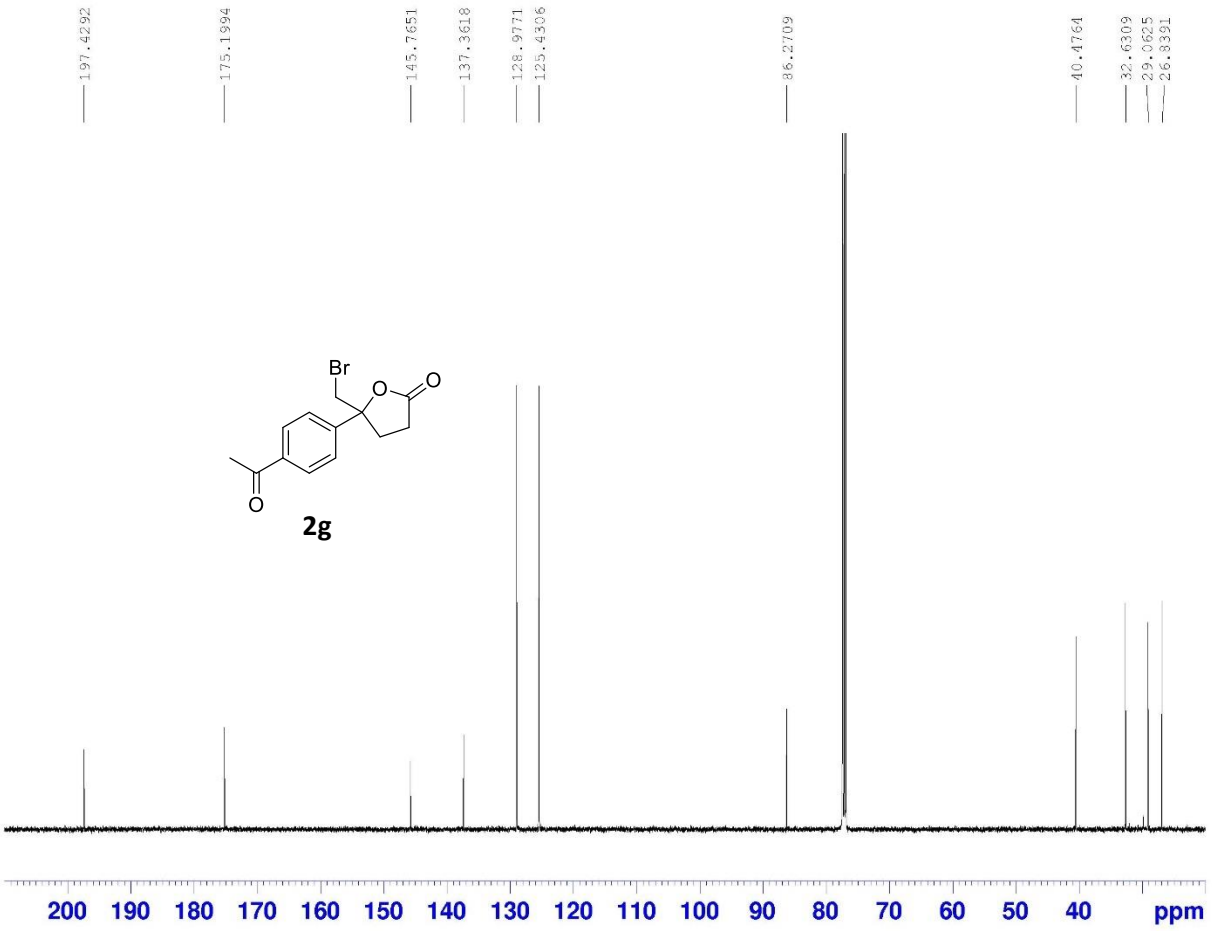
F2 - Processing parameters
SI                32768
SF           125.7577808 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME                 CWC473II p
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_               20200221
Time                   14.54 h
INSTRUM                spect
PROBHD     %S20201_0170 (
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 8012.820 Hz
FIDRES              0.244532 Hz
AQ                  4.0894465 sec
RG                       203
DW                    62.400 usec
DE                     6.50 usec
TE                    293.2 K
D1                  1.00000000 sec
TD0                        1
SFO1              400.1324708 MHz
NUC1                      1H
P1                     6.75 usec
PLW1             13.17700005 W

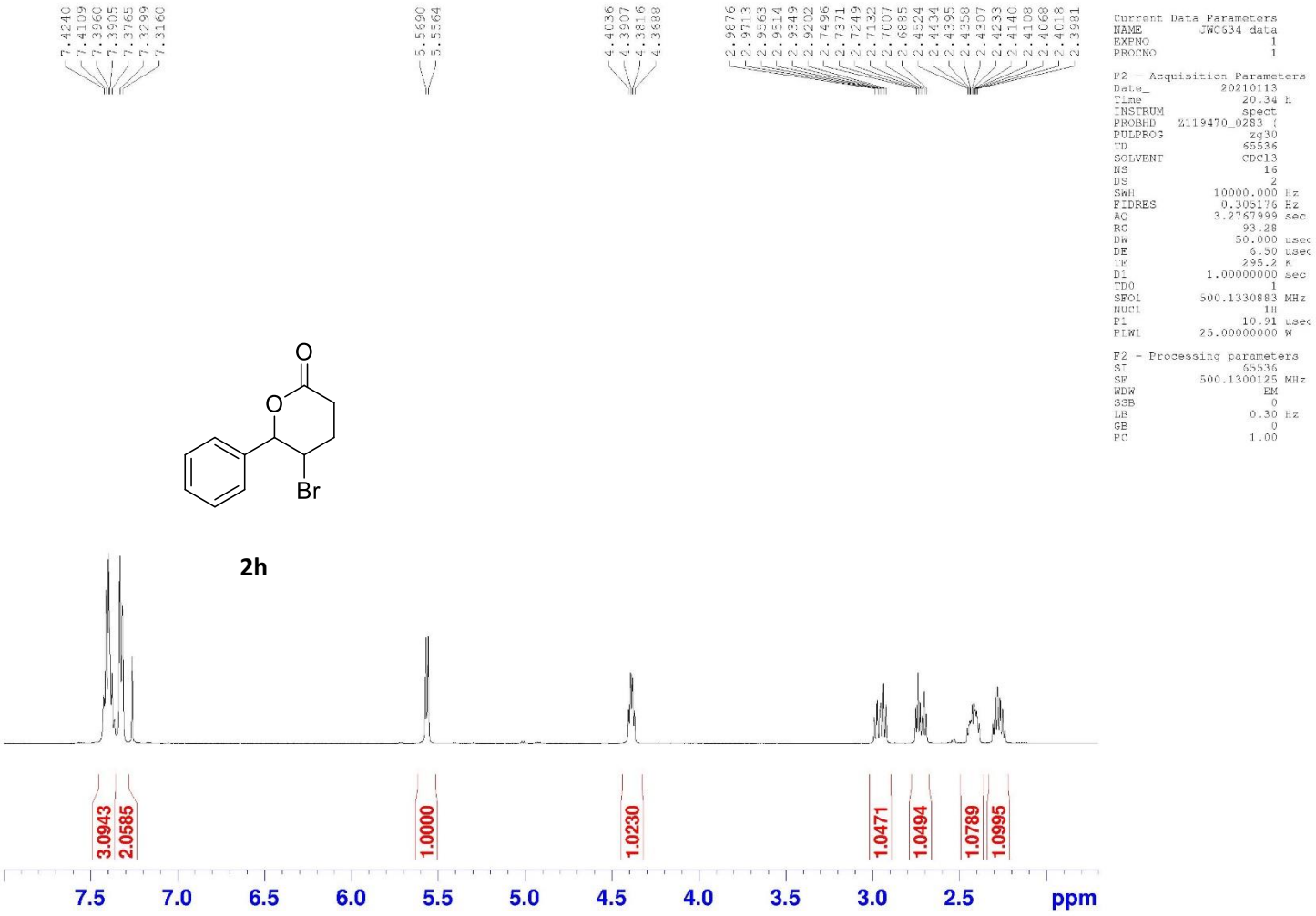
F2 - Processing parameters
SI                     65536
SF                400.1300097 MHz
WDW                       EM
SSB                        0
LB                      0.30 Hz
GB                         0
PC                      1.00
```




```
Current Data Parameters
NAME          JWC473 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201113
Time                0.34 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                  13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

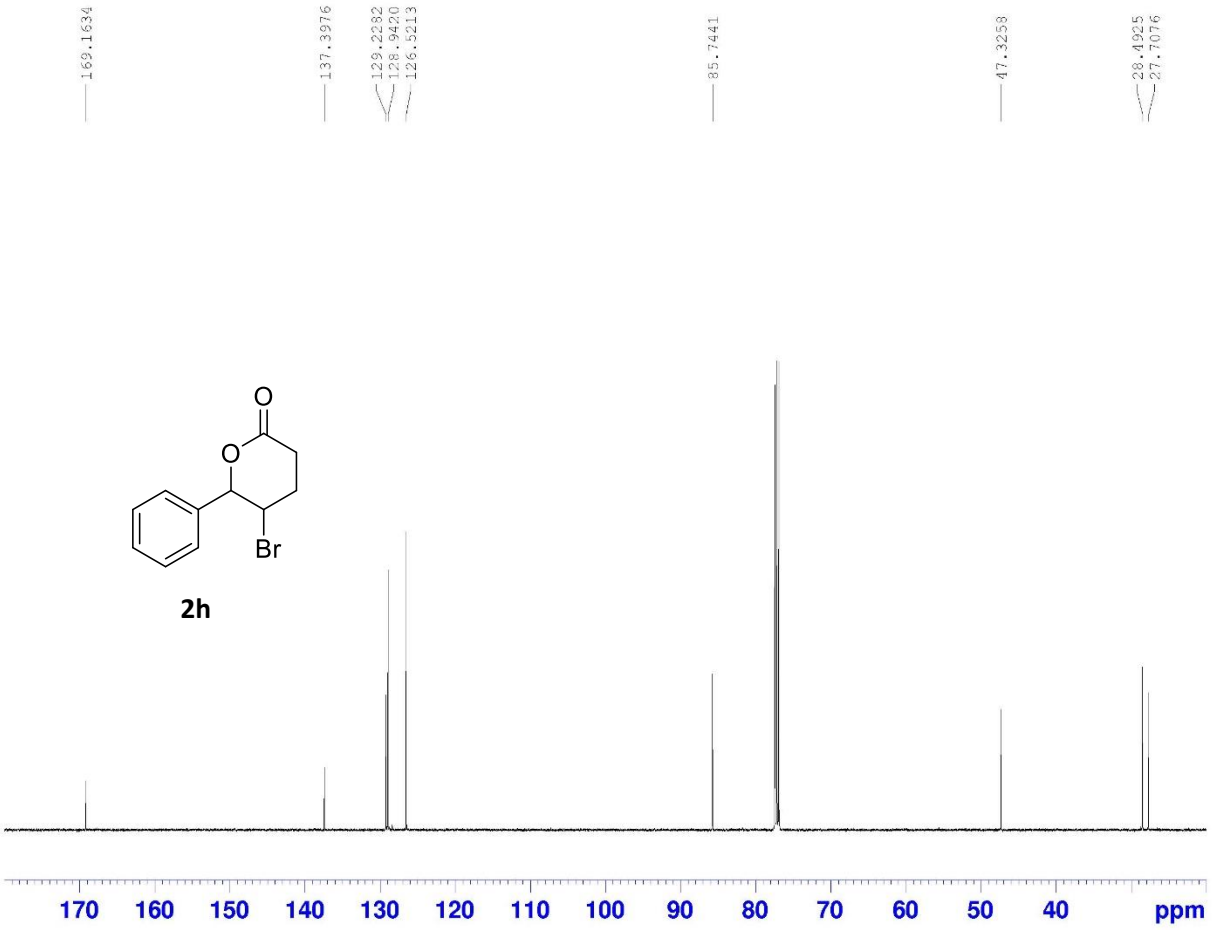
F2 - Processing parameters
SI                 32768
SF           125.7577743 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME          JWC634 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210113
Time               20.34 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            10000.000 Hz
FIDRES         0.305176 Hz
AQ             3.2767999 sec
RG                 93.28
DW                 50.000 usec
DE                  6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

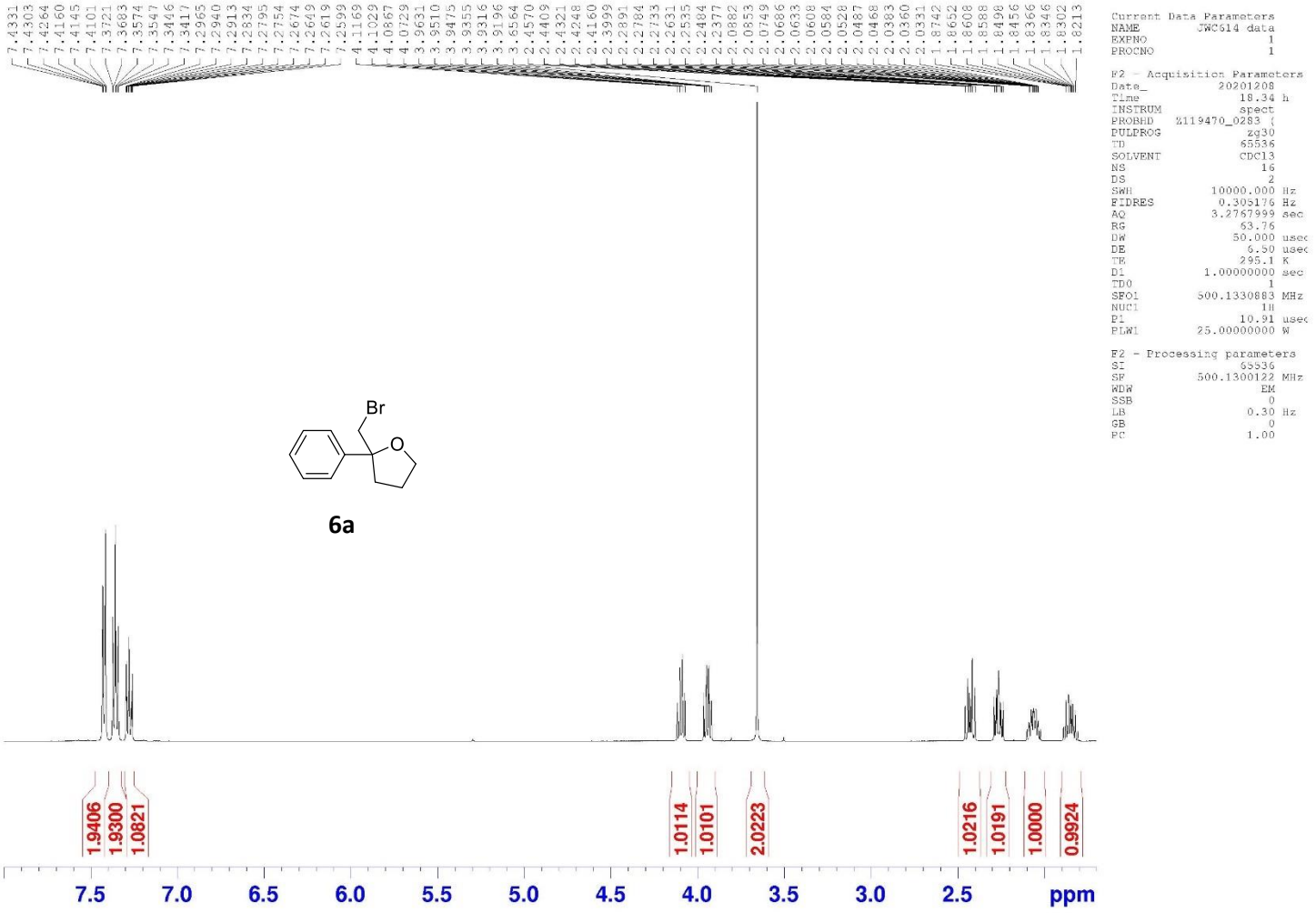
F2 - Processing parameters
SI                 65536
SF            500.1300125 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC634 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_            20210113
Time               21.29 h
INSTRUM              spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                 142.5
DW                16.800 usec
DE                 6.50 usec
TE                 295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

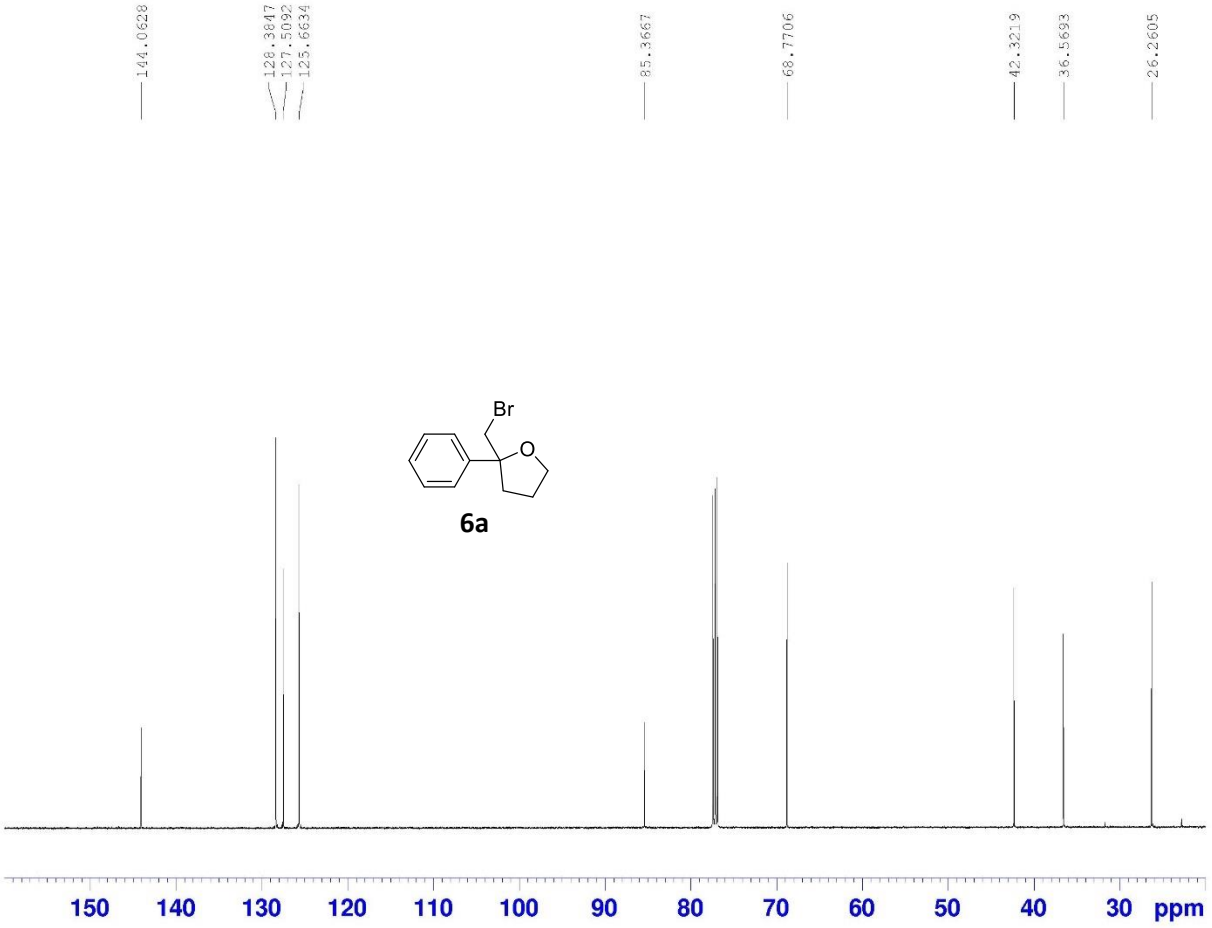
F2 - Processing parameters
SI                 32768
SF           125.7577753 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME          JWC614 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201208
Time              18.34 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 53.75
DW                50.000 usec
DE                 6.50 usec
TE                295.1 K
D1            1.00000000 sec
TD0                    1
SFO1        500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1        25.00000000 W

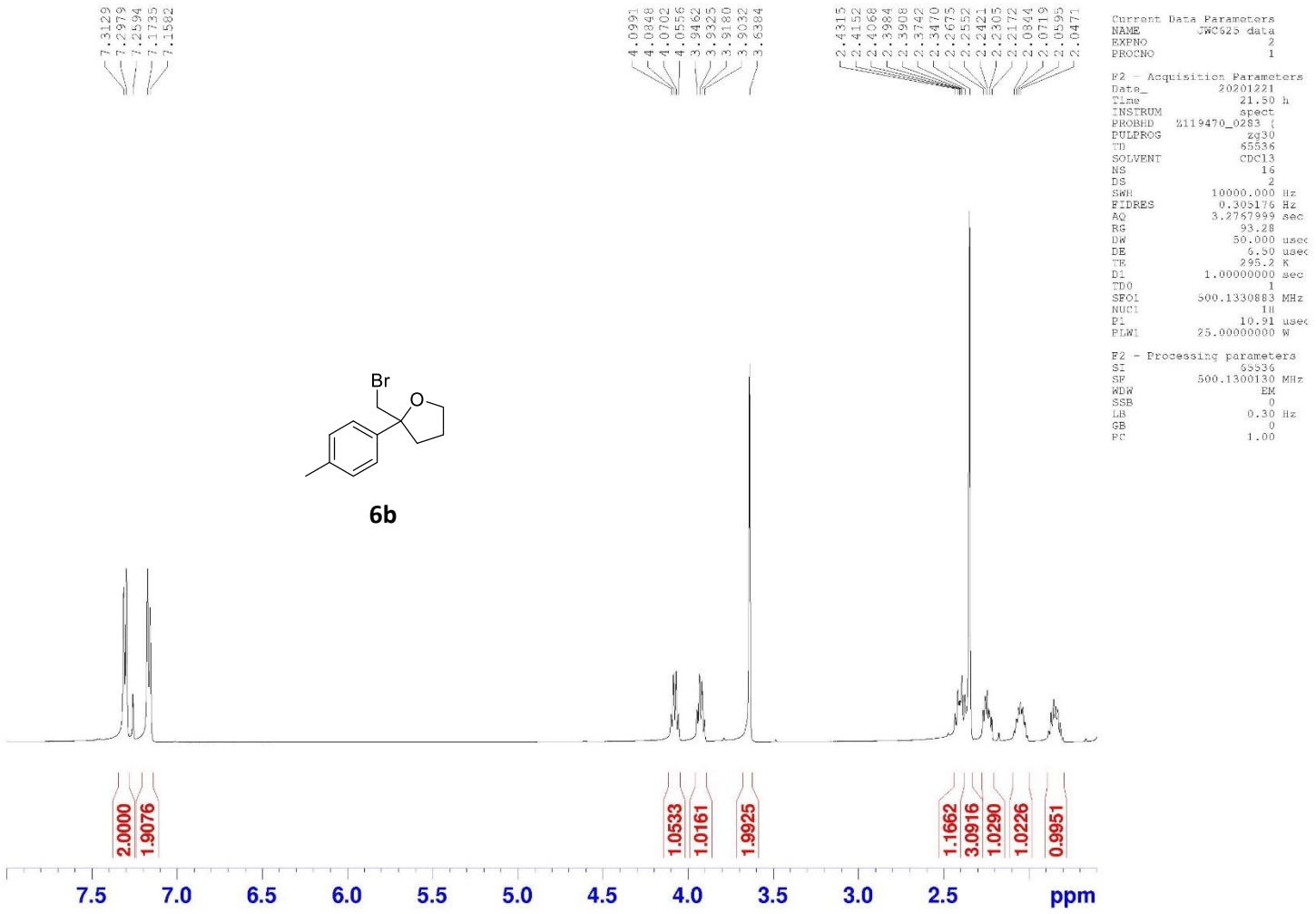
F2 - Processing parameters
SI                 65536
SF          500.1300122 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC614 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201208
Time              21.27 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                  13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

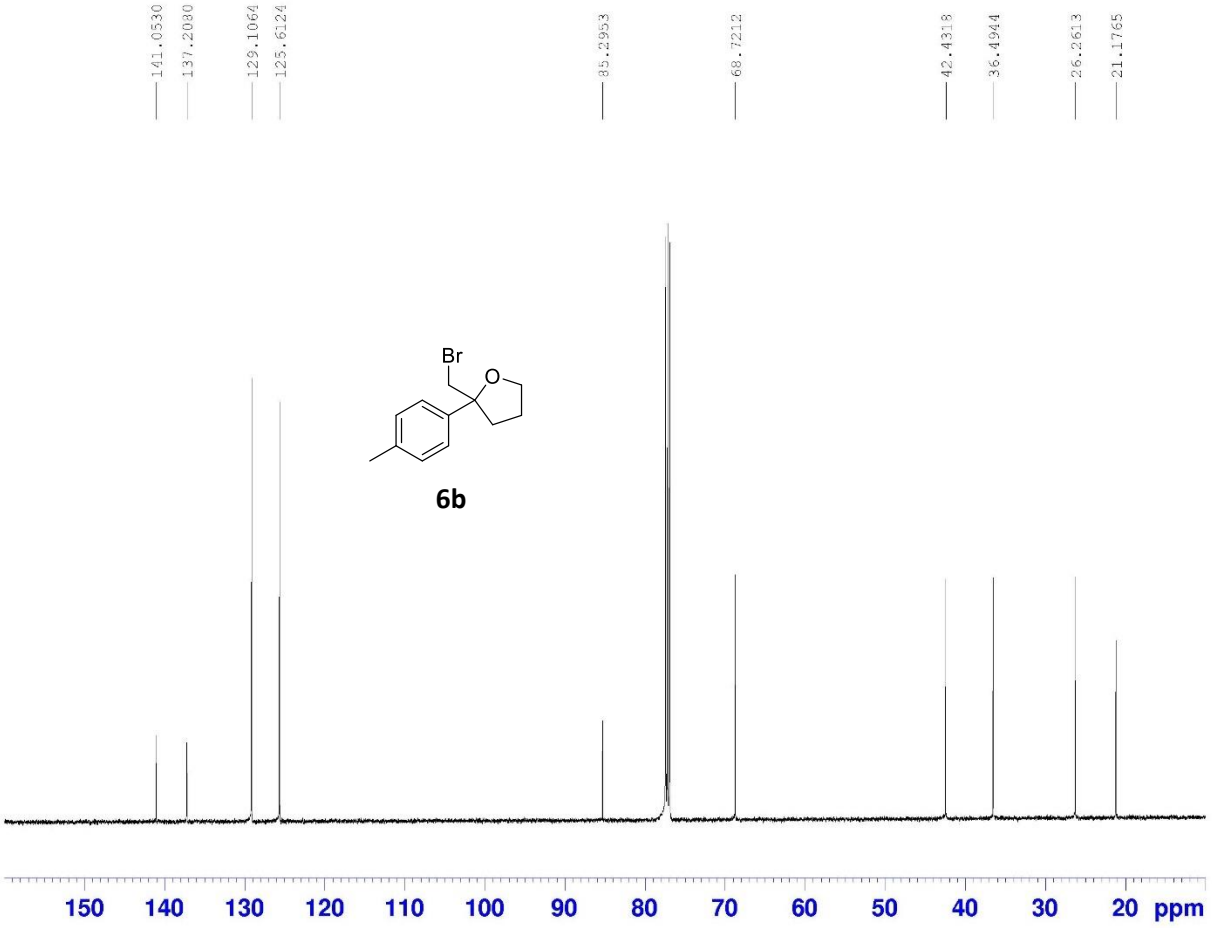
F2 - Processing parameters
SI                 32768
SF           125.7577772 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME          JWC625 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201221
Time              21.50 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 93.28
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1          25.00000000 W

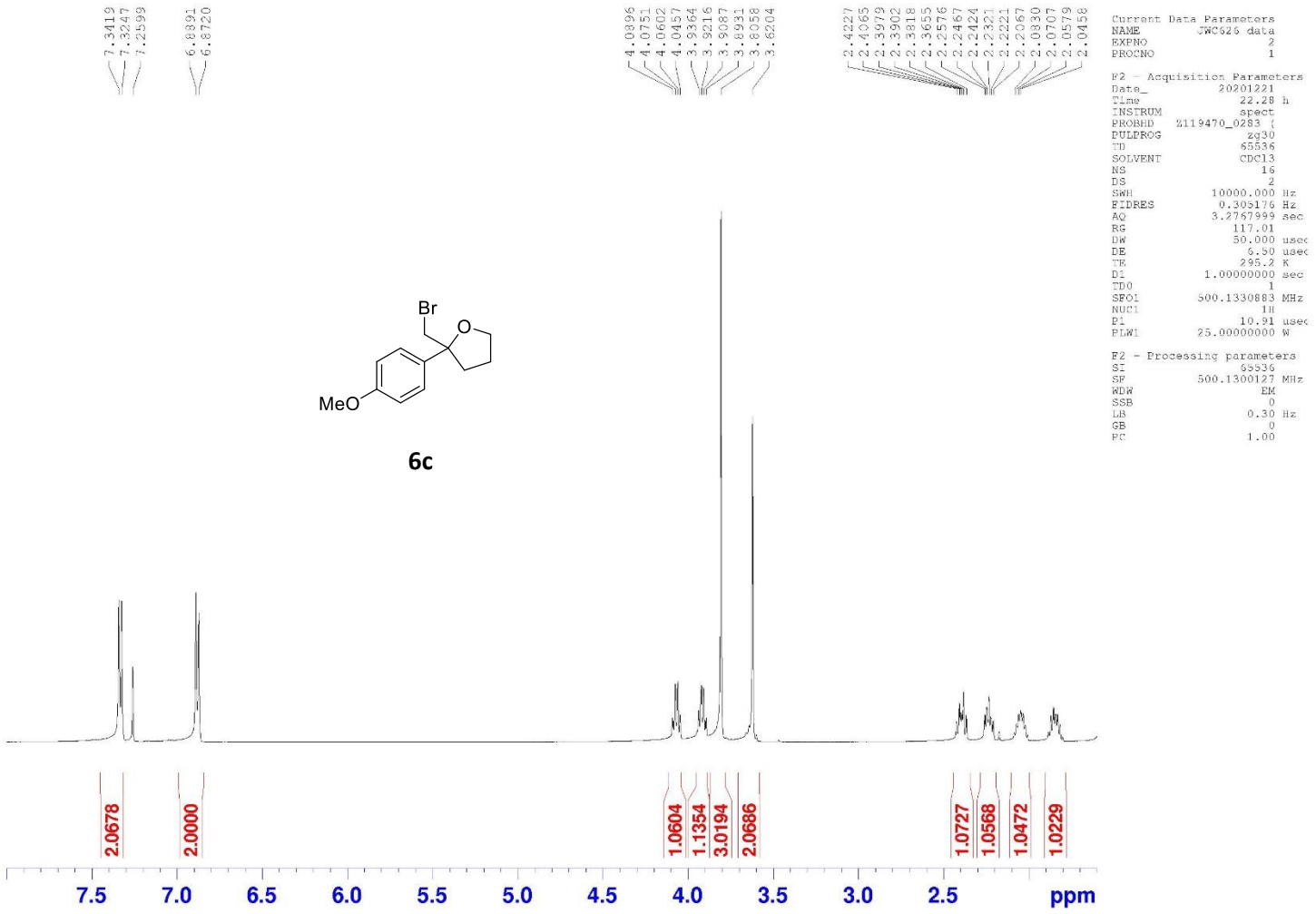
F2 - Processing parameters
SI                 65536
SF            500.1300130 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC625 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201221
Time              21.49 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                  13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

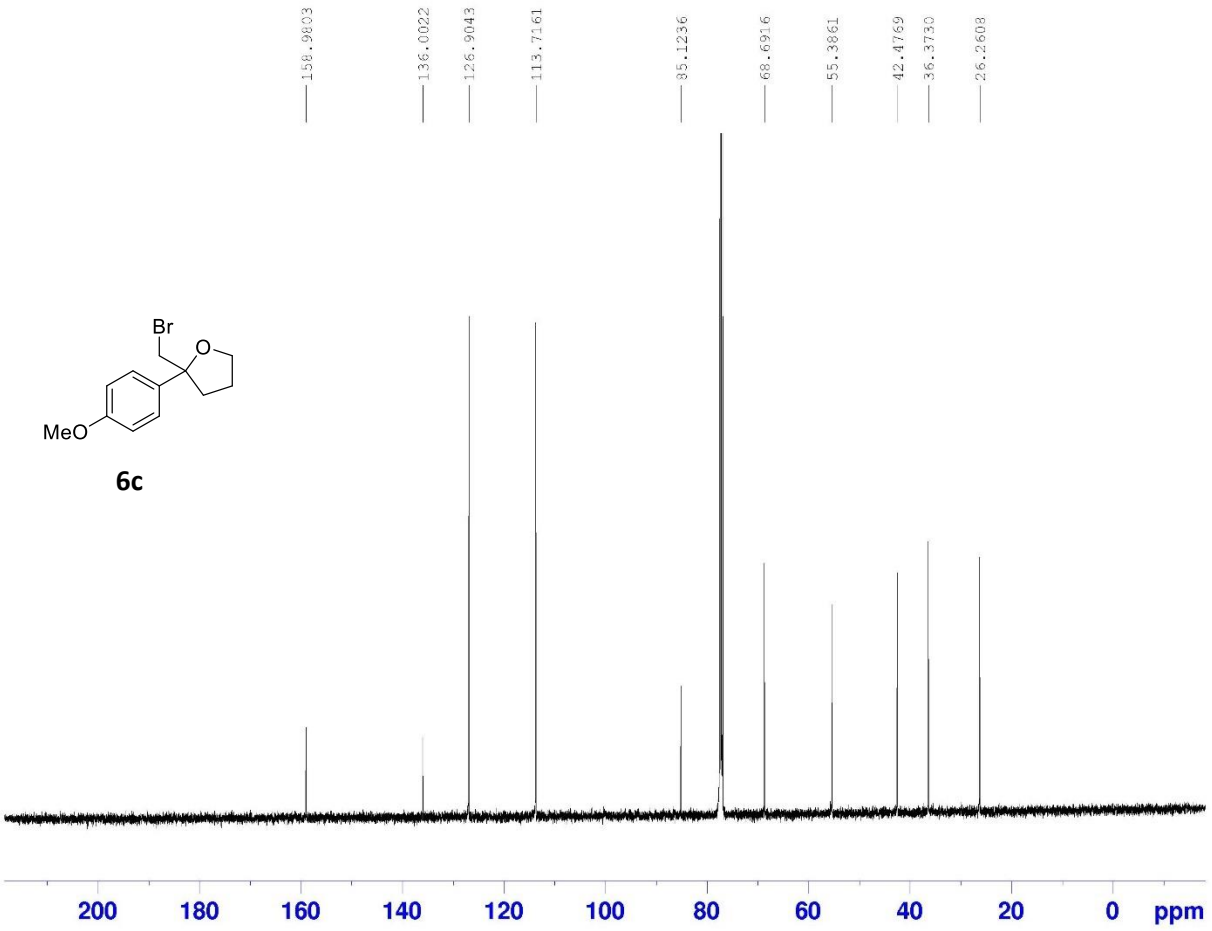
F2 - Processing parameters
SI                 32768
SF           125.7577752 MHz
WDW                   EM
SSB                    0
LB                1.00 Hz
GB                     0
PC                1.40
```




```
Current Data Parameters
NAME          JWC626 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201221
Time              22.28 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                117.01
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1          25.00000000 W

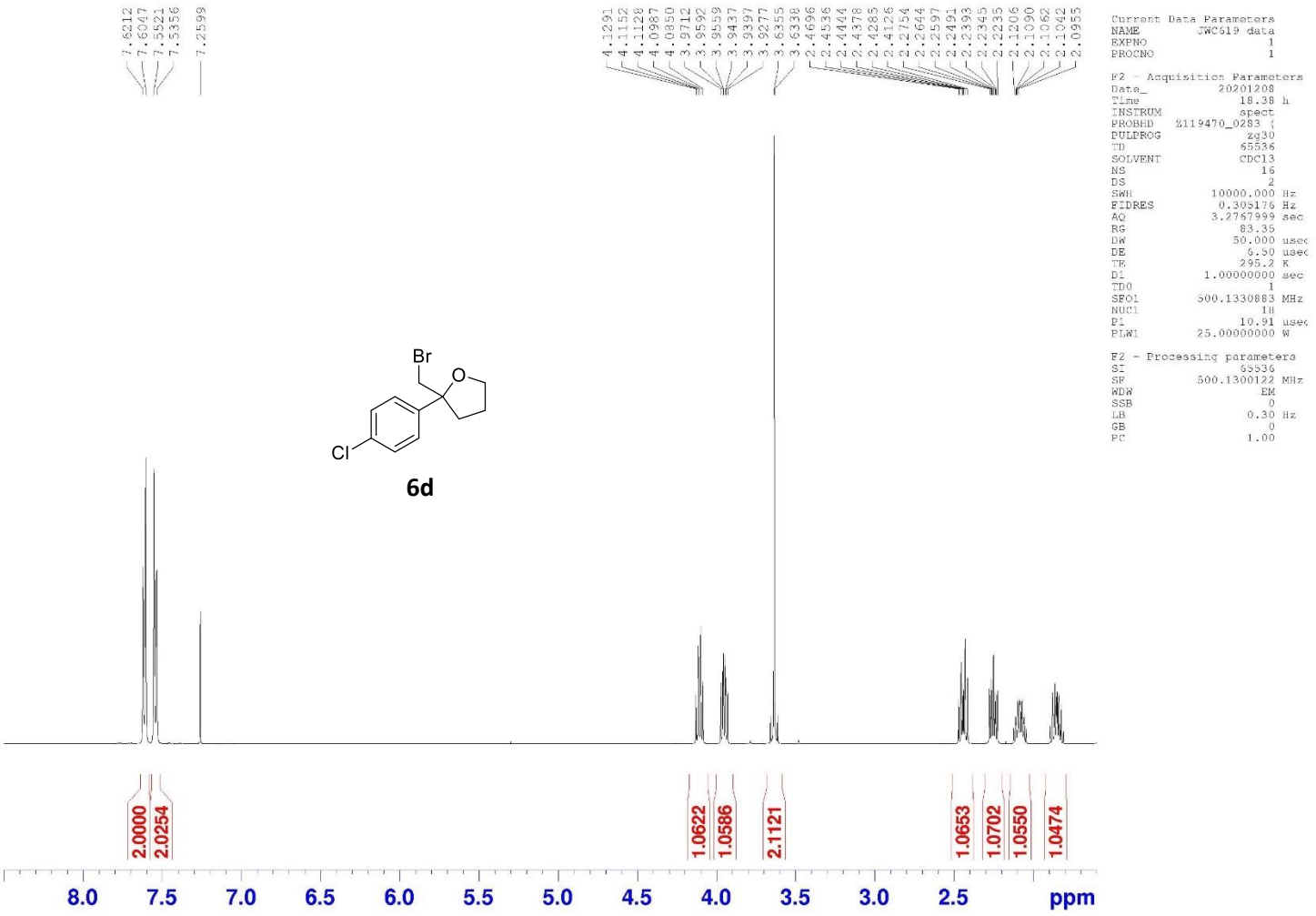
F2 - Processing parameters
SI                 65536
SF            500.1300127 MHz
WDW                   EM
SSB                    0
LB                0.30 Hz
GB                     0
PC                1.00
```




```
Current Data Parameters
NAME          JWC626 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201221
Time              22.26 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                  625
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

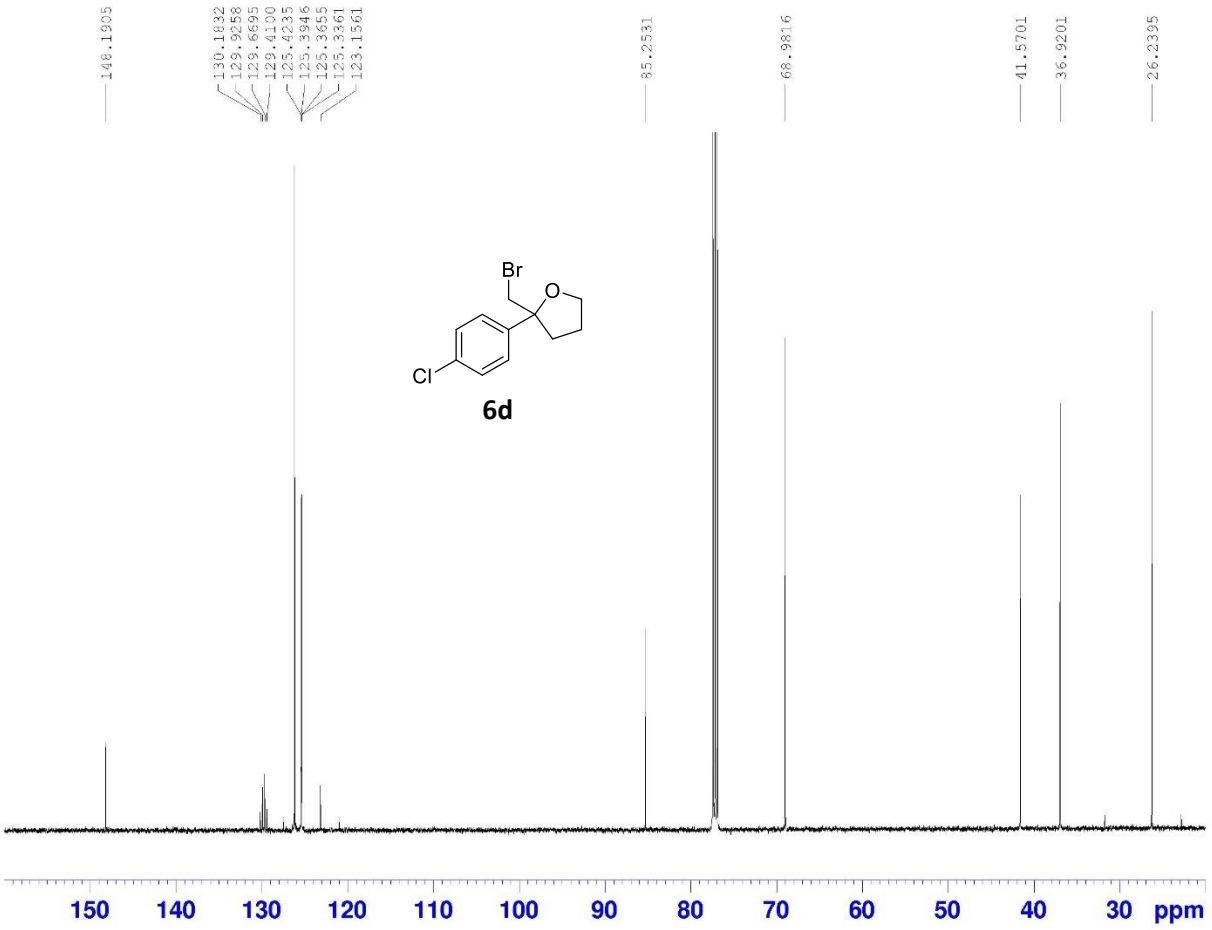
F2 - Processing parameters
SI                32768
SF           125.7577743 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME          JWC619 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201208
Time              18.38 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 83.35
DW                 50.000 usec
DE                  6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

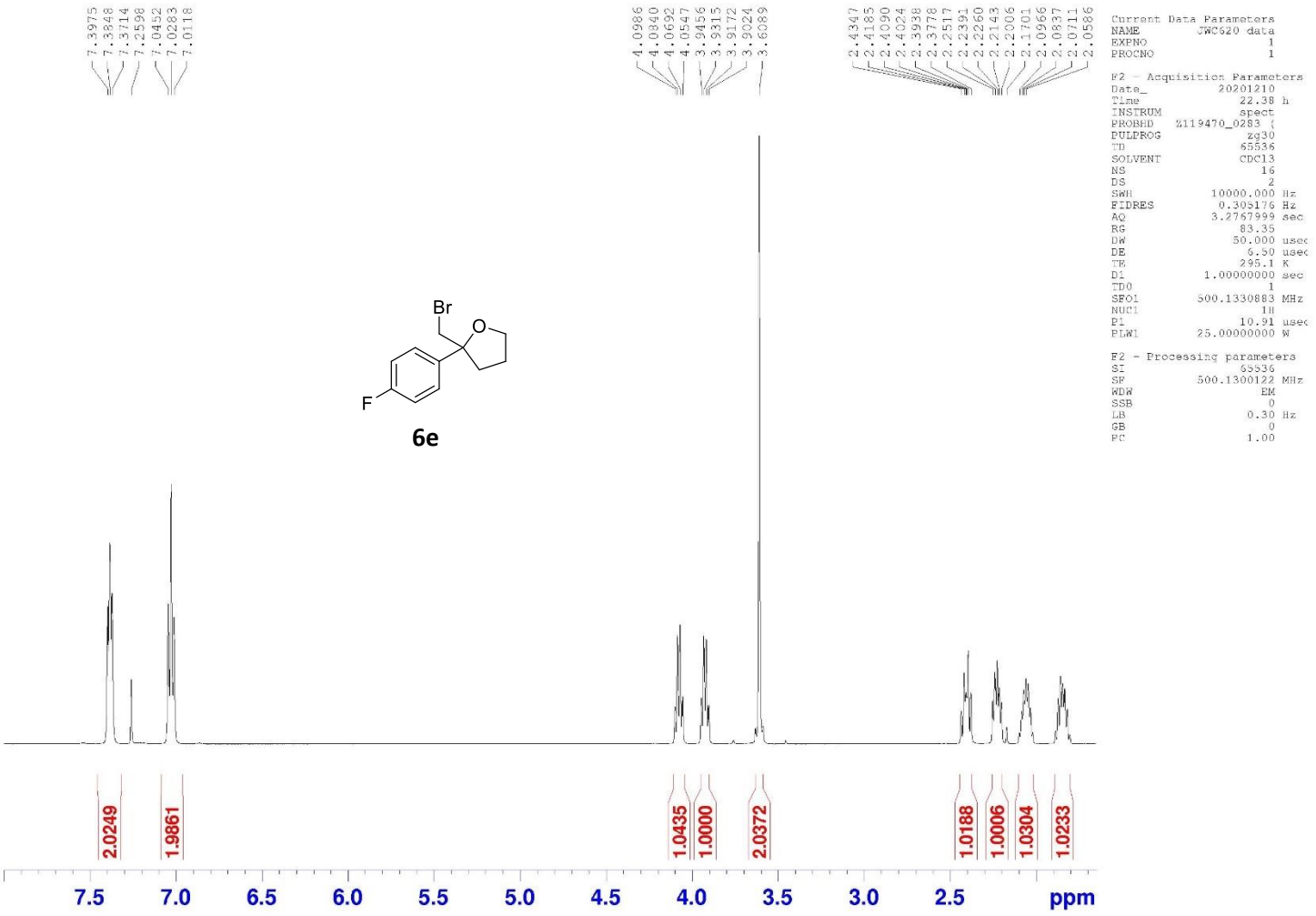
F2 - Processing parameters
SI                 65536
SF            500.1300122 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC619 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201208
Time              22.23 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1          125.7703643 MHz
NUC1                  13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2          500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

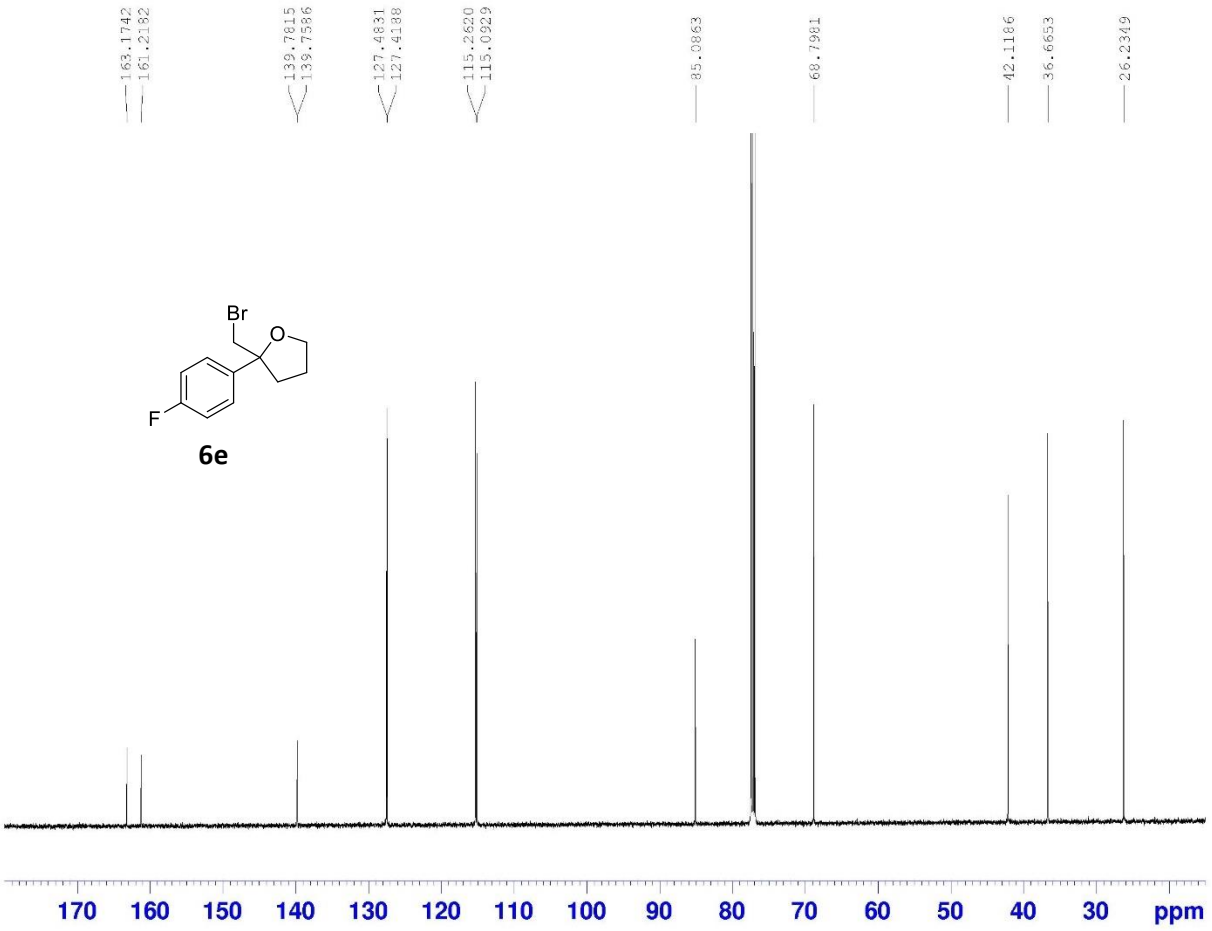
F2 - Processing parameters
SI                 32768
SF            125.7577734 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME          JWC620 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201210
Time              22.38 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                83.35
DW               50.000 usec
DE                6.50 usec
TE               295.1 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1         25.00000000 W

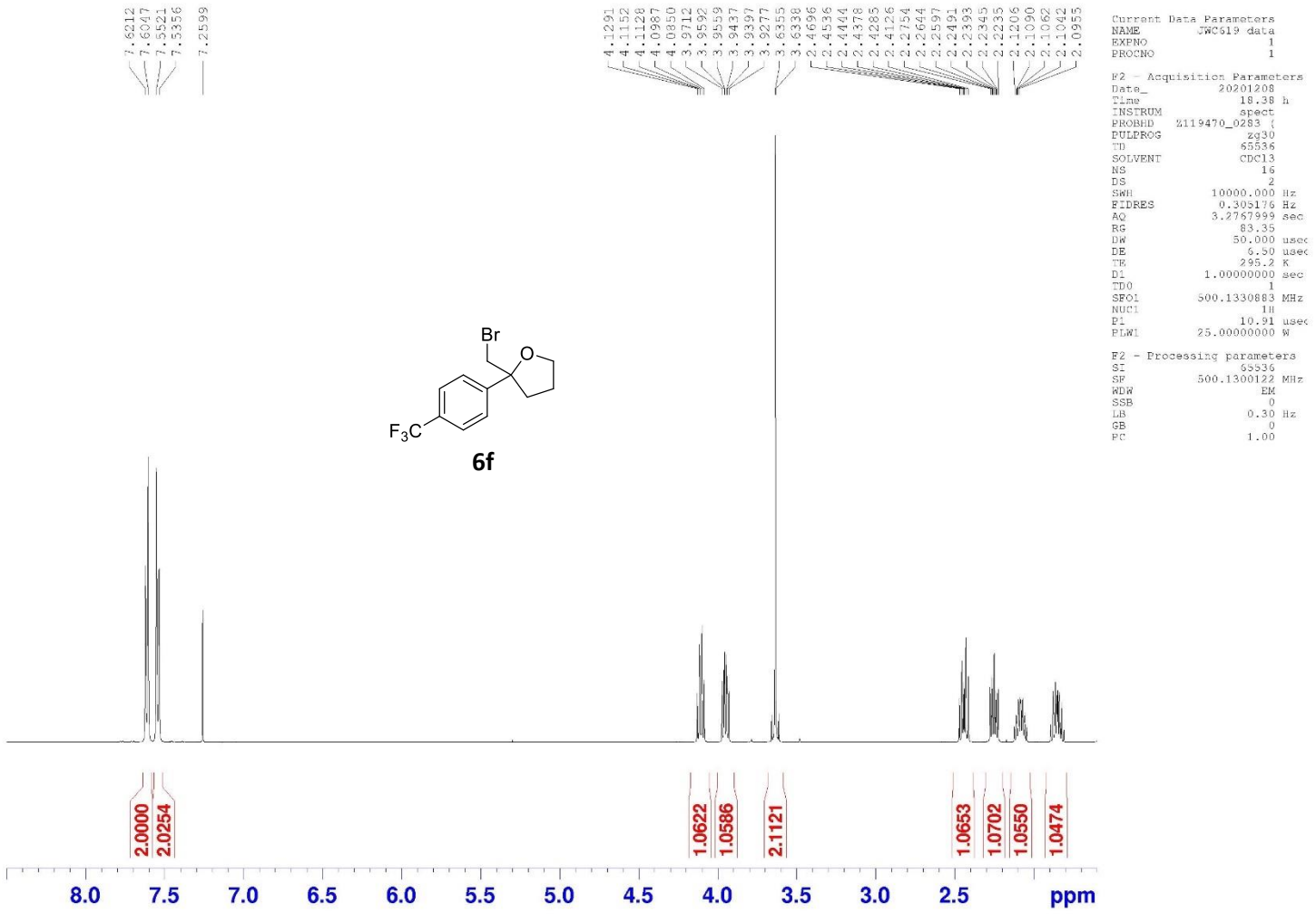
F2 - Processing parameters
SI                 65536
SF            500.1300122 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC620 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201210
Time              23.33 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                  13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

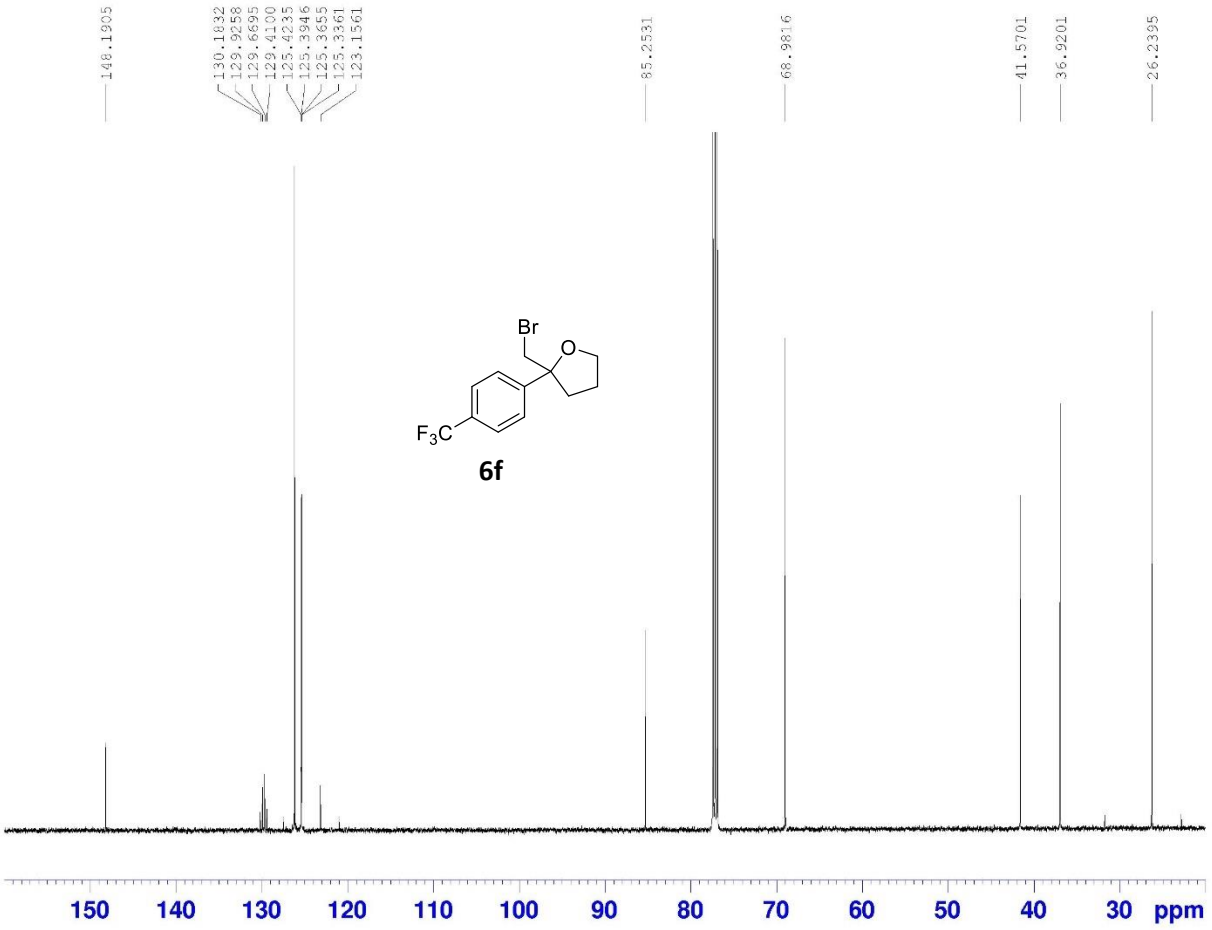
F2 - Processing parameters
SI                 32768
SF           125.7577752 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME          JWC619 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20201208
Time               18.38 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            10000.000 Hz
FIDRES         0.305176 Hz
AQ             3.2767999 sec
RG                 83.35
DW                 50.000 usec
DE                  6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

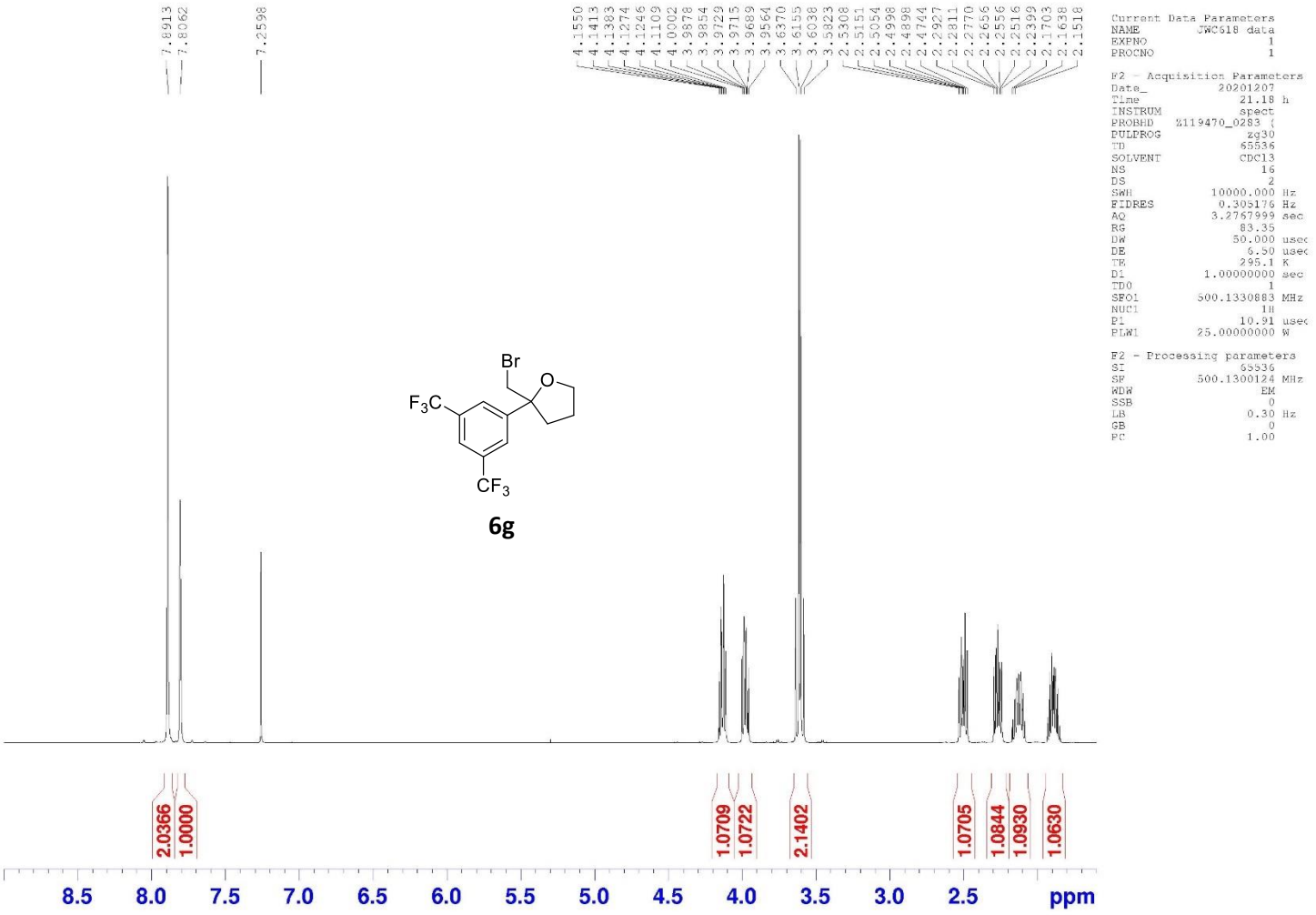
F2 - Processing parameters
SI                 65536
SF            500.1300122 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC619 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201208
Time              22.23 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.1 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1          125.7703643 MHz
NUC1                  13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2          500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

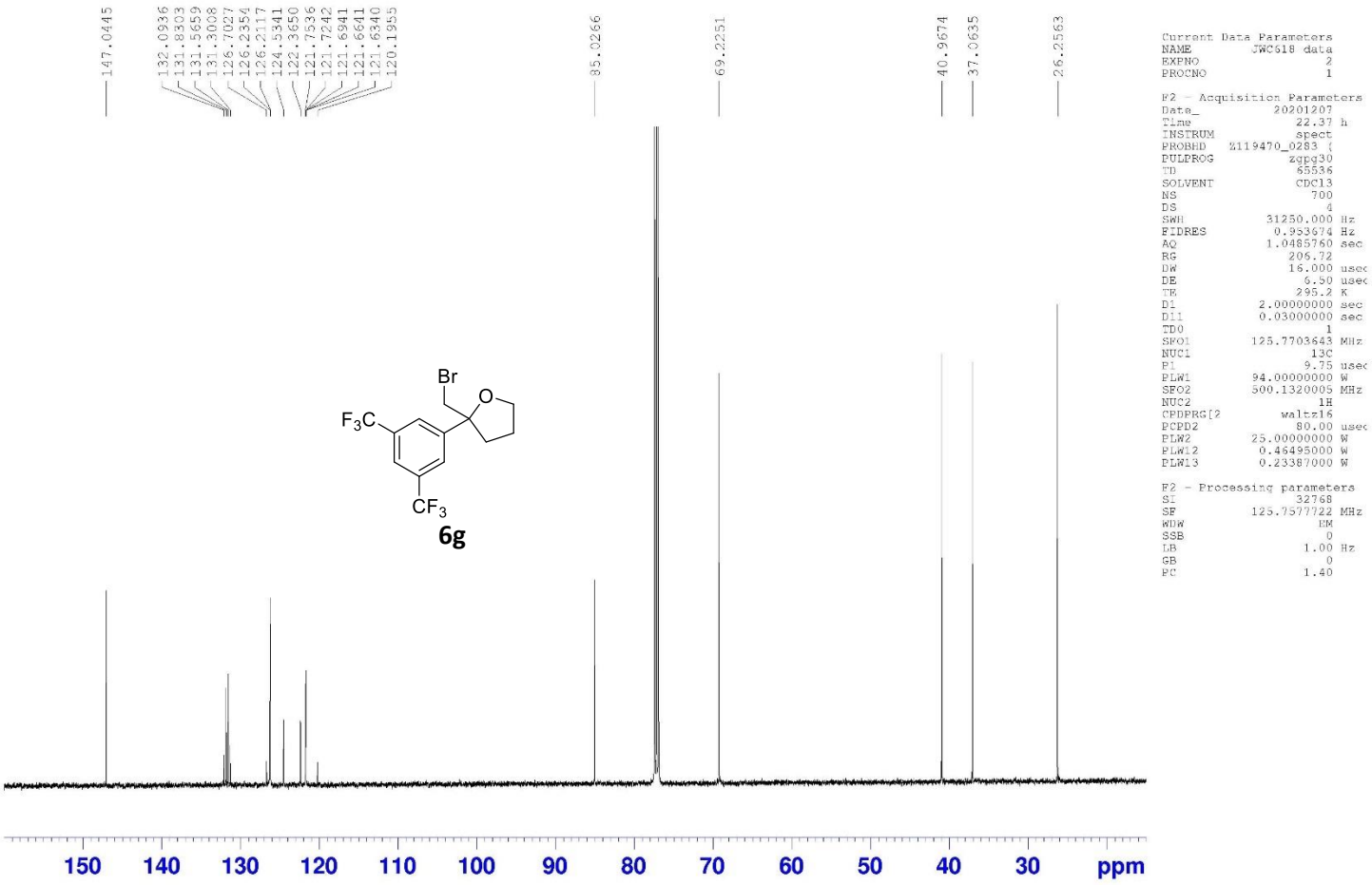
F2 - Processing parameters
SI                 32768
SF            125.7577734 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME          JWC618 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201207
Time              21.18 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 83.35
DW                50.000 usec
DE                 6.50 usec
TE                295.1 K
D1            1.00000000 sec
TD0                    1
SFO1        500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1        25.00000000 W

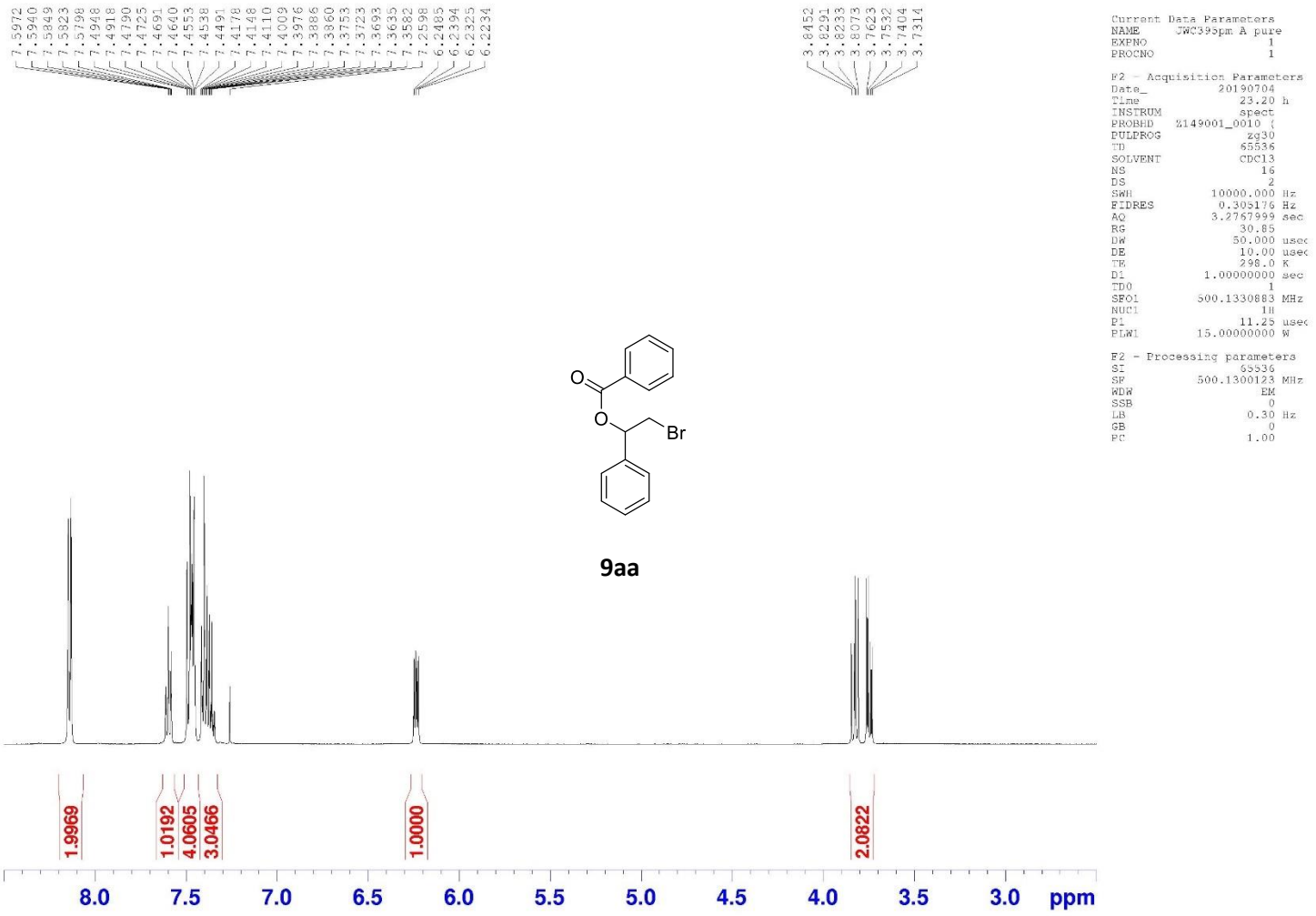
F2 - Processing parameters
SI                 65536
SF          500.1300124 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC618 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201207
Time              22.37 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   700
DS                     4
SWH            31250.000 Hz
FIDRES         0.953674 Hz
AQ             1.0485760 sec
RG                205.72
DW                16.000 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1          125.7703643 MHz
NUC1                  13C
P1                  9.75 usec
PLW1          94.00000000 W
SFO2          500.1320005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

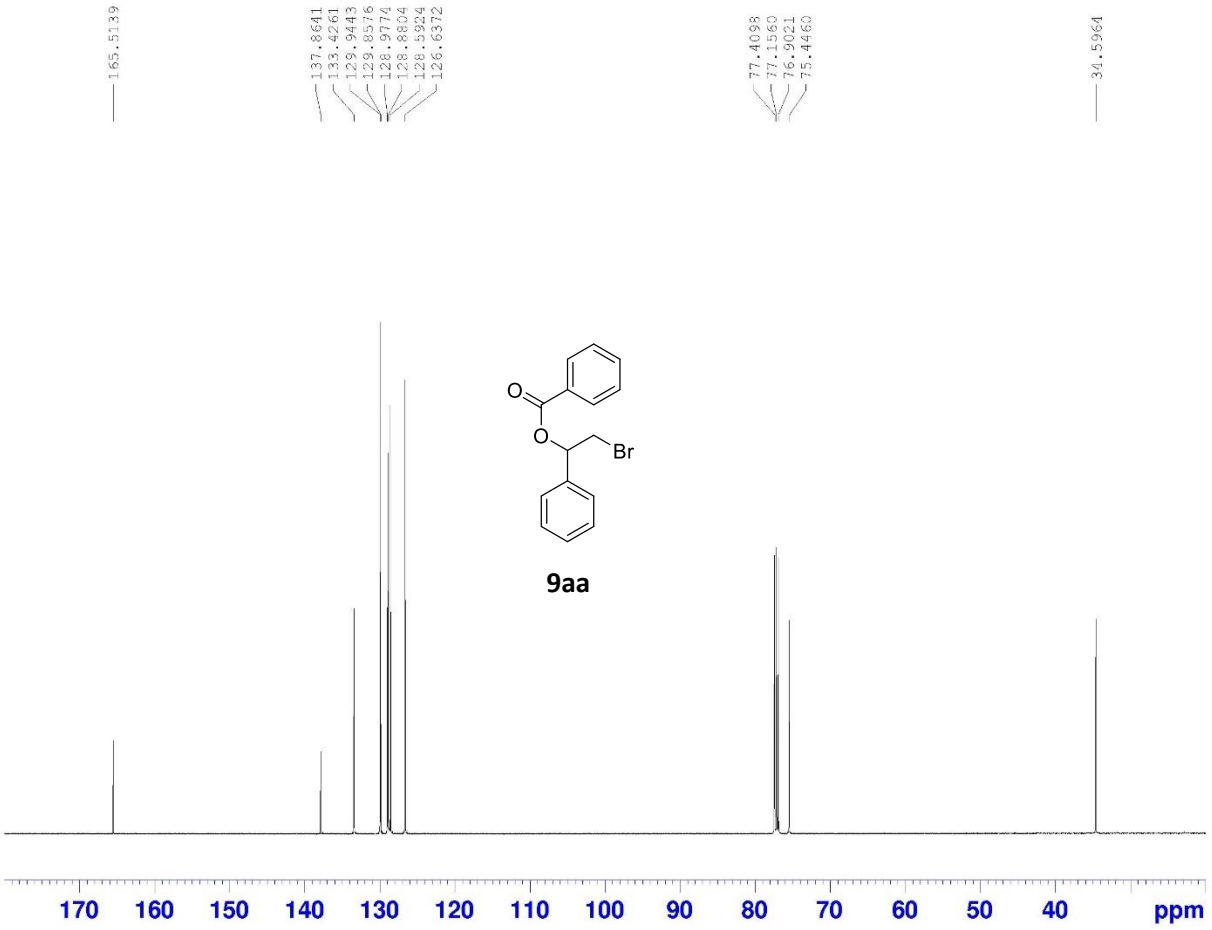
F2 - Processing parameters
SI                 32768
SF            125.7577722 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME      JWC395pm A pure
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190704
Time              23.20 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 30.85
DW                50.000 usec
DE                10.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 11.25 usec
PLW1          15.00000000 W

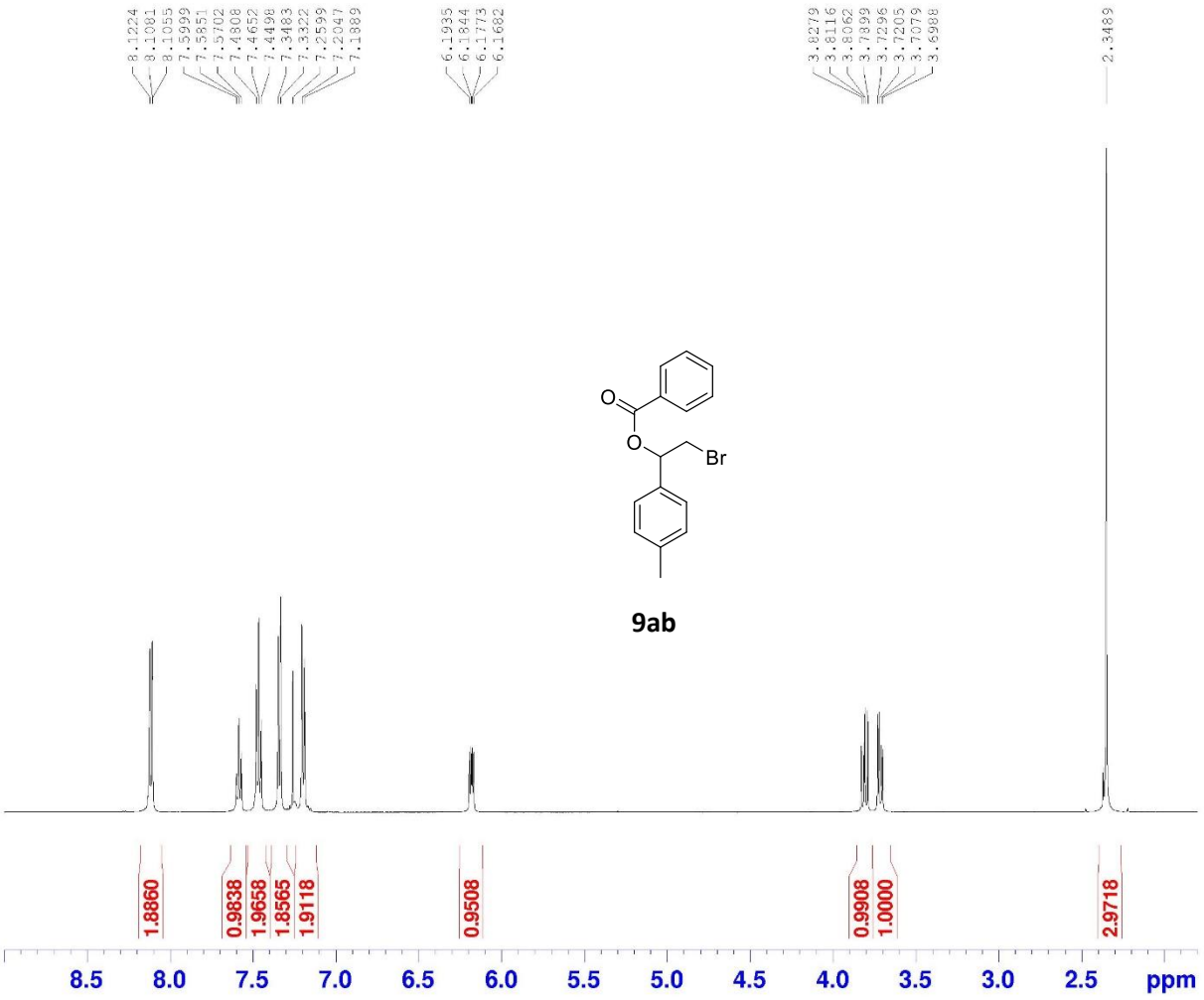
F2 - Processing parameters
SI                 65536
SF            500.1300123 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME      JWC396pm A pure
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190704
Time              23.52 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                  600
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1        125.7703643 MHz
NUC1                13C
P1                10.00 usec
PLW1         61.00000000 W
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

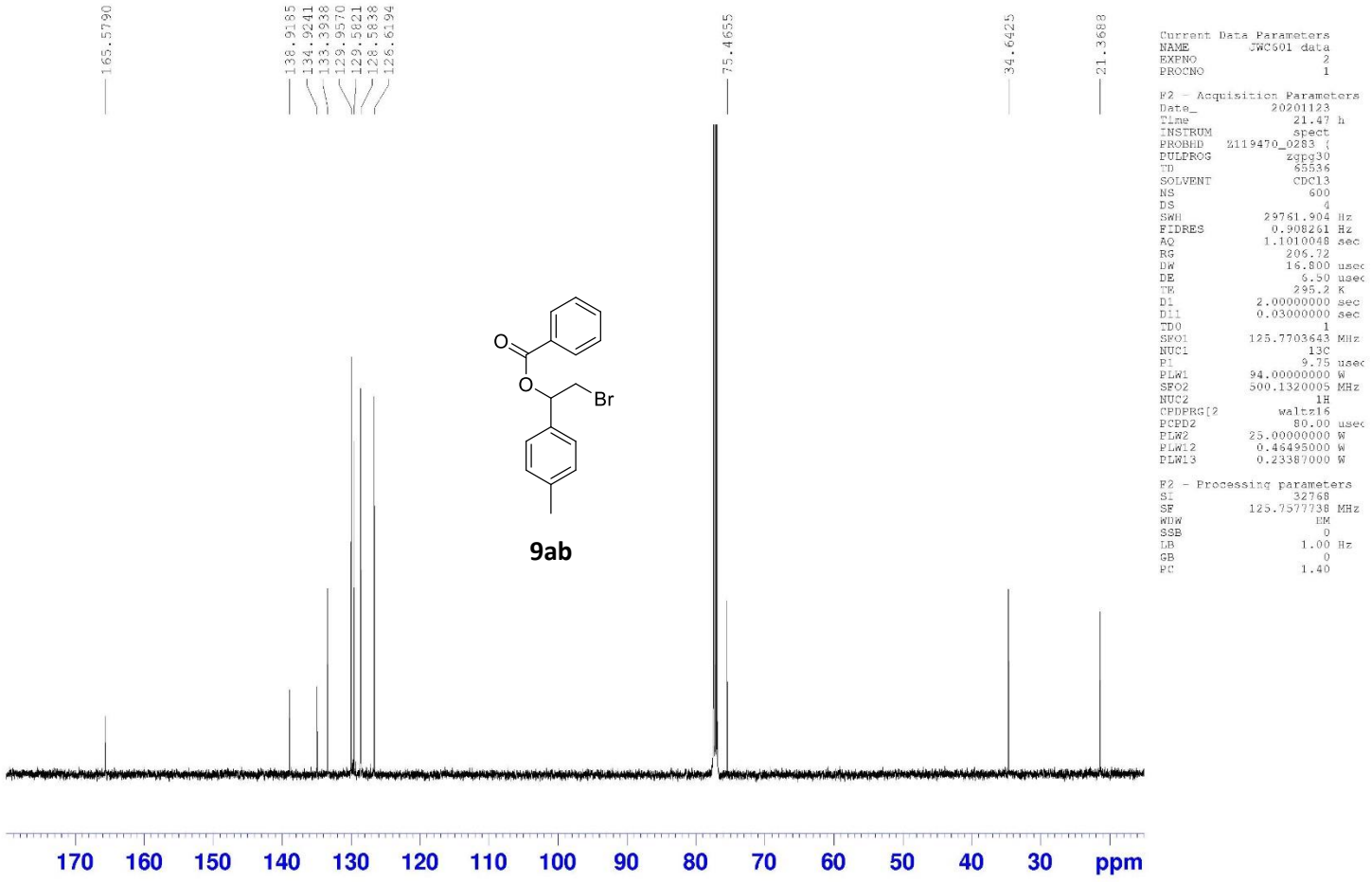
F2 - Processing parameters
SI                 32768
SF          125.7577789 MHz
WDW                   EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME                  JWC525 p3
EXPNO                         1
PROCNO                        1

F2 - Acquisition Parameters
Date_                  20200722
Time                      18.45 h
INSTRUM                    spect
PROBHD     %119470_0283 (
PULPROG                    zg30
TD                        65536
SOLVENT                   CDCl3
NS                           16
DS                            2
SWH                   10000.000 Hz
FIDRES                0.305176 Hz
AQ                    3.2767999 sec
RG                       102.6
DW                       50.000 usec
DE                        6.50 usec
TE                       295.1 K
D1                    1.00000000 sec
TD0                           1
SFO1                500.1330883 MHz
NUC1                         1H
P1                       10.00 usec
PLW1                25.00000000 W

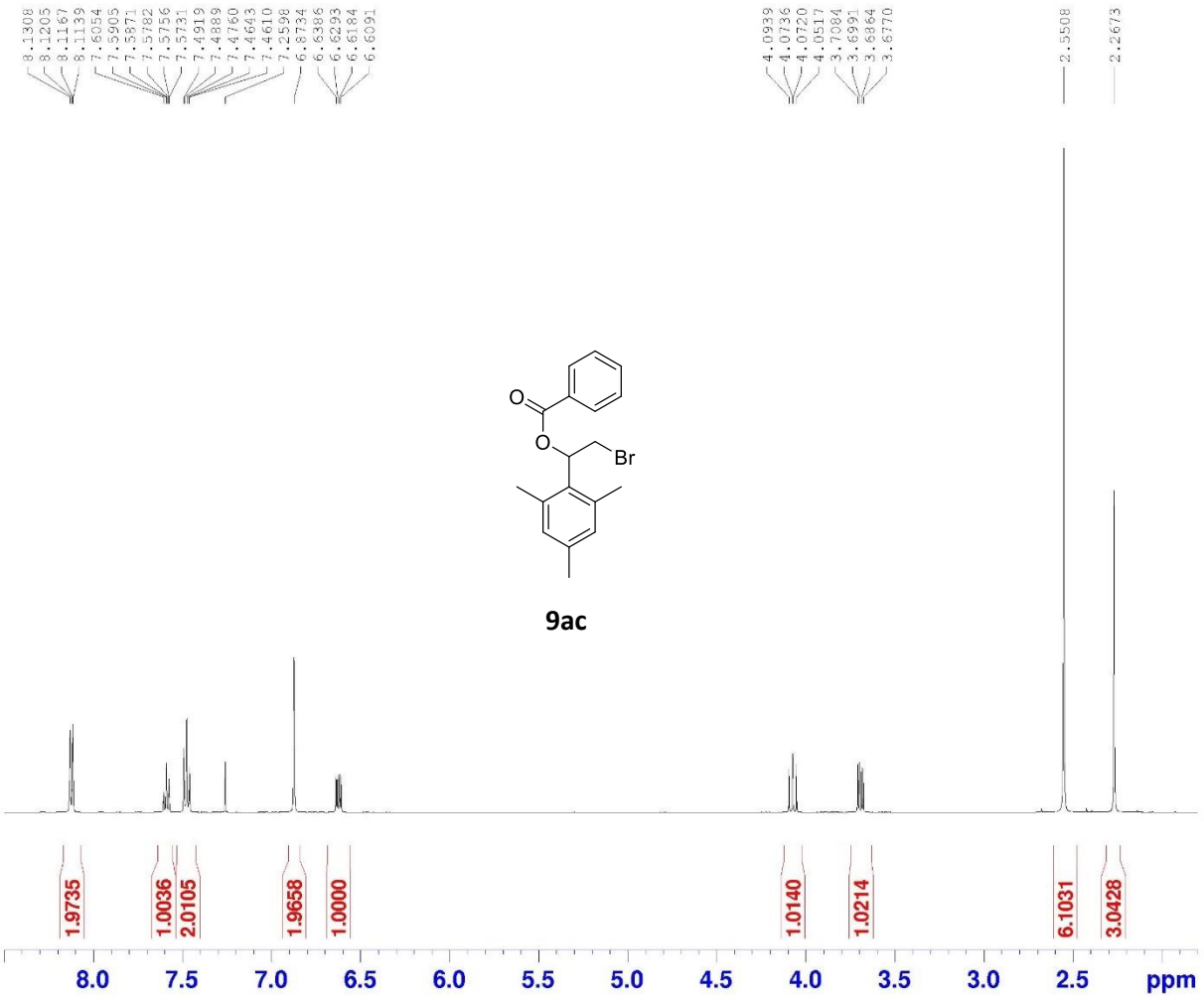
F2 - Processing parameters
SI                        65536
SF                  500.1300125 MHz
WDW                          EM
SSB                           0
LB                        0.30 Hz
GB                            0
PC                        1.00
```




```
Current Data Parameters
NAME          JWC601 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_            20201123
Time               21.47 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   600
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                206.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

F2 - Processing parameters
SI                 32768
SF           125.7577738 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```

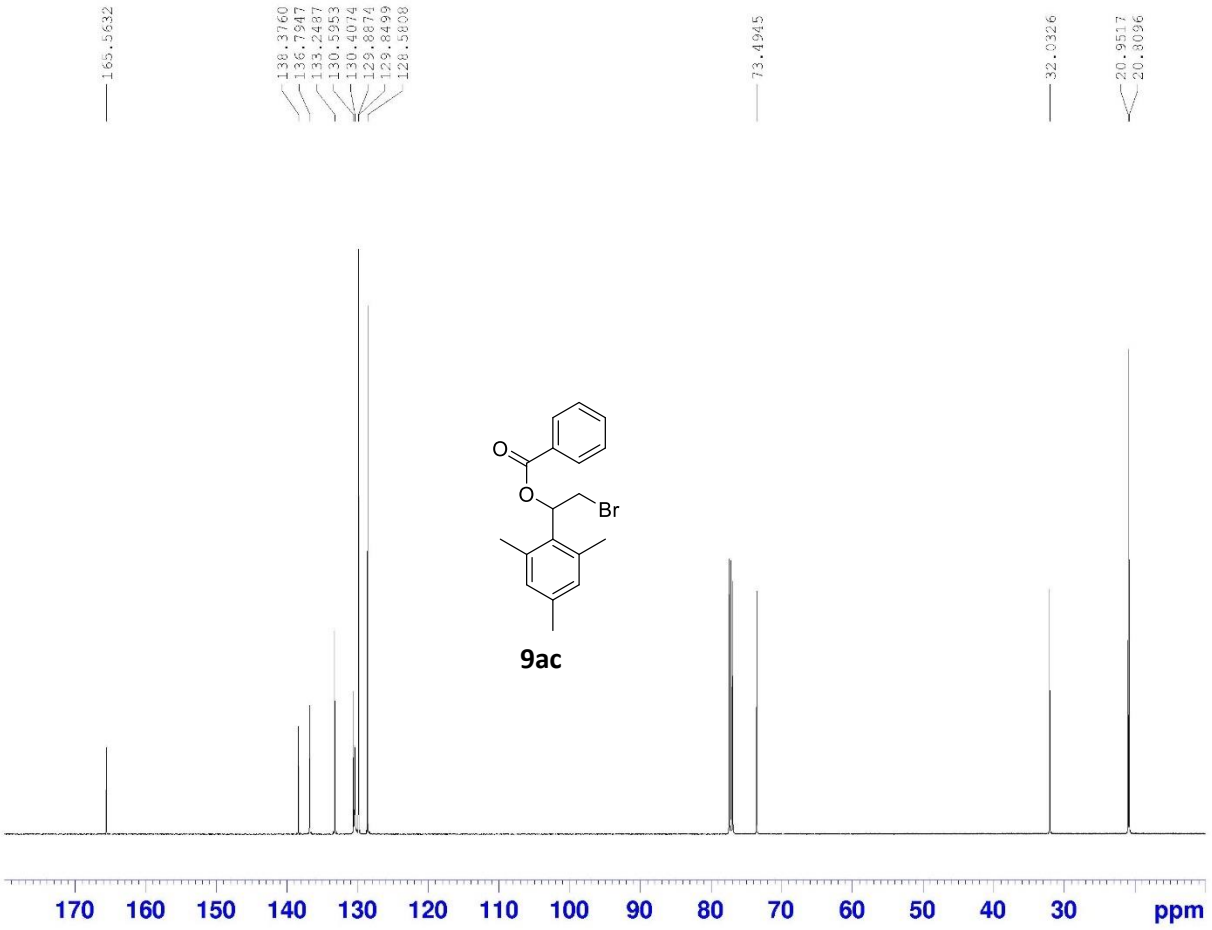


9ac

```
Current Data Parameters
NAME      JWC395pm B pure
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190704
Time              23.55 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 30.85
DW                50.000 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
TD0                    1
SFO1        500.1330883 MHz
NUC1                  1H
P1                11.25 usec
PLW1         15.00000000 W

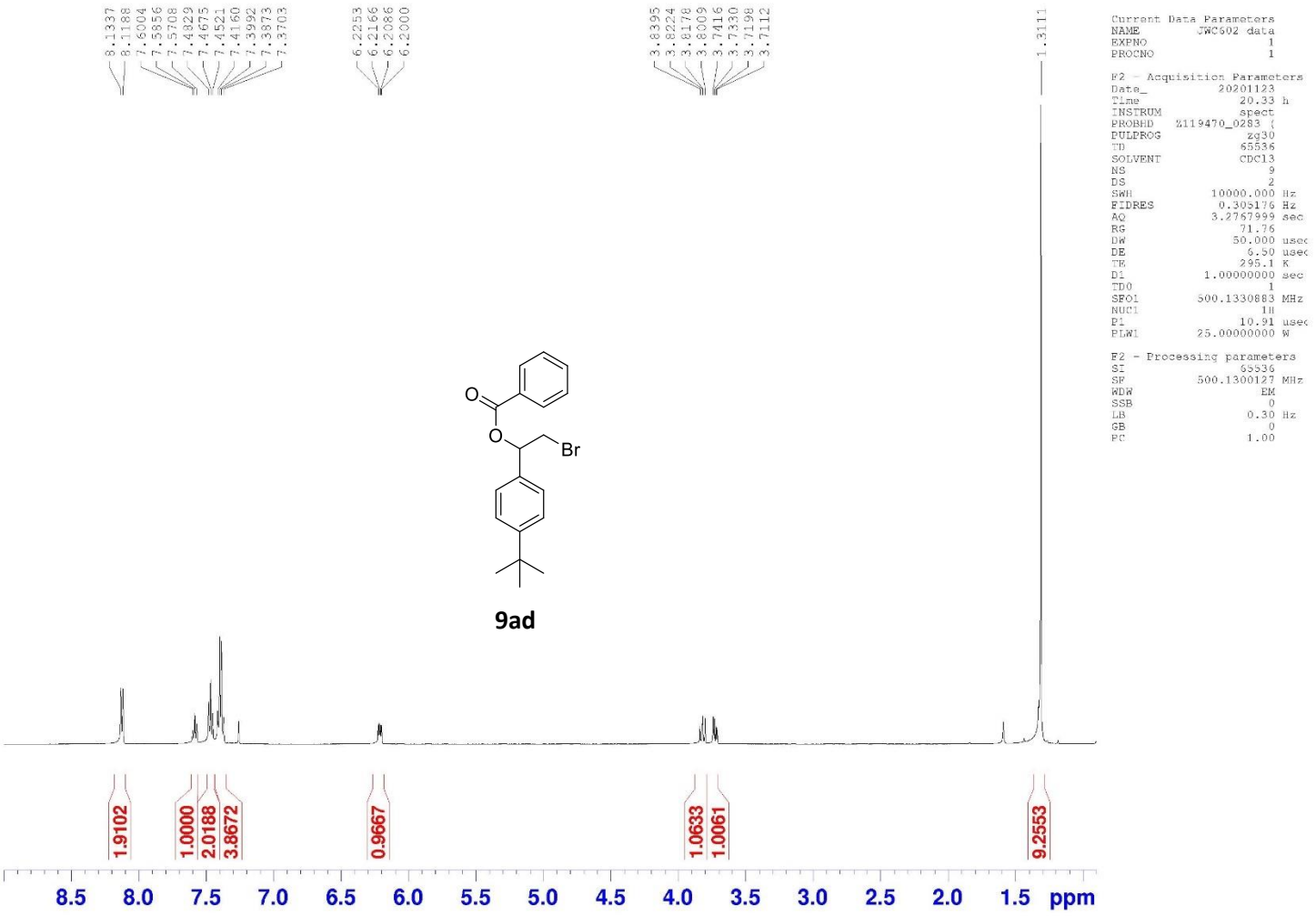
F2 - Processing parameters
SI                 65536
SF          500.1300123 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

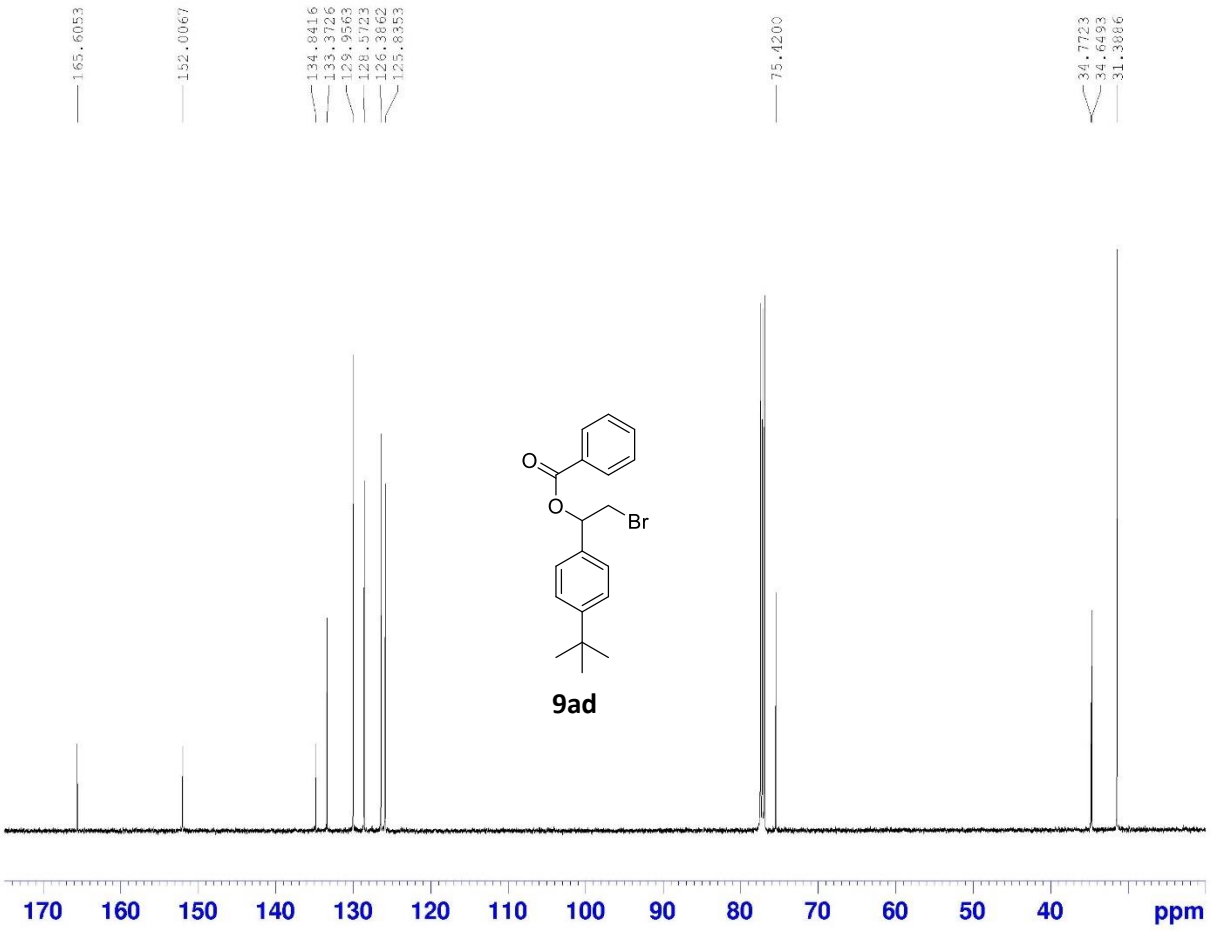



```
Current Data Parameters
NAME      JWC395pm B pure
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190705
Time               0.27 h
INSTRUM            spect
PROBHD   %149001_0010 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  600
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1        125.7703643 MHz
NUC1                13C
P1               10.00 usec
PLW1         61.00000000 W
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2            80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

F2 - Processing parameters
SI                 32768
SF          125.7577815 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```

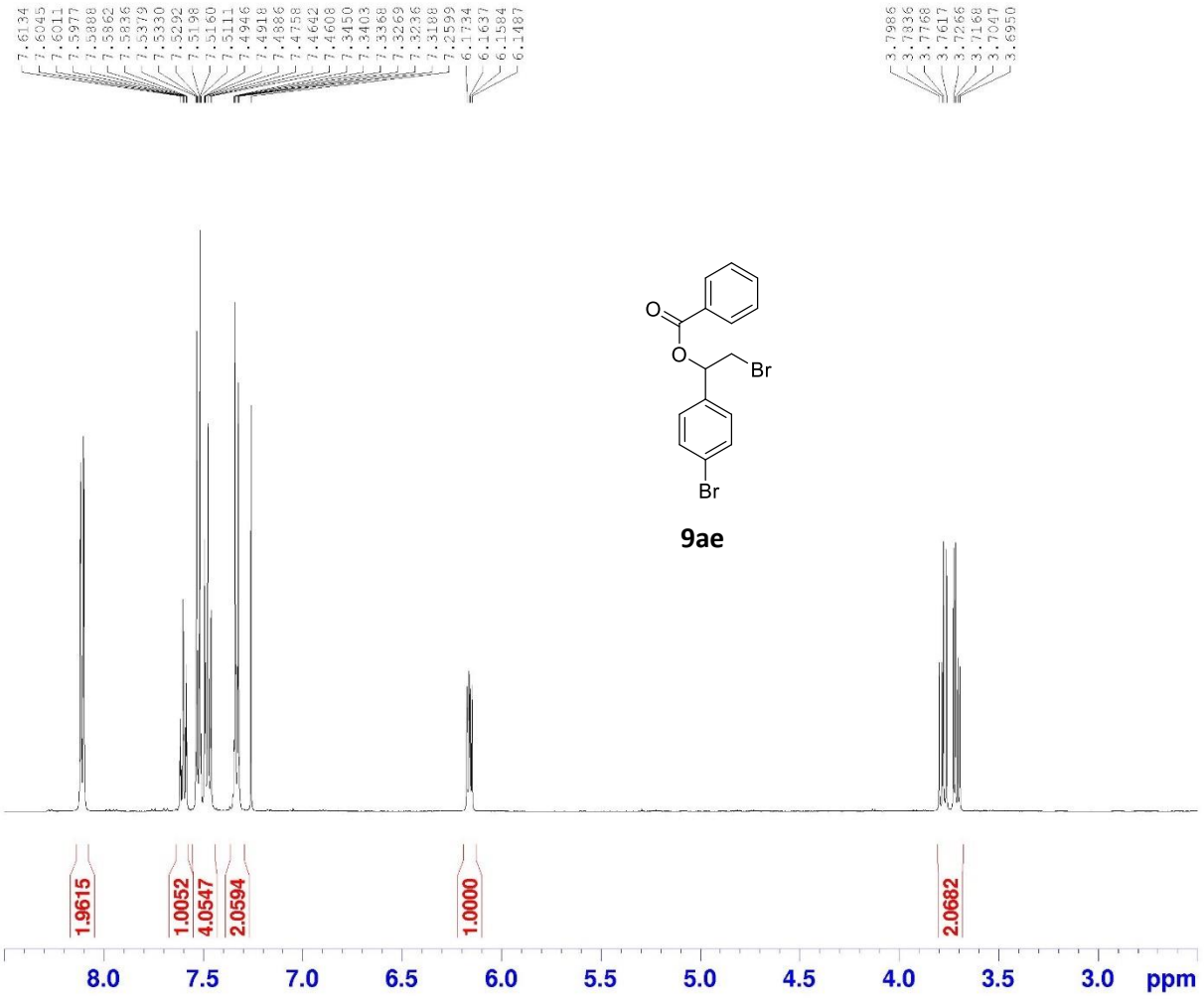

8.1337
8.1188
7.6004
7.5856
7.5708
7.4829
7.4675
7.4521
7.4160
7.3992
7.3873
7.3703
6.2253
6.2166
6.2086
6.2000
3.8395
3.8224
3.8178
3.8009
3.7416
3.7330
3.7198
3.7112
1.3111
Current Data Parameters
NAME JWC602 data
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20201123
Time 20.33 h
INSTRUM spect
PROBHD %119470_0283 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 9
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 71.76
DW 50.000 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 10.91 usec
PLW1 25.00000000 W
F2 - Processing parameters
SI 65536
SF 500.1300127 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
O
Br
9ad
1.9102
1.0000
2.0188
3.8672
0.9667
1.0633
1.0061
9.2553
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
ppm




```
Current Data Parameters
NAME          JWC602 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201123
Time              21.10 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   700
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

F2 - Processing parameters
SI                 32768
SF           125.7577757 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```

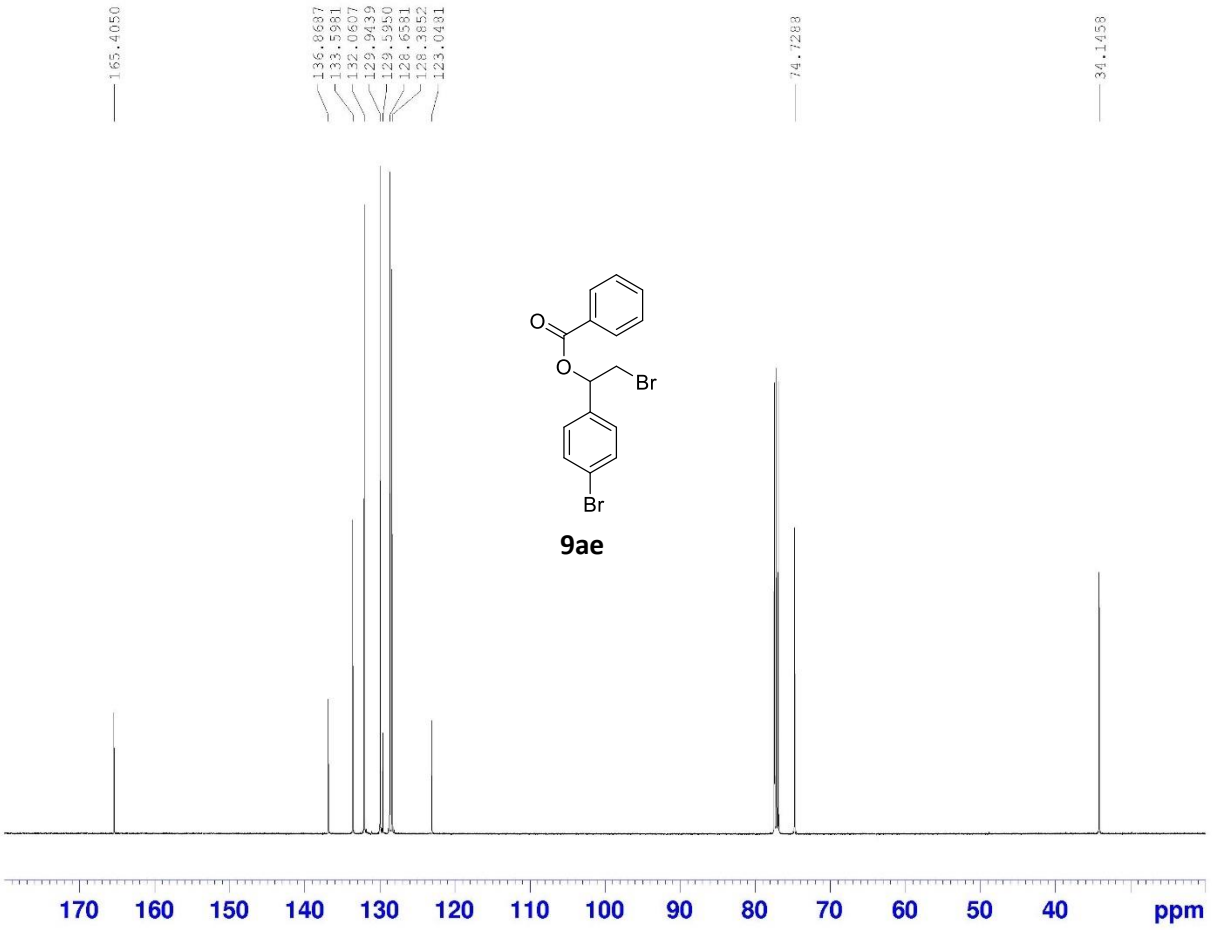


9ae

```
Current Data Parameters
NAME      JWC372 pm pure
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190621
Time                0.07 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            10000.000 Hz
FIDRES             0.305176 Hz
AQ              3.2767999 sec
RG                 30.85
DW                 50.000 usec
DE                 10.00 usec
TE                 298.0 K
D1              1.00000000 sec
TD0                    1
SFO1           500.1330883 MHz
NUC1                  1H
P1                 11.25 usec
PLW1           15.00000000 W

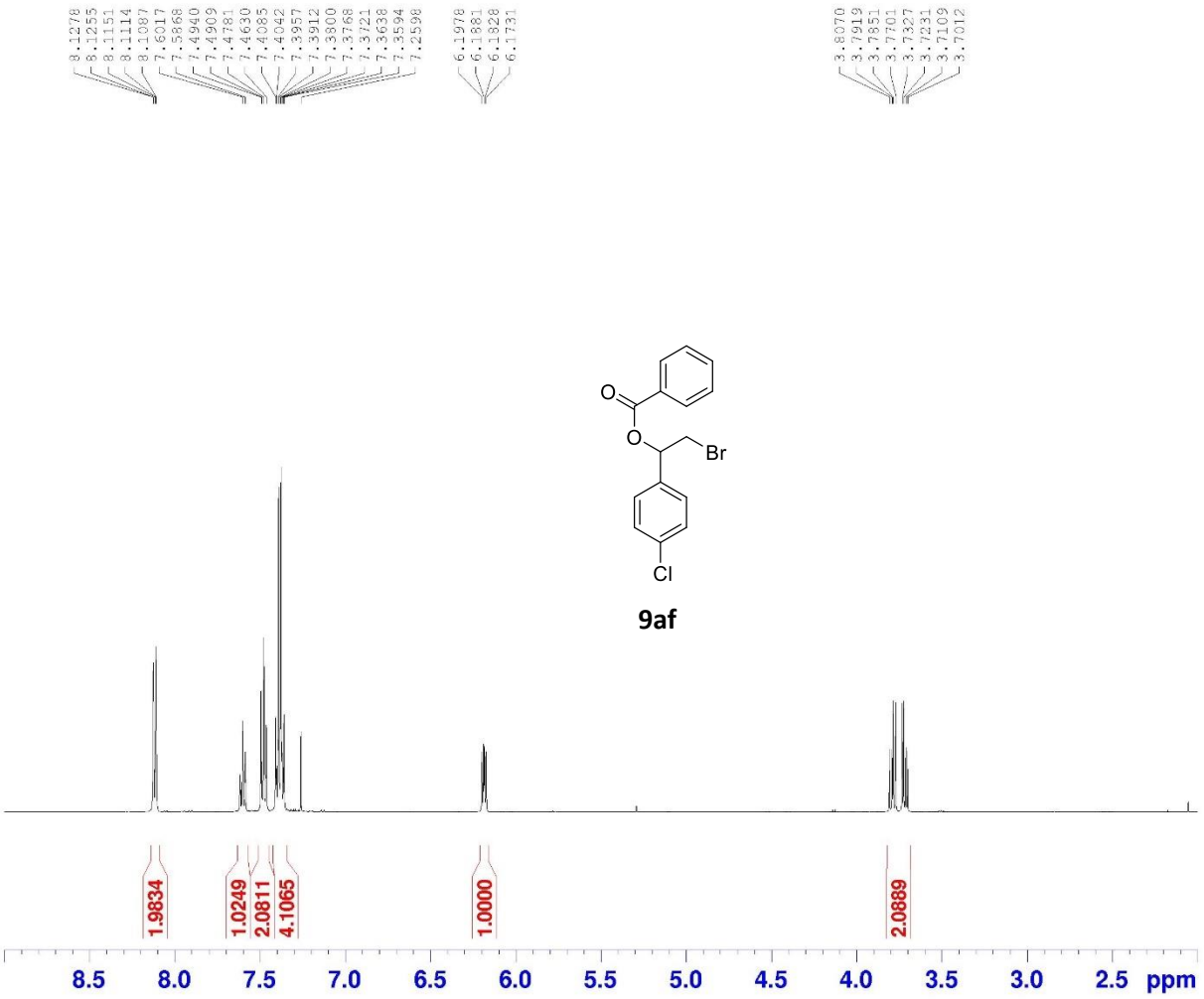
F2 - Processing parameters
SI                 65536
SF            500.1300123 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME      JWC372 pm pure
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190621
Time                0.49 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                13C
P1                10.00 usec
PLW1         61.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

F2 - Processing parameters
SI                32768
SF           125.7577771 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```


8.1278
8.1255
8.1151
8.1114
8.1087
7.6017
7.5868
7.4940
7.4909
7.4781
7.4630
7.4085
7.4042
7.3957
7.3912
7.3800
7.3768
7.3721
7.3638
7.3594
7.2598
6.1978
6.1881
6.1828
6.1731
3.8070
3.7919
3.7851
3.7701
3.7327
3.7231
3.7109
3.7012
Current Data Parameters
NAME JWC370 pm pure
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20190620
Time 23.21 h
INSTRUM spect
PROBHD %149001_0010 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 30.85
DW 50.000 usec
DE 10.00 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 11.25 usec
PLW1 15.00000000 W
F2 - Processing parameters
SI 65536
SF 500.1300123 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
O
Br
Cl
9af
1.9834
1.0249
2.0811
4.1065
1.0000
2.0889
8.5
8.0
7.5
7.0
6.5
6.0
5.5
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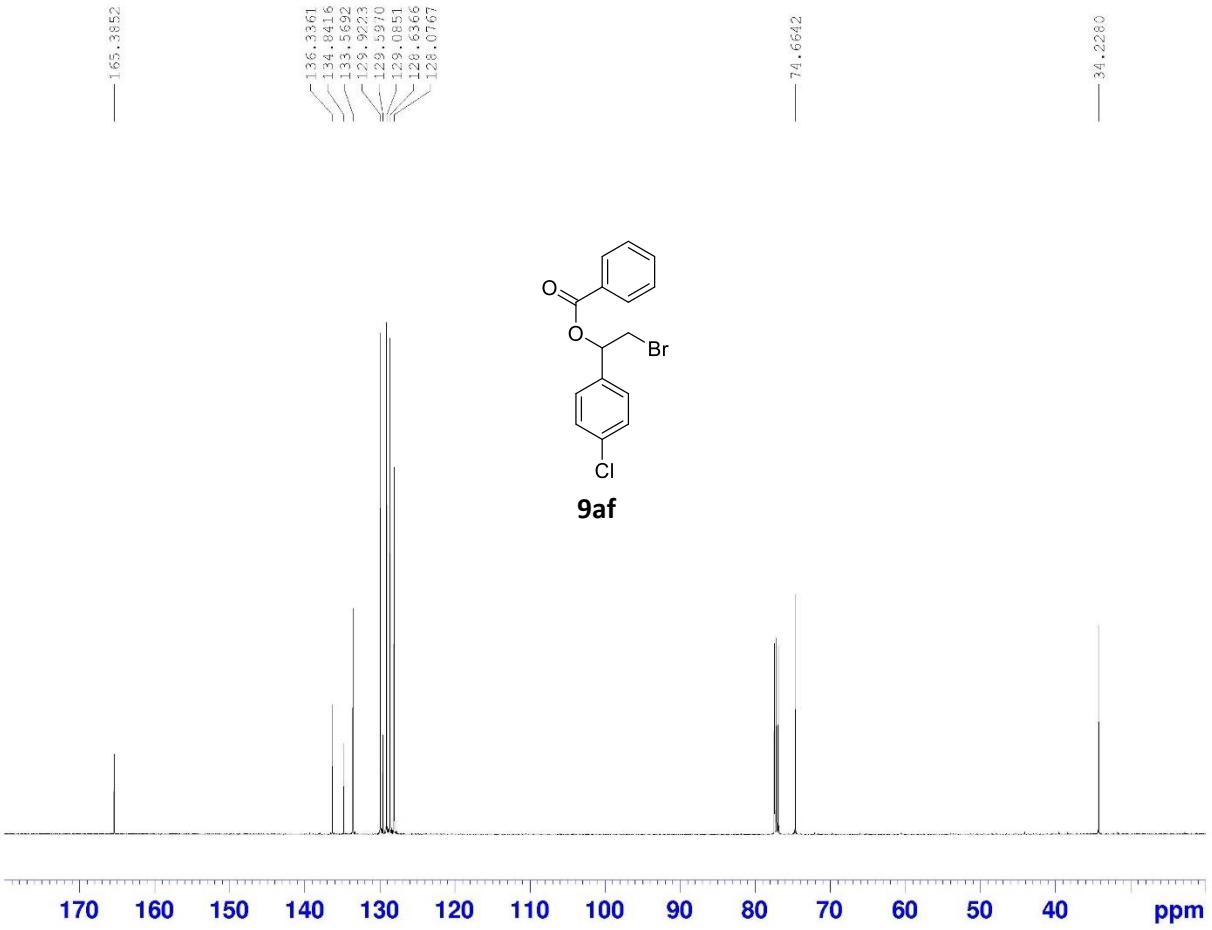
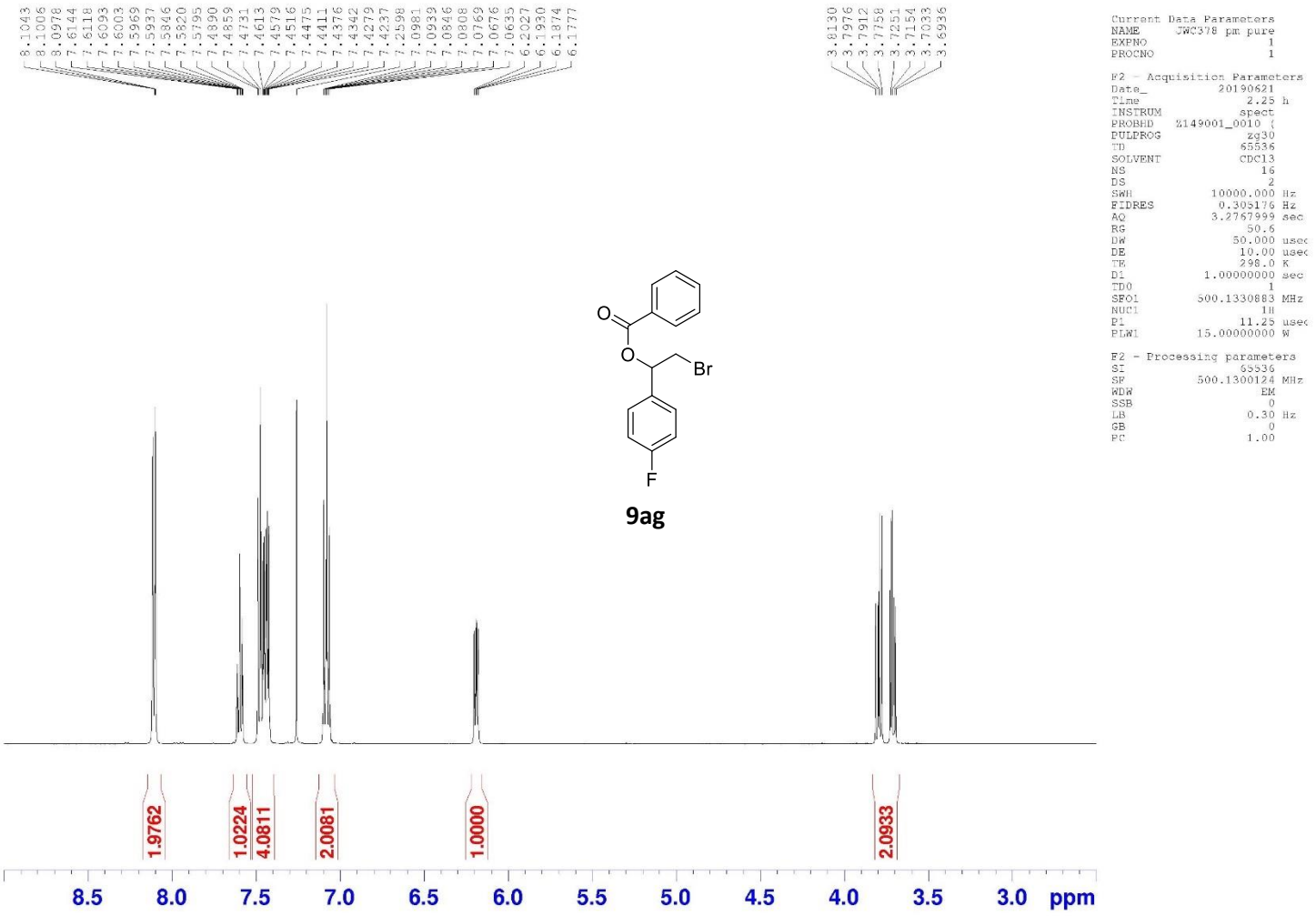
4.5
4.0
3.5
3.0
2.5
ppm




```
Current Data Parameters
NAME      JWC370 pm pure
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190621
Time                0.03 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1        125.7703643 MHz
NUC1                13C
P1                10.00 usec
PLW1         61.00000000 W
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

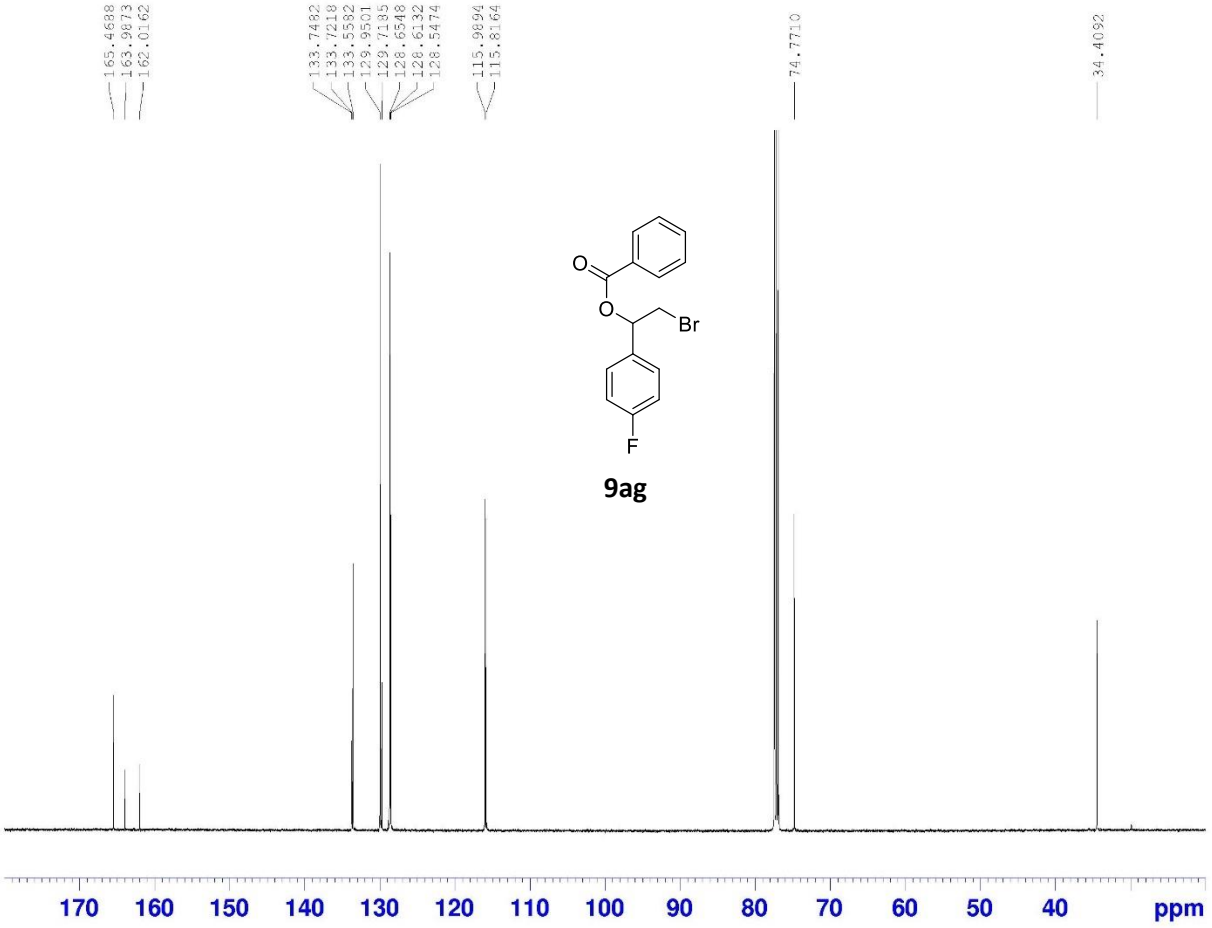
F2 - Processing parameters
SI                 32768
SF          125.7577807 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME      JWC378 pm pure
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190621
Time               2.25 h
INSTRUM            spect
PROBHD    %149001_0010 (
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 50.6
DW               50.000 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
TD0                   1
SFO1        500.1330883 MHz
NUC1                  1H
P1                11.25 usec
PLW1        15.00000000 W

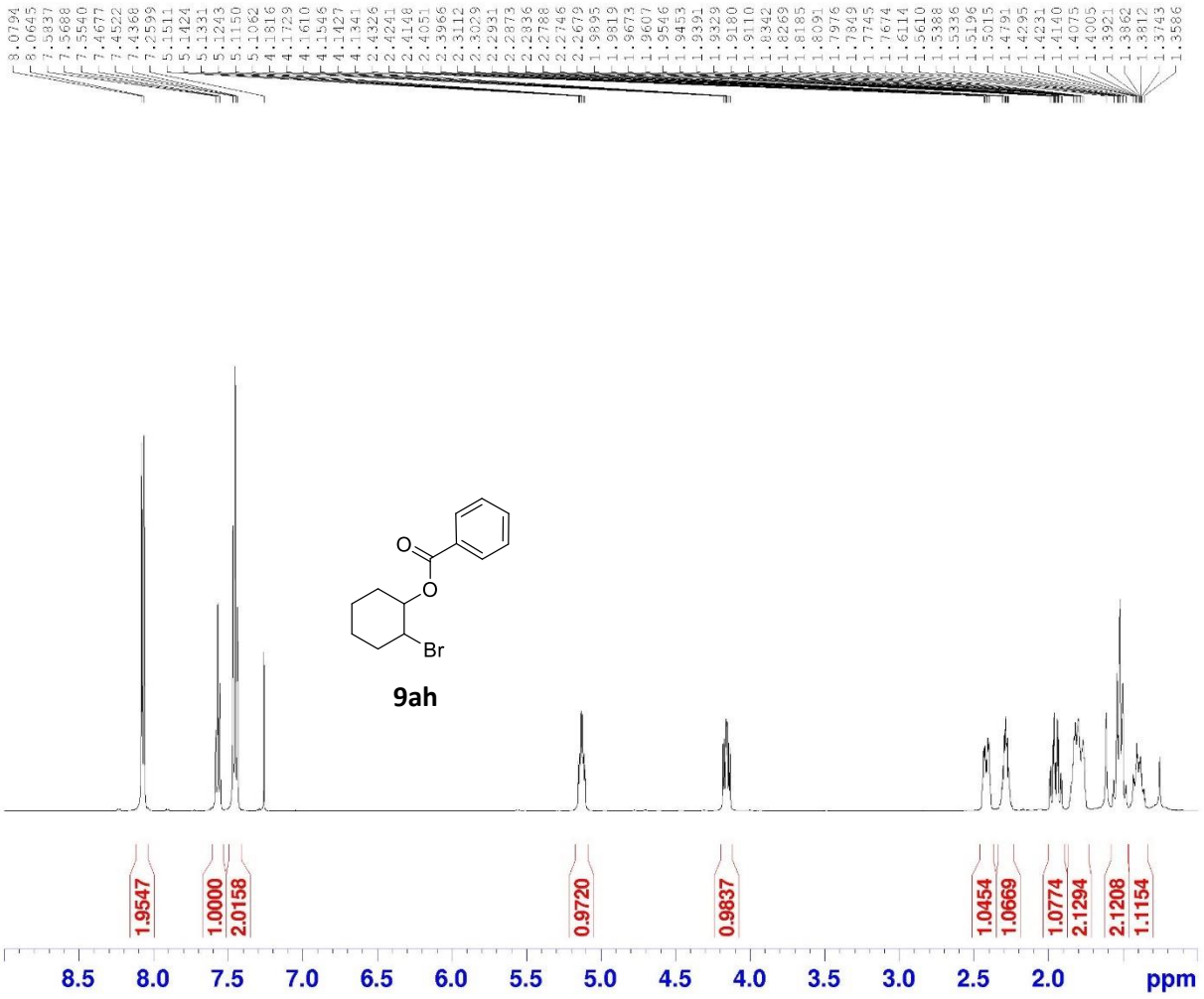
F2 - Processing parameters
SI                65536
SF          500.1300124 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```




```
Current Data Parameters
NAME      JWC378 pm pure
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190621
Time               3.07 h
INSTRUM            spect
PROBHD    %149001_0010 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  800
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                13C
P1                10.00 usec
PLW1         61.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

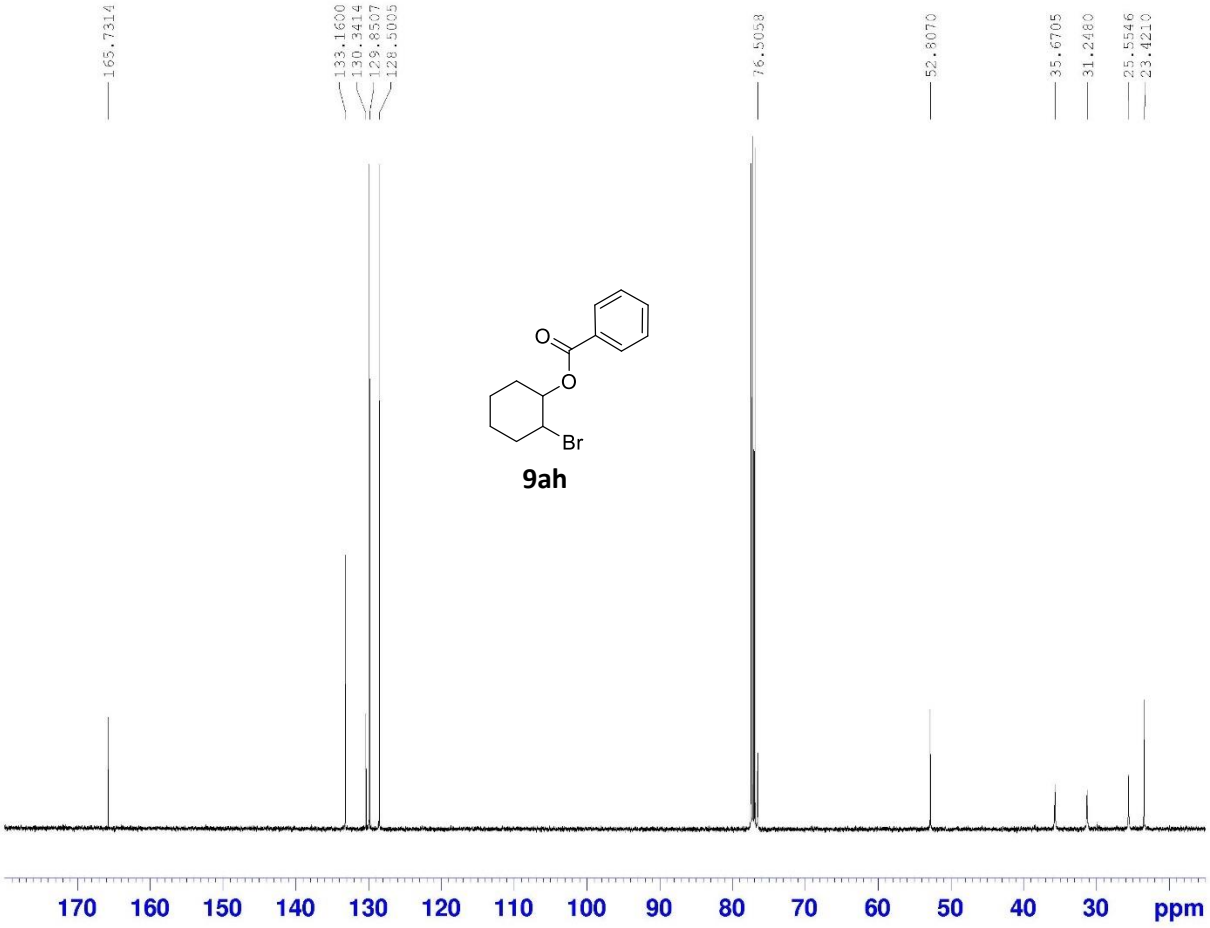
F2 - Processing parameters
SI                 32768
SF           125.7577737 MHz
WDW                   EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME          JWC600 data
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201117
Time              20.38 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 83.35
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1          25.00000000 W

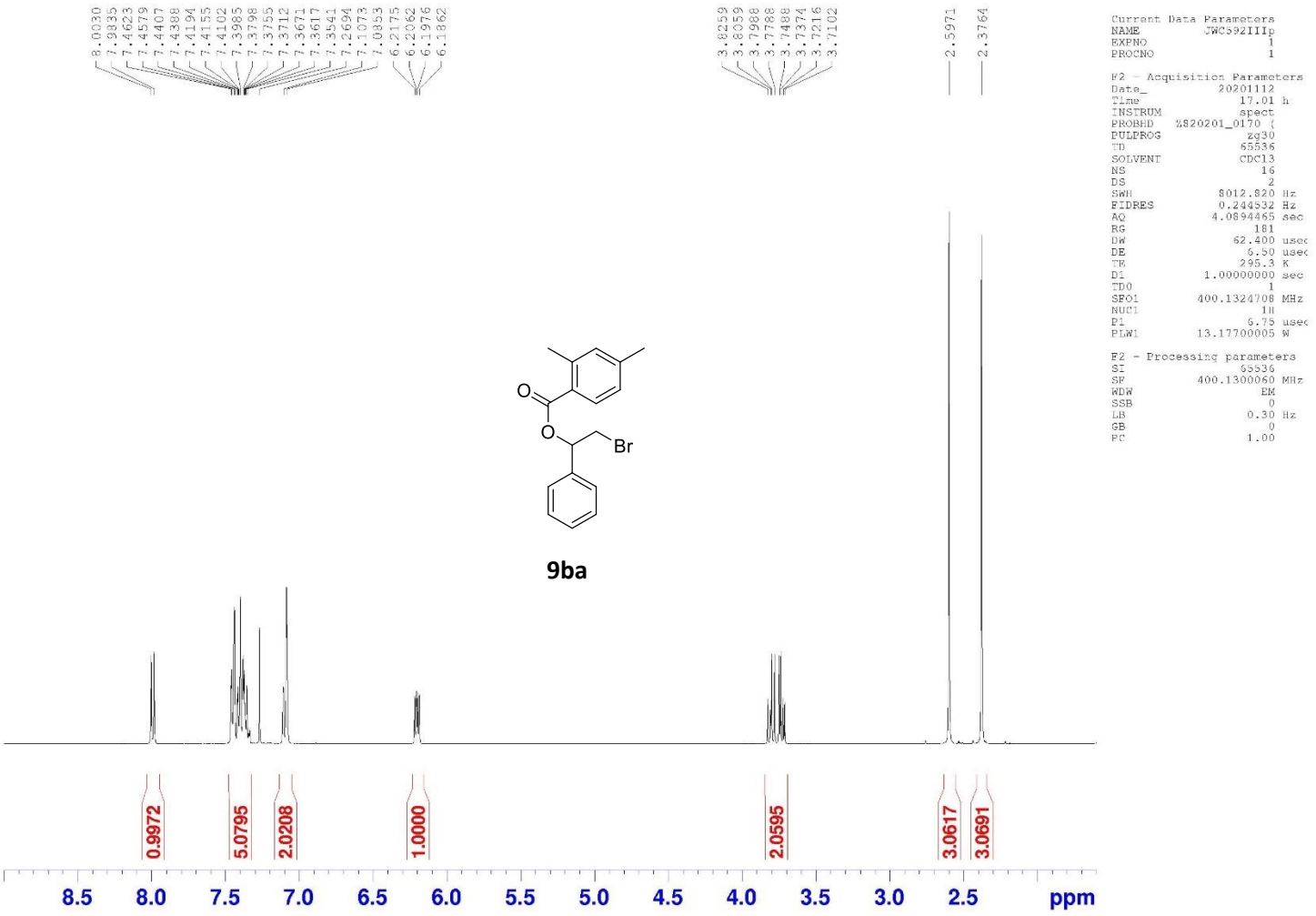
F2 - Processing parameters
SI                 65536
SF            500.1300125 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME          JWC600 data
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20201117
Time              21.16 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  700
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

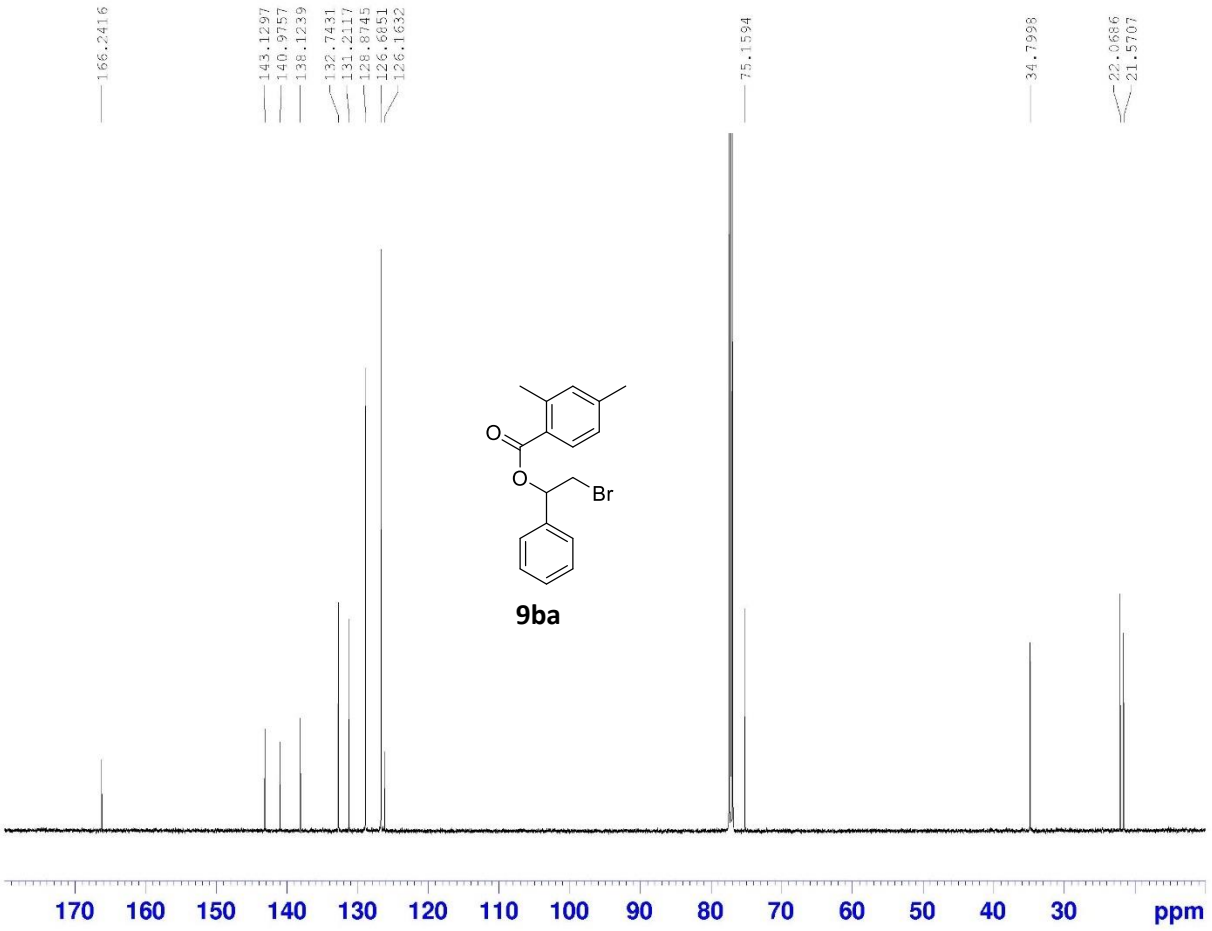
F2 - Processing parameters
SI                32768
SF           125.7577752 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME                  CWC92IIIp
EXPNO                         1
PROCNO                        1

F2 - Acquisition Parameters
Date_                  20201112
Time                      17.01 h
INSTRUM                    spect
PROBHD     %820201_0170 (
PULPROG                    zg30
TD                        65536
SOLVENT                   CDCl3
NS                           16
DS                            2
SWH                    8012.820 Hz
FIDRES                 0.244532 Hz
AQ                     4.0894465 sec
RG                          181
DW                         62.400 usec
DE                          6.50 usec
TE                         295.3 K
D1                     1.00000000 sec
TD0                           1
SFO1                 400.1324708 MHz
NUC1                         1H
P1                          6.75 usec
PLW1                13.17700005 W

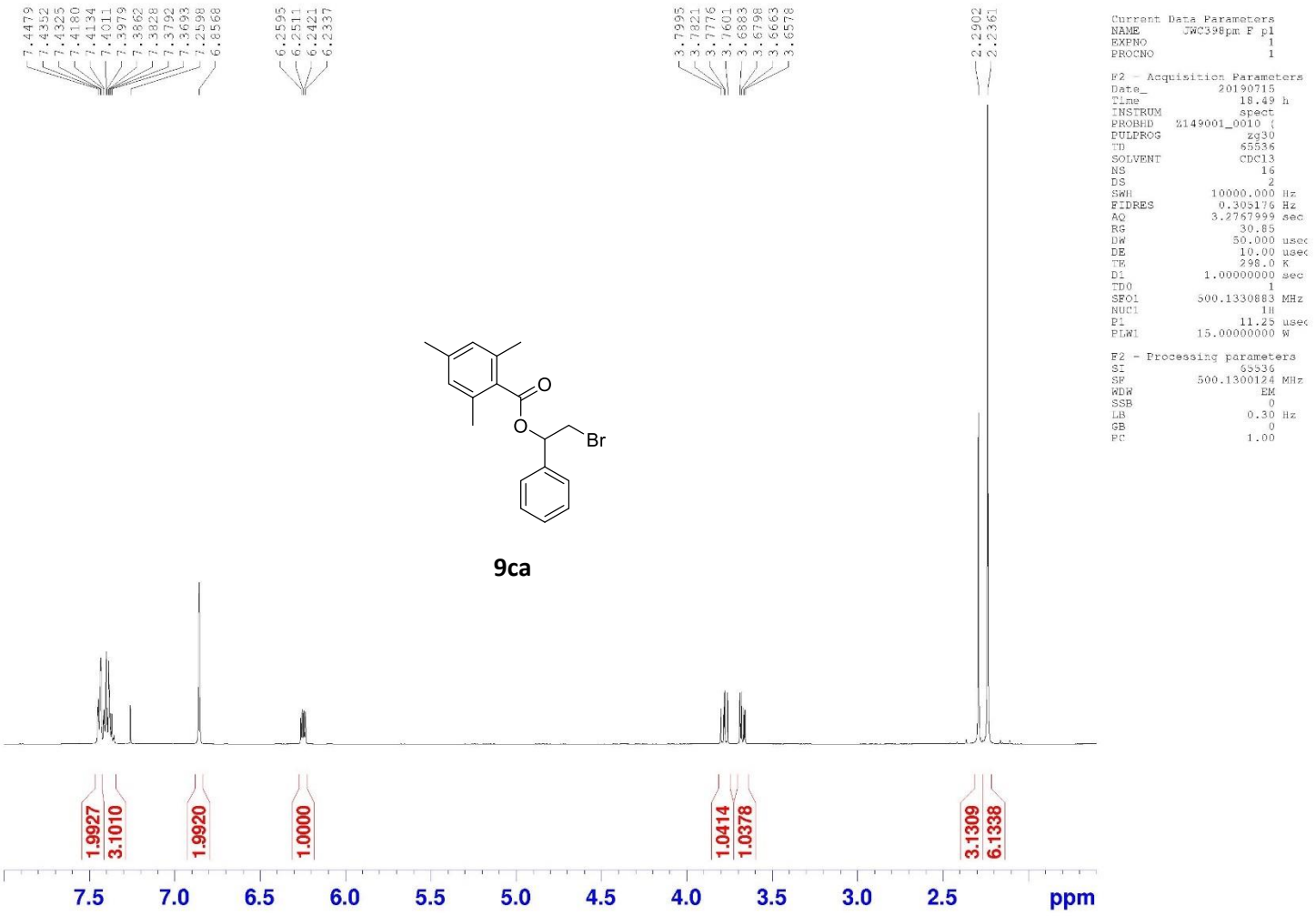
F2 - Processing parameters
SI                        65536
SF                   400.1300060 MHz
WDW                          EM
SSB                           0
LB                         0.30 Hz
GB                            0
PC                         1.00
```




```
Current Data Parameters
NAME       JWC592IIIp c2
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_          20201112
Time              23.37 h
INSTRUM            spect
PROBHD    %119470_0283 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1000
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

F2 - Processing parameters
SI                32768
SF           125.7577748 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

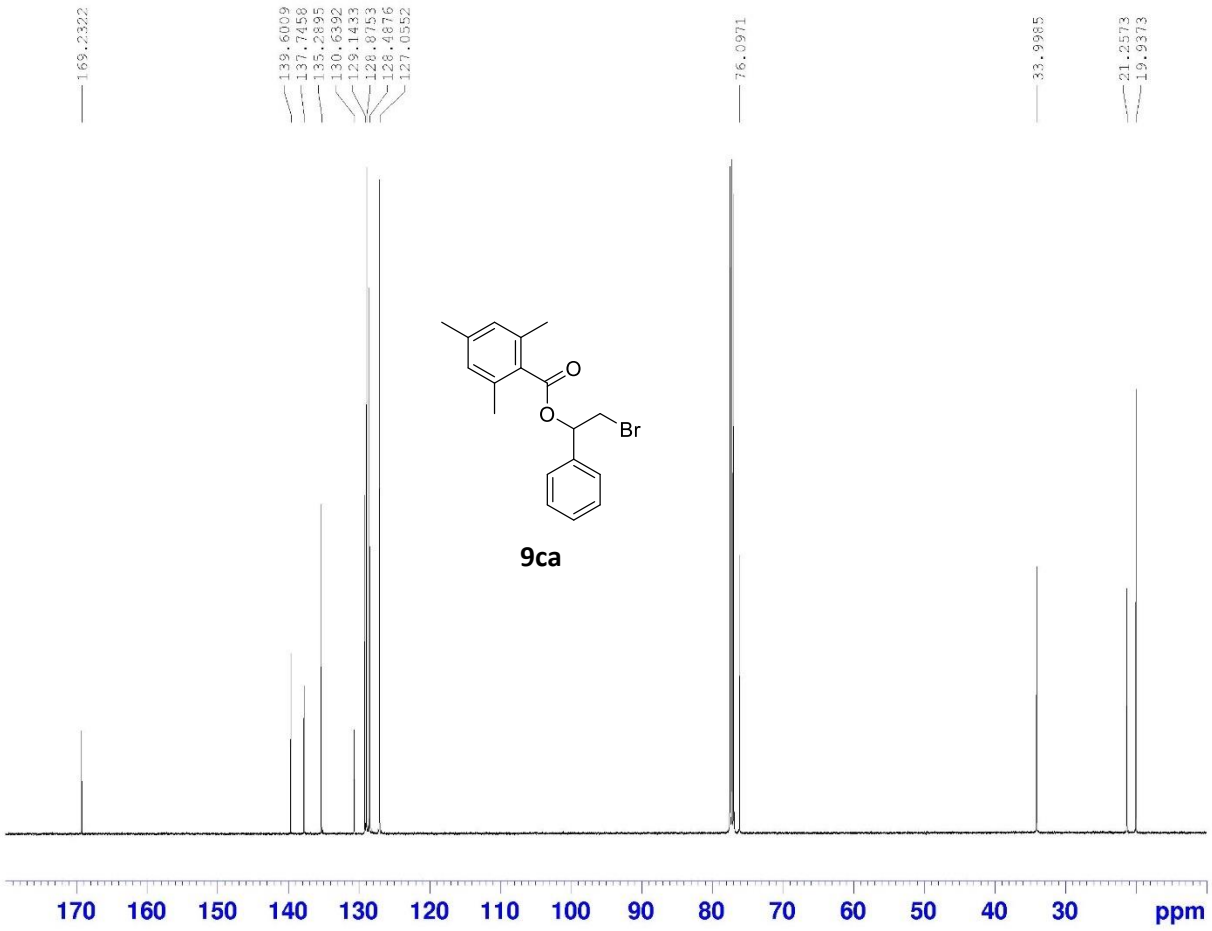


9ca

```
Current Data Parameters
NAME        5WC398pm F pl
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190715
Time              18.49 h
INSTRUM            spect
PROBHD    %149001_0010 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 30.85
DW                 50.000 usec
DE                 10.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 11.25 usec
PLW1          15.00000000 W

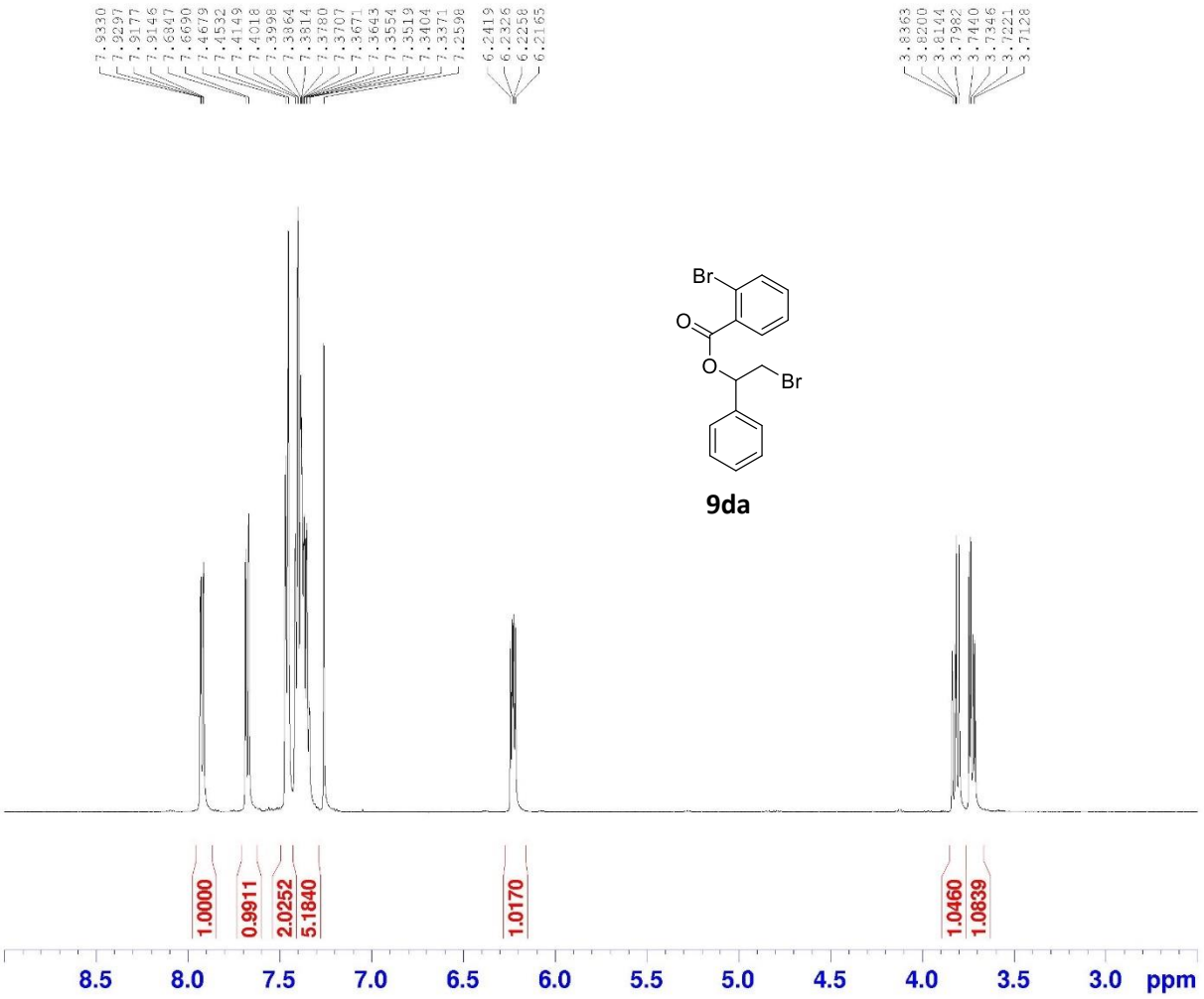
F2 - Processing parameters
SI                 65536
SF            500.1300124 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME       JWC398pm F p1
EXPNO                 2
PROCNO                1

F2 - Acquisition Parameters
Date_          20190715
Time              19.18 h
INSTRUM            spect
PROBHD   %149001_0010 (
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 500
DS                   4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                  1
SFO1         125.7703643 MHz
NUC1                13C
P1                10.00 usec
PLW1         61.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

F2 - Processing parameters
SI                32768
SF           125.7577761 MHz
WDW                  EM
SSB                  0
LB                1.00 Hz
GB                   0
PC                1.40
```

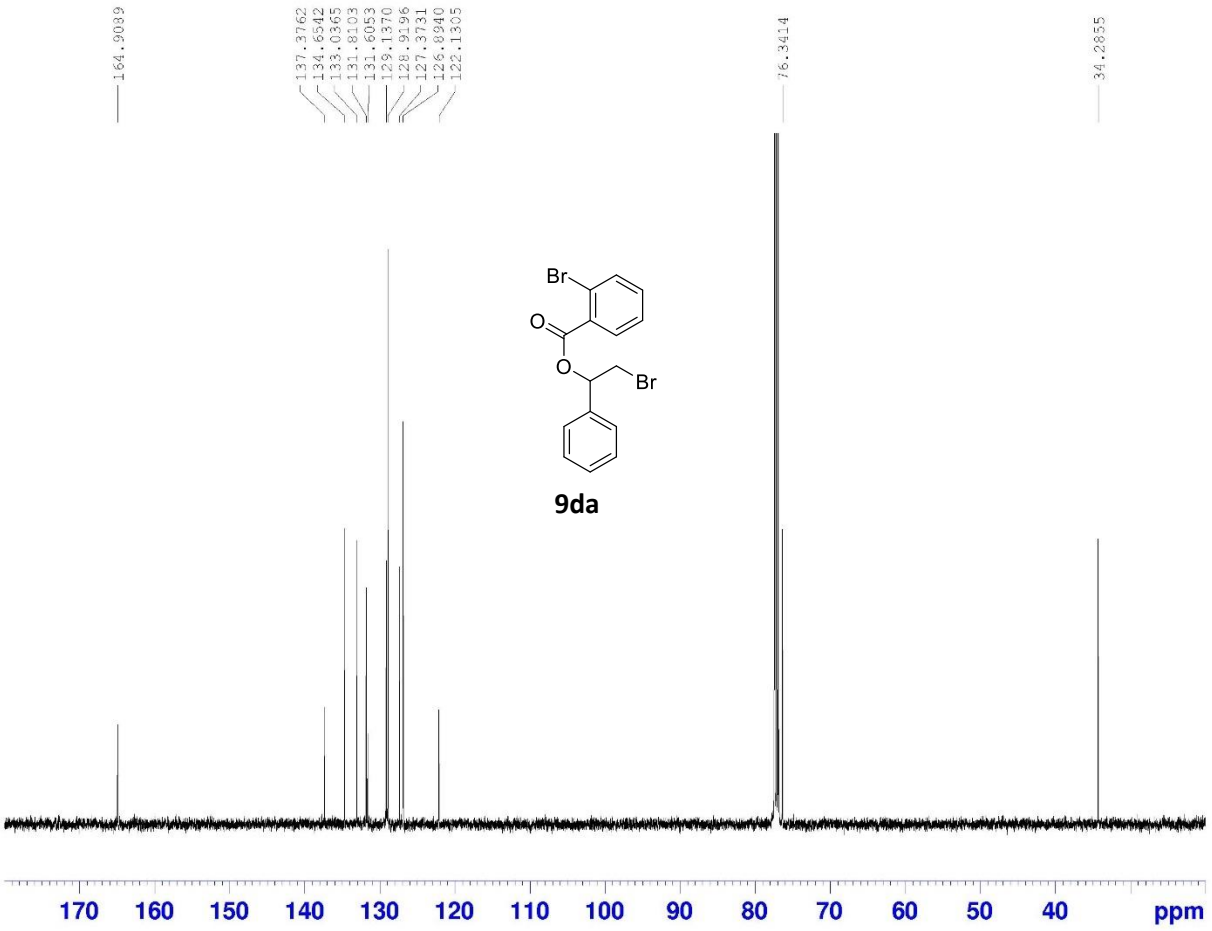


9da

```
Current Data Parameters
NAME                  JWC531 p3
EXPNO                         1
PROCNO                        1

F2 - Acquisition Parameters
Date_               20200727
Time                    18.33 h
INSTRUM                 spect
PROBHD     %119470_0283 (
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                10000.000 Hz
FIDRES             0.305176 Hz
AQ                 3.2767999 sec
RG                    126.88
DW                    50.000 usec
DE                     6.50 usec
TE                    295.1 K
D1                 1.00000000 sec
TD0                        1
SFO1            500.1330883 MHz
NUC1                      1H
P1                     10.00 usec
PLW1           25.00000000 W

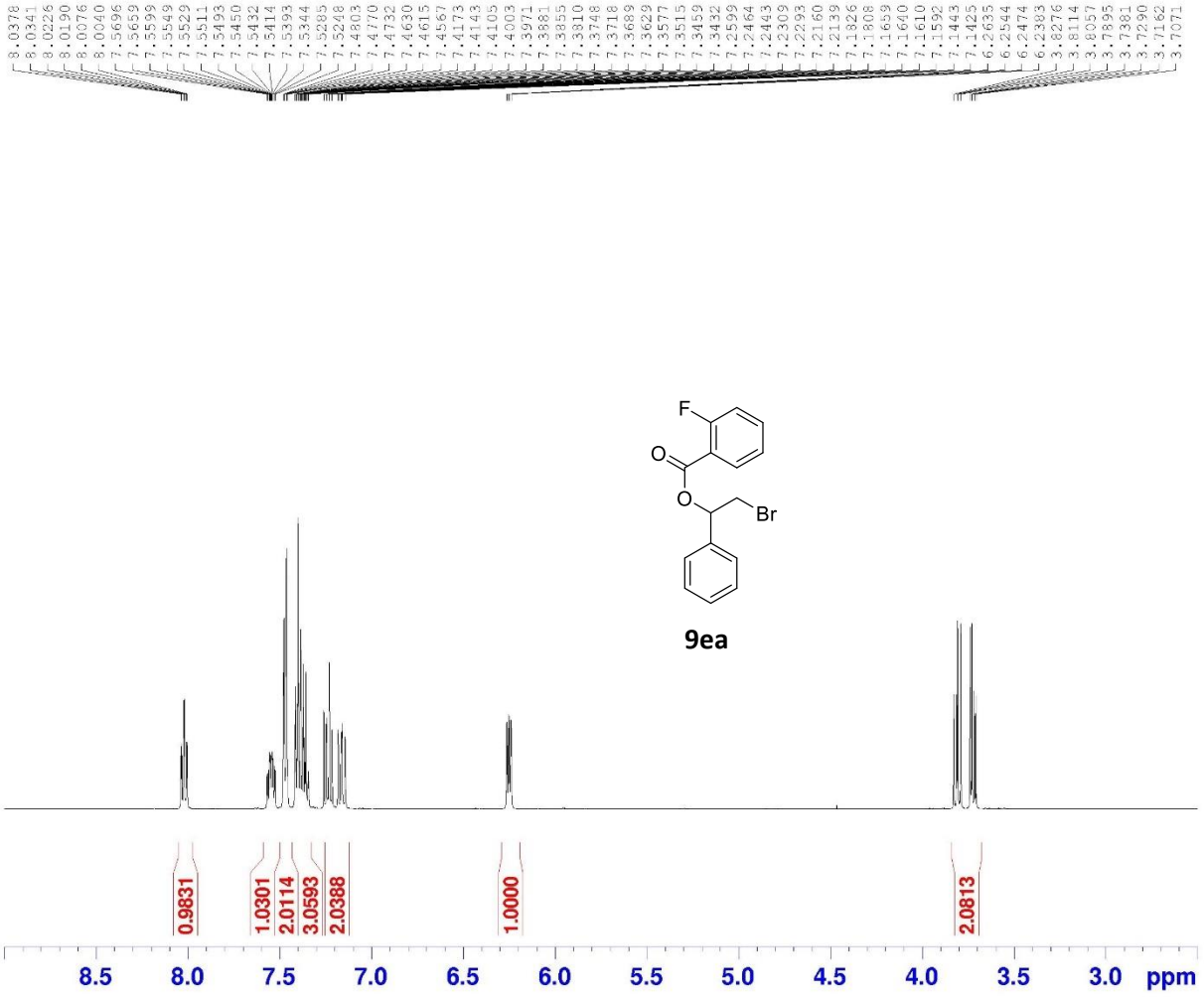
F2 - Processing parameters
SI                     65536
SF              500.1300117 MHz
WDW                       EM
SSB                        0
LB                      0.30 Hz
GB                         0
PC                      1.00
```




```
Current Data Parameters
NAME              JWC531 p3
EXPNO                     2
PROCNO                    1

F2 - Acquisition Parameters
Date_              20200727
Time                 19.01 h
INSTRUM                spect
PROBHD    %119470_0283 (
PULPROG              zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      400
DS                        4
SWH                29761.904 Hz
FIDRES             0.908261 Hz
AQ                 1.1010048 sec
RG                    205.72
DW                    16.800 usec
DE                     6.50 usec
TE                    295.1 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                       1
SFO1              125.7703643 MHz
NUC1                     13C
P1                     9.75 usec
PLW1              94.00000000 W
SFO2              500.1320005 MHz
NUC2                     1H
CPDPRG[2               waltz16
PCPD2                 80.00 usec
PLW2              25.00000000 W
PLW12              0.39063001 W
PLW13              0.19648001 W

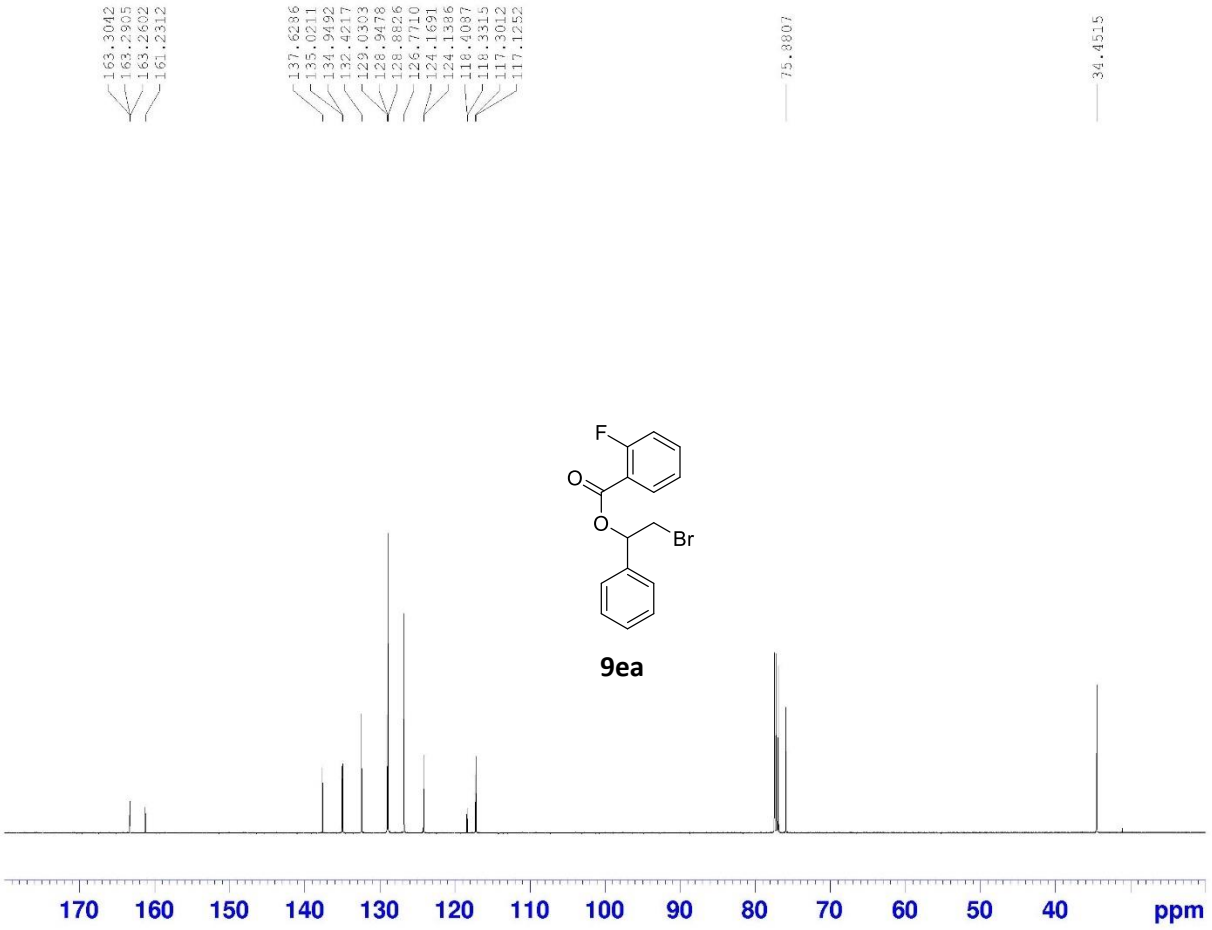
F2 - Processing parameters
SI                       32768
SF                125.7577742 MHz
WDW                         EM
SSB                          0
LB                        1.00 Hz
GB                           0
PC                        1.40
```




```
Current Data Parameters
NAME      JWC389pm pIII pure
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190625
Time              21.37 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                 30.85
DW                50.000 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
TD0                    1
SFO1        500.1330883 MHz
NUC1                  1H
P1                11.25 usec
PLW1         15.00000000 W

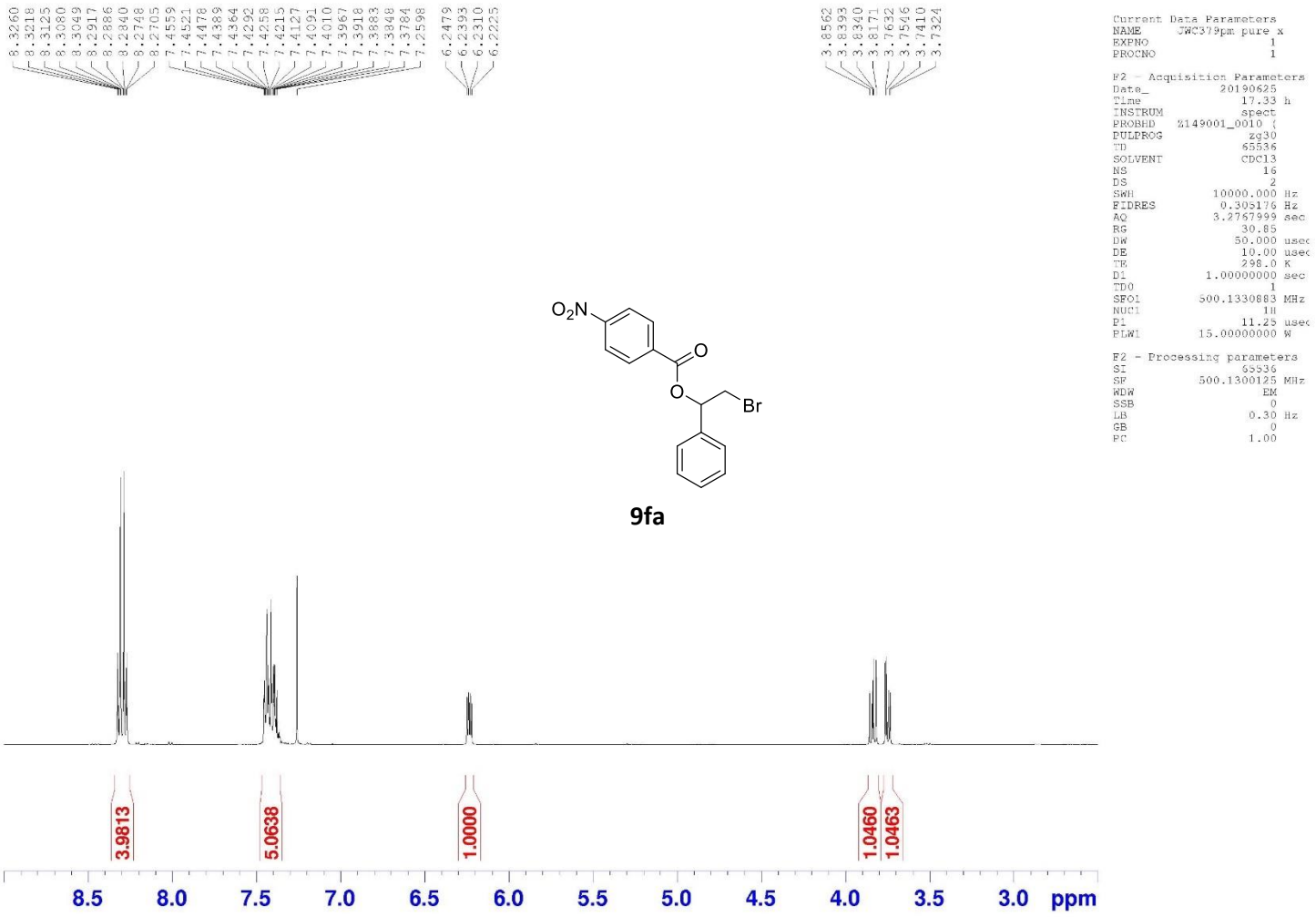
F2 - Processing parameters
SI                 65536
SF          500.1300122 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME      JWC389pm pIII pure
EXPNO                      2
PROCNO                     1

F2 - Acquisition Parameters
Date_              20190625
Time                  21.53 h
INSTRUM                spect
PROBHD    %149001_0010 (
PULPROG              zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      300
DS                        4
SWH                29761.904 Hz
FIDRES             0.908261 Hz
AQ                 1.1010048 sec
RG                    205.72
DW                    16.800 usec
DE                    18.00 usec
TE                    298.0 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                       1
SFO1           125.7703643 MHz
NUC1                    13C
P1                    10.00 usec
PLW1           61.00000000 W
SFO2           500.1320005 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                 80.00 usec
PLW2           15.00000000 W
PLW12           0.29663000 W
PLW13           0.14920001 W

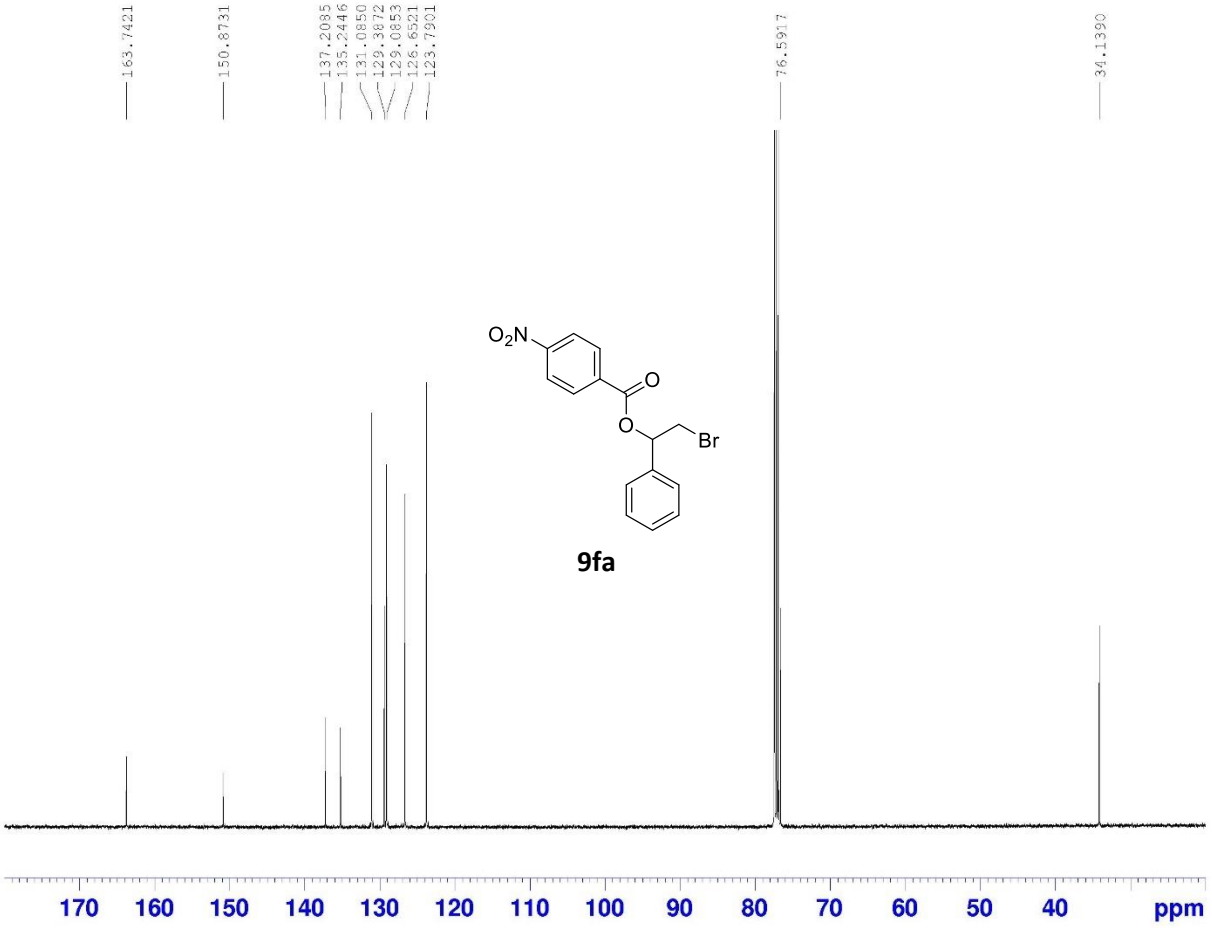
F2 - Processing parameters
SI                    32768
SF             125.7577779 MHz
WDW                      EM
SSB                       0
LB                     1.00 Hz
GB                        0
PC                     1.40
```




```
Current Data Parameters
NAME      JWC379pm pure x
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190625
Time              17.33 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 30.85
DW                50.000 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                11.25 usec
PLW1          15.00000000 W

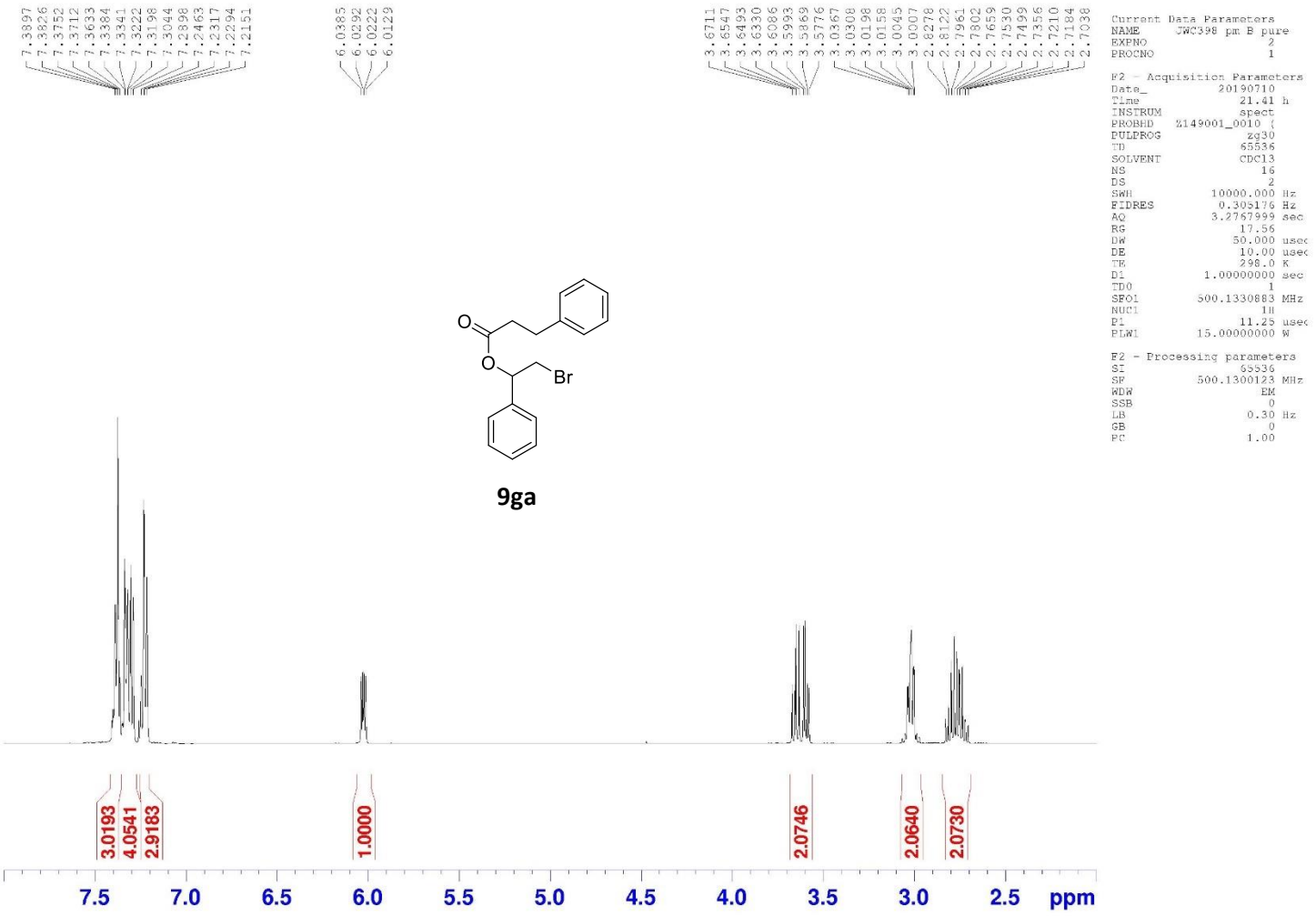
F2 - Processing parameters
SI                 65536
SF            500.1300125 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```




```
Current Data Parameters
NAME      JWC379pm pure x
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190625
Time              17.49 h
INSTRUM             spect
PROBHD    %149001_0010 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                  300
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE               18.00 usec
TE               298.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                13C
P1                10.00 usec
PLW1         61.00000000 W
SFO2         500.1320005 MHz
NUC2                1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2         15.00000000 W
PLW12         0.29663000 W
PLW13         0.14920001 W

F2 - Processing parameters
SI                32768
SF           125.7577736 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

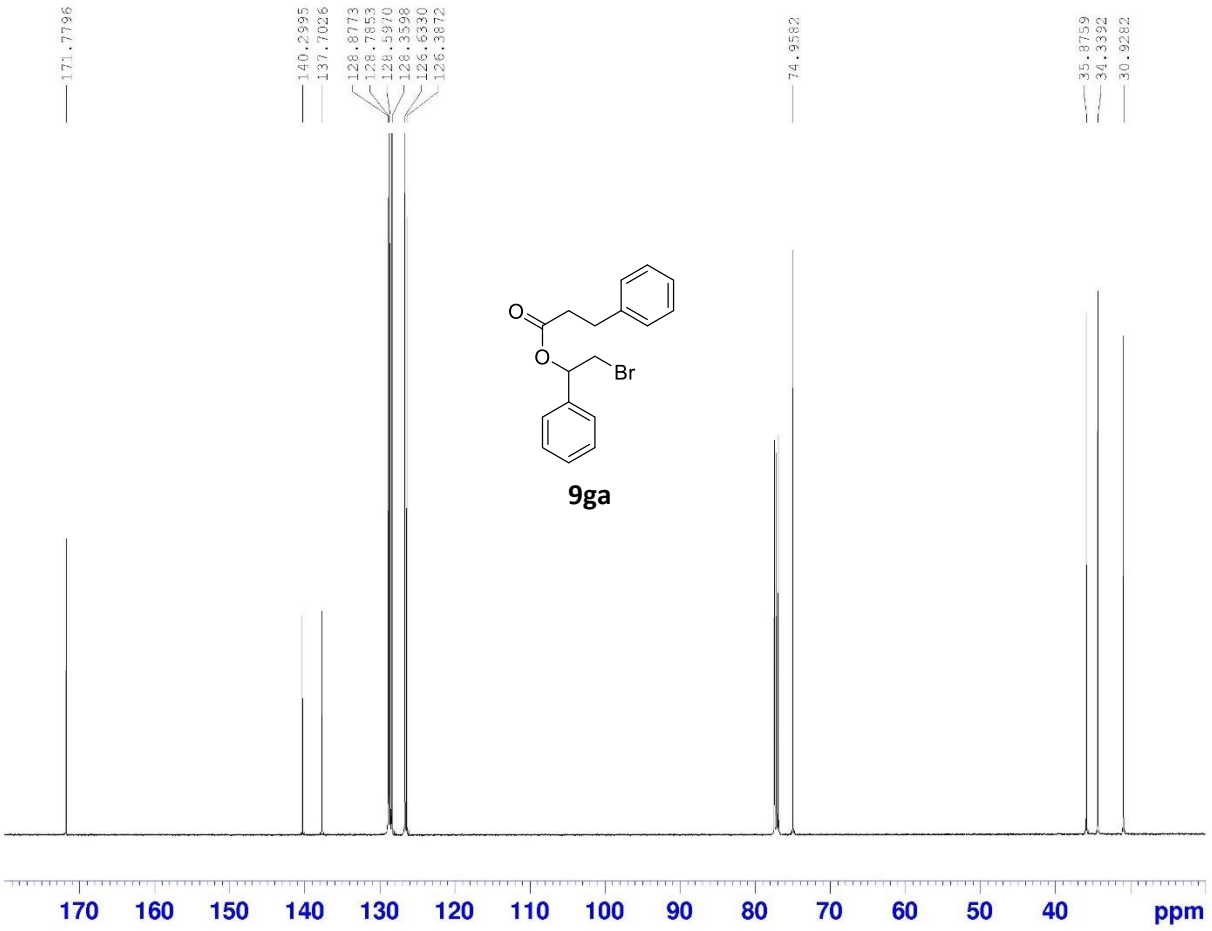


9ga

```
Current Data Parameters
NAME      JWC398 pm B pure
EXPNO                    2
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190710
Time                 21.41 h
INSTRUM              spect
PROBHD    %149001_0010 (
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH             10000.000 Hz
FIDRES              0.305176 Hz
AQ                3.2767999 sec
RG                    17.56
DW                   50.000 usec
DE                   10.00 usec
TE                   298.0 K
D1              1.00000000 sec
TD0                     1
SFO1           500.1330883 MHz
NUC1                   1H
P1                   11.25 usec
PLW1           15.00000000 W

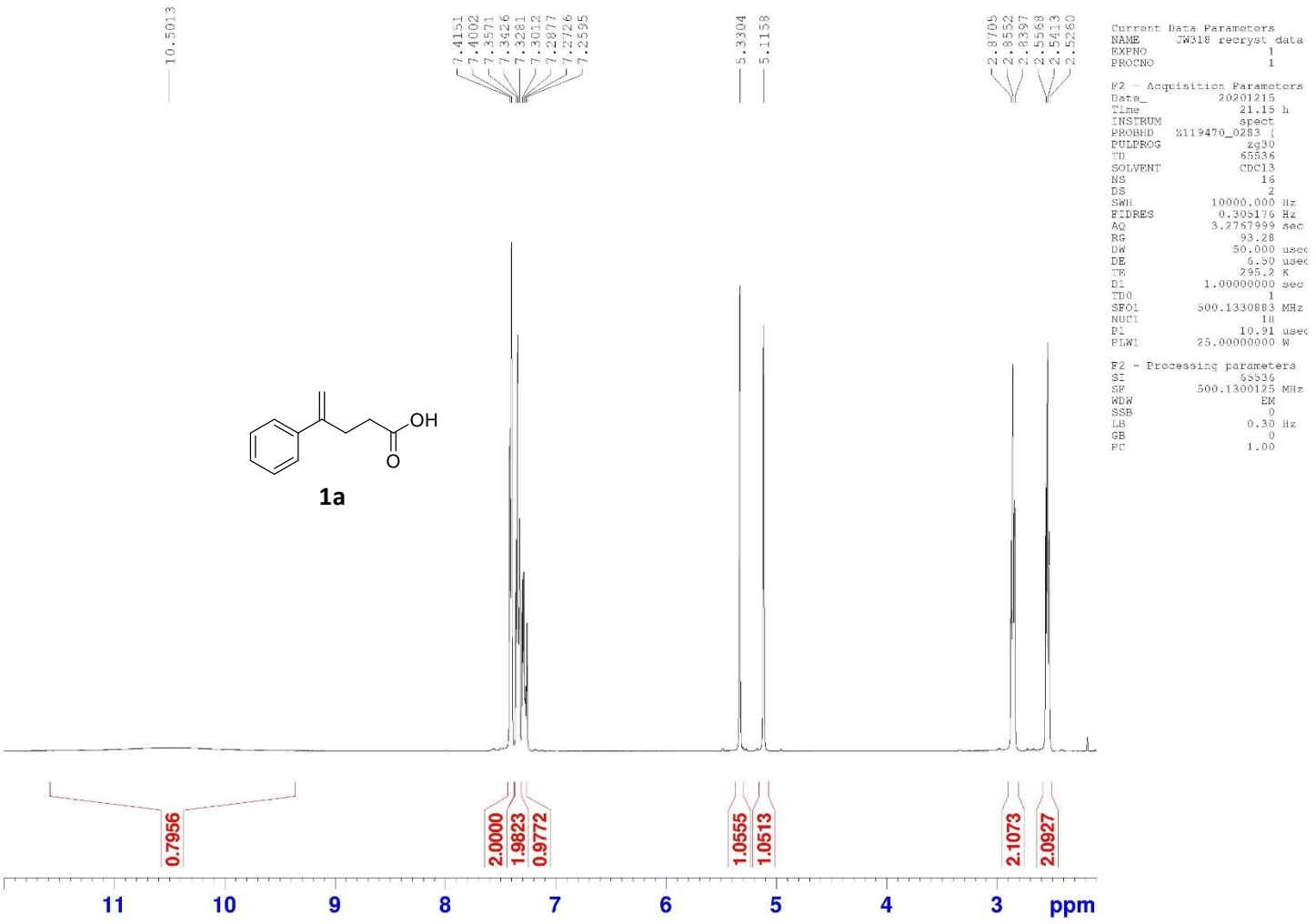
F2 - Processing parameters
SI                  65536
SF             500.1300123 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




```
Current Data Parameters
NAME      JWC398 pm B pure
EXPNO                    3
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190710
Time                 21.34 h
INSTRUM              spect
PROBHD    %149001_0010 (
PULPROG              zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      500
DS                        4
SWH                29761.904 Hz
FIDRES             0.908261 Hz
AQ                 1.1010048 sec
RG                    205.72
DW                    16.800 usec
DE                    18.00 usec
TE                    298.0 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                       1
SFO1            125.7703643 MHz
NUC1                    13C
P1                    10.00 usec
PLW1           61.00000000 W
SFO2           500.1320005 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                 80.00 usec
PLW2           15.00000000 W
PLW12           0.29663000 W
PLW13           0.14920001 W

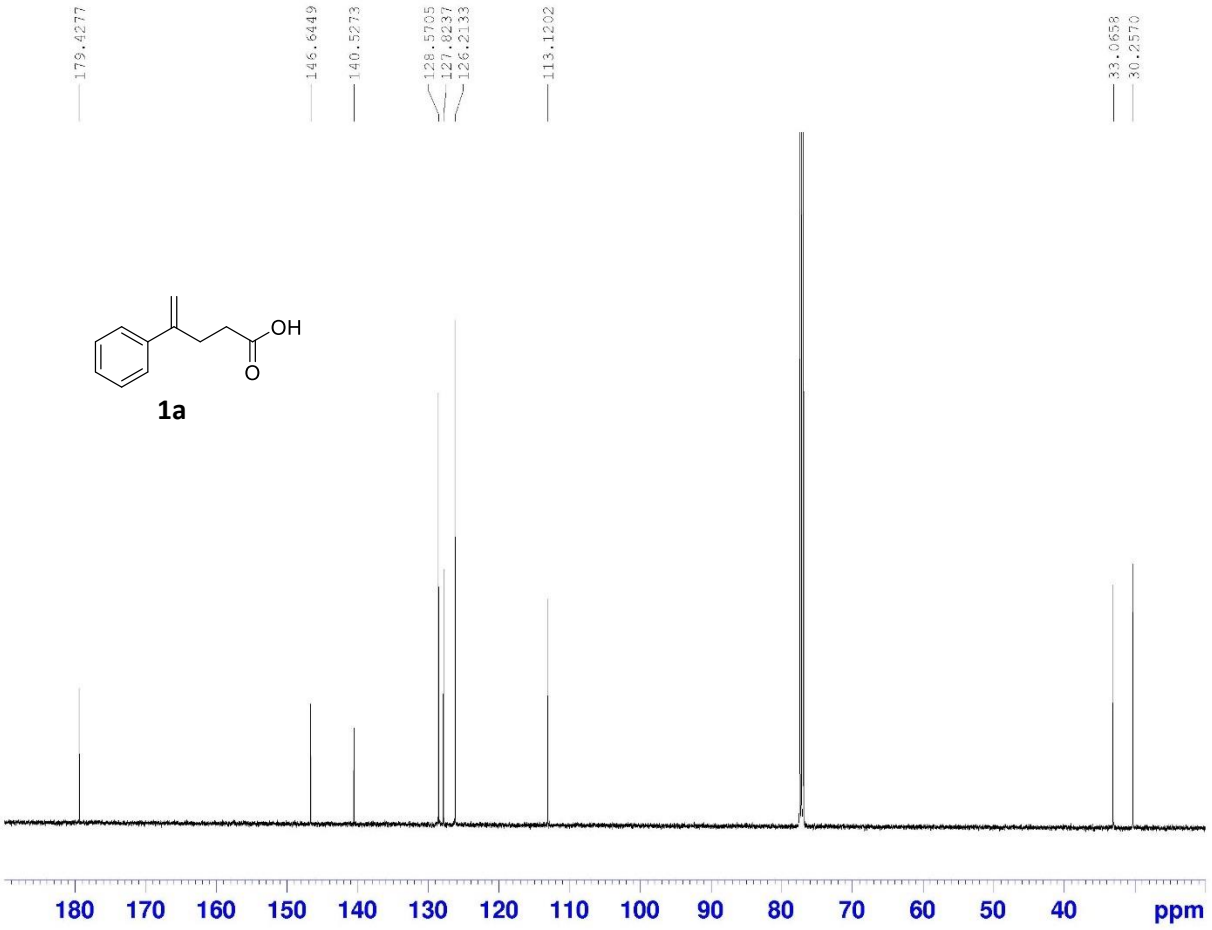
F2 - Processing parameters
SI                    32768
SF              125.7577866 MHz
WDW                      EM
SSB                       0
LB                     1.00 Hz
GB                        0
PC                     1.40
```




```
Current Data Parameters
NAME      JW318 recryst data
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_             20201215
Time                21.15 h
INSTRUM               spect
PROBHD    %119470_0283 (
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               10000.000 Hz
FIDRES            0.305176 Hz
AQ                3.2767999 sec
RG                   93.28
DW                  50.000 usec
DE                    6.50 usec
TE                  295.2 K
D1                1.00000000 sec
TD0                      1
SFO1           500.1330883 MHz
NUC1                    1H
P1                   10.91 usec
PLW1          25.00000000 W

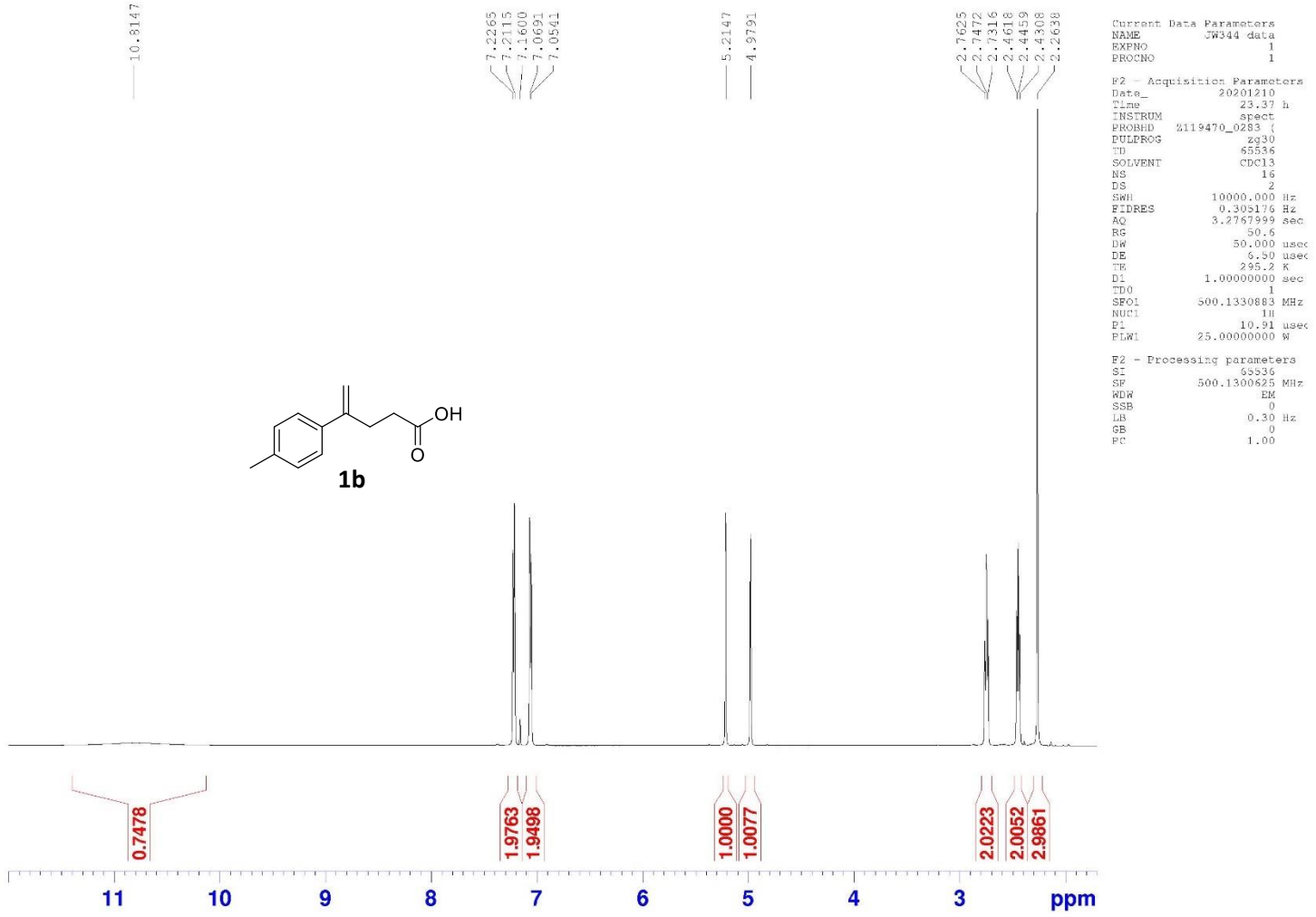
F2 - Processing parameters
SI                   65536
SF             500.1300125 MHz
WDW                     EM
SSB                      0
LB                    0.30 Hz
GB                       0
PC                    1.00
```




```
Current Data Parameters
NAME      JW318 recryst data
EXPNO                      2
PROCNO                     1

F2 - Acquisition Parameters
Date_              20201215
Time                  21.52 h
INSTRUM                spect
PROBHD    %119470_0283 (
PULPROG              zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      700
DS                        4
SWH                29761.904 Hz
FIDRES             0.908261 Hz
AQ                 1.1010048 sec
RG                    205.72
DW                    16.800 usec
DE                     6.50 usec
TE                    295.1 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                       1
SFO1           125.7703643 MHz
NUC1                    13C
P1                     9.75 usec
PLW1              94.00000000 W
SFO2              500.1320005 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                 80.00 usec
PLW2              25.00000000 W
PLW12              0.46495000 W
PLW13              0.23387000 W

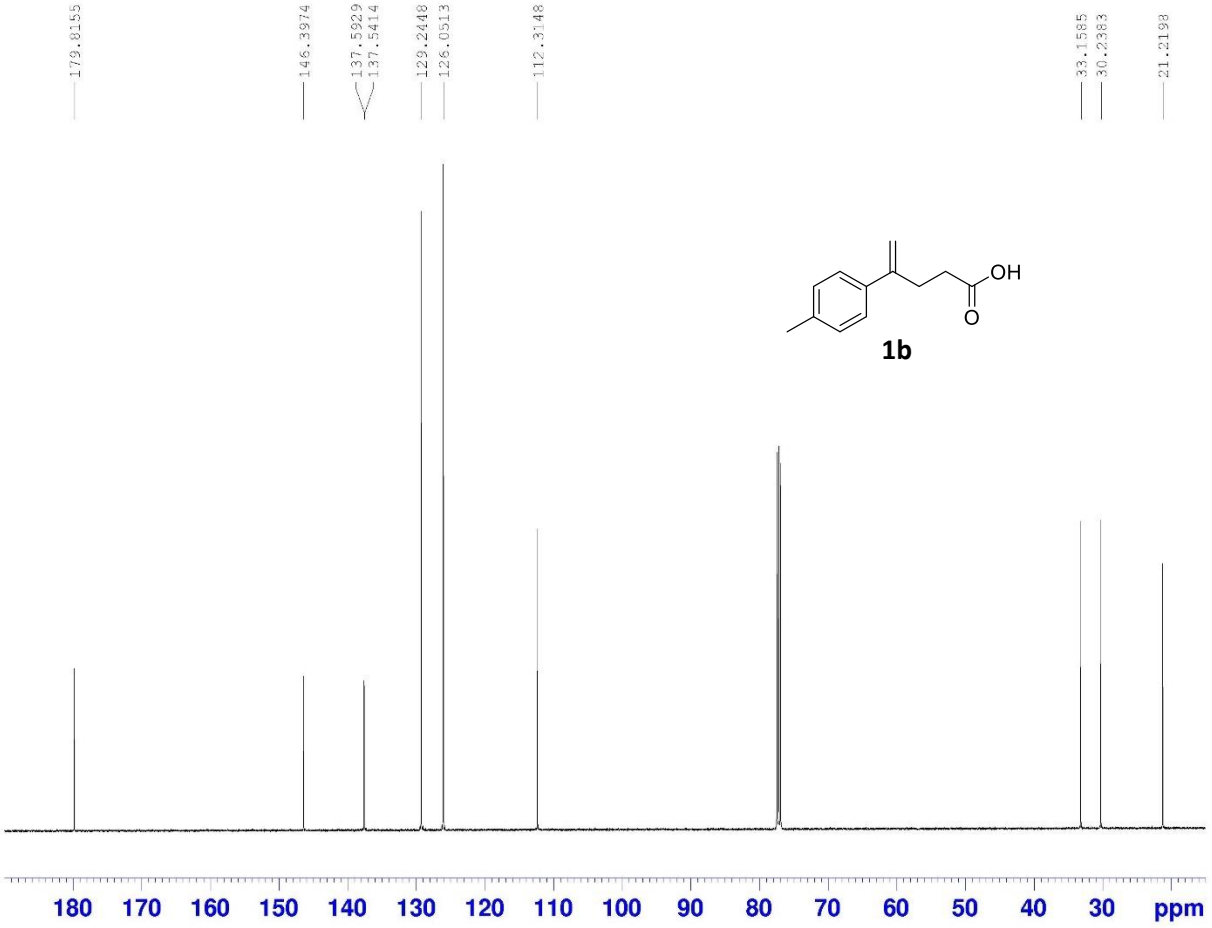
F2 - Processing parameters
SI                     32768
SF             125.7577740 MHz
WDW                       EM
SSB                        0
LB                      1.00 Hz
GB                         0
PC                      1.40
```




```
Current Data Parameters
NAME                  SW344 data
EXPNO                          1
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201210
Time                       23.37 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                     zg30
TD                         65536
SOLVENT                    CDCl3
NS                            16
DS                             2
SWH                    10000.000 Hz
FIDRES                 0.305176 Hz
AQ                     3.2767999 sec
RG                          50.6
DW                        50.000 usec
DE                          6.50 usec
TE                         295.2 K
D1                     1.00000000 sec
TD0                            1
SFO1                 500.1330883 MHz
NUC1                          1H
P1                         10.91 usec
PLW1                25.00000000 W

F2 - Processing parameters
SI                         65536
SF                   500.1300625 MHz
WDW                           EM
SSB                            0
LB                          0.30 Hz
GB                             0
PC                          1.00
```

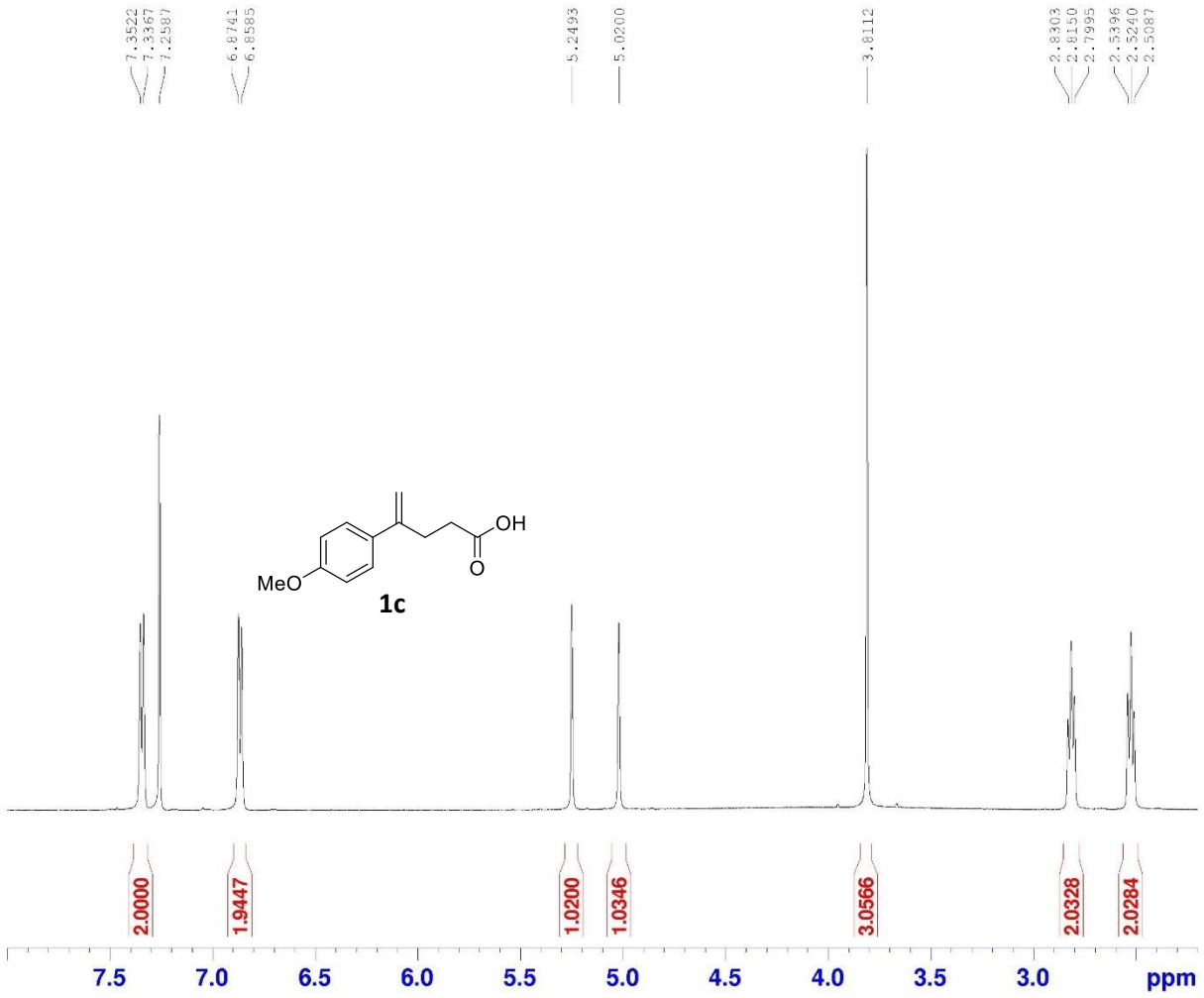


1b

```
Current Data Parameters
NAME                  SW344 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201211
Time                        2.31 h
INSTRUM                     spect
PROBHD    5119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                          1024
DS                             4
SWH                     29761.904 Hz
FIDRES                  0.908261 Hz
AQ                      1.1010048 sec
RG                         205.72
DW                         16.800 usec
DE                          6.50 usec
TE                         295.2 K
D1                      2.00000000 sec
D11                     0.03000000 sec
TD0                            1
SFO1                 125.7703643 MHz
NUC1                         13C
P1                          9.75 usec
PLW1                94.00000000 W
SFO2                500.1320005 MHz
NUC2                         1H
CPDPRG[2                 waltz16
PCPD2                      80.00 usec
PLW2                25.00000000 W
PLW12                0.46495000 W
PLW13                0.23387000 W

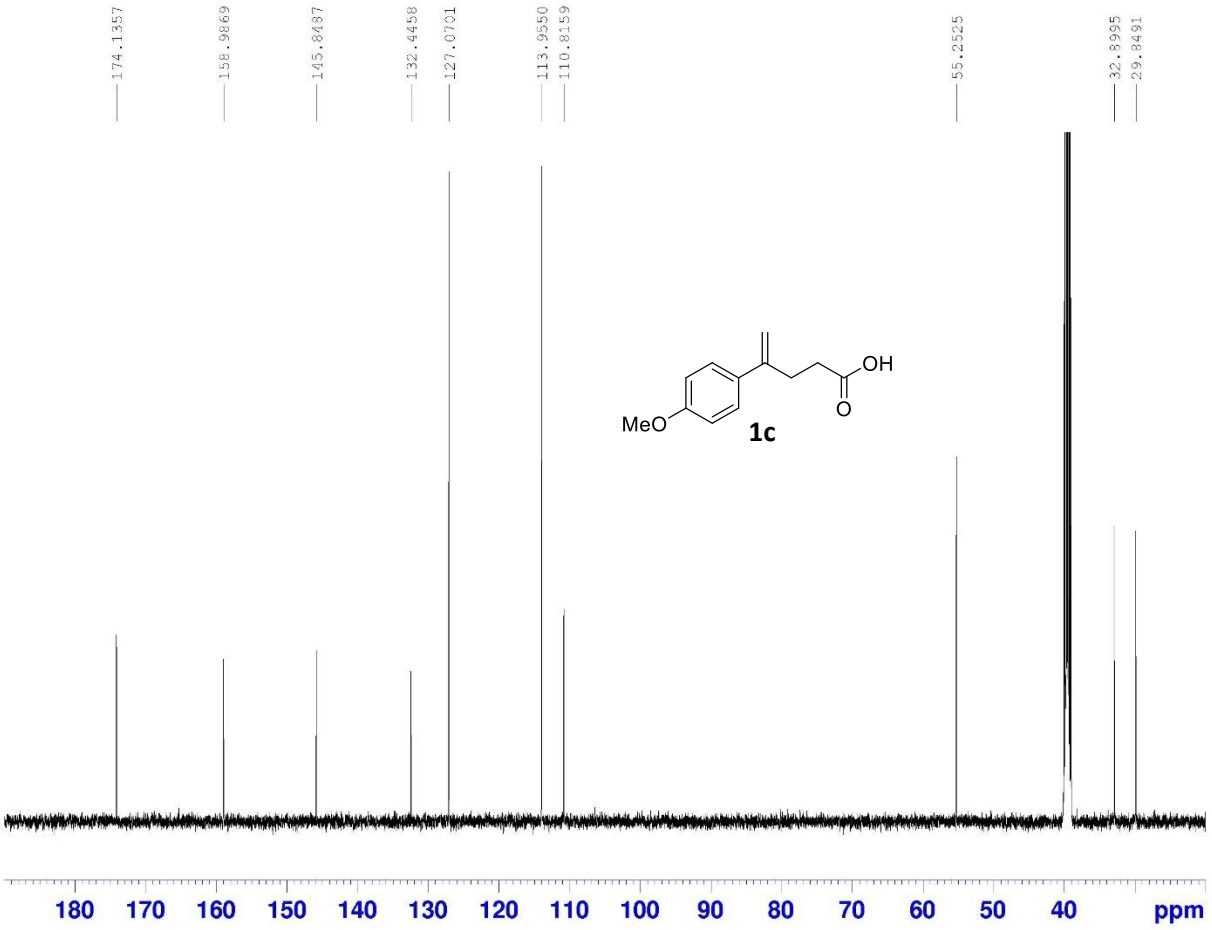
F2 - Processing parameters
SI                         32768
SF                  125.7577771 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```




```
Current Data Parameters
NAME                  SW323 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201214
Time                       18.04 h
INSTRUM                     spect
PROBHD     %119470_0283 (
PULPROG                     zg30
TD                         65536
SOLVENT                    CDCl3
NS                            16
DS                             2
SWH                    10000.000 Hz
FIDRES                 0.305176 Hz
AQ                     3.2767999 sec
RG                         142.5
DW                        50.000 usec
DE                         6.50 usec
TE                        295.1 K
D1                     1.00000000 sec
TD0                            1
SFO1                 500.1330883 MHz
NUC1                          1H
P1                        10.91 usec
PLW1                25.00000000 W

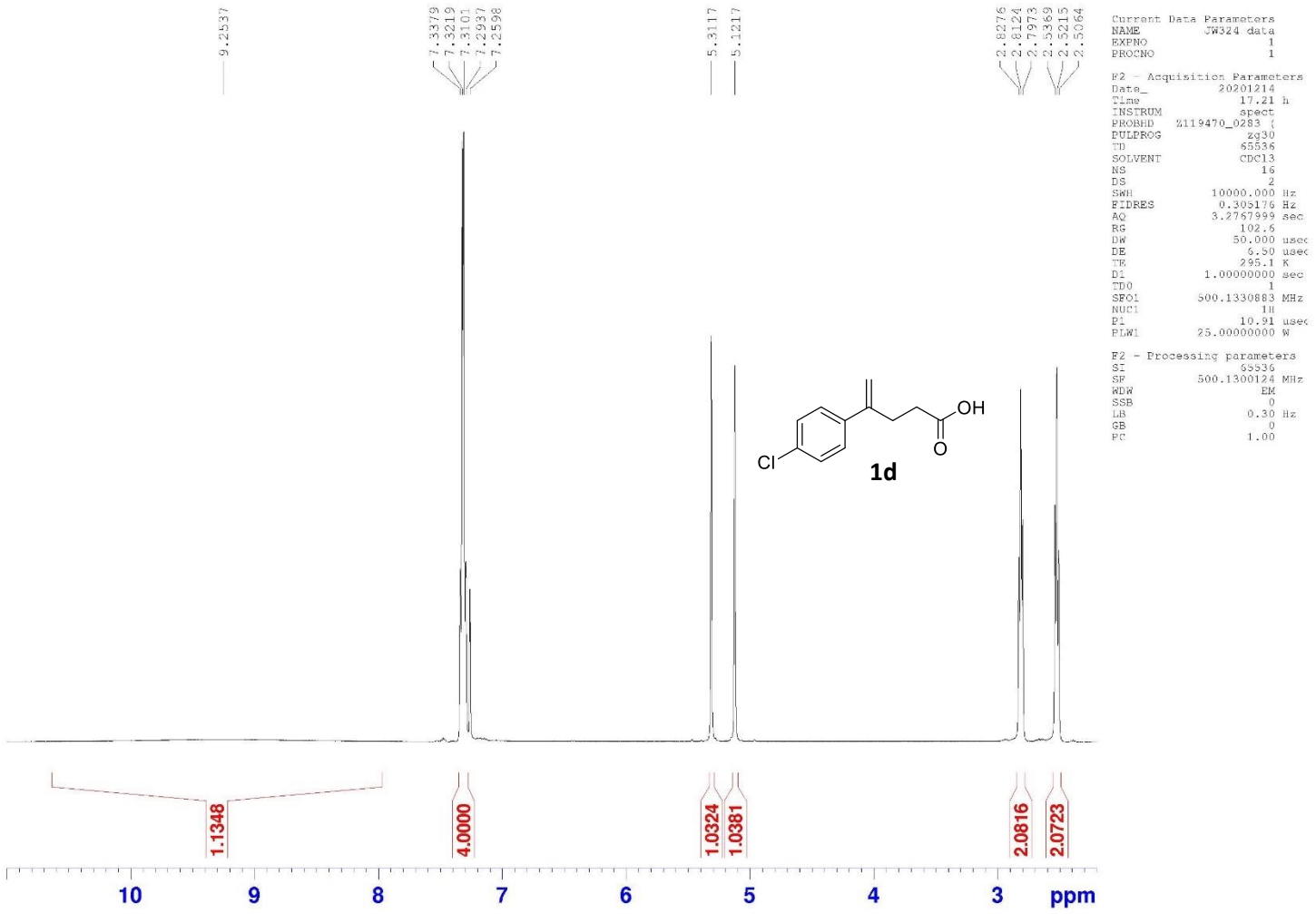
F2 - Processing parameters
SI                         65536
SF                   500.1300130 MHz
WDW                           EM
SSB                            0
LB                          0.30 Hz
GB                             0
PC                          1.00
```




```
Current Data Parameters
NAME      JW323 dmso data
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201215
Time              18.59 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                 65536
SOLVENT             DMSO
NS                   500
DS                     4
SWH            29761.904 Hz
FIDRES         0.908261 Hz
AQ             1.1010048 sec
RG                205.72
DW                16.800 usec
DE                 6.50 usec
TE                295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1          94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2          25.00000000 W
PLW12          0.46495000 W
PLW13          0.23387000 W

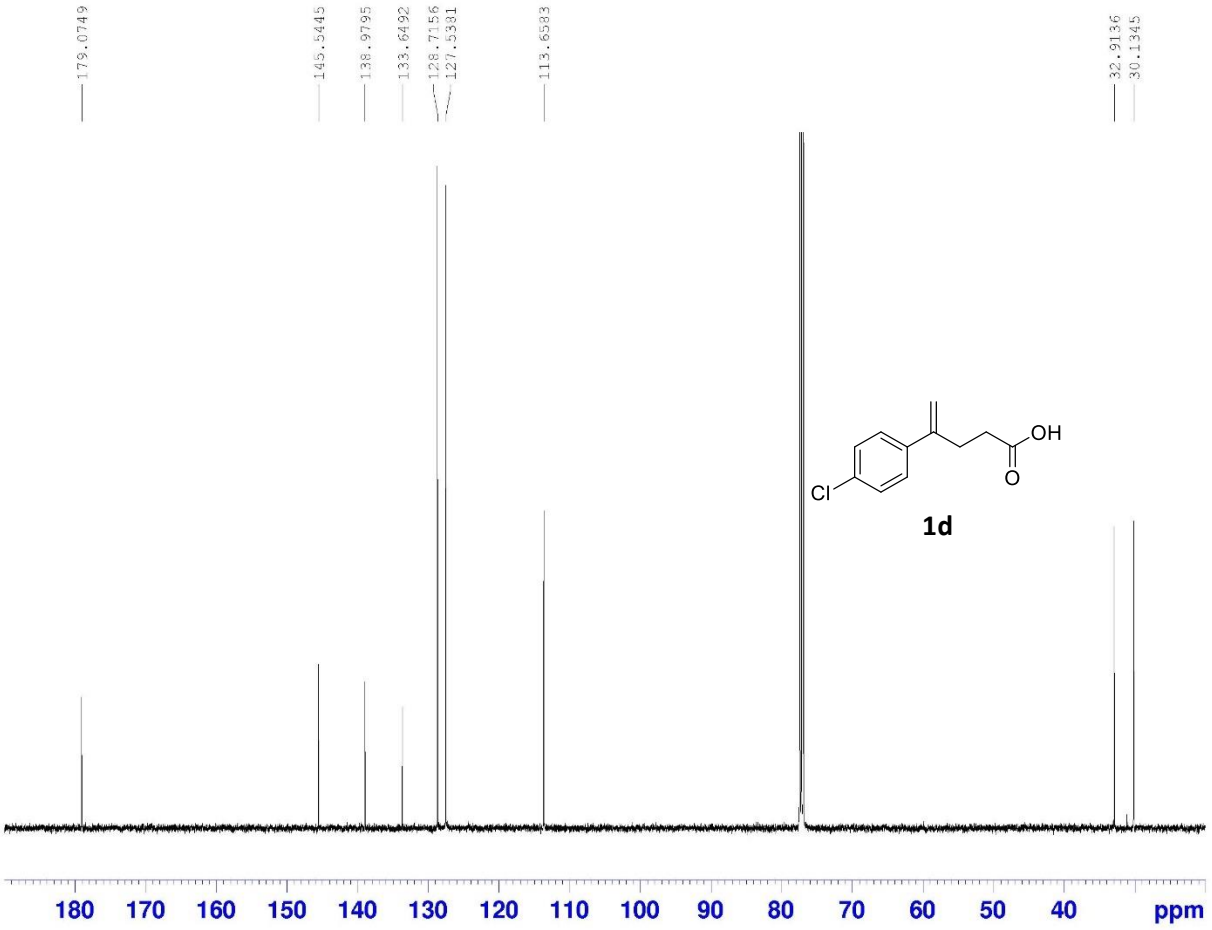
F2 - Processing parameters
SI                 32768
SF           125.7578242 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```




```
Current Data Parameters
NAME                  SW324 data
EXPNO                          1
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201214
Time                       17.21 h
INSTRUM                     spect
PROBHD     %119470_0283 (
PULPROG                     zg30
TD                         65536
SOLVENT                    CDCl3
NS                            16
DS                             2
SWH                    10000.000 Hz
FIDRES                 0.305176 Hz
AQ                     3.2767999 sec
RG                         102.6
DW                        50.000 usec
DE                         6.50 usec
TE                        295.1 K
D1                    1.00000000 sec
TD0                            1
SFO1                 500.1330883 MHz
NUC1                          1H
P1                        10.91 usec
PLW1                 25.00000000 W

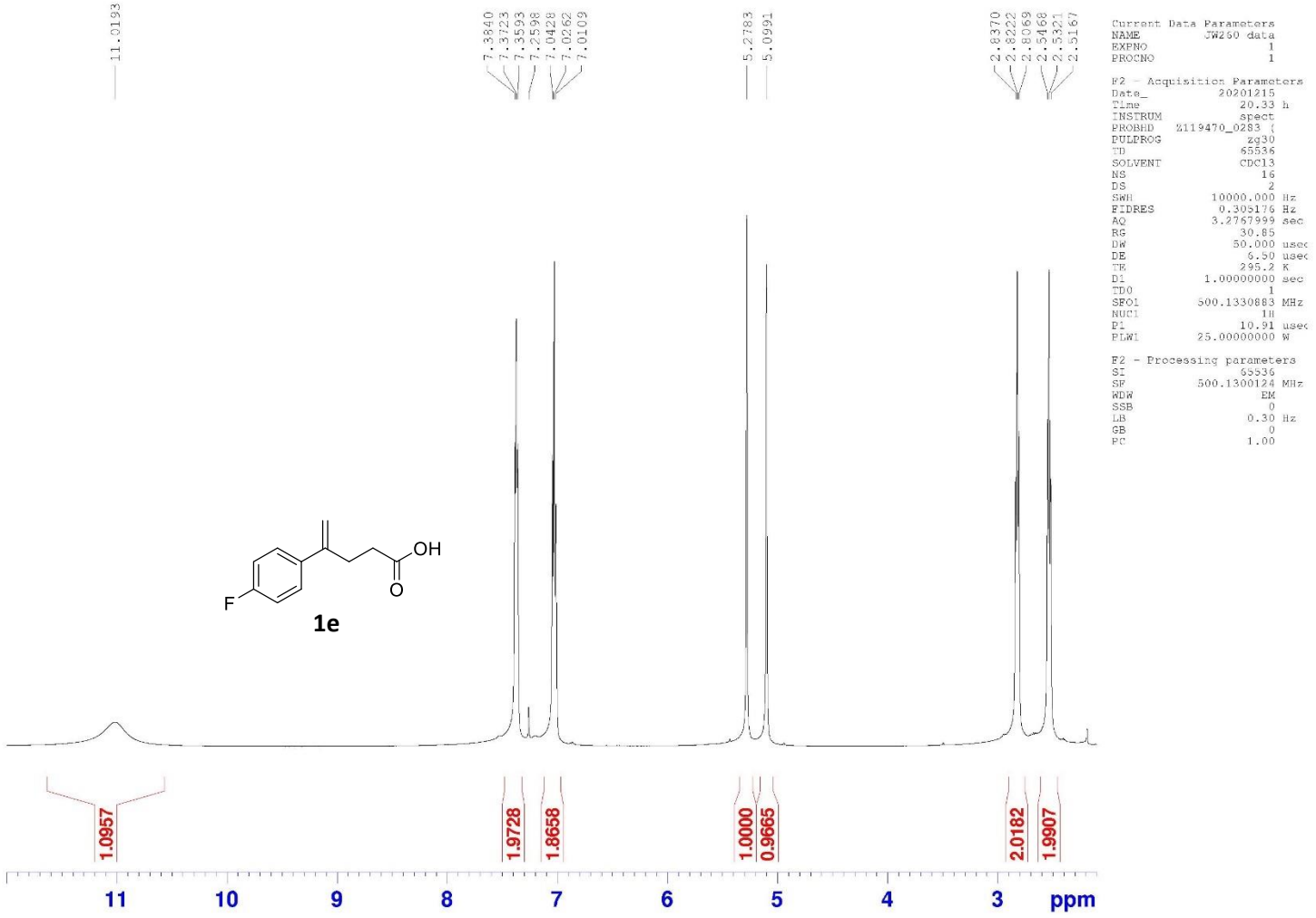
F2 - Processing parameters
SI                         65536
SF                   500.1300124 MHz
WDW                           EM
SSB                            0
LB                          0.30 Hz
GB                             0
PC                          1.00
```




```
Current Data Parameters
NAME                  SW324 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201214
Time                       21.14 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                           800
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.908261 Hz
AQ                     1.1010048 sec
RG                        205.72
DW                        16.800 usec
DE                         6.50 usec
TE                        295.1 K
D1                     2.00000000 sec
D11                    0.03000000 sec
TD0                            1
SFO1                 125.7703643 MHz
NUC1                        13C
P1                         9.75 usec
PLW1                  94.00000000 W
SFO2                 500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     80.00 usec
PLW2                  25.00000000 W
PLW12                  0.46495000 W
PLW13                  0.23387000 W

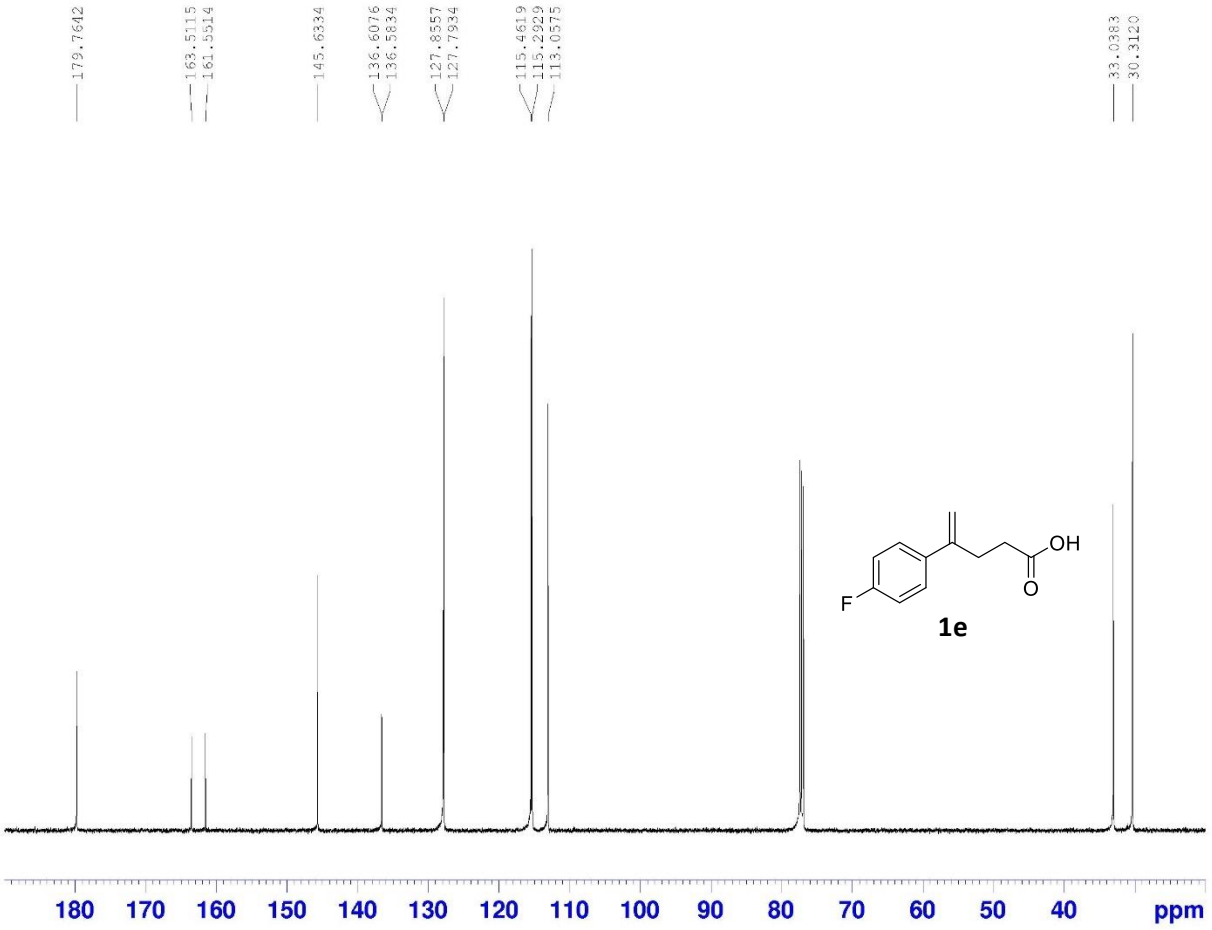
F2 - Processing parameters
SI                         32768
SF                   125.7577734 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```




```
Current Data Parameters
NAME                  SW260 data
EXPNO                          1
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201215
Time                       20.33 h
INSTRUM                     spect
PROBHD     %119470_0283 (
PULPROG                     zg30
TD                         65536
SOLVENT                    CDCl3
NS                            16
DS                             2
SWH                    10000.000 Hz
FIDRES                 0.305176 Hz
AQ                     3.2767999 sec
RG                         30.85
DW                        50.000 usec
DE                         6.50 usec
TE                        295.2 K
D1                     1.00000000 sec
TD0                            1
SFO1                 500.1330883 MHz
NUC1                          1H
P1                         10.91 usec
PLW1                  25.00000000 W

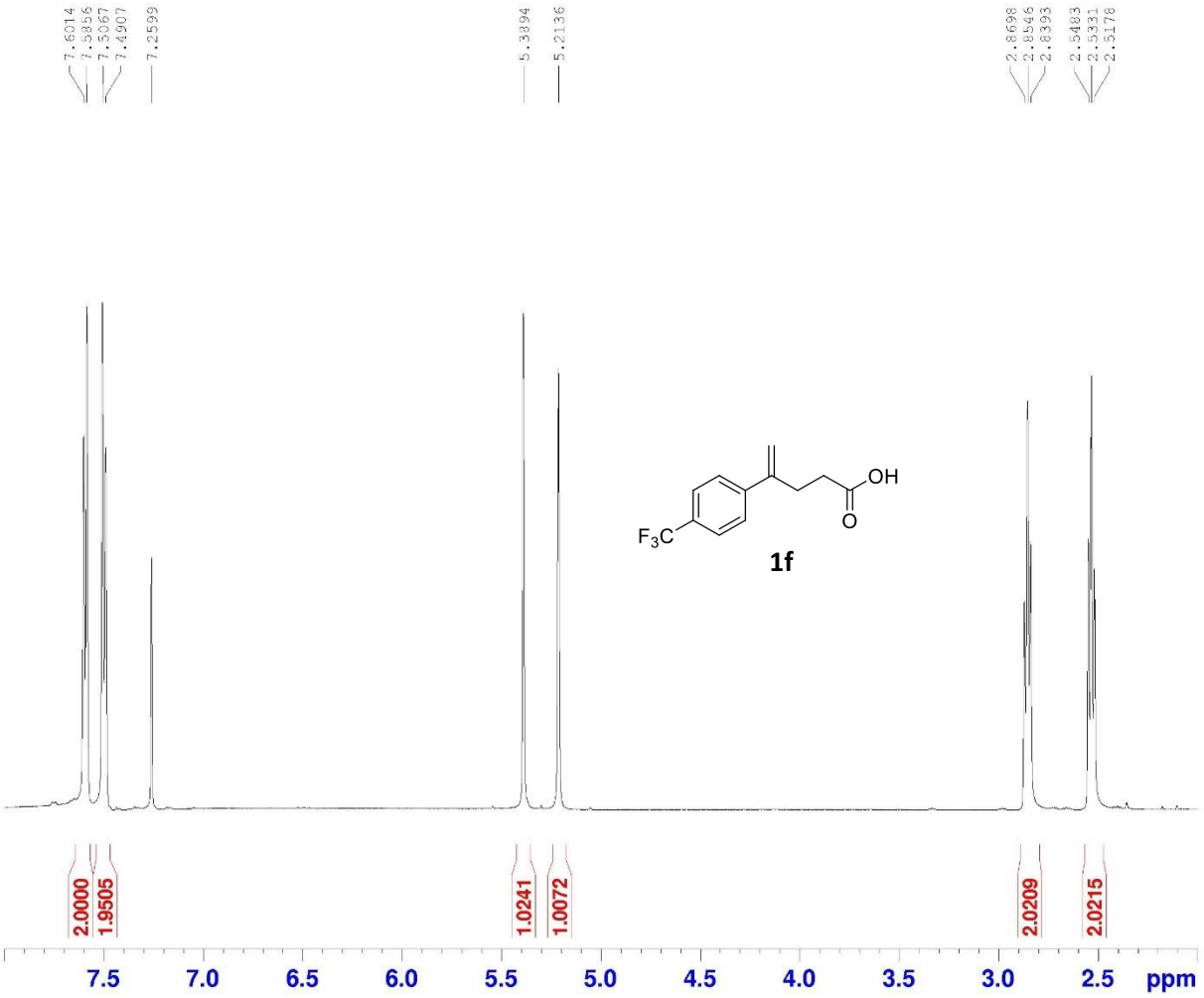
F2 - Processing parameters
SI                         65536
SF                   500.1300124 MHz
WDW                           EM
SSB                            0
LB                          0.30 Hz
GB                             0
PC                          1.00
```




```
Current Data Parameters
NAME                  SW260 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201215
Time                       21.11 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                           700
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.908261 Hz
AQ                     1.1010048 sec
RG                        205.72
DW                        16.800 usec
DE                         6.50 usec
TE                        295.2 K
D1                    2.00000000 sec
D11                   0.03000000 sec
TD0                            1
SFO1                125.7703643 MHz
NUC1                        13C
P1                         9.75 usec
PLW1                 94.00000000 W
SFO2                500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     80.00 usec
PLW2                 25.00000000 W
PLW12                 0.46495000 W
PLW13                 0.23387000 W

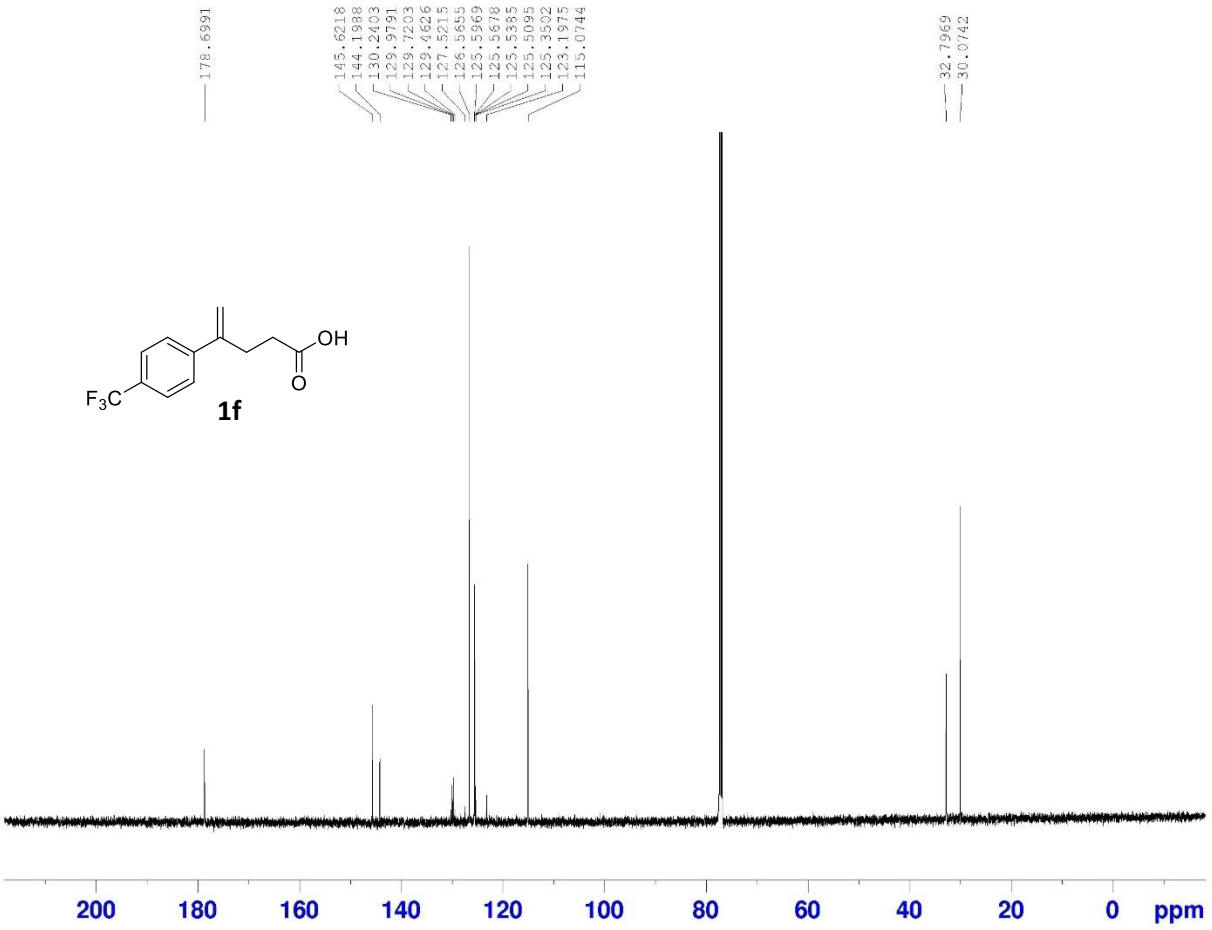
F2 - Processing parameters
SI                         32768
SF                  125.7577767 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```




```
Current Data Parameters
NAME      JW287 ptlc data
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201223
Time              22.29 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES        0.305176 Hz
AQ            3.2767999 sec
RG                142.5
DW               50.000 usec
DE                6.50 usec
TE               295.2 K
D1            1.00000000 sec
TD0                    1
SFO1        500.1330883 MHz
NUC1                  1H
P1                10.91 usec
PLW1        25.00000000 W

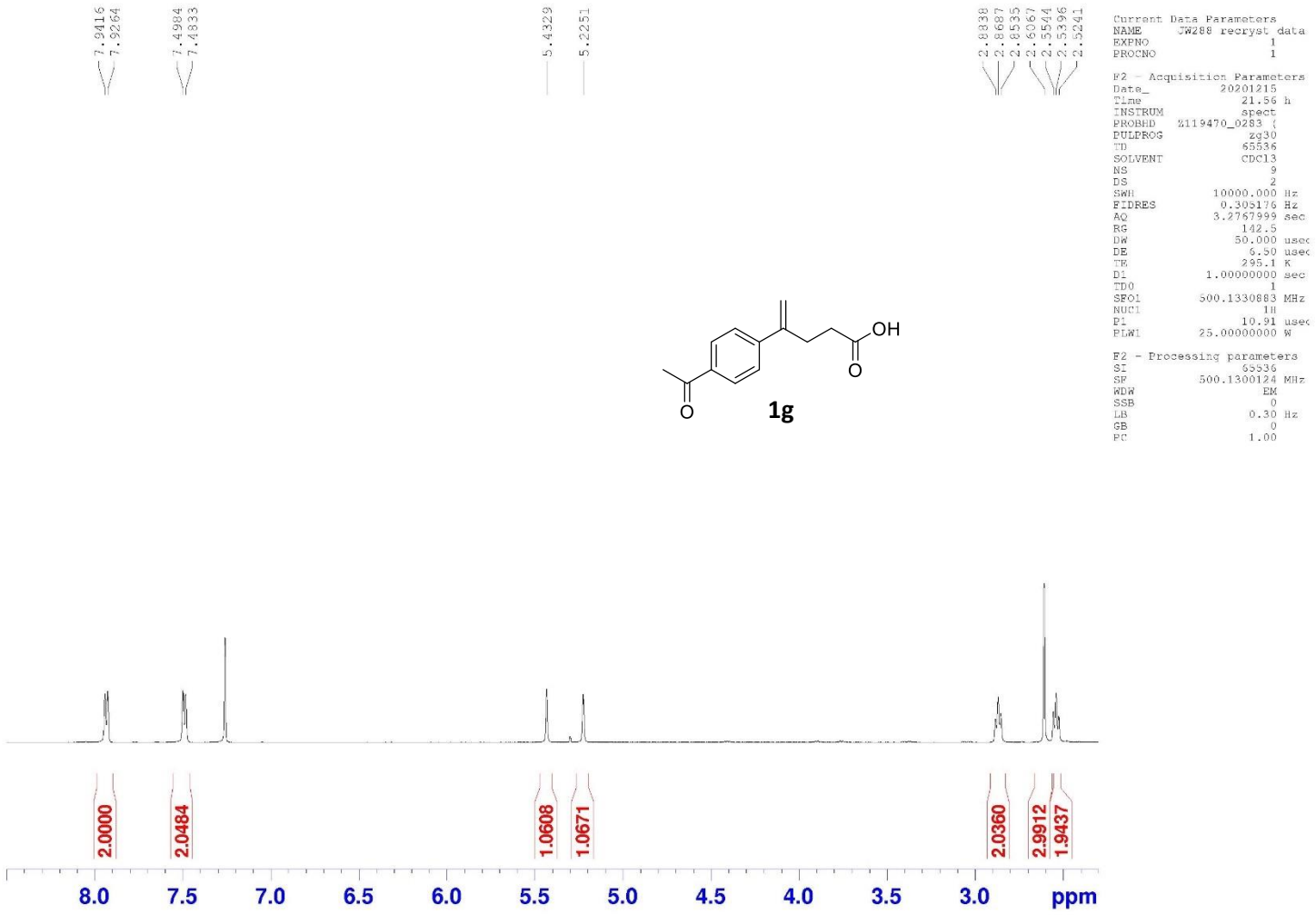
F2 - Processing parameters
SI                 65536
SF          500.1300121 MHz
WDW                   EM
SSB                    0
LB                0.30 Hz
GB                     0
PC                1.00
```




```
Current Data Parameters
NAME      JW287 ptlc data
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201223
Time              22.27 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

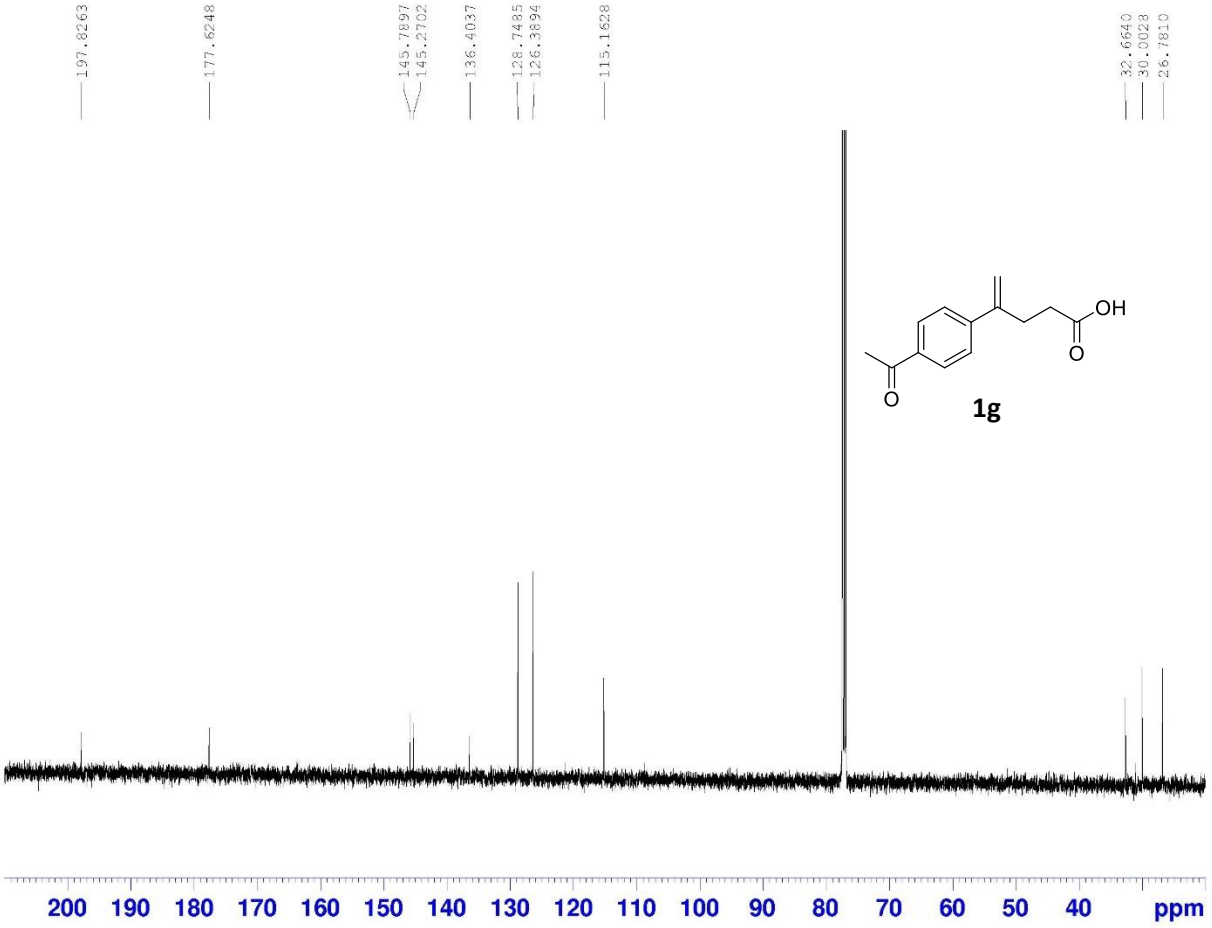
F2 - Processing parameters
SI                32768
SF           125.7577726 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME      JW288 recryst data
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20201215
Time                 21.56 h
INSTRUM              spect
PROBHD    %119470_0283 (
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                      9
DS                      2
SWH              10000.000 Hz
FIDRES               0.305176 Hz
AQ                3.2767999 sec
RG                    142.5
DW                   50.000 usec
DE                    6.50 usec
TE                   295.1 K
D1                1.00000000 sec
TD0                     1
SFO1           500.1330883 MHz
NUC1                    1H
P1                   10.91 usec
PLW1          25.00000000 W

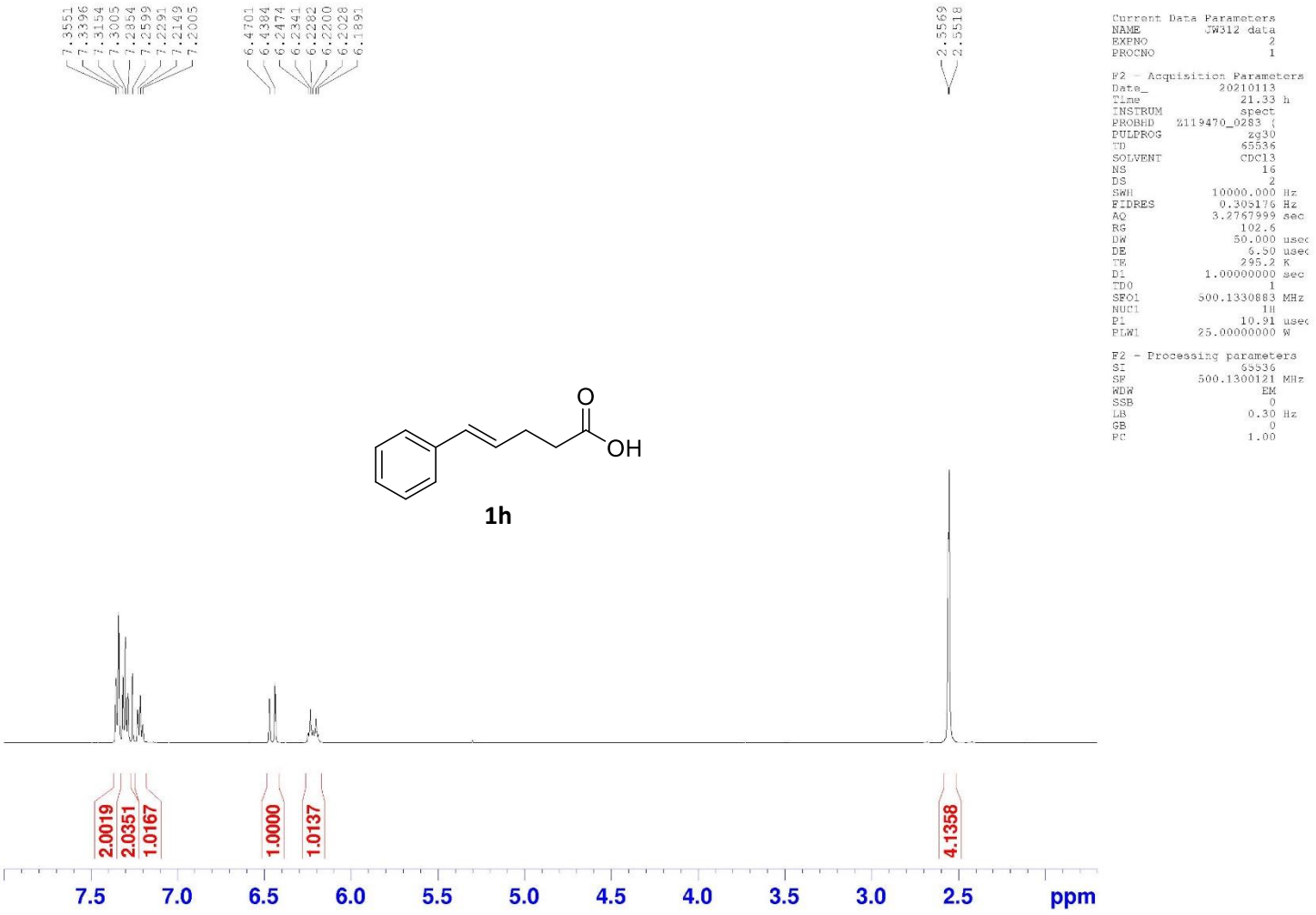
F2 - Processing parameters
SI                  65536
SF             500.1300124 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




```
Current Data Parameters
NAME      JW288 recryst data
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20201215
Time              22.33 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                  700
DS                    4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            1.1010048 sec
RG               205.72
DW               16.800 usec
DE                6.50 usec
TE               295.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1        125.7703643 MHz
NUC1                13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2        500.1320005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

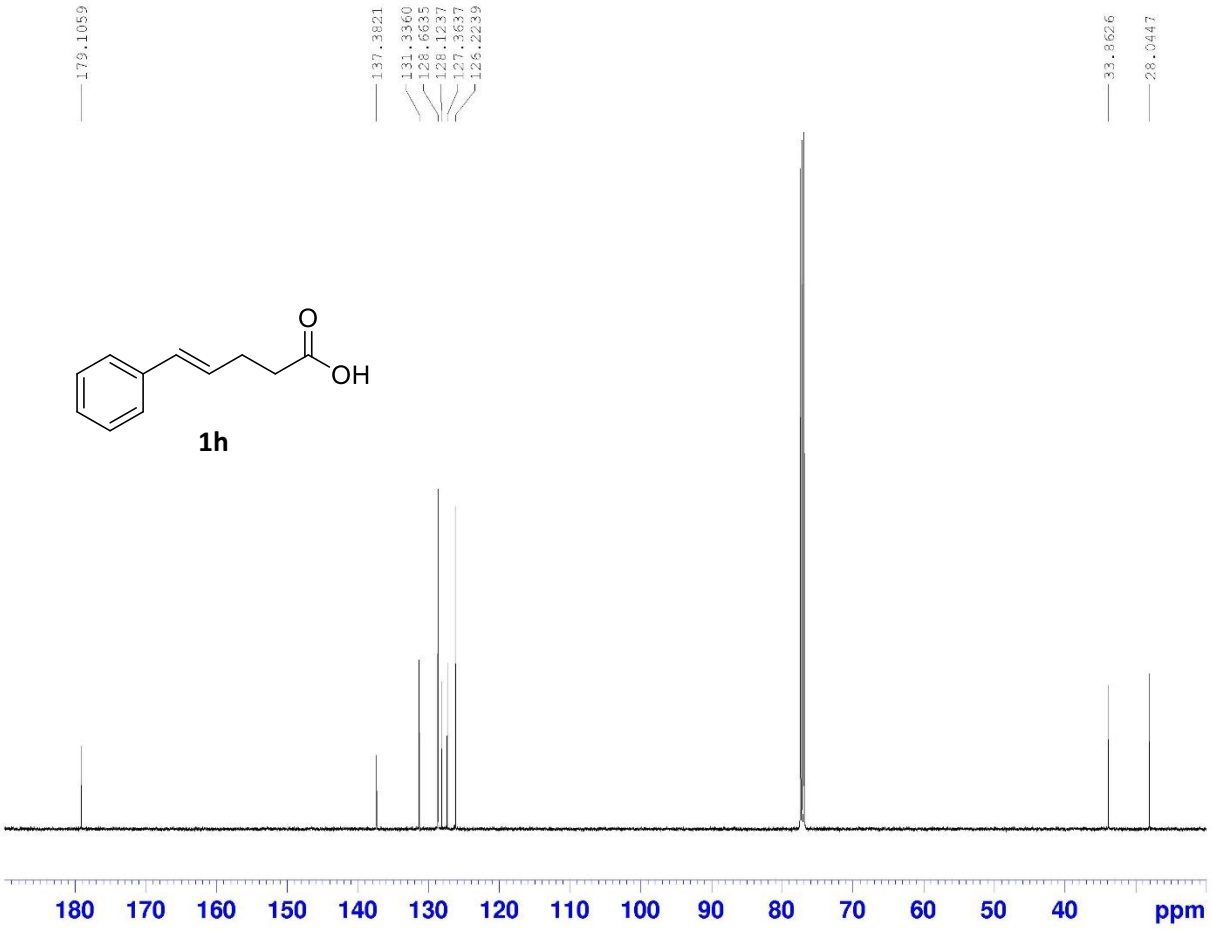
F2 - Processing parameters
SI                32768
SF          125.7577726 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```




```
Current Data Parameters
NAME          JW312 data
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20210113
Time              21.33 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           10000.000 Hz
FIDRES            0.305176 Hz
AQ             3.2767999 sec
RG                 102.6
DW                50.000 usec
DE                 6.50 usec
TE                295.2 K
D1             1.00000000 sec
TD0                    1
SFO1          500.1330883 MHz
NUC1                  1H
P1                 10.91 usec
PLW1          25.00000000 W

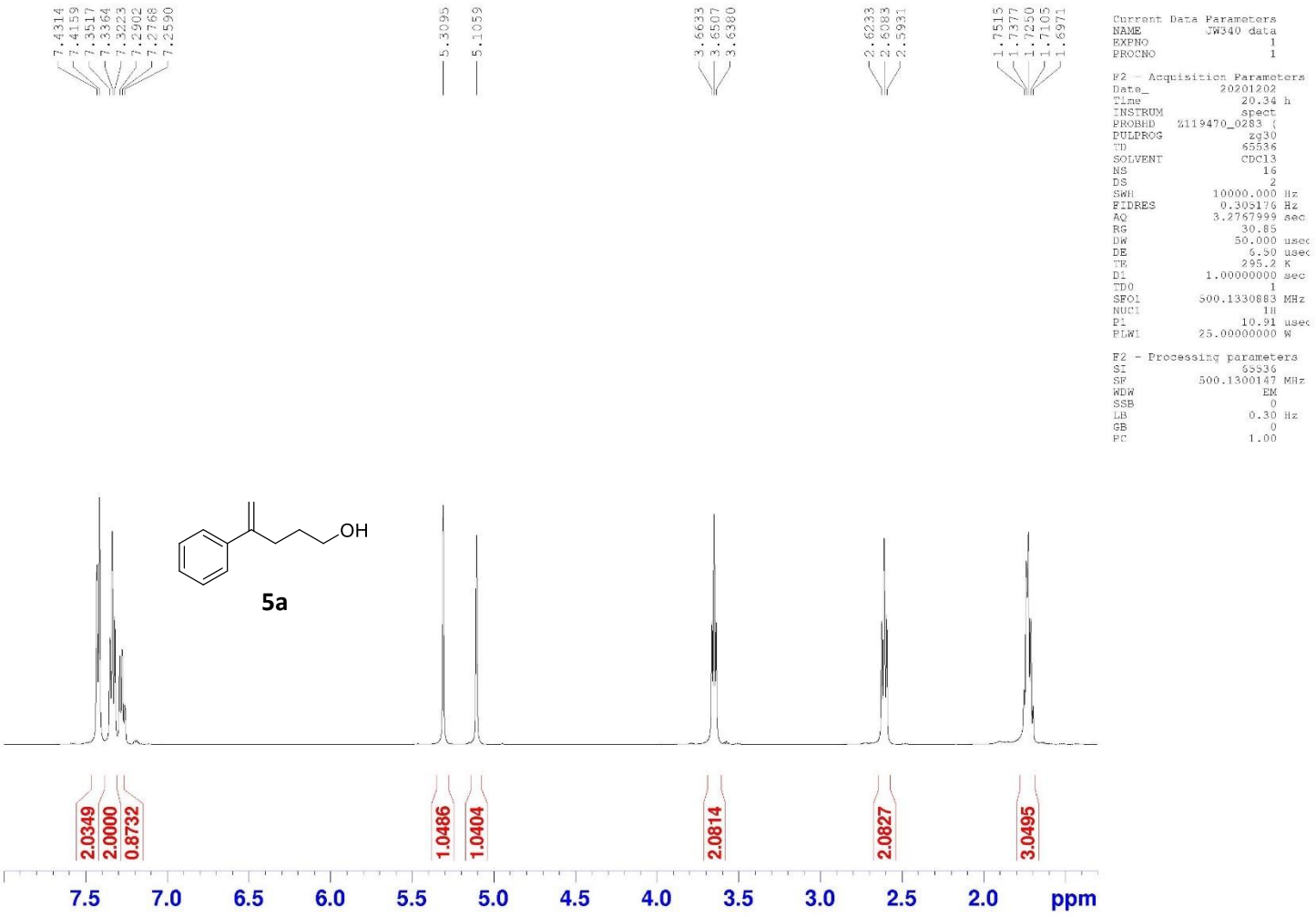
F2 - Processing parameters
SI                 65536
SF            500.1300121 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

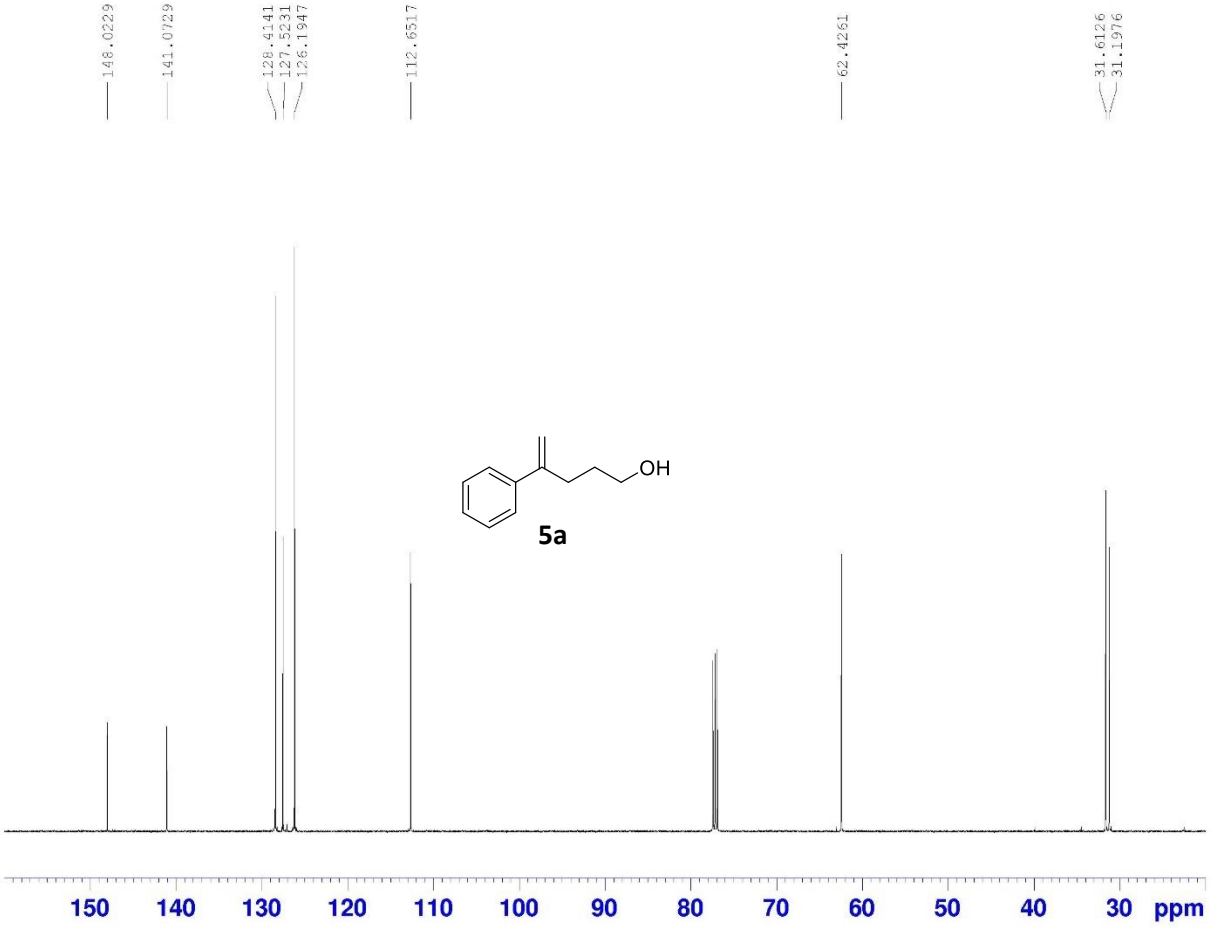



```
Current Data Parameters
NAME                  JW312 data
EXPNO                          3
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20210113
Time                       22.28 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                  zgpg30
TD                            65536
SOLVENT                     CDCl3
NS                             1024
DS                                4
SWH                       29761.904 Hz
FIDRES                     0.908261 Hz
AQ                         1.1010048 sec
RG                             142.5
DW                            16.800 usec
DE                             6.50 usec
TE                            295.2 K
D1                     2.00000000 sec
D11                    0.03000000 sec
TD0                               1
SFO1                  125.7703643 MHz
NUC1                           13C
P1                             9.75 usec
PLW1                  94.00000000 W
SFO2                  500.1320005 MHz
NUC2                           1H
CPDPRG[2                  waltz16
PCPD2                         80.00 usec
PLW2                  25.00000000 W
PLW12                  0.46495000 W
PLW13                  0.23387000 W

F2 - Processing parameters
SI                            32768
SF                    125.7577737 MHz
WDW                              EM
SSB                               0
LB                             1.00 Hz
GB                                0
PC                             1.40
```

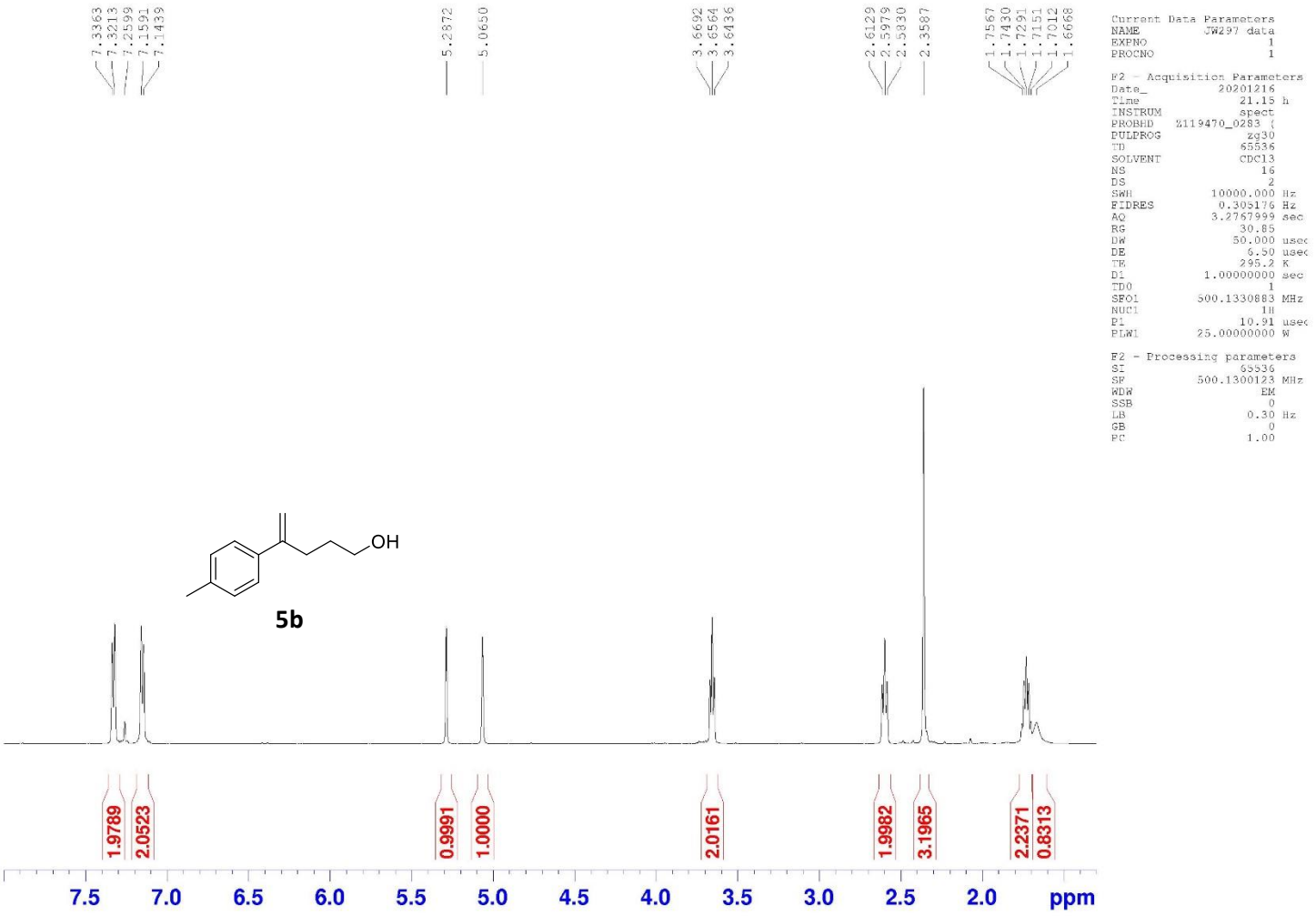

7.4314
7.4159
7.3517
7.3364
7.3223
7.2902
7.2768
7.2590
5.3095
5.1059
3.6633
3.6507
3.6380
2.6233
2.6083
2.5931
1.7515
1.7377
1.7250
1.7105
1.6971
Current Data Parameters
NAME SW340 data
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20201202
Time 20.34 h
INSTRUM spect
PROBHD %119470_0283 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 30.85
DW 50.000 usec
DE 6.50 usec
TE 295.2 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 10.91 usec
PLW1 25.00000000 W
F2 - Processing parameters
SI 65536
SF 500.1300147 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
OH
5a
2.0349
2.0000
0.8732
1.0486
1.0404
2.0814
2.0827
3.0495
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
ppm




```
Current Data Parameters
NAME                  SW340 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201202
Time                       21.07 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                           600
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.908261 Hz
AQ                     1.1010048 sec
RG                        205.72
DW                        16.800 usec
DE                         6.50 usec
TE                        295.1 K
D1                     2.00000000 sec
D11                    0.03000000 sec
TD0                            1
SFO1                125.7703643 MHz
NUC1                        13C
P1                         9.75 usec
PLW1                94.00000000 W
SFO2                500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     80.00 usec
PLW2                25.00000000 W
PLW12                0.46495000 W
PLW13                0.23387000 W

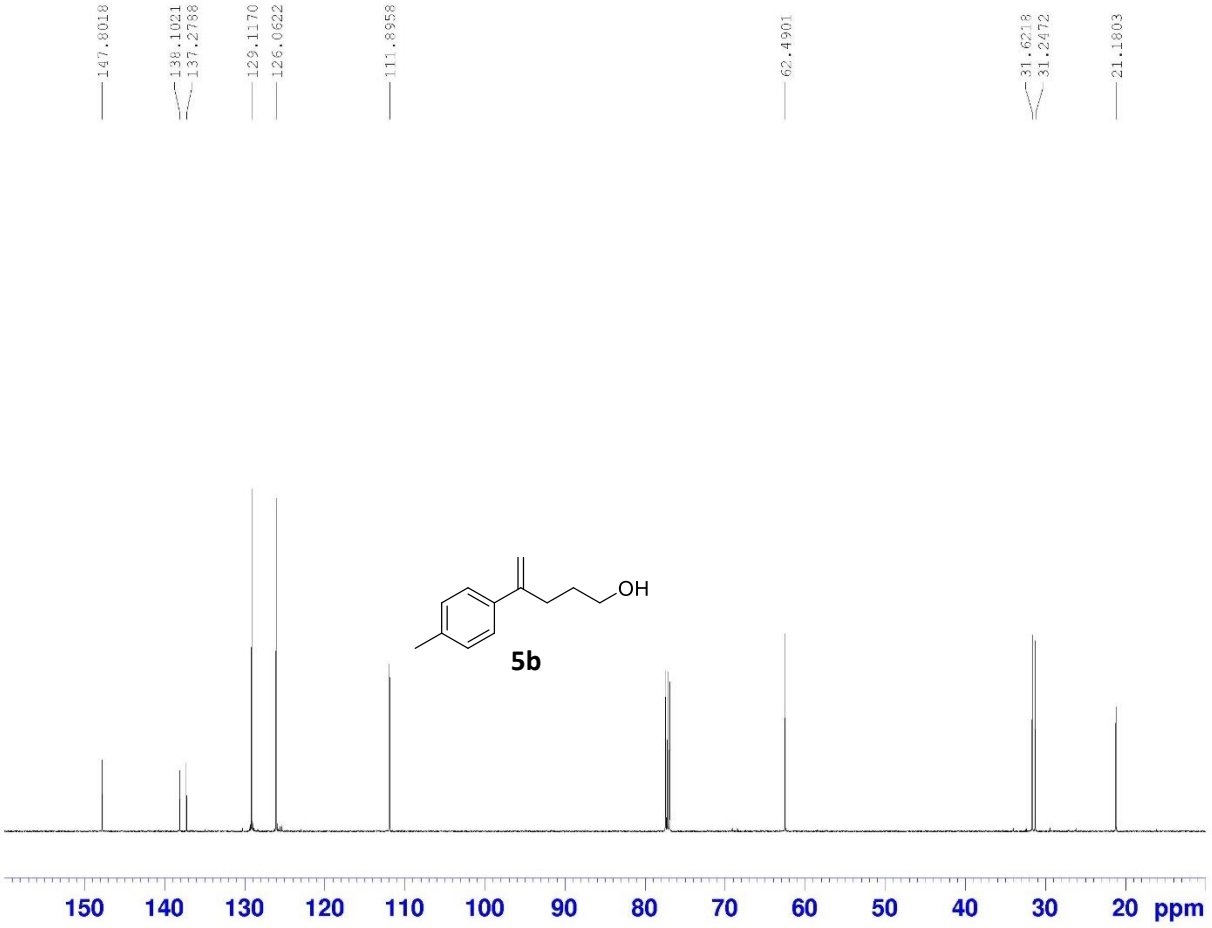
F2 - Processing parameters
SI                         32768
SF                  125.7577826 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```




```
Current Data Parameters
NAME                  SW297 data
EXPNO                          1
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201216
Time                       21.15 h
INSTRUM                      spect
PROBHD     %119470_0283 (
PULPROG                      zg30
TD                          65536
SOLVENT                     CDCl3
NS                             16
DS                              2
SWH                    10000.000 Hz
FIDRES                  0.305176 Hz
AQ                      3.2767999 sec
RG                          30.85
DW                         50.000 usec
DE                          6.50 usec
TE                         295.2 K
D1                     1.00000000 sec
TD0                             1
SFO1                 500.1330883 MHz
NUC1                           1H
P1                         10.91 usec
PLW1                  25.00000000 W

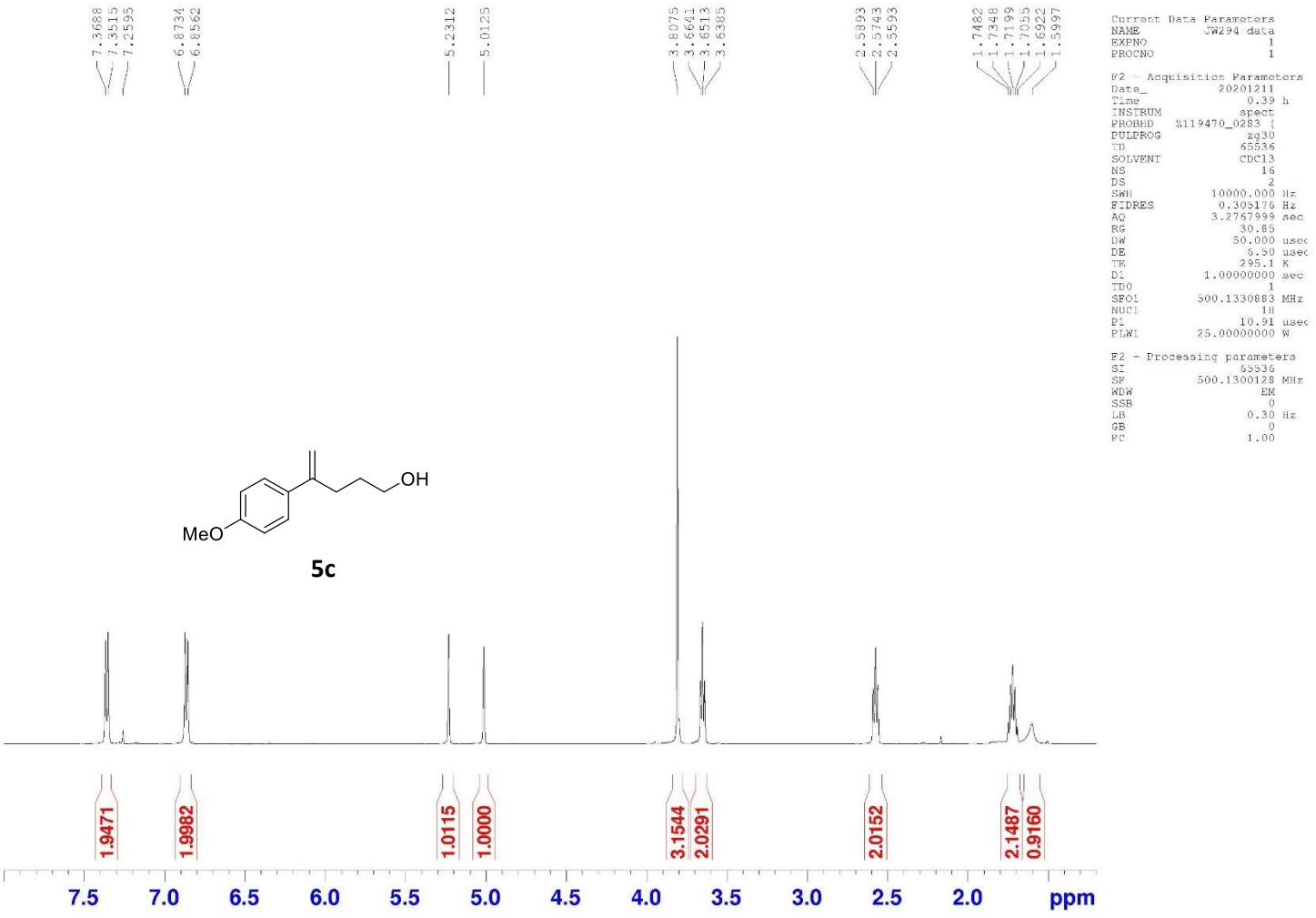
F2 - Processing parameters
SI                          65536
SF                   500.1300123 MHz
WDW                            EM
SSB                             0
LB                           0.30 Hz
GB                              0
PC                           1.00
```

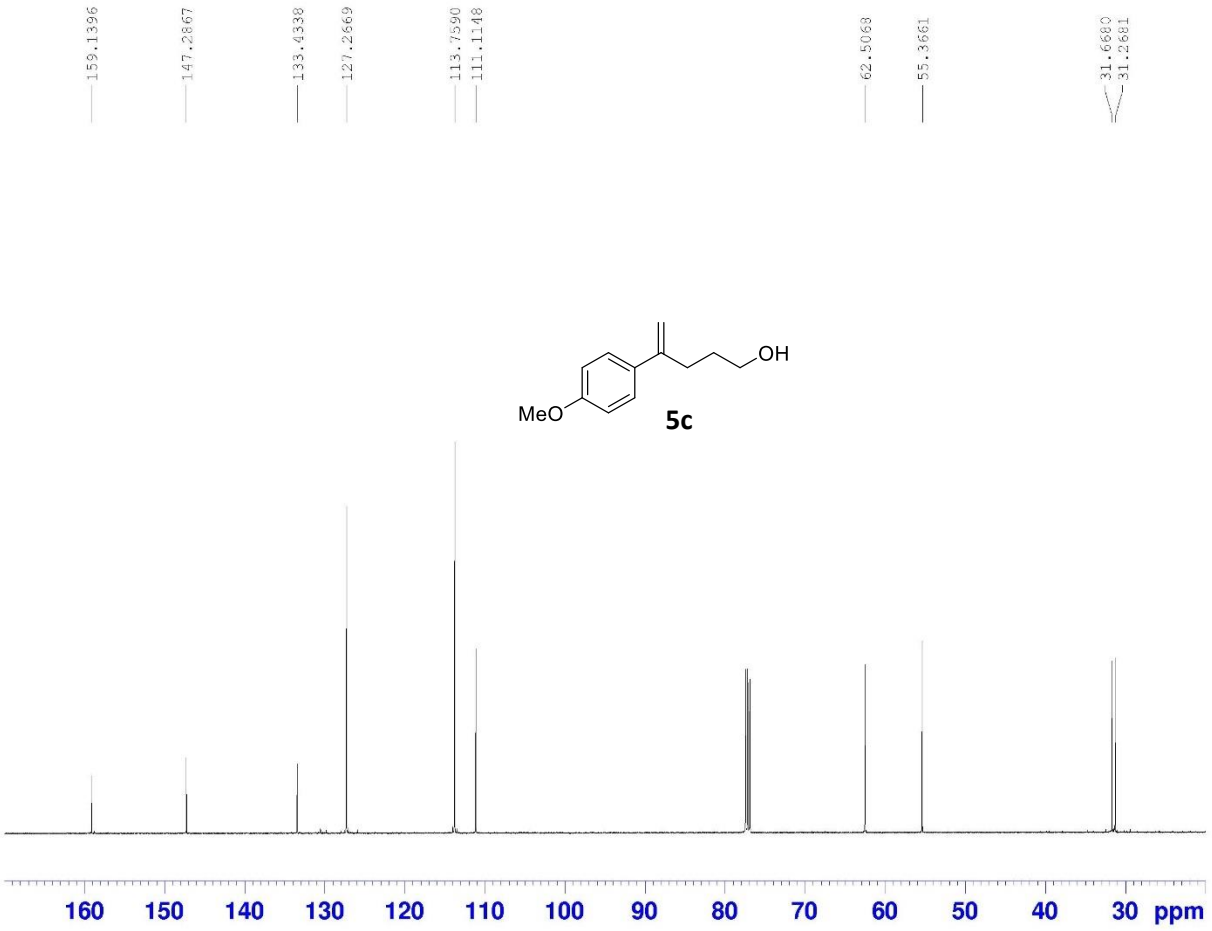



```
Current Data Parameters
NAME                  JW297 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201216
Time                       21.52 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                           700
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.908261 Hz
AQ                     1.1010048 sec
RG                        205.72
DW                        16.800 usec
DE                         6.50 usec
TE                        295.2 K
D1                    2.00000000 sec
D11                   0.03000000 sec
TD0                            1
SFO1                125.7703643 MHz
NUC1                        13C
P1                         9.75 usec
PLW1                 94.00000000 W
SFO2                500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     80.00 usec
PLW2                 25.00000000 W
PLW12                 0.46495000 W
PLW13                 0.23387000 W

F2 - Processing parameters
SI                         32768
SF                  125.7577814 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```

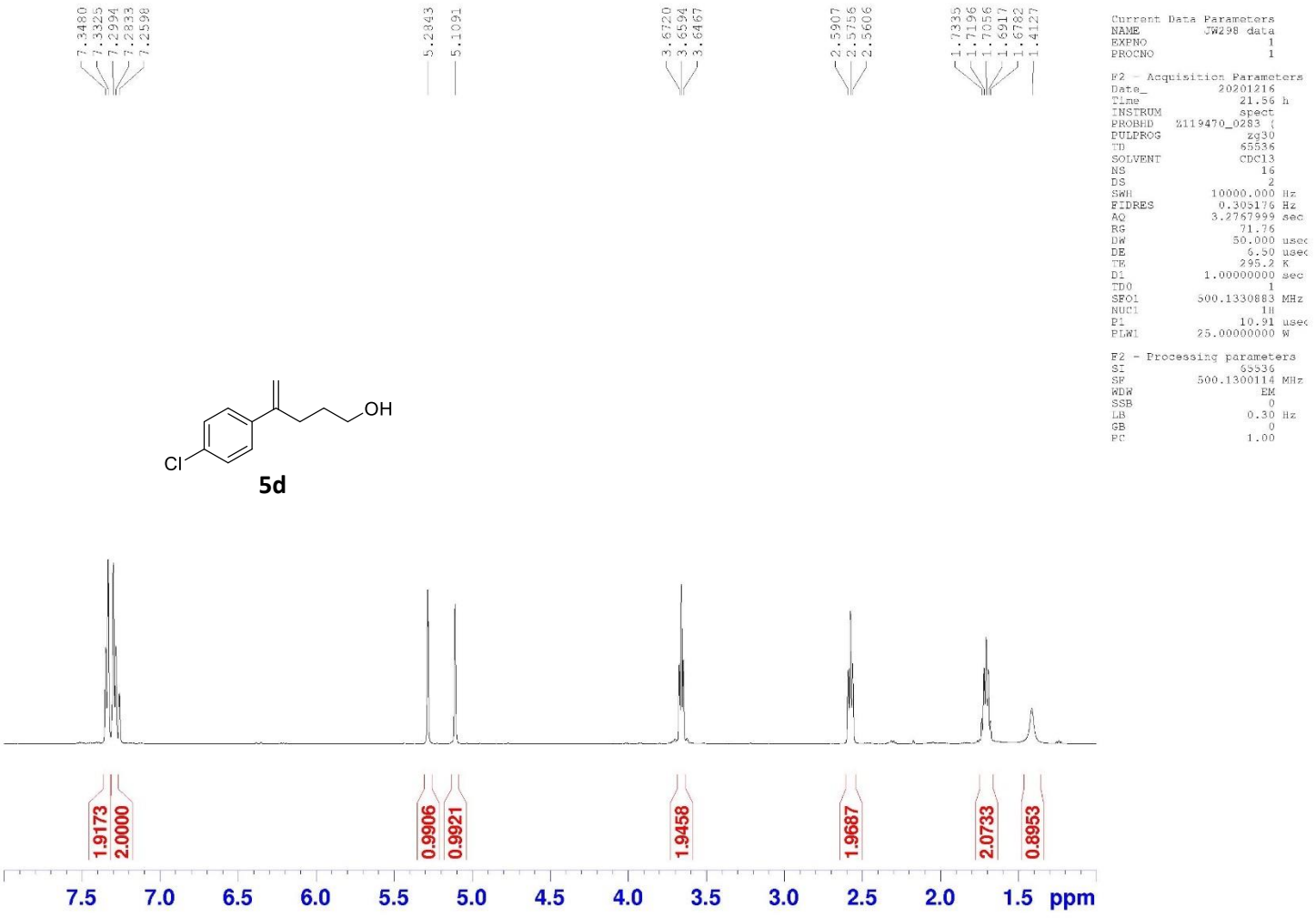

7.3688
7.3515
7.2595
6.8734
6.8562
5.2312
5.0125
3.8075
3.6641
3.6513
3.6385
2.5393
2.5243
2.5093
1.7482
1.7348
1.7199
1.7055
1.6922
1.5997
Current Data Parameters
NAME SW294 data
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20201211
Time 0.39 h
INSTRUM spect
PROBHD 5119470_0283 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 30.85
DW 50.000 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 10.91 usec
PLW1 25.00000000 W
F2 - Processing parameters
SI 65536
SF 500.1300128 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
OH
MeO
5c
1.9471
1.9982
1.0115
1.0000
3.1544
2.0291
2.0152
2.1487
0.9160
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
ppm

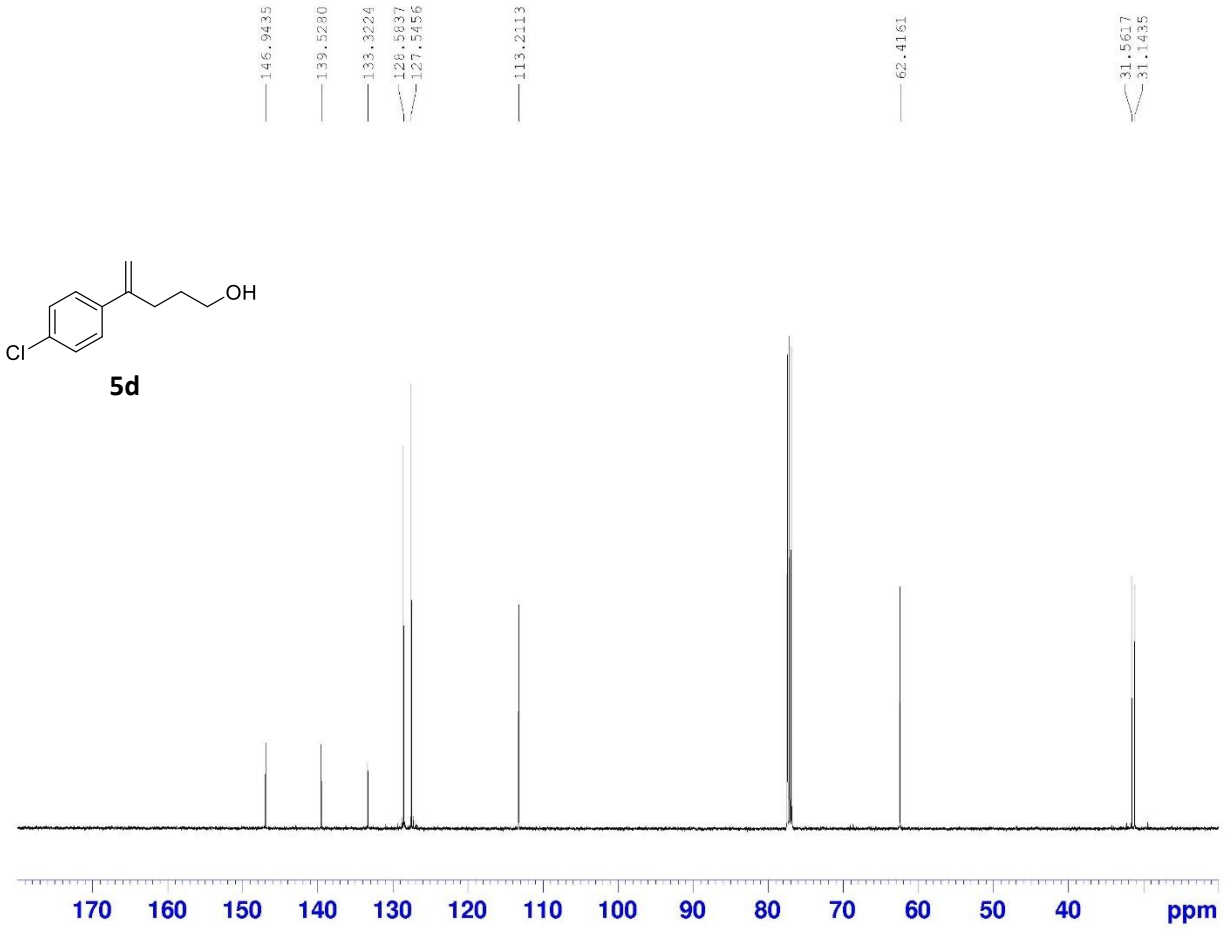



```
Current Data Parameters
NAME                  SW294 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201211
Time                        1.33 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                          1024
DS                             4
SWH                     29761.904 Hz
FIDRES                  0.908261 Hz
AQ                      1.1010048 sec
RG                         205.72
DW                         16.800 usec
DE                          6.50 usec
TE                         295.2 K
D1                      2.00000000 sec
D11                     0.03000000 sec
TD0                            1
SFO1                125.7703643 MHz
NUC1                        13C
P1                          9.75 usec
PLW1                94.00000000 W
SFO2                500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                      80.00 usec
PLW2                25.00000000 W
PLW12               0.46495000 W
PLW13               0.23387000 W

F2 - Processing parameters
SI                         32768
SF                  125.7577798 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```

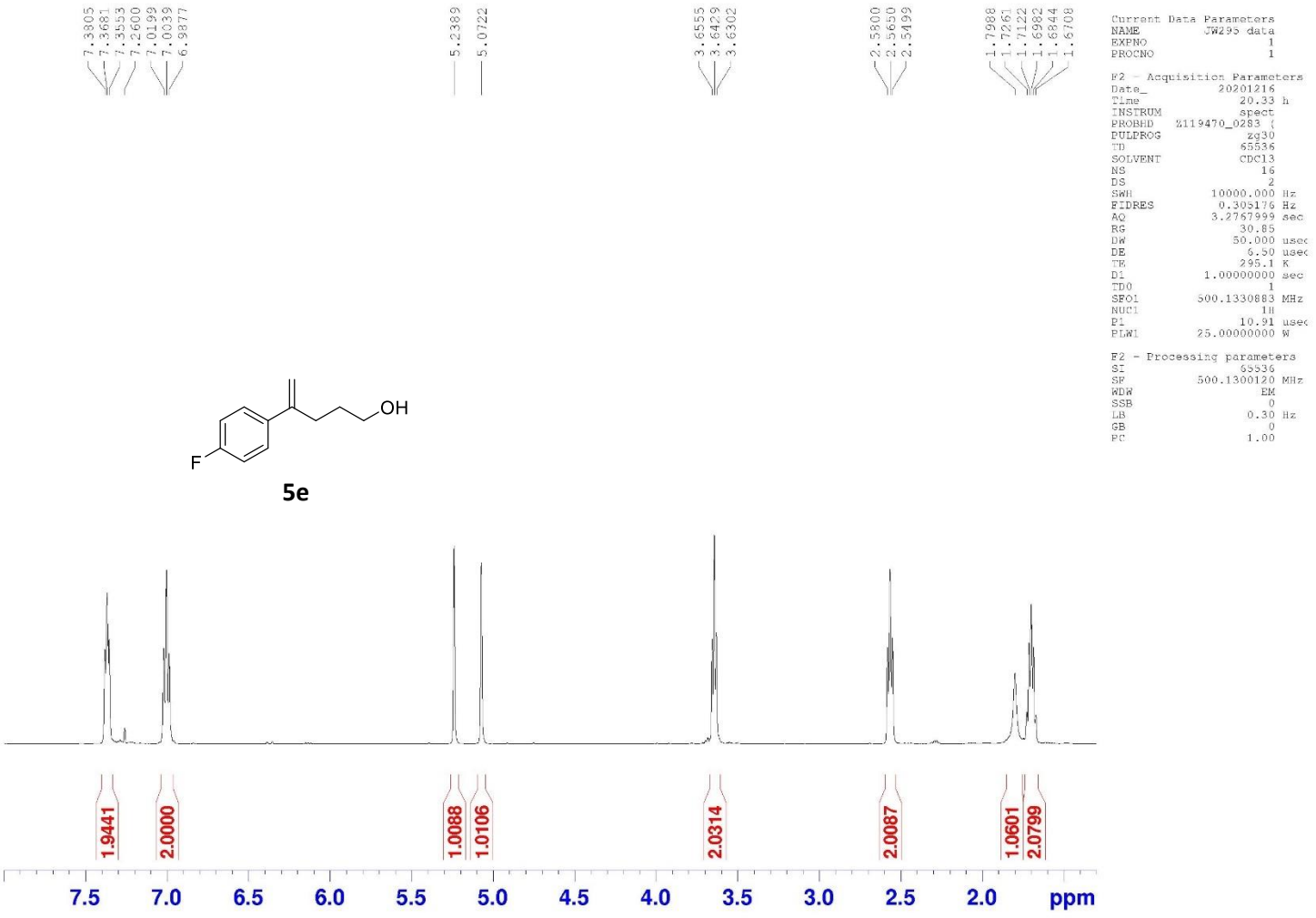

7.3480
7.3325
7.2994
7.2833
7.2598
5.2843
5.1091
3.6720
3.6594
3.6467
2.5907
2.5756
2.5606
1.7335
1.7196
1.7056
1.6917
1.6782
1.4127
Current Data Parameters
NAME SW298 data
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20201216
Time 21.56 h
INSTRUM spect
PROBHD %119470_0283 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 71.75
DW 50.000 usec
DE 6.50 usec
TE 295.2 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 10.91 usec
PLW1 25.00000000 W
F2 - Processing parameters
SI 65536
SF 500.1300114 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
OH
Cl
5d
1.9173
2.0000
0.9906
0.9921
1.9458
1.9687
2.0733
0.8953
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
ppm

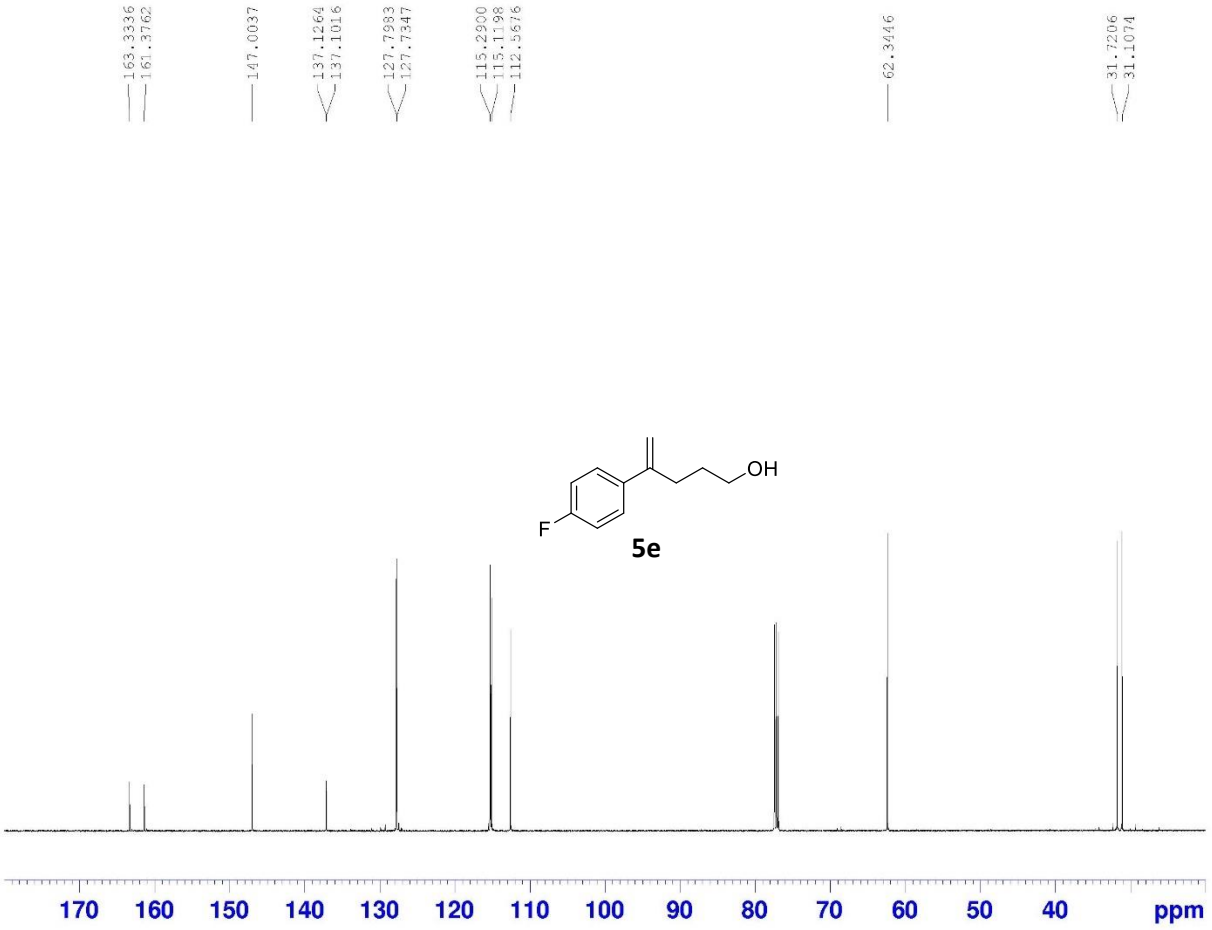



```
Current Data Parameters
NAME                  SW298 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201216
Time                       22.34 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                           700
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.908261 Hz
AQ                     1.1010048 sec
RG                        205.72
DW                        16.800 usec
DE                         6.50 usec
TE                        295.1 K
D1                   2.00000000 sec
D11                  0.03000000 sec
TD0                            1
SFO1                125.7703643 MHz
NUC1                        13C
P1                         9.75 usec
PLW1                94.00000000 W
SFO2                500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     80.00 usec
PLW2                25.00000000 W
PLW12                0.46495000 W
PLW13                0.23387000 W

F2 - Processing parameters
SI                         32768
SF                  125.7577753 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```

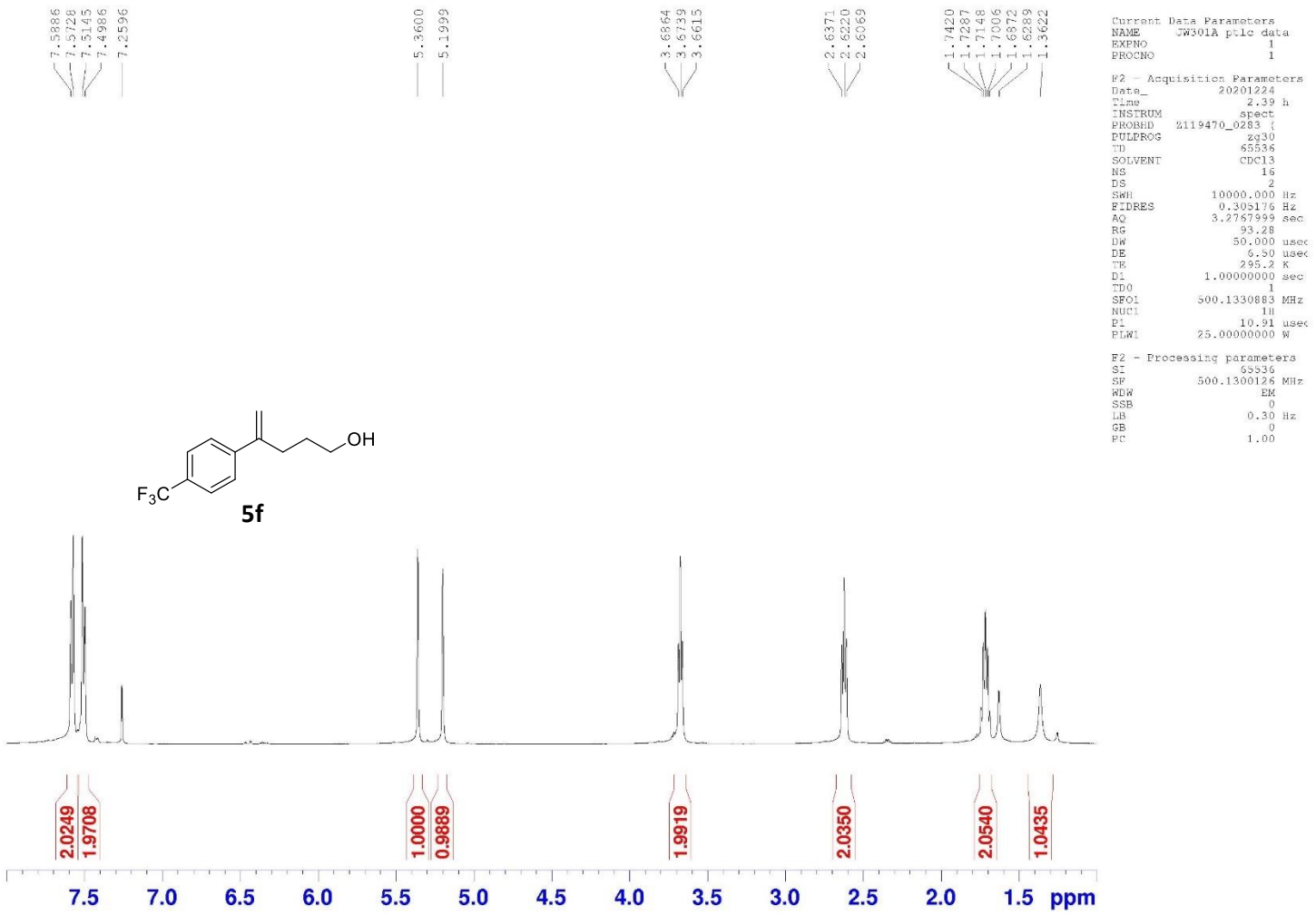

7.3305
7.3681
7.3553
7.2600
7.0199
7.0039
6.9877
5.2389
5.0722
3.6555
3.6429
3.6302
2.5900
2.5650
2.5499
1.7988
1.7261
1.7122
1.6982
1.6844
1.6708
Current Data Parameters
NAME SW295 data
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20201216
Time 20.33 h
INSTRUM spect
PROBHD 5119470_0283 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 30.85
DW 50.000 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 10.91 usec
PLW1 25.00000000 W
F2 - Processing parameters
SI 65536
SF 500.1300120 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
OH
F
5e
1.9441
2.0000
1.0088
1.0106
2.0314
2.0087
1.0601
2.0799
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
ppm




```
Current Data Parameters
NAME                  SW295 data
EXPNO                          2
PROCNO                         1

F2 - Acquisition Parameters
Date_                   20201216
Time                       21.11 h
INSTRUM                     spect
PROBHD    %119470_0283 (
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                           700
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.908261 Hz
AQ                     1.1010048 sec
RG                        205.72
DW                        16.800 usec
DE                         6.50 usec
TE                        295.2 K
D1                    2.00000000 sec
D11                   0.03000000 sec
TD0                            1
SFO1                125.7703643 MHz
NUC1                        13C
P1                         9.75 usec
PLW1                94.00000000 W
SFO2                500.1320005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                     80.00 usec
PLW2                25.00000000 W
PLW12                0.46495000 W
PLW13                0.23387000 W

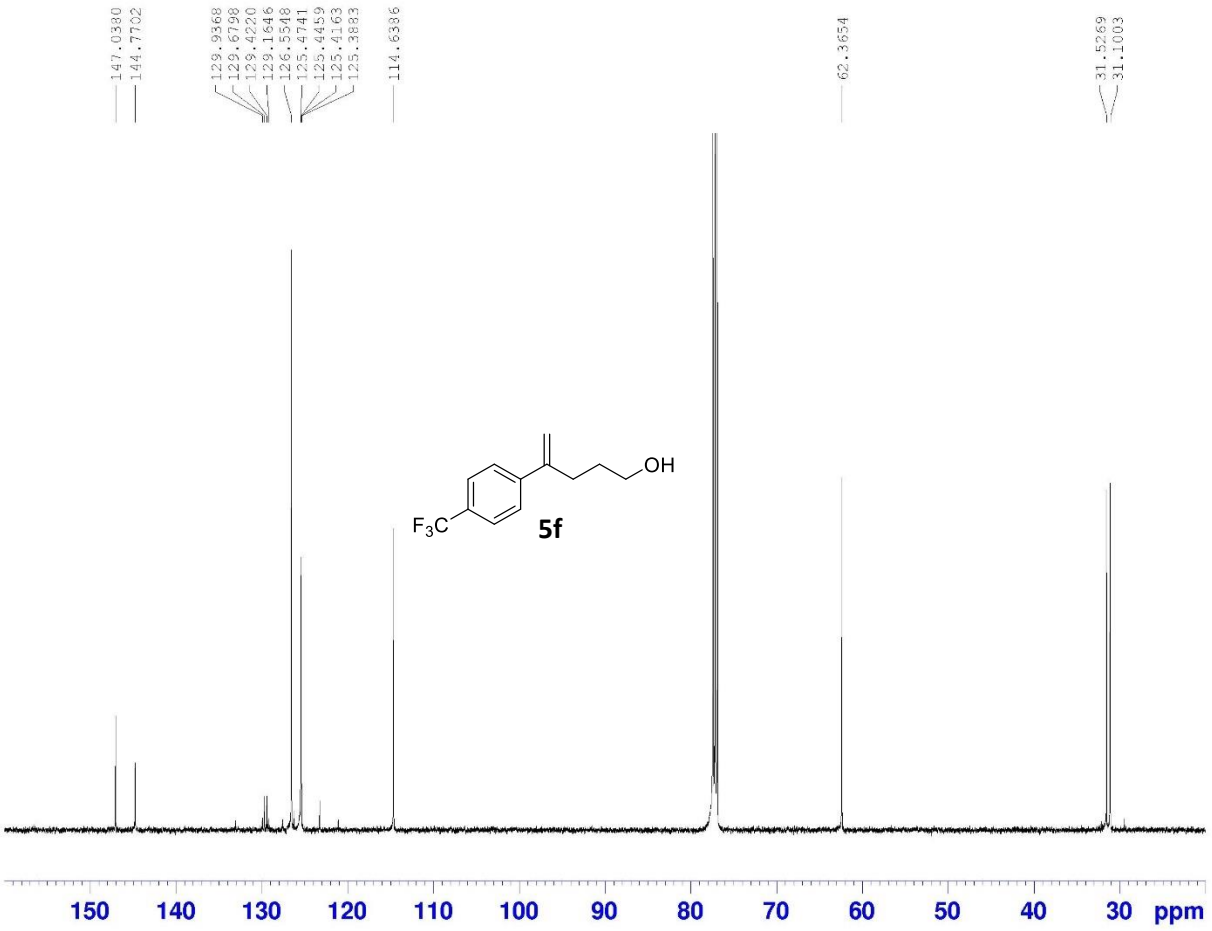
F2 - Processing parameters
SI                         32768
SF                  125.7577798 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40
```




```
Current Data Parameters
NAME      JW301A ptlc data
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20201224
Time                2.39 h
INSTRUM              spect
PROBHD    %119470_0283 (
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH             10000.000 Hz
FIDRES              0.305176 Hz
AQ                3.2767999 sec
RG                    93.28
DW                   50.000 usec
DE                    6.50 usec
TE                  295.2 K
D1             1.00000000 sec
TD0                     1
SFO1           500.1330883 MHz
NUC1                   1H
P1                   10.91 usec
PLW1           25.00000000 W

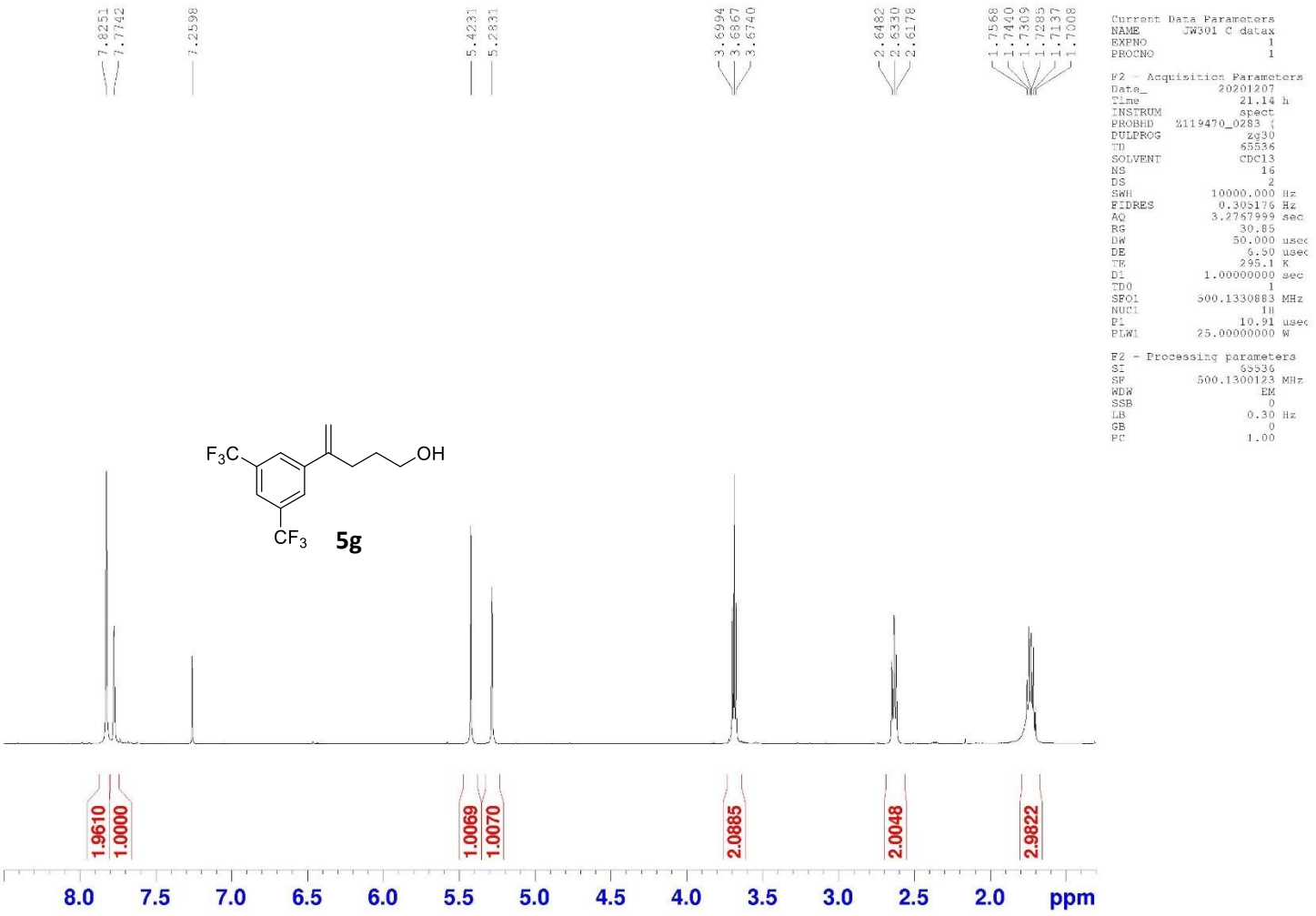
F2 - Processing parameters
SI                  65536
SF             500.1300126 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```




```
Current Data Parameters
NAME      JW301A ptlc data2
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20201225
Time                 17.19 h
INSTRUM              spect
PROBHD    %119470_0283 (
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   2000
DS                      4
SWH              29761.904 Hz
FIDRES           0.908261 Hz
AQ               1.1010048 sec
RG                  205.72
DW                  16.800 usec
DE                   6.50 usec
TE                  295.2 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                     1
SFO1           125.7703643 MHz
NUC1                  13C
P1                   9.75 usec
PLW1           94.00000000 W
SFO2           500.1320005 MHz
NUC2                  1H
CPDPRG[2           waltz16
PCPD2                80.00 usec
PLW2           25.00000000 W
PLW12           0.46495000 W
PLW13           0.23387000 W

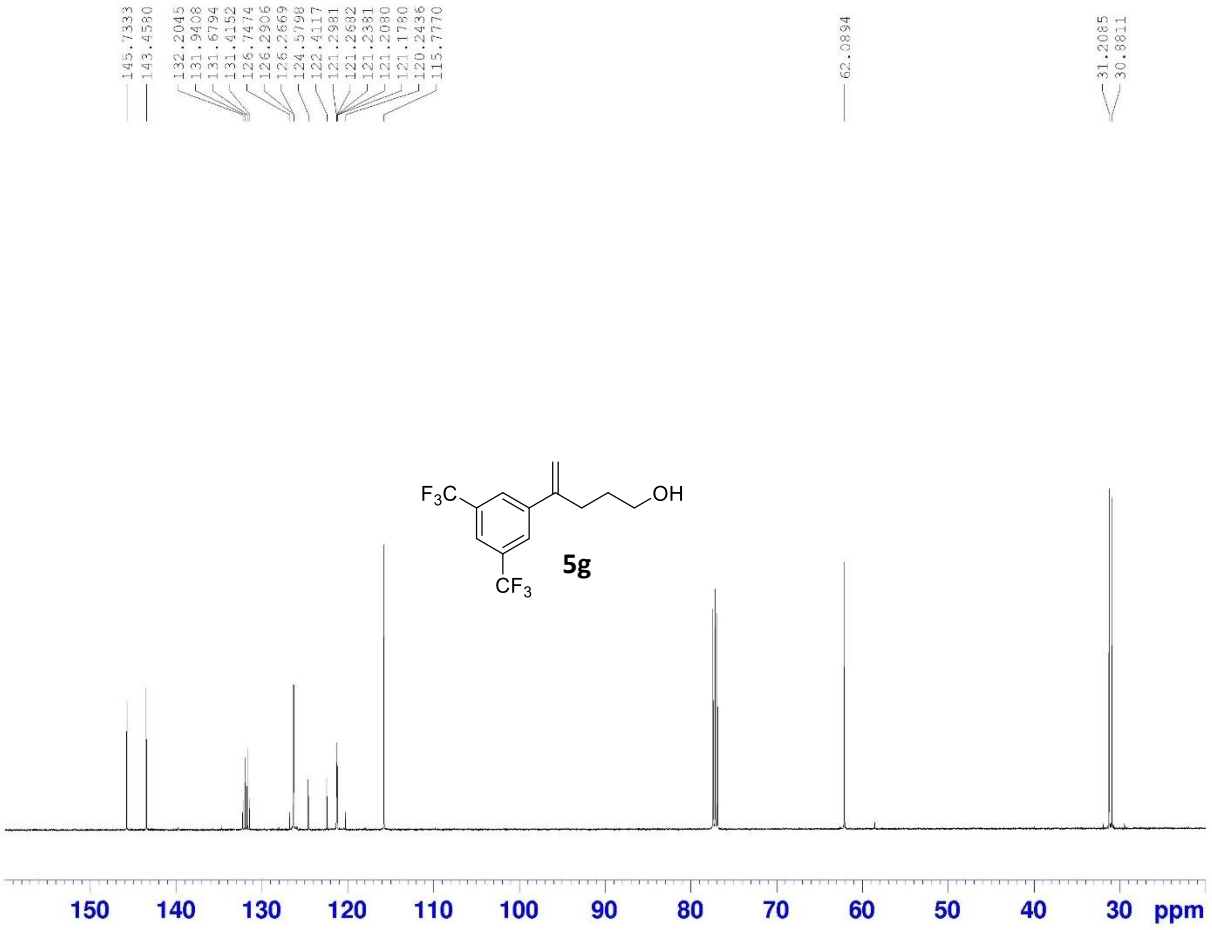
F2 - Processing parameters
SI                   32768
SF             125.7577735 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```



Current Data Parameters
NAME JW301 C datax
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20201207
Time 21.14 h
INSTRUM spect
PROBHD %119470_0283 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 3.2767999 sec
RG 30.85
DW 50.000 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
TD0 1
SFO1 500.1330883 MHz
NUC1 1H
P1 10.91 usec
PLW1 25.00000000 W

F2 - Processing parameters
SI 65536
SF 500.1300123 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00




```
Current Data Parameters
NAME       JW301 C datax
EXPNO                 2
PROCNO                1

F2 - Acquisition Parameters
Date_          20201207
Time              21.57 h
INSTRUM             spect
PROBHD    %119470_0283 (
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  700
DS                    4
SWH           31250.000 Hz
FIDRES        0.953674 Hz
AQ            1.0485760 sec
RG               205.72
DW               16.000 usec
DE                6.50 usec
TE               295.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1
SFO1         125.7703643 MHz
NUC1                 13C
P1                 9.75 usec
PLW1         94.00000000 W
SFO2         500.1320005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             80.00 usec
PLW2         25.00000000 W
PLW12         0.46495000 W
PLW13         0.23387000 W

F2 - Processing parameters
SI                32768
SF           125.7577712 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```