Electronic Supplementary Material (ESI) for Organic Chemistry Frontiers.

Supporting Information

Gold-Catalyzed Oxidative Cycloalkenations of Alkynes with Quinoline *N*-Oxides

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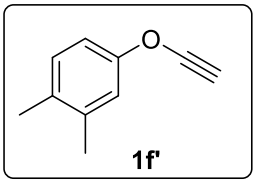
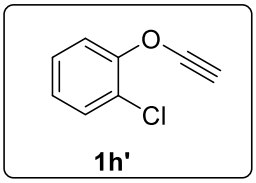
(1) Spectral Data of Key Compounds:

Spectral data of compound 4-(ethynyloxy)-1,2-dimethylbenzene (1f'):



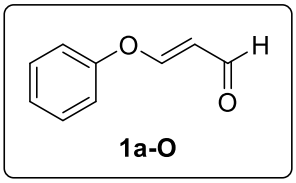
Black oil; ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.08 (d, *J* = 8.4 Hz, 1H), 7.04 (s, 1H), 7.99 (d, *J* = 8.0 Hz, 1H), 2.25 (s, 3 H), 2.21 (s, 3H), 2.03 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 153.6, 138.3, 132.8, 130.5, 115.9, 112.0, 85.0, 32.8, 20.0, 19.0; EI-MS calcd. for $C_{10}H_{10}NaO$ (M+Na): 169.0629; Found: 169.0634.

Spectral data of compound 4-(ethynyloxy)-1,2-dimethylbenzene (1h'):



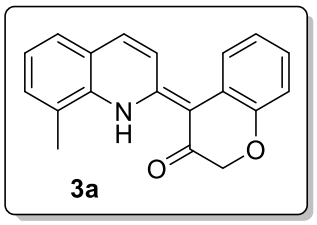
Black oil; ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.58 (d, *J* = 8.3 Hz, 1H), 7.37 (d, *J* = 8.0 Hz, 1H), 7.29 (t, *J* = 7.7 Hz, 1H), 7.08 (t, *J* = 7.7 Hz, 1H), 2.17 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 151.1, 130.5, 127.8, 125.3, 121.6, 115.2, 83.4, 34.6; EI-MS calcd. for C_8H_6ClO(M+H): 153.0107; Found: 153.0125.

Spectral data of compound (*E*)-3-phenoxyacrylaldehyde (1a-O):



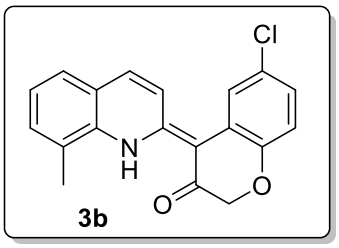
Pale yellow oil; ^{1}H NMR (400 MHz, $CDCl_3$): δ 9.47 (d, *J* = 8.1 Hz, 1H), 7.58 (d, *J* = 12.4 Hz, 1H), 7.42-7.37 (m, 2H), 7.25-7.21 (m, 1H), 7.10-7.07 (m, 2H), 5.84 (dd, *J* = 8.0, 12.3 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 190.8, 167.2, 155.5, 130.1, 125.7, 118.3, 114.3; EI-MS calcd. for $C_9H_8O_2$: 148.0524; Found: 148.0510.

Spectral data for (*Z*)-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3a):



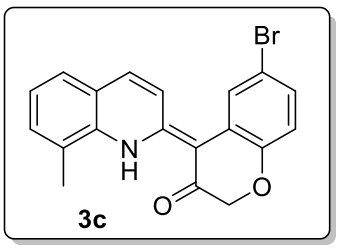
Orange solid; m.p 182-183 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.22 (s, 1H), 7.83 (d, *J* = 9.4 Hz, 1H), 7.70 (d, *J* = 9.4 Hz, 1H), 7.47 (t, *J* = 8.5 Hz, 3H), 7.26-7.25 (m, 1H), 7.06-7.01 (m, 3H), 4.55 (s, 2H), 2.67 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 188.6, 152.7, 149.4, 138.1, 136.4, 132.2, 126.0, 125.3, 125.0, 124.5, 124.0, 123.6, 123.3, 122.0, 118.7, 117.2, 97.2, 72.0, 17.0; EI-MS calcd. for $C_{19}H_{15}NO_2$: 289.1103; Found: 289.1106.

Spectral data for (*Z*)-6-chloro-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3b):



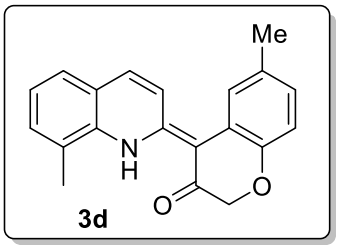
Orange solid; m.p 243-244 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.26 (s, 1H), 7.90 (d, *J* = 9.4 Hz, 1H), 7.66 (d, *J* = 9.4 Hz, 1H), 7.49-7.47 (m, 2H), 7.41 (d, *J* = 2.2 Hz, 1H), 7.26 (t, *J* = 7.6 Hz, 1H), 6.97-6.93 (m, 2H), 4.50 (s, 2H), 2.66 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 188.3, 151.2, 149.5, 138.8, 136.3, 132.5, 127.0, 126.4, 126.1, 125.5, 124.4, 124.3, 123.4, 123.0, 118.3, 118.1, 96.4, 72.0, 17.0; EI-MS calcd. for $C_{19}H_{14}ClNO_2$: 323.0713; Found: 323.0722.

Spectral data for (*Z*)-6-bromo-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3c):



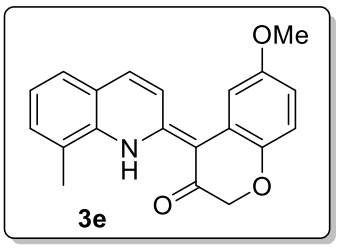
Orange solid; m.p 261-261 °C; ^{1}H NMR (500 MHz, $CDCl_3$): δ 16.26 (s, 1H), 7.90 (d, *J* = 9.5 Hz, 1H), 7.66 (d, *J* = 9.4 Hz, 1H), 7.55 (s, 1H), 7.47 (d, *J* = 2.2 Hz, 2H), 7.26 (t, *J* = 8.0 Hz, 1H), 7.11 (d, *J* = 8.0 Hz, 1H), 6.88 (d, *J* = 8.0 Hz, 1H), 4.50 (s, 2H), 2.66 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 188.3, 151.7, 149.5, 138.9, 136.3, 132.5, 127.3, 126.9, 126.1, 125.8, 125.5, 124.3, 123.5, 118.8, 118.1, 114.5, 96.3, 72.0, 17.0; EI-MS calcd. for $C_{19}H_{14}BrNO_2$: 367.0208; Found: 367.0089.

Spectral data for (*Z*)-6-methyl-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3d):



Orange solid; m.p 174-175 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.18 (s, 1H), 7.81 (d, *J* = 9.4 Hz, 1H), 7.69 (d, *J* = 9.4 Hz, 1H), 7.44 (d, *J* = 7.6 Hz, 2H), 7.27 (d, *J* = 1.6 Hz, 1H), 7.23 (t, *J* = 7.5 Hz, 1H), 6.92 (d, *J* = 8.1 Hz, 1H), 6.84 (dd, *J* = 8.1, 1.6 Hz, 1H), 4.50 (s, 2H), 2.65 (s, 3H), 2.33 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 188.9, 150.6, 149.4, 138.1, 136.5, 132.2, 131.2, 126.0, 125.5, 125.3, 124.3, 124.1, 123.9, 123.3, 118.8, 116.9, 97.3, 72.2, 21.1, 17.0; EI-MS calcd. for $C_{20}H_{17}NO_2$: 303.1259; Found: 303.1256.

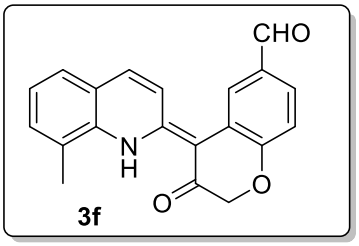
Spectral data for (*Z*)-6-methoxy-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3e):



Orange solid; m.p 197-198 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.23 (s, 1H), 7.82 (d, *J* = 9.4 Hz, 1H), 7.74 (dd, *J* = 9.4, 0.8 Hz, 1H), 7.45 (d, *J* = 7.6 Hz, 2H), 7.25-7.22 (m, 1H), 7.03 (d, *J* = 2.3 Hz, 1H), 6.96 (d, *J* = 8.6 Hz, 1H), 6.58 (dd, *J* = 8.1, 2.9 Hz, 1H), 4.48 (s, 2H), 3.79 (s, 3H), 2.65 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 189.1, 154.6, 149.5, 146.9, 138.2, 136.4, 132.3, 126.0,

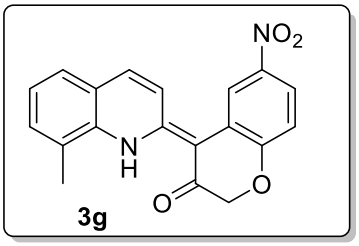
125.6, 125.4, 124.0, 123.3, 118.6, 117.4, 110.2, 108.8, 97.3, 72.3, 55.7, 17.0; EI-MS calcd. for $C_{20}H_{17}NO_3$: 319.1208; Found: 319.1205.

Spectral data for (*Z*)-6-chloro-7-methyl-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3f):



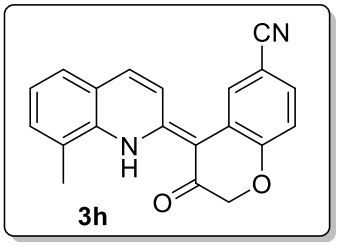
Orange solid; m.p 195-196 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.21 (s, 1H), 7.88 (d, *J* = 9.4 Hz, 1H), 7.65 (d, *J* = 9.4 Hz, 1H), 7.48-7.46 (m, 2H), 7.47 (s, 1H), 7.27-7.23 (m, 1H), 6.88 (s, 1H), 4.49 (s, 2H), 2.65 (s, 3H), 2.32 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 188.2, 151.2, 149.3, 138.6, 136.4, 132.4, 132.2, 127.0, 126.1, 125.5, 124.2, 123.8, 123.3, 119.4, 118.3, 96.3, 72.1, 19.7, 17.0, one carbon merged with others; EI-MS calcd. for $C_{20}H_{16}ClNO_2$: 337.0870; Found: 337.0872.

Spectral data for (*Z*)-7-bromo-4-(8-methylquinolin-2(1*H*)-ylidene) chroman-3-one (3g):



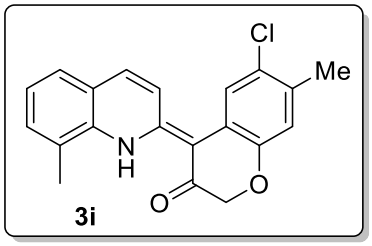
Orange solid; m.p 231-232 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 16.20 (s, 1H), 7.84 (d, *J* = 9.3 Hz, 1H), 7.59 (d, *J* = 9.3 Hz, 1H), 7.46 (d, *J* = 7.4 Hz, 2H), 7.31-7.25 (m, 2H), 7.16-7.10 (m, 2H), 4.51 (s, 2H), 2.64 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 187.9, 153.5, 149.4, 138.5, 136.3, 132.4, 126.1, 125.4, 124.9, 124.4, 124.2, 123.7, 123.4, 120.5, 118.3, 116.8, 96.5, 72.1, 17.0; EI-MS calcd. for $C_{19}H_{14}BrNO_2$: 367.0208; Found: 367.0203.

Spectral data for (*Z*)-8-bromo-4-(8-methylquinolin-2(1*H*)-ylidene) chroman-3-one (3h):



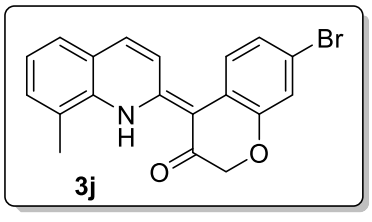
Orange solid; m.p 224-225 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.23 (s, 1H), 7.84 (d, *J* = 9.4 Hz, 1H), 7.62 (d, *J* = 9.4 Hz, 1H), 7.47 (d, *J* = 7.6 Hz, 2H), 7.37 (d, *J* = 7.7 Hz, 1H), 7.27-7.24 (m, 2H), 6.86 (t, *J* = 7.8 Hz, 1H), 4.61 (s, 2H), 2.65 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 187.9, 149.6, 149.3, 138.5, 136.3, 132.4, 128.5, 126.2, 126.1, 125.4, 124.3, 123.4, 122.8, 122.5, 118.3, 111.6, 96.6, 72.2, 17.0; EI-MS calcd. for $C_{19}H_{14}BrNO_2$: 367.0208; Found: 367.0209.

Spectral data for (*Z*)-6-chloro-7-methyl-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3i):



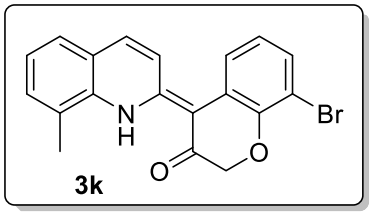
Orange solid; m.p 195-196 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.21 (s, 1H), 7.88 (d, *J* = 9.4 Hz, 1H), 7.65 (d, *J* = 9.4 Hz, 1H), 7.48-7.46 (m, 2H), 7.47 (s, 1H), 7.27-7.23 (m, 1H), 6.88 (s, 1H), 4.49 (s, 2H), 2.65 (s, 3H), 2.32 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 188.2, 151.2, 149.3, 138.6, 136.4, 132.4, 132.2, 127.0, 126.1, 125.5, 124.2, 123.8, 123.3, 119.4, 118.3, 96.3, 72.1, 19.7, 17.0, one carbon merged with others; EI-MS calcd. for $C_{20}H_{16}ClNO_2$: 337.0870; Found: 337.0872.

Spectral data for (*Z*)-7-bromo-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3j):



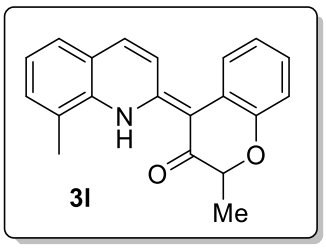
Orange solid; m.p 231-232 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 16.20 (s, 1H), 7.84 (d, *J* = 9.3 Hz, 1H), 7.59 (d, *J* = 9.3 Hz, 1H), 7.46 (d, *J* = 7.4 Hz, 2H), 7.31-7.25 (m, 2H), 7.16-7.10 (m, 2H), 4.51 (s, 2H), 2.64 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 187.9, 153.5, 149.4, 138.5, 136.3, 132.4, 126.1, 125.4, 124.9, 124.4, 124.2, 123.7, 123.4, 120.5, 118.3, 116.8, 96.5, 72.1, 17.0; EI-MS calcd. for $C_{19}H_{14}BrNO_2$: 367.0208; Found: 367.0203.

Spectral data for (*Z*)-8-bromo-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3k):



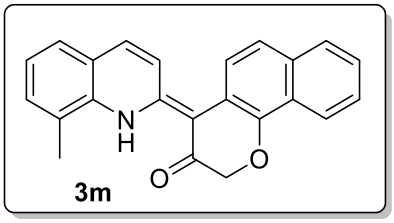
Orange solid; m.p 224-225 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.23 (s, 1H), 7.84 (d, *J* = 9.4 Hz, 1H), 7.62 (d, *J* = 9.4 Hz, 1H), 7.47 (d, *J* = 7.6 Hz, 2H), 7.37 (d, *J* = 7.7 Hz, 1H), 7.27-7.24 (m, 2H), 6.86 (t, *J* = 7.8 Hz, 1H), 4.61 (s, 2H), 2.65 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 187.9, 149.6, 149.3, 138.5, 136.3, 132.4, 128.5, 126.2, 126.1, 125.4, 124.3, 123.4, 122.8, 122.5, 118.3, 111.6, 96.6, 72.2, 17.0; EI-MS calcd. for $C_{19}H_{14}BrNO_2$: 367.0208; Found: 367.0209.

Spectral data for (*Z*)-2-methyl-4-(8-methylquinolin-2(1*H*)-ylidene)chroman-3-one (3l):



Orange solid; m.p 133-134 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 16.27 (s, 1H), 7.80 (d, *J* = 9.5 Hz, 1H), 7.70 (d, *J* = 9.4 Hz, 1H), 7.45 (t, *J* = 7.3 Hz, 3H), 7.22-7.20 (m, 1H), 7.07-6.98 (m, 3H), 4.57 (q, *J* = 6.8 Hz, 1H), 2.67 (s, 3H), 1.51 (d, *J* = 6.8 Hz, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 190.8, 151.5, 149.7, 137.9, 136.5, 132.1, 126.0, 125.3, 125.0, 124.5, 123.9, 123.5, 123.3, 121.8, 119.0, 117.8, 96.4, 77.0, 17.2, 16.3; EI-MS calcd. for $C_{20}H_{17}NO_2$: 303.1259; Found: 303.1258.

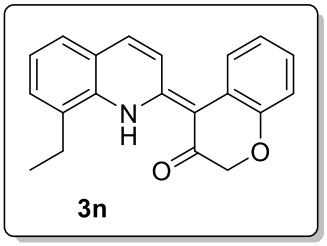
Spectral data for (*Z*)-4-(8-methylquinolin-2(1*H*)-ylidene)-2*H*-benzo[*h*]chromen-3(4*H*)-one (3m):



3m

Orange solid; m.p 261-262 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.06 (s, 1H), 8.19 (d, *J* = 9.3 Hz, 1H), 7.81 (d, *J* = 9.4 Hz, 1H), 7.77 (d, *J* = 9.4 Hz, 1H), 7.65 (d, *J* = 9.3 Hz, 1H), 7.62 (d, *J* = 8.5 Hz, 1H), 7.50 (d, *J* = 9.4 Hz, 1H), 7.46-7.43 (m, 3H), 7.39-7.38 (m, 1H), 7.23 (t, *J* = 7.4 Hz, 1H), 4.70 (s, 2H), 2.67 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 189.3, 148.9, 147.1, 138.1, 136.5, 132.3, 131.9, 127.4, 125.9, 125.7, 125.6, 125.4, 125.1, 123.9, 123.3, 122.9, 121.4, 121.2, 119.1, 118.8, 97.8, 72.4, 17.0; ESI-MS (M+H) calcd. for $C_{23}H_{18}NO_2$: 340.1338; Found: 340.1328.

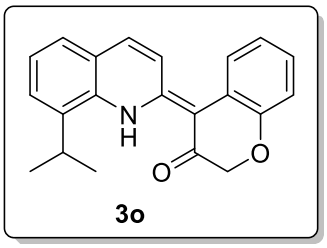
Spectral data for (*Z*)-4-(8-ethylquinolin-2(1*H*)-ylidene)chroman-3-one (3n):



3n

Orange solid; m.p 184-185 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 16.29 (s, 1H), 7.82 (d, *J* = 9.4 Hz, 1H), 7.68 (d, *J* = 9.4 Hz, 1H), 7.47-7.44 (m, 3H), 7.27 (t, *J* = 7.3 Hz, 1H), 7.03-6.99 (m, 3H), 4.53 (s, 2H), 3.04 (q, *J* = 7.4 Hz, 2H), 1.44 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 188.6, 152.7, 149.4, 138.2, 135.7, 131.7, 130.2, 125.3, 124.9, 124.5, 124.1, 123.6, 123.4, 121.9, 118.6, 117.2, 97.1, 72.0, 23.7, 12.9; EI-MS calcd. for $C_{20}H_{17}NO_2$: 303.1259; Found: 303.1255.

Spectral data for (*Z*)-4-(8-isopropylquinolin-2(1*H*)-ylidene)chroman-3-one (3o):

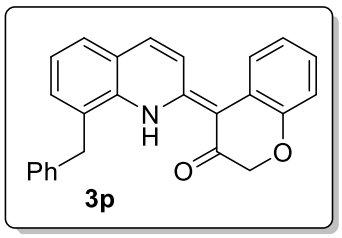


3o

Orange solid; m.p 173-174 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.41 (s, 1H), 7.84 (d, *J* = 9.4 Hz, 1H), 7.70 (dd, *J* = 9.4, 1.0 Hz, 1H), 7.54 (d, *J* = 9.3 Hz, 1H), 7.47-7.44 (m, 2H), 7.31 (t, *J* = 7.6

Hz, 1H), 7.04-6.99 (m, 3H), 4.53 (s, 2H), 3.66-3.59 (m, 1H), 1.44 (d, *J* = 6.8 Hz, 6H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 188.6, 152.8, 149.6, 138.5, 136.5, 135.2, 127.7, 125.4, 125.0, 124.6, 124.3, 123.6, 122.0, 118.6, 117.3, 97.1, 72.1, 29.6 (grease peak), 27.7, 22.4, one carbon merged with others; EI-MS calcd. for $C_{21}H_{19}NO_2$: 317.1416; Found: 317.1414.

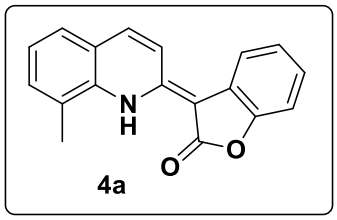
Spectral data for (*Z*)-4-(8-benzylquinolin-2(1*H*)-ylidene)chroman-3-one (3p):



3p

Orange solid; m.p 194-195 °C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 16.29 (s, 1H), 7.81 (d, *J* = 9.4 Hz, 1H), 7.68 (d, *J* = 9.4 Hz, 1H), 7.48-7.43 (m, 2H), 7.34-7.31 (m, 5H), 7.25-7.23 (m, 2H), 7.04-7.00 (m, 3H), 4.36 (s, 2H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 188.5, 152.8, 149.5, 138.1, 137.8, 136.0, 132.1, 129.3, 128.6, 126.6, 125.9, 125.1, 124.5, 124.0, 123.7, 122.0, 119.0, 117.2, 97.4, 72.0, 36.4, other carbons merged with others; EI-MS calcd. for $C_{25}H_{19}NO_2$: 365.1416; Found: 365.1414.

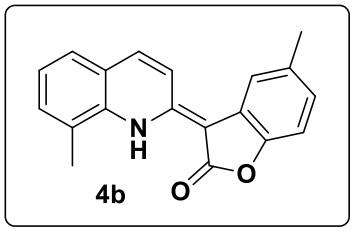
Spectral Data of (*Z*)-3-(8-methylquinolin-2(1*H*)-ylidene)benzofuran-2(*3H*)-one (4a):



4a

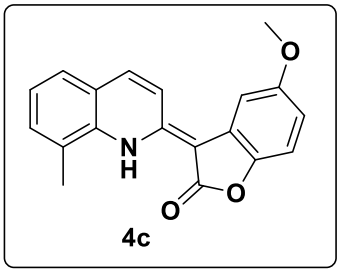
Orange solid, m.p 219-220 ^{o}C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.23 (bs, 1H), 7.86 (d, *J* = 9.2 Hz, 1H), 7.51 (d, *J* = 9.6 Hz, 1H), 7.46-7.43 (m, 3H), 7.21 (t, *J* = 8.0 Hz, 1H), 7.17-7.11 (m, 2H), 7.08-7.04 (m, 1H), 2.61 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.7, 149.1, 148.3, 138.8, 136.1, 132.9, 125.9, 125.8, 125.0, 123.8, 122.9, 122.6, 122.0, 117.8, 117.3, 110.1, 85.2, 16.6 ; ESI-MS calcd for $C_{18}H_{14}NO_2$ [M+H]: 276.1025 found: 276.1016.

Spectral Data of (*Z*)-5-methyl-3-(8-methylquinolin-2(1*H*)-ylidene)benzofuran-2(*3H*)-one (4b):



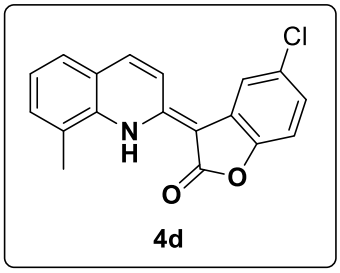
Orange solid, m.p 228-229 ^{o}C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.22 (bs, 1H), 7.85 (dd, *J* = 9.2, 2.0 Hz, 1H), 7.50 (d, *J* = 9.2 Hz, 1H), 7.43 (t, *J* = 8.0 Hz, 2H), 7.24-7.19 (m, 2H), 7.03 (dd, *J* = 8.0 Hz, 1H), 6.86 (d, *J* = 8.0 Hz, 1H), 2.60 (s, 3H), 2.39 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 172.1, 148.2, 147.3, 138.6, 136.1, 132.8, 132.3, 125.9, 125.8, 125.0, 123.7, 123.2, 122.0, 118.0, 109.7, 85.4, 21.6, 16.6, one carbon merged with others; ESI-MS calcd for $C_{19}H_{16}NO_2$ [M+H]: 290.1181 found: 290.1178.

Spectral Data of (*Z*)-5-methoxy-3-(8-methylquinolin-2(1*H*)-ylidene)benzofuran-2(3*H*)-one (4c):



Orange solid, m.p 222-223 ^{o}C; ^{1}H NMR (600 MHz, $CDCl_3$): δ 13.30 (bs, 1H), 7.87 (d, *J* = 9.3 Hz, 1H), 7.48-7.44 (m, 3H), 7.21 (t, *J* = 7.6 Hz, 1H), 7.05 (d, *J* = 8.6 Hz, 1H), 6.99 (d, *J* = 2.4 Hz, 1H), 6.60 (dd, *J* = 8.6, 2.5 Hz, 1H), 3.84 (s, 3H), 2.61 (s, 3H); ^{13}C NMR (150 MHz, $CDCl_3$): 172.3, 155.9, 148.3, 143.7, 138.8, 136.1, 132.9, 126.6, 125.9, 125.1, 123.8, 122.1, 117.7, 110.0, 107.0, 104.3, 85.7, 56.0, 16.6; ESI-MS calcd for $C_{19}H_{16}NO_3$ [M+H]: 306.1130 found: 306.1141.

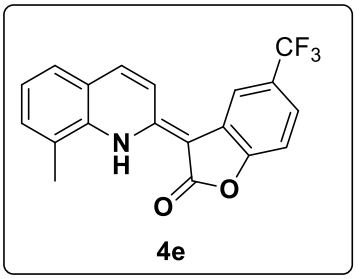
Spectral Data of (*Z*)-5-chloro-3-(8-methylquinolin-2(1*H*)-ylidene)benzofuran-2(3*H*)-one (4d):



4d

Orange solid, m.p 288-289 ^{o}C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.36 (bs, 1H), 7.96 (d, *J* = 9.2 Hz, 1H), 7.51-7.48 (m, 3H), 7.40 (s, 1H), 7.27 (d, *J* = 7.2 Hz, 1H), 7.06 (d, *J* = 8.4 Hz, 1H), 7.01 (d, *J* = 8.4 Hz, 1H), 2.64 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.7, 148.5, 147.3, 139.5, 136.0, 133.2, 128.3, 127.4, 126.1, 125.3, 124.3, 122.3, 122.1, 117.6, 117.1, 110.9, 84.7, 16.6; ESI-MS calcd for $C_{18}H_{13}ClNO_2$ [M+H]: 310.0635 found: 310.0639.

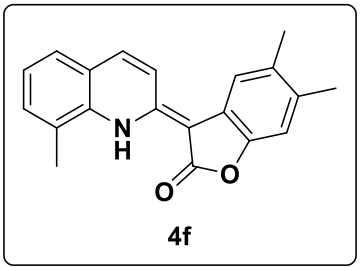
Spectral Data of (*Z*)-3-(8-methylquinolin-2(1*H*)-ylidene)-5-(trifluoromethyl)benzofuran-2(3*H*)-one (4e):



4e

Orange solid, m.p 271-271 ^{o}C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.40 (bs, 1H), 8.01 (d, *J* = 9.2 Hz, 1H), 7.66 (s, 1H), 7.57-7.50 (m, 3H), 7.34 (d, *J* = 8.0 Hz, 1H), 7.28 (d, *J* = 7.6 Hz, 1H), 7.26-7.21 (m, 1H), 2.66 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.5, 150.8, 148.7, 139.8, 136.0, 133.3, 126.5, 127.0, 125.4 ($J_{C\text{-}F}$ = 29.0 Hz), 124.4, 123.4, 122.4, 119.8, 117.5, 113.9, 109.9, 84.2, 16.6, other carbon peaks are merged; ESI-MS calcd for $C_{19}H_{13}F_3NO_2$ [M+H]: 344.0898 found: 344.0882.

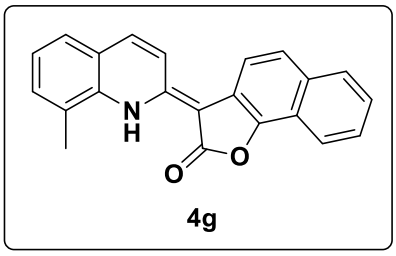
Spectral Data of (*Z*)-5,6-dimethyl-3-(8-methylquinolin-2(1*H*)-ylidene)benzofuran-2(3*H*)-one (4f):



4f

Orange solid, m.p 249-250 ^{o}C**;** ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.07 (bs, 1H), 7.80 (dd, *J* = 9.2, 1.6 Hz, 1H), 7.46 (d, *J* = 9.6 Hz, 1H), 7.41 (t, *J* = 6.8 Hz, 2H), 7.19-7.15 (m, 2H), 6.93 (s, 1H), 2.58 (s, 3H), 2.29 (s, 3H), 2.26 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 172.0, 147.7, 138.2, 136.2, 132.7, 131.1, 130.7, 128.8, 124.8, 123.4, 123.2, 121.9, 118.5, 118.1, 111.1, 85.5, 20.0, 19.9, 16.5, one carbon merged with others; ESI-MS calcd for $C_{20}H_{18}NO_2$ [M+H]: 304.1338 found: 304.1346.

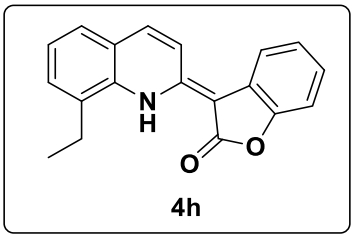
Spectral Data of (*Z*)-3-(8-methylquinolin-2(1*H*)-ylidene)naphtho[1,2-*b*]furan-2(3*H*)-one (4g):



4g

Orange solid, m.p 123-124 ^{o}C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.30 (bs, 1H), 8.12 (d, *J* = 8.4 Hz, 1H), 7.86 (d, *J* = 9.6 Hz, 1H), 7.80 (d, *J* = 8.0 Hz, 1H), 7.68 (d, *J* = 8.8 Hz, 1H), 7.64-7.61 (m, 2H), 7.48 (d, *J* = 7.2 Hz, 1H), 7.44 (d, *J* = 7.6 Hz, 2H), 7.37-7.33 (m, 1H), 7.21 (t, *J* = 7.2 Hz, 1H), 2.64 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.8, 148.2, 143.1, 138.6, 136.2, 132.9, 130.4, 128.0, 126.3, 125.8, 125.1, 124.2, 123.8, 122.9, 122.2, 120.5, 120.3, 120.1, 118.0, 117.1, 86.7, 16.6; ESI-MS calcd for $C_{22}H_{16}NO_2$ [M+H]: 326.1181 found: 326.1170.

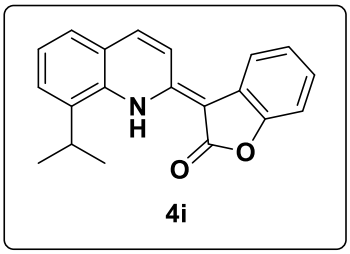
Spectral Data of (*Z*)-3-(8-ethylquinolin-2(1*H*)-ylidene)benzofuran-2(3*H*)-one (4h):



4h

Orange solid, m.p 182-183 ^{o}C; = ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.38 (bs, 1H), 7.88 (d, *J* = 9.6 Hz, 1H), 7.54-7.44 (m, 4H), 7.26 (d, *J* = 7.6 Hz, 1H), 7.18-7.06 (m, 3H), 2.99 (q, *J* = 7.2 Hz, 2H), 1.44 (t, *J* = 7.6 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.8, 149.1, 148.3, 138.9, 135.4, 130.9, 130.8, 125.9, 124.0, 122.9, 122.6, 122.2, 117.8, 117.2, 110.1, 85.1, 23.3, 13.0, one carbon merged with others; ESI-MS calcd for $C_{19}H_{16}NO_2$ [M+H]: 290.1181 found: 290.1178.

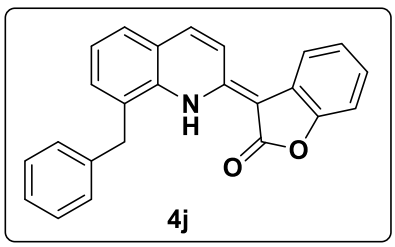
Spectral Data of (*Z*)-3-(8-isopropylquinolin-2(1*H*)-ylidene)benzofuran-2(3*H*)-one (4i):



4i

Orange solid, m.p 185-186 ^{o}C = ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.54 (bs, 1H), 7.89 (d, *J* = 9.2 Hz, 1H), 7.55 (d, *J* = 8.4 Hz, 2H), 7.46 (d, *J* = 7.6 Hz, 2H), 7.29 (t, *J* = 7.6 Hz, 1H), 7.19-7.11 (m, 2H), 7.09-7.05 (m, 1H), 3.58-3.51 (m, 1H), 1.45 (s, 3H), 1.43 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.8, 149.1, 148.4, 139.1, 135.5, 134.8, 128.3, 125.9, 124.1, 122.9, 122.5, 122.3, 117.7, 117.2, 110.1, 85.1, 27.4, 22.3, other carbon peaks are merged; ESI-MS calcd for $C_{20}H_{18}NO_2$ [M+H]: 304.1338 found: 304.1337.

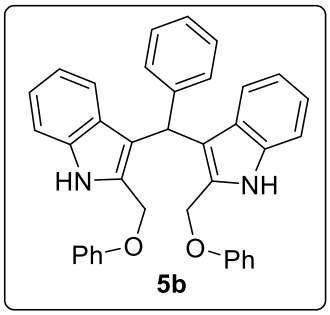
Spectral Data of (*Z*)-3-(8-benzylquinolin-2(1*H*)-ylidene)benzofuran-2(3*H*)-one (4j):



4j

Orange red solid, m.p 239-240 ^{o}C**;** ^{1}H NMR (400 MHz, $CDCl_3$): δ 13.38 (bs, 1H), 7.86 (dd, *J* = 9.6, 2.8 Hz, 1H), 7.54-7.48 (m, 2H), 7.43 (d, *J* = 7.2 Hz, 1H), 7.38-7.36 (m, 3H), 7.33-7.29 (m, 2H), 7.27-7.22 (m, 2H), 7.17-7.07 (m, 3H), 4.32 (s, 2H); ^{13}C NMR (100 MHz, $CDCl_3$): 171.6, 149.1, 148.3, 138.8, 137.3, 135.6, 132.9, 129.3, 128.7, 128.3, 126.9, 126.5, 125.8, 123.8, 123.0, 122.7, 122.5, 118.1, 117.3, 110.2, 85.5, 36.2; ESI-MS calcd for $C_{24}H_{18}NO_2$ [M+H]: 352.1338 found: 352.1331.

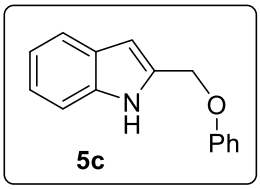
Spectral Data of 3,3'-(phenylmethylene)bis(2-(phenoxymethyl)-1*H*-indole) (5b):



5b

Yellow solid; ^{1}H NMR (600 MHz, $CDCl_3$): δ 8.29 (s, 2H), 7.35-7.33 (m, 4H), 7.29-7.25 (m, 3H), 7.20 (d, *J* = 8.0 Hz, 2H), 7.17-7.13 (m, 6H), 6.97-6.95 (m, 2H), 6.91-6.89 (m, 2H), 6.60 (dd, *J* = 8.8, 1.0 Hz, 4H), 4.60 (d, *J* = 12.9 Hz, 2H), 4.48 (d, *J* = 12.9 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 158.0, 142.8, 135.3, 130.9, 129.3, 128.9, 128.4, 128.2, 126.6, 122.0, 121.1, 119.7, 119.6, 114.4, 114.0, 110.8, 62.1, 39.1; EI-MS calcd for $C_{37}H_{30}N_2O_2$: 534.2307 found: 534.2308

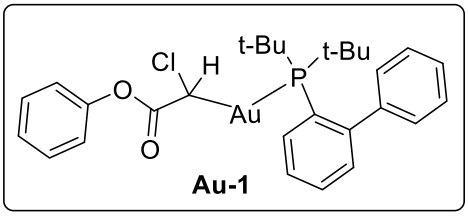
Spectral Data of 2-(phenoxymethyl)-1*H*-indole (5c):



5c

Pale yellow oil; ^{1}H NMR (600 MHz, $CDCl_3$): δ 8.35 (s, 1H), 7.59 (d, *J* = 7.8 Hz, 1H), 7.35 (d, *J* = 8.1 Hz, 1H), 7.28 (t, *J* = 8.5 Hz, 2H), 7.17 (t, *J* = 7.2 Hz, 1H), 7.09 (t, *J* = 7.3 Hz, 1H), 6.99 (d, *J* = 8.4 Hz, 2H), 6.96 (d, *J* = 7.3 Hz, 1H), 6.52 (s, 1H), 5.21 (s, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 158.1, 136.3, 133.7, 129.5, 127.9, 122.2, 121.3, 120.6, 119.9, 114.7, 110.9, 101.7, 63.6 ; ESI-MS calcd for $C_{15}H_{14}NO$ [M+H]: 224.1075, found: 224.1122

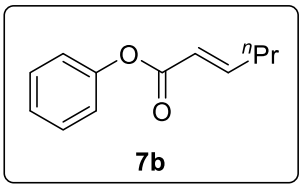
Spectral Data of Compound Au-1:



Au-1

Off White Solid: m.p 173-174 ^{o}C; ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.85 (t, *J* = 6.8 Hz, 1H), 7.50-7.39 (m, 5H), 7.30-7.25 (m, 3H), 7.18-7.09 (m, 3H), 7.00 (d, *J* = 8.0 Hz, 2H), 3.47 (d, *J* = 8.8 Hz, 1H), 1.38 (t, *J* = 14.8 Hz, 18 H); ^{13}C NMR (100 MHz, $CDCl_3$): 174.7, 151.9, 150.1 (J_{C-P} = 15.4 Hz)), 142.8 (J_{C-P} = 134.3 Hz), 134.3, 132.9 (J_{C-P} = 7.3 Hz), 130.4, 129.3, 129.1, 128.8 (J_{C-P} = 10.4 Hz), 127.5, 127.4, 127.1, 126.7 (J_{C-P} = 5.5 Hz), 124.7, 121.7, 37.5 (J_{C-P} = 10.2 Hz), 37.2 (J_{C-P} = 10.2 Hz), 31.1 (J_{C-P} = 6.8 Hz), 30.9 (J_{C-P} = 6.6 Hz); ESI-MS calcd for $C_{28}H_{33}AuClNaO_2P$ [M+Na]: 687.1470, found: 687.1463.

Spectral Data of (*E*)-hex-2-enoate (7b):

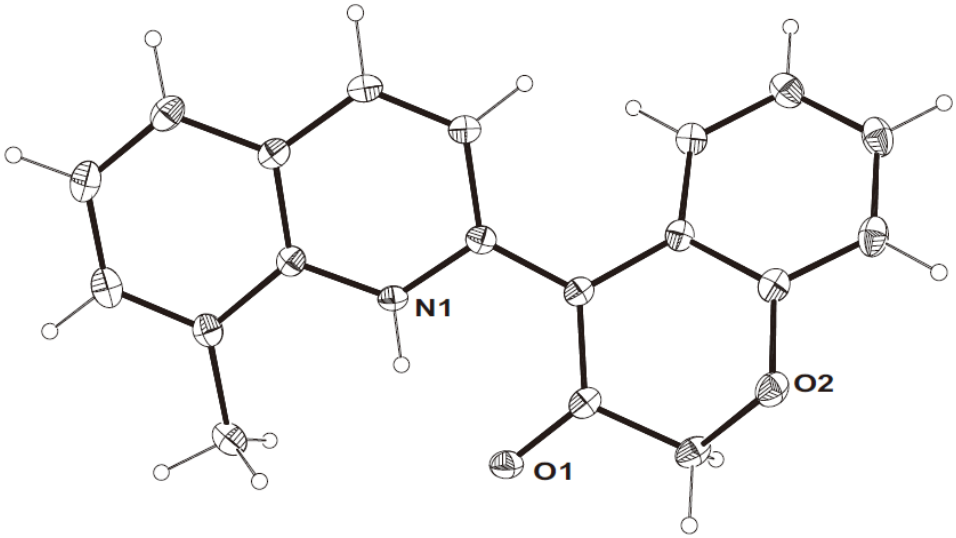


7b

Sticky Solid; ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.40-7.35 (m, 2H), 7.23-7.17 (m, 2H), 7.13-7.10 (m, 2H), 6.01 (d, *J* = 15.6 Hz, 1H), 2.28-2.22 (m, 2H), 1.58-1.49 (m, 2H), 0.97(t, *J* = 7.2 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): 165.1, 151.7, 150.8, 129.4, 125.7, 121.7, 120.7, 34.4, 21.2, 13.7; ESI-MS calcd for $C_{12}H_{14}NaO_2$ [M+Na]: 213.0891, found: 213.0882.

(2) X-Ray crystallographic Data:

(a) X-Ray Data of Compound 3a:



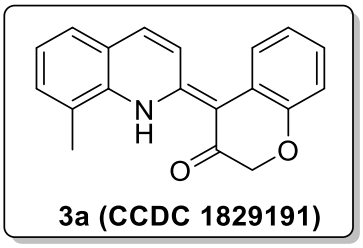


Table S1. Crystal data and structure refinement for d19251.

Identification code	d19251	
Empirical formula	C19 H15 N O2	
Formula weight	289.32	
Temperature	200(2) K	
Wavelength	0.71073 Å	
Crystal system	Monoclinic	
Space group	P c	
Unit cell dimensions	a = 21.0827(15) Å	α= 90°.
	b = 8.2829(6) Å	β= 95.222(2)°.
	c = 8.2169(4) Å	γ = 90°.
Volume	1428.93(16) $Å^3$	
Z	4	
Density (calculated)	1.345 Mg/m^3	
Absorption coefficient	0.087 mm^{-1}	

F(000)	608
Crystal size	0.79 x 0.28 x 0.04 mm^3
Theta range for data collection	2.46 to 25.06°.
Index ranges	-25<=h<=25, -9<=k<=9, -9<=l<=9
Reflections collected	16223
Independent reflections	4764 [R(int) = 0.0851]
Completeness to theta = 25.06°	99.6 %
Absorption correction	multi-scan
Max. and min. transmission	0.9965 and 0.9341
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	4764 / 2 / 398
Goodness-of-fit on F^2	1.013
Final R indices [I>2sigma(I)]	R1 = 0.0448, wR2 = 0.1034
R indices (all data)	R1 = 0.0603, wR2 = 0.1156
Absolute structure parameter	0.3(12)
Extinction coefficient	0.052(5)
Largest diff. peak and hole	0.168 and -0.149 e.$Å^{-3}$

Table S2. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters ($Å^2$x 10^3) for d19251. U(eq) is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	U(eq)
C(1)	2648(1)	1027(3)	5570(3)	34(1)
C(2)	3024(2)	-120(4)	6685(3)	40(1)
C(3)	3750(1)	1901(4)	7562(3)	37(1)
C(4)	4332(2)	2124(4)	8454(4)	46(1)
C(5)	4736(2)	3337(4)	8001(4)	48(1)
C(6)	4558(1)	4295(4)	6665(4)	46(1)
C(7)	3970(1)	4055(4)	5785(3)	39(1)
C(8)	3536(1)	2893(3)	6247(3)	33(1)
C(9)	2896(1)	2602(3)	5418(3)	32(1)
C(10)	2518(1)	3831(3)	4625(3)	31(1)
C(11)	2626(1)	5528(3)	4779(3)	36(1)
C(12)	2210(1)	6600(4)	4042(3)	37(1)
C(13)	1656(1)	6091(4)	3069(3)	34(1)

C(14)	1545(1)	4432(3)	2908(3)	32(1)
C(15)	1009(1)	3801(4)	1956(3)	38(1)
C(16)	920(1)	2025(4)	1743(4)	48(1)
C(17)	592(2)	4928(4)	1198(4)	49(1)
C(18)	687(2)	6589(4)	1361(4)	49(1)
C(19)	1212(2)	7176(4)	2271(3)	43(1)
C(20)	7351(1)	6044(3)	6664(3)	34(1)
C(21)	6969(2)	4888(4)	7611(3)	40(1)
C(22)	6245(1)	6915(3)	8146(3)	36(1)
C(23)	5660(1)	7130(4)	8767(4)	45(1)
C(24)	5258(1)	8338(4)	8122(4)	49(1)
C(25)	5438(1)	9287(4)	6872(4)	45(1)
C(26)	6026(1)	9062(4)	6262(3)	39(1)
C(27)	6456(1)	7902(3)	6938(3)	33(1)
C(28)	7101(1)	7612(3)	6410(3)	31(1)
C(29)	7481(1)	8841(3)	5788(3)	30(1)
C(30)	7370(1)	10543(3)	5894(3)	35(1)
C(31)	7784(1)	11617(4)	5352(3)	37(1)
C(32)	8344(1)	11102(4)	4637(3)	33(1)
C(33)	8453(1)	9447(3)	4538(3)	32(1)
C(34)	8993(1)	8820(4)	3844(3)	36(1)
C(35)	9084(1)	7041(4)	3694(4)	46(1)
C(36)	9411(1)	9941(4)	3288(4)	45(1)
C(37)	9317(2)	11592(4)	3398(4)	48(1)
C(38)	8785(1)	12183(4)	4053(4)	43(1)
N(1)	1978(1)	3388(3)	3705(3)	31(1)
N(2)	8021(1)	8397(3)	5127(2)	32(1)
O(1)	2130(1)	512(2)	4827(2)	40(1)
O(2)	3369(1)	673(2)	8045(2)	43(1)
O(3)	7867(1)	5522(2)	6177(2)	39(1)
O(4)	6630(1)	5680(2)	8809(2)	42(1)

Table S3. Bond lengths [Å] and angles [°] for d19251.

C(1)-O(1)	1.274(3)

C(1)-C(9)	1.415(4)
C(1)-C(2)	1.496(4)
C(2)-O(2)	1.436(4)
C(2)-H(2A)	0.9900
C(2)-H(2B)	0.9900
C(3)-O(2)	1.377(4)
C(3)-C(4)	1.383(4)
C(3)-C(8)	1.399(4)
C(4)-C(5)	1.390(5)
C(4)-H(4)	0.9500
C(5)-C(6)	1.378(5)
C(5)-H(5)	0.9500
C(6)-C(7)	1.392(4)
C(6)-H(6)	0.9500
C(7)-C(8)	1.405(4)
C(7)-H(7)	0.9500
C(8)-C(9)	1.475(4)
C(9)-C(10)	1.414(4)
C(10)-N(1)	1.358(3)
C(10)-C(11)	1.428(4)
C(11)-C(12)	1.350(4)
C(11)-H(11)	0.9500
C(12)-C(13)	1.419(4)
C(12)-H(12)	0.9500
C(13)-C(14)	1.398(4)
C(13)-C(19)	1.415(4)
C(14)-N(1)	1.378(3)
C(14)-C(15)	1.415(4)
C(15)-C(17)	1.389(4)
C(15)-C(16)	1.491(4)
C(16)-H(16A)	0.9984
C(16)-H(16B)	0.9343
C(16)-H(16C)	0.9491
C(17)-C(18)	1.395(5)
C(17)-H(17)	0.9500
C(18)-C(19)	1.366(4)

C(18)-H(18)	0.9500
C(19)-H(19)	0.9500
C(20)-O(3)	1.269(3)
C(20)-C(28)	1.411(4)
C(20)-C(21)	1.511(4)
C(21)-O(4)	1.428(3)
C(21)-H(21A)	0.9900
C(21)-H(21B)	0.9900
C(22)-O(4)	1.386(3)
C(22)-C(23)	1.388(4)
C(22)-C(27)	1.390(4)
C(23)-C(24)	1.385(5)
C(23)-H(23)	0.9500
C(24)-C(25)	1.374(5)
C(24)-H(24)	0.9500
C(25)-C(26)	1.393(4)
C(25)-H(25)	0.9500
C(26)-C(27)	1.400(4)
C(26)-H(26)	0.9500
C(27)-C(28)	1.485(4)
C(28)-C(29)	1.419(4)
C(29)-N(2)	1.357(3)
C(29)-C(30)	1.433(4)
C(30)-C(31)	1.350(4)
C(30)-H(30)	0.9500
C(31)-C(32)	1.430(4)
C(31)-H(31)	0.9500
C(32)-C(33)	1.394(4)
C(32)-C(38)	1.407(4)
C(33)-N(2)	1.378(3)
C(33)-C(34)	1.418(4)
C(34)-C(36)	1.384(4)
C(34)-C(35)	1.492(4)
C(35)-H(35A)	1.0528
C(35)-H(35B)	0.9714
C(35)-H(35C)	1.0150

C(36)-C(37)	1.386(5)
C(36)-H(36)	0.9500
C(37)-C(38)	1.378(5)
C(37)-H(37)	0.9500
C(38)-H(38)	0.9500
N(1)-H(1)	0.8800
N(2)-H(2)	0.8800
O(1)-C(1)-C(9)	125.0(3)
O(1)-C(1)-C(2)	117.7(3)
C(9)-C(1)-C(2)	117.4(3)
O(2)-C(2)-C(1)	112.9(2)
O(2)-C(2)-H(2A)	109.0
C(1)-C(2)-H(2A)	109.0
O(2)-C(2)-H(2B)	109.0
C(1)-C(2)-H(2B)	109.0
H(2A)-C(2)-H(2B)	107.8
O(2)-C(3)-C(4)	117.3(3)
O(2)-C(3)-C(8)	120.1(3)
C(4)-C(3)-C(8)	122.7(3)
C(3)-C(4)-C(5)	119.4(3)
C(3)-C(4)-H(4)	120.3
C(5)-C(4)-H(4)	120.3
C(6)-C(5)-C(4)	120.0(3)
C(6)-C(5)-H(5)	120.0
C(4)-C(5)-H(5)	120.0
C(5)-C(6)-C(7)	119.8(3)
C(5)-C(6)-H(6)	120.1
C(7)-C(6)-H(6)	120.1
C(6)-C(7)-C(8)	122.0(3)
C(6)-C(7)-H(7)	119.0
C(8)-C(7)-H(7)	119.0
C(3)-C(8)-C(7)	116.0(3)
C(3)-C(8)-C(9)	118.6(2)
C(7)-C(8)-C(9)	125.4(3)
C(10)-C(9)-C(1)	120.5(2)
C(10)-C(9)-C(8)	123.2(3)

C(1)-C(9)-C(8)	116.1(2)
N(1)-C(10)-C(9)	118.1(2)
N(1)-C(10)-C(11)	115.7(2)
C(9)-C(10)-C(11)	126.1(3)
C(12)-C(11)-C(10)	121.0(3)
C(12)-C(11)-H(11)	119.5
C(10)-C(11)-H(11)	119.5
C(11)-C(12)-C(13)	121.7(3)
C(11)-C(12)-H(12)	119.2
C(13)-C(12)-H(12)	119.2
C(14)-C(13)-C(19)	118.9(3)
C(14)-C(13)-C(12)	117.8(3)
C(19)-C(13)-C(12)	123.3(3)
N(1)-C(14)-C(13)	118.3(2)
N(1)-C(14)-C(15)	119.5(2)
C(13)-C(14)-C(15)	122.2(3)
C(17)-C(15)-C(14)	116.1(3)
C(17)-C(15)-C(16)	122.9(3)
C(14)-C(15)-C(16)	121.0(3)
C(15)-C(16)-H(16A)	107.2
C(15)-C(16)-H(16B)	112.7
H(16A)-C(16)-H(16B)	104.3
C(15)-C(16)-H(16C)	113.4
H(16A)-C(16)-H(16C)	108.7
H(16B)-C(16)-H(16C)	110.1
C(15)-C(17)-C(18)	122.7(3)
C(15)-C(17)-H(17)	118.7
C(18)-C(17)-H(17)	118.7
C(19)-C(18)-C(17)	120.4(3)
C(19)-C(18)-H(18)	119.8
C(17)-C(18)-H(18)	119.8
C(18)-C(19)-C(13)	119.7(3)
C(18)-C(19)-H(19)	120.1
C(13)-C(19)-H(19)	120.1
O(3)-C(20)-C(28)	125.9(3)
O(3)-C(20)-C(21)	117.4(2)

C(28)-C(20)-C(21)	116.7(3)
O(4)-C(21)-C(20)	112.8(2)
O(4)-C(21)-H(21A)	109.0
C(20)-C(21)-H(21A)	109.0
O(4)-C(21)-H(21B)	109.0
C(20)-C(21)-H(21B)	109.0
H(21A)-C(21)-H(21B)	107.8
O(4)-C(22)-C(23)	117.3(3)
O(4)-C(22)-C(27)	120.1(2)
C(23)-C(22)-C(27)	122.6(3)
C(24)-C(23)-C(22)	119.1(3)
C(24)-C(23)-H(23)	120.5
C(22)-C(23)-H(23)	120.5
C(25)-C(24)-C(23)	119.8(3)
C(25)-C(24)-H(24)	120.1
C(23)-C(24)-H(24)	120.1
C(24)-C(25)-C(26)	120.6(3)
C(24)-C(25)-H(25)	119.7
C(26)-C(25)-H(25)	119.7
C(25)-C(26)-C(27)	120.9(3)
C(25)-C(26)-H(26)	119.6
C(27)-C(26)-H(26)	119.6
C(22)-C(27)-C(26)	116.8(3)
C(22)-C(27)-C(28)	118.3(2)
C(26)-C(27)-C(28)	124.8(3)
C(20)-C(28)-C(29)	119.9(2)
C(20)-C(28)-C(27)	116.5(2)
C(29)-C(28)-C(27)	123.5(2)
N(2)-C(29)-C(28)	118.2(2)
N(2)-C(29)-C(30)	115.9(2)
C(28)-C(29)-C(30)	125.8(2)
C(31)-C(30)-C(29)	121.0(3)
C(31)-C(30)-H(30)	119.5
C(29)-C(30)-H(30)	119.5
C(30)-C(31)-C(32)	121.4(3)
C(30)-C(31)-H(31)	119.3

C(32)-C(31)-H(31)	119.3
C(33)-C(32)-C(38)	119.2(3)
C(33)-C(32)-C(31)	117.7(2)
C(38)-C(32)-C(31)	123.1(3)
N(2)-C(33)-C(32)	118.8(2)
N(2)-C(33)-C(34)	119.4(2)
C(32)-C(33)-C(34)	121.8(3)
C(36)-C(34)-C(33)	116.4(3)
C(36)-C(34)-C(35)	123.0(3)
C(33)-C(34)-C(35)	120.5(3)
C(34)-C(35)-H(35A)	107.2
C(34)-C(35)-H(35B)	116.1
H(35A)-C(35)-H(35B)	106.5
C(34)-C(35)-H(35C)	107.5
H(35A)-C(35)-H(35C)	106.3
H(35B)-C(35)-H(35C)	112.7
C(34)-C(36)-C(37)	122.8(3)
C(34)-C(36)-H(36)	118.6
C(37)-C(36)-H(36)	118.6
C(38)-C(37)-C(36)	120.1(3)
C(38)-C(37)-H(37)	119.9
C(36)-C(37)-H(37)	119.9
C(37)-C(38)-C(32)	119.7(3)
C(37)-C(38)-H(38)	120.2
C(32)-C(38)-H(38)	120.2
C(10)-N(1)-C(14)	125.5(2)
C(10)-N(1)-H(1)	117.3
C(14)-N(1)-H(1)	117.3
C(29)-N(2)-C(33)	125.2(2)
C(29)-N(2)-H(2)	117.4
C(33)-N(2)-H(2)	117.4
C(3)-O(2)-C(2)	112.4(2)
C(22)-O(4)-C(21)	112.4(2)

Symmetry transformations used to generate equivalent atoms:

Table S4. Anisotropic displacement parameters ($Å^2 x\ 10^3$)for d19251. The anisotropic displacement factor exponent takes the form: $-2\pi^2[\ h^2 a^{*2} U^{11} + ... + 2\ h\ k\ a^*\ b^*\ U^{12}\ ]$

	U^{11}	U^{22}	U^{33}	U^{23}	U^{13}	U^{12}
C(1)	45(2)	33(2)	27(1)	-1(1)	10(1)	5(1)
C(2)	60(2)	33(2)	29(2)	1(1)	10(1)	2(2)
C(3)	43(2)	38(2)	31(2)	-2(1)	8(1)	7(1)
C(4)	51(2)	52(2)	34(2)	-4(1)	-2(1)	16(2)
C(5)	37(2)	59(2)	48(2)	-13(2)	-3(1)	10(2)
C(6)	36(2)	52(2)	50(2)	-11(2)	6(1)	1(2)
C(7)	38(2)	42(2)	36(2)	-1(1)	6(1)	2(1)
C(8)	36(2)	37(2)	26(1)	-2(1)	5(1)	4(1)
C(9)	38(2)	31(2)	27(1)	0(1)	7(1)	2(1)
C(10)	33(2)	35(2)	26(1)	1(1)	9(1)	-3(1)
C(11)	39(2)	31(2)	37(2)	-1(1)	6(1)	-3(1)
C(12)	44(2)	28(2)	38(2)	-1(1)	10(1)	-3(1)
C(13)	37(2)	33(2)	34(2)	3(1)	13(1)	4(1)
C(14)	31(1)	35(2)	32(2)	0(1)	9(1)	3(1)
C(15)	34(2)	47(2)	34(2)	-1(1)	6(1)	0(1)
C(16)	39(2)	52(2)	52(2)	-8(2)	3(2)	-8(2)
C(17)	37(2)	67(3)	41(2)	-1(2)	2(1)	3(2)
C(18)	44(2)	58(2)	44(2)	10(2)	7(2)	15(2)
C(19)	48(2)	40(2)	41(2)	6(1)	14(1)	10(2)
C(20)	44(2)	31(2)	26(1)	-1(1)	-1(1)	0(1)
C(21)	55(2)	35(2)	31(2)	2(1)	5(1)	0(1)
C(22)	40(2)	37(2)	29(1)	-4(1)	-1(1)	-3(1)
C(23)	48(2)	51(2)	38(2)	-11(1)	11(1)	-14(2)
C(24)	37(2)	58(2)	52(2)	-14(2)	7(1)	-6(2)
C(25)	35(2)	52(2)	46(2)	-12(2)	-3(1)	4(1)
C(26)	39(2)	45(2)	34(2)	-1(1)	1(1)	1(1)
C(27)	34(1)	38(2)	27(1)	-3(1)	0(1)	-2(1)
C(28)	37(1)	30(2)	25(1)	-2(1)	0(1)	1(1)
C(29)	35(2)	32(2)	24(1)	-2(1)	-2(1)	6(1)
C(30)	38(2)	31(2)	36(2)	-1(1)	2(1)	5(1)
C(31)	43(2)	29(2)	37(2)	-1(1)	-3(1)	4(1)

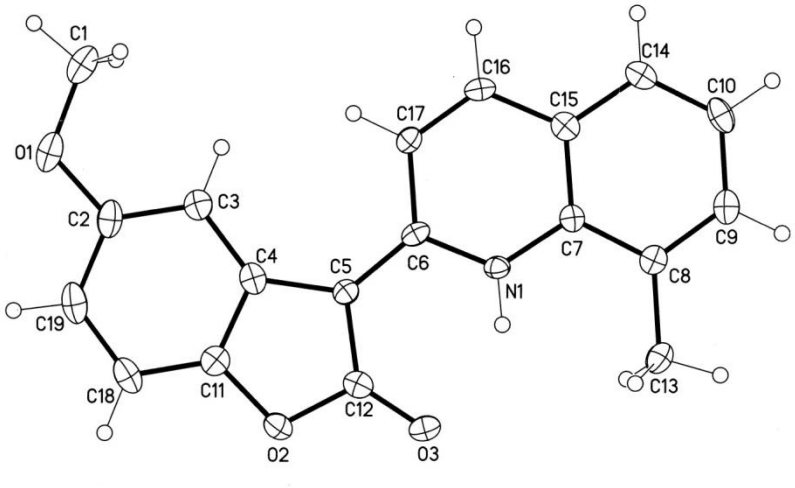
C(32)	38(2)	30(2)	30(1)	2(1)	-6(1)	-1(1)
C(33)	32(1)	36(2)	28(1)	3(1)	-4(1)	-3(1)
C(34)	33(2)	44(2)	31(1)	1(1)	-4(1)	-1(1)
C(35)	40(2)	46(2)	53(2)	2(2)	8(1)	8(2)
C(36)	34(2)	59(2)	42(2)	4(2)	3(1)	-4(2)
C(37)	45(2)	51(2)	47(2)	8(2)	0(1)	-13(2)
C(38)	46(2)	40(2)	40(2)	4(1)	-6(1)	-9(1)
N(1)	36(1)	25(1)	33(1)	-2(1)	4(1)	-2(1)
N(2)	37(1)	25(1)	32(1)	-3(1)	3(1)	2(1)
O(1)	46(1)	31(1)	43(1)	-2(1)	4(1)	-5(1)
O(2)	56(1)	43(1)	28(1)	4(1)	4(1)	2(1)
O(3)	43(1)	32(1)	42(1)	0(1)	5(1)	5(1)
O(4)	55(1)	44(1)	27(1)	3(1)	6(1)	1(1)

Table S5. Hydrogen coordinates (x 10^4) and isotropic displacement parameters ($Å^2$x 10^3) for d19251.

	x	y	z	U(eq)
H(2A)	2731	-923	7102	48
H(2B)	3329	-709	6055	48
H(4)	4454	1455	9368	55
H(5)	5135	3506	8613	58
H(6)	4836	5116	6347	55
H(7)	3859	4695	4843	46
H(11)	2995	5910	5411	43
H(12)	2292	7722	4179	44
H(17)	228	4552	542	58
H(18)	386	7316	837	58
H(19)	1278	8308	2367	51
H(21A)	6662	4307	6838	49
H(21B)	7260	4079	8161	49
H(23)	5538	6459	9622	54
H(24)	4858	8509	8542	58
H(25)	5159	10104	6421	54

H(26)	6138	9705	5374	47
H(30)	7000	10922	6352	42
H(31)	7702	12739	5447	44
H(36)	9777	9561	2811	54
H(37)	9620	12318	3020	57
H(38)	8717	13314	4111	51
H(1)	1898	2348	3610	38
H(2)	8102	7358	5070	38
H(16A)	507	1857	1072	50
H(16B)	869	1495	2726	50
H(16C)	1249	1524	1207	50
H(35A)	8687	6592	2965	50
H(35B)	9110	6433	4709	50
H(35C)	9467	6863	3051	50

(b) X-Ray Data of Compound 4c:



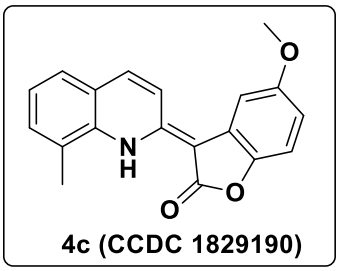


Table S6. Crystal data and structure refinement for 170929LT.

Identification code	170929LT
Empirical formula	C19 H15 N O3
Formula weight	305.32

Temperature	100(2) K	
Wavelength	0.71073 Å	
Crystal system	Orthorhombic	
Space group	P c a 21	
Unit cell dimensions	a = 14.3845(14) Å	α= 90°.
	b = 4.3448(4) Å	β= 90°.
	c = 23.199(2) Å	γ = 90°.
Volume	1449.9(2) $Å^3$	
Z	4	
Density (calculated)	1.399 Mg/m^3	
Absorption coefficient	0.095 mm^{-1}	
F(000)	640	
Crystal size	0.15 x 0.14 x 0.06 mm^3	
Theta range for data collection	1.756 to 26.337°.	
Index ranges	-17<=h<=17, -3<=k<=5, -28<=l<=28	
Reflections collected	10448	
Independent reflections	2941 [R(int) = 0.0542]	
Completeness to theta = 25.242°	99.9 %	
Absorption correction	Semi-empirical from equivalents	
Max. and min. transmission	0.9485 and 0.8324	
Refinement method	Full-matrix least-squares on F^2	
Data / restraints / parameters	2941 / 1 / 211	
Goodness-of-fit on F^2	1.035	
Final R indices [I>2sigma(I)]	R1 = 0.0375, wR2 = 0.0747	
R indices (all data)	R1 = 0.0510, wR2 = 0.0802	
Absolute structure parameter	-1.7(17)	
Extinction coefficient	n/a	
Largest diff. peak and hole	0.147 and -0.211 e.$Å^{-3}$	

Table S7. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters ($Å^2$x 10^3) for 170929LT. U(eq) is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	U(eq)
O(1)	8573(1)	12185(5)	6294(1)	28(1)
O(2)	11520(1)	12421(5)	4790(1)	22(1)

O(3)	11722(1)	10118(5)	3923(1)	21(1)
N(1)	10295(2)	6371(5)	3625(1)	15(1)
C(1)	7812(2)	10168(8)	6180(1)	30(1)
C(2)	9297(2)	12156(7)	5903(1)	22(1)
C(3)	9268(2)	10583(7)	5383(1)	19(1)
C(4)	10048(2)	10757(6)	5020(1)	17(1)
C(5)	10300(2)	9439(7)	4469(1)	15(1)
C(6)	9840(2)	7400(7)	4103(1)	15(1)
C(7)	9940(2)	4304(6)	3232(1)	15(1)
C(8)	10485(2)	3318(6)	2764(1)	16(1)
C(9)	10085(2)	1257(7)	2382(1)	20(1)
C(10)	9179(2)	142(7)	2456(1)	21(1)
C(11)	10804(2)	12496(7)	5197(1)	20(1)
C(12)	11215(2)	10544(6)	4342(1)	18(1)
C(13)	11464(2)	4482(7)	2688(1)	21(1)
C(14)	8657(2)	1107(7)	2917(1)	19(1)
C(15)	9030(2)	3193(6)	3315(1)	16(1)
C(16)	8530(2)	4288(7)	3808(1)	18(1)
C(17)	8909(2)	6273(7)	4183(1)	17(1)
C(18)	10844(2)	14051(7)	5712(1)	25(1)
C(19)	10073(2)	13878(7)	6066(1)	26(1)

Table S8. Bond lengths [Å] and angles [°] for 170929LT.

O(1)-C(2)	1.380(4)
O(1)-C(1)	1.427(4)
O(2)-C(12)	1.392(4)
O(2)-C(11)	1.398(3)
O(3)-C(12)	1.231(3)
N(1)-C(6)	1.363(3)
N(1)-C(7)	1.378(4)
N(1)-H(5)	0.8800
C(1)-H(3)	0.9800
C(1)-H(1)	0.9800
C(1)-H(15)	0.9800

C(2)-C(3)	1.387(4)
C(2)-C(19)	1.396(5)
C(3)-C(4)	1.406(4)
C(3)-H(4)	0.9500
C(4)-C(11)	1.386(4)
C(4)-C(5)	1.446(4)
C(5)-C(6)	1.393(4)
C(5)-C(12)	1.431(4)
C(6)-C(17)	1.438(4)
C(7)-C(8)	1.408(4)
C(7)-C(15)	1.408(4)
C(8)-C(9)	1.384(4)
C(8)-C(13)	1.507(4)
C(9)-C(10)	1.401(4)
C(9)-H(12)	0.9500
C(10)-C(14)	1.373(4)
C(10)-H(2)	0.9500
C(11)-C(18)	1.373(4)
C(13)-H(6)	0.9800
C(13)-H(7)	0.9800
C(13)-H(8)	0.9800
C(14)-C(15)	1.400(4)
C(14)-H(9)	0.9500
C(15)-C(16)	1.432(4)
C(16)-C(17)	1.341(4)
C(16)-H(10)	0.9500
C(17)-H(11)	0.9500
C(18)-C(19)	1.383(5)
C(18)-H(13)	0.9500
C(19)-H(14)	0.9500

C(2)-O(1)-C(1)	116.9(2)
C(12)-O(2)-C(11)	106.5(2)
C(6)-N(1)-C(7)	125.0(2)
C(6)-N(1)-H(5)	117.5
C(7)-N(1)-H(5)	117.5

O(1)-C(1)-H(3)	109.5
O(1)-C(1)-H(1)	109.5
H(3)-C(1)-H(1)	109.5
O(1)-C(1)-H(15)	109.5
H(3)-C(1)-H(15)	109.5
H(1)-C(1)-H(15)	109.5
O(1)-C(2)-C(3)	123.5(3)
O(1)-C(2)-C(19)	114.9(3)
C(3)-C(2)-C(19)	121.6(3)
C(2)-C(3)-C(4)	118.1(3)
C(2)-C(3)-H(4)	120.9
C(4)-C(3)-H(4)	120.9
C(11)-C(4)-C(3)	118.5(3)
C(11)-C(4)-C(5)	106.3(2)
C(3)-C(4)-C(5)	135.2(3)
C(6)-C(5)-C(12)	121.6(2)
C(6)-C(5)-C(4)	132.1(3)
C(12)-C(5)-C(4)	106.2(2)
N(1)-C(6)-C(5)	118.5(2)
N(1)-C(6)-C(17)	116.1(2)
C(5)-C(6)-C(17)	125.4(3)
N(1)-C(7)-C(8)	120.1(3)
N(1)-C(7)-C(15)	118.6(2)
C(8)-C(7)-C(15)	121.3(3)
C(9)-C(8)-C(7)	117.3(3)
C(9)-C(8)-C(13)	122.1(3)
C(7)-C(8)-C(13)	120.6(3)
C(8)-C(9)-C(10)	122.2(3)
C(8)-C(9)-H(12)	118.9
C(10)-C(9)-H(12)	118.9
C(14)-C(10)-C(9)	119.9(3)
C(14)-C(10)-H(2)	120.0
C(9)-C(10)-H(2)	120.0
C(18)-C(11)-C(4)	124.0(3)
C(18)-C(11)-O(2)	124.5(3)
C(4)-C(11)-O(2)	111.5(2)

O(3)-C(12)-O(2)	119.4(2)
O(3)-C(12)-C(5)	131.1(3)
O(2)-C(12)-C(5)	109.5(2)
C(8)-C(13)-H(6)	109.5
C(8)-C(13)-H(7)	109.5
H(6)-C(13)-H(7)	109.5
C(8)-C(13)-H(8)	109.5
H(6)-C(13)-H(8)	109.5
H(7)-C(13)-H(8)	109.5
C(10)-C(14)-C(15)	120.1(3)
C(10)-C(14)-H(9)	119.9
C(15)-C(14)-H(9)	119.9
C(14)-C(15)-C(7)	119.2(3)
C(14)-C(15)-C(16)	123.3(3)
C(7)-C(15)-C(16)	117.5(3)
C(17)-C(16)-C(15)	121.8(3)
C(17)-C(16)-H(10)	119.1
C(15)-C(16)-H(10)	119.1
C(16)-C(17)-C(6)	121.0(3)
C(16)-C(17)-H(11)	119.5
C(6)-C(17)-H(11)	119.5
C(11)-C(18)-C(19)	117.2(3)
C(11)-C(18)-H(13)	121.4
C(19)-C(18)-H(13)	121.4
C(18)-C(19)-C(2)	120.6(3)
C(18)-C(19)-H(14)	119.7
C(2)-C(19)-H(14)	119.7

Symmetry transformations used to generate equivalent atoms:

Table S9. Anisotropic displacement parameters ($Å^2 x\ 10^3$) for 170929LT. The anisotropic displacement factor exponent takes the form: $-2\pi^2[\ h^2\ a^{*2}U^{11} + ... + 2\ h\ k\ a^*\ b^*\ U^{12}\ ]$

	U^{11}	U^{22}	U^{33}	U^{23}	U^{13}	U^{12}
O(1)	36(1)	30(1)	19(1)	-2(1)	7(1)	6(1)

O(2)	18(1)	24(1)	22(1)	-4(1)	-3(1)	-3(1)
O(3)	15(1)	24(1)	24(1)	1(1)	2(1)	0(1)
N(1)	11(1)	15(1)	19(1)	0(1)	0(1)	0(1)
C(1)	32(2)	34(2)	23(2)	1(2)	10(2)	5(2)
C(2)	32(2)	18(2)	14(2)	2(1)	1(1)	7(1)
C(3)	20(1)	17(2)	21(2)	1(1)	-2(1)	4(1)
C(4)	22(2)	14(1)	16(2)	2(1)	-4(1)	4(1)
C(5)	14(1)	15(1)	16(2)	1(1)	0(1)	2(1)
C(6)	12(1)	14(1)	18(2)	5(1)	2(1)	3(1)
C(7)	16(1)	14(1)	13(2)	2(1)	-2(1)	2(1)
C(8)	20(1)	13(1)	16(2)	5(1)	0(1)	3(1)
C(9)	26(2)	18(2)	16(2)	0(1)	-2(1)	6(1)
C(10)	29(2)	16(2)	19(2)	-2(1)	-9(1)	3(1)
C(11)	20(2)	19(2)	19(2)	2(1)	-1(1)	2(1)
C(12)	17(1)	15(2)	22(2)	2(1)	-3(1)	1(1)
C(13)	20(1)	24(2)	19(2)	0(1)	3(1)	5(1)
C(14)	20(1)	16(2)	22(2)	3(1)	-6(1)	-2(1)
C(15)	18(1)	12(1)	19(2)	3(1)	-4(1)	4(1)
C(16)	13(1)	19(1)	21(2)	5(1)	1(1)	-2(1)
C(17)	16(1)	17(1)	17(2)	-1(1)	2(1)	2(1)
C(18)	33(2)	19(2)	22(2)	-3(1)	-7(2)	-2(1)
C(19)	42(2)	19(2)	16(2)	-2(1)	-4(2)	5(2)

Table S10. Hydrogen coordinates (x 10^4) and isotropic displacement parameters ($Å^2$x 10^3) for 170929LT.

	x	y	z	U(eq)
H(5)	10859	7082	3562	18
H(3)	7530	10706	5809	45
H(1)	7347	10374	6486	45
H(15)	8036	8039	6167	45
H(4)	8736	9421	5276	23
H(12)	10437	575	2060	24

H(2)	8927	-1282	2188	26
H(6)	11743	3520	2346	31
H(7)	11833	3960	3029	31
H(8)	11454	6721	2637	31
H(9)	8041	359	2966	23
H(10)	7912	3590	3871	21
H(11)	8558	6943	4506	20
H(13)	11379	15197	5819	30
H(14)	10071	14941	6424	31

(c) X-Ray Data of Compound Au-1:

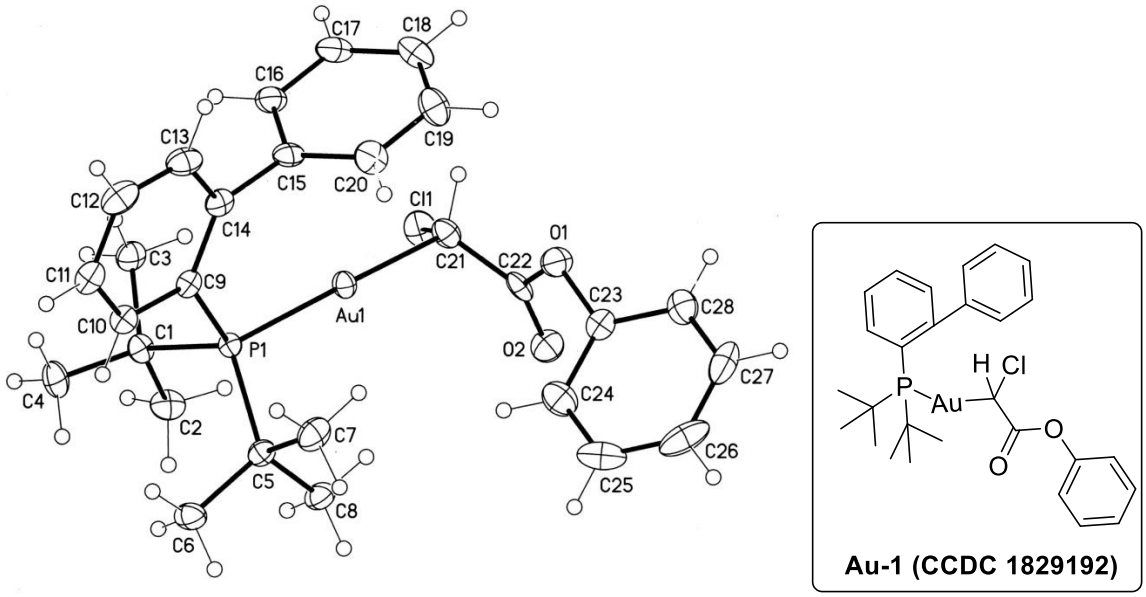


Table S11. Crystal data and structure refinement for 170934LT_0M_A.

Identification code	170934lt_0m_a	
Empirical formula	C28 H33 Au Cl O2 P	
Formula weight	664.93	
Temperature	100(2) K	
Wavelength	0.71073 Å	
Crystal system	Triclinic	
Space group	P -1	
Unit cell dimensions	a = 9.2179(4) Å	α= 100.062(2)°.
	b = 10.4777(5) Å	β= 92.031(2)°.

	c = 14.2247(7) Å γ = 103.287(2)°.
Volume	1312.41(11) $Å^3$
Z	2
Density (calculated)	1.683 Mg/m^3
Absorption coefficient	5.790 mm^{-1}
F(000)	656
Crystal size	0.10 x 0.08 x 0.02 mm^3
Theta range for data collection	1.458 to 26.432°.
Index ranges	-11<=h<=11, -13<=k<=13, -17<=l<=17
Reflections collected	19696
Independent reflections	5361 [R(int) = 0.0197]
Completeness to theta = 25.242°	99.7 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.9485 and 0.7527
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	5361 / 0 / 304
Goodness-of-fit on F^2	1.137
Final R indices [I>2sigma(I)]	R1 = 0.0186, wR2 = 0.0442
R indices (all data)	R1 = 0.0196, wR2 = 0.0480
Extinction coefficient	n/a
Largest diff. peak and hole	1.390 and -0.666 $e.Å^{-3}$

Table S12. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters ($Å^2$x 10^3) for 170934LT_0M_A. U(eq) is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	U(eq)
Au(1)	3140(1)	5408(1)	6972(1)	17(1)
C(1)	2097(3)	2113(3)	6056(2)	18(1)
C(2)	2330(4)	2483(4)	5063(2)	24(1)
C(3)	575(3)	2337(3)	6360(2)	22(1)
C(4)	2074(4)	639(3)	6001(2)	25(1)
C(5)	5537(3)	3355(3)	6690(2)	18(1)
C(6)	5907(4)	2010(3)	6323(2)	24(1)
C(7)	6483(4)	4054(4)	7629(2)	27(1)
C(8)	5959(4)	4232(3)	5930(2)	23(1)

C(9)	3258(3)	2718(3)	8088(2)	17(1)
C(10)	3610(3)	1508(3)	8177(2)	19(1)
C(11)	3443(4)	990(3)	9009(2)	23(1)
C(12)	2904(4)	1681(4)	9784(2)	28(1)
C(13)	2555(4)	2875(4)	9714(2)	26(1)
C(14)	2717(3)	3418(3)	8882(2)	19(1)
C(15)	2301(3)	4726(3)	8930(2)	20(1)
C(16)	850(4)	4779(4)	8661(2)	24(1)
C(17)	438(4)	5986(4)	8794(2)	28(1)
C(18)	1456(4)	7153(4)	9208(3)	31(1)
C(19)	2898(4)	7116(4)	9481(3)	31(1)
C(20)	3315(4)	5909(4)	9347(2)	26(1)
C(21)	2721(4)	7275(3)	6875(2)	21(1)
C(22)	4155(4)	8173(3)	6815(2)	20(1)
C(23)	6431(4)	9040(3)	7805(2)	21(1)
C(24)	7236(4)	8114(4)	7464(2)	30(1)
C(25)	8771(4)	8457(5)	7630(3)	37(1)
C(26)	9491(4)	9721(5)	8135(3)	41(1)
C(27)	8653(4)	10631(4)	8468(3)	34(1)
C(28)	7136(4)	10298(3)	8296(2)	26(1)
Cl(1)	1428(1)	7116(1)	5867(1)	28(1)
O(1)	4864(3)	8669(2)	7727(2)	25(1)
O(2)	4749(3)	8478(2)	6111(2)	26(1)
P(1)	3533(1)	3323(1)	6952(1)	14(1)

Table S13. Bond lengths [Å] and angles [°] for 170934LT_0M_A.

Au(1)-C(21)	2.105(3)
Au(1)-P(1)	2.2911(8)
C(1)-C(4)	1.528(4)
C(1)-C(2)	1.538(4)
C(1)-C(3)	1.539(4)
C(1)-P(1)	1.879(3)
C(2)-H(2A)	0.9800
C(2)-H(2B)	0.9800

C(2)-H(2C)	0.9800
C(3)-H(3A)	0.9800
C(3)-H(3B)	0.9800
C(3)-H(3C)	0.9800
C(4)-H(4A)	0.9800
C(4)-H(4B)	0.9800
C(4)-H(4C)	0.9800
C(5)-C(6)	1.533(4)
C(5)-C(7)	1.537(4)
C(5)-C(8)	1.542(4)
C(5)-P(1)	1.891(3)
C(6)-H(6A)	0.9800
C(6)-H(6B)	0.9800
C(6)-H(6C)	0.9800
C(7)-H(7A)	0.9800
C(7)-H(7B)	0.9800
C(7)-H(7C)	0.9800
C(8)-H(8A)	0.9800
C(8)-H(8B)	0.9800
C(8)-H(8C)	0.9800
C(9)-C(10)	1.403(4)
C(9)-C(14)	1.408(4)
C(9)-P(1)	1.841(3)
C(10)-C(11)	1.386(4)
C(10)-H(10)	0.9500
C(11)-C(12)	1.382(5)
C(11)-H(11)	0.9500
C(12)-C(13)	1.380(5)
C(12)-H(12)	0.9500
C(13)-C(14)	1.398(4)
C(13)-H(13)	0.9500
C(14)-C(15)	1.497(5)
C(15)-C(20)	1.390(5)
C(15)-C(16)	1.395(4)
C(16)-C(17)	1.387(5)
C(16)-H(16)	0.9500

C(17)-C(18)	1.380(5)
C(17)-H(17)	0.9500
C(18)-C(19)	1.383(5)
C(18)-H(18)	0.9500
C(19)-C(20)	1.388(5)
C(19)-H(19)	0.9500
C(20)-H(20)	0.9500
C(21)-C(22)	1.450(5)
C(21)-Cl(1)	1.791(3)
C(21)-H(21)	1.0000
C(22)-O(2)	1.214(4)
C(22)-O(1)	1.389(4)
C(23)-C(28)	1.378(5)
C(23)-C(24)	1.385(5)
C(23)-O(1)	1.402(4)
C(24)-C(25)	1.378(5)
C(24)-H(24)	0.9500
C(25)-C(26)	1.392(6)
C(25)-H(25)	0.9500
C(26)-C(27)	1.392(6)
C(26)-H(26)	0.9500
C(27)-C(28)	1.364(5)
C(27)-H(27)	0.9500
C(28)-H(28)	0.9500

C(21)-Au(1)-P(1)	175.48(9)
C(4)-C(1)-C(2)	109.7(3)
C(4)-C(1)-C(3)	108.5(3)
C(2)-C(1)-C(3)	108.5(3)
C(4)-C(1)-P(1)	115.7(2)
C(2)-C(1)-P(1)	108.6(2)
C(3)-C(1)-P(1)	105.6(2)
C(1)-C(2)-H(2A)	109.5
C(1)-C(2)-H(2B)	109.5
H(2A)-C(2)-H(2B)	109.5
C(1)-C(2)-H(2C)	109.5

H(2A)-C(2)-H(2C)	109.5
H(2B)-C(2)-H(2C)	109.5
C(1)-C(3)-H(3A)	109.5
C(1)-C(3)-H(3B)	109.5
H(3A)-C(3)-H(3B)	109.5
C(1)-C(3)-H(3C)	109.5
H(3A)-C(3)-H(3C)	109.5
H(3B)-C(3)-H(3C)	109.5
C(1)-C(4)-H(4A)	109.5
C(1)-C(4)-H(4B)	109.5
H(4A)-C(4)-H(4B)	109.5
C(1)-C(4)-H(4C)	109.5
H(4A)-C(4)-H(4C)	109.5
H(4B)-C(4)-H(4C)	109.5
C(6)-C(5)-C(7)	110.1(3)
C(6)-C(5)-C(8)	107.3(3)
C(7)-C(5)-C(8)	108.3(3)
C(6)-C(5)-P(1)	117.1(2)
C(7)-C(5)-P(1)	105.7(2)
C(8)-C(5)-P(1)	108.0(2)
C(5)-C(6)-H(6A)	109.5
C(5)-C(6)-H(6B)	109.5
H(6A)-C(6)-H(6B)	109.5
C(5)-C(6)-H(6C)	109.5
H(6A)-C(6)-H(6C)	109.5
H(6B)-C(6)-H(6C)	109.5
C(5)-C(7)-H(7A)	109.5
C(5)-C(7)-H(7B)	109.5
H(7A)-C(7)-H(7B)	109.5
C(5)-C(7)-H(7C)	109.5
H(7A)-C(7)-H(7C)	109.5
H(7B)-C(7)-H(7C)	109.5
C(5)-C(8)-H(8A)	109.5
C(5)-C(8)-H(8B)	109.5
H(8A)-C(8)-H(8B)	109.5
C(5)-C(8)-H(8C)	109.5

H(8A)-C(8)-H(8C)	109.5
H(8B)-C(8)-H(8C)	109.5
C(10)-C(9)-C(14)	117.9(3)
C(10)-C(9)-P(1)	119.0(2)
C(14)-C(9)-P(1)	123.1(2)
C(11)-C(10)-C(9)	122.5(3)
C(11)-C(10)-H(10)	118.7
C(9)-C(10)-H(10)	118.7
C(12)-C(11)-C(10)	119.2(3)
C(12)-C(11)-H(11)	120.4
C(10)-C(11)-H(11)	120.4
C(13)-C(12)-C(11)	119.3(3)
C(13)-C(12)-H(12)	120.4
C(11)-C(12)-H(12)	120.4
C(12)-C(13)-C(14)	122.5(3)
C(12)-C(13)-H(13)	118.8
C(14)-C(13)-H(13)	118.8
C(13)-C(14)-C(9)	118.6(3)
C(13)-C(14)-C(15)	115.6(3)
C(9)-C(14)-C(15)	125.8(3)
C(20)-C(15)-C(16)	118.4(3)
C(20)-C(15)-C(14)	120.2(3)
C(16)-C(15)-C(14)	121.1(3)
C(17)-C(16)-C(15)	120.7(3)
C(17)-C(16)-H(16)	119.7
C(15)-C(16)-H(16)	119.7
C(18)-C(17)-C(16)	120.3(3)
C(18)-C(17)-H(17)	119.8
C(16)-C(17)-H(17)	119.8
C(17)-C(18)-C(19)	119.7(3)
C(17)-C(18)-H(18)	120.2
C(19)-C(18)-H(18)	120.2
C(18)-C(19)-C(20)	120.1(3)
C(18)-C(19)-H(19)	119.9
C(20)-C(19)-H(19)	119.9
C(19)-C(20)-C(15)	120.8(3)

C(19)-C(20)-H(20)	119.6
C(15)-C(20)-H(20)	119.6
C(22)-C(21)-Cl(1)	112.8(2)
C(22)-C(21)-Au(1)	106.9(2)
Cl(1)-C(21)-Au(1)	110.37(16)
C(22)-C(21)-H(21)	108.9
Cl(1)-C(21)-H(21)	108.9
Au(1)-C(21)-H(21)	108.9
O(2)-C(22)-O(1)	121.1(3)
O(2)-C(22)-C(21)	129.2(3)
O(1)-C(22)-C(21)	109.7(3)
C(28)-C(23)-C(24)	121.3(3)
C(28)-C(23)-O(1)	118.4(3)
C(24)-C(23)-O(1)	120.0(3)
C(25)-C(24)-C(23)	119.1(4)
C(25)-C(24)-H(24)	120.4
C(23)-C(24)-H(24)	120.4
C(24)-C(25)-C(26)	119.9(4)
C(24)-C(25)-H(25)	120.0
C(26)-C(25)-H(25)	120.0
C(27)-C(26)-C(25)	119.7(3)
C(27)-C(26)-H(26)	120.2
C(25)-C(26)-H(26)	120.2
C(28)-C(27)-C(26)	120.5(4)
C(28)-C(27)-H(27)	119.8
C(26)-C(27)-H(27)	119.8
C(27)-C(28)-C(23)	119.5(3)
C(27)-C(28)-H(28)	120.3
C(23)-C(28)-H(28)	120.3
C(22)-O(1)-C(23)	117.3(2)
C(9)-P(1)-C(1)	105.15(14)
C(9)-P(1)-C(5)	106.37(13)
C(1)-P(1)-C(5)	114.52(14)
C(9)-P(1)-Au(1)	114.75(10)
C(1)-P(1)-Au(1)	107.44(10)
C(5)-P(1)-Au(1)	108.78(10)

Symmetry transformations used to generate equivalent atoms:

Table S14. Anisotropic displacement parameters ($Å^2 x\ 10^3$) for 170934LT_0M_A. The anisotropic displacement factor exponent takes the form: $-2\pi^2[\ h^2\ a^{*2}U^{11} + ... + 2\ h\ k\ a^*\ b^*\ U^{12}\ ]$

	U^{11}	U^{22}	U^{33}	U^{23}	U^{13}	U^{12}
Au(1)	18(1)	14(1)	19(1)	4(1)	0(1)	5(1)
C(1)	18(2)	18(2)	15(1)	1(1)	-4(1)	3(1)
C(2)	24(2)	33(2)	14(2)	2(1)	-2(1)	8(1)
C(3)	18(2)	25(2)	22(2)	2(1)	-1(1)	3(1)
C(4)	27(2)	18(2)	27(2)	-2(1)	-8(1)	3(1)
C(5)	16(1)	21(2)	19(2)	6(1)	1(1)	4(1)
C(6)	26(2)	25(2)	28(2)	11(1)	9(1)	13(1)
C(7)	19(2)	33(2)	26(2)	5(2)	-2(1)	1(1)
C(8)	22(2)	24(2)	24(2)	9(1)	7(1)	6(1)
C(9)	15(1)	18(2)	15(1)	5(1)	-1(1)	1(1)
C(10)	19(2)	21(2)	18(2)	5(1)	0(1)	4(1)
C(11)	19(2)	26(2)	27(2)	11(1)	-1(1)	4(1)
C(12)	26(2)	41(2)	21(2)	17(2)	2(1)	5(2)
C(13)	25(2)	36(2)	17(2)	5(1)	4(1)	7(1)
C(14)	14(1)	24(2)	17(2)	2(1)	-2(1)	2(1)
C(15)	21(2)	27(2)	12(1)	1(1)	3(1)	7(1)
C(16)	18(2)	28(2)	24(2)	-2(1)	3(1)	5(1)
C(17)	23(2)	35(2)	26(2)	1(2)	6(1)	12(2)
C(18)	40(2)	29(2)	25(2)	-2(2)	4(2)	16(2)
C(19)	38(2)	26(2)	24(2)	-5(1)	-5(2)	5(2)
C(20)	23(2)	30(2)	24(2)	0(1)	-5(1)	6(1)
C(21)	22(2)	20(2)	22(2)	2(1)	-1(1)	9(1)
C(22)	23(2)	14(2)	22(2)	-2(1)	-3(1)	11(1)
C(23)	20(2)	24(2)	20(2)	7(1)	-1(1)	4(1)
C(24)	36(2)	31(2)	22(2)	1(2)	-1(1)	11(2)
C(25)	35(2)	60(3)	26(2)	9(2)	8(2)	28(2)
C(26)	15(2)	77(3)	33(2)	22(2)	2(2)	4(2)
C(27)	36(2)	34(2)	23(2)	9(2)	-1(2)	-12(2)

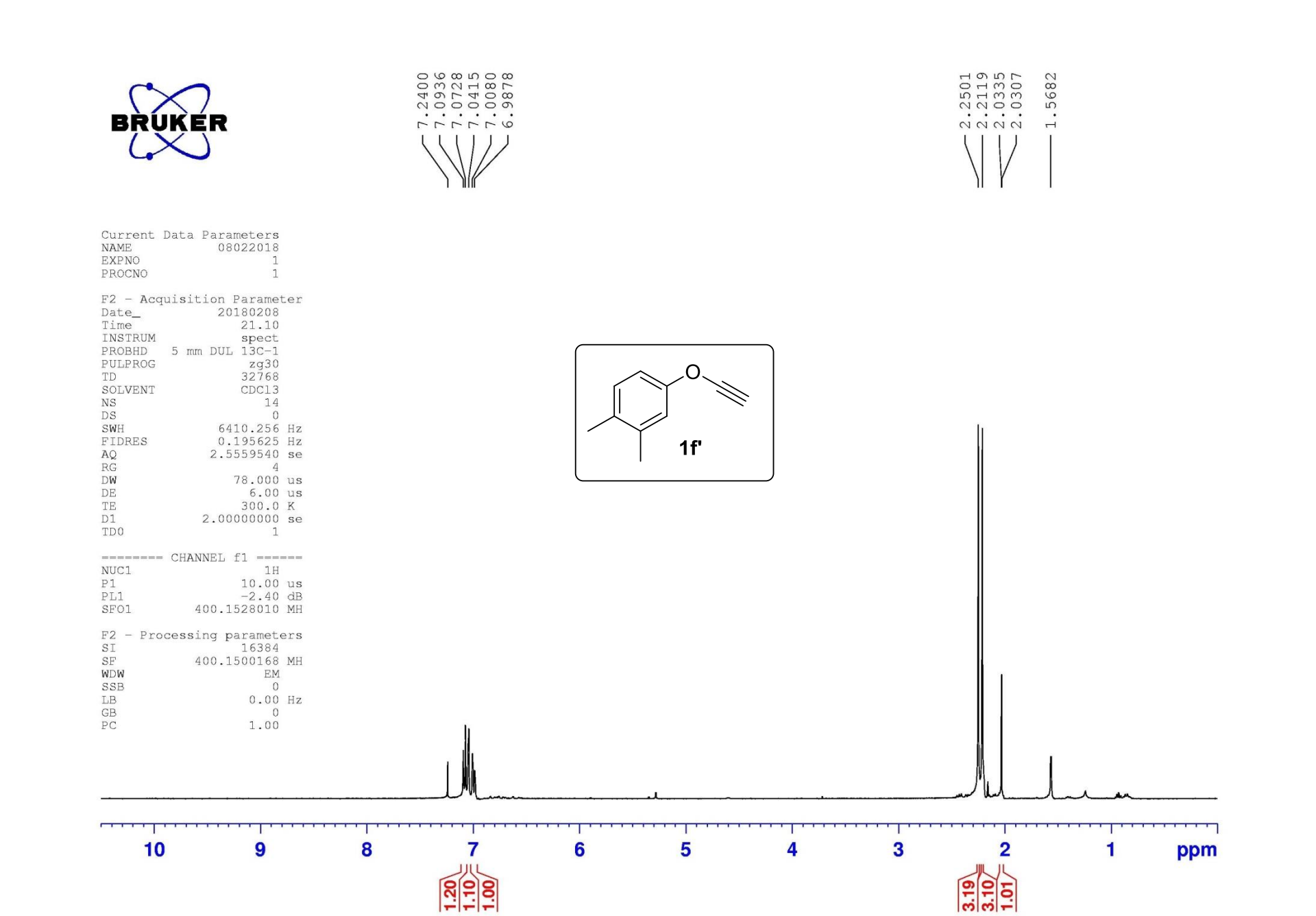
C(28)	32(2)	23(2)	24(2)	8(1)	1(1)	7(1)
Cl(1)	24(1)	26(1)	33(1)	4(1)	-7(1)	9(1)
O(1)	21(1)	29(1)	21(1)	0(1)	1(1)	3(1)
O(2)	27(1)	29(1)	24(1)	7(1)	2(1)	6(1)
P(1)	16(1)	14(1)	13(1)	4(1)	0(1)	4(1)

Table S15. Hydrogen coordinates (x 10^4) and isotropic displacement parameters ($Å^2$x 10^3) for 170934LT_0M_A.

	x	y	z	U(eq)
H(2A)	3242	2254	4829	36
H(2B)	2426	3444	5112	36
H(2C)	1471	1988	4616	36
H(3A)	-224	1758	5900	34
H(3B)	560	3272	6376	34
H(3C)	419	2122	6998	34
H(4A)	1322	94	5496	38
H(4B)	1823	383	6617	38
H(4C)	3060	493	5854	38
H(6A)	6974	2156	6221	36
H(6B)	5316	1583	5717	36
H(6C)	5667	1432	6796	36
H(7A)	6284	3480	8108	41
H(7B)	6223	4902	7865	41
H(7C)	7546	4224	7513	41
H(8A)	7031	4368	5848	35
H(8B)	5722	5098	6138	35
H(8C)	5391	3787	5319	35
H(10)	3978	1027	7646	23
H(11)	3696	170	9047	28
H(12)	2776	1337	10359	34
H(13)	2190	3345	10251	31
H(16)	137	3980	8382	29

H(17)	-551	6010	8600	33
H(18)	1167	7977	9305	37
H(19)	3605	7918	9762	37
H(20)	4306	5892	9541	32
H(21)	2280	7617	7472	25
H(24)	6737	7254	7120	35
H(25)	9338	7832	7401	45
H(26)	10548	9961	8251	50
H(27)	9142	11491	8817	41
H(28)	6568	10927	8514	31

(3) ^{1}H & ^{13}C Spectra OF Key Compounds: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7.0728
7.0415
7.0080
6.9878
2.2501
2.2119
2.0335
2.0307
1.5682
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NAME 08022018
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20180208
Time 21.10
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 14
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 se
RG 4
DW 78.000 us
DE 6.00 us
TE 300.0 K
D1 2.00000000 se
TD0 1
======== CHANNEL f1 ======
NUC1 1H
P1 10.00 us
PL1 -2.40 dB
SFO1 400.1528010 MH
F2 - Processing parameters
SI 16384
SF 400.1500168 MH
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
O
1f'
10
9
8
7
6
5
4
3
2
1
ppm
1.20
1.10
1.00
3.19
3.10
1.01

153.569
138.324
132.847
130.476
115.936
111.993
85.005
77.381
77.064
76.746
32.816
19.989
19.032

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Current Data Parameters
NAME            24032018
EXPNO                  3
PROCNO                 1

F2 - Acquisition Parameters
Date_           20180324
Time               17.54
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                65536
SOLVENT            CDCl3
NS                   102
DS                     0
SWH           22727.273 Hz
FIDRES         0.346791 Hz
AQ             1.4418420 sec
RG                    57
DW               22.000 usec
DE                6.00 usec
TE                300.0 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.70 usec
PL1                 -0.50 dB
SFO1         100.6288660 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                   1H
PCPD2               90.00 usec
PL2                 -2.40 dB
PL12                15.10 dB
PL13                18.10 dB
SFO2         400.1516010 MHz

F2 - Processing parameters
SI                 32768
SF           100.6177980 MHz
WDW                   EM
SSB                    0
LB                  3.00 Hz
GB                     0
PC                  1.00
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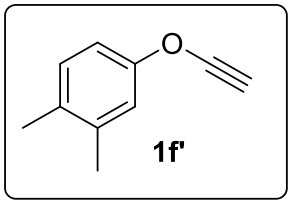

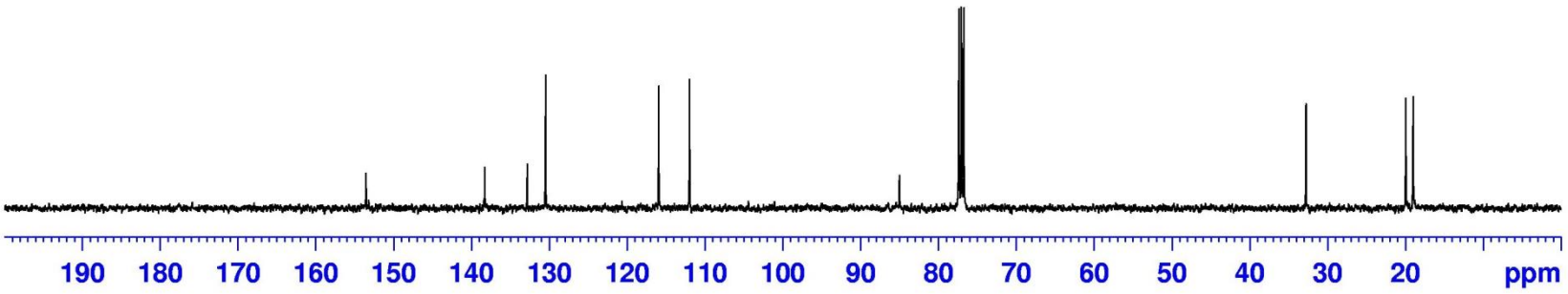

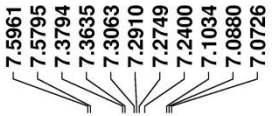

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NAME MDP-115-H.fid
EXPNO 1
PROCNO 1

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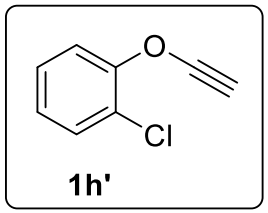
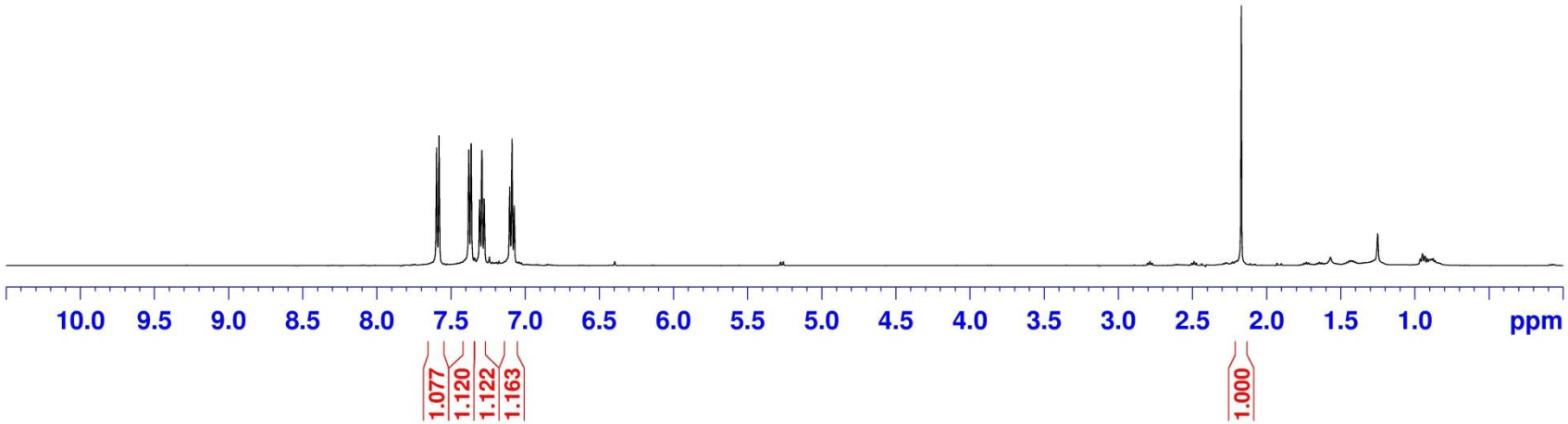
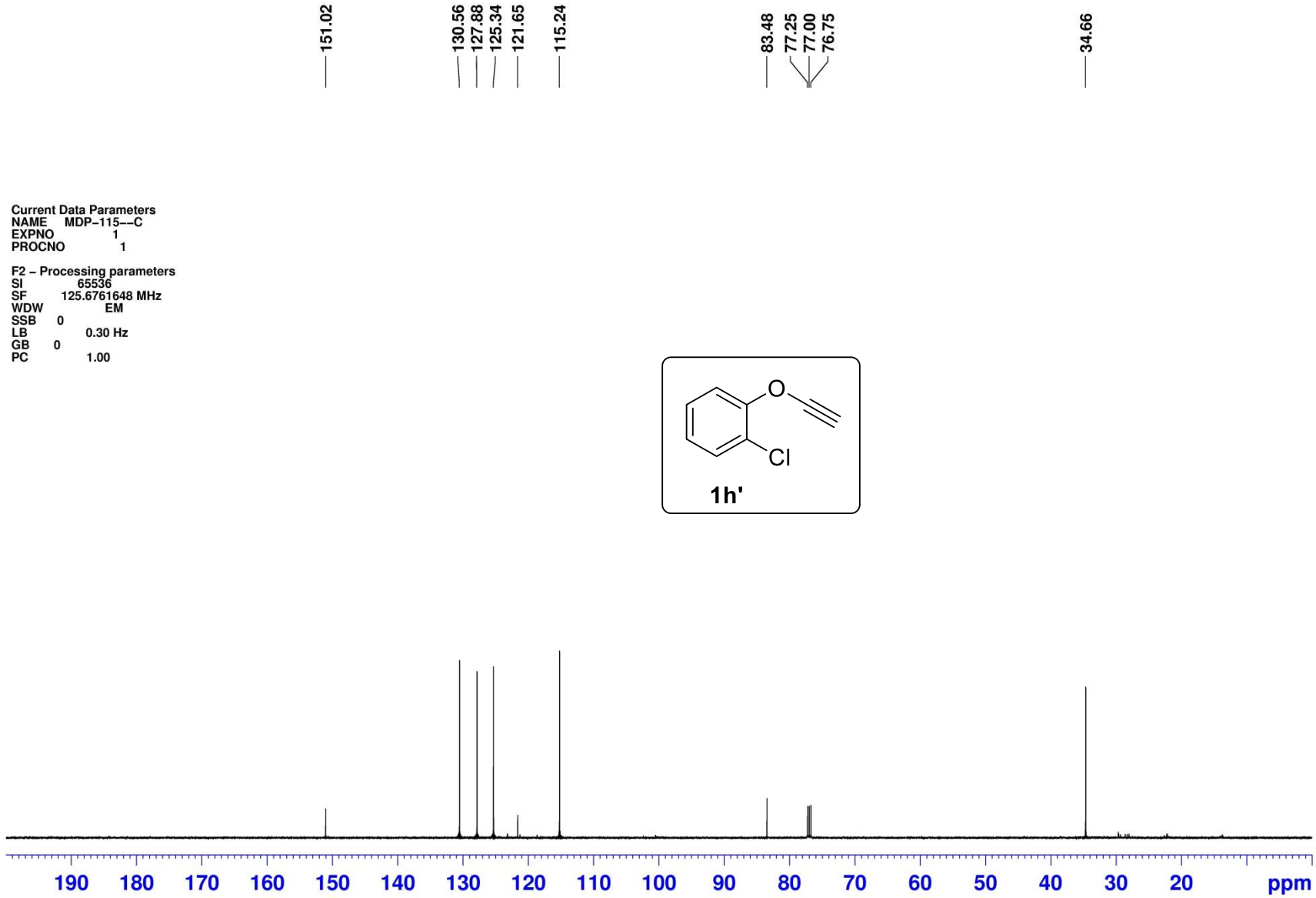
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



1h'

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130.56
127.88
125.34
121.65
115.24
83.48
77.25
77.00
76.75
34.66
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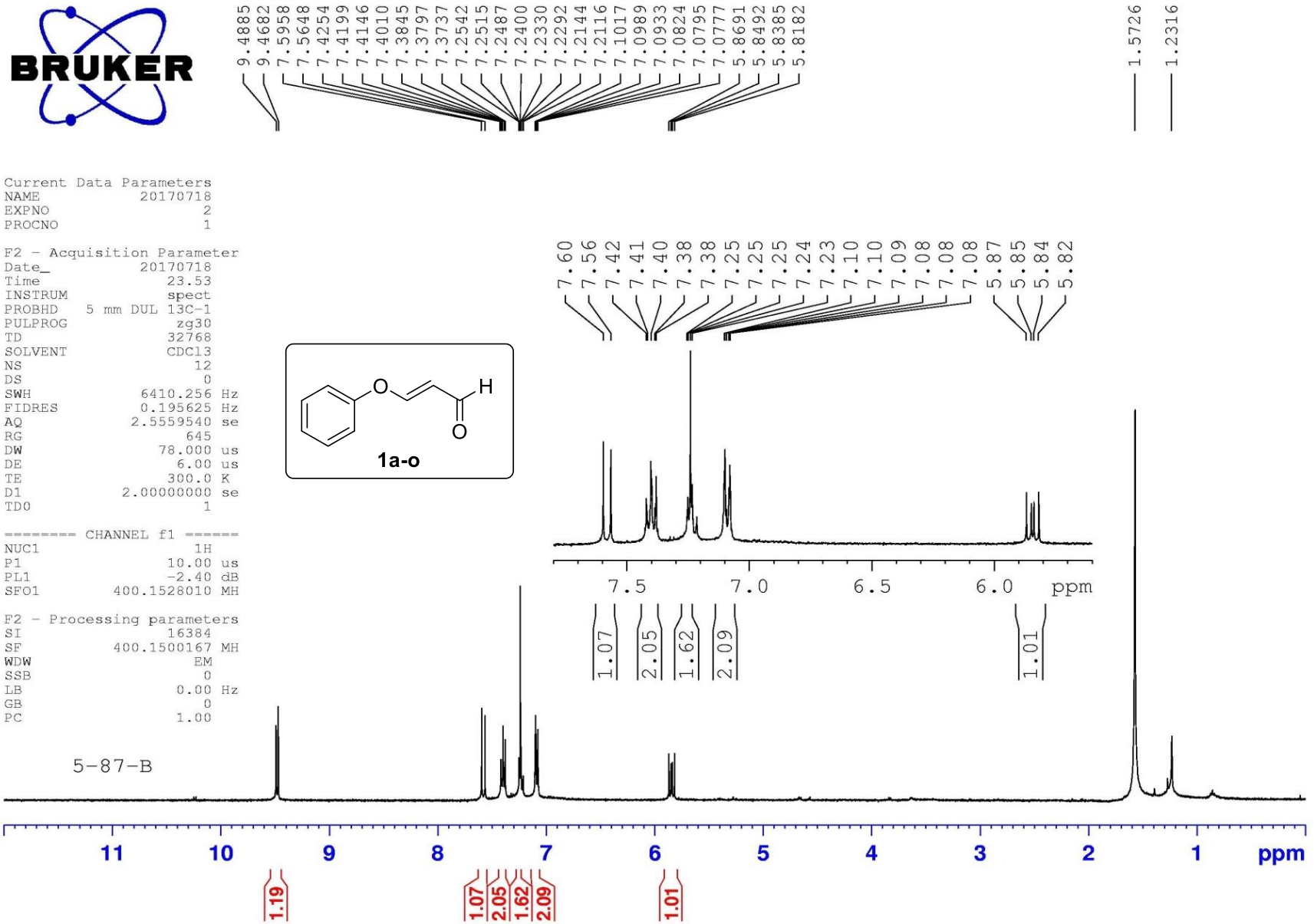
NAME MDP-115--C
EXPNO 1
PROCNO 1
F2 - Processing parameters
SI 65536
SF 125.6761648 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
Cl
1h'
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm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9.4682
7.5958
7.5648
7.4254
7.4199
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7.3845
7.3797
7.3737
7.2542
7.2515
7.2487
7.2400
7.2330
7.2292
7.2144
7.2116
7.1017
7.0989
7.0933
7.0824
7.0795
7.0777
5.8691
5.8492
5.8385
5.8182
1.5726
1.2316
Current Data Parameters
NAME 20170718
EXPNO 2
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170718
Time 23.53
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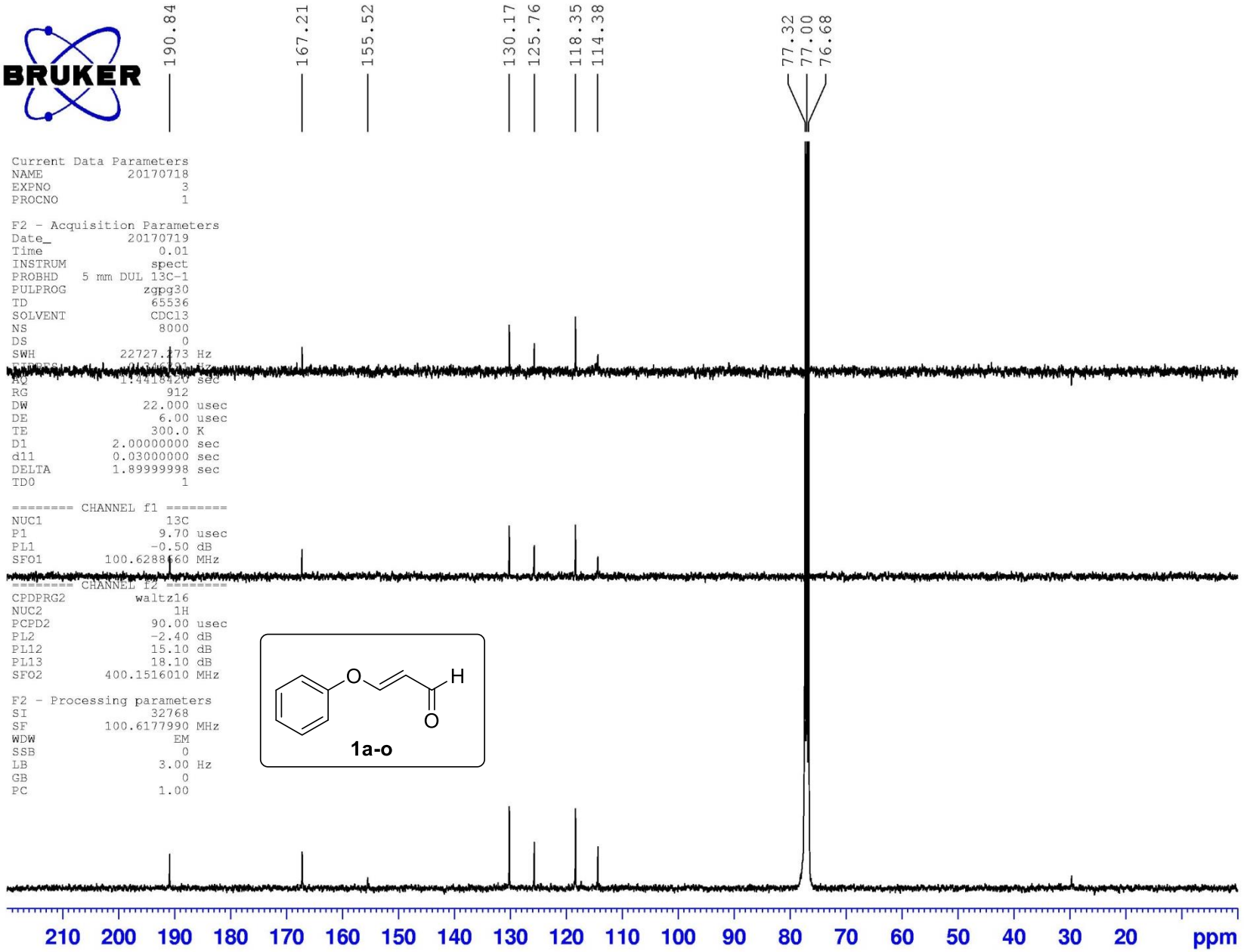
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 12
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 se
RG 645
DW 78.000 us
DE 6.00 us
TE 300.0 K
D1 2.00000000 se
TD0 1
======== CHANNEL f1 ======
NUC1 1H
P1 10.00 us
PL1 -2.40 dB
SFO1 400.1528010 MH
F2 - Processing parameters
SI 16384
SF 400.1500167 MH
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
O
H
O
1a-o
7.60
7.56
7.42
7.41
7.40
7.38
7.38
7.25
7.25
7.25
7.24
7.23
7.10
7.10
7.09
7.08
7.08
7.08
5.87
5.85
5.84
5.82
7.5
7.0
6.5
6.0
ppm
1.07
2.05
1.62
2.09
1.01
5-87-B
11
10
9
8
7
6
5
4
3
2
1
ppm
1.19
1.07
2.05
1.62
2.09
1.01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167.21
155.52
130.17
125.76
118.35
114.38
77.32
77.00
76.68
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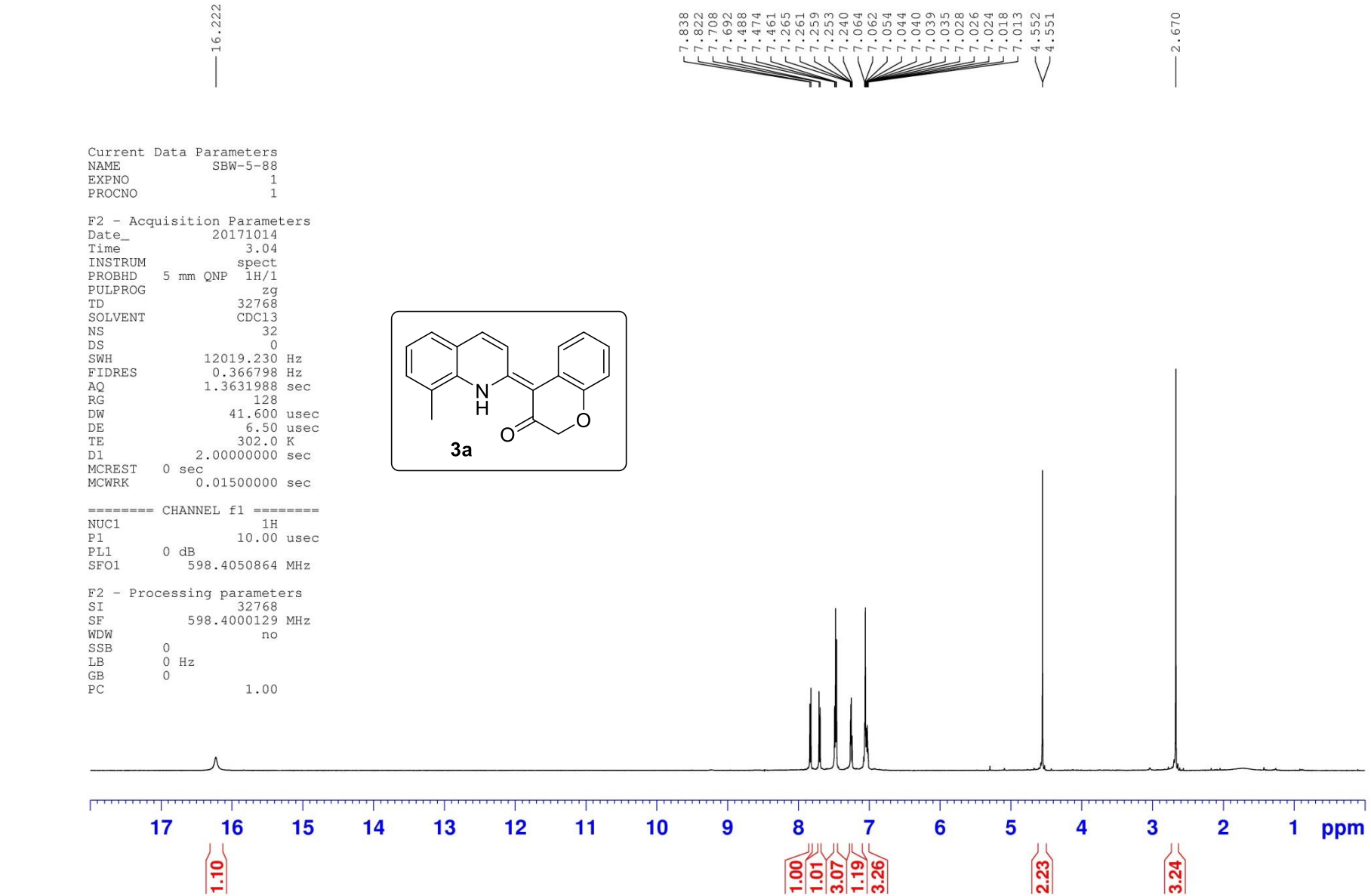
EXPNO 3
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170719
Time 0.01
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 8000
DS 0
SWH 22727.273 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177990 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
O
H
O
1a-o
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm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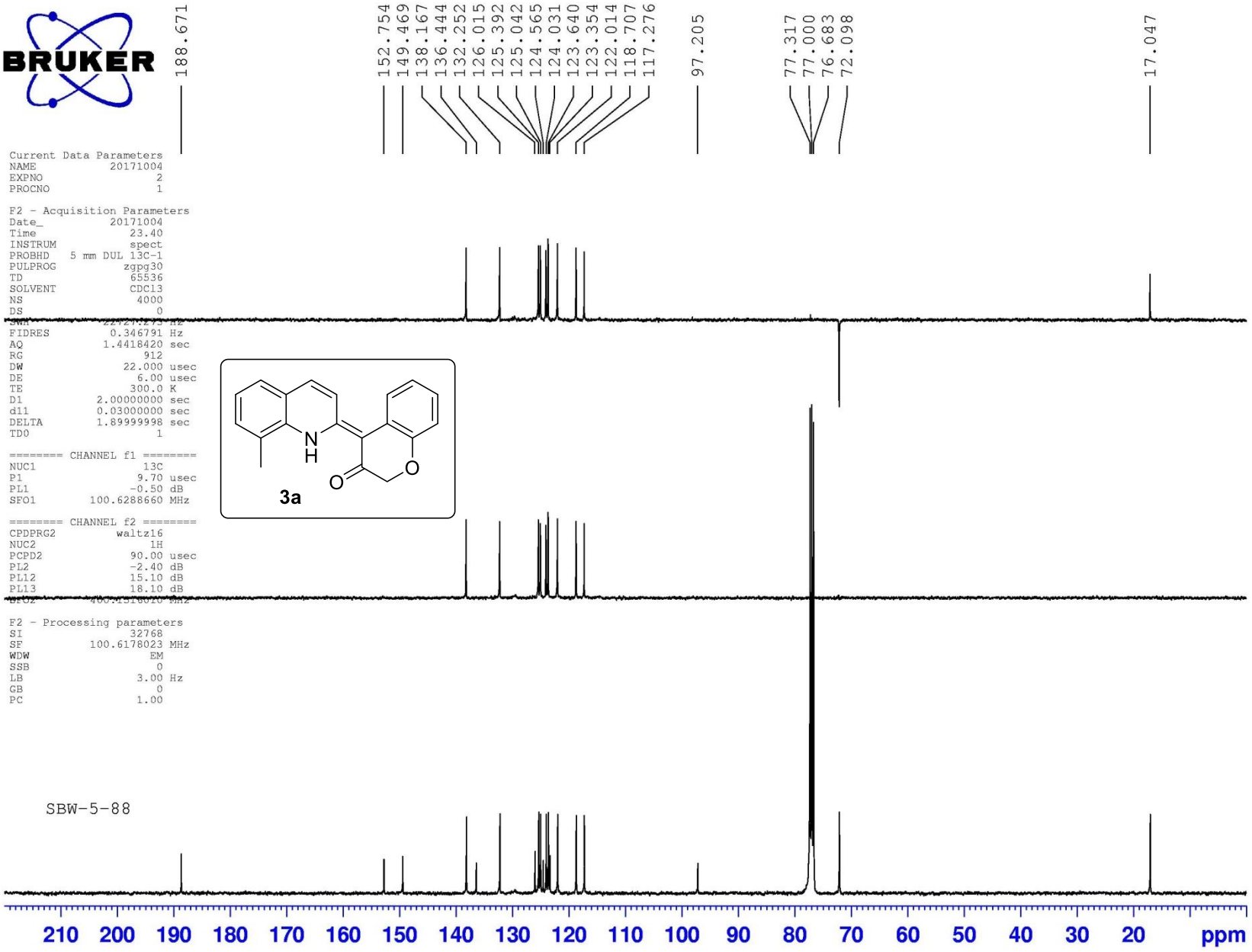
7.822
7.708
7.692
7.488
7.474
7.461
7.265
7.261
7.259
7.253
7.240
7.064
7.062
7.054
7.044
7.040
7.039
7.035
7.028
7.026
7.024
7.018
7.013
4.552
4.551
2.670
Current Data Parameters
NAME SBW-5-88
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171014
Time 3.04
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDC13
NS 32
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 128
DW 41.600 usec
DE 6.50 usec
TE 302.0 K
D1 2.00000000 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 0 dB
SFO1 598.4050864 MHz
F2 - Processing parameters
SI 32768
SF 598.4000129 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00
N
H
O
O
3a
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.10
1.00
1.01
3.07
1.19
3.26
2.23
3.24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136.444
132.252
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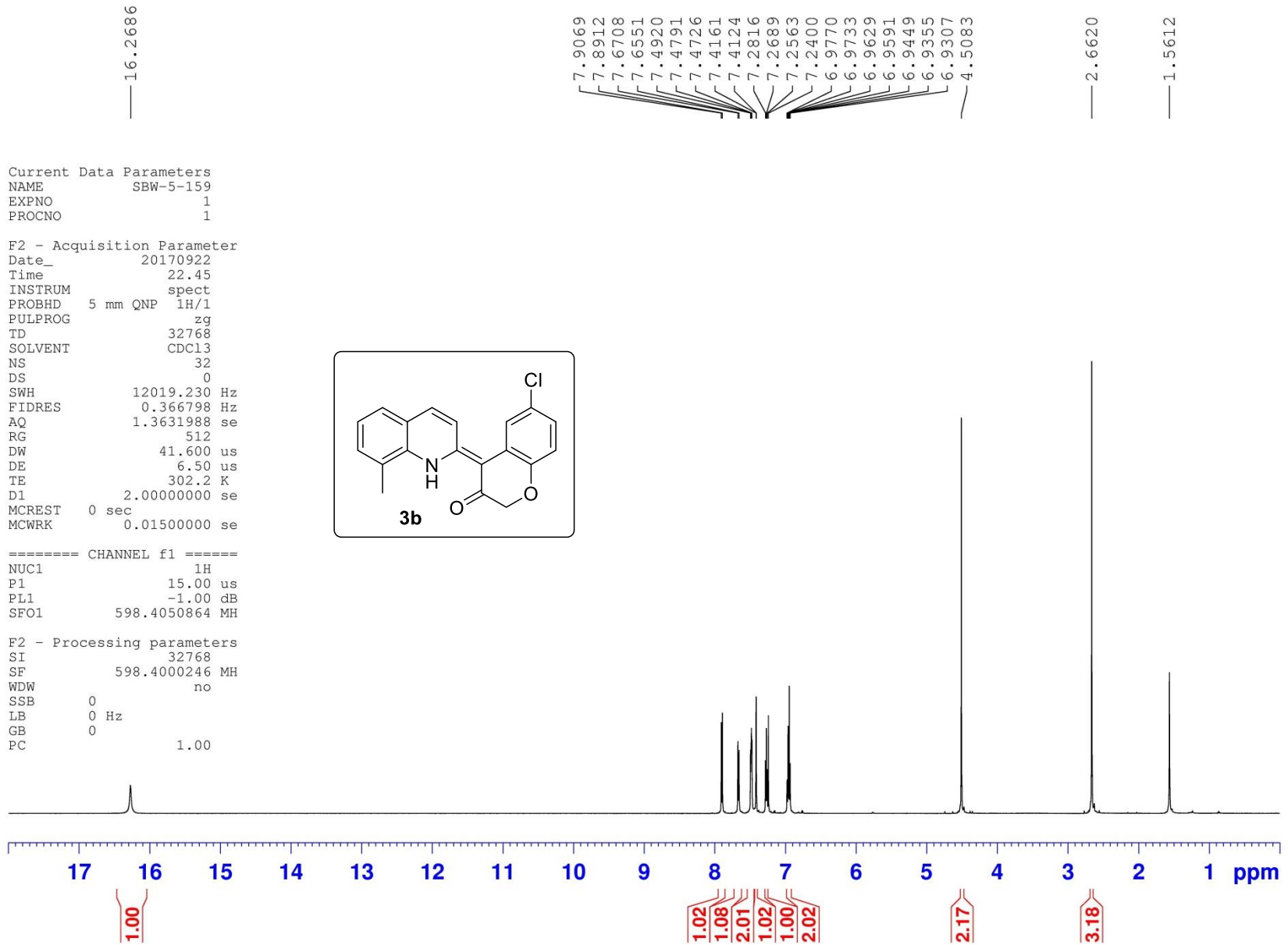
125.392
125.042
124.565
124.031
123.640
123.354
122.014
118.707
117.276
97.205
77.317
77.000
76.683
72.098
17.047
Current Data Parameters
NAME 20171004
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171004
Time 23.40
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 4000
DS 0
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
F2 - Processing parameters
SI 32768
SF 100.6178023 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
N
H
O
O
3a
SBW-5-88
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm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7.8912
7.6708
7.6551
7.4920
7.4791
7.4726
7.4161
7.4124
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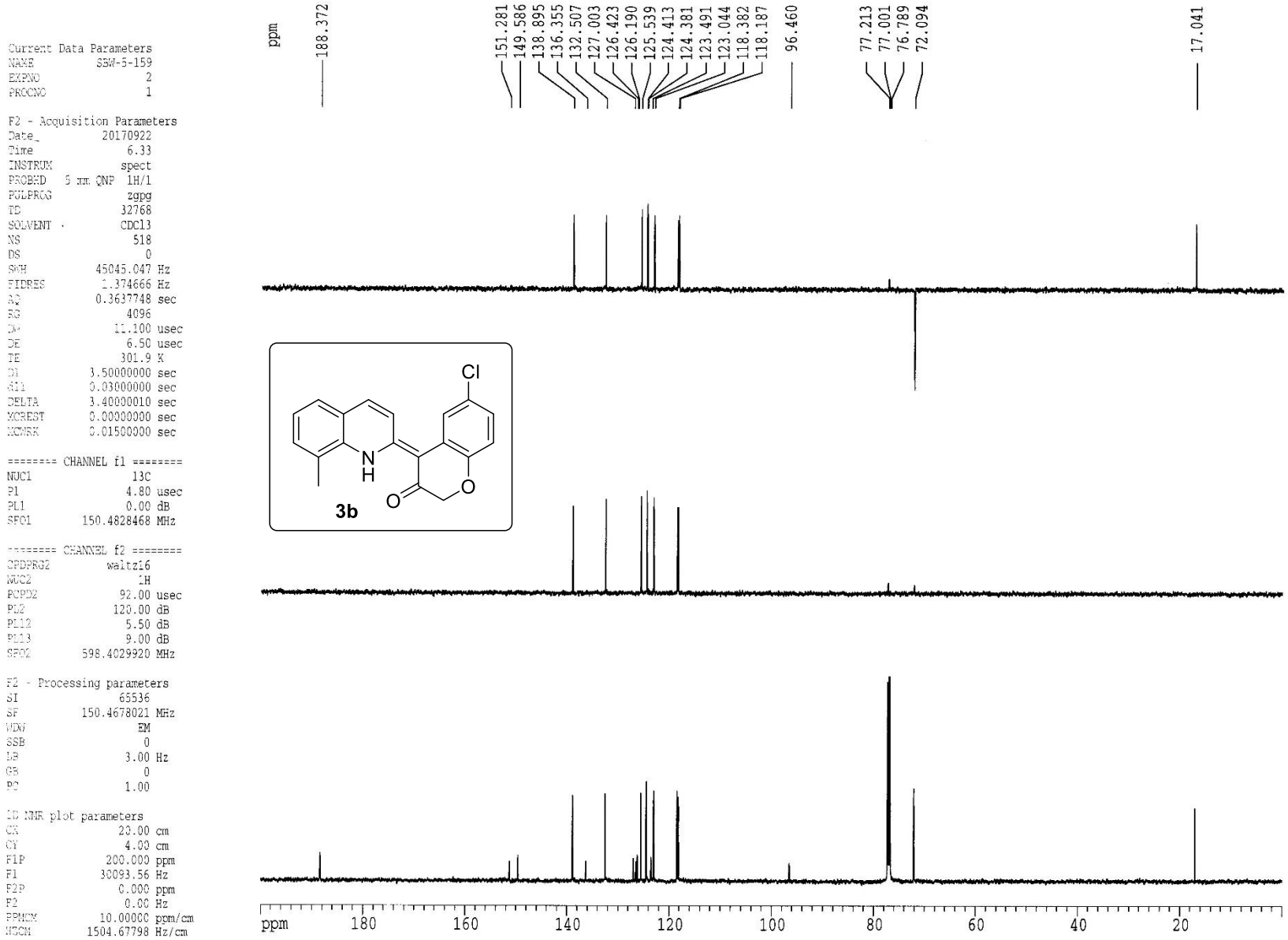
7.2689
7.2563
7.2400
6.9770
6.9733
6.9629
6.9591
6.9449
6.9355
6.9307
4.5083
2.6620
1.5612
Current Data Parameters
NAME SBW-5-159
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170922
Time 22.45
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 se
RG 512
DW 41.600 us
DE 6.50 us
TE 302.2 K
D1 2.00000000 se
MCREST 0 sec
MCWRK 0.01500000 se
======== CHANNEL f1 ======
NUC1 1H
P1 15.00 us
PL1 -1.00 dB
SFO1 598.4050864 MH
F2 - Processing parameters
SI 32768
SF 598.4000246 MH
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00
Cl
N
H
O
O
3b
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.00
1.02
1.08
2.01
1.02
1.00
2.02
2.17
3.18

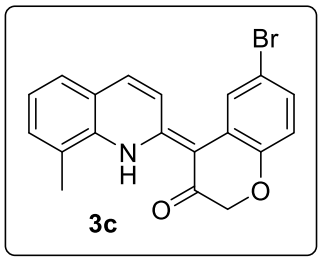

Current Data Parameters
NAME SBW-5-159
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170922
Time 6.33
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 518
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 301.9 K
D1 3.50000000 sec
D11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4828468 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678021 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 4.00 cm
F1P 200.000 ppm
F1 30093.56 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.00000 ppm/cm
HZCM 1504.67798 Hz/cm
ppm
188.372
151.281
149.586
138.895
136.355
132.507
127.003
126.423
126.190
125.539
124.413
124.381
123.491
123.044
118.382
118.187
96.460
77.213
77.001
76.789
72.094
17.041
Cl
N
H
O
O
3b
ppm
180
160
140
120
100
80
60
40
20

SBW-S-111

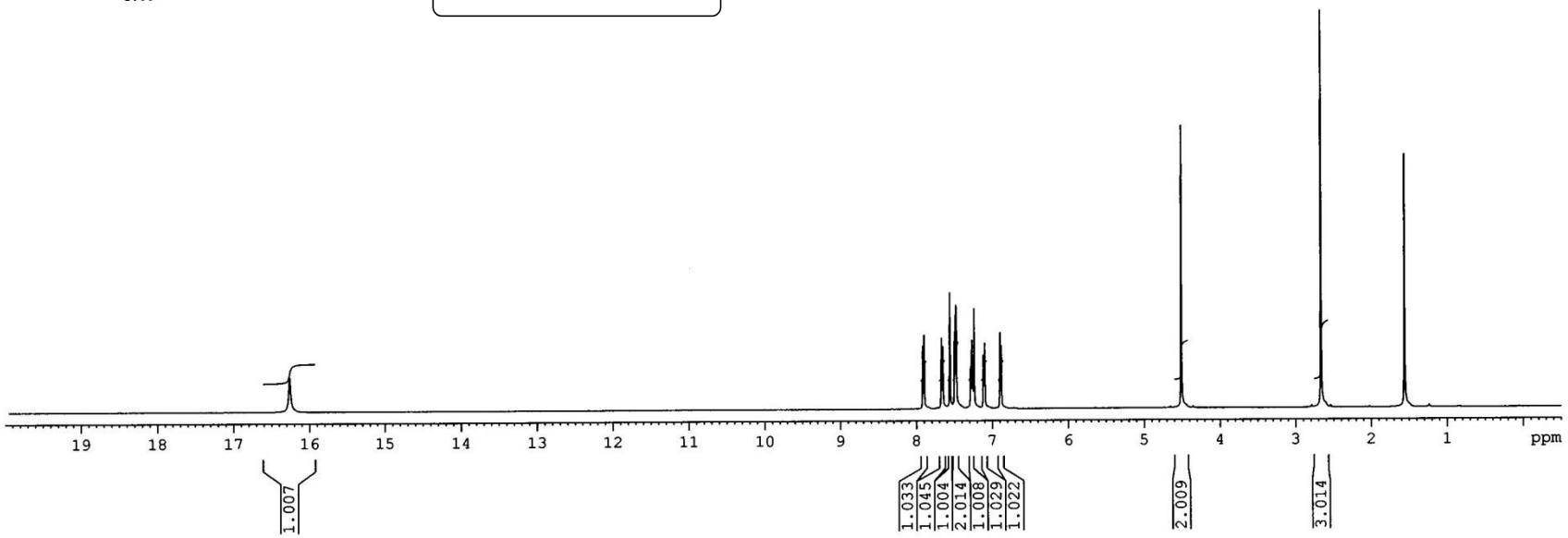
```
Current Data Parameters
NAME          liou0810.002
EXPNO                    5
PROCNO                   1

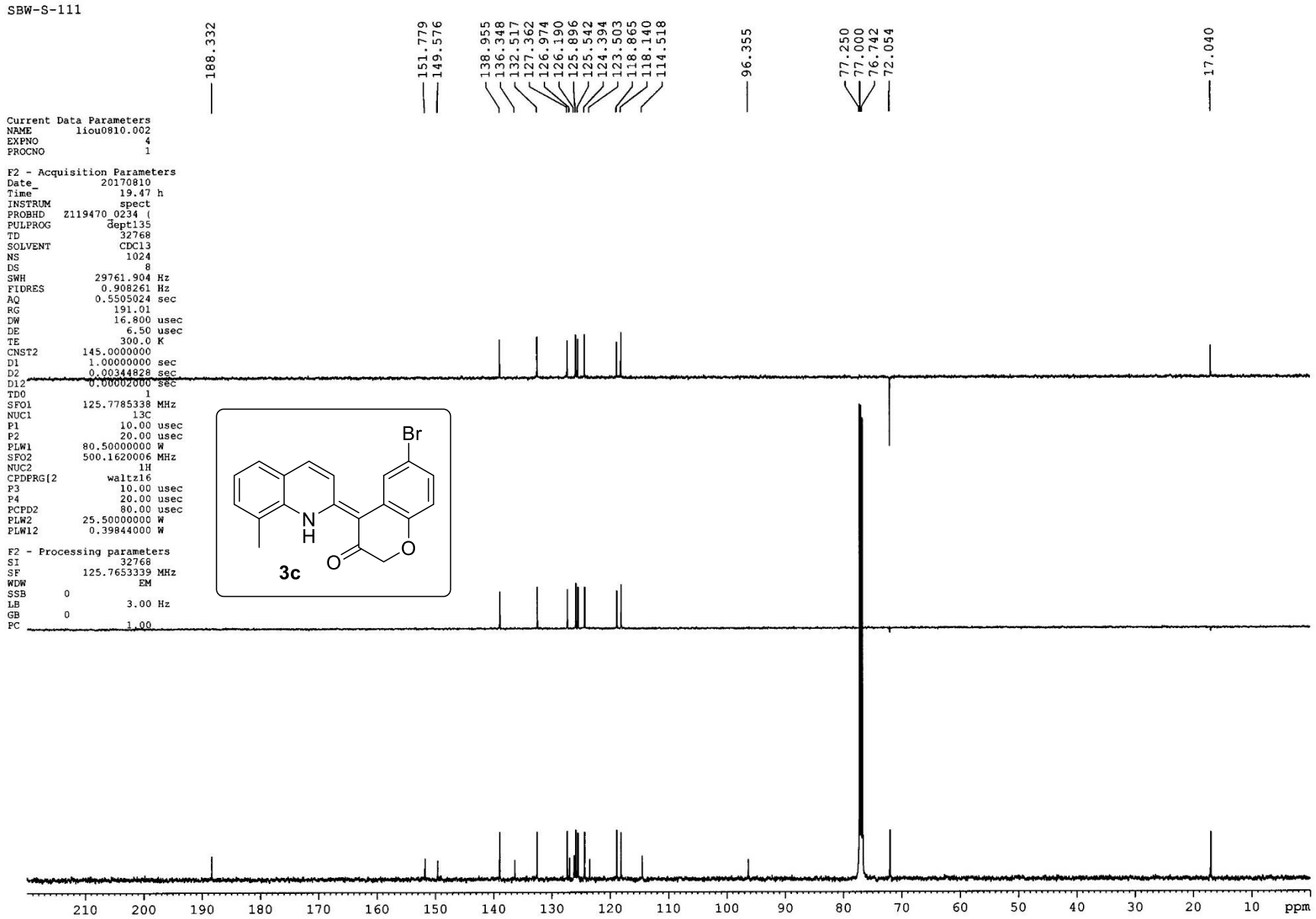
F2 - Acquisition Parameters
Date_              20170810
Time                 16.58 h
INSTRUM              spect
PROBHD    Z119470_0234 (
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     32
DS                      0
SWH              10997.067 Hz
FIDRES           0.335604 Hz
AQ               1.4898517 sec
RG                  154.01
DW                  45.467 usec
DE                    6.88 usec
TE                  299.9 K
D1             2.00000000 sec
TD0                     1
SFO1          500.1645014 MHz
NUC1                   1H
P1                  10.00 usec
PLW1          23.39999962 W

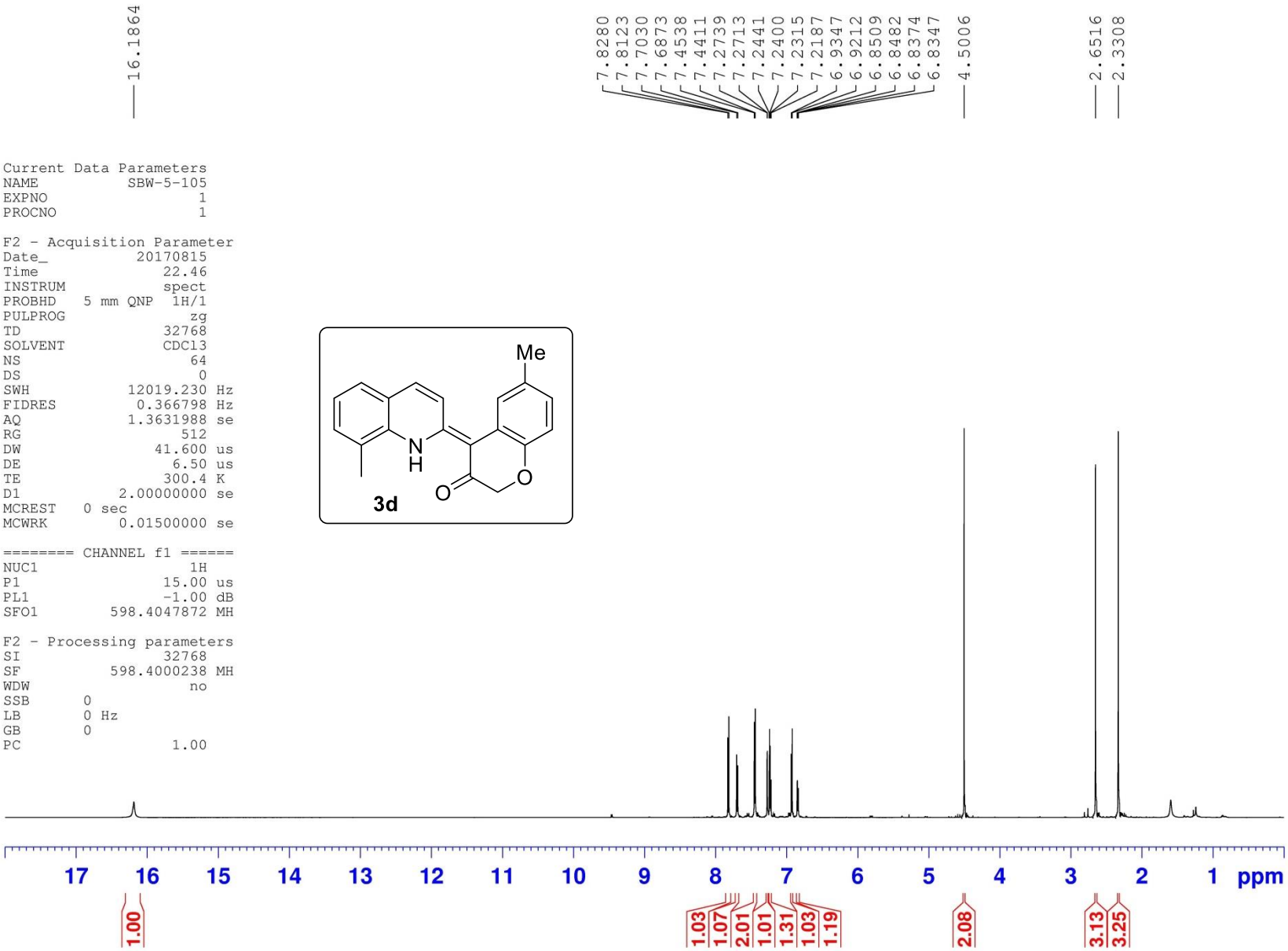
F2 - Processing parameters
SI                  16384
SF            500.1600211 MHz
WDW                    EM
SSB       0
LB                   0.30 Hz
GB        0
PC                   1.00
```

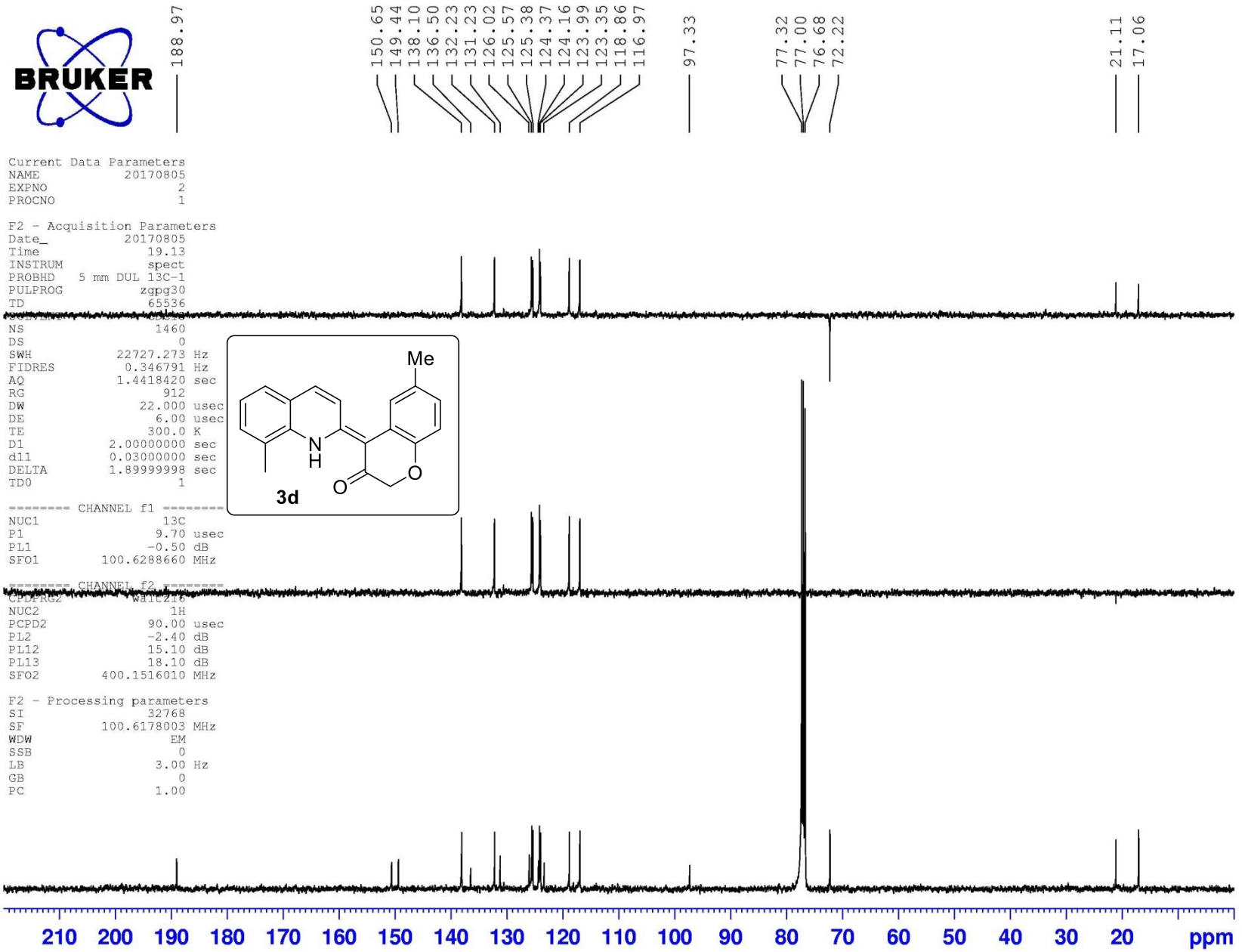


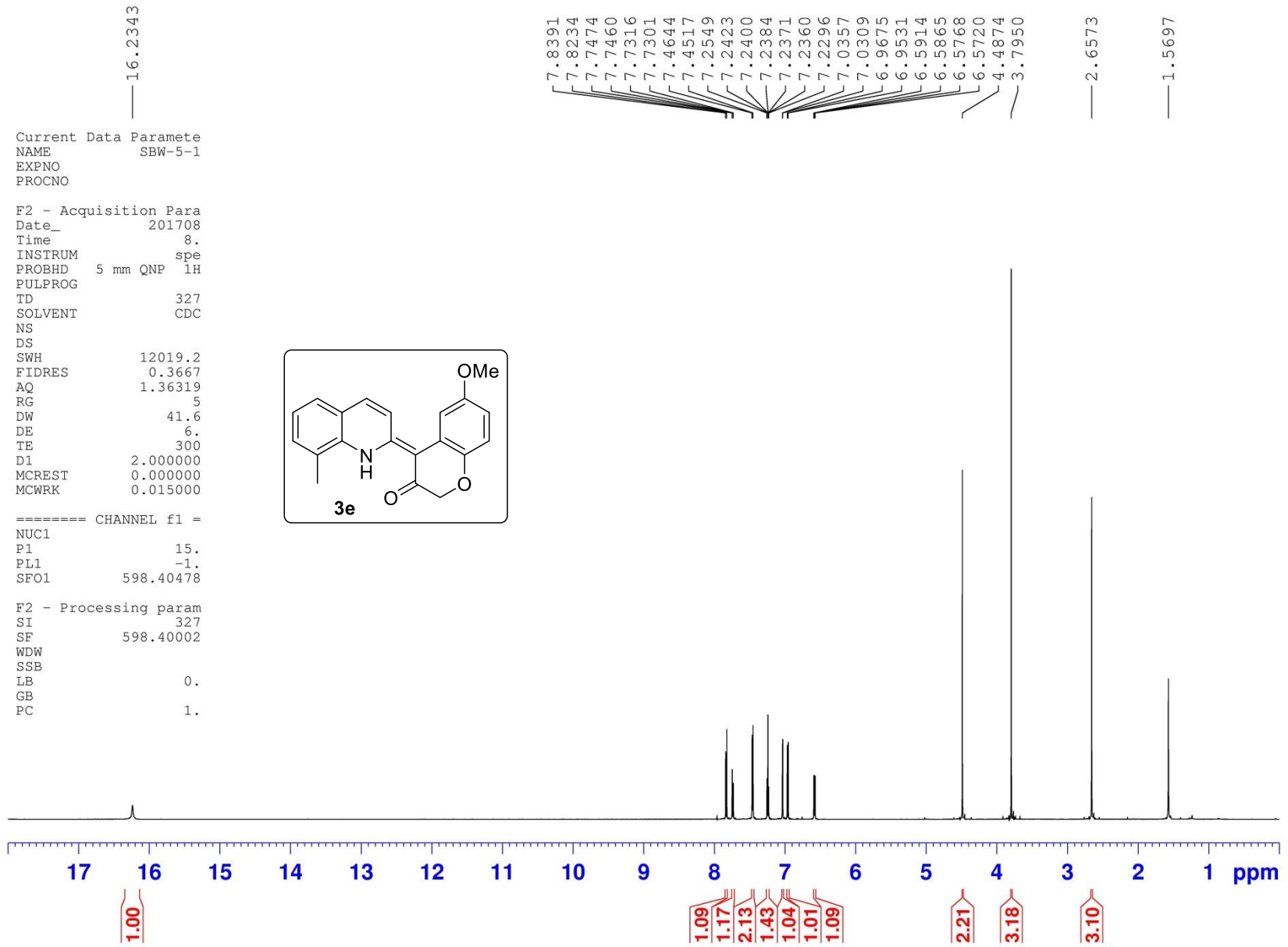
3c




SBW-S-111
188.332
151.779
149.576
138.955
136.348
132.517
127.362
126.974
126.190
125.896
125.542
124.394
123.503
118.865
118.140
114.518
96.355
77.250
77.000
76.742
72.054
17.040
Current Data Parameters
NAME liou0810.002
EXPNO 4
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170810
Time 19.47 h
INSTRUM spect
PROBHD Z119470_0234 (
PULPROG dept135
TD 32768
SOLVENT CDCl3
NS 1024
DS 8
SWH 29761.904 Hz
FIDRES 0.908261 Hz
AQ 0.5505024 sec
RG 191.01
DW 16.800 usec
DE 6.50 usec
TE 300.0 K
CNST2 145.00000000
D1 1.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 1
SFO1 125.7785338 MHz
NUC1 13C
P1 10.00 usec
P2 20.00 usec
PLW1 80.50000000 W
SFO2 500.1620006 MHz
NUC2 1H
CPDPRG[2 waltz16
P3 10.00 usec
P4 20.00 usec
PCPD2 80.00 usec
PLW2 25.50000000 W
PLW12 0.39844000 W
F2 - Processing parameters
SI 32768
SF 125.7653339 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
Br
N
H
O
O
3c
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm


16.1864
7.8280
7.8123
7.7030
7.6873
7.4538
7.4411
7.2739
7.2713
7.2441
7.2400
7.2315
7.2187
6.9347
6.9212
6.8509
6.8482
6.8374
6.8347
4.5006
2.6516
2.3308
Current Data Parameters
NAME SBW-5-105
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170815
Time 22.46
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 64
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 se
RG 512
DW 41.600 us
DE 6.50 us
TE 300.4 K
D1 2.00000000 se
MCREST 0 sec
MCWRK 0.01500000 se
======== CHANNEL f1 ======
NUC1 1H
P1 15.00 us
PL1 -1.00 dB
SFO1 598.4047872 MH
F2 - Processing parameters
SI 32768
SF 598.4000238 MH
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00
Me
N
H
O
O
3d
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.00
1.03
1.07
2.01
1.01
1.31
1.03
1.19
2.08
3.13
3.25


188.97
150.65
149.44
138.10
136.50
132.23
131.23
126.02
125.57
125.38
124.37
124.16
123.99
123.35
118.86
116.97
97.33
77.32
77.00
76.68
72.22
21.11
17.06
Current Data Parameters
NAME 20170805
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170805
Time 19.13
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
NS 1460
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178003 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
Me
N
H
O
O
3d
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm


16.2343
7.8391
7.8234
7.7474
7.7460
7.7316
7.7301
7.4644
7.4517
7.2549
7.2423
7.2400
7.2384
7.2371
7.2360
7.2296
7.0357
7.0309
6.9675
6.9531
6.5914
6.5865
6.5768
6.5720
4.4874
3.7950
2.6573
1.5697
Current Data Paramete
NAME SBW-5-1
EXPNO
PROCNO
F2 - Acquisition Para
Date_ 201708
Time 8.
INSTRUM spe
PROBHD 5 mm QNP 1H
PULPROG
TD 327
SOLVENT CDC
NS
DS
SWH 12019.2
FIDRES 0.3667
AQ 1.36319
RG 5
DW 41.6
DE 6.
TE 300
D1 2.000000
MCREST 0.000000
MCWRK 0.015000
======== CHANNEL f1 =
NUC1
P1 15.
PL1 -1.
SFO1 598.40478
F2 - Processing param
SI 327
SF 598.40002
WDW
SSB
LB 0.
GB
PC 1.
OMe
N
H
O
O
3e
17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 ppm
1.00
1.09
1.17
2.13
1.43
1.04
1.01
1.09
2.21
3.18
3.10

```
Current Data Parameters
NAME            SBW-5-115
EXPNO                   2
PROCNO                  1

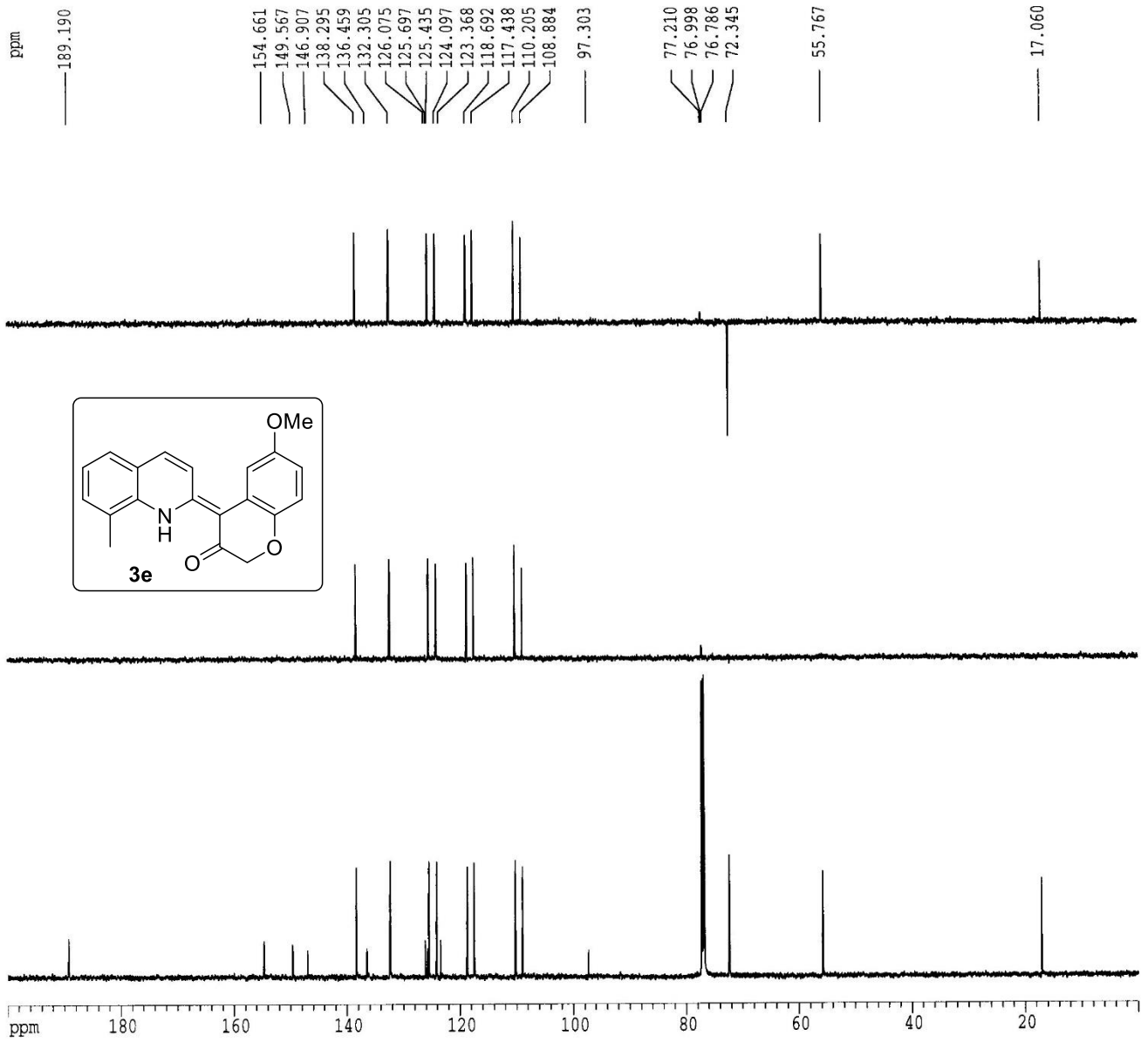
F2 - Acquisition Parameters
Date_            20170821
Time                 8.57
INSTRUM             spect
PROBHD   5 mm QNP  1H/1
PULPROG              zgpg
TD                  32768
SOLVENT             CDCl3
NS                    813
DS                      0
SWH             45045.047 Hz
FIDRES              1.374666 Hz
AQ                0.3637748 sec
RG                     4096
DW                  11.100 usec
DE                   6.50 usec
TE                   300.5 K
D1              3.50000000 sec
D11             0.03000000 sec
D12             0.00002000 sec
D13             3.40000010 sec
D16             0.00000000 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

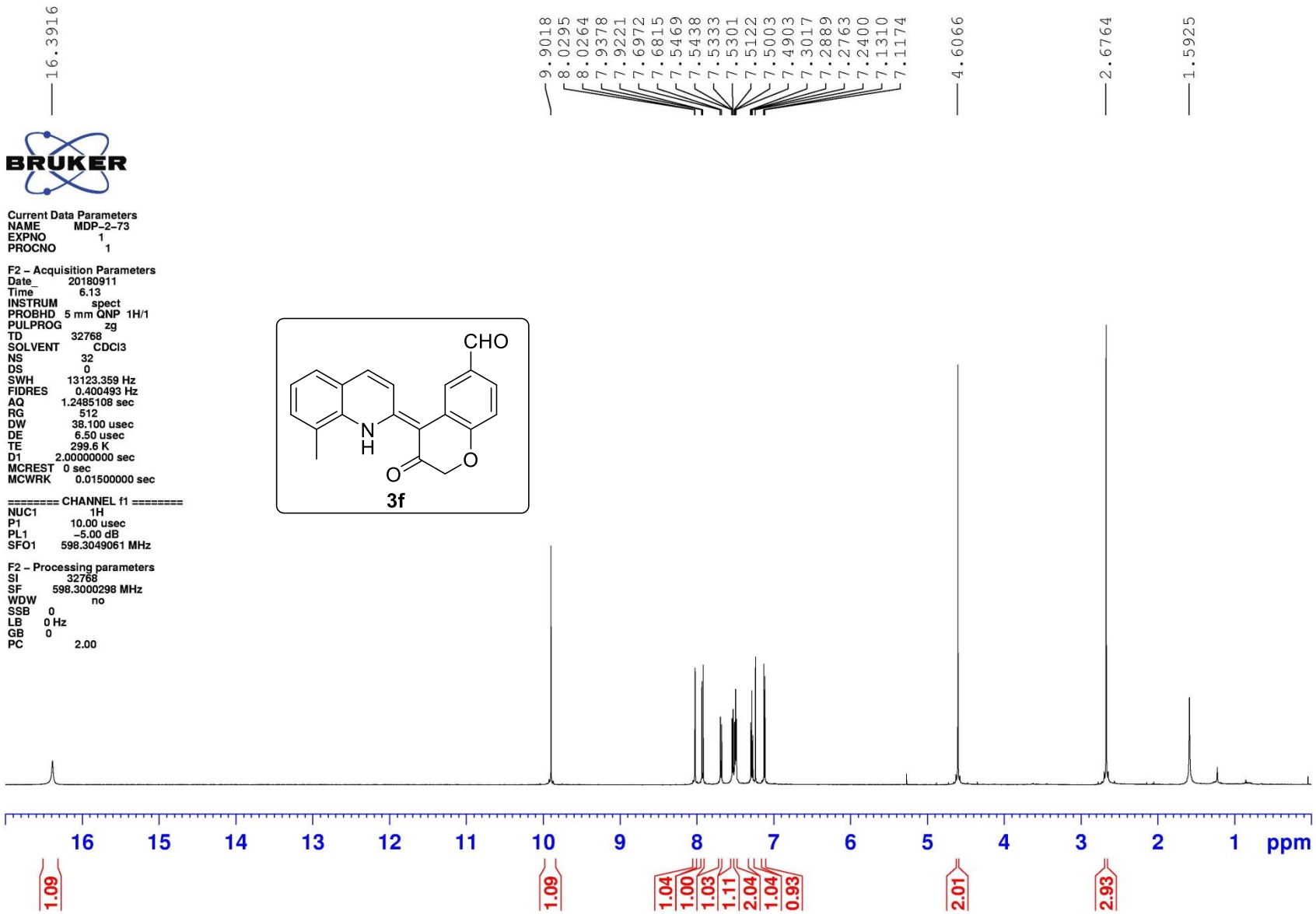
======== CHANNEL f1 ========
NUC1                   13C
P1                   4.80 usec
PL1                  0.00 dB
SFO1           150.4843515 MHz

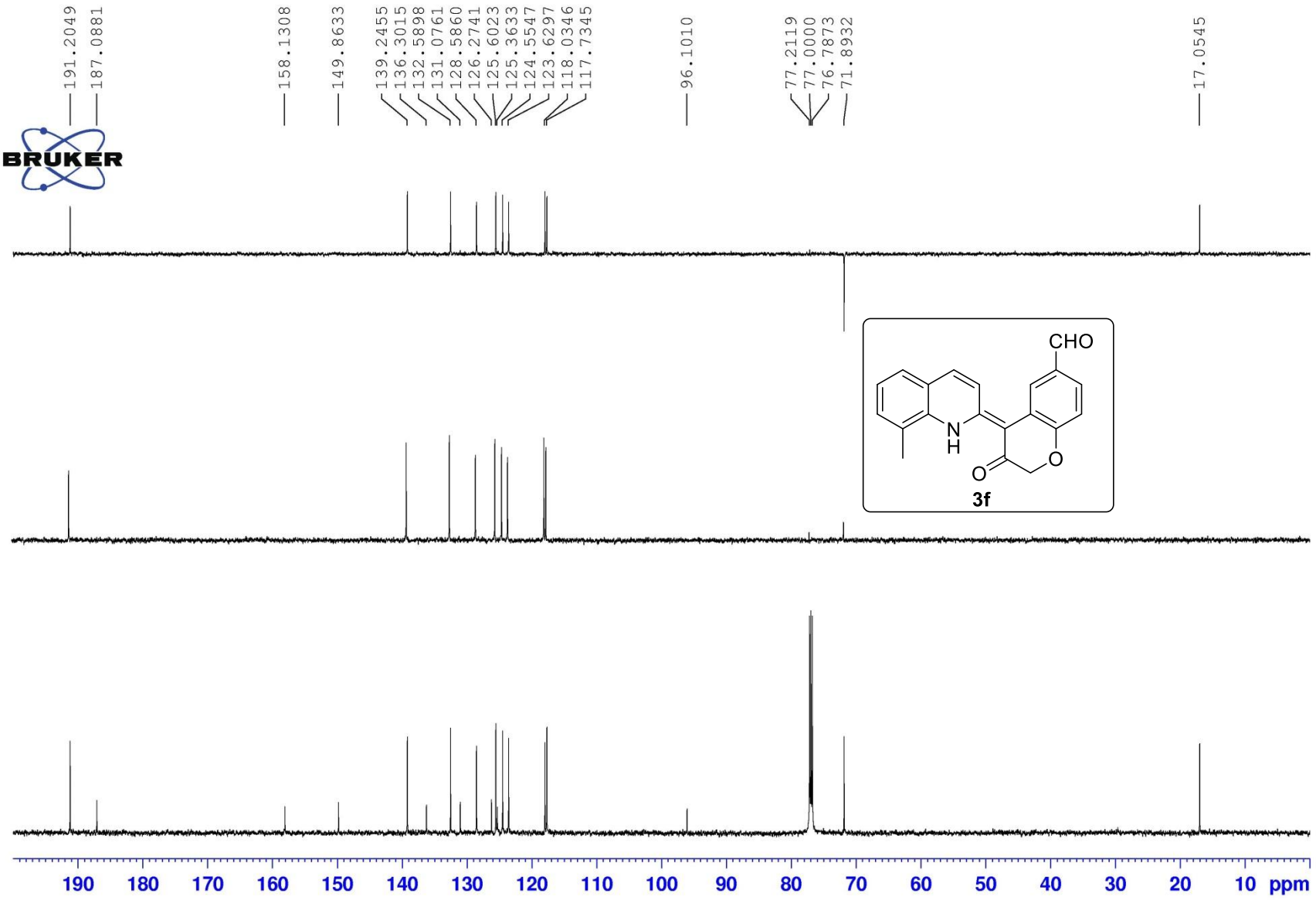
======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                   1H
PCPD2                92.00 usec
PL2                 120.00 dB
PL12                  5.50 dB
PL13                  9.00 dB
SFO2           598.4029920 MHz

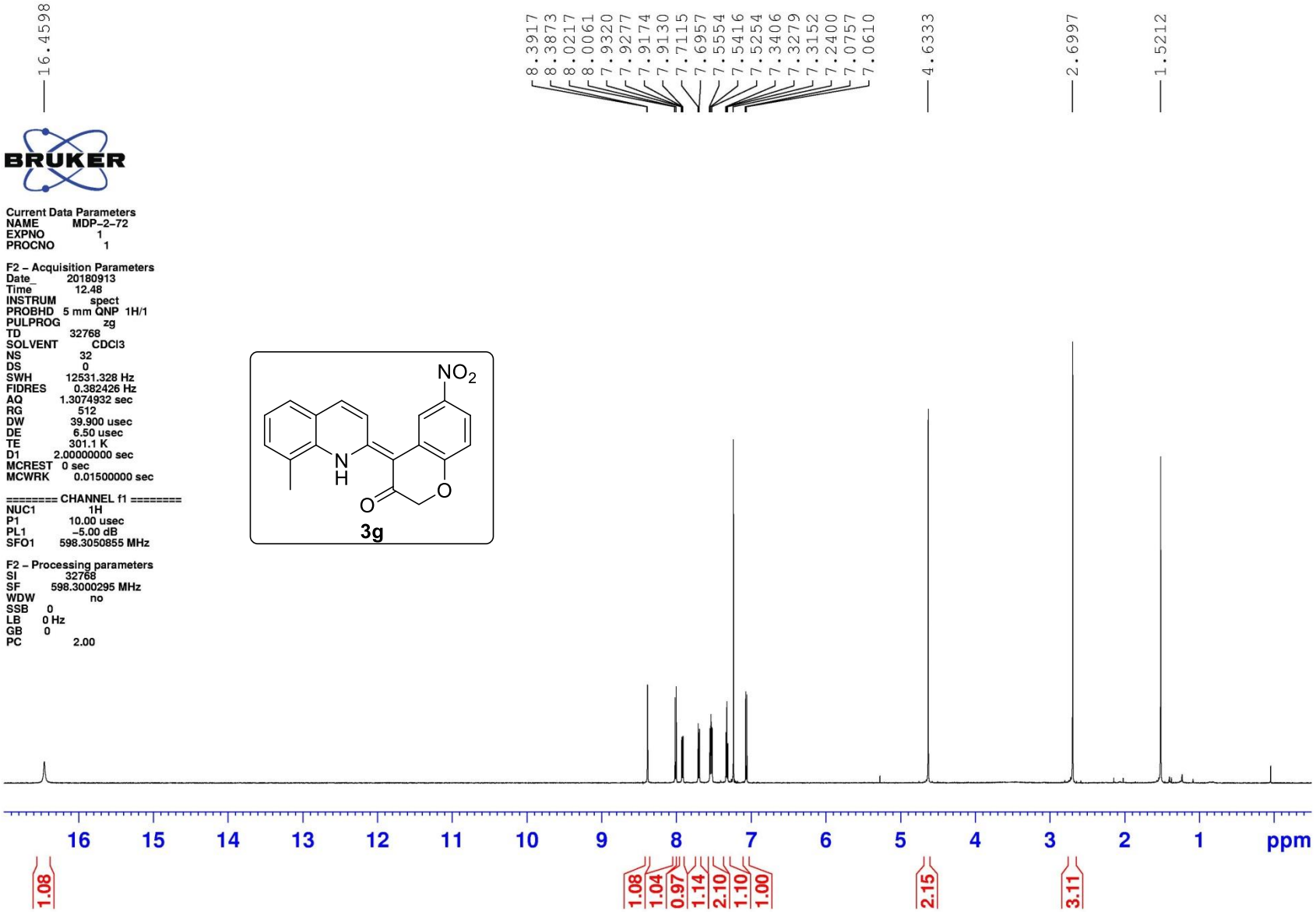
F2 - Processing parameters
SI                    65536
SF             150.4678036 MHz
WDW                      EM
SSB                       0
LB                     3.00 Hz
GB                        0
PC                     1.00

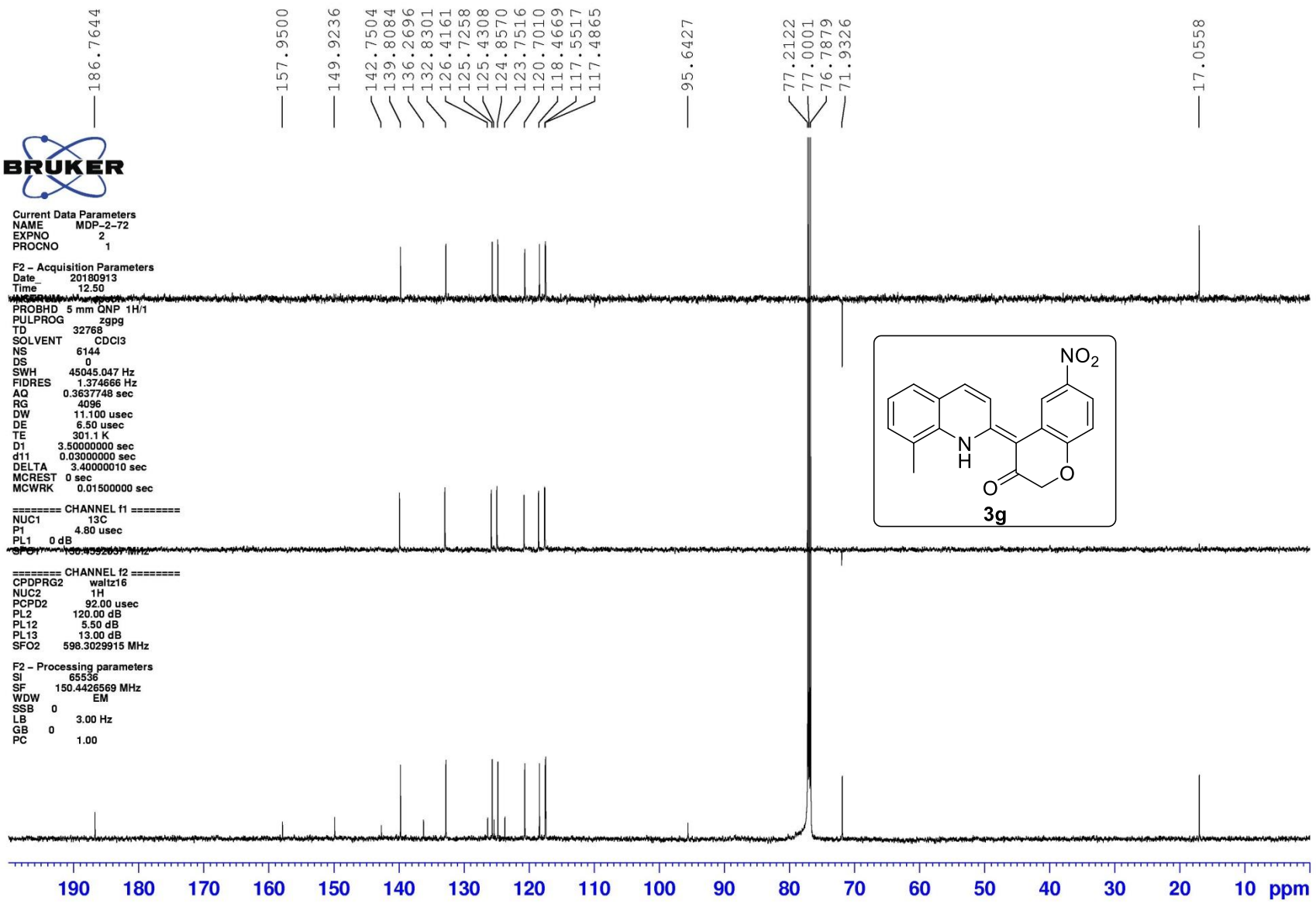
1D NMR plot parameters
WX                    20.00 cm
CY                     5.30 cm
F1P                 200.000 ppm
F1                30093.56 Hz
F2P                   0.000 ppm
F2                    0.00 Hz
PPMCM              10.00000 ppm/cm
HZCM             1504.67798 Hz/cm
```

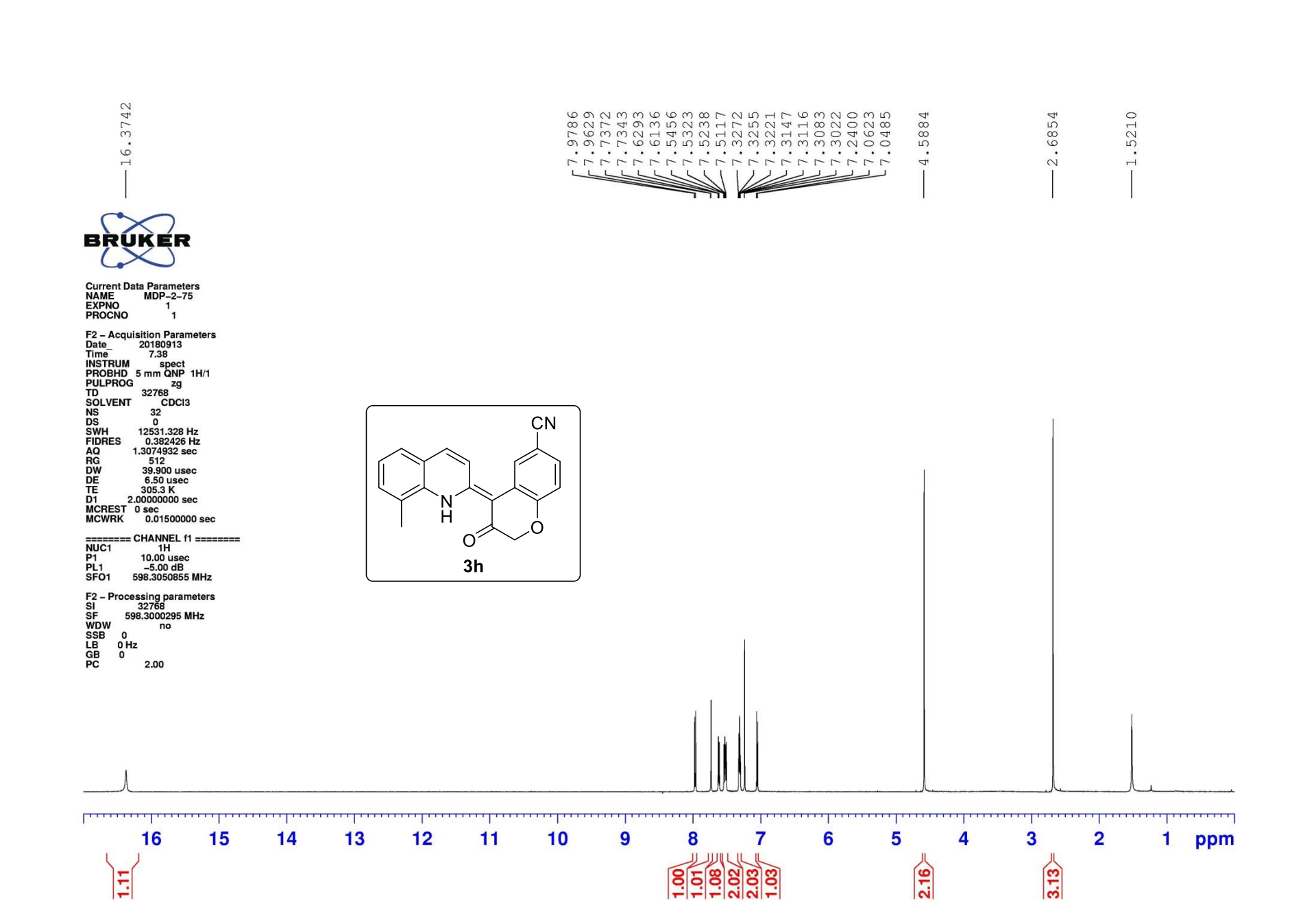


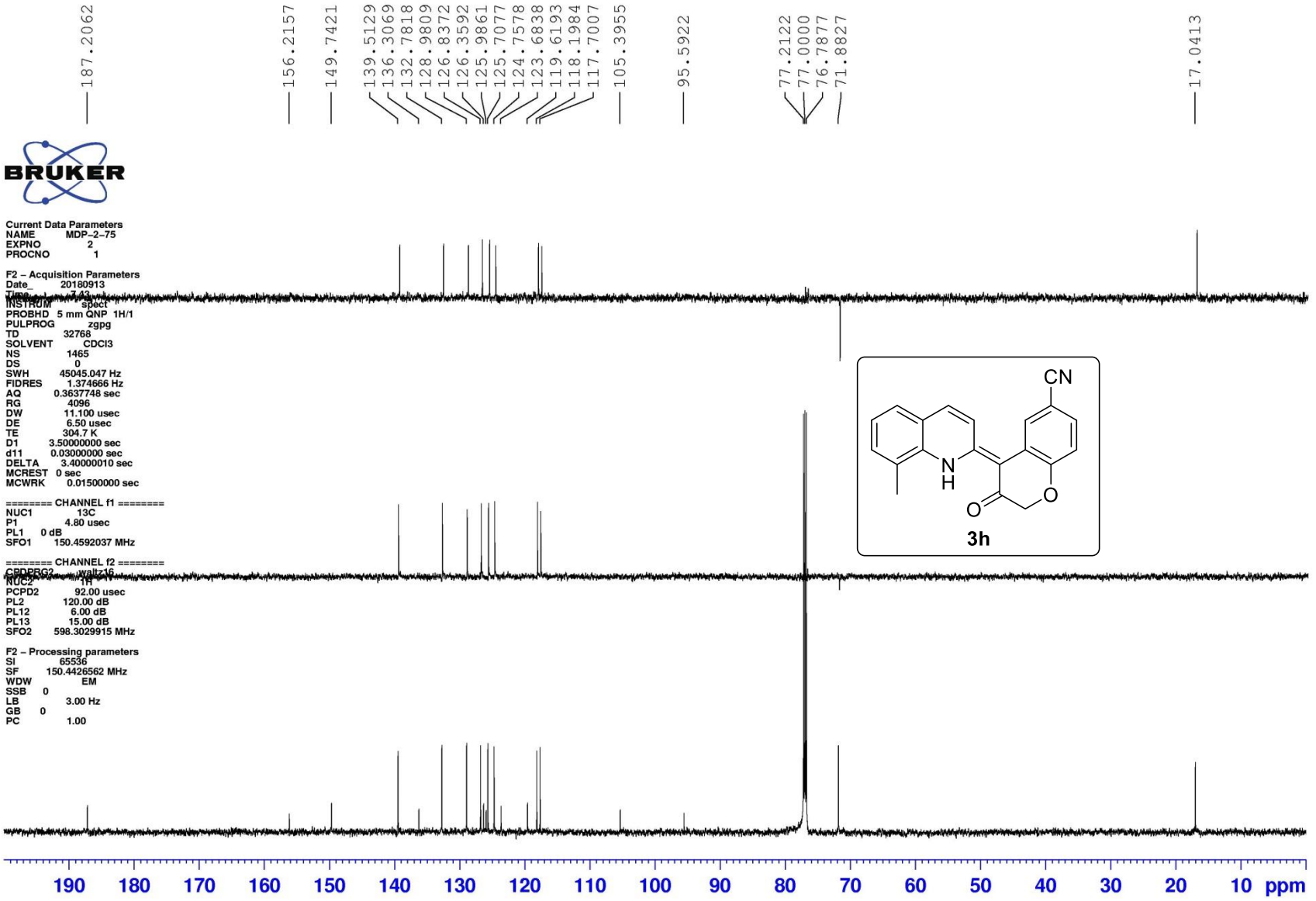

16.3916
9.9018
8.0295
8.0264
7.9378
7.9221
7.6972
7.6815
7.5469
7.5438
7.5333
7.5301
7.5122
7.5003
7.4903
7.3017
7.2889
7.2763
7.2400
7.1310
7.1174
4.6066
2.6764
1.5925
BRUKER
Current Data Parameters
NAME MDP-2-73
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180911
Time 6.13
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 13123.359 Hz
FIDRES 0.400493 Hz
AQ 1.2485108 sec
RG 512
DW 38.100 usec
DE 6.50 usec
TE 299.6 K
D1 2.00000000 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -5.00 dB
SFO1 598.3049061 MHz
F2 - Processing parameters
SI 32768
SF 598.3000298 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 2.00
CHO
N
H
O
O
3f
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.09
1.09
1.04
1.00
1.03
1.11
2.04
1.04
0.93
2.01
2.93

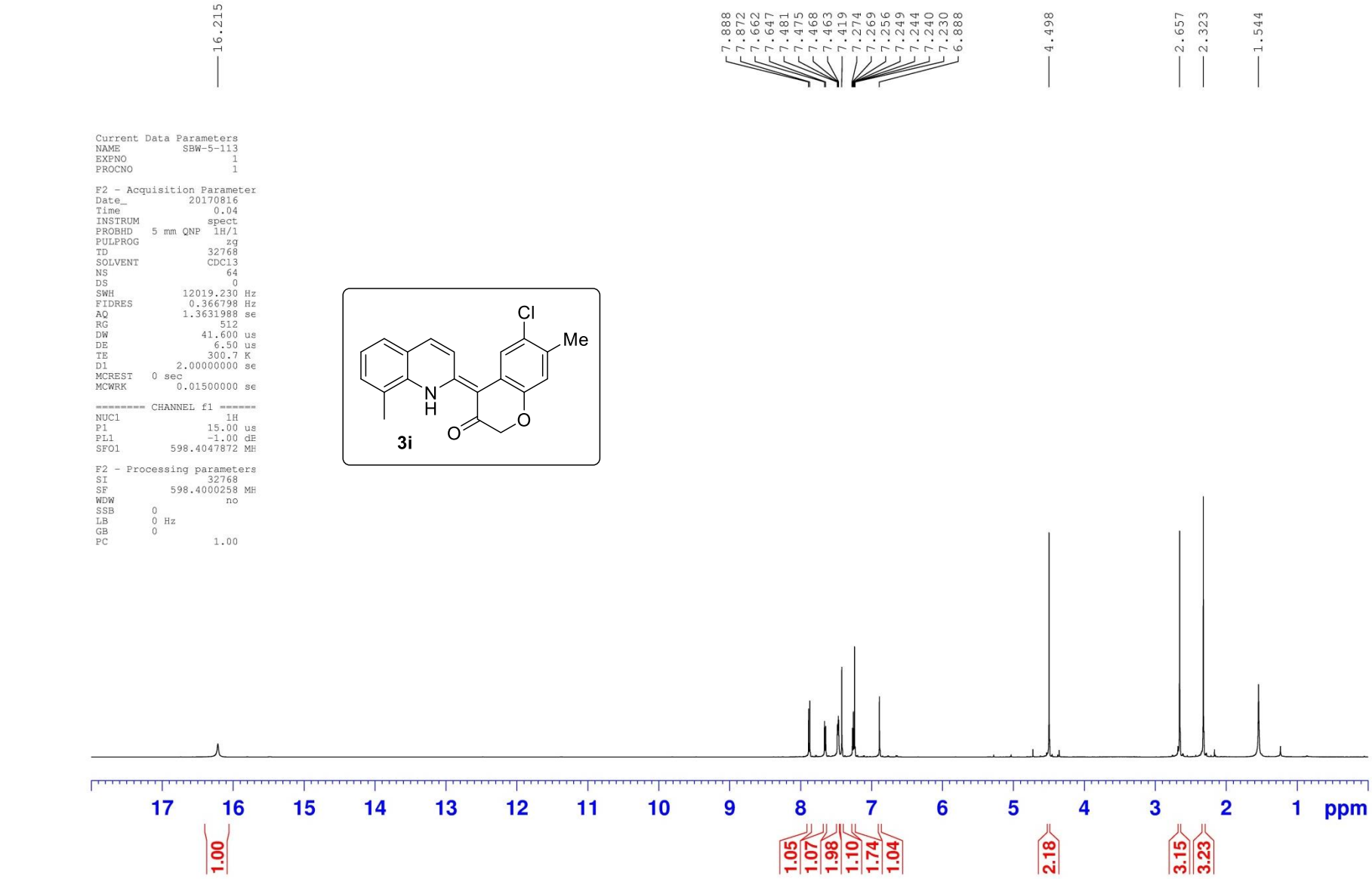

191.2049
187.0881
158.1308
149.8633
139.2455
136.3015
132.5898
131.0761
128.5860
126.2741
125.6023
125.3633
124.5547
123.6297
118.0346
117.7345
96.1010
77.2119
77.0000
76.7873
71.8932
17.0545
BRUKER
CHO
N
H
O
O
3f
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

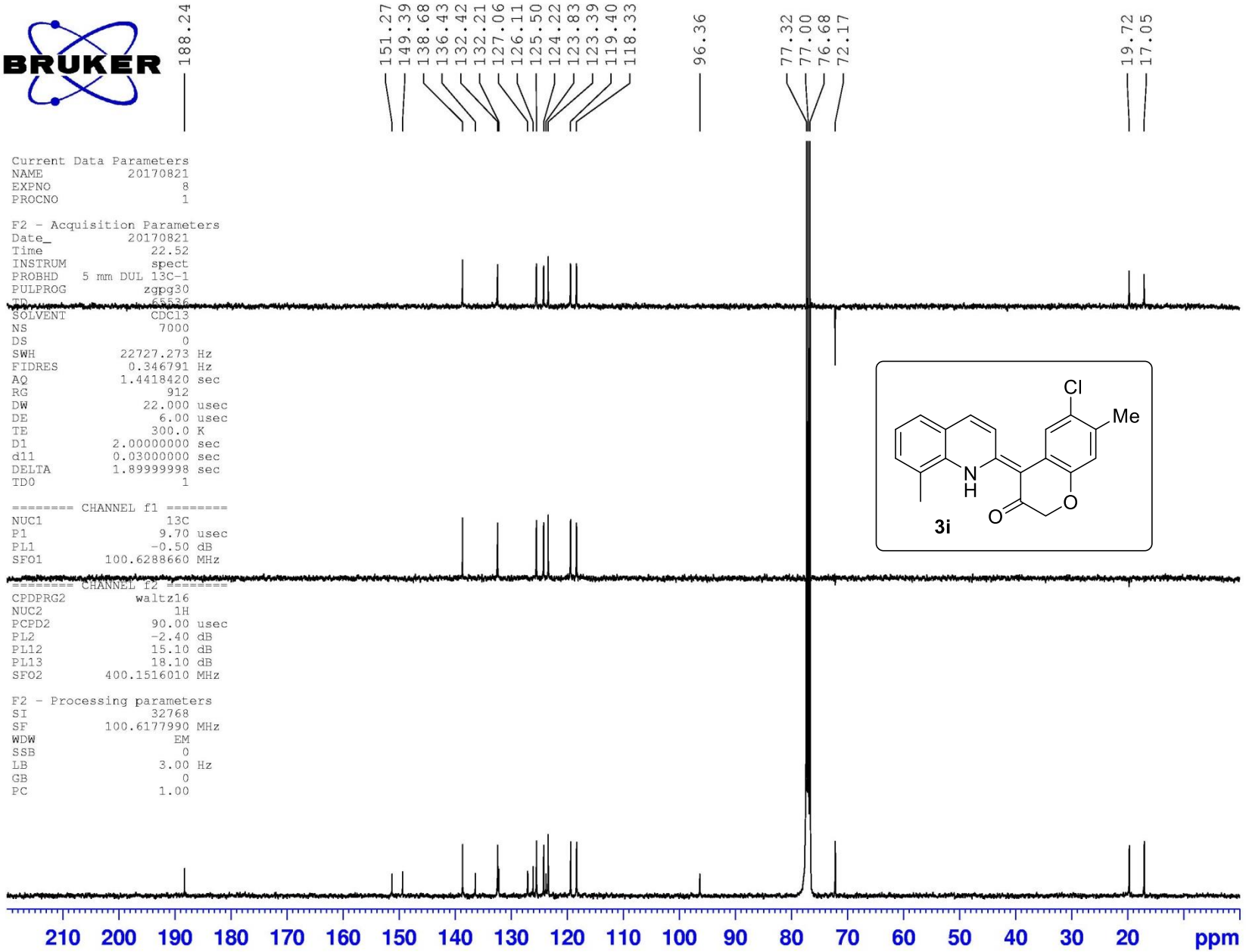

16.4598
8.3917
8.3873
8.0217
8.0061
7.9320
7.9277
7.9174
7.9130
7.7115
7.6957
7.5554
7.5416
7.5254
7.3406
7.3279
7.3152
7.2400
7.0757
7.0610
4.6333
2.6997
1.5212
BRUKER
Current Data Parameters
NAME MDP-2-72
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180913
Time 12.48
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 12531.328 Hz
FIDRES 0.382426 Hz
AQ 1.3074932 sec
RG 512
DW 39.900 usec
DE 6.50 usec
TE 301.1 K
D1 2.00000000 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -5.00 dB
SFO1 598.3050855 MHz
F2 - Processing parameters
SI 32768
SF 598.3000295 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 2.00
NO2
N
H
O
O
3g
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.08
1.08
1.04
0.97
1.14
2.10
1.10
1.00
2.15
3.11

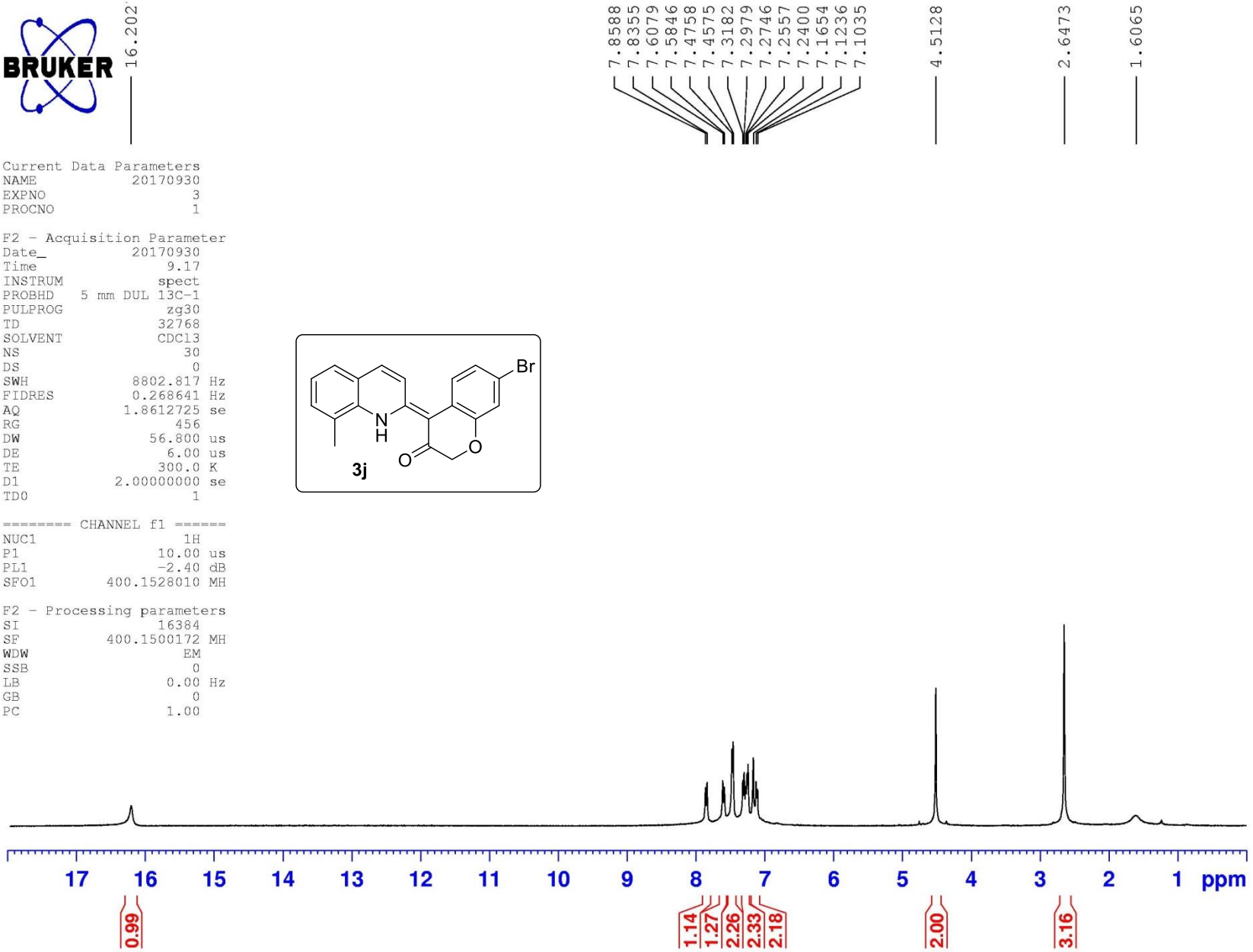

186.7644
157.9500
149.9236
142.7504
139.8084
136.2696
132.8301
126.4161
125.7258
125.4308
124.8570
123.7516
120.7010
118.4669
117.5517
117.4865
95.6427
77.2122
77.0001
76.7879
71.9326
17.0558
BRUKER
Current Data Parameters
NAME MDP-2-72
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180913
Time 12.50
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 6144
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 301.1 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0 dB
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 13.00 dB
SFO2 598.3029915 MHz
F2 - Processing parameters
SI 65536
SF 150.4426569 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
NO2
N
H
O
O
3g
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

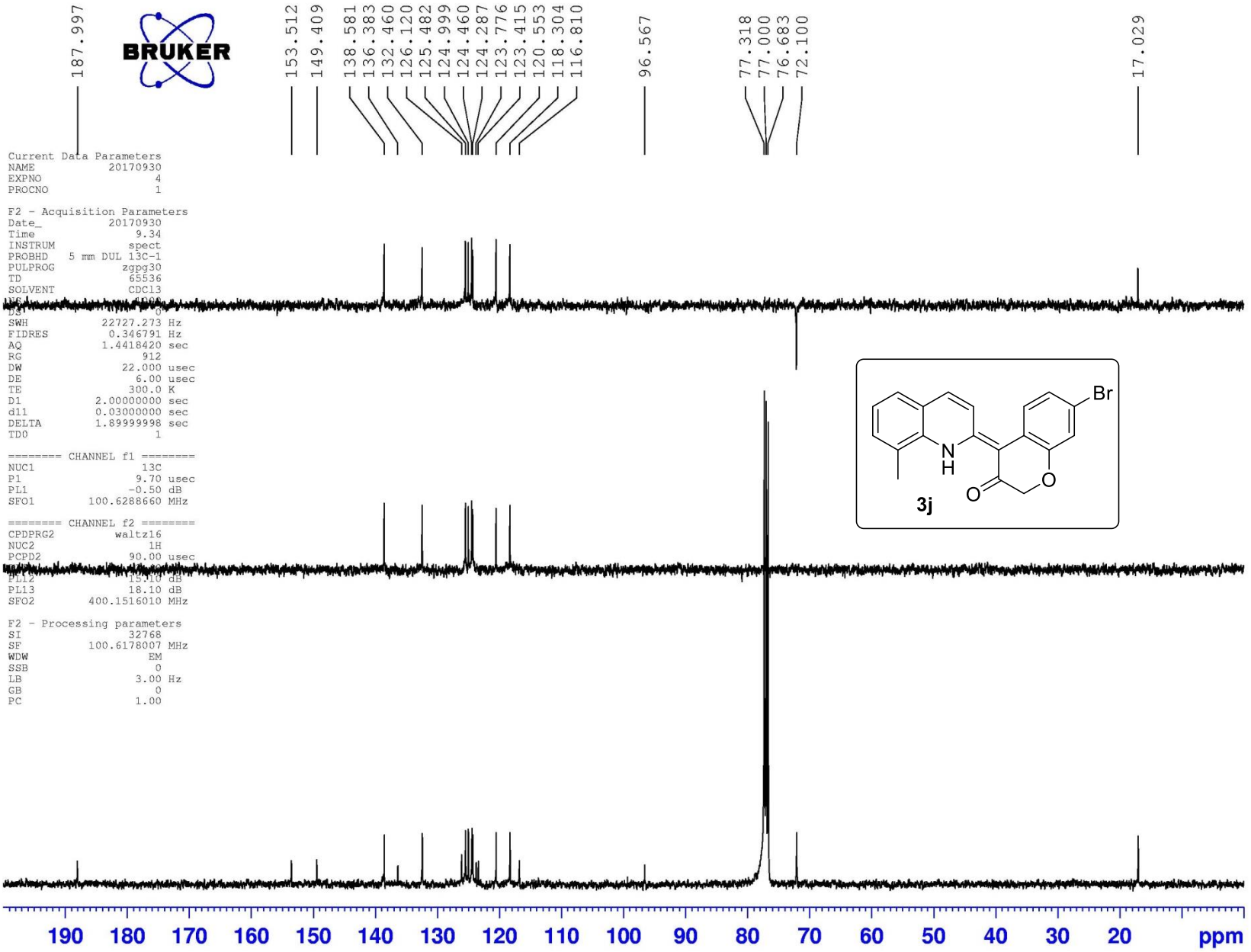

16.3742
7.9786
7.9629
7.7372
7.7343
7.6293
7.6136
7.5456
7.5323
7.5238
7.5117
7.3272
7.3255
7.3221
7.3147
7.3116
7.3083
7.3022
7.2400
7.0623
7.0485
4.5884
2.6854
1.5210
BRUKER
Current Data Parameters
NAME MDP-2-75
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180913
Time 7.38
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 12531.328 Hz
FIDRES 0.382426 Hz
AQ 1.3074932 sec
RG 512
DW 39.900 usec
DE 6.50 usec
TE 305.3 K
D1 2.00000000 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -5.00 dB
SFO1 598.3050855 MHz
F2 - Processing parameters
SI 32768
SF 598.3000295 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 2.00
CN
N
H
O
O
3h
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.11
1.00
1.01
1.08
2.02
2.03
1.03
2.16
3.13

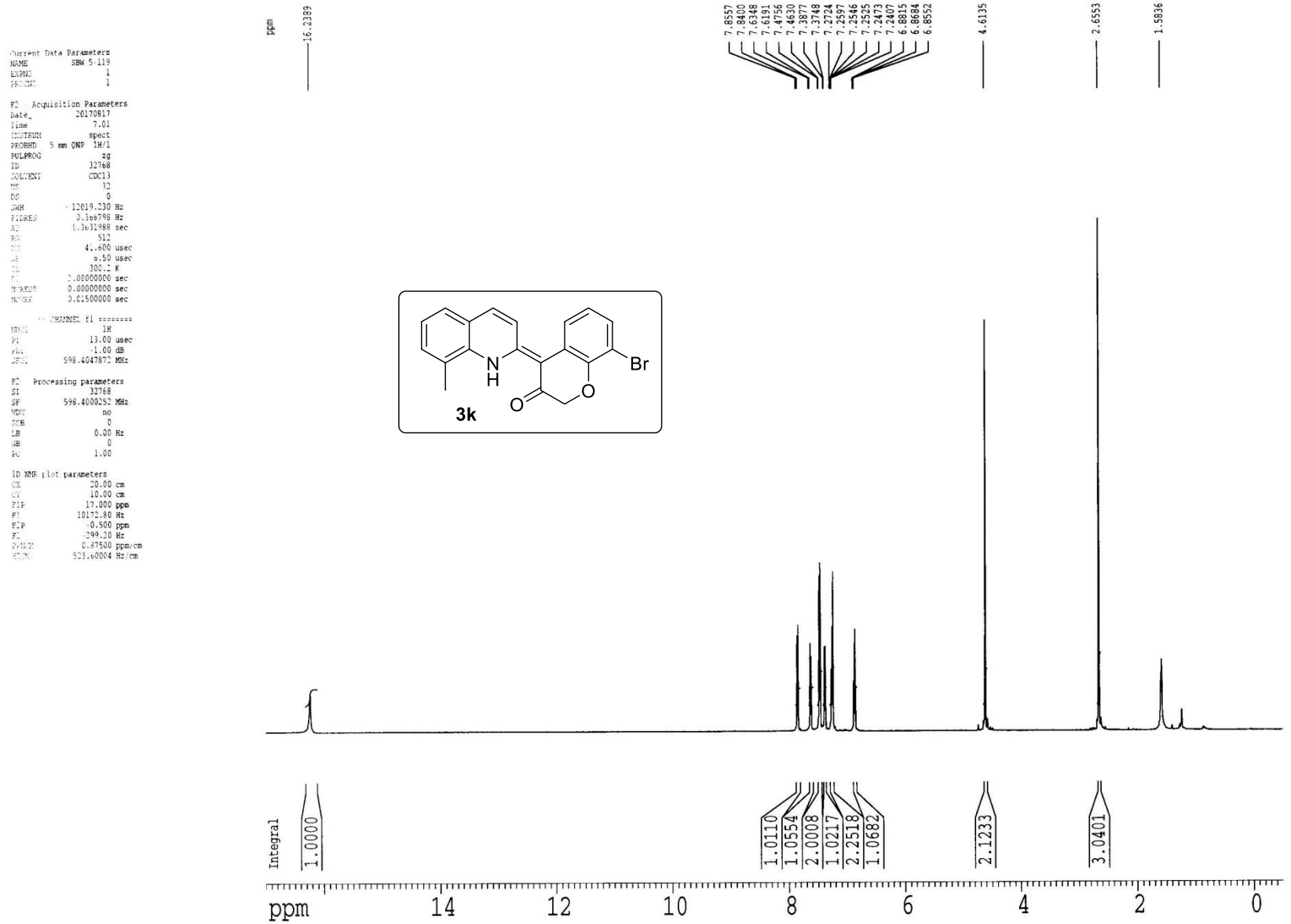

187.2062
156.2157
149.7421
139.5129
136.3069
132.7818
128.9809
126.8372
126.3592
125.9861
125.7077
124.7578
123.6838
119.6193
118.1984
117.7007
105.3955
95.5922
77.2122
77.0000
76.7877
71.8827
17.0413
BRUKER
Current Data Parameters
NAME MDP-2-75
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180913
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 1465
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 304.7 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0 dB
SFO1 150.4592037 MHz
======== CHANNEL f2 ========
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 6.00 dB
PL13 15.00 dB
SFO2 598.3029915 MHz
F2 - Processing parameters
SI 65536
SF 150.4426562 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
CN
N
H
O
O
3h
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

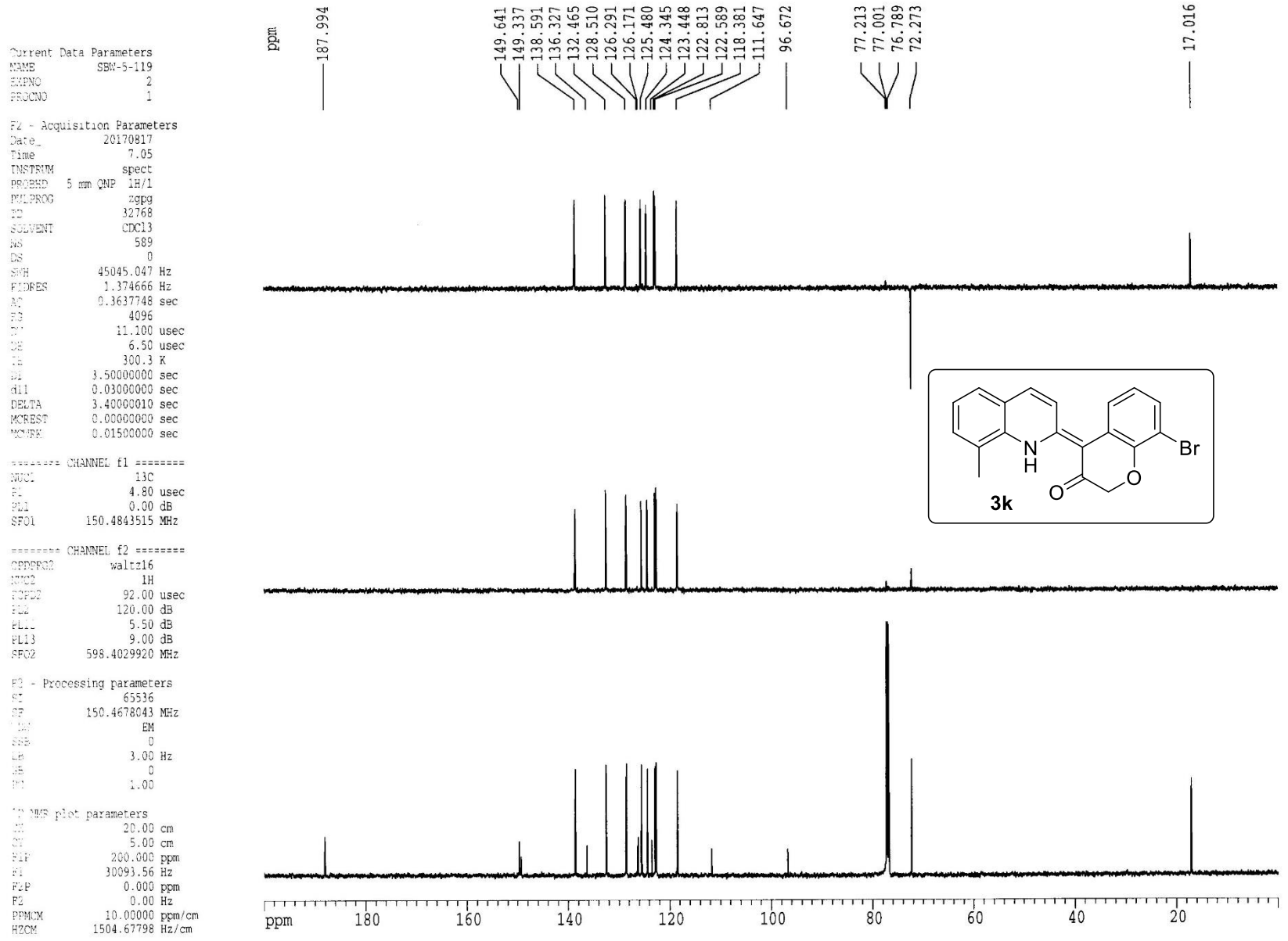

16.215
7.888
7.872
7.662
7.647
7.481
7.475
7.468
7.463
7.419
7.274
7.269
7.256
7.249
7.244
7.240
7.230
6.888
4.498
2.657
2.323
1.544
Current Data Parameters
NAME SBW-5-113
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170816
Time 0.04
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 64
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 se
RG 512
DW 41.600 us
DE 6.50 us
TE 300.7 K
D1 2.00000000 se
MCREST 0 sec
MCWRK 0.01500000 se
======== CHANNEL f1 ======
NUC1 1H
P1 15.00 us
PL1 -1.00 dB
SFO1 598.4047872 MH
F2 - Processing parameters
SI 32768
SF 598.4000258 MH
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00
Cl
Me
N
H
O
O
3i
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.00
1.05
1.07
1.98
1.10
1.74
1.04
2.18
3.15
3.23

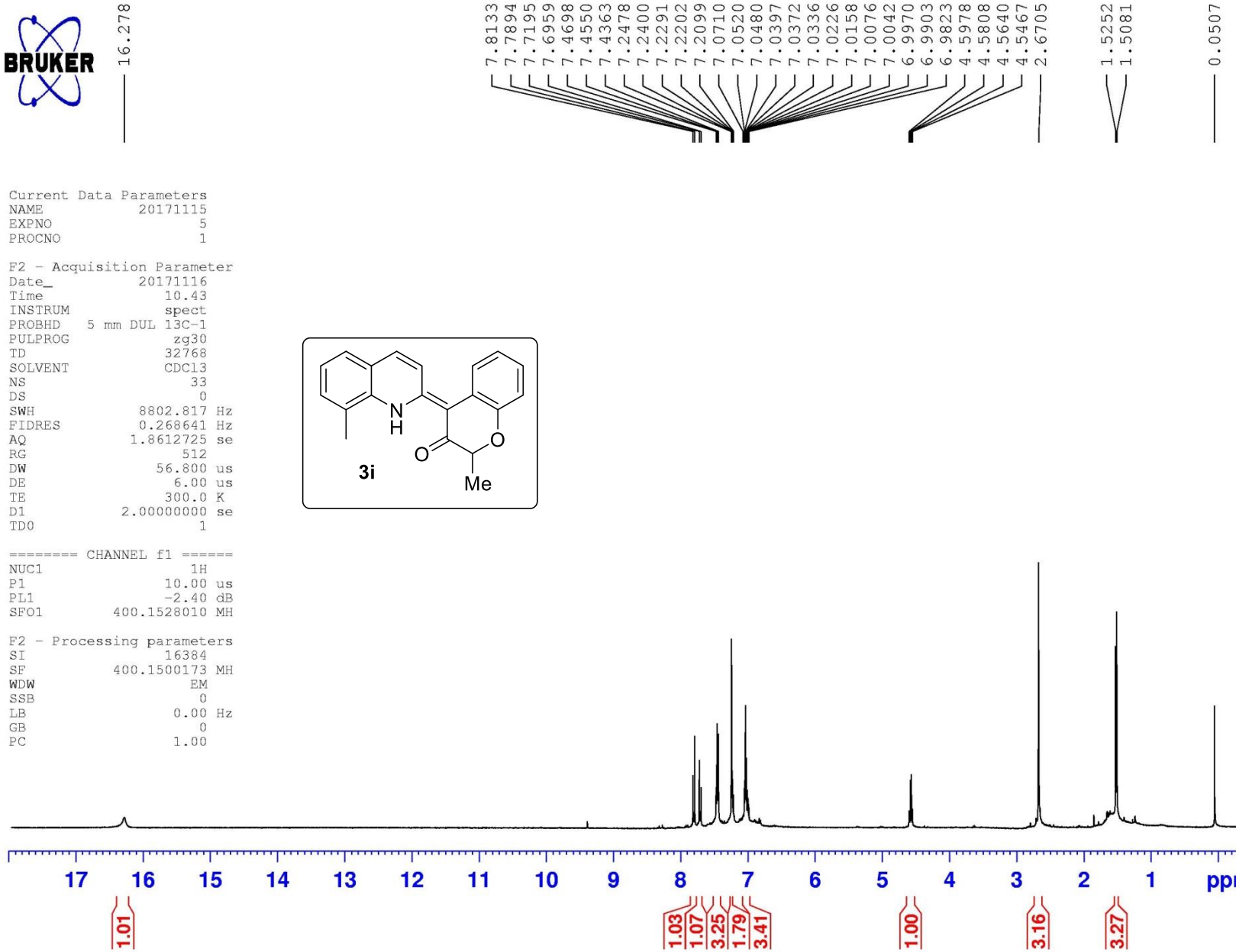

188.24
151.27
149.39
138.68
136.43
132.42
132.21
127.06
126.11
125.50
124.22
123.83
123.39
119.40
118.33
96.36
77.32
77.00
76.68
72.17
19.72
17.05
Current Data Parameters
NAME 20170821
EXPNO 8
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170821
Time 22.52
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 7000
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177990 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
Cl
Me
N
H
O
O
3i
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm

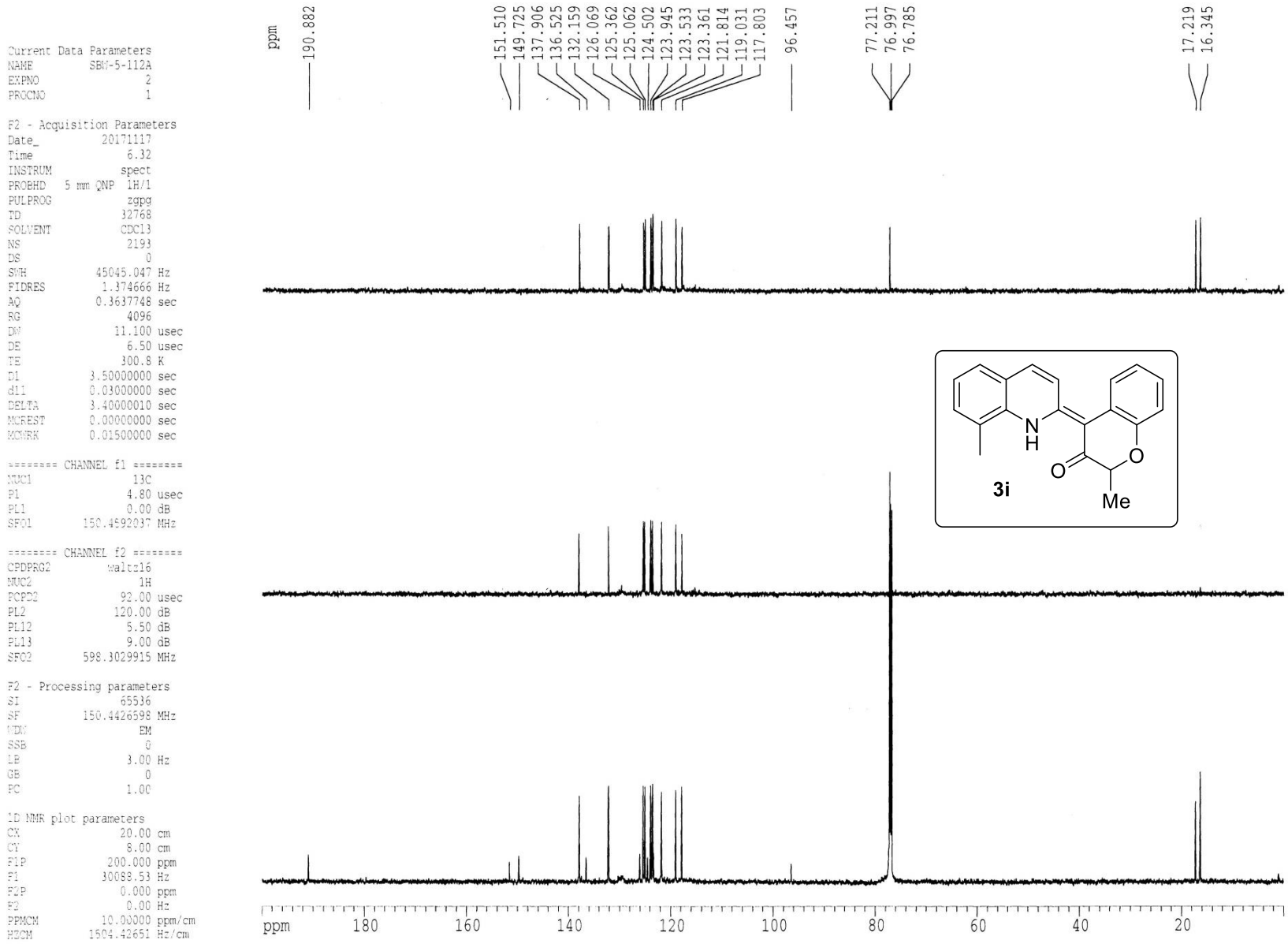

16.202
7.8588
7.8355
7.6079
7.5846
7.4758
7.4575
7.3182
7.2979
7.2746
7.2557
7.2400
7.1654
7.1236
7.1035
4.5128
2.6473
1.6065
Current Data Parameters
NAME 20170930
EXPNO 3
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170930
Time 9.17
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 30
DS 0
SWH 8802.817 Hz
FIDRES 0.268641 Hz
AQ 1.8612725 se
RG 456
DW 56.800 us
DE 6.00 us
TE 300.0 K
D1 2.00000000 se
TD0 1
======== CHANNEL f1 ======
NUC1 1H
P1 10.00 us
PL1 -2.40 dB
SFO1 400.1528010 MH
F2 - Processing parameters
SI 16384
SF 400.1500172 MH
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
Br
N
H
O
O
3j
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
0.99
1.14
1.27
2.26
2.33
2.18
2.00
3.16


187.997
153.512
149.409
138.581
136.383
132.460
126.120
125.482
124.999
124.460
124.287
123.776
123.415
120.553
118.304
116.810
96.567
77.318
77.000
76.683
72.100
17.029
Current Data Parameters
NAME 20170930
EXPNO 4
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170930
Time 9.34
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178007 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
Br
N
H
O
O
3j
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm


Current Data Parameters
NAME SBW 5-119
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170817
Time 7.01
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 512
DW 41.600 usec
DE 6.50 usec
TE 300.2 K
D1 2.00000000 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
CHANNEL f1
NUC1 1H
P1 13.00 usec
PL1 -1.00 dB
SFO1 598.4047872 MHz
F2 - Processing parameters
SI 32768
SF 598.4000252 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
WX 20.00 cm
WY 10.00 cm
F1P 17.000 ppm
F1 10172.80 Hz
F2P -0.500 ppm
F2 -299.20 Hz
PPMCM 0.87500 ppm/cm
HZCM 523.60004 Hz/cm
ppm
16.2389
7.8557
7.8400
7.6348
7.6191
7.4756
7.4630
7.3877
7.3748
7.2724
7.2597
7.2546
7.2525
7.2473
7.2407
6.8815
6.8684
6.8552
4.6135
2.6553
1.5836
Br
N
H
O
O
3k
Integral
1.0000
1.0110
1.0554
2.0008
1.0217
2.2518
1.0682
2.1233
3.0401
ppm
14
12
10
8
6
4
2
0


Current Data Parameters
NAME SBM-5-119
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170817
Time 7.05
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 589
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 300.3 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4843515 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678043 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
WX 20.00 cm
CX 5.00 cm
F1P 200.000 ppm
F1 30093.56 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.00000 ppm/cm
HZCM 1504.67798 Hz/cm
ppm
187.994
149.641
149.337
138.591
136.327
132.465
128.510
126.291
126.171
125.480
124.345
123.448
122.813
122.589
118.381
111.647
96.672
77.213
77.001
76.789
72.273
17.016
N
H
O
O
Br
3k
ppm
180
160
140
120
100
80
60
40
20


16.278
7.8133
7.7894
7.7195
7.6959
7.4698
7.4550
7.4363
7.2478
7.2400
7.2291
7.2202
7.2099
7.0710
7.0520
7.0480
7.0397
7.0372
7.0336
7.0226
7.0158
7.0076
7.0042
6.9970
6.9903
6.9823
4.5978
4.5808
4.5640
4.5467
2.6705
1.5252
1.5081
0.0507
Current Data Parameters
NAME 20171115
EXPNO 5
PROCNO 1
F2 - Acquisition Parameter
Date_ 20171116
Time 10.43
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 33
DS 0
SWH 8802.817 Hz
FIDRES 0.268641 Hz
AQ 1.8612725 se
RG 512
DW 56.800 us
DE 6.00 us
TE 300.0 K
D1 2.00000000 se
TD0 1
======== CHANNEL f1 ======
NUC1 1H
P1 10.00 us
PL1 -2.40 dB
SFO1 400.1528010 MH
F2 - Processing parameters
SI 16384
SF 400.1500173 MH
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
N
H
O
O
Me
3i
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.01
1.03
1.07
3.25
1.79
3.41
1.00
3.16
3.27



Current Data Parameters
NAME SBM-5-112A
EXPNO 2
PROCNO 1

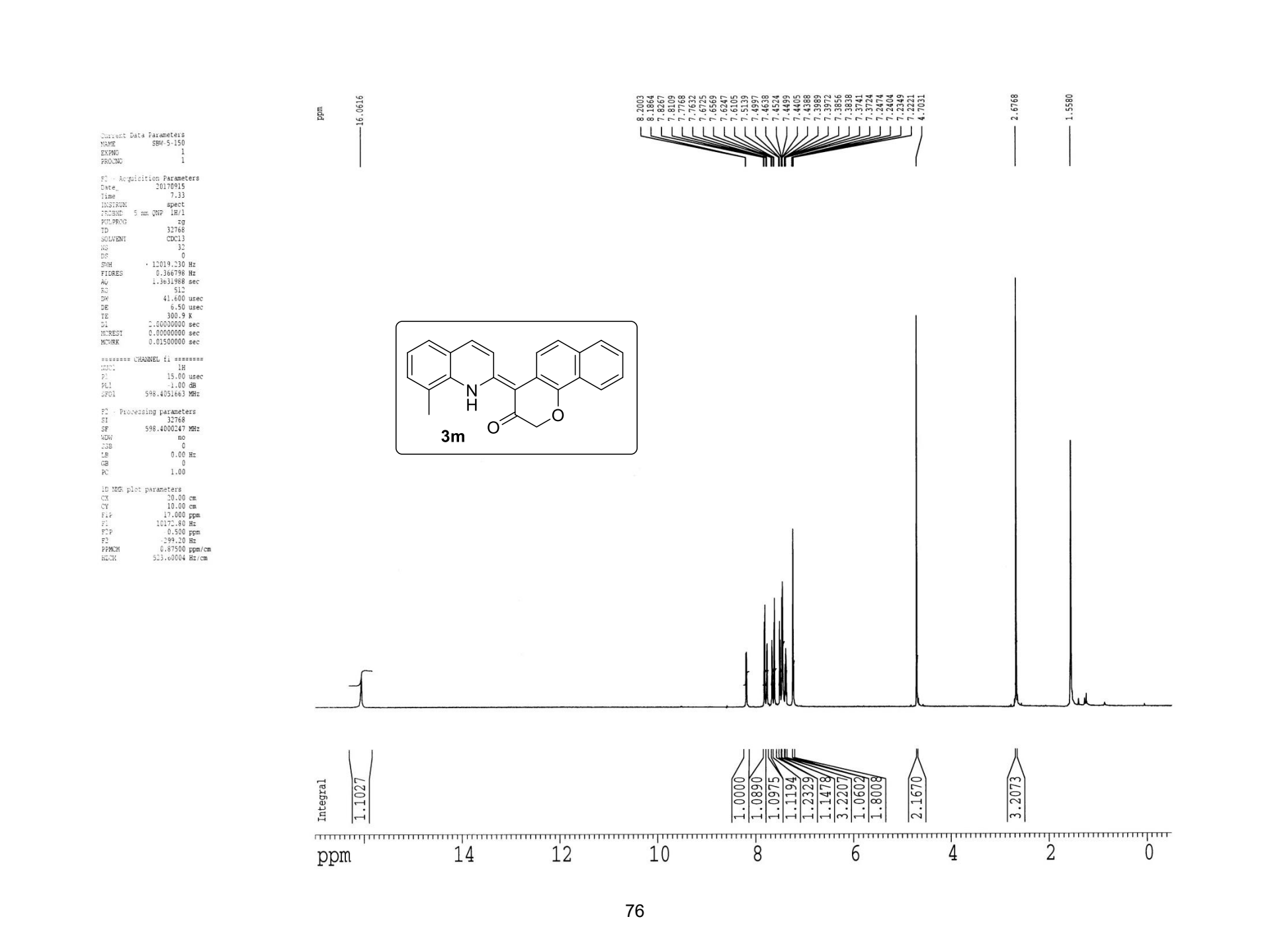
F2 - Acquisition Parameters
Date_ 20171117
Time 6.32
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 2193
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 300.8 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec

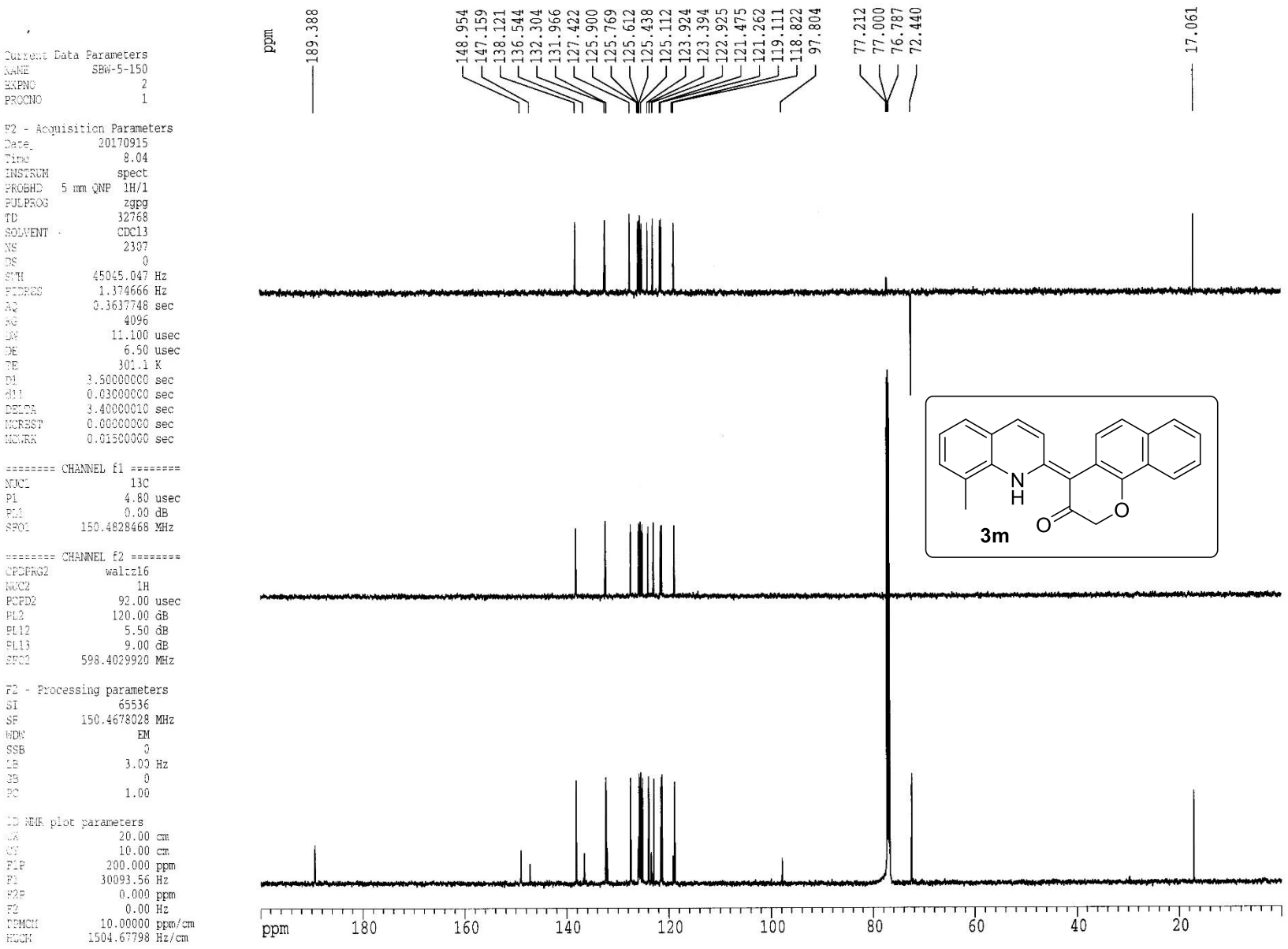
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4892037 MHz

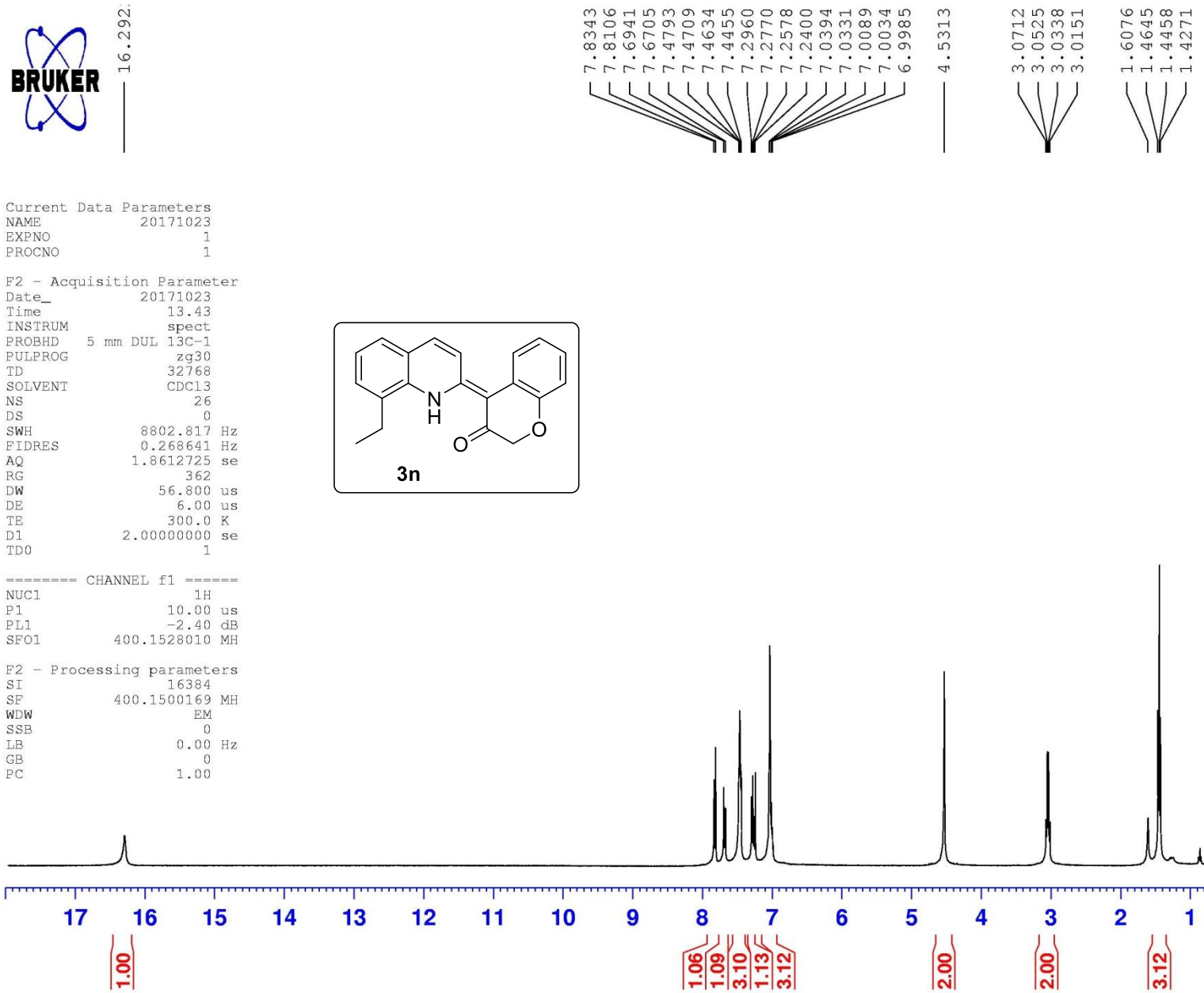
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.3029915 MHz

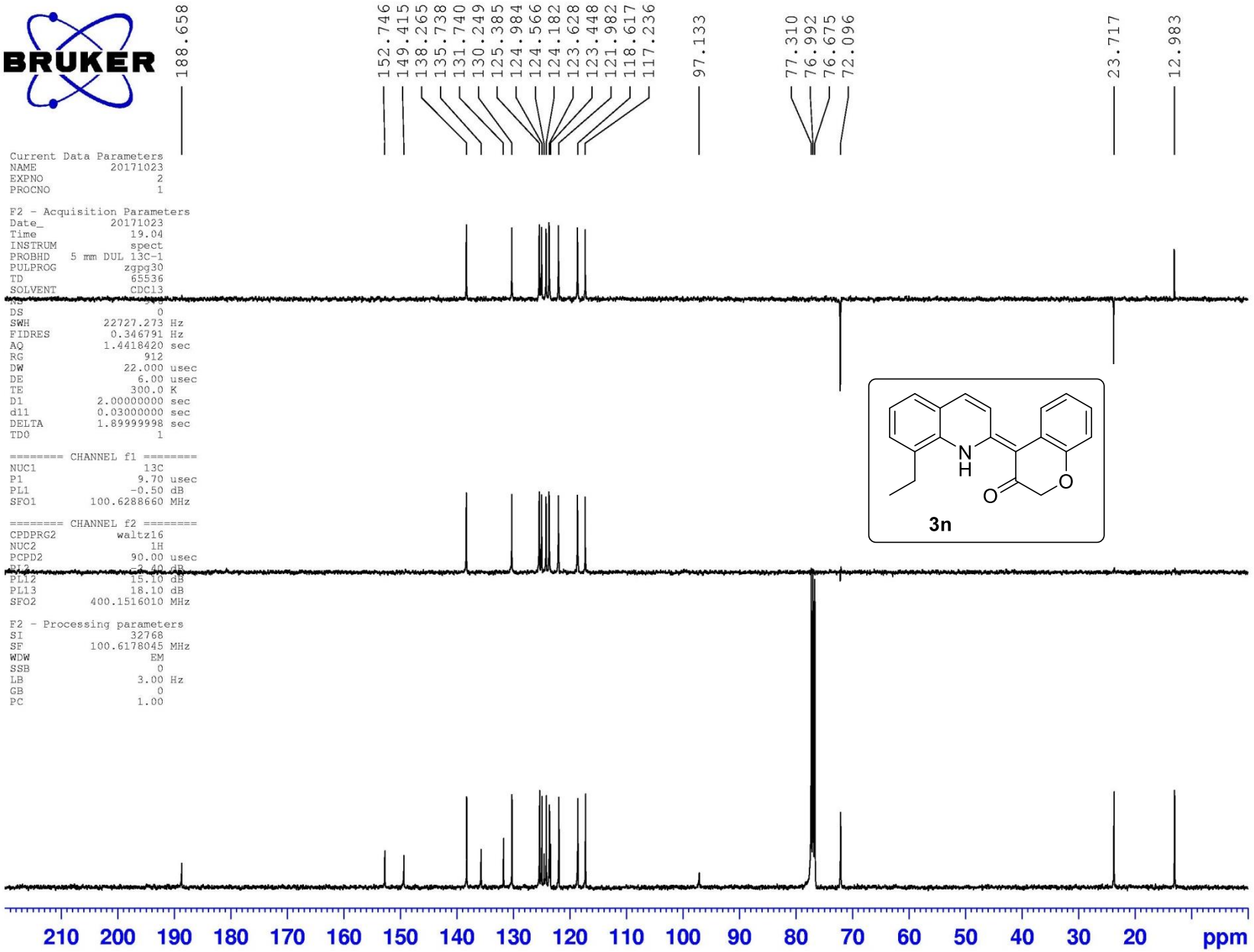
F2 - Processing parameters
SI 65536
SF 150.4426598 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

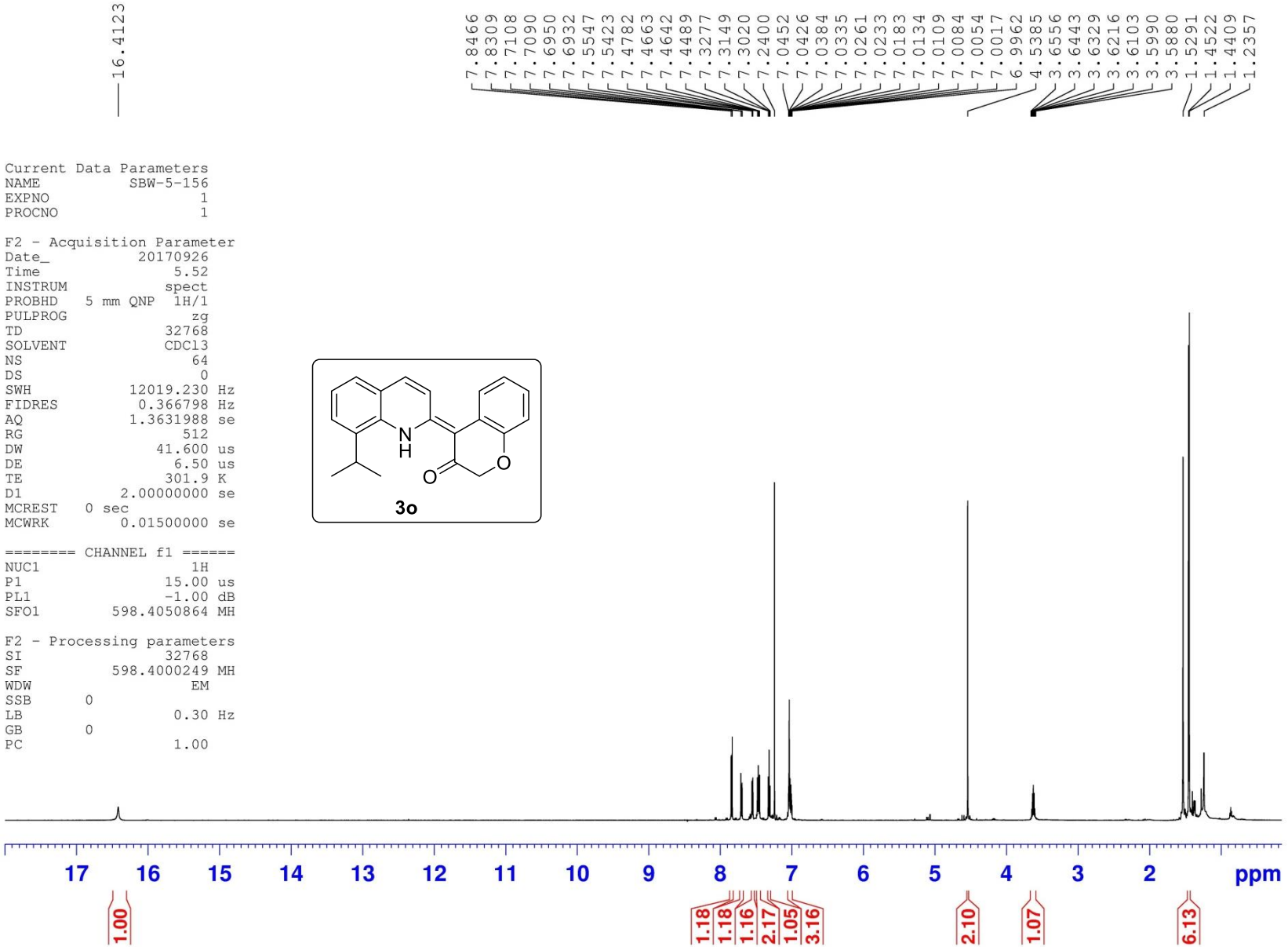
1D NMR plot parameters
CX 20.00 cm
CY 8.00 cm
F1P 200.000 ppm
F1 30088.53 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.00000 ppm/cm
HZCM 1504.42651 Hz/cm

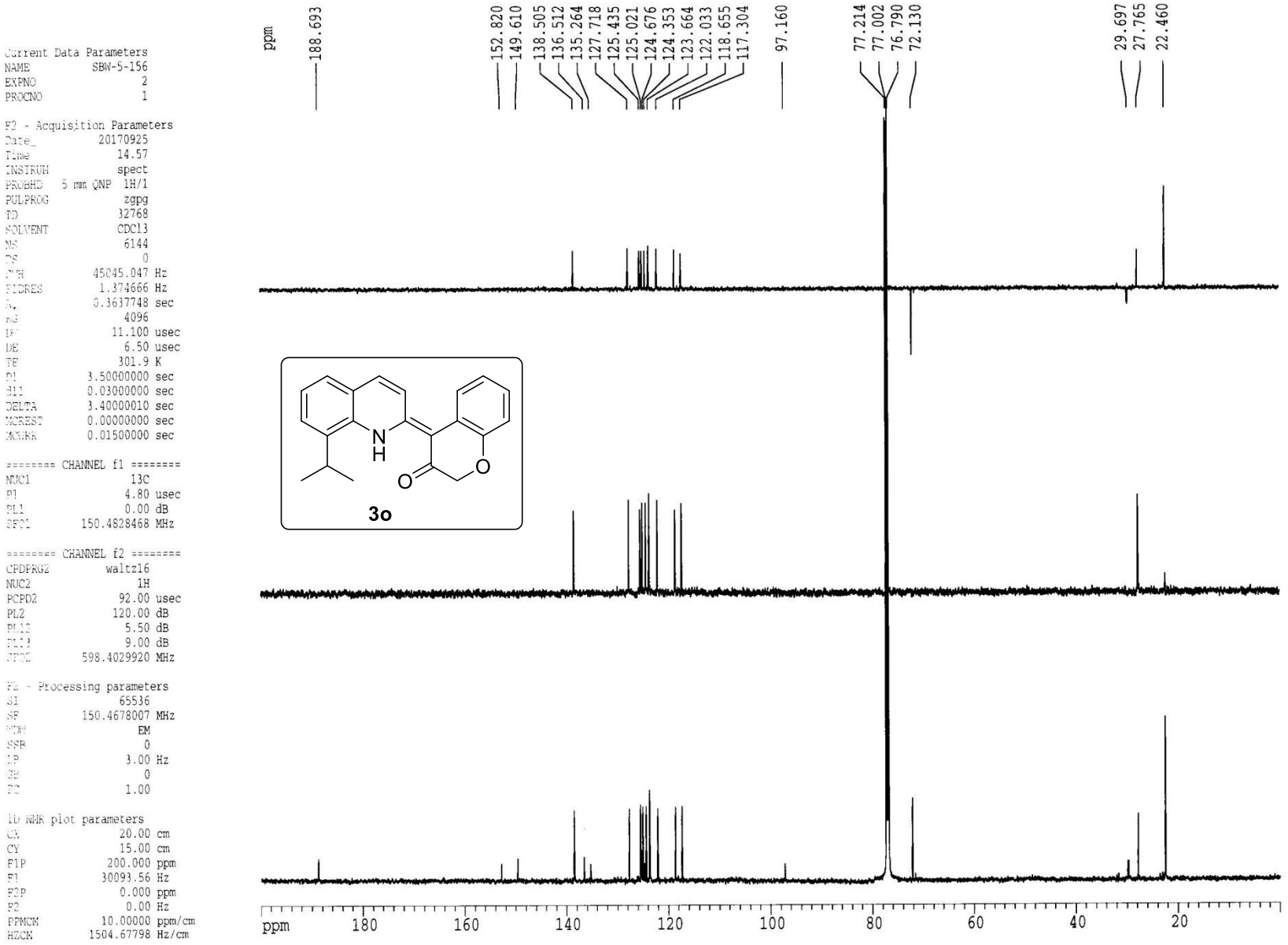

Current Data Parameters
NAME SBW-5-150
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170915
Time 7.33
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 512
DW 41.600 usec
DE 6.50 usec
TE 300.9 K
D1 2.00000000 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.00 usec
PL1 -1.00 dB
SFO1 598.4051663 MHz
F2 - Processing parameters
SI 32768
SF 598.4000247 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 10.00 cm
F1P 17.000 ppm
F1 10172.80 Hz
F2P -0.500 ppm
F2 -299.20 Hz
PPMCM 0.87500 ppm/cm
HZCM 523.60004 Hz/cm
ppm
16.0616
8.2003
8.1864
7.8267
7.8109
7.7768
7.7632
7.6725
7.6569
7.6247
7.6105
7.5139
7.4997
7.4638
7.4524
7.4499
7.4405
7.4388
7.3989
7.3972
7.3856
7.3838
7.3741
7.3724
7.2474
7.2404
7.2349
7.2221
4.7031
2.6768
1.5580
N
H
O
O
3m
Integral
1.1027
1.0000
1.0890
1.0975
1.1194
1.2329
1.1478
3.2207
1.0602
1.8008
2.1670
3.2073
ppm
14
12
10
8
6
4
2
0


Current Data Parameters
NAME SBW-5-150
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170915
Time 8.04
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 2307
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 301.1 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4828468 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678028 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 10.00 cm
F1P 200.000 ppm
F1 30093.56 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.00000 ppm/cm
HZCM 1504.67798 Hz/cm
ppm
189.388
148.954
147.159
138.121
136.544
132.304
131.966
127.422
125.900
125.769
125.612
125.438
125.112
123.924
123.394
122.925
121.475
121.262
119.111
118.822
97.804
77.212
77.000
76.787
72.440
17.061
N
H
O
O
3m
ppm
180
160
140
120
100
80
60
40
20


16.292
7.8343
7.8106
7.6941
7.6705
7.4793
7.4709
7.4634
7.4455
7.2960
7.2770
7.2578
7.2400
7.0394
7.0331
7.0089
7.0034
6.9985
4.5313
3.0712
3.0525
3.0338
3.0151
1.6076
1.4645
1.4458
1.4271
Current Data Parameters
NAME 20171023
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20171023
Time 13.43
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 26
DS 0
SWH 8802.817 Hz
FIDRES 0.268641 Hz
AQ 1.8612725 se
RG 362
DW 56.800 us
DE 6.00 us
TE 300.0 K
D1 2.00000000 se
TD0 1
======== CHANNEL f1 ======
NUC1 1H
P1 10.00 us
PL1 -2.40 dB
SFO1 400.1528010 MH
F2 - Processing parameters
SI 16384
SF 400.1500169 MH
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
N
H
O
O
3n
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.00
1.06
1.09
3.10
1.13
3.12
2.00
2.00
3.12


188.658
152.746
149.415
138.265
135.738
131.740
130.249
125.385
124.984
124.566
124.182
123.628
123.448
121.982
118.617
117.236
97.133
77.310
76.992
76.675
72.096
23.717
12.983
Current Data Parameters
NAME 20171023
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171023
Time 19.04
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178045 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
N
H
O
O
3n
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm


16.4123
7.8466
7.8309
7.7108
7.7090
7.6950
7.6932
7.5547
7.5423
7.4782
7.4663
7.4642
7.4489
7.3277
7.3149
7.3020
7.2400
7.0452
7.0426
7.0384
7.0335
7.0261
7.0233
7.0183
7.0134
7.0109
7.0084
7.0054
7.0017
6.9962
4.5385
3.6556
3.6443
3.6329
3.6216
3.6103
3.5990
3.5880
1.5291
1.4522
1.4409
1.2357
Current Data Parameters
NAME SBW-5-156
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170926
Time 5.52
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 64
DS 0
SWH 12019.230 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 se
RG 512
DW 41.600 us
DE 6.50 us
TE 301.9 K
D1 2.00000000 se
MCREST 0 sec
MCWRK 0.01500000 se
======== CHANNEL f1 ======
NUC1 1H
P1 15.00 us
PL1 -1.00 dB
SFO1 598.4050864 MH
F2 - Processing parameters
SI 32768
SF 598.4000249 MH
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
N
H
O
O
3o
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
ppm
1.00
1.18
1.18
1.16
2.17
1.05
3.16
2.10
1.07
6.13


Current Data Parameters
NAME SBW-5-156
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170925
Time 14.57
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 6144
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 301.9 K
D1 3.50000000 sec
D11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4828468 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678007 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 15.00 cm
F1P 200.000 ppm
F1 30093.56 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.00000 ppm/cm
HZCM 1504.67798 Hz/cm
ppm
188.693
152.820
149.610
138.505
136.512
135.264
127.718
125.435
125.021
124.676
124.353
123.664
122.033
118.655
117.304
97.160
77.214
77.002
76.790
72.130
29.697
27.765
22.460
N
H
O
O
3o
ppm
180
160
140
120
100
80
60
40
20

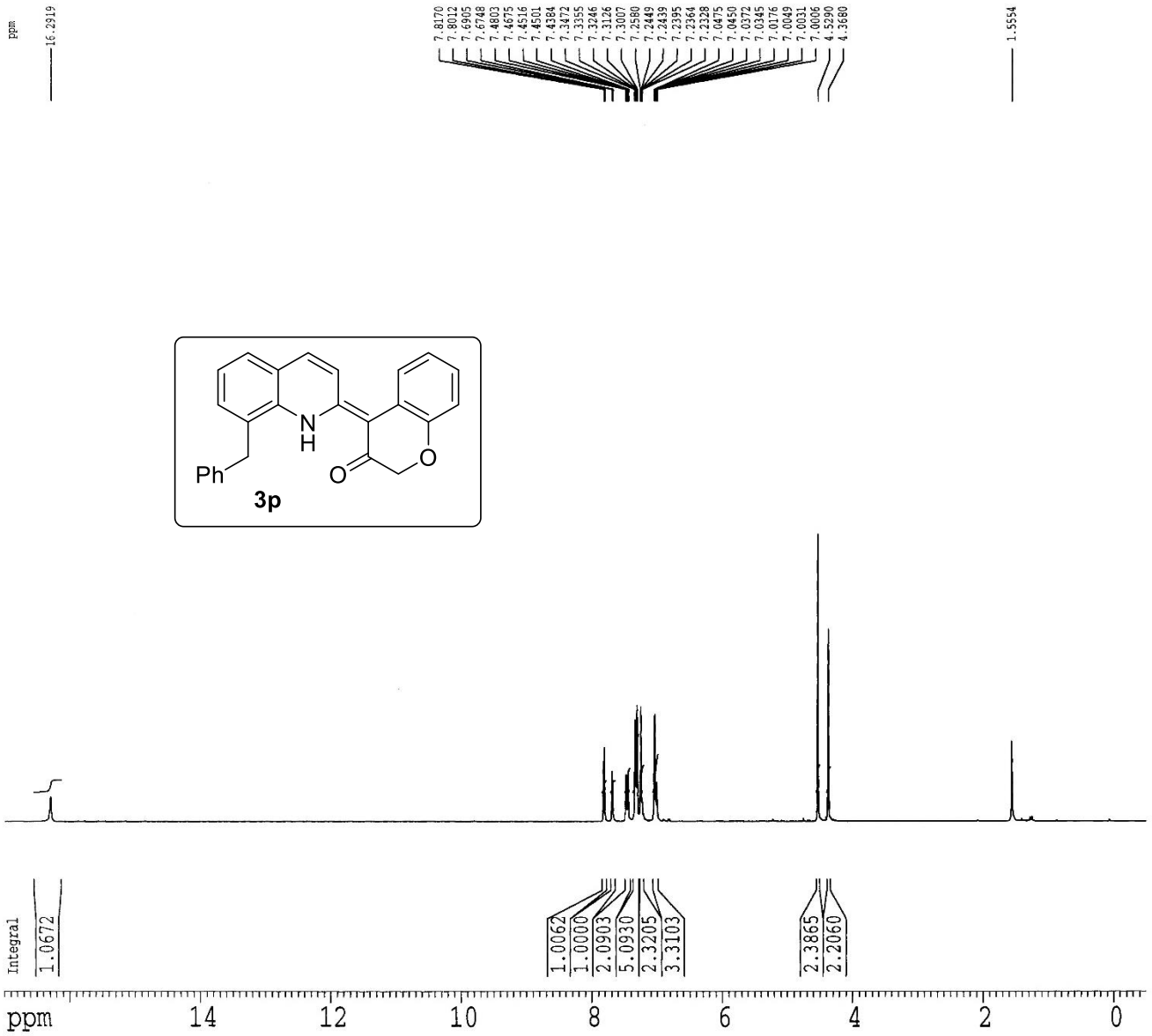
```
Current Data Parameters
NAME          SEM-5-165
EXPNO                 1
PROCNO                1

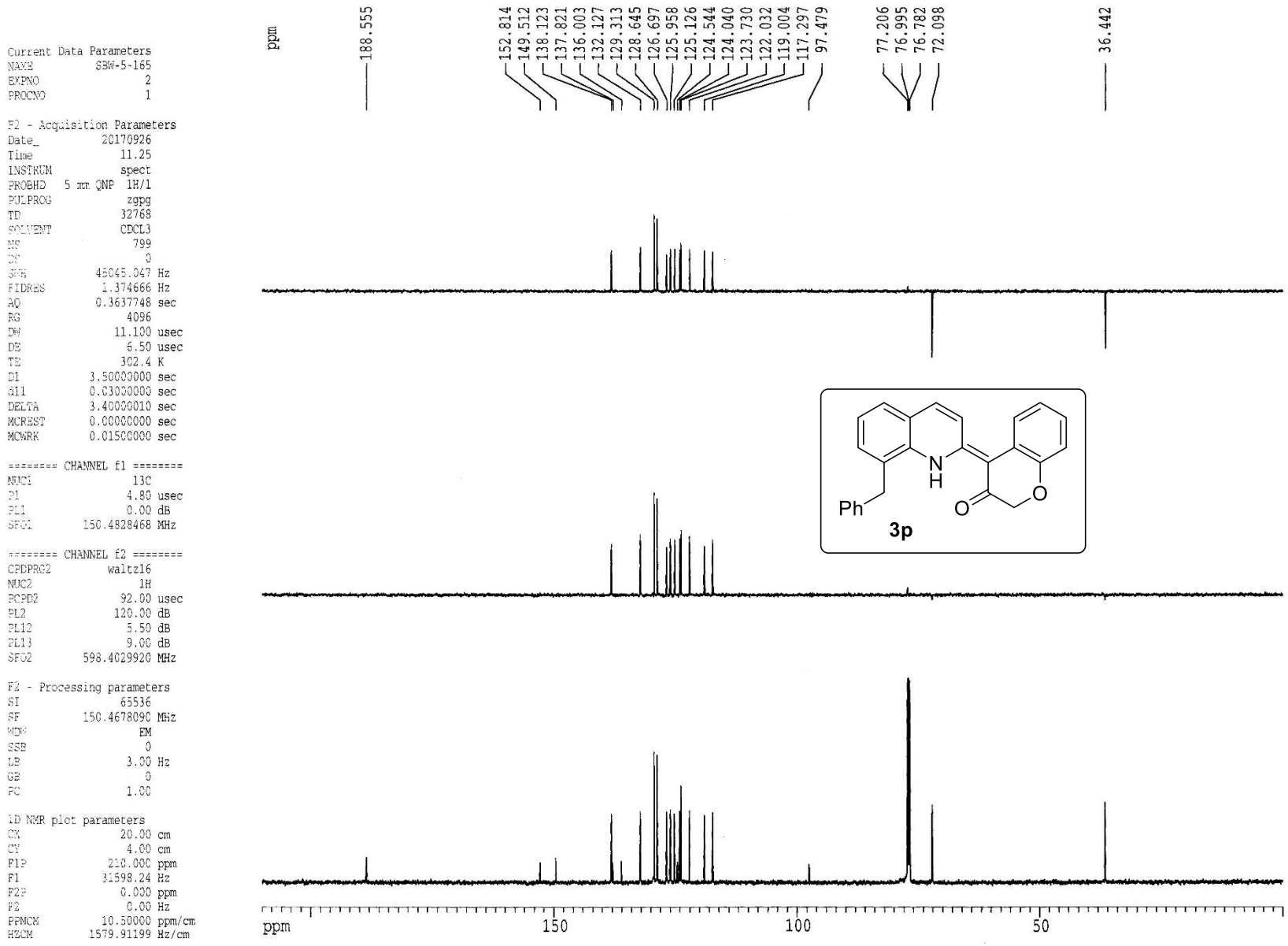
F2 - Acquisition Parameters
Date_          20170926
Time              13.29
INSTRUM           spect
PROBHD   5 mm QNP  1H/1
PULPROG              zg
TD                32768
SOLVENT             C6D6
NS                    32
DS                     0
SWH           12019.230 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG                  512
DW               41.600 usec
DE                6.50 usec
TE               301.6 K
D1            2.00000000 sec
MCREST        0.00000000 sec
MCWRK         0.01500000 sec

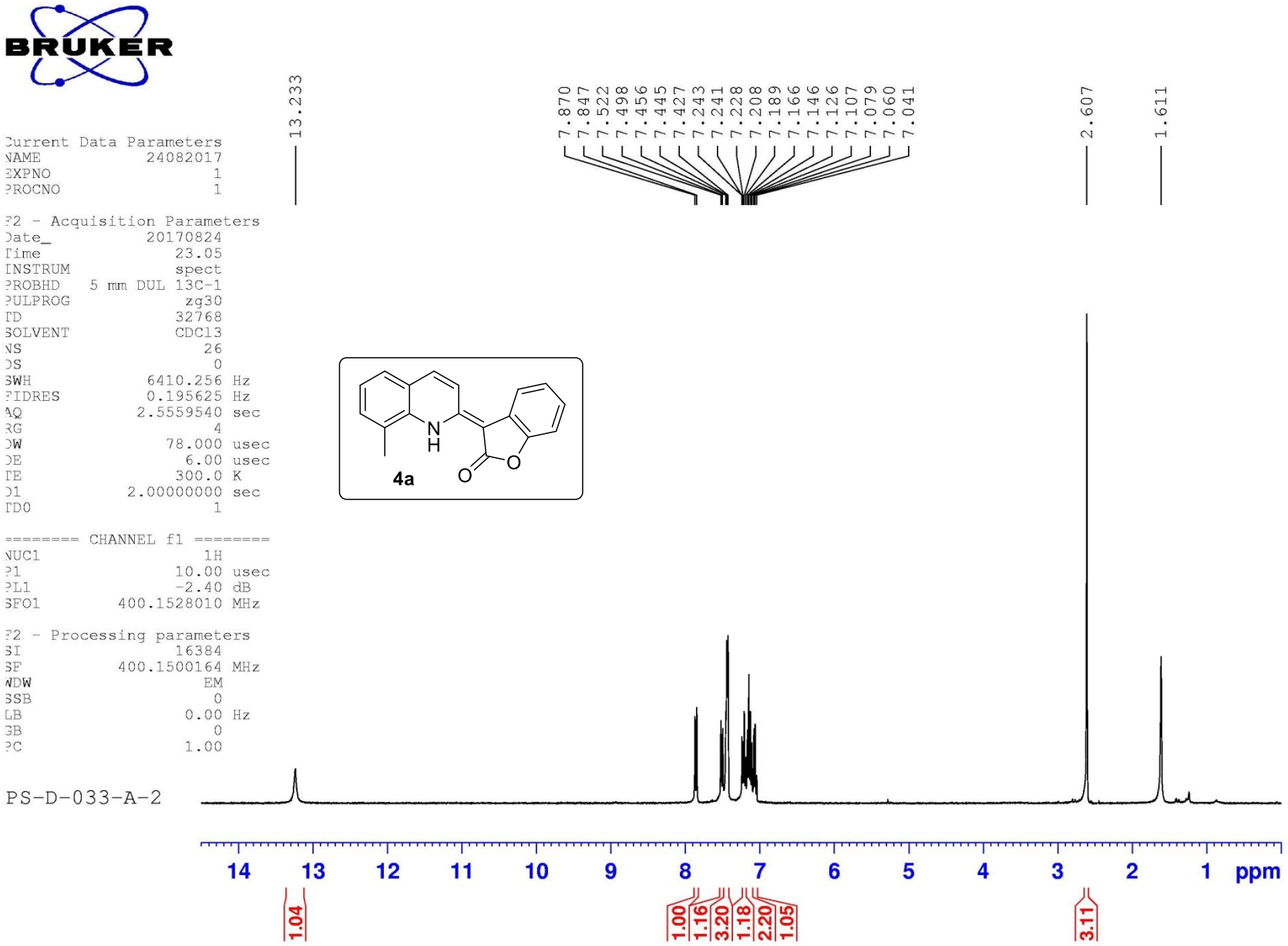
======== CHANNEL f1 ========
NUC1                  1H
P1                15.00 usec
PL1               -1.00 dB
SFO1         598.4047872 MHz

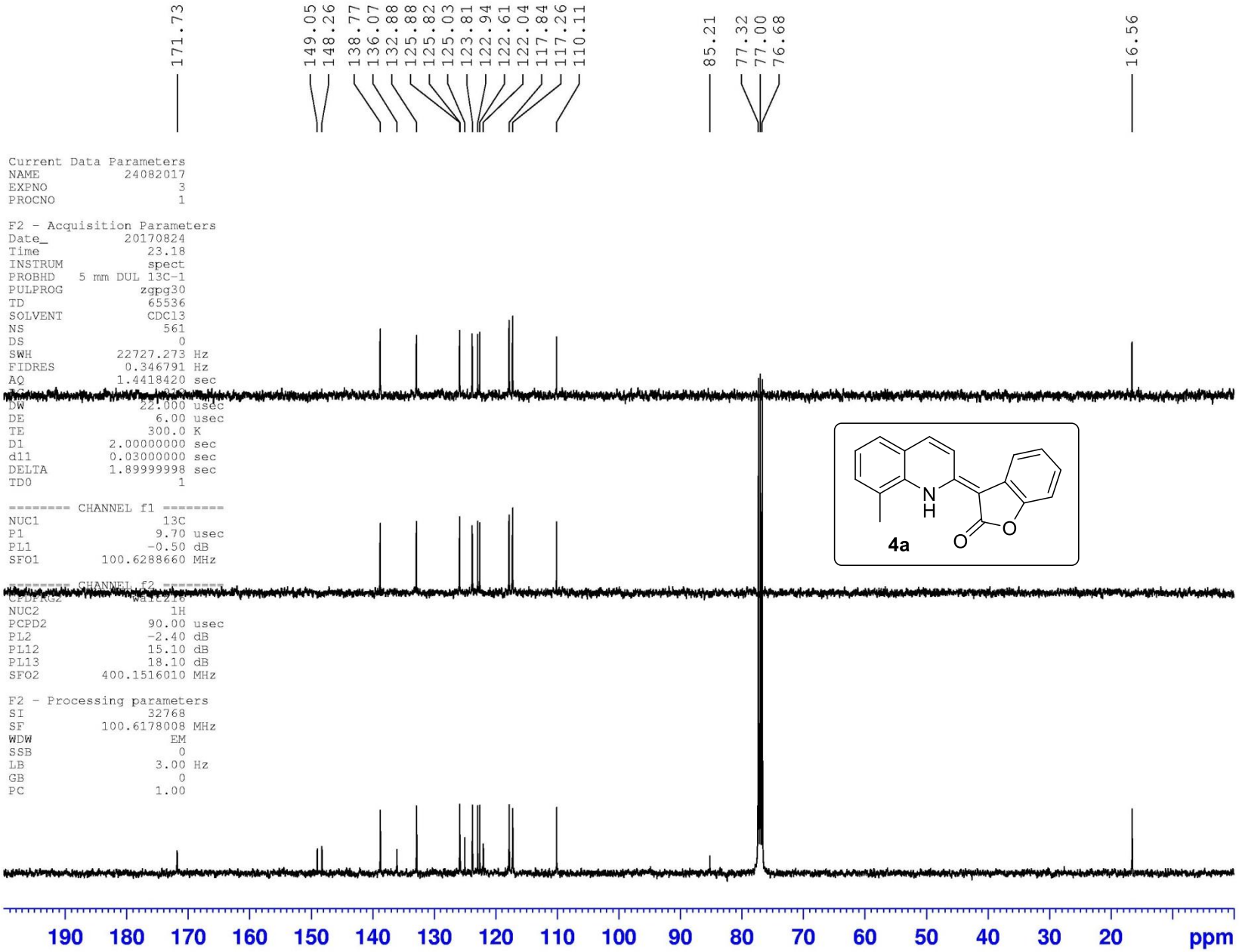
F2 - Processing parameters
SI                32768
SF          598.4000468 MHz
WDW                  no
SSB                   0
LB                 0.00 Hz
GB                    0
PC                 1.00

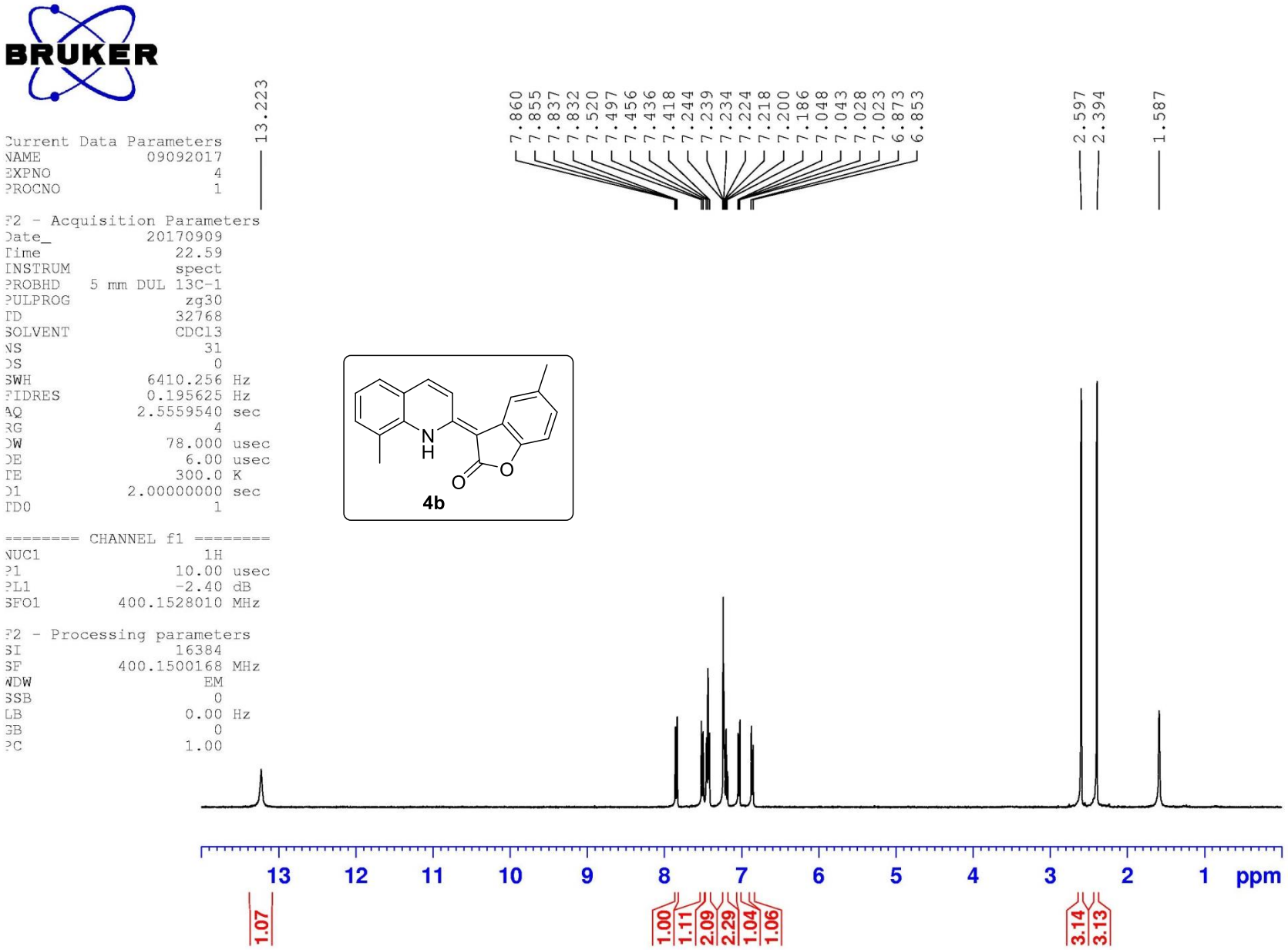
1D NMR plot parameters
CX                20.00 cm
CY                 5.00 cm
F1P               17.000 ppm
F1                10172.80 Hz
F2P               -0.500 ppm
F2                -299.20 Hz
PPMCM             0.87500 ppm/cm
HZCM            523.60004 Hz/cm
```

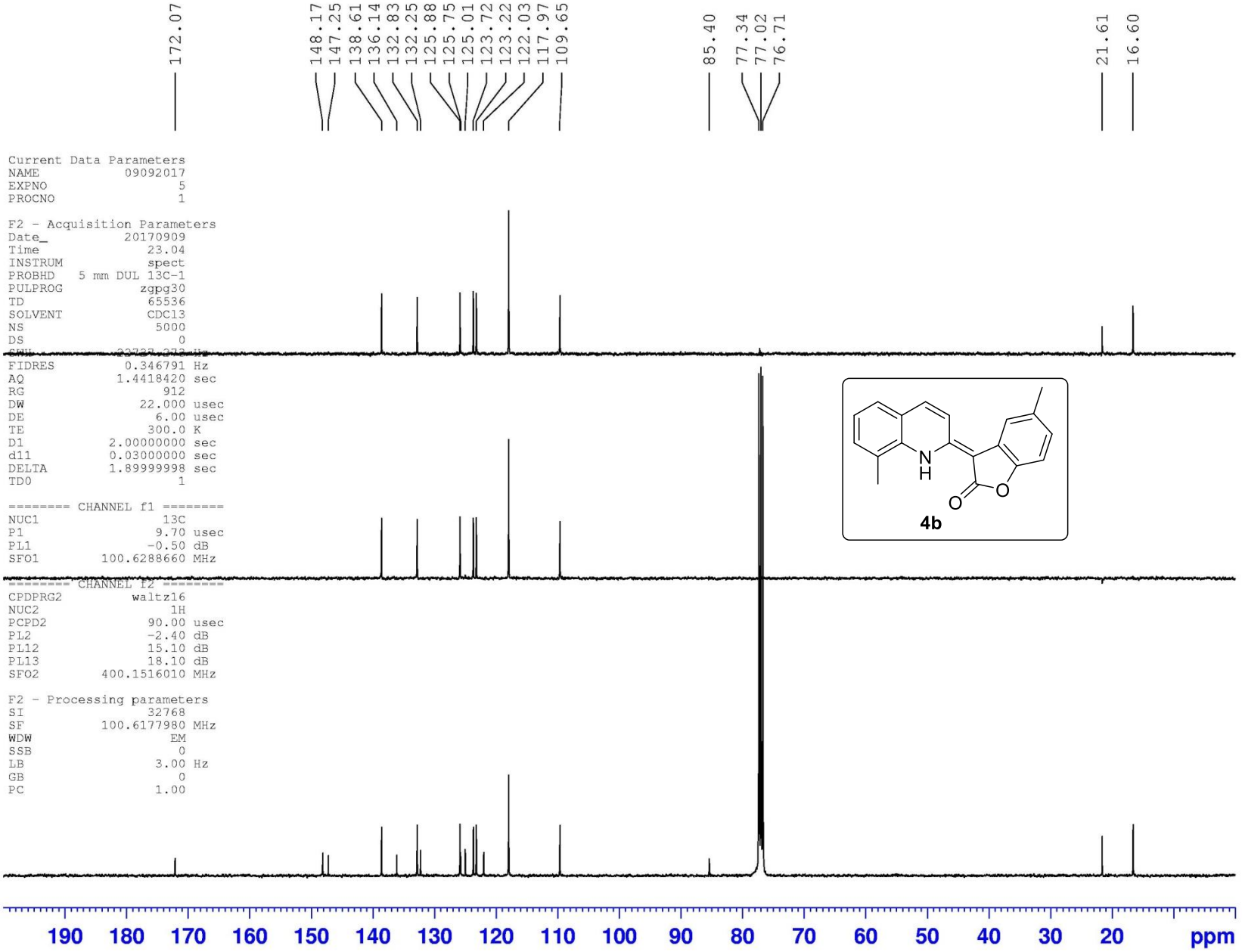


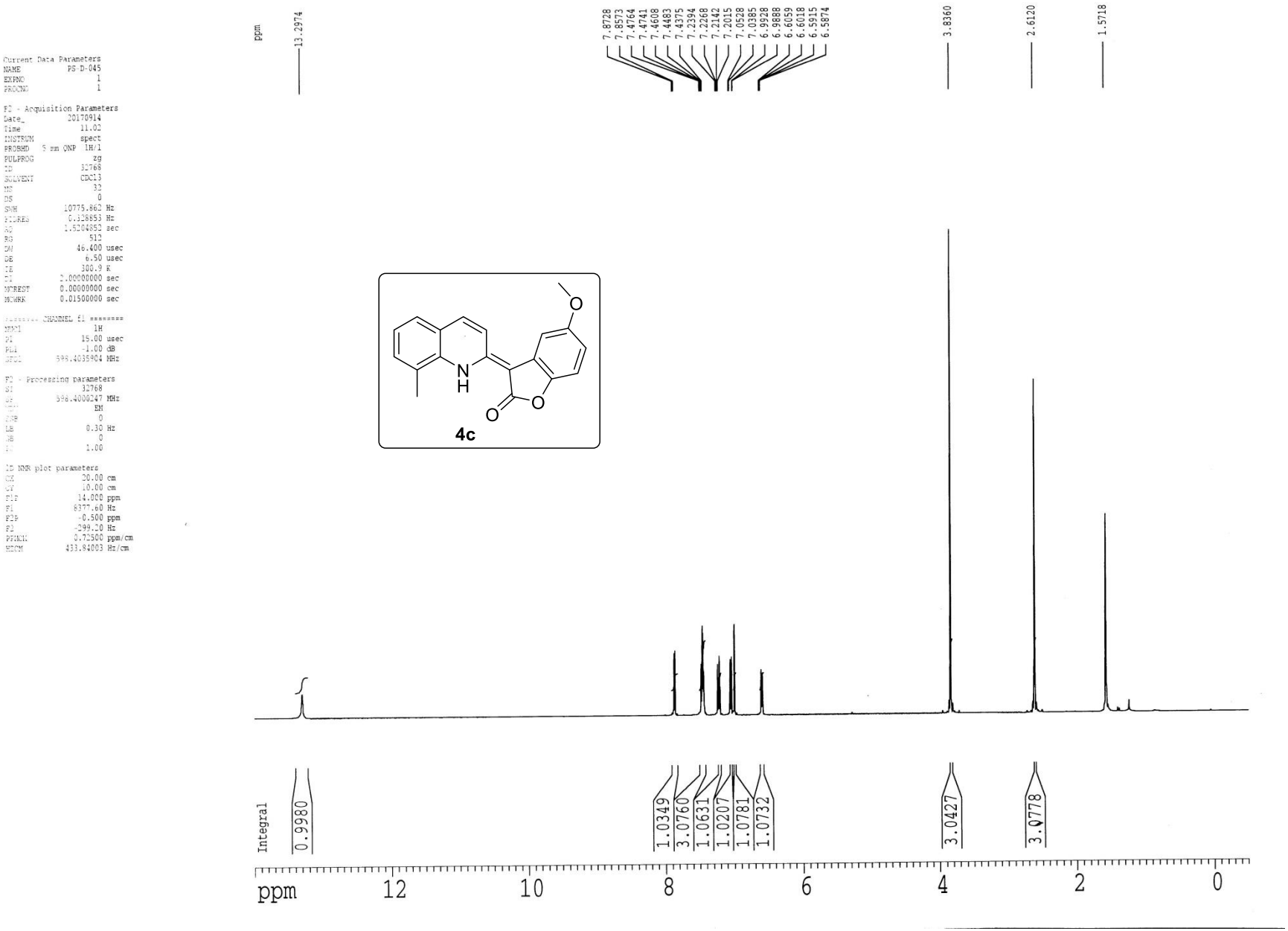

Current Data Parameters
NAME SBW-5-165
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170926
Time 11.25
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCL3
NS 799
DS 0
SWH 48065.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 302.4 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4828468 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678090 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 4.00 cm
F1P 210.000 ppm
F1 31598.24 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.50000 ppm/cm
HZCM 1579.91199 Hz/cm
ppm
188.555
152.814
149.512
138.123
137.821
136.003
132.127
129.313
128.645
126.697
125.958
125.126
124.544
124.040
123.730
122.032
119.004
117.297
97.479
77.206
76.995
76.782
72.098
36.442
N
H
Ph
O
O
3p
ppm
150
100
50


Current Data Parameters
NAME 24082017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170824
Time 23.05
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 26
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500164 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
13.233
7.870
7.847
7.522
7.498
7.456
7.445
7.427
7.243
7.241
7.228
7.208
7.189
7.166
7.146
7.126
7.107
7.079
7.060
7.041
2.607
1.611
N
H
O
O
4a
PS-D-033-A-2
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.04
1.00
1.16
3.20
1.18
2.20
1.05
3.11


171.73
149.05
148.26
138.77
136.07
132.88
125.88
125.82
125.03
123.81
122.94
122.61
122.04
117.84
117.26
110.11
85.21
77.32
77.00
76.68
16.56
Current Data Parameters
NAME 24082017
EXPNO 3
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170824
Time 23.18
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 561
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178008 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
N
H
O
O
4a
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm


13.223
7.860
7.855
7.837
7.832
7.520
7.497
7.456
7.436
7.418
7.244
7.239
7.234
7.224
7.218
7.200
7.186
7.048
7.043
7.028
7.023
6.873
6.853
2.597
2.394
1.587
Current Data Parameters
NAME 09092017
EXPNO 4
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170909
Time 22.59
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 31
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
N
H
O
O
4b
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.07
1.00
1.11
2.09
2.29
1.04
1.06
3.14
3.13


172.07
148.17
147.25
138.61
136.14
132.83
132.25
125.88
125.75
125.01
123.72
123.22
122.03
117.97
109.65
85.40
77.34
77.02
76.71
21.61
16.60
Current Data Parameters
NAME 09092017
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170909
Time 23.04
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5000
DS 0
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177980 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
N
H
O
O
4b
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm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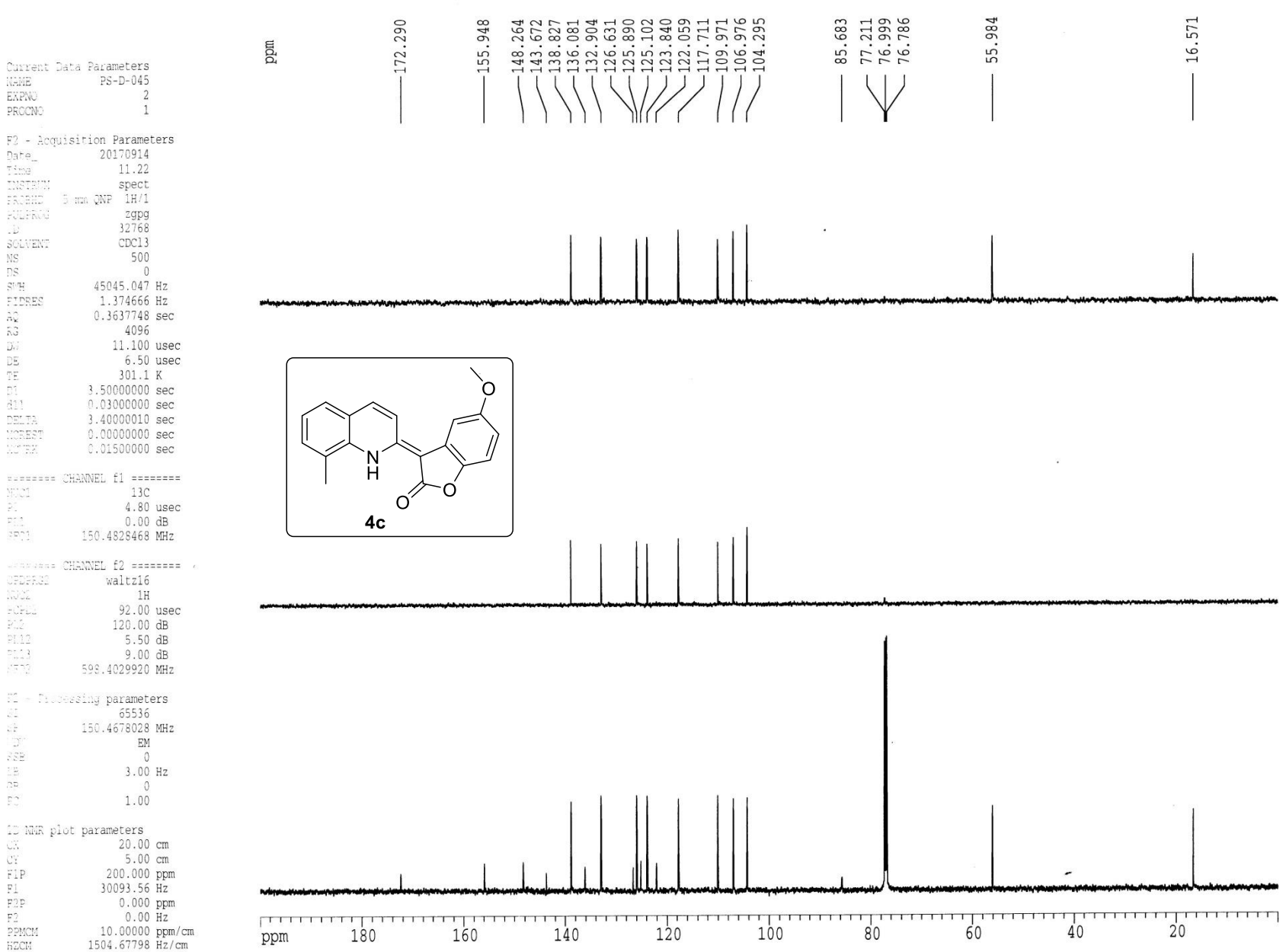
NAME PS-D-045
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170914
Time 11.02
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 10775.862 Hz
FIDRES 0.328853 Hz
AQ 1.5204852 sec
RG 512
DW 46.400 usec
DE 6.50 usec
TE 300.9 K
D1 2.00000000 sec
MYREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.00 usec
PL1 -1.00 dB
SFO1 599.4035904 MHz
F2 - Processing parameters
SI 32768
SF 599.4000247 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 10.00 cm
F1P 14.000 ppm
F1 8377.60 Hz
F2P -0.500 ppm
F2 -299.20 Hz
PPMCM 0.72500 ppm/cm
HZCM 433.84003 Hz/cm
ppm
13.2974
7.8728
7.8573
7.4764
7.4741
7.4608
7.4483
7.4375
7.2394
7.2268
7.2142
7.2015
7.0528
7.0385
6.9928
6.9888
6.6059
6.6018
6.5915
6.5874
3.8360
2.6120
1.5718
O
N
H
O
O
4c
Integral
0.9980
1.0349
3.0760
1.0631
1.0207
1.0781
1.0732
3.0427
3.0778
ppm
12
10
8
6
4
2
0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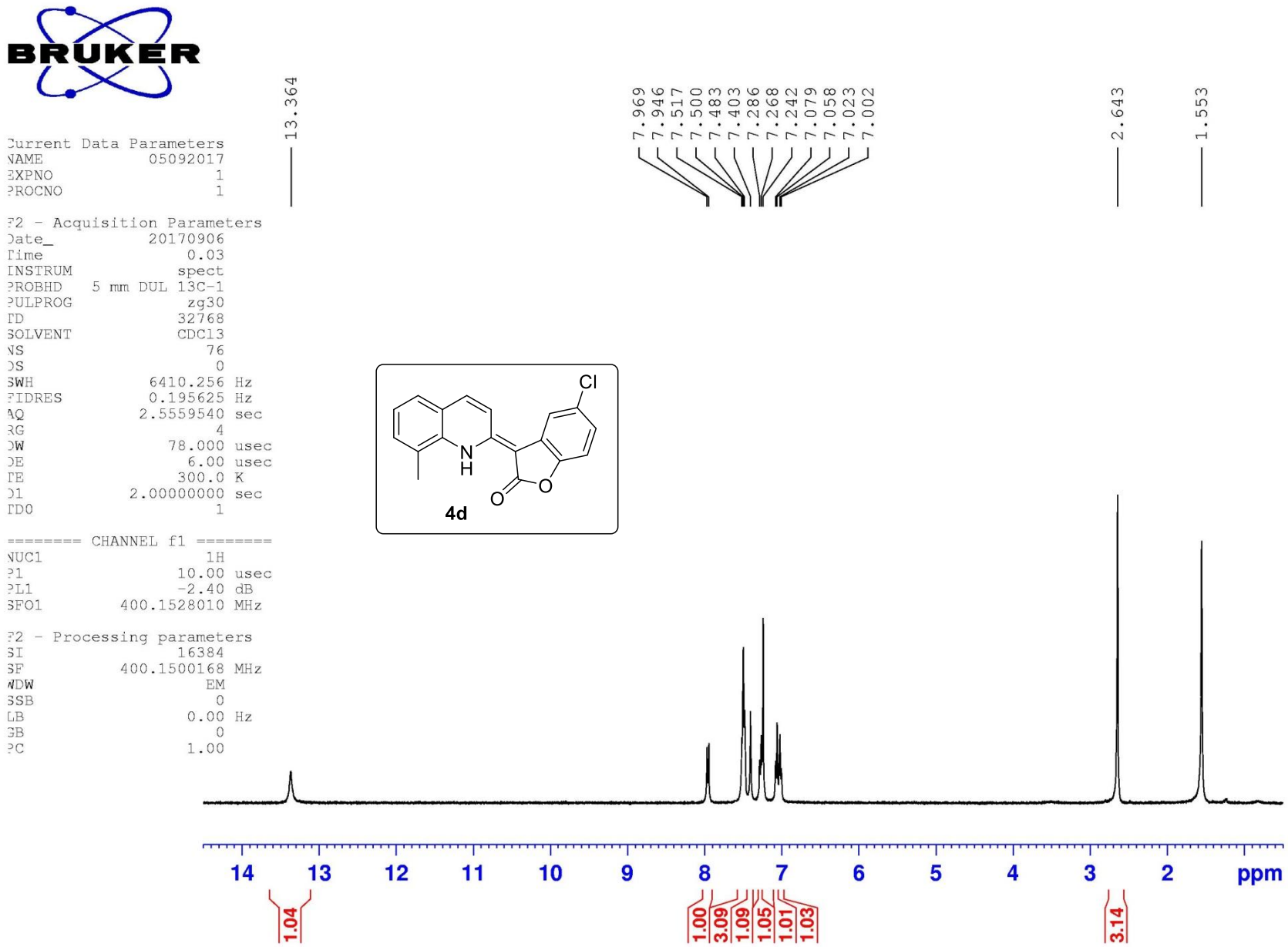
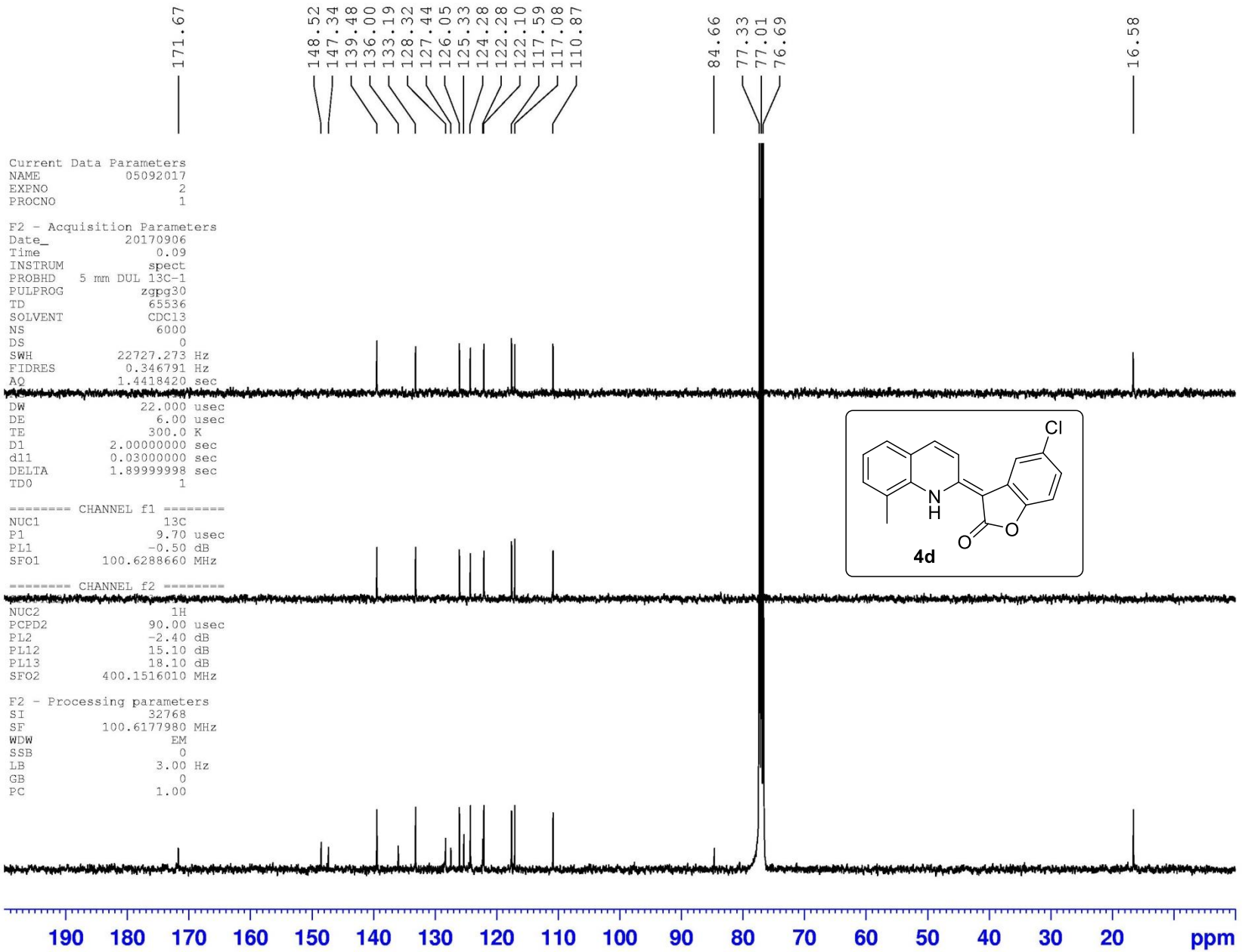
NAME PS-D-045
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170914
Time 11.22
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 500
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637748 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 301.1 K
D1 3.50000000 sec
D11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0.00 dB
SFO1 150.4828468 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 599.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678028 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 5.00 cm
F1P 200.000 ppm
F1 30093.56 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 10.00000 ppm/cm
HZCM 1504.67798 Hz/cm
ppm
172.290
155.948
148.264
143.672
138.827
136.081
132.904
126.631
125.890
125.102
123.840
122.059
117.711
109.971
106.976
104.295
85.683
77.211
76.999
76.786
55.984
16.571
4c
ppm
180
160
140
120
100
80
60
40
20


13.364
7.969
7.946
7.517
7.500
7.483
7.403
7.286
7.268
7.242
7.079
7.058
7.023
7.002
2.643
1.553
Current Data Parameters
NAME 05092017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170906
Time 0.03
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 76
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
Cl
N
H
O
O
4d
14
13
12
11
10
9
8
7
6
5
4
3
2
ppm
1.04
1.00
3.09
1.09
1.05
1.01
1.03
3.14


171.67
148.52
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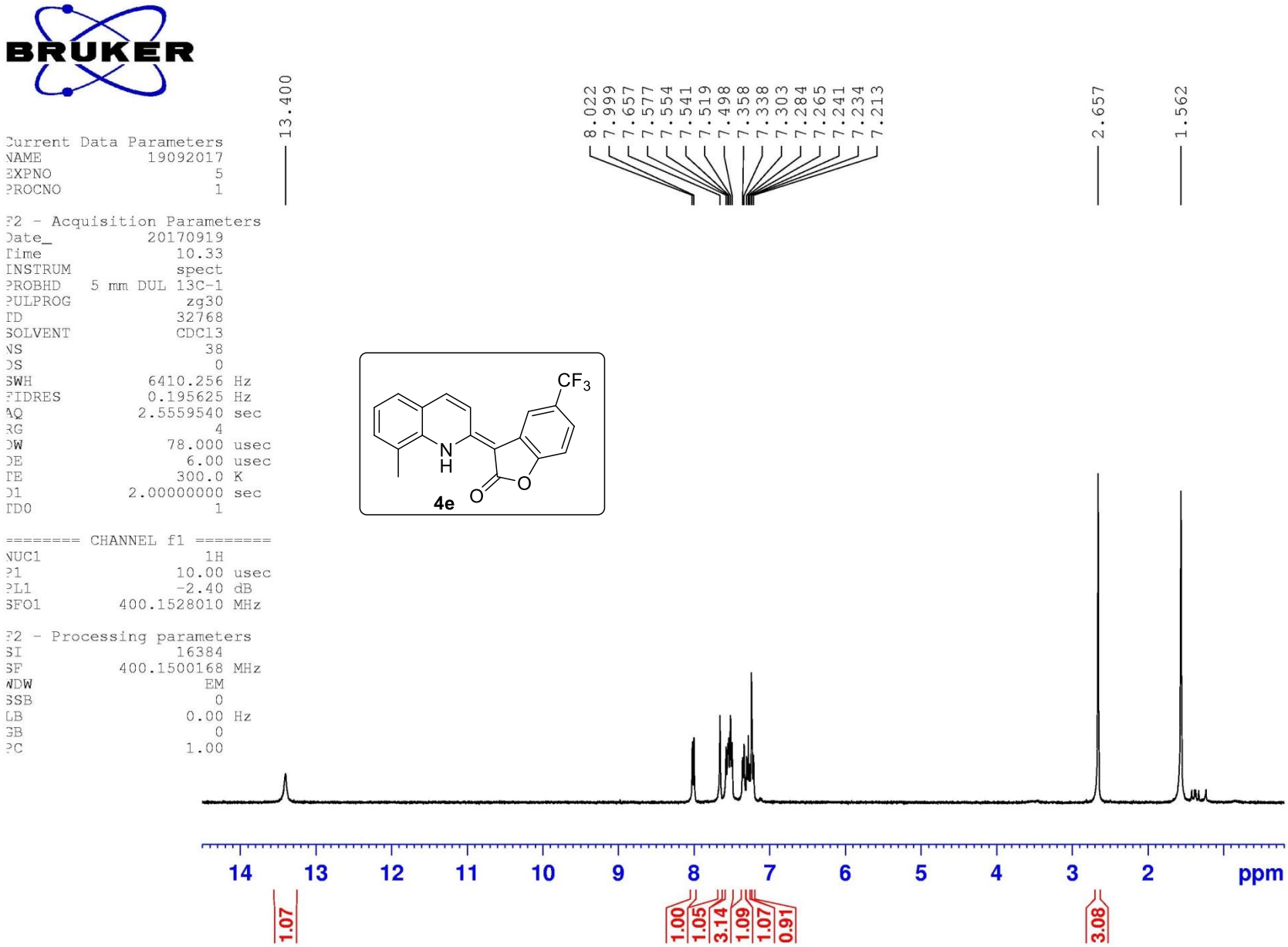
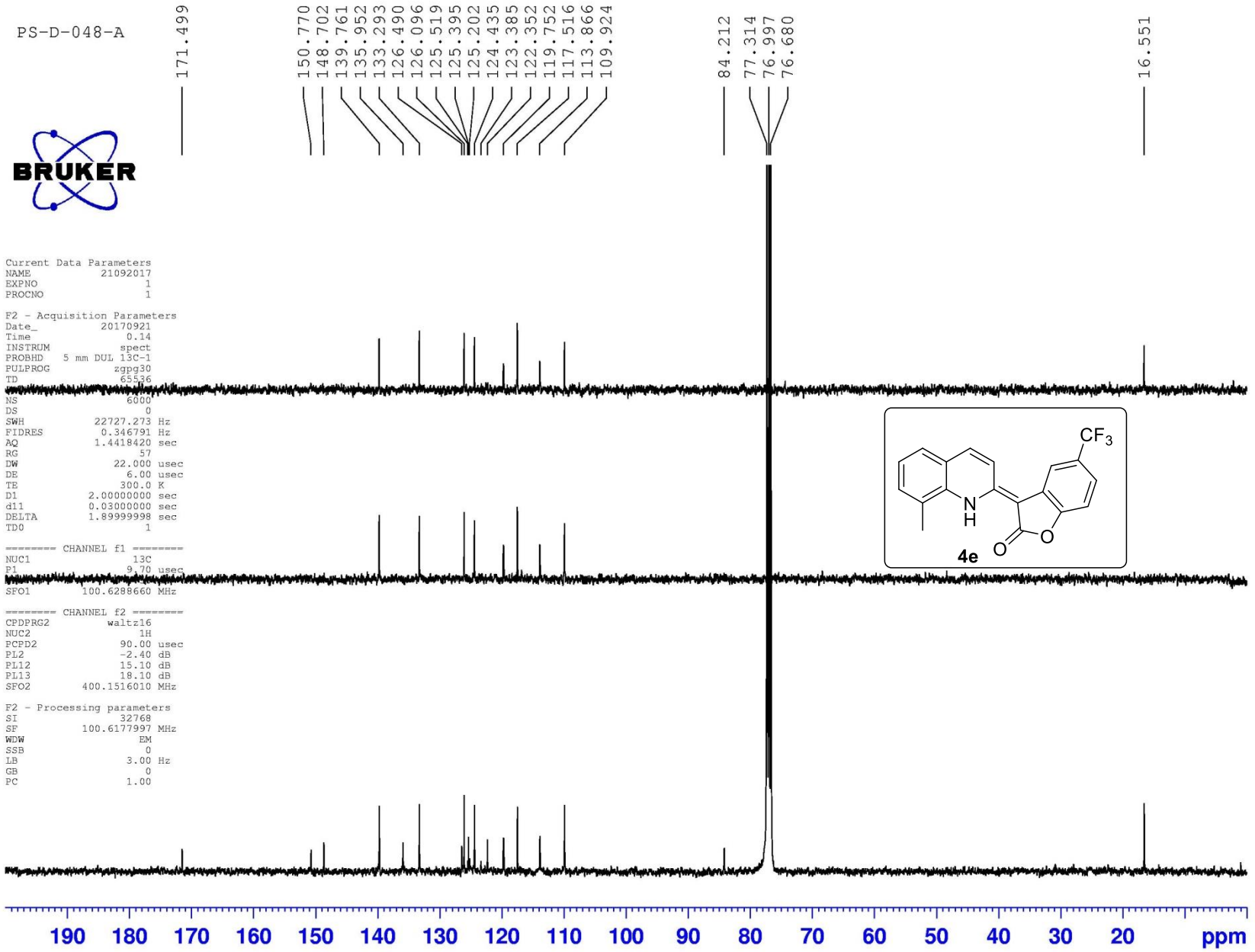
139.48
136.00
133.19
128.32
127.44
126.05
125.33
124.28
122.28
122.10
117.59
117.08
110.87
84.66
77.33
77.01
76.69
16.58
Current Data Parameters
NAME 05092017
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170906
Time 0.09
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 6000
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177980 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
Cl
N
H
O
O
4d
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm


Current Data Parameters
NAME 19092017
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170919
Time 10.33
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 38
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
13.400
8.022
7.999
7.657
7.577
7.554
7.541
7.519
7.498
7.358
7.338
7.303
7.284
7.265
7.241
7.234
7.213
2.657
1.562
CF3
N
H
O
O
4e
14
13
12
11
10
9
8
7
6
5
4
3
2
ppm
1.07
1.00
1.05
3.14
1.09
1.07
0.91
3.08

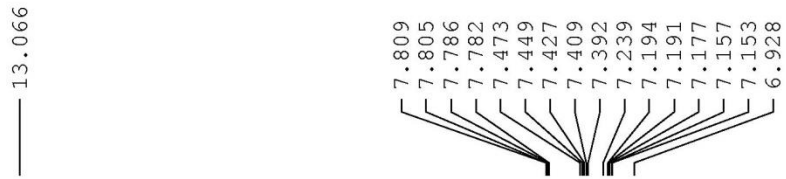

PS-D-048-A
171.499
150.770
148.702
139.761
135.952
133.293
126.490
126.096
125.519
125.395
125.202
124.435
123.385
122.352
119.752
117.516
113.866
109.924
84.212
77.314
76.997
76.680
16.551
BRUKER
Current Data Parameters
NAME 21092017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170921
Time 0.14
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
NS 6000
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 57
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177997 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
CF3
N
H
O
O
4e
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

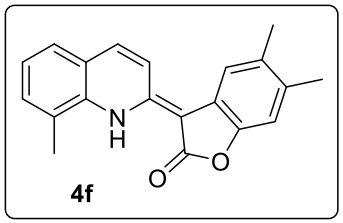
```
Current Data Parameters
NAME              11092017
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_             20170911
Time                 23.10
INSTRUM              spect
PROBHD    5 mm DUL 13C-1
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     20
DS                      0
SWH               6410.256 Hz
FIDRES            0.195625 Hz
AQ                2.5559540 sec
RG                      4
DW                 78.000 usec
DE                  6.00 usec
TE                 300.0 K
D1              2.00000000 sec
TD0                     1

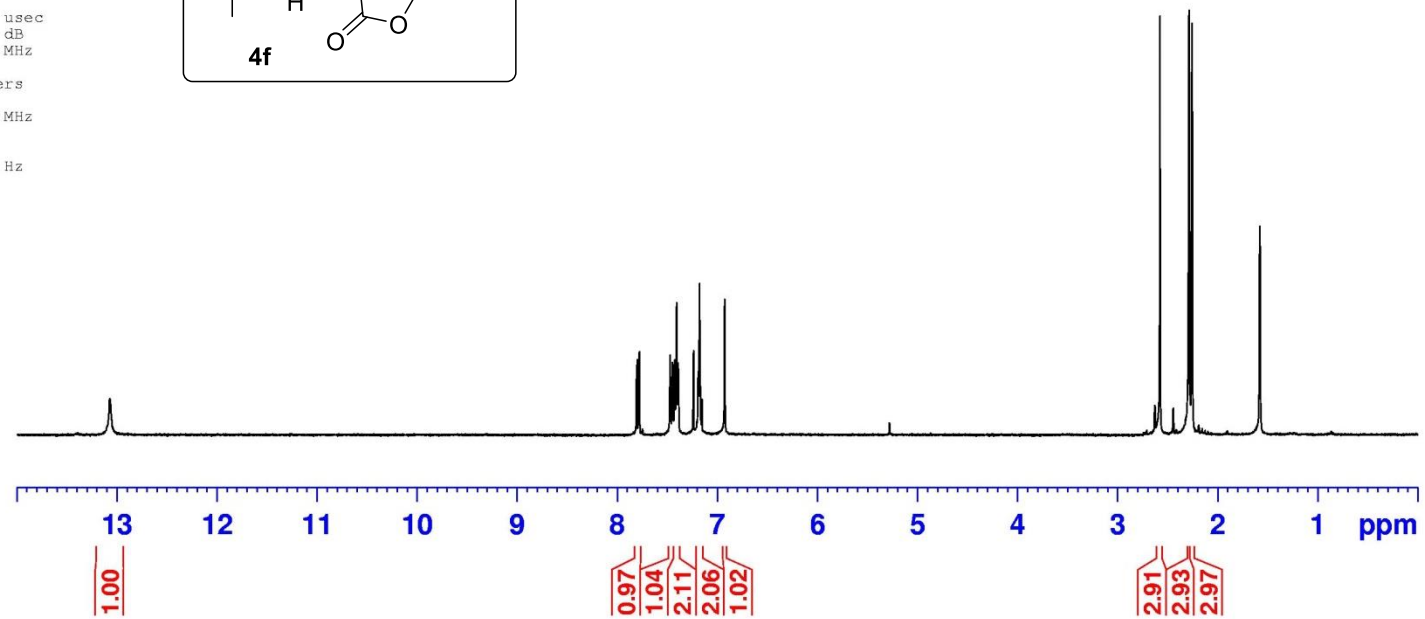
======== CHANNEL f1 ========
NUC1                   1H
P1                  10.00 usec
PL1                 -2.40 dB
SFO1          400.1528010 MHz

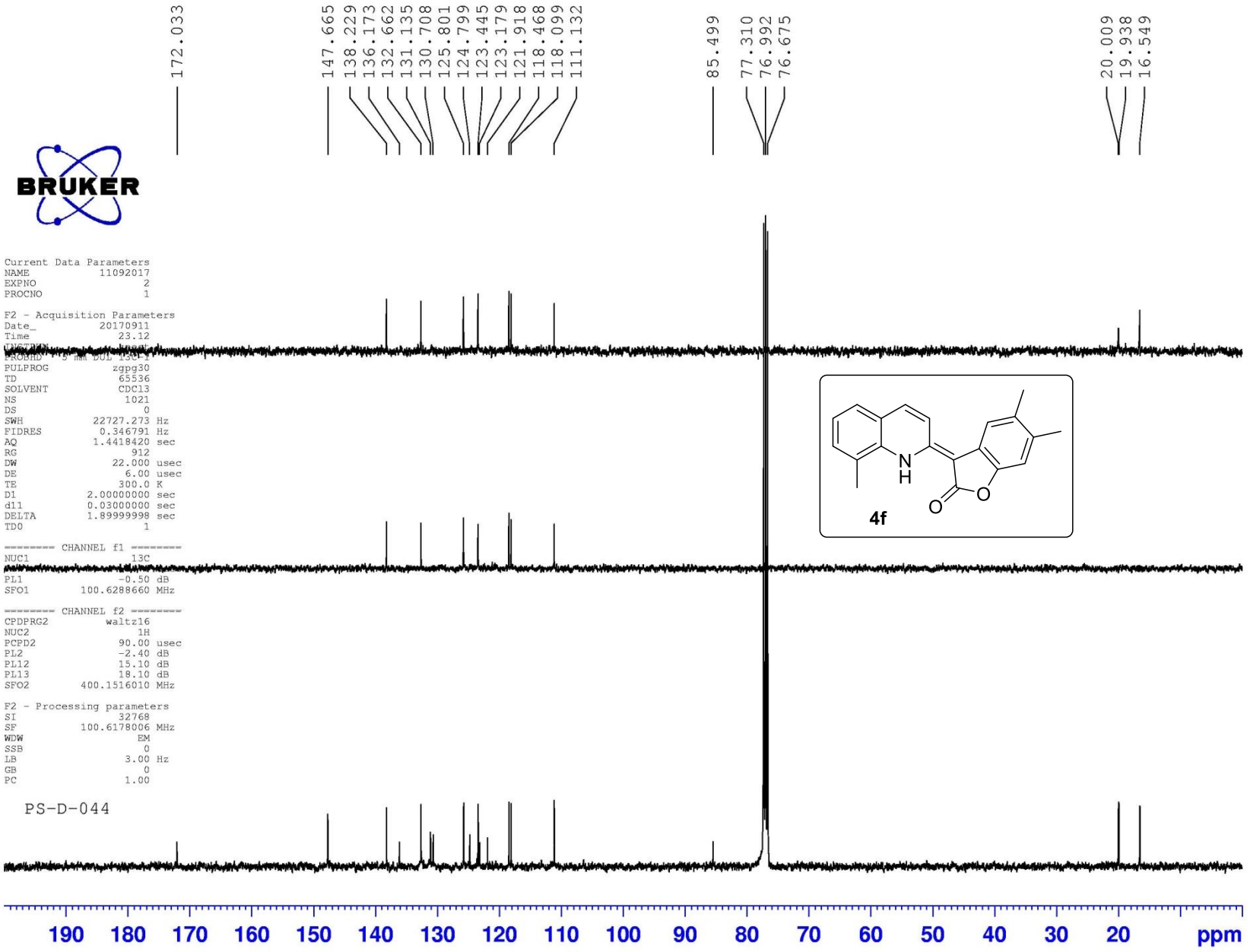
F2 - Processing parameters
SI                  16384
SF            400.1500168 MHz
WDW                    EM
SSB                     0
LB                   0.00 Hz
GB                      0
PC                   1.00
```

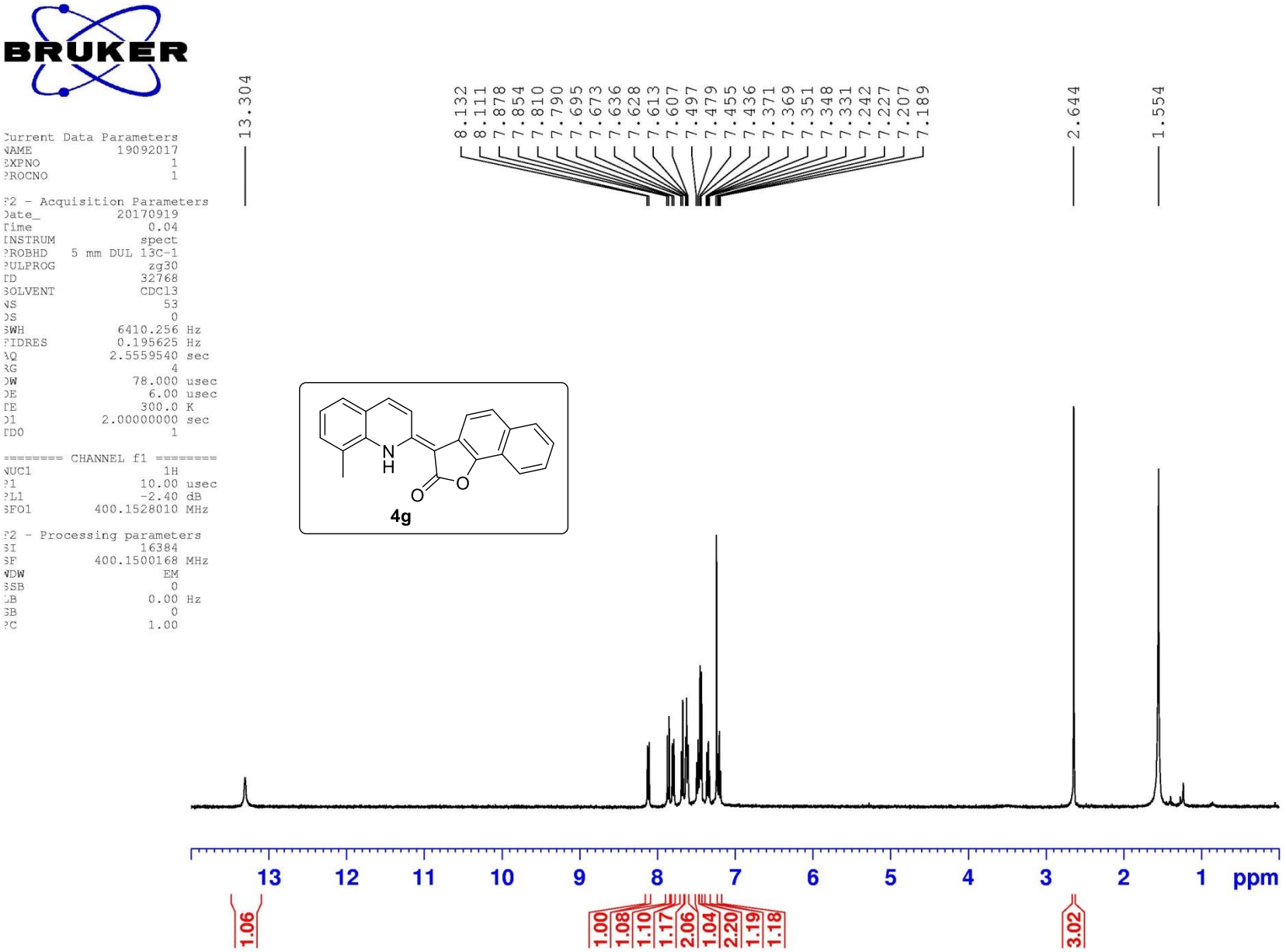


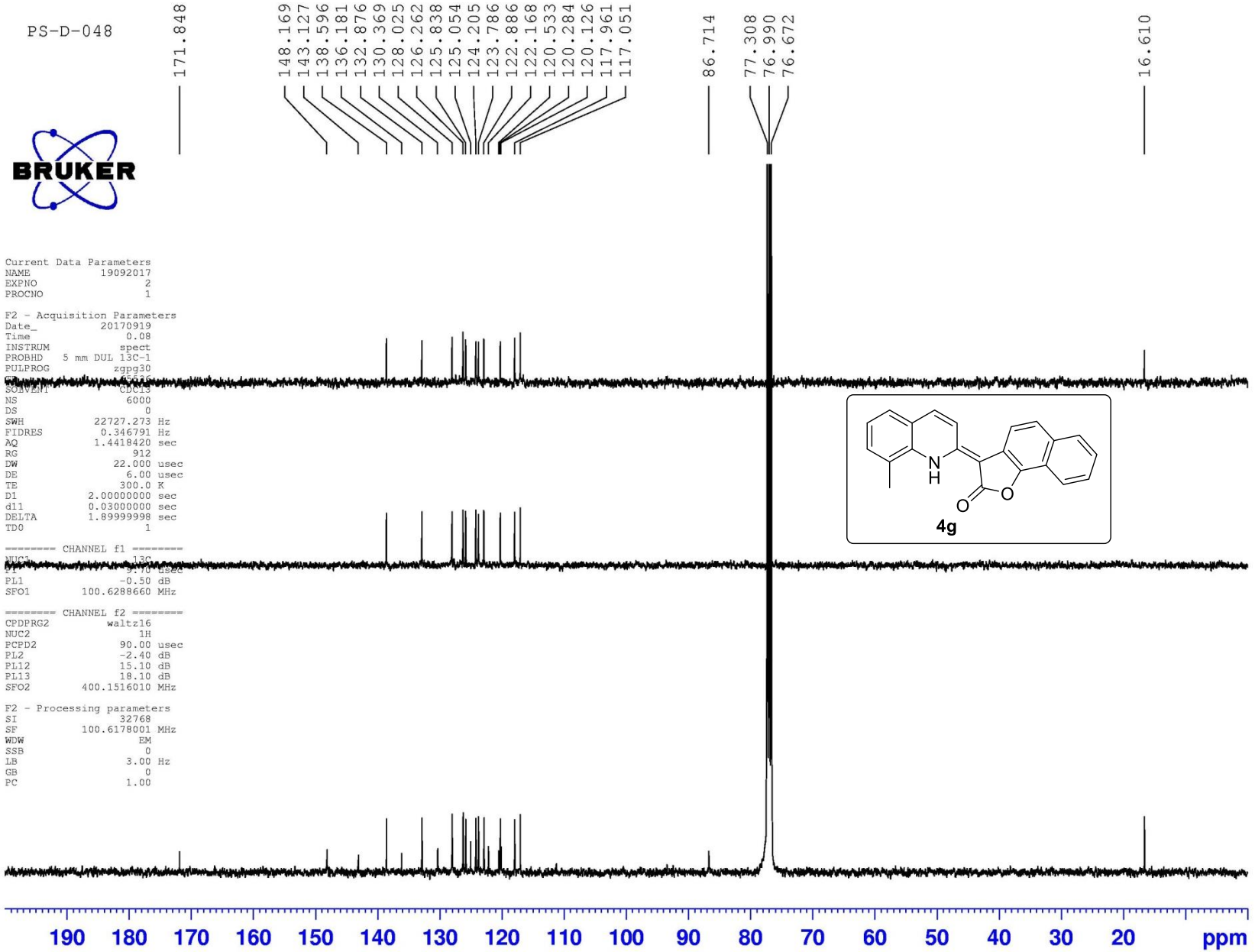


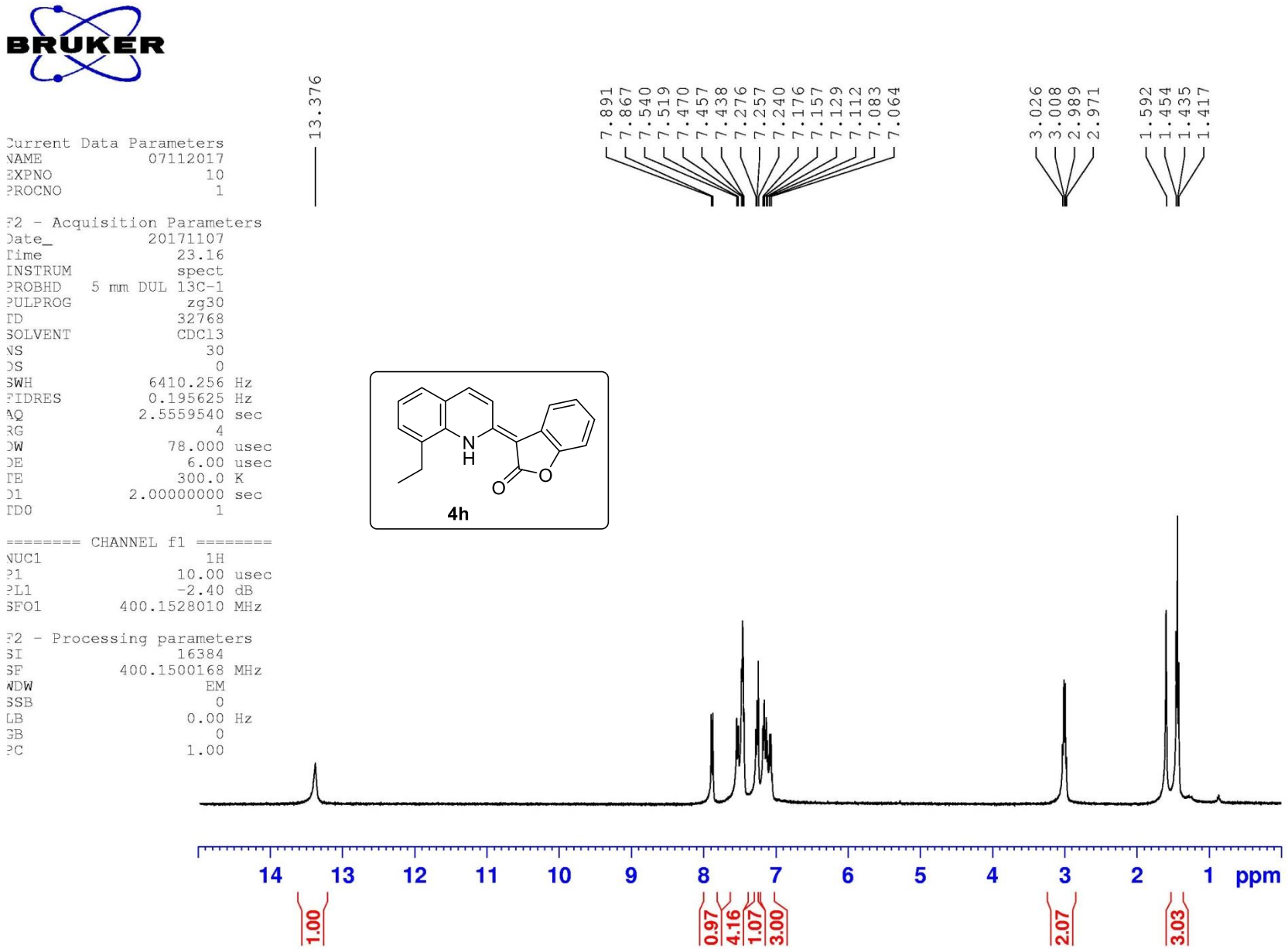
4f

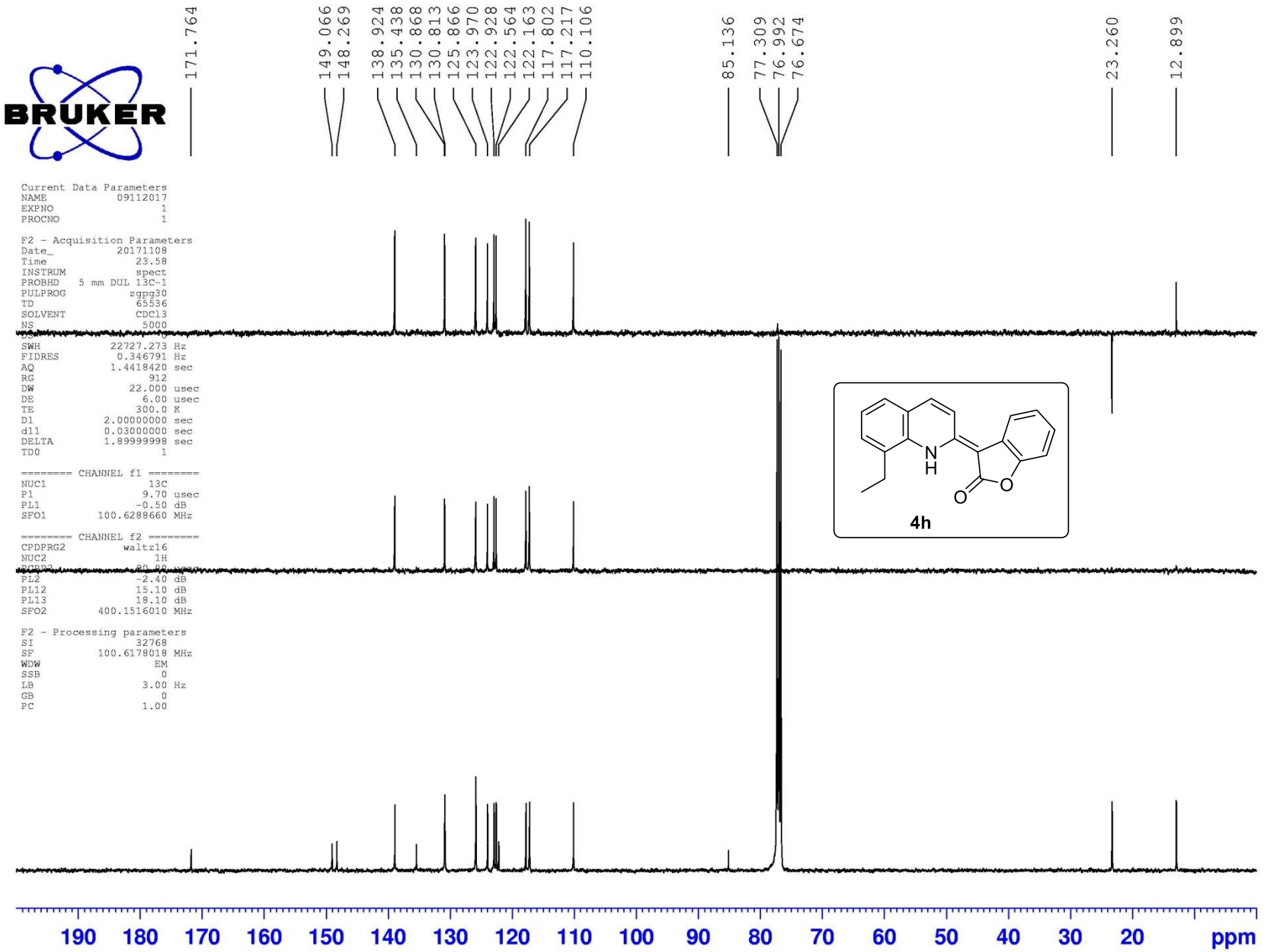


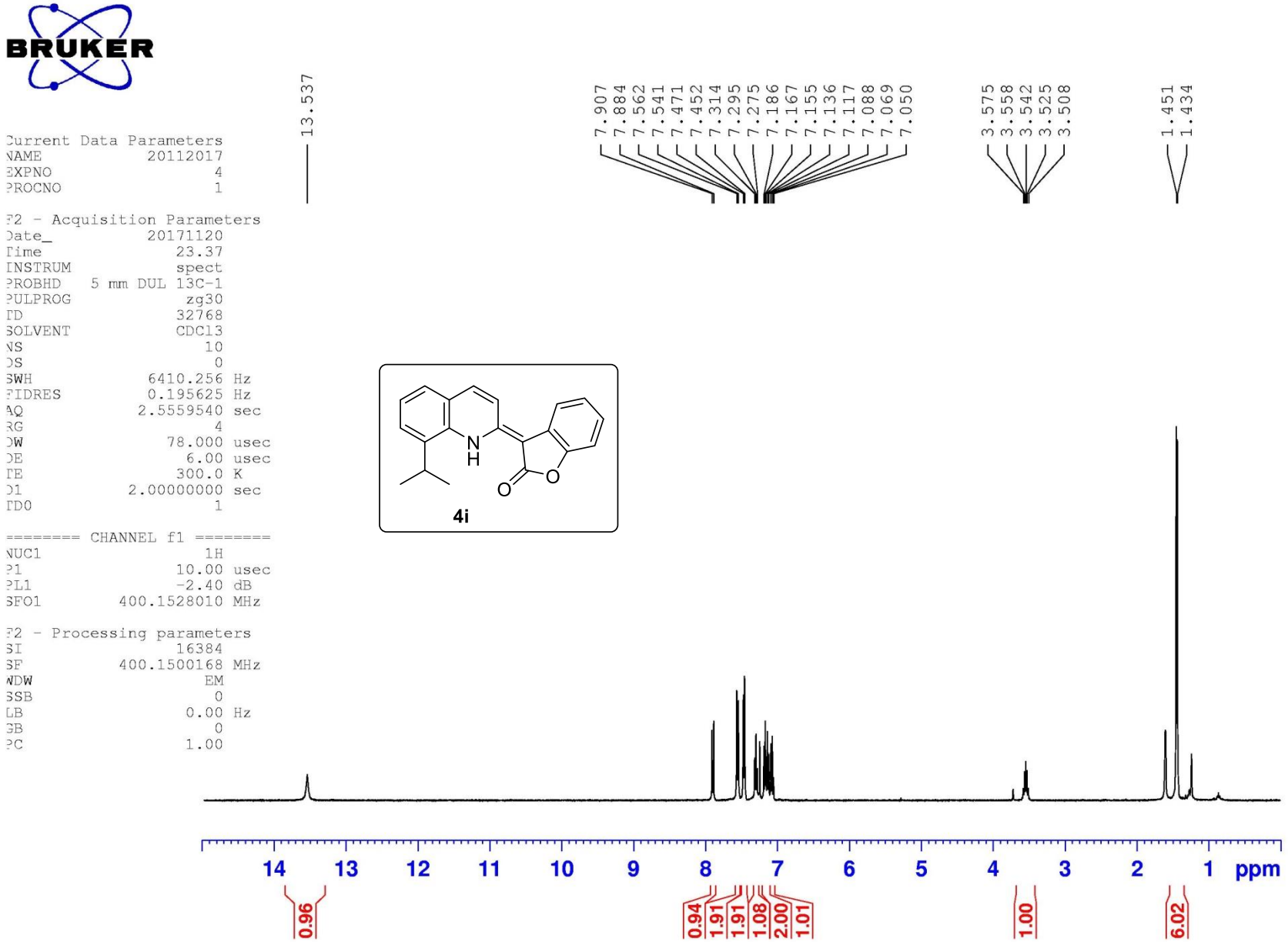

172.033
147.665
138.229
136.173
132.662
131.135
130.708
125.801
124.799
123.445
123.179
121.918
118.468
118.099
111.132
85.499
77.310
76.992
76.675
20.009
19.938
16.549
BRUKER
Current Data Parameters
NAME 11092017
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170911
Time 23.12
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 1021
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178006 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
PS-D-044
N
H
O
O
4f
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

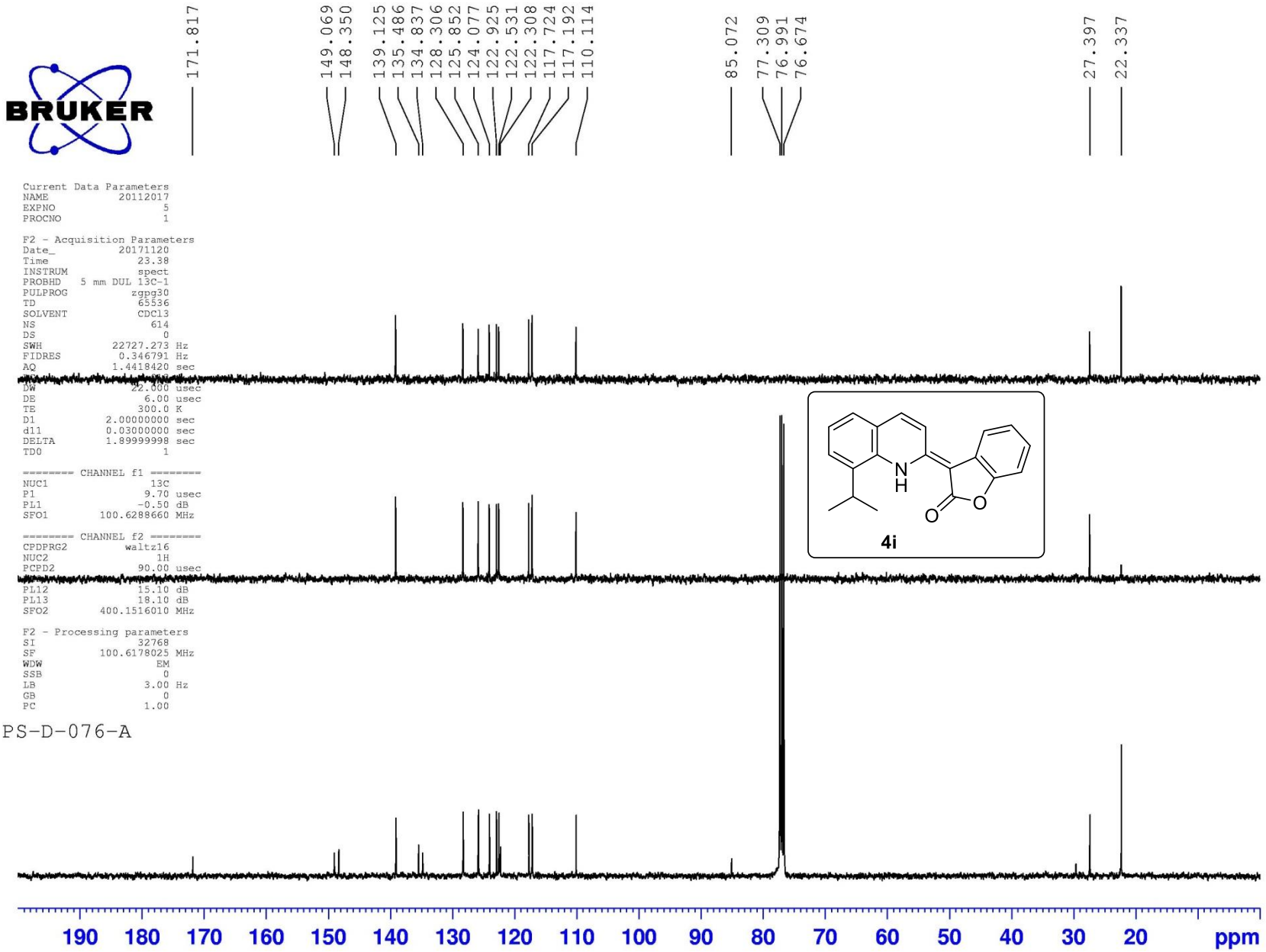

Current Data Parameters
NAME 19092017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170919
Time 0.04
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 53
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
13.304
8.132
8.111
7.878
7.854
7.810
7.790
7.695
7.673
7.636
7.628
7.613
7.607
7.497
7.479
7.455
7.436
7.371
7.369
7.351
7.348
7.331
7.242
7.227
7.207
7.189
2.644
1.554
4g
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.06
1.00
1.08
1.10
1.17
2.06
1.04
2.20
1.19
1.18
3.02

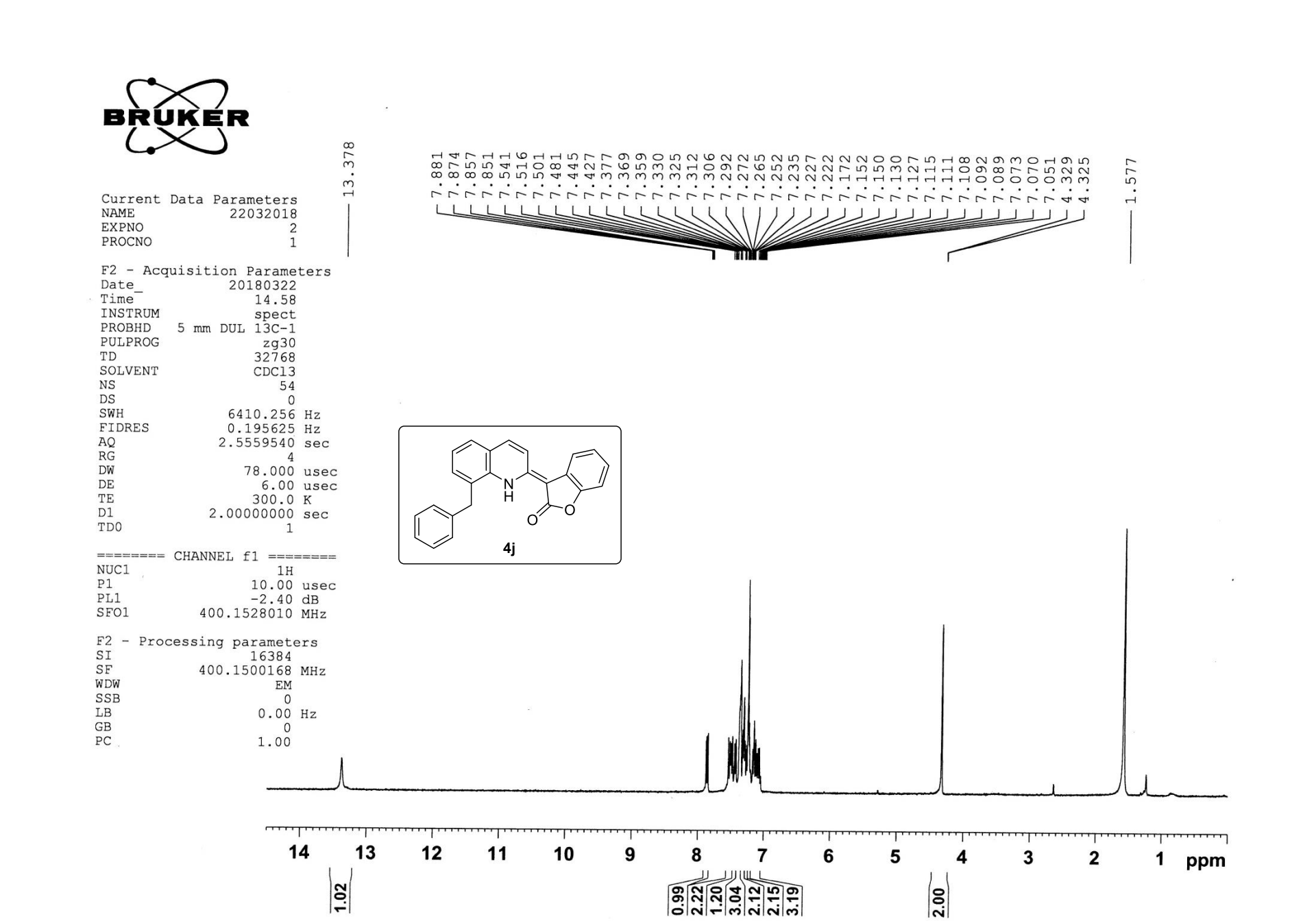

PS-D-048
171.848
148.169
143.127
138.596
136.181
132.876
130.369
128.025
126.262
125.838
125.054
124.205
123.786
122.886
122.168
120.533
120.284
120.126
117.961
117.051
86.714
77.308
76.990
76.672
16.610
BRUKER
Current Data Parameters
NAME 19092017
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170919
Time 0.08
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
SOLVENT CDCl3
NS 6000
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178001 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
N
H
O
O
4g
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm

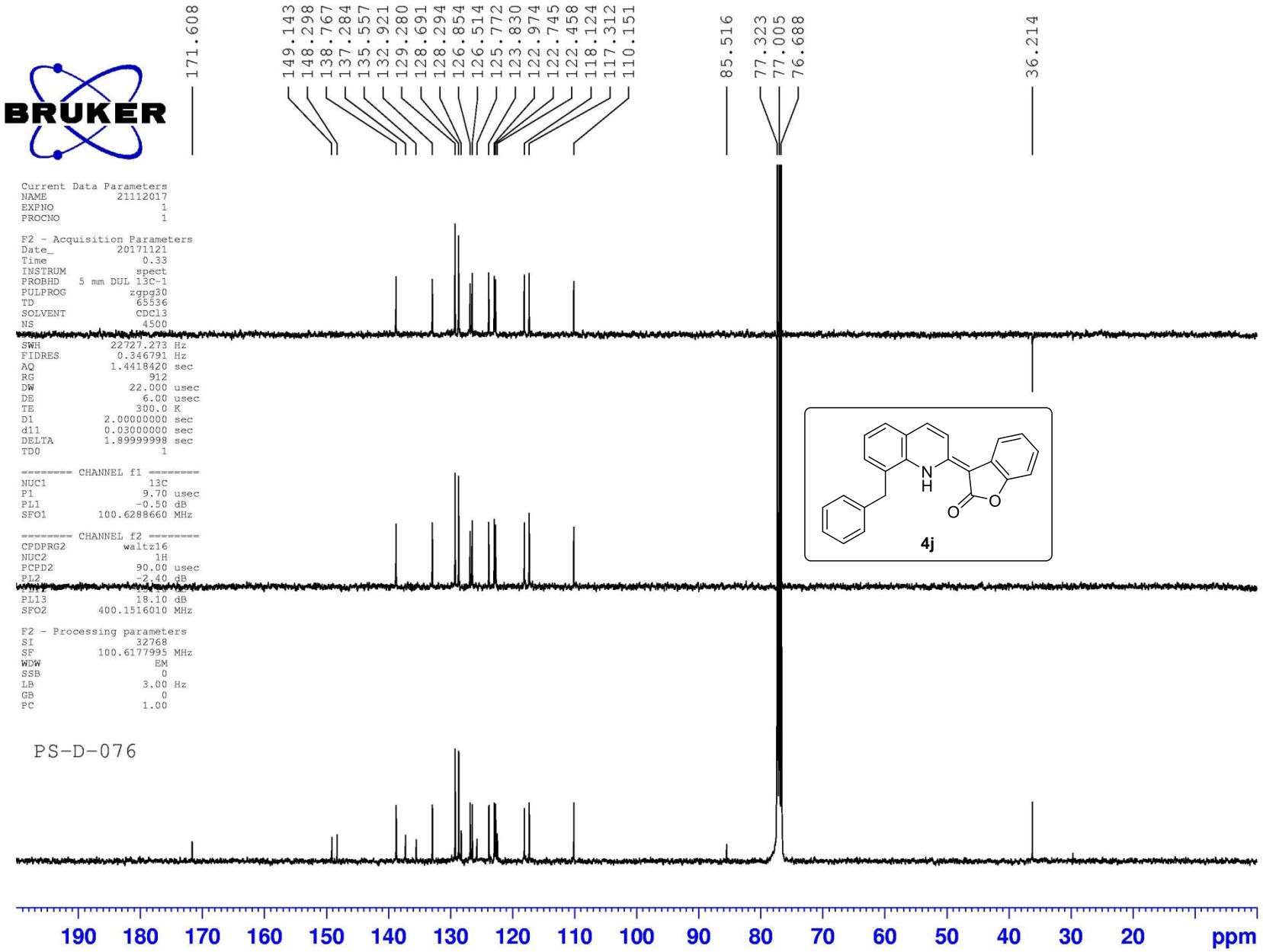

Current Data Parameters
NAME 07112017
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171107
Time 23.16
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 30
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
13.376
7.891
7.867
7.540
7.519
7.470
7.457
7.438
7.276
7.257
7.240
7.176
7.157
7.129
7.112
7.083
7.064
3.026
3.008
2.989
2.971
1.592
1.454
1.435
1.417
N
H
O
O
4h
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.00
0.97
4.16
1.07
3.00
2.07
3.03

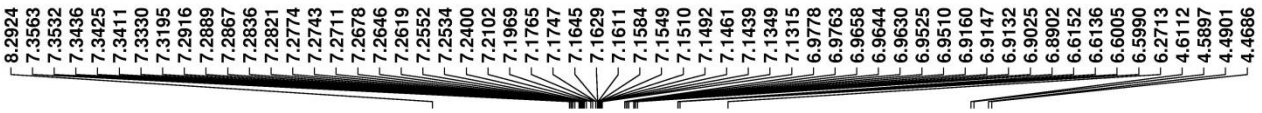

171.764
149.066
148.269
138.924
135.438
130.868
130.813
125.866
123.970
122.928
122.564
122.163
117.802
117.217
110.106
85.136
77.309
76.992
76.674
23.260
12.899
Current Data Parameters
NAME 09112017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171108
Time 23.58
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5000
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.40 dB
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178018 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
N
H
O
O
4h
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm


13.537
7.907
7.884
7.562
7.541
7.471
7.452
7.314
7.295
7.275
7.186
7.167
7.155
7.136
7.117
7.088
7.069
7.050
3.575
3.558
3.542
3.525
3.508
1.451
1.434
Current Data Parameters
NAME 20112017
EXPNO 4
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171120
Time 23.37
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
N
H
O
O
4i
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
0.96
0.94
1.91
1.91
1.08
2.00
1.01
1.00
6.02


171.817
149.069
148.350
139.125
135.486
134.837
128.306
125.852
124.077
122.925
122.531
122.308
117.724
117.192
110.114
85.072
77.309
76.991
76.674
27.397
22.337
Current Data Parameters
NAME 20112017
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171120
Time 23.38
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 614
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6178025 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
PS-D-076-A
N
H
O
O
4i
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm


13.378
7.881
7.874
7.857
7.851
7.541
7.516
7.501
7.481
7.445
7.427
7.377
7.369
7.359
7.330
7.325
7.312
7.306
7.292
7.272
7.265
7.252
7.235
7.227
7.222
7.172
7.152
7.150
7.130
7.127
7.115
7.111
7.108
7.092
7.089
7.073
7.070
7.051
4.329
4.325
1.577
Current Data Parameters
NAME 22032018
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180322
Time 14.58
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 54
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 4
DW 78.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -2.40 dB
SFO1 400.1528010 MHz
F2 - Processing parameters
SI 16384
SF 400.1500168 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
N
H
O
O
4j
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm
1.02
0.99
2.22
1.20
3.04
2.12
2.15
3.19
2.00


171.608
149.143
148.298
138.767
137.284
135.557
132.921
129.280
128.691
128.294
126.854
126.514
125.772
123.830
122.974
122.745
122.458
118.124
117.312
110.151
85.516
77.323
77.005
76.688
36.214
Current Data Parameters
NAME 21112017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171121
Time 0.33
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 4500
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177995 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
PS-D-076
N
H
O
O
4j
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

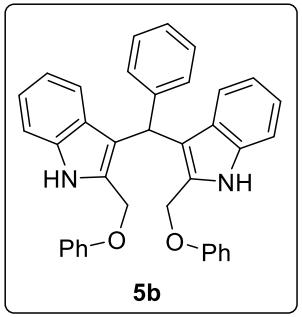


Current Data Parameters
NAME SBW-5-203
EXPNO 1
PROCNO 1

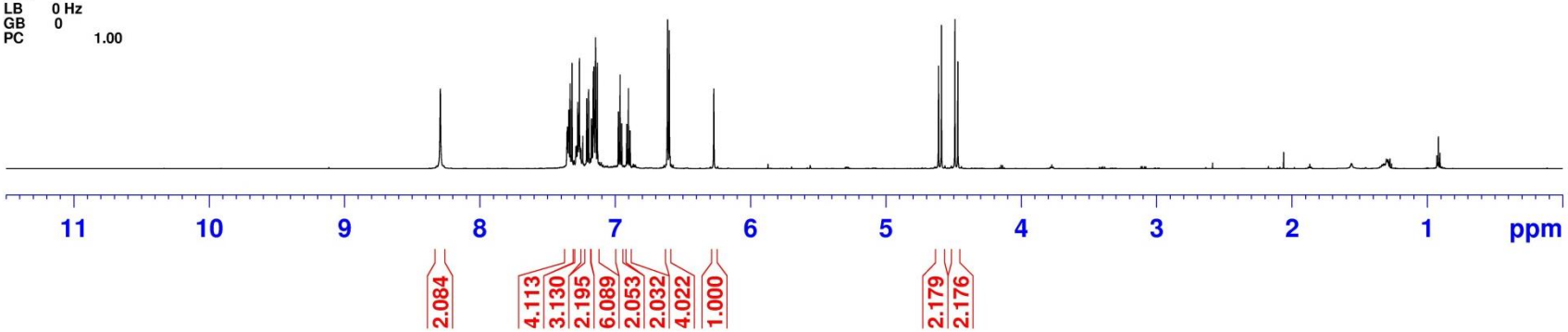
F2 - Acquisition Parameters
Date_ 20170801
Time 23.13
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpr
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 1.6384000 sec
RG 128
DW 50.000 usec
DE 6.50 usec
TE 299.1 K
D1 2.00000000 sec
d12 0.00002000 sec
MCREST 0 sec
MCWRK 0.01500000 sec

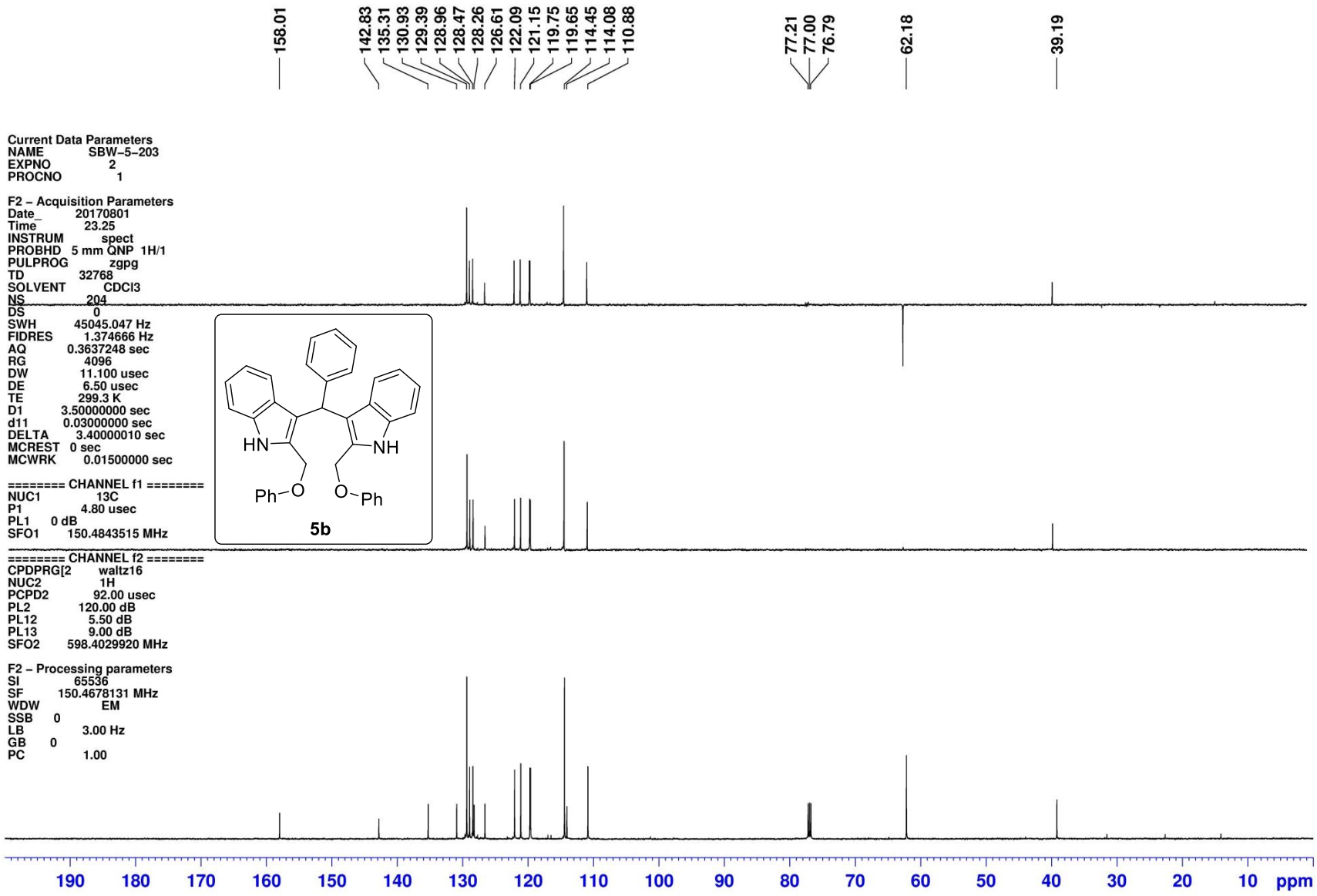
======== CHANNEL f1 ========
NUC1 1H
P1 20.00 usec
PL1 -1.00 dB
PL9 35.00 dB
SFO1 598.4035904 MHz

F2 - Processing parameters
SI 32768
SF 598.4000248 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00



5b

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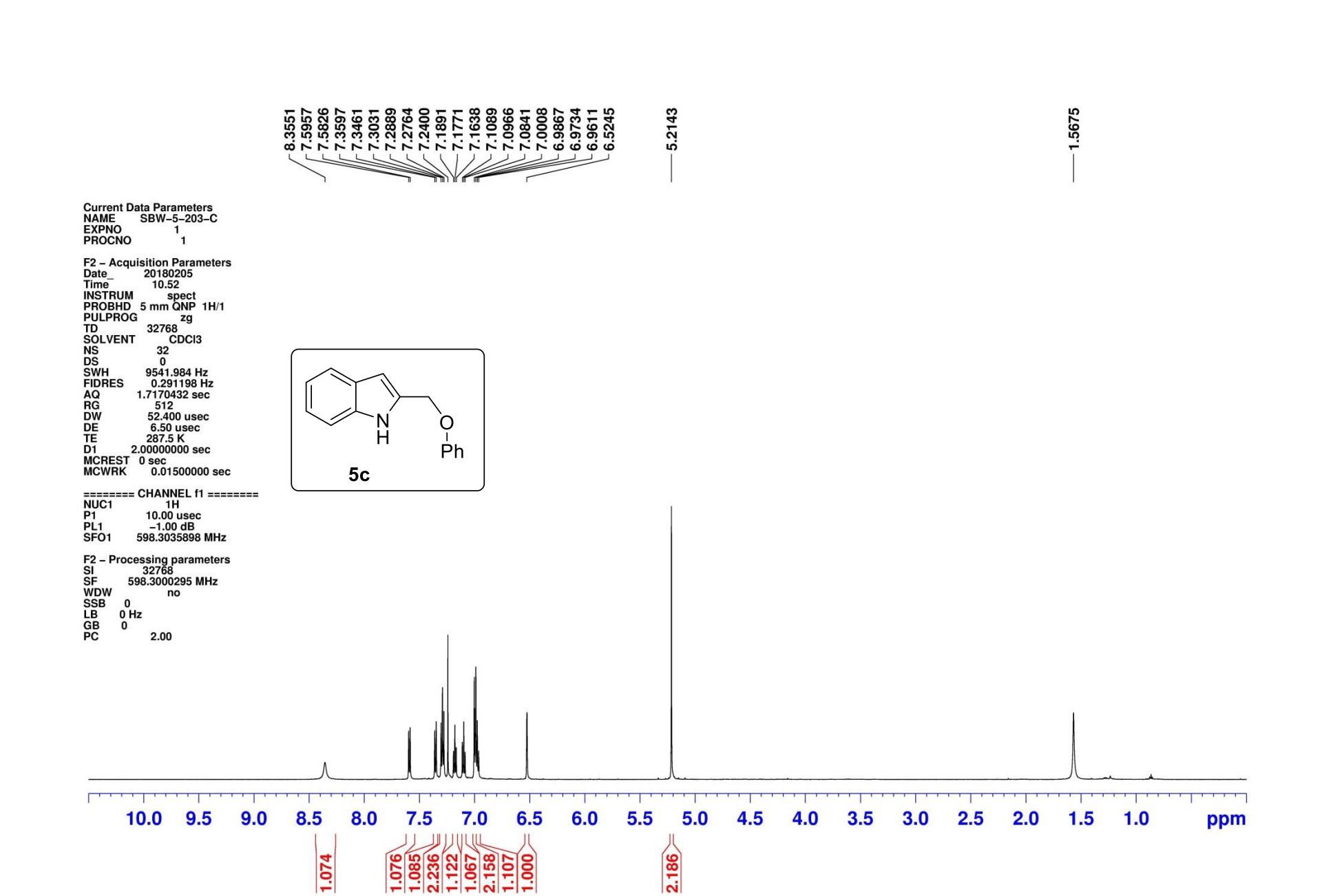
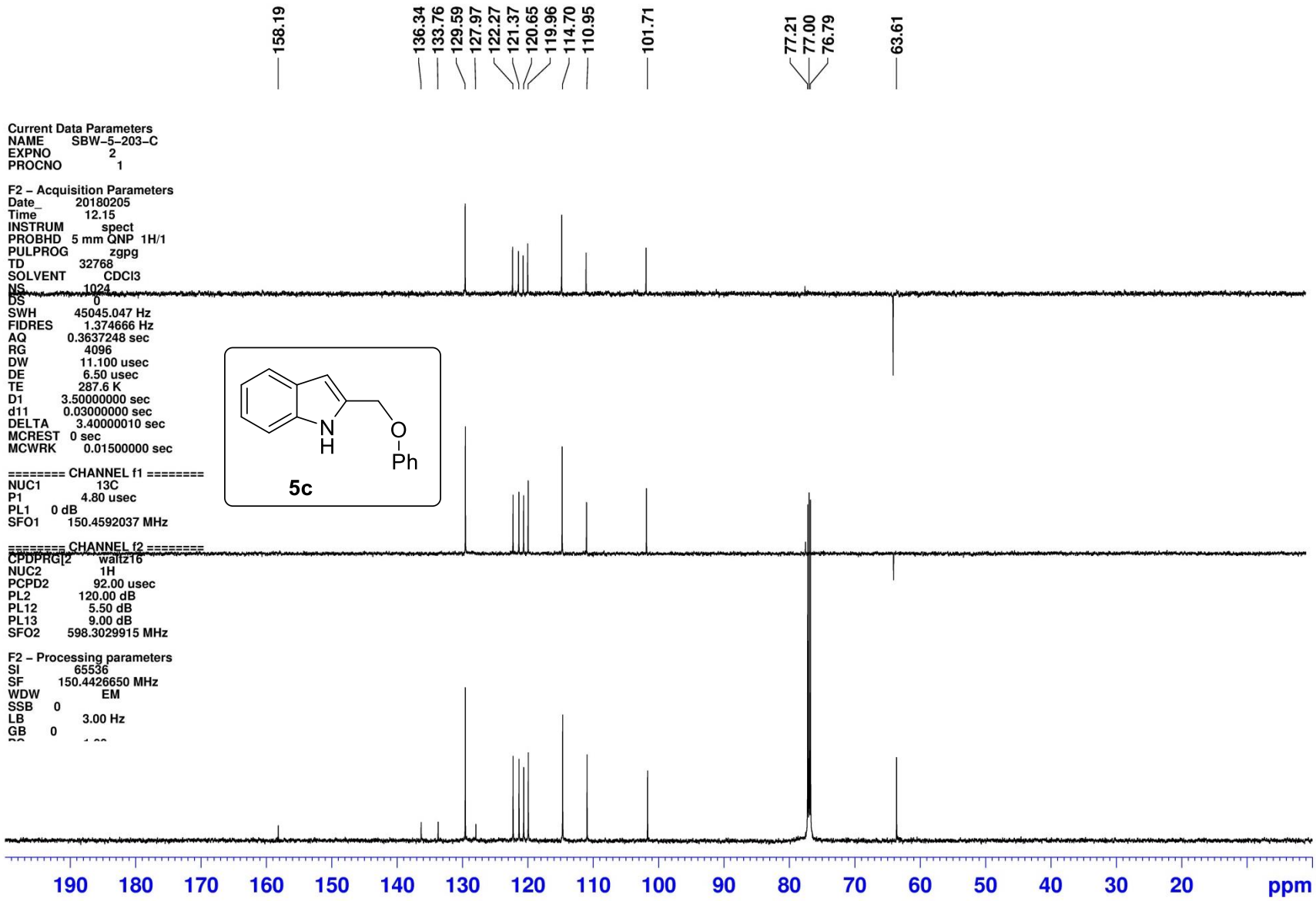
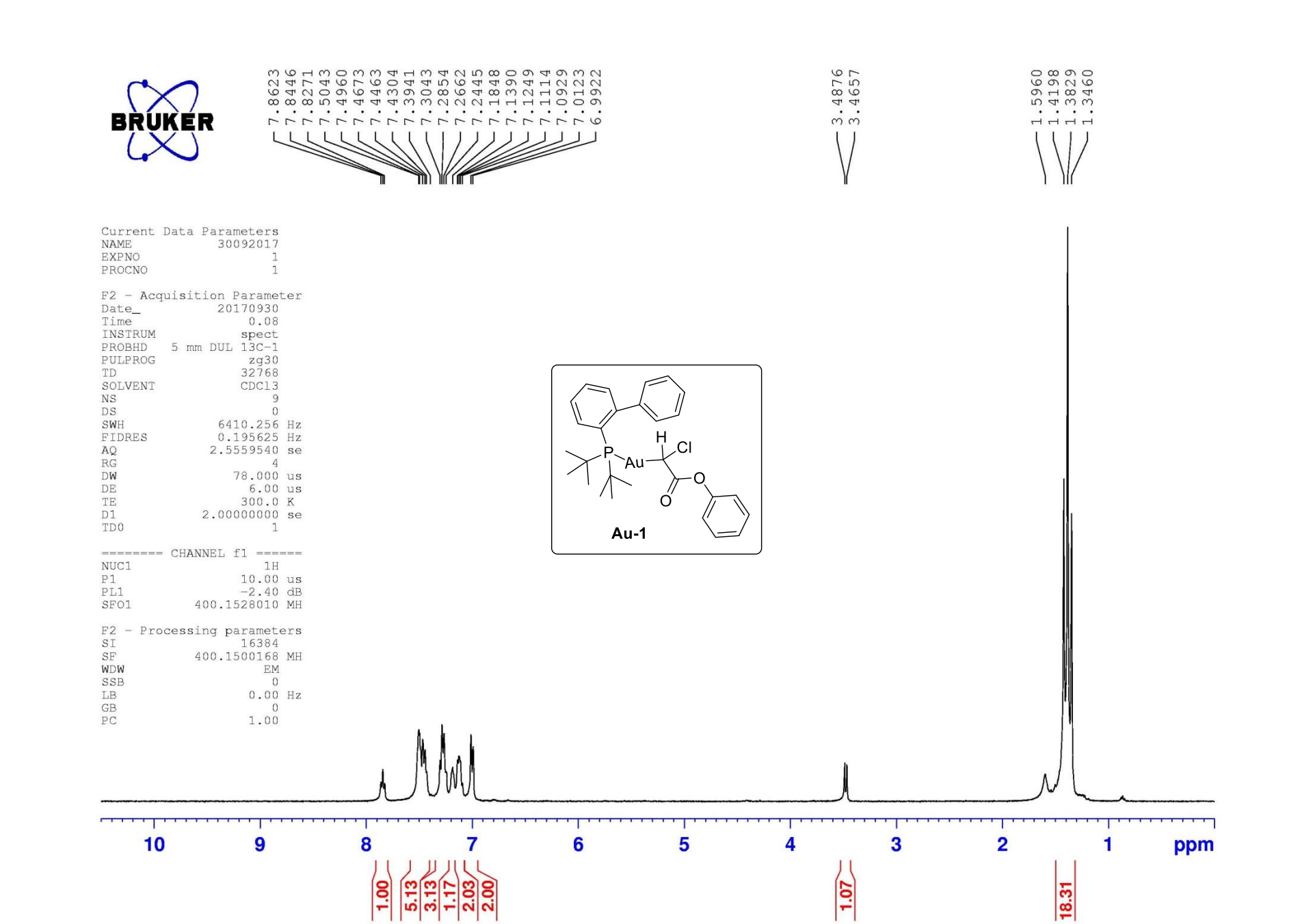
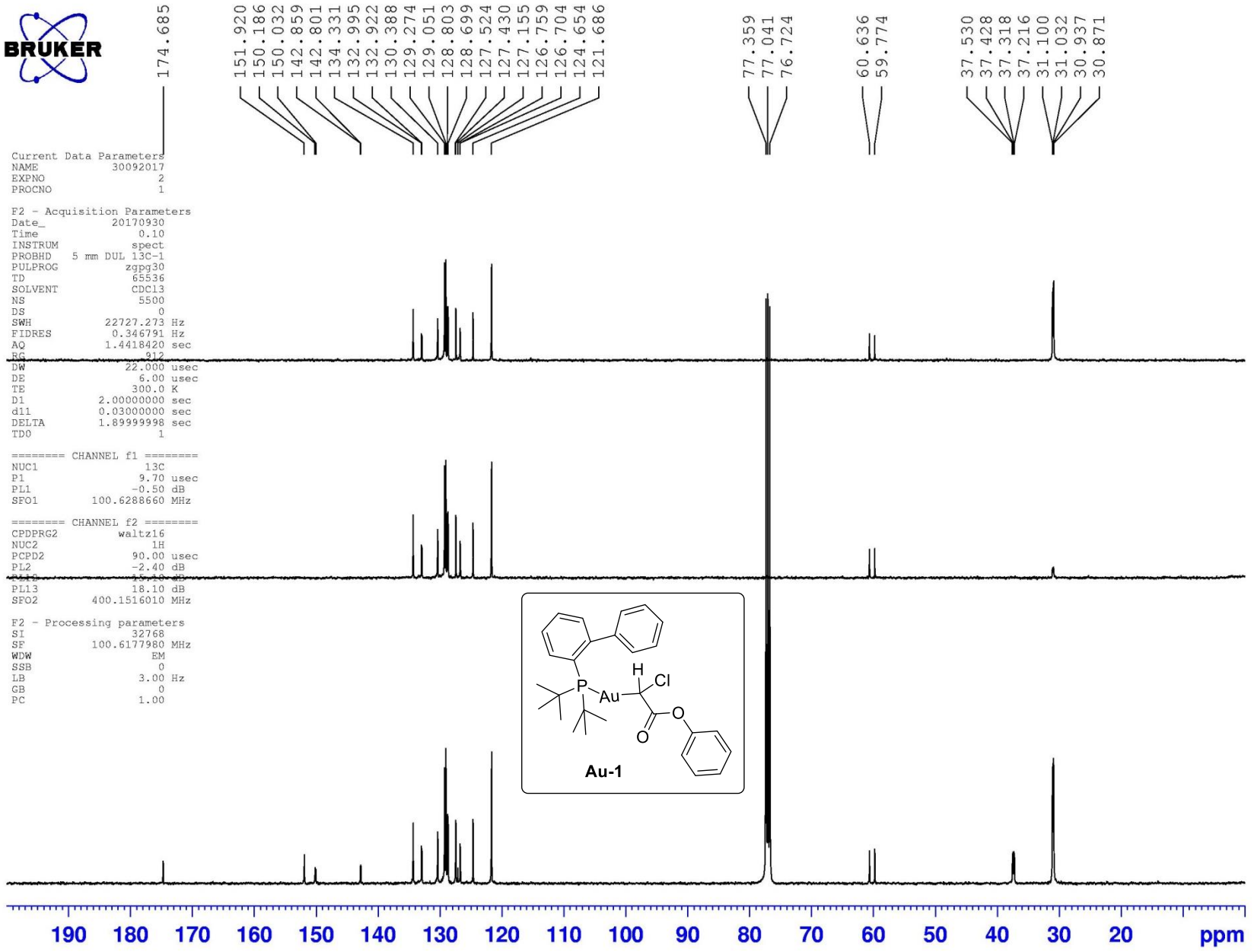
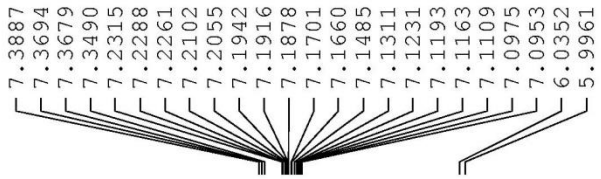
142.83
135.31
130.93
129.39
128.96
128.47
128.26
126.61
122.09
121.15
119.75
119.65
114.45
114.08
110.88
77.21
77.00
76.79
62.18
39.19
Current Data Parameters
NAME SBW-5-203
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170801
Time 23.25
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 204
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637248 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 299.3 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0 dB
SFO1 150.4843515 MHz
HN
NH
Ph-O
O-Ph
5b
======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.4029920 MHz
F2 - Processing parameters
SI 65536
SF 150.4678131 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

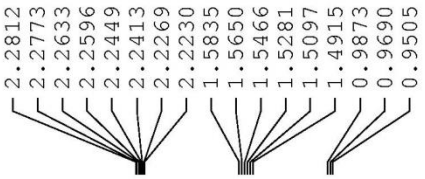

8.3551
7.5957
7.5826
7.3597
7.3461
7.3031
7.2889
7.2764
7.2400
7.1891
7.1771
7.1638
7.1089
7.0966
7.0841
7.0008
6.9867
6.9734
6.9611
6.5245
5.2143
1.5675
Current Data Parameters
NAME SBW-5-203-C
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180205
Time 10.52
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 9541.984 Hz
FIDRES 0.291198 Hz
AQ 1.7170432 sec
RG 512
DW 52.400 usec
DE 6.50 usec
TE 287.5 K
D1 2.00000000 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 10.00 usec
PL1 -1.00 dB
SFO1 598.3035898 MHz
F2 - Processing parameters
SI 32768
SF 598.3000295 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 2.00
N
H
O
Ph
5c
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
ppm
1.074
1.076
1.085
2.236
1.122
1.067
2.158
1.107
1.000
2.186


158.19
136.34
133.76
129.59
127.97
122.27
121.37
120.65
119.96
114.70
110.95
101.71
77.21
77.00
76.79
63.61
Current Data Parameters
NAME SBW-5-203-C
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180205
Time 12.15
INSTRUM spect
PROBHD 5 mm QNP 1H/1
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 1024
DS 0
SWH 45045.047 Hz
FIDRES 1.374666 Hz
AQ 0.3637248 sec
RG 4096
DW 11.100 usec
DE 6.50 usec
TE 287.6 K
D1 3.50000000 sec
d11 0.03000000 sec
DELTA 3.40000010 sec
MCREST 0 sec
MCWRK 0.01500000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 4.80 usec
PL1 0 dB
SFO1 150.4592037 MHz
======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 92.00 usec
PL2 120.00 dB
PL12 5.50 dB
PL13 9.00 dB
SFO2 598.3029915 MHz
F2 - Processing parameters
SI 65536
SF 150.4426650 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
N
H
O
Ph
5c
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm


7.8623
7.8446
7.8271
7.5043
7.4960
7.4673
7.4463
7.4304
7.3941
7.3043
7.2854
7.2662
7.2445
7.1848
7.1390
7.1249
7.1114
7.0929
7.0123
6.9922
3.4876
3.4657
1.5960
1.4198
1.3829
1.3460
Current Data Parameters
NAME 30092017
EXPNO 1
PROCNO 1
F2 - Acquisition Parameter
Date_ 20170930
Time 0.08
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 9
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 se
RG 4
DW 78.000 us
DE 6.00 us
TE 300.0 K
D1 2.00000000 se
TD0 1
======== CHANNEL f1 ======
NUC1 1H
P1 10.00 us
PL1 -2.40 dB
SFO1 400.1528010 MH
F2 - Processing parameters
SI 16384
SF 400.1500168 MH
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
H
Cl
P
Au
O
O
Au-1
10
9
8
7
6
5
4
3
2
1
ppm
1.00
5.13
3.13
1.17
2.03
2.00
1.07
18.31


174.685
151.920
150.186
150.032
142.859
142.801
134.331
132.995
132.922
130.388
129.274
129.051
128.803
128.699
127.524
127.430
127.155
126.759
126.704
124.654
121.686
77.359
77.041
76.724
60.636
59.774
37.530
37.428
37.318
37.216
31.100
31.032
30.937
30.871
Current Data Parameters
NAME 30092017
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170930
Time 0.10
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 5500
DS 0
SWH 22727.273 Hz
FIDRES 0.346791 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.40 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177980 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
P
Au
H
Cl
O
O
Au-1
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm



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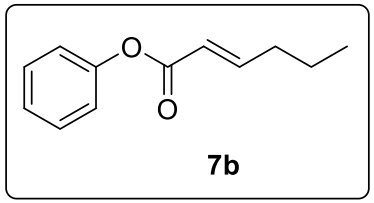
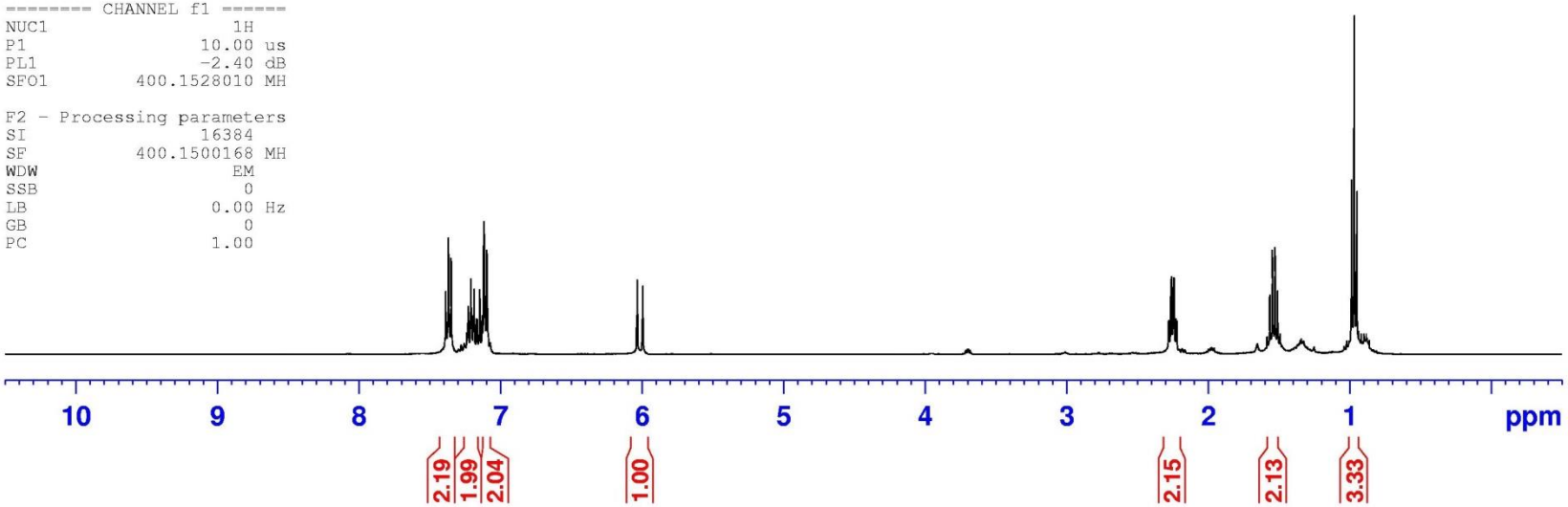
Current Data Parameters
NAME            24032018
EXPNO                 10
PROCNO                 1

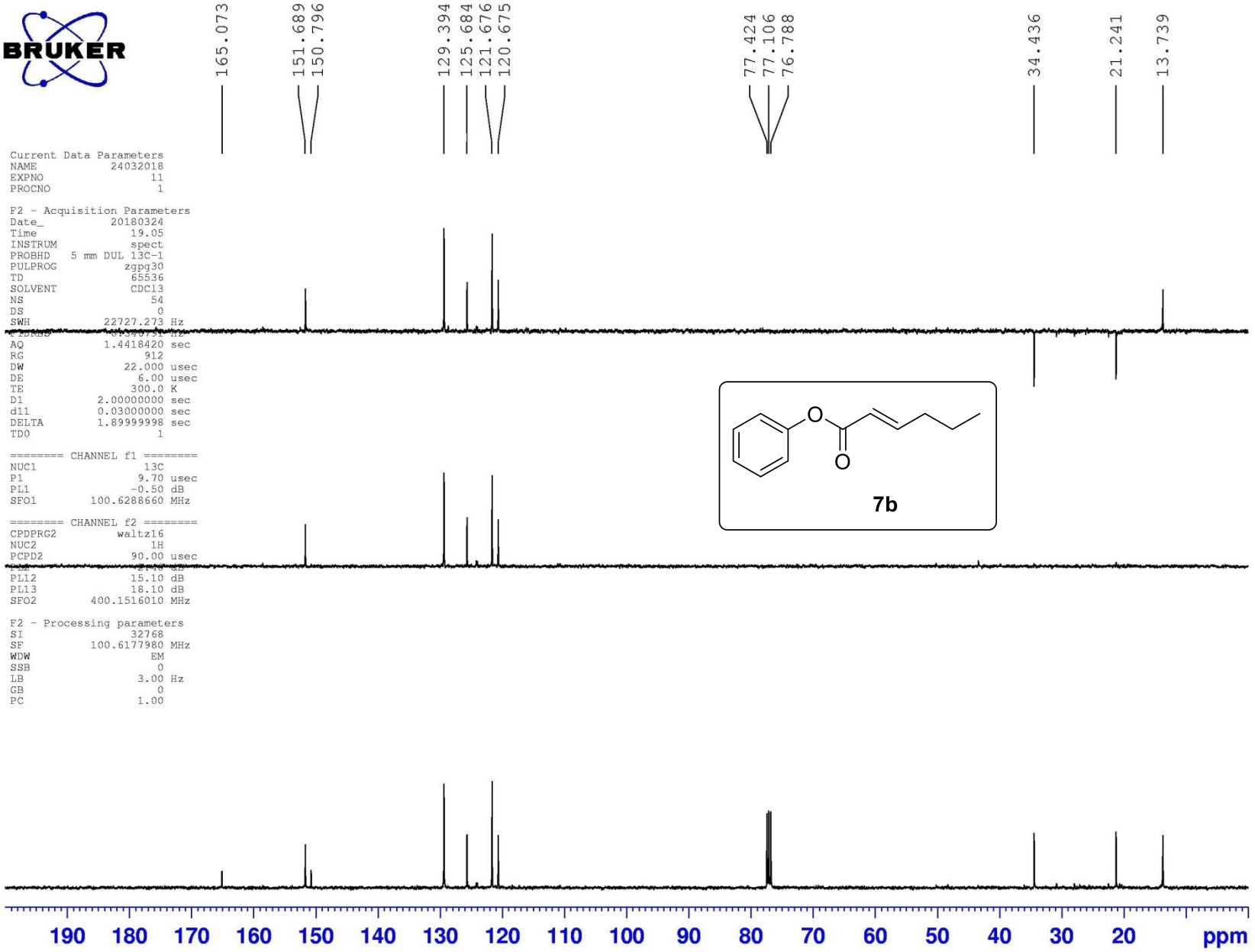
F2 - Acquisition Parameter
Date_           20180324
Time               19.01
INSTRUM            spect
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     7
DS                     0
SWH             6410.256 Hz
FIDRES          0.195625 Hz
AQ              2.5559540 se
RG                     4
DW                78.000 us
DE                 6.00 us
TE                300.0 K
D1             2.00000000 se
TD0                    1

======== CHANNEL f1 ======
NUC1                  1H
P1                10.00 us
PL1               -2.40 dB
SFO1         400.1528010 MH

F2 - Processing parameters
SI                 16384
SF           400.1500168 MH
WDW                   EM
SSB                    0
LB                0.00 Hz
GB                     0
PC                1.00
```






165.073
151.689
150.796
129.394
125.684
121.676
120.675
77.424
77.106
76.788
34.436
21.241
13.739
Current Data Parameters
NAME 24032018
EXPNO 11
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180324
Time 19.05
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 54
DS 0
SWH 22727.273 Hz
AQ 1.4418420 sec
RG 912
DW 22.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.70 usec
PL1 -0.50 dB
SFO1 100.6288660 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL12 15.10 dB
PL13 18.10 dB
SFO2 400.1516010 MHz
F2 - Processing parameters
SI 32768
SF 100.6177980 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
O
O
7b
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm